# Evaluation of Iowa's 70 mph Speed Limit – 2.5 Year Update

tech transfer summary

**For the six months immediately after Iowa raised the rural Interstate speed limit to 70 mph, an increase in serious crashes was observed, but longer term trends were not found to be statistically significant.**

## Objective

On July 1, 2005, the State of Iowa implemented a 70 mph speed limit on most rural Interstates. The objective of the present research was to evaluate the effect the new speed limit has had on speeds, traffic volumes, and highway safety in the state.

## Research Description

Several analytical methods were investigated in this study:

- Speed and volume analysis
- Crash data assembly and processing
- Descriptive crash analysis
  - o Total crash
  - o Crashes by severity
  - o Cross-median crashes
  - o Day-night breakdown of crashes
  - o Regional comparison of rural Interstate crashes
- Periodic analysis (by six-month periods)
- Crash modeling

Speed and traffic volume analysis was conducted for a period from 11 months before to 18 months after the speed limit change. Crash data were assembled for the period 1991 to 2007, covering 14½ years before through 2½ years after the speed limit change.

## Key Findings

### Speed and Volume

On the rural Interstates, the mean and 85th percentile speeds (speed exceeded by only 15% of vehicles) increased by about two mph and the increases were statistically significant. However, the number of drivers exceeding the speed limit by ten mph was reduced from 20% to about 8%. During the study period, traffic volumes increased by about 5%.

### Descriptive Crash Analysis

In the 2½ years following the speed limit increase, serious (fatal and major injury) crashes increased, on average from 79 to 91 per year. This represents a 15% increase as compared to the 2½ year before period. However, compared to the longer 14½ year before period, serious crashes have decreased from 103 to 91 per year (a 12% decrease). The annual variability in crash frequencies of this severity over the longer period is consistent with the observed change.

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**RESEARCH PROJECT TITLE**
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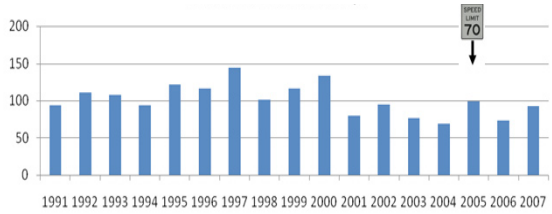


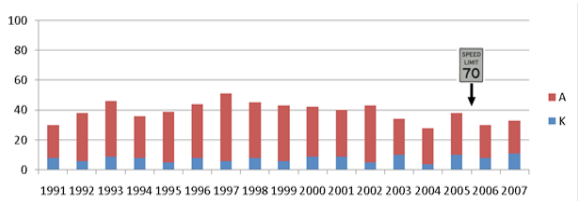

*Trend in annual number of serious crashes on rural Interstates*

Fatal and nighttime fatal crashes increased in the after period, but the magnitude of these increases was equal to or smaller than the normal year-to-year variation for these types of crashes. Serious nighttime crashes were observed to decrease during the after period.

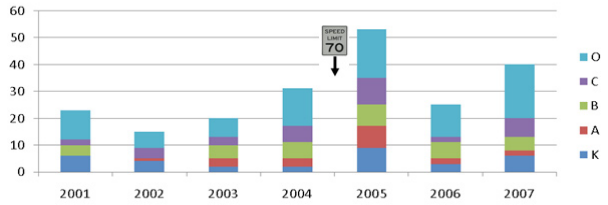
Fatal and serious cross-median crashes were evaluated for 4½ years before and 2½ years after the speed limit change. This type of crash was observed to increase a statistically significant amount. However, most of the increase occurred in the six months immediately following the speed limit change. Since then, the frequency of these types of crashes has reduced to pre-seventy mph levels. The frequency of nighttime cross-median crashes also exhibited a significant spike in the six months following the change.

### Periodic (Six-month) Crash Analysis

Because the speed limit change took effect mid-year, 2½ years of after period data were available. Comparing these data to the 2½ year period immediately preceding the change would compare different parts of the year when crash frequencies typically differ significantly. To account for this, data were divided into two time periods each year, January to June, and July to December. Using this methodology, all crash types with the exception of cross-median crashes in the July to December period were observed to decrease over the long term.




*Trend in major injury (A) and fatal (K) crashes (January to June)*




*Trend in cross-median crashes by severity (July to December; K=fatal, A=severe injury, B=minor injury, C=possible injury, and O=property damage only)*

### Statistical Modeling

To formally test for statistical significance and account for effects of seasonality, volume, and other trends, a statistical model was developed for the crash data. Based on a standard definition of significance, evidence does not support the conclusion that the increase in speed limit is associated with an increase in the frequency of fatal or other serious crashes. However, a number of the increases were found to be significant at lower confidence levels, most notably, serious nighttime crashes.

### Other Results

An analysis by region was also conducted. I-35 experienced relatively larger increases in most crash types compared to I-80. On I-35 south of Des Moines, the proportion of fatal crashes was more than twice that of other regions of the rural Interstate. There was no observable shift in traffic to or from the Interstates, nor was there any observed speed spillover effect from the rural Interstates to the primary parallel routes. In fact, speeds on parallel facilities were observed to decrease. Finally, driver speed adaptation, where a driver who has been on a high-speed facility does not adjust appropriately to a reduced-speed facility, was not observed to occur.

## Implementation Limitations

It should be noted that the 2½ year-after period is quite short and may not provide an adequate base of data for a reliable statistical analysis. In addition, other factors such as changing economic conditions and higher fuel prices during the 2½ year after period may have impacts that mask any speed-limit related changes. Finally, it is likely some changes were due to the speed limit, (as the only significant highway safety related public policy change in Iowa since 2004 has been the change to 70 mph on rural Interstates). The findings are observations of correlation only.