Additionally Selected Technologies | 2008

Priority, Market-Ready Technologies and Innovations

Putting It In Perspective

The idea of controlling vehicle speed evolved from the assumption that reducing speed also reduces crashes. Speed limits are selected to balance travel efficiency versus safety.

On road sections in rural areas where crash risk is typically not very high, many experts recommend posting the speed limit at the 85th percentile speed (the 85th percentile speed is the speed at or below which 85 percent of motorists drive on a given road). In urban areas with high pedestrian and bicycle activity, many experts recommend selecting the 50th percentile speed as the speed limit.

Studies have shown that better methods are needed to identify appropriate speed limits especially on urban roads having higher traffic volumes, a mix of road users, and more roadside activity.

USLIMITS

Software for Identifying Appropriate Speed Limits

The Challenge:

A speed limit must be safe, appropriate, protect the public, and be enforceable.

It can be argued that a rational speed limit is one that is safe, that most people consider appropriate, that will protect the public, and that can be enforced.

Artificially *low* speed limits can lead to poor compliance as well as large variations in speed within the traffic stream. Increased speed variance creates more conflicts and passing maneuvers, which can lead to more crashes.

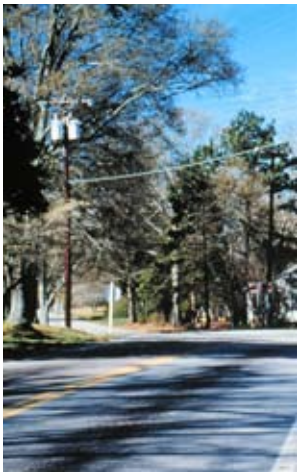
Credibility is important in achieving compliance in order to protect the traveling public with safer road conditions. Finding common ground among elected officials and public policy makers, drivers who are directly impacted by the limits established and whose behavior is a direct reflection of the effectiveness of the system, judges and magistrates who must often address the situation in their courts, and enforcement officials who need an objective means of separating the egregious violators from the rest of the driving population, is often a challenge for local, regional and national regulatory agencies.

The Solution:

USLIMITS is the next generation in a series developed by the Australian Road Research Board for application in the U.S. Developed in partnership with the Federal Highway Administration it is based on the logic used in XLIMITS, but with changes made to suit the conditions in this country.

Easy to use, and available at no charge at http://safety.fhwa.dot.gov/USLIMITS/, this tool is particularly valuable in situations where a defensible argument is needed for the selection of a posted speed.

Successful Application:
FHWA reports success nationwide



The Federal Highway Administration reports at least trial use in 20 State DOTs, 12 County DPWs, 25 City Traffic Departments, and six Police Departments. USLIMITS logic includes a five-step process before recommending a speed limit. The first step deals with the type of area: rural, urban, urban fringe, or rural fringe. The next step deals with roadway and roadside characteristics such as number of lanes, access control, type of road, and median width. Using the information entered in these two steps, the system develops a first approximation for the speed limit. In the next two steps this speed limit may be modified based on other factors such as schools, accidents, alignment, then incorporates a recommendation between the 50th and 85th percentile speed.

A report prepared for the National Cooperative Highway Research Program Transportation Research Board National Research Council found in using this system with several case studies, the area type, roadway characteristics, abutting development, and the operating speed do seem to affect the recommended speed limit. However, other factors such as accident counts, adjacent limits, and presence/absence of adverse alignment do not seem to affect the recommended speed limit. The user can take this additional information under advisement in order to make a more-informed decision regarding local conditions.

The Result

The goal of speed management is to maintain mobility and capacity while increasing safety, as well as to reduce travel times without compromising safety. Applicable in all states and most counties and municipalities, this expert system provides a valuable tool in helping the professional planner to set an appropriate speed limit. Enforcement issues are relieved, crashes can be minimized, and traffic flows more fluidly.

Additional Resources

- Tech Brief, USLIMITS: Expert Speed Zoning Advisor. FHWA, 2005.
- USLIMITS2 Website at http://safety.fhwa.dot.gov/USLIMITS/.
- Warren. "USLIMITS: Expert Speed Zoning Advisor," APWA-IL Newsletter, APWA , Illinois Chapter, July 2005.

Benefits

Credibility in setting appropriate speed limits will be achieved in the eyes of multiple audiences:

- *Practitioners using the system and applying the results.*
- *Elected officials and public policy makers that must respond to the community.*
- *Drivers who are directly impacted by the limits established and whose behavior is a direct reflection of the effectiveness of the system.*
- *Judges and magistrates who must often address the "reasonableness" rule within their courts.*
- *Enforcement officials who need a more objective means of separating the egregious violators from the rest of the driving population.*

This tool is particularly valuable in situations where a defensible argument is needed for the selection of a posted speed.

Contacts

Rudolph Umbs
FHWA
RUDOLPH.UMBS@DOT.GOV
708-283-3548

Davey Warren
FHWA
DAVEY.WARREN@DOT.GOV
202-366-4668