

## 2. Comprehensive Crash Analysis

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### 2.1 County Wide Crash Overview

The analysis of crashes in Olmsted County was conducted using the Minnesota Crash Mapping Analysis Tool (MnCMAT). MnCMAT is a map-based computer application that provides a crash data base for every county in Minnesota. In MnCMAT individual crashes are spatially located by reference point along all roadways in each county and over 70 pieces of information are provided for each crash, including; route, reference point, day/date/time, severity, crash causation, road characteristics and driver condition.

For Olmsted County, a data set consisting of five years of crash records was assembled; this data set includes a total of 11,151 crashes. In safety analysis, it is recommended to include more than one year of data in order to reduce the possibility of looking at a year that is unusual, to include as many years as necessary to produce a data set that will provide statistically reliable results, but to be careful going too far back in history because of a concern that conditions might have changed (for example, roads could have been reconstructed, STOP signs added, speed limits changed, etc.). For Olmsted County, it was concluded that a data set covering five years with over 11,000 crash records would be sufficient to provide the desired level of statistical reliability.

The data set indicates that Olmsted County averages approximately 2,230 crashes per year on all systems of roads. Of these, 13 involve fatalities (0.6%), 54 involve severe injuries (2.4%) and 1,462 are property damage only (65%). Disaggregating these crashes by highway system results in the following (**Figure 2.1**):

- 52% of fatal crashes on the local system (County, municipal and township)
- 70% of severe injury crashes on the local system
- 59% of all crashes on the local system

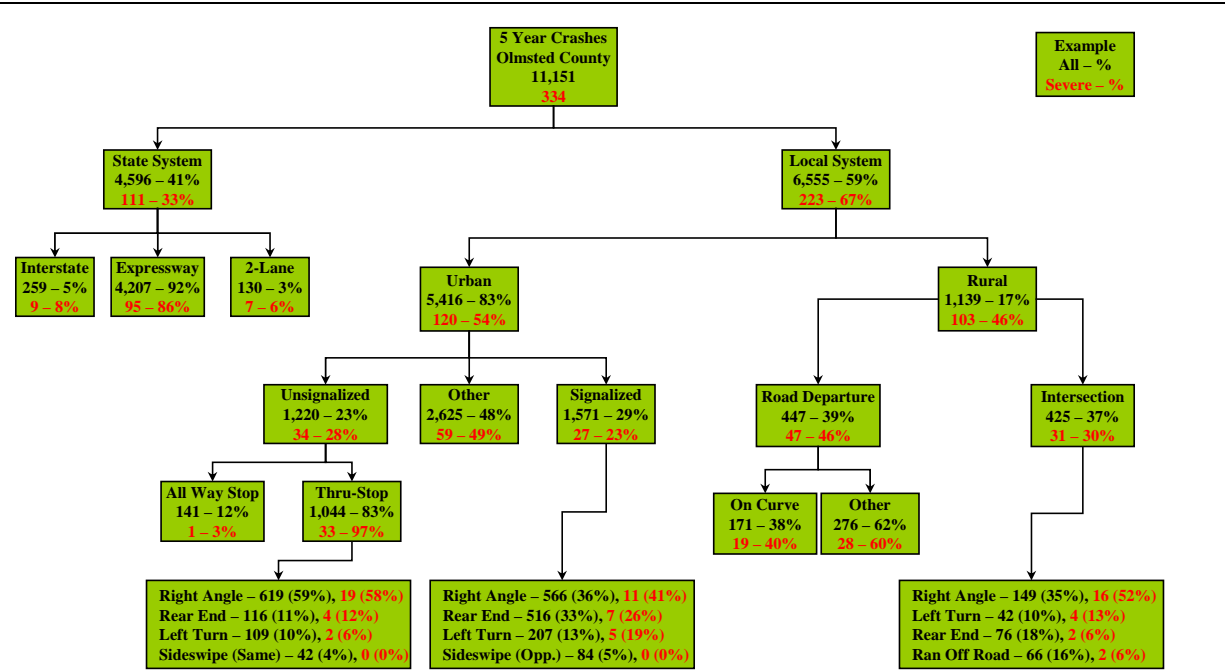


Figure 2.1 Olmsted County Crash Disaggregation  
 Source: MnCMAT Crash Data, 2002-2006. Severe is fatal plus serious injury crashes

This distribution reinforces the importance of Olmsted County's efforts to implement a safety improvement program – the majority of crashes in Olmsted County are on the local system, not on the State's system of highways which have previously been the focus of deployment of safety improvement projects.

The next level of analysis focuses solely on the approximately 1,300 crashes per year on the local system (MnDOT does their own analysis of the State's system and develops their own highway safety projects). Of these 1,300 crashes, approximately 1,083 (83%) occur in urban areas and 228 (17%) occur in rural areas. However, when only severe crashes are considered, there is almost an even split with 24 crashes (54%) in urban areas, and 21 crashes (46%) in rural areas. In urban areas, 244 crashes (23%) occur at STOP sign controlled intersections, 314 crashes (29%) occur at traffic signals and the remainder of the urban crashes (48%) is not intersection related. The primary crash type at these urban intersections is a right angle, 59% at the STOP controlled and 36% at the traffic signals. It should be noted that these fractions of angle crashes are more than double the expected values for similar intersections across Minnesota.

In rural areas, crashes are almost evenly distributed between the 89 road departure crashes (39%) and the 85 intersection crashes (37%). Key factors associated with these crashes include; 38% of the road departure crashes occurred in horizontal curves and 35% of the intersection crashes were right angle. Both of these statistics are much greater than expected, the fraction of curve related road departure crashes is about four times higher than the fraction of rural mileage that is on a horizontal curve and the fraction of angle crashes is about twice the value at similar rural STOP controlled intersections in Minnesota.