**Speed Studies**

Speed is an important transportation consideration because it relates to safety, time, comfort, convenience, and economics. Spot speed studies are used to determine the speed distribution of a traffic stream at a specific location. The data gathered in spot speed studies are used to determine vehicle speed percentiles, which are useful in making many speed-related decisions. Spot speed data have a number of safety applications, including the following (Robertson 1994):

Speed percentiles are tools used to determine effective and adequate speed limits. The two speed percentiles most important to understand are the 50th and the 85th percentiles. The 50th percentile is the median speed of the observed data set. This percentile represents the speed at which half of the observed vehicles are below and half of the observed vehicles are above. The 50th percentile of speed represents the average speed of the traffic stream. The 85th percentile is the speed at which 85% of the observed vehicles are traveling at or below. This percentile is used in evaluating/recommending posted speed limits based on the assumption that 85% of the drivers are traveling at a speed they perceive to be safe (Homburger et al. 1996). In other words, the 85th percentile of speed is normally assumed to be the highest safe speed for a roadway section.

Example 1

Data collected during a speed study in Malaysia was downloaded into the spreadsheet “Speed Study Data”. Excel’s single variable statistics and graphing functions are used to summarize the data and calculate the recommended posted speed limit.

Example 2

A copy of a speed study done in the fall of 2015 on North Montana Avenue in Helena, MT is shown in the file “Speed Study North Montana.pdf”. The pdf shows the transmittal letter and results of the study. It also includes the raw traffic count data on the third page. The counts used to conduct the study are shown under “total counts #1” and “total counts #3” (one is the northbound lane and the other is the southbound lane). The date and time of the study is shown in the upper right hand corner of page 3. Put the date into excel, generate a cumulative frequency polygon (line graph) and see if you can reproduce the results shown in the transmittal letter. The answers are included in the spreadsheet “North Montana Speed Study”.