



The Minnesota Department of Transportation (Mn/DOT) and Department of Public Safety (DPS) launched an extensive speed control project involving engineering, enforcement and education. Developed within the framework of the Minnesota Comprehensive Highway Safety Plan, this was a traffic engineering project that involved speed limit studies, speed limit adjustments, increased speed enforcement and education, in an effort to reduce fatal and life changing crashes on Minnesota highways. The project also included an evaluation of the effectiveness of this comprehensive approach.

Background

Minnesota recently completed a Comprehensive Highway Safety Plan (CHSP) and listed enforcement as a high priority strategy to improve highway safety. Data from recent crash reports show that roughly 20% of fatal crashes list excessive speed as a contributing factor; as a result, speed enforcement is a high priority for Minnesota's CHSP. Nationally, the cost of speeding related crashes is estimated to be \$40.4 billion annually, representing approximately 18% of the total cost of crashes.

In general, travel speeds are out of control, a majority of drivers ignore posted limits, and travel speeds increase each year. Further, the Minnesota Legislature has considered bills to raise speed limits on all two-way, two-lane roads currently set at 55 MPH.

While Mn/DOT and DPS recognize that a wholesale increase in speed limits is unwise, they have evidence that some roadways posted at 55 MPH might be safely posted at 60 MPH if sufficient enforcement and education resources are implemented with the speed limit change. The implementation of rational speed limits (limits that match the design standards of the roadways), enforcement that strictly adheres to those limits, and public education could help the motoring public embrace the concept that the posted speed is the true speed limit.

Crash History and Problem Identification

In 1997, in response to the repeal of the National Maximum Speed Limit law, speed limits were increased on Minnesota rural interstates to 70 MPH and certain expressways to 65 MPH. The change was covered by the media, but no substantial enforcement or education effort accompanied the change.

In 2005, Mn/DOT reviewed crash data from five years before and after the speed limit increases made in 1997. This study showed a 93% increase in fatalities on four-lane divided expressway roads where speed limits were raised to 65 MPH. The same study revealed a 70% increase on rural freeways that were raised to 70 MPH.

From this study, Mn/DOT and DPS concluded that the engineering change made in 1997 (speed limit increase) was isolated and lacked supporting education and enforcement resources. This solitary engineering change created a safety hazard to the motoring public.

Goals

The goals of the program are:

- Reduce fatalities and severe injuries on interstates and expressways
- Reduce high travel speeds on those roadways
- Prevent excessive speeding on the roads selected that go to 60 MPH
- Increase public perception of enforcement presence
- Develop a better understanding of enforcement pressure and its “halo” effect



Scope

Two types of roadways were targeted in this project. The first type was 900 miles of interstates and 970 miles of expressways on which speed limits were raised in 1997. Unchecked aggressive driving had led to a group of very fast drivers and it is high speed that directly contributes to the fatalities and severe injuries. The greatest reduction in casualties would come from reducing the speeds of the faster drivers. This phase of the program was aimed at increased enforcement on our fastest roads.

The second type of roadway was 55 MPH roadways which, based on the concept of rational speed limits, were raised to 60 MPH. Because project resources would not allow complete coverage of all sections of these roadways, a sample was selected for the project. Many of these routes were constructed to a 60 MPH (or higher) design speed; but have operated with a posted speed limit of 55 MPH since the mid-1970s. Mn/DOT Traffic Engineers identified qualifying roads based on design, function and crash history and, with DPS personnel experienced with their areas, selected roughly 850 miles believed to be “good candidates” for increased speed limits.

Process

The project included distinct processes and timelines for each of the components of the study (engineering, enforcement, education, and evaluation).

Engineering

Preliminary engineering included review for minimum 6 foot shoulders, crash rates, connectivity to regional trade centers and geometry to safely support 60 MPH. Mn/DOT performed traffic engineering studies to verify all traffic control devices and operational characteristics were addressed before raising the speed limit to 60 MPH. MnDOT collected travel speed data during selected intervals. Some roadways had automatic traffic recorders (ATRs) and

a constant flow of data was available. Other roadways required mobile data recorders. Summaries of this data and crash data were monitored throughout the project.

Enforcement

The State Patrol partnered with county sheriffs and local law enforcement to deploy staff resources in the most effective way. Deployment decisions were based on the number of speeders observed in the traffic recorder data and the roadway's serious crash history. This enforcement campaign was named HEAT, an acronym for Highway Enforcement of Aggressive Traffic. Enforcement personnel logged in hours, crashes, stops and citations issued on a regular basis. Extra enforcement was scheduled for 8 weeks and followed by 4 weeks of normal enforcement.

Education

The Office of Traffic Safety conducted a public education campaign throughout the project. At every opportunity media attention was generated with press that explains the project to the public. A paid media campaign ran approximately 10,000 radio spots statewide throughout the year. The radio spots ran in flights that overlapped the end and the beginning of the enhanced enforcement periods.

Evaluation

Several evaluations were conducted. The first was an evaluation of attitudes and self-reported behavior of drivers of affected roadways. Telephone surveys were conducted prior to the start of the project and toward the end of the year to gauge changes in driver awareness. The second evaluation (conducted by the University of Minnesota) analyzed traffic recorder data, law enforcement contact data, and severe injury and fatal statistics along selected roadways of the study.

Expectations

It was expected that the added enforcement and media attention would reduce travel speeds in Minnesota and, as a result, reduce the number of fatal and severe injury crashes.

Costs

Approximately \$3,000,000 in federal funds was invested for FFY06.

- \$2,500,000 in enforcement (roughly 50,000 hours of overtime enforcement by the Minnesota State Patrol, county sheriffs, and local law enforcement)
- \$349,700 in paid media (primarily radio spots)
- \$150,300 in data collection, analysis, and evaluation

Of the \$2.5 million for enforcement, half of the resources were used on freeways and expressways where the demonstrated crash problems existed. The other half was used on the newly established 60 MPH corridors to prevent a crash problem from forming.

In addition to these funds, both agencies made significant in-kind contributions for project management, sign installation, speed detection equipment, traffic engineering reviews, vehicle costs, and fuel. Additionally, \$50,000 was set aside by Mn/DOT towards the evaluation project with the University of Minnesota.



PR Kickoff on September 26, 2005

Results

The evaluation showed that throughout the Minnesota Speed Management Program there was a decrease in the number of drivers who were traveling at excessive speeds. In particular, there were large decreases in the number of drivers traveling at least 10mph above the speed limit. There were decreases (-28.7%) in the number of drivers traveling at 70mph or more on 60mph 2-Lane/2-Way Highways; decreases (-28.7%) in the number of drivers traveling at 75mph or more on 65mph 4-Lane Divided Highways; decreases (-42.9%) in the number of drivers traveling at 80mph or more on 70mph Rural Freeways; and decreases (-11.2%) in the number of drivers traveling at 70mph or more on 60mph Urban Freeways. These results are presented in the tables.

There was one exception in the speed reduction findings—there was a pronounced increase (61.3%) in the number of drivers traveling at 70mph or more on 2-Lane/2-Way Highways located outside the HEAT zone.

In addition to the reductions in the numbers of speeders there were also reductions in the numbers of fatal and serious 'A' injury crashes (although the numbers of these crashes were too few to enable us to conduct statistical analyses).

The market survey showed that nine of ten drivers were supportive of the speed increase to 60mph in both Metro and Greater MN. Most drivers don't think they should get a ticket for doing 60mph in a 55mph zone but they do think they should get a ticket for 75mph in a 70mph zone.

Although more drivers reported seeing more officers during the HEAT project, the percentage of drivers (3 of 4), who felt enforcement was about right, remained the same. After the HEAT project, more drivers felt that they would get tickets at only 5mph-over. Previous attitude was 10mph-over.

Data from the University of Minnesota

2-Way 2-Lane	Miles	Percent Change Drivers > 70 MPH	85th Percentile		Mean Speed		Fatal and "A" Crashes		ATRs Used*
			Before	During	Before	During	Before (5yr AVG)	During	
Outside HEAT 55-55	7594	+61.3%	64.1	64.2	58.2	57.7	251.6	224	4
Inside HEAT 55-60	317	-28.7%	65.9	65.1	61.2	61.0	16.8	13	3
Outside HEAT 55-60	475	N/C	N/C	N/C	N/C	N/C	12.8	6	0

4-Lane Divided 65 MPH	Miles	Percent Change Drivers > 75 MPH	85th Percentile		Mean Speed		F+A Crashes (5yr avg)		ATRs Used*
			Before	During	Before	During	Before (5yr AVG)	During	
Inside HEAT	52	-28.7%	73.2	72.0	67.4	65.8	8.2	5	4
Outside HEAT	550	-34.3%	73.5	72.9	68.2	67.3	49.6	38	1

Rural-Freeway 70 MPH	Miles	Percent Change Drivers > 80 MPH	85th Percentile		Mean Speed		F+A Crashes (5yr avg)		ATRs Used*
			Before	During	Before	During	Before (5yr AVG)	During	
Inside HEAT	265	-42.9%	78.6	77.2	72.7	70.9	31.6	25	3
Outside HEAT	460	-71.1%	79.9	78.1	73.3	72.1	37.8	37	1

Urban-Freeway 60 MPH	Miles	Percent Change Drivers > 70 MPH	85th Percentile		Mean Speed		F+A Crashes (5yr avg)		ATRs Used*
			Before	During	Before	During	Before (5yr AVG)	During	
Inside HEAT	27	-11.2%	69.5	68.7	61.6	60.0	13.2	9	3
Outside HEAT	89	N/C	N/C	N/C	N/C	N/C	26.8	19	0

N/C - Not Calculated

*ATRs Used - Automatic Traffic Recorders embedded in the roadway that record speed, class, and volume

Breakdown of HEAT Vehicle Stops

Highway Enforcement of Aggressive Traffic

Violation	Number of Citations	Number of Warnings
Speed	33,686	45,672
Seatbelt	2,684	1,549
DAR/DAS	1,638	
Equipment	1,143	5,847
No Insurance	917	
Warrants	422	
Drugs	235	
DWI	136	
Child Restraint	101	57
Open Bottle	86	
Minor Consumption	34	
Vehicle Forfeiture	25	
Weapons	14	
Miscellaneous	6,459	16,402
Total Warnings		69,527
Total Citations	47,580	
Total Officers Involved		6,513
Total Vehicles Stopped		88,238

