

ANALYZE SAFETY DATA

First, SRF Consulting Group worked with WEN and MnDOT staff to assemble a roadway network in Geographic Information System (GIS) application or map analysis tool. Crash data is provided by DPS MNCRASH System. The crash data includes state, county, and tribal network crashes or all the crashes in the White Earth Reservation boundary. The roadway and crash data assembled through this process is used to analyze and identify intersections, segments, and curves in the safety plan. The safety analysis covers approximately 1,600 miles of tribal, state, county, and municipal roadways.

The core components of the comprehensive safety analysis found in the safety plan include:

- Data Analysis with Crash Data
- Data Analysis with Other Safety Data (weather, time, season, age, etc.)
- Review of Crash Modification Factors (CMF) via the CMF Clearinghouse web-based database
- Law enforcement records (state/tribal/local crash reporting databases)

DETERMINE FOCUS AREAS

The safety plan identifies a list of focus areas or areas that are important for roadway safety within the White Earth Reservation. Focus areas are crash themes that include the roadway characteristics and/or crash attributes contributing to the majority of fatal and serious injury crashes. Development of focus areas includes a systemic risk assessment using factors such as high crash locations. This traditional quantitative method is effective for transportation safety planning on state roadway systems but can be a barrier to local system participation because there are typically few to no locations that meet the state criteria for designation as “high crash” locations on the local system. Because of this barrier, non-traditional qualitative information from the PMT, stakeholder, and community helps determine focus areas through robust community engagement and feedback. The development of focus areas for this plan follows the model of the Minnesota Strategic Highway Safety Plan (SHSP) which blended crash data analysis with input from stakeholders as part of an extensive group of public and project outreach.

IDENTIFY STRATEGIES

A list of proven strategies is developed to proactively address risk factors identified through the systemic roadway analysis, crash analysis, and identification of focus areas. Although some strategies are unfeasible, the full range of options is included. Review of agency partnership is also important, as many roadways within the White Earth Reservation are non-tribal however, WEN maintains an interest by placing some non-tribal projects into the Tribal Transportation Improvement Plan (TTIP).

Each strategy and treatment identified in this plan is proven effective to address the risk factors identified. The CMF Clearing house database is used to assess key crash data trends such as lane departure and intersection crashes that represent the predominant type of crashes on the state and county system within the Reservation boundaries.

PRIORITIZE AND INCORPORATE STRATEGIES

Once all locations are assessed for risk factors and consideration of PMT, stakeholder, and community input, the segments, curves, and intersections are sorted and prioritized. Risk factors are prioritized by check marks. PMT, stakeholder, and community feedback locations and strategies are prioritized by WEN TTP staff. High



priority locations by risk factor include the top three check rankings of each category. Emphasis is given to rural areas with higher speed limits because this is where the majority of severe crashes occur.

Evaluate and Update the LRSP

Successful safety plans monitor implementation progress. This helps provide accountability to the Plan Champion and keep stakeholders informed. This plan has been developed to ensure meetings are scheduled and implementation strategies and treatments are being followed through with. As safety strategies are implemented at specific locations, the opportunity for WEN to re-prioritize its list of focus areas and strategies can be updated.

DISAGGREGATED CRASH ANALYSIS

The disaggregated crash analysis for the safety plan is comprised of a crash data set consisting of five years (2017-2021) of crash records occurring within the White Earth Reservation boundary. The data set includes 335 crashes that occurred within the Reservation on the transportation system.

OVERVIEW

Detailed analysis of the data is important in identifying the root cause issues of fatal (K) and serious injury (A) crashes. The analyzed crash data is mapped to determine specific locations of occurrence on the Reservation-wide roadway system. Figure 2 illustrates the location of the severe (K + A) crashes that have occurred within the White Earth Reservation roadway network from 2018-2022. After mapping the data, a more detailed and deeper analysis identifies the factors contributing to each crash. The crash tree diagram illustrated in Figure 3 – 7 distinguishes crashes by roadway characteristics for all crashes that occurred on the Reservation-wide roadway system between 2017-2021. Table 4 includes crash information by the Strategic Highway Safety Plan focus area. The following lists findings from the detailed crash analysis and crash tree diagram:

- 16% of all crashes on State Rural Roadways from 2017-2021 were severe
- 100% of severe crashes occurring on the County Road System were rural
- 95% of severe crashes occurring the State Highway System were rural
- 9% of severe crashes on the local system occurred on the Tribal Roadway System
- 1% of severe crashes occurred on the Urban Municipal Roadway System



Figure 2 - Fatal (K) and Serious Injury (A) Crashes from 2018-2022

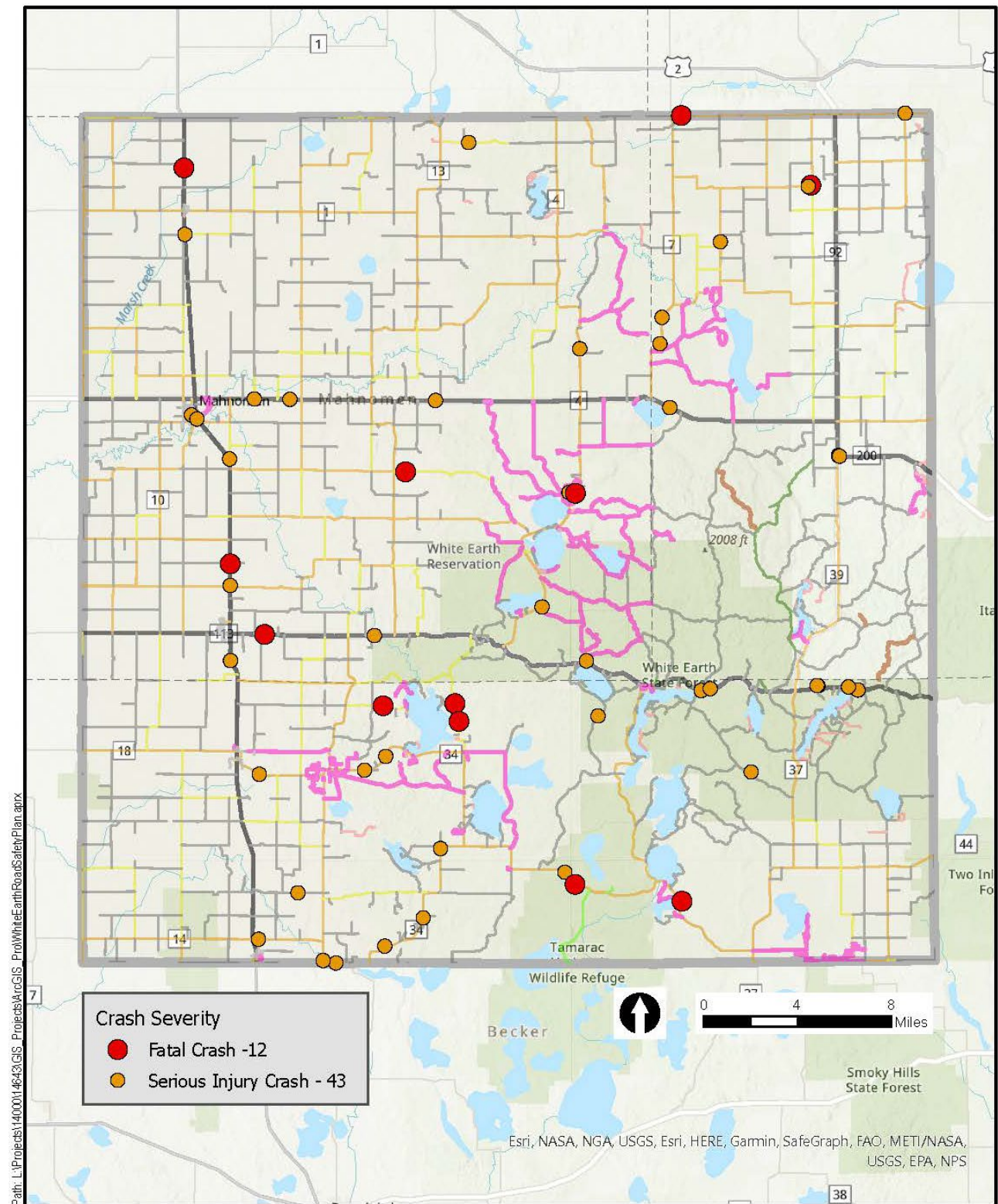


Figure 3 - White Earth Reservation Crash Data Overview - State Rural System (2017-2021)

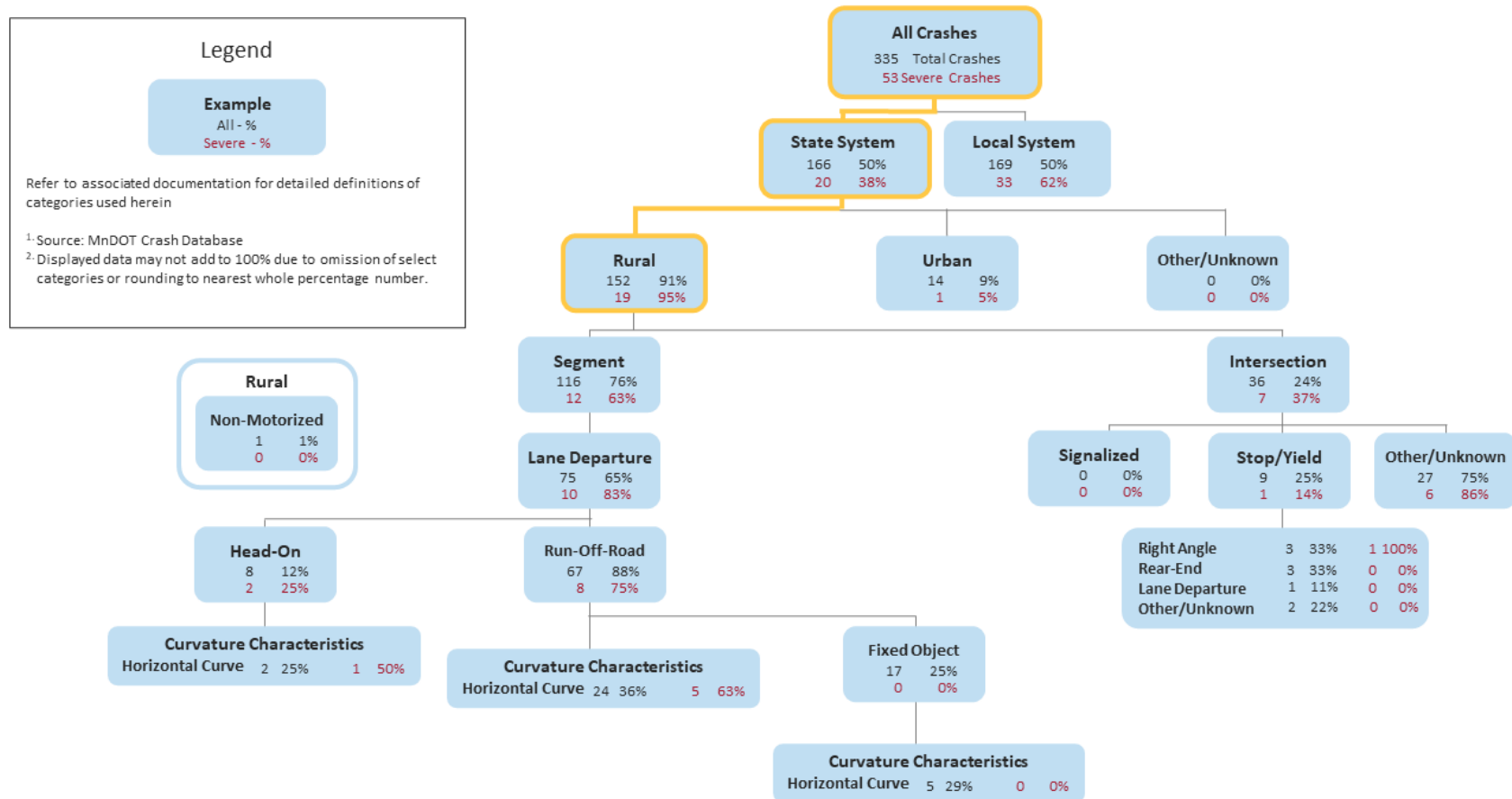


Figure 4 - White Earth Reservation Crash Data Overview – County Rural System (2017-2021)

White Earth Nation County Crash Tree – County Rural – 2017-2021

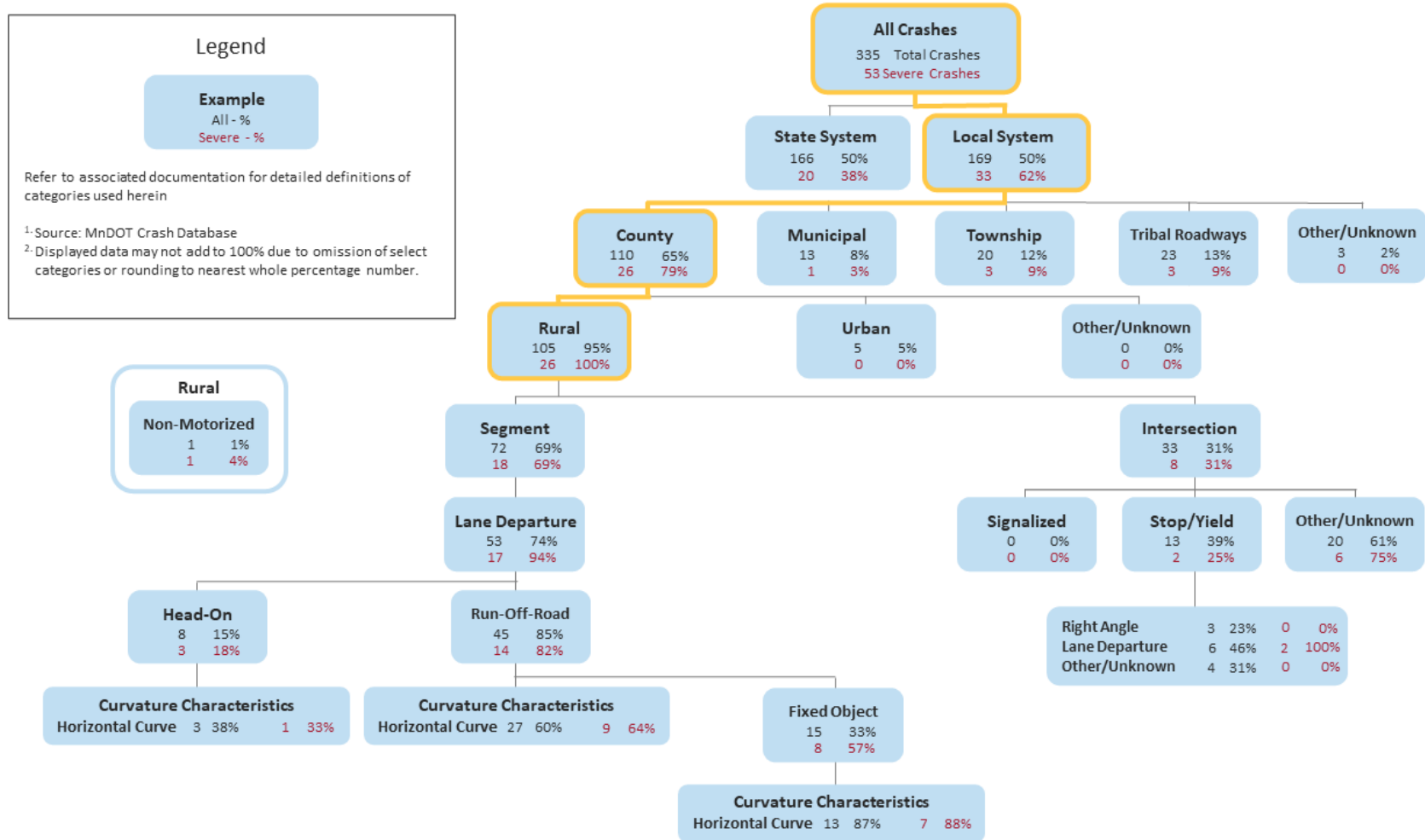


Figure 5 - White Earth Reservation Crash Data Overview - Township Rural System (2017-2021)

White Earth Nation Township Crash Tree – Township Rural – 2017-2021

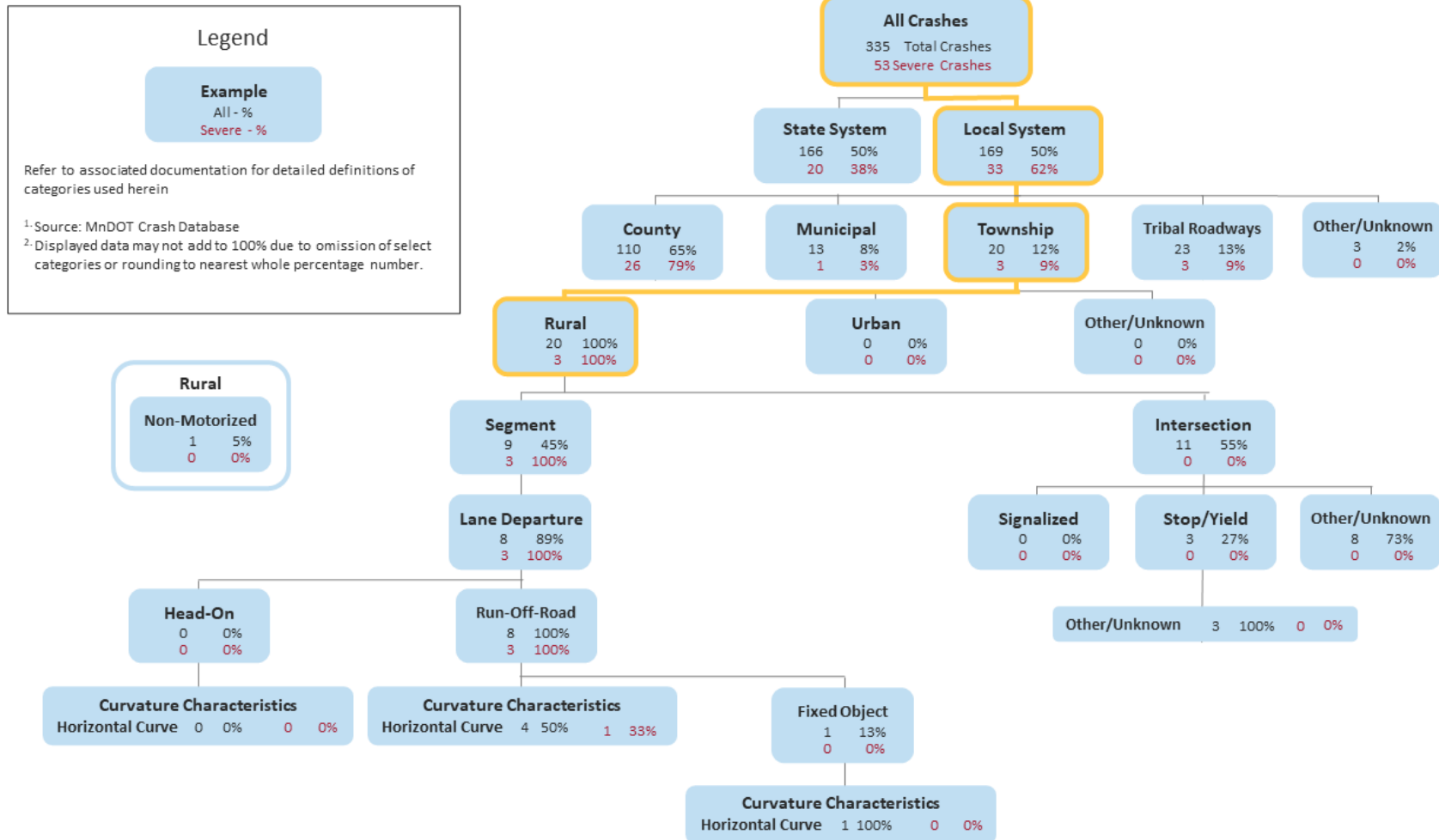


Figure 6 - White Earth Reservation Crash Data Overview – Tribal Rural Roadway System (2017-2021)

White Earth Nation Tribal Crash Tree – Tribal Rural Roadways – 2017-2021

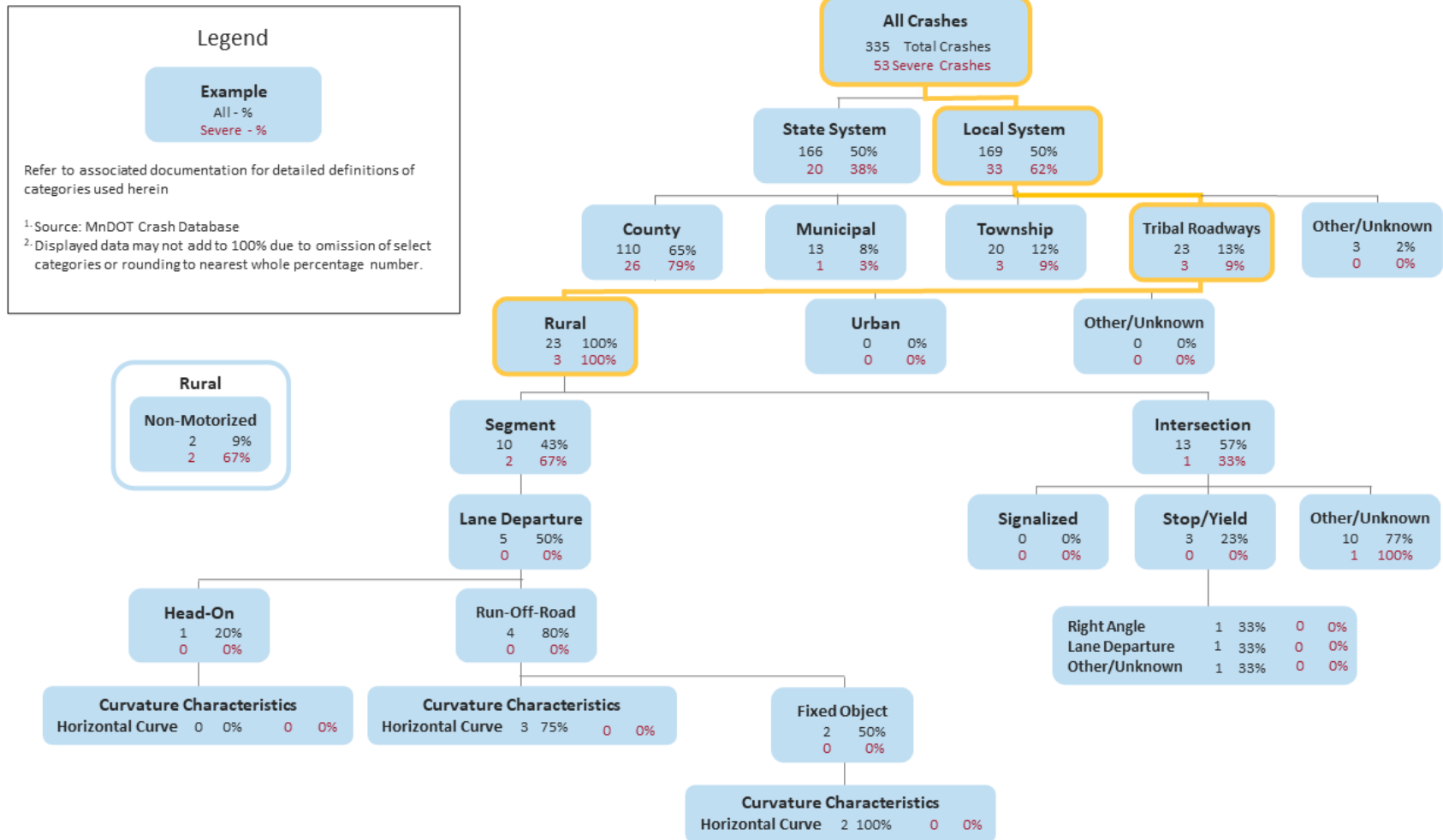


Figure 7 - White Earth Reservation Crash Data Overview - Municipal Urban System (2017-2021)

White Earth Nation Municipal Crash Tree – Municipal Urban – 2017-2021

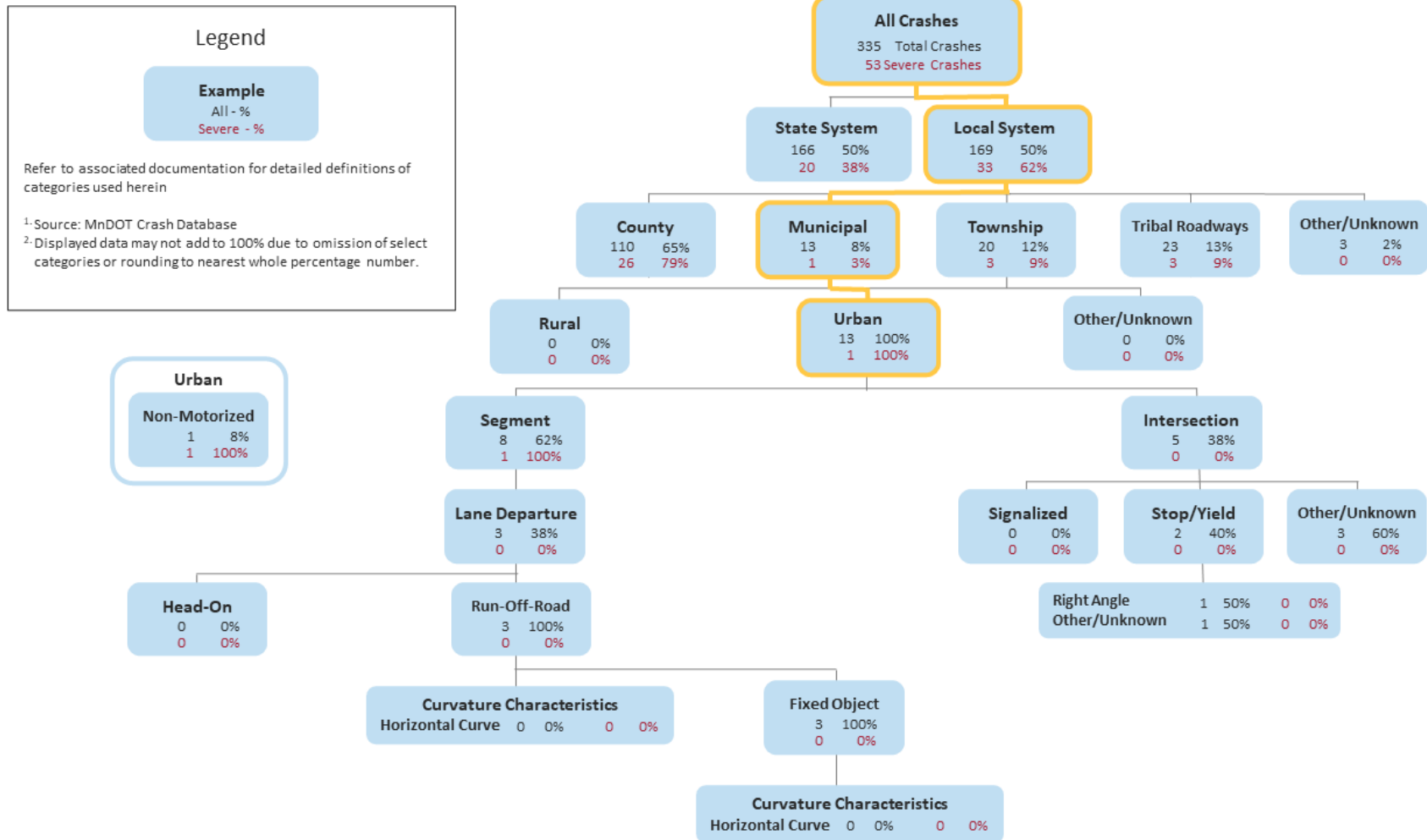


Table 4 - Crash Data Analysis Overview

		White Earth Nation											
		All Systems		State System		County System		Tribal System		Municipal		Township/Other	
Total Severe Crashes		53	100%	20	100%	26	100%	3	100%	1	100%	3	100%
Core Areas	Intersection	16	30%	7	35%	8	31%	1	33%	0	0%	0	0%
	Lane Departure	42	79%	15	75%	23	88%	1	33%	0	0%	3	100%
	Run-Off-Road	37	70%	13	65%	20	77%	1	33%	0	0%	3	100%
	Head-On	5	9%	2	10%	3	12%	0	0%	0	0%	0	0%
	Impaired	16	30%	4	20%	10	38%	1	33%	0	0%	1	33%
	Speed	20	38%	5	25%	11	42%	1	33%	0	0%	3	100%
	Unbelted	17	32%	5	25%	10	38%	0	0%	0	0%	2	67%
	Inattentive	11	21%	4	20%	6	23%	1	33%	0	0%	0	0%
Strategic	Older Driver	9	17%	6	30%	3	12%	0	0%	0	0%	0	0%
	Motorcycle	9	17%	7	35%	2	8%	0	0%	0	0%	0	0%
	Younger Driver	14	26%	4	20%	6	23%	1	33%	1	33%	2	67%
	Non-motorist	4	8%	0	0%	1	4%	2	67%	1	33%	0	0%
	Pedestrian	3	6%	0	0%	1	4%	1	33%	1	33%	0	0%
	Bicyclist	1	2%	0	0%	0	0%	1	33%	0	0%	0	0%
	Commercial Vehicles	2	4%	2	10%	0	0%	0	0%	0	0%	0	0%
	Work Zone	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Connected	Unlicensed	22	42%	5	25%	11	42%	3	100%	0	0%	3	100%
	Trains	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
	Deer/Animal	2	4%	1	5%	1	4%	0	0%	0	0%	0	0%
	Winter Weather	3	6%	1	5%	2	8%	0	0%	0	0%	0	0%
		1471 Miles		106 Miles		485 Miles		148 Miles		22 Miles		710 Miles	
Miles per fatal or severe crash		27.8		5.3		18.7		49.3		22.0		236.7	

a. Focus Area definitions consistent with the 2020-2024 Minnesota Strategic Highway Safety Plan unless otherwise noted.

