# UPDATE REPORT

**ON**

# SPEED LIMITS IN IOWA

**PREPARED**

By
SAFETY MANAGEMENT SYSTEM
TASK FORCE ON SPEED LIMITS

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# EXECUTIVE SUMMARY

The National Highway System Designation Act of 1995 repealed the National Maximum Speed Limit (NMSL) and returned authority to set speed limits to the states. In the interest of providing information to legislative decision-makers, the Iowa Safety Management System Coordinating Committee formed a Speed Limit Task Force. The Speed Limit Task Force issued reports on the subject of speed limits in January of 1996 and January of 1997.

Iowa Code section 321.285 was amended in 1996 to authorize the Department of Transportation (DOT) to increase speed limits to 65 mph on certain divided multi-lane highways.

The DOT undertook an engineering review of highways eligible for increased speed limits under the new law. A total of 340 miles of rural, four-lane divided Expressways were included in the review. After it was completed, the speed limits were increased to 65 mph on a total of 232 miles.

This Report is a compilation of data gathered in Iowa and other states regarding the effects of changing speed limits on travel speeds, crashes, injuries, and fatalities.

**Key findings on speed and crashes on Iowa's Rural Expressways where speed limits were increased from 55 mph to 65 mph**

- The 85$^{th}$ percentile operating speeds increased an average of 6.6 mph—from 61.6 to 68.2 mph—since the new speed limits went into effect in 1996. The 85$^{th}$ percentile speed is the speed at, or below which 85 percent of vehicles travel, and which 15 percent of vehicles exceed.
- On sections of rural four-lane highway where speed limits were increased from 55 mph to 65 mph, the difference between the 85$^{th}$ and 15$^{th}$ percentile speeds increased from 7.9 to 9.3 mph. Also, the percent of vehicles travelling in the 10 pace speed declined from 80.7 percent to 74.5 percent. In theory, a larger gap in speeds between vehicles sharing the roadway may be detrimental to safety.

- The percent in violation of the posted speed limit decreased from 71 percent in 1996 when the speed limit was 55 mph to 35 percent in 1997 with the 65 mph speed limit.
- On the 170 miles of 65 mph Expressway where crash and fatality data was available, the total number of fatalities recorded in the three years prior to the change was five, compared to 11 in the one year following the change.
- The 11 fatalities calculate to a rate of 2.33 fatalities per hundred million vehicle miles (HVHM). This fatality rate is almost six times higher than the rate of 0.39 fatalities per HMVM during the three years prior to the increase.
- Only four to six months of 1996 non-fatal crash and injury information was available after the dates of the speed limit increase on these sections. However, the data did show an increase of approximately 33 percent for “Fatal Plus Injury Crashes”, 47 percent for total crashes, 21 percent for “Fatal Plus Major” injuries, and 12 percent for “Other” injuries when compared with the “Before” time period.
- Although the increase in fatalities, injuries, and total crashes following the speed limit change is cause for concern, a longer period of time is needed (at least three years) to verify a statistically reliable trend.
- The number of Iowa State Patrol speeding citations issued has not experienced any significant increases or decreases from 1993 to 1997.

**Key findings from the Crash Experiences of Surrounding States**

- In the four neighboring states where Rural Interstate speed limits were increased to 70 or 75 mph (Kansas, Missouri, Nebraska and South Dakota), total Interstate fatalities were up 36 percent from 1995. This compares to an increase of 16 percent for states which did not raise Interstate speed limits above 65 mph (Illinois, Iowa, Minnesota[1], and Wisconsin).
- Rural traffic injuries were up 7.9 percent from 1995 to 1996 in the four surrounding states with speed limits above 65 mph. This compares to a 1.4 percent increase in the states which did not increase speed limits above 65 mph.

[1] On July 1, 1997, Minnesota changed their Interstate speed limit to 70 mph. However, it is still too soon to collect and evaluate valid data on behavioral habits or traffic crashes at the new speed limit.

**Table ES-1**
**Change in Rural Traffic Injuries from 1995 to 1996 in Surrounding States WITH Speed Limit Increases**

| State | Percent Change |
|---|---|
| Kansas | +9.6% |
| Missouri | +8.6% |
| Nebraska | +4.9% |
| South Dakota | +5.9% |
| Total | +7.9% |

**Table ES-2**
**Change in Rural Traffic Injuries from 1995 to 1996 in Surrounding States WITHOUT Speed Limit Increases**

| State | Percent Change |
|---|---|
| Illinois | -- |
| Iowa | +1.2% |
| Minnesota[2] | +3.9% |
| Wisconsin | -0.3% |
| Total* | +1.4% |

*Illinois figures not included.

- Total traffic fatalities fell from 1995 to 1997 in all four states which did not increase speed limits above 65 mph, with declines ranging from 4.0 to 14.7 percent. Meanwhile, three of the four surrounding states which did increase speed limits, experienced increases in fatalities, ranging from 4.2 to 12.0 percent. South Dakota had an initial increase in fatalities of 20.8 percent in 1996 when compared to the same period in 1995. However, in the first eight months of 1997, they had 8.9 percent fewer fatalities compared to the same period in 1995.

**Table ES-3**
**Changes in total traffic fatalities from 1995 to 1997**

| States that **Did Not** Change Speed Limits Above 65 mph | | States that **Did** Change Speed Limits Above 65 mph | |
|---|---|---|---|
| Iowa | -14.7% | Kansas | + 5.3% |
| Illinois | - 4.0% | Missouri | + 12.0% |
| Minnesota[2] | - 6.4% | Nebraska | + 4.2% |
| Wisconsin | - 6.8% | South Dakota | - 8.9% |

[2] On July 1, 1997, Minnesota changed their Interstate speed limit to 70 mph. However, it is still too soon to collect and evaluate valid data on behavioral habits or traffic crashes at the new speed limit.

# INTRODUCTION

The National Highway Designation Act of 1995 repealed the National Maximum Speed Limit (NMSL) and returned authority to set speed limits to the states. To provide information to legislative decision makers, the Iowa Safety Management System Coordinating Committee (SMSCC) formed a Speed Limit Task Force in late 1995. This Task Force developed information reports on the subject of speed limits in January of 1996 and again in January of 1997. Copies of these reports are available by contacting the Iowa Department of Transportation Engineering Division in Ames.

As in past years, the SMSCC reconvened the Speed Limit Task Force to develop an update on what has happened with speed limits and operating speeds in the past 12 months. This report is a compilation of the findings of the Task Force. It contains information on speed limit changes, operating speeds, fatalities, injuries, speeding citations, car and truck fuel efficiency relative to speed, and a discussion of items relevant to speed limit changes. As was the case for past reports, this report contains information and facts and does not contain recommendations.

# SPEED LIMIT CHANGES IN IOWA

Iowa Code section 321.285 was amended in 1996 to authorize the Department of Transportation (DOT) to increase speed limits up to 65 mph on certain divided multi-lane highways.

Table 1 is a tabulation of the 25 sections of Rural Expressway in Iowa eligible for the increased speed limit. The list includes a few sections where construction was completed after the new speed limit law was enacted. The table shows a total of 340 miles eligible for the increased speed limit.

Engineering studies were made on each section. These studies included a review of design characteristics, a check on the crash history, and a field review. In 1996, the speed limit was raised to 65 mph on 17 sections totaling 204 miles. In 1997, the speed limit was raised on 2 more sections encompassing 28 miles. This brings the total mileage increased to date to 232. Table 1 also includes several sections where speed limits were left at 55 mph. The reasons for not increasing some speed limits were poor physical characteristics, adverse crash history, or a length considered to be too short. For some short, isolated sections, it was decided to wait until the section was extended before considering an increase in the speed limit to 65 mph.

## Table 1 Iowa Expressways Eligible for 65 mph Speed Limit

| Route | Location | Eligible Length (miles) | Changed Length (miles) | Date Changed | Comments |
|---|---|---|---|---|---|
| US 20 | Iowa 38 to Dubuque | 32.3 | 28.3 | 7/2/96 | |
| US 20 | Grundy Co. Line to US 218/ I-380 | 11.4 | 10.5 | 5/28/96 | |
| US 20 | US 169 to West Jct IA 17 | 14.5 | 13.0 | 5/6/96 | |
| US 20 | I-29 to End Divided Section (W. of Moville) | 20.5 | 14.9 | 7/8/96 | 55 @ Lawton & Moville East |
| US 30 | Ogden to Nevada | 35.4 | 26.2 | 7/8/96 | 55 @ Boone & School Speed Zone @ United |
| US 30 | Iowa 201 to US 151 | 20.5 | 17.9 | 7/2/96 | |
| US 30 | US 61 to Clinton | 17.2 | 9.5 | 7/2/96 | |
| US 30 | Marshalltown Bypass | 7.8 | 7.1 | 12/16/96 | New Construction |
| US 218 | IA 22 to End Divided Section (N. of IA 92) | 12.1 | 10.5 | 7/3/96 | |
| US 71 | Spencer to Milford | 8.6 | 7.7 | 7/3/96 | |
| US 75 | Sioux City to LeMars | 19.5 | -- | -- | Defer - SB Lanes Resurfacing, Poor Cross-Sections |
| US 69/65 | Des Moines to Indianola | 10.9 | 7.8 | 9/4/96 | |
| IA 141 | I-35/80 to Granger | 8.3 | 5.9 | 12/11/96 | |
| IA 141 | West of Granger to East of Perry | 13.5 | 13.5 | 11/20/97 | Reconstructed 2-lane to 4-lane |
| US 151 | IA 13 to E. of Springville | 10.1 | 6.7 | 8/30/96 | |
| IA 13 | US 151 to Central City | 11.8 | 10.3 | 8/30/96 | |
| US 63 | Waterloo to Iowa 3 | 12.6 | 8.5 | 10/14/96 | |
| US 218 | Cedar Falls to Waverly | 12.8 | -- | -- | Under study - studying County road intersections |
| US 34 | I-29 to US 275 | 8.3 | 6.3 | 7/2/96 | |
| US 61 | Ft. Madison to Burlington | 15.0 | 15.0 | 8/4/97 | |
| US 61 | North of DeWitt to Maquoketa | 14.0 | 12.6 | 11/1/96 | Reconstructed 2-lane to 4-lane |
| IA 163 | Pleasant Hill to Prairie City | 8.6 | -- | -- | Defer until more 4-lane is done |
| IA 163 | Pella Bypass | 5.6 | -- | -- | Defer until more 4-lane is done |
| IA 92 | Knoxville Bypass | 5.9 | -- | -- | No - too short |
| US 34 | Ottumwa to Agency | 2.3 | -- | -- | No - too short |
| | **Total Length** | **340** | **232** | | |

# OPERATING SPEEDS IN IOWA

## 85th Percentile Speeds

One statistic commonly used to study travel speeds is the 85th percentile speed. It is the speed at or below which 85 percent of the free flow traffic travels. This is considered to be a reasonable and safe speed. Fifteen percent travel above the 85th percentile and may be travelling too fast for conditions. Other statistics used in this section are the 50th percentile speed and the 15th percentile speed. The 50th percentile is also the median speed. It is the speed at which one-half of the traffic is traveling above and one-half is traveling below. It is a good measure of the central tendency of the speed distribution. The 15th percentile speed is the speed at or below which 15 percent of the free flowing traffic is traveling.

Speed data were collected before and after speed limits were changed on the 232 miles of Expressway previously described. A summary of this data can be seen in Table 2. The average 85th percentile speed before the increase was 61.6 mph. The 85th percentile speed in 1996, after the 65 mph speed limit had been in effect for one to six months, was 67.6 mph. Although the speed limit was increased 10 mph, the 85th percentile operating speed increased 6.0 mph. In 1997, after the 65 mph speed limit had been in effect for 12 to 18 months, the average 85th percentile speed was 68.2 mph, which is 0.6 mph higher than the previous year.

## Speed Variance

Speed Variance is the difference in travel speeds between vehicles on the road. Under ideal conditions, all vehicles would be traveling at the same speed. In other words, there would be no variation in speeds and therefore, speed related crashes would be minimized. Theoretically, there would be no rear end collisions and there would be no need for lane changing and passing. Motorists tend to travel at different speeds so there will be variations. Good speed limit strategy attempts to keep variations in speed to a minimum.

**Table 2 Percentile Speeds on 65 mph Iowa Expressways**

| | | 85th Percentile Speed | | | 50th Percentile Speed | | | 15th Percentile Speed | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Route | Location | 1996 Before Changes | 1996 After Changes | 1997 | 1996 Before Changes | 1996 After Changes | 1997 | 1996 Before Changes | 1996 After Changes | 1997 |
| US 20 | Iowa 38 to Dubuque | 62 | 69 | 70 | 58 | 65 | 67 | 53 | 59 | 62 |
| US 20 | Grundy Co. Line to US 218/I-380 | 64 | 69 | 69 | 59 | 64 | 64 | 56 | 59 | 58 |
| US 20 | US 169 to West Jct IA 17 | 64 | 68 | 69 | 60 | 65 | 65 | 56 | 59 | 61 |
| US 20 | I-29 to End Divided Section (W. of Moville) | 61 | 66 | 67 | 58 | 62 | 63 | 53 | 57 | 58 |
| US 30 | Ogden to Nevada | 60 | 68 | 67 | 57 | 64 | 63 | 54 | 58 | 56 |
| US 30 | Iowa 201 to US 151 | 61 | 67 | 70 | 57 | 64 | 65 | 54 | 60 | 60 |
| US 30 | US 61 to Clinton | 61 | 70 | 70 | 57 | 65 | 66 | 53 | 60 | 61 |
| US 218 | IA 22 to End Divided Section (N. of IA 92) | 63 | 69 | 68 | 58 | 65 | 64 | 55 | 61 | 60 |
| US 71 | Spencer to Milford | 61 | 66 | 67 | 57 | 64 | 63 | 54 | 58 | 58 |
| US 69/65 | Des Moines to Indianola | 60 | 68 | 67 | 57 | 63 | 64 | 54 | 58 | 59 |
| IA 141 | I-35/80 to Granger | 62 | 67 | 68 | 58 | 62 | 63 | 53 | 57 | 59 |
| US 151 | IA 13 to E. of Springville | 62 | 68 | 68 | 57 | 63 | 63 | 52 | 57 | 58 |
| IA 13 | US 151 to Central City | 60 | 67 | 68 | 56 | 62 | 63 | 53 | 56 | 57 |
| US 63 | Waterloo to Iowa 3 | 60 | 65 | 67 | 56 | 62 | 63 | 53 | 57 | 57 |
| US 34 | I-29 to US 275 | 62 | N/A | 68 | 57 | N/A | 63 | 53 | N/A | 58 |
| US 61 | Ft. Madison to Burlington | 62 | N/A | 67 | 57 | N/A | 63 | 53 | N/A | 58 |
| US 30 | Marshalltown Bypass | N/A | N/A | 69 | N/A | N/A | 65 | N/A | N/A | 61 |
| US 61 | North of DeWitt to Maquoketa | N/A | N/A | 69 | N/A | N/A | 65 | N/A | N/A | 60 |
| IA 141 | West of Granger to East of Perry | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | **Average (mph)** | **61.6** | **67.6** | **68.2** | **57.4** | **63.6** | **64.0** | **53.7** | **58.3** | **58.9** |

## Percentile Distribution

One way to examine travel speed variance is by looking at the distribution of speeds. Table 2 shows the 85th, 50th, and 15th percentile travel speeds for the 65 mph Iowa Expressway segments both before and after the speed limits were increased. The greater the difference between the 15th and 85th percentile speeds, the more variation there is in the speeds being driven. This difference was 7.9 mph before the speed limit increase and 9.3 mph for both of the two after periods. Figure 1 graphically shows the changes in percentile speeds. It appears that this increase in variation is the result of the slower vehicles not increasing their speed as much as the faster vehicles. Comparing the "Before Changes" data and the "1997" data, the 85th percentile and 50th percentile speeds each increased 6.6 mph, while the 15th percentile increased by 5.2 mph. The variance in the upper half of the speed distribution remained the same at 4.2 mph before and after the speed limit changes. The variance in the lower half of the speeds increased from 3.7 mph before the changes to 5.1 mph after the changes. This indicates that the variance grew between the slower drivers and the median (50th percentile) speed, while it remained constant above the median speed.

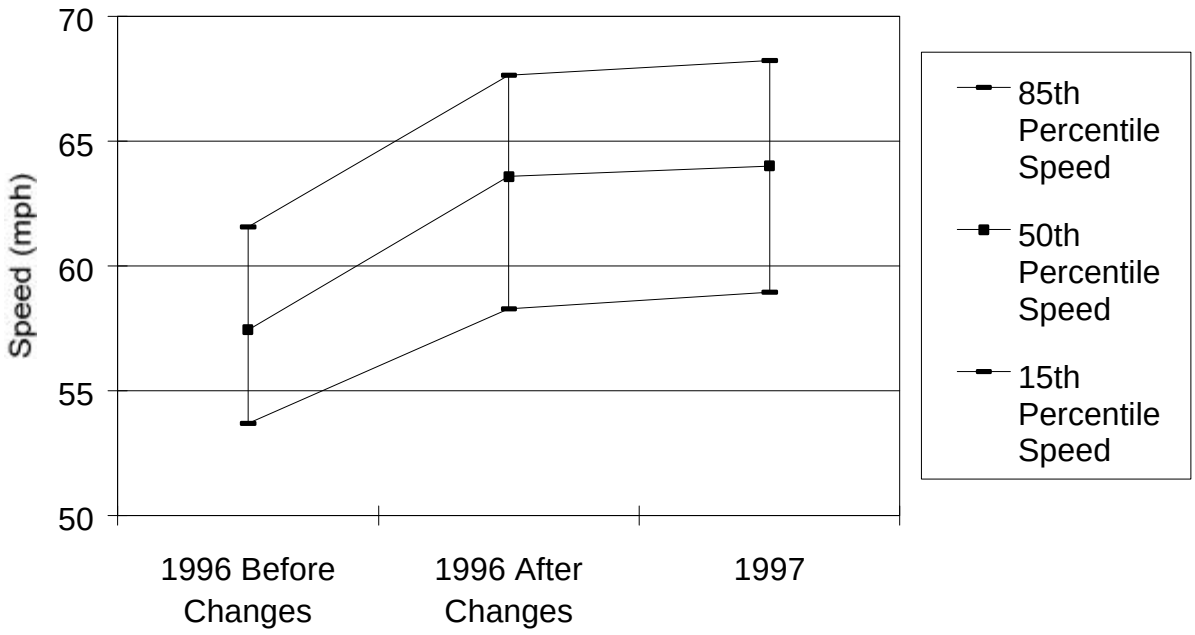


**Figure 1 Changes in Speed Variance in Iowa (85th percentile to 15th percentile)**

The percentile speeds also show that more drivers are complying with the 65 mph speed limits. Before the increase, the 85$^{th}$ percentile speed was 6.6 mph over the posted 55 mph speed limit. In 1996, after the 65 mph speed limit had been in effect for one to six months, the 85$^{th}$ percentile speed was 2.6 mph over the posted speed limit. In 1997, after the 65 mph speed limit had been in effect for 12 to 18 months, the average 85$^{th}$ percentile speed was 3.2 mph above the new posted speed limit. This indicates that motorists on the divided multi-lane highways complied more closely to the 65 mph speed limit than they did to the 55 mph speed limit.

**Pace Speeds**

Another way to judge travel speed variance is by looking at the pace speed. The pace speed is the 10 mph speed range that contains the highest number of observations. The higher the percentage in the pace speed, the less variation there is in travel speeds.

Table 3 lists the pace speeds for the Iowa Expressways which had their speed limits increased to 65 mph. Table 3 also shows the percent of observations (vehicles) that were in the 10 mph pace. Higher percentages within the pace speeds indicate less speed variance. The averages from Table 3 are also shown graphically in Figure 2.

Table 3 shows that the 10 mph pace speed increased 6 mph in 1996, after the speed limit was increased to 65 mph. The 6 mph change was less than the 10 mph increase in the speed limit. In 1997, the average pace went up 0.5 mph.

Table 3 also shows the percent of vehicles in the pace speed, which is a measure of variation in travel speeds. Before the speed limit was increased, 80.7 percent of drivers were in the 10 mph pace. After the increase to 65 mph in 1996, this figure dropped to 74.1 percent. This indicates a slightly wider dispersion in speeds which, in theory, is detrimental to safety. In 1997, the percent in the 10 mph pace went up 0.4 percent to 74.5 percent, which indicates a slight improvement, or reduction in speed variance.

## Speed Compliance

Figure 3 and Table 4 show the percentage of motorists who were exceeding the posted speed limit. Before the speed limit was increased, an average of 71.0 percent of

motorists exceeded the posted 55 mph speed limit. After the Expressway speed limits were raised to 65 mph, the percent in violation dropped significantly to 31.2 percent. In other words, almost 70 percent of the motorists were in compliance following the change. In 1997, the percent in violation went up to 35.2 percent.

While the compliance with the posted speed limit has improved, the number of vehicles traveling in excess of 70 mph has increased. Table 4 and Figure 4 illustrate this fact. The percentage of the traffic sample exceeding 70 mph increased from less than one percent before the speed limit was increased to approximately six percent after the increase.

**Table 3 Pace Speeds on 65 mph Iowa Expressways**

| | | 10 mph Pace Speed (mph) | | | % in 10 mph Pace Speed | | |
|---|---|---|---|---|---|---|---|
| Route | Location | 1996 Before Changes | 1996 After Changes | 1997 | 1996 Before Changes | 1996 After Changes | 1997 |
| US 20 | Iowa 38 to Dubuque | 54-63 | 61-70 | 62-71 | 76.4 | 68.8 | 76.4 |
| US 20 | Grundy Co. Line to US 218/I-380 | 55-64 | 60-69 | 60-69 | 80.5 | 74.3 | 68.1 |
| US 20 | US 169 to West Jct IA 17 | 55-64 | 59-68 | 61-70 | 77.0 | 78.4 | 80.6 |
| US 20 | I-29 to End Divided (W. of Moville) | 53-62 | 58-67 | 59-68 | 79.5 | 74.5 | 74.2 |
| US 30 | Ogden to Nevada | 52-61 | 60-69 | 59-68 | 87.8 | 71.5 | 71.5 |
| US 30 | Iowa 201 to US 151 | 53-62 | 59-68 | 60-69 | 82.4 | 81.7 | 70.1 |
| US 30 | US 61 to Clinton | 53-62 | 62-71 | 61-70 | 81.0 | 71.5 | 75.7 |
| US 218 | IA 22 to End Divided (N. of IA 92) | 54-63 | 61-70 | 61-70 | 76.2 | 78.1 | 77.9 |
| US 71 | Spencer to Milford | 52-61 | 58-67 | 59-68 | 86.9 | 80.2 | 77.7 |
| US 69/65 | Des Moines to Indianola | 52-61 | 58-67 | 59-68 | 86.8 | 72.2 | 78.2 |
| IA 141 | I-35/80 to Granger | 53-62 | 59-68 | 59-68 | 79.6 | 68.8 | 73.9 |
| US 151 | IA 13 to E. of Springville | 53-62 | 58-67 | 58-67 | 72.2 | 67.4 | 70.8 |
| IA 13 | US 151 to Central City | 52-61 | 58-67 | 59-68 | 84.4 | 67.7 | 68.7 |
| US 63 | Waterloo to Iowa 3 | 53-62 | 57-66 | 59-68 | 85.4 | 82.9 | 73.2 |
| US 34 | I-29 to US 275 | 53-62 | N/A | 58-67 | 74.8 | N/A | 70.9 |
| US 61 | Ft. Madison to Burlington | N/A | N/A | 59-68 | N/A | N/A | 76.0 |
| US 30 | Marshalltown Bypass | N/A | N/A | 61-70 | N/A | N/A | 80.6 |
| US 61 | North of DeWitt to Maquoketa | N/A | N/A | 59-68 | N/A | N/A | 77.2 |
| IA 141 | West of Granger to East of Perry | N/A | N/A | N/A | N/A | N/A | N/A |
| | **Average** | **53-62** | **59-68** | **59-68** | **80.7** | **74.1** | **74.5** |
| | **Low End** | **53.1** | **59.1** | **59.6** | | | |

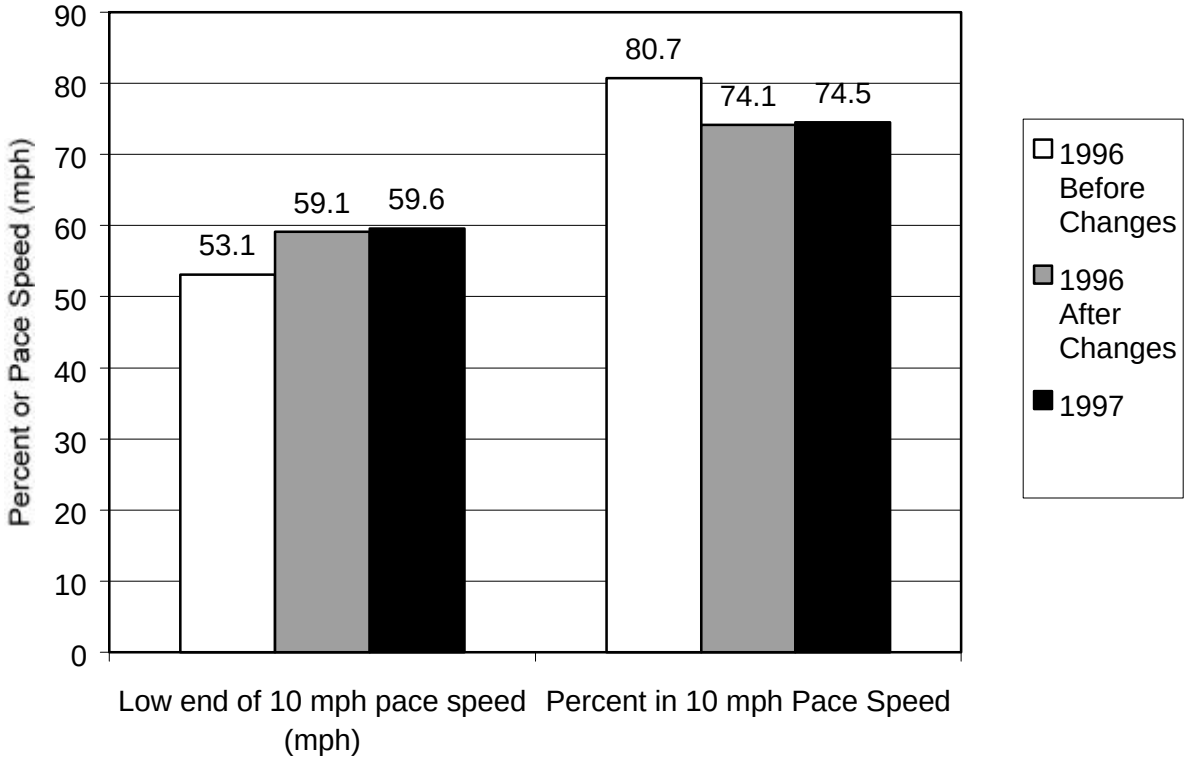


**Figure 2 Changes in Pace Speeds on 65 mph Iowa Expressways**

**Table 4 Percent Exceeding High Speeds on 65 mph Iowa Expressways**

| | | Percent in Violation | | | Percent Exceeding 70 mph | | | Percent Exceeding 75 mph | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Route | Location | 1996 Before Changes | 1996 After Changes | 1997 | 1996 Before Changes | 1996 After Changes | 1997 | 1996 Before Changes | 1996 After Changes | 1997 |
| US 20 | Iowa 38 to Dubuque | 70.8 | 41.9 | 58.6 | 0 | 8 | 15 | 0 | 1 | 2 |
| US 20 | Grundy Co. Line to US 218/I-380 | 86.6 | 36.3 | 38.7 | 1 | 7 | 7 | 0 | 0 | 1 |
| US 20 | US 169 to West Jct IA 17 | 86.4 | 42.9 | 46.0 | 0 | 3 | 6 | 0 | 0 | 0 |
| US 20 | I-29 to End Divided Section (W. of Moville) | 70.5 | 21.6 | 25.8 | 0 | 3 | 4 | 0 | 1 | 0 |
| US 30 | Ogden to Nevada | 71.6 | 34.4 | 26.4 | 0 | 2 | 3 | 0 | 0 | 0 |
| US 30 | Iowa 201 to US 151 | 67.8 | 27.7 | 45.5 | 0 | 2 | 12 | 0 | 0 | 1 |
| US 30 | US 61 to Clinton | 69.8 | 47.0 | 52.2 | 0 | 14 | 12 | 0 | 1 | 1 |
| US 218 | IA 22 to End Divided Section (N. of IA 92) | 78.0 | 39.8 | 34.7 | 1 | 7 | 3 | 1 | 0 | 0 |
| US 71 | Spencer to Milford | 70.8 | 25.6 | 28.2 | 0 | 0 | 1 | 0 | 0 | 0 |
| US 69/65 | Des Moines to Indianola | 72.6 | 31.5 | 32.4 | 0 | 4 | 4 | 0 | 1 | 1 |
| IA 141 | I-35/80 to Granger | 71.4 | 25.2 | 26.3 | 1 | 5 | 5 | 0 | 1 | 1 |
| US 151 | IA 13 to E. of Springville | 61.9 | 28.1 | 28.1 | 1 | 5 | 6 | 0 | 1 | 1 |
| IA 13 | US 151 to Central City | 60.4 | 23.0 | 28.5 | 0 | 2 | 5 | 0 | 0 | 0 |
| US 63 | Waterloo to Iowa 3 | 60.9 | 11.8 | 26.1 | 1 | 1 | 3 | 0 | 0 | 0 |
| US 34 | I-29 to US 275 | 66.0 | N/A | 26.3 | 1 | N/A | 4 | 0 | N/A | 0 |
| US 61 | Ft. Madison to Burlington | N/A | N/A | 26.7 | 1 | N/A | 2 | 0 | N/A | 0 |
| US 30 | Marshalltown Bypass | N/A | N/A | 47.0 | N/A | N/A | 7 | N/A | N/A | 0 |
| US 61 | North of DeWitt to Maquoketa | N/A | N/A | 36.8 | N/A | N/A | 10 | N/A | N/A | 1 |
| IA 141 | West of Granger to East of Perry | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | **Average** | **71.0** | **31.2** | **35.2** | **0.4** | **4.5** | **6.1** | **0.1** | **0.4** | **0.5** |

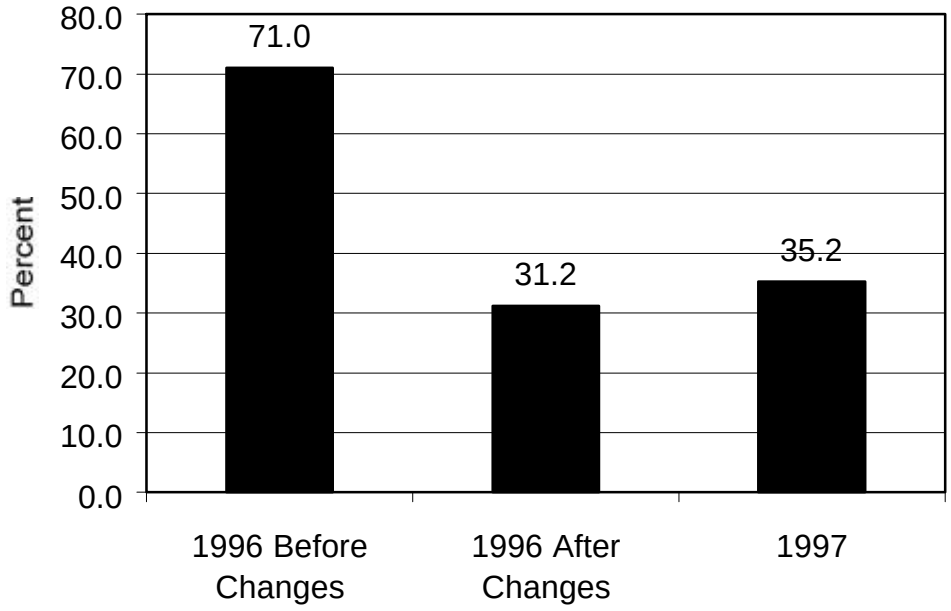


**Figure 3 Percent in Violation of the Speed Limit on Iowa's Rural Expressways**

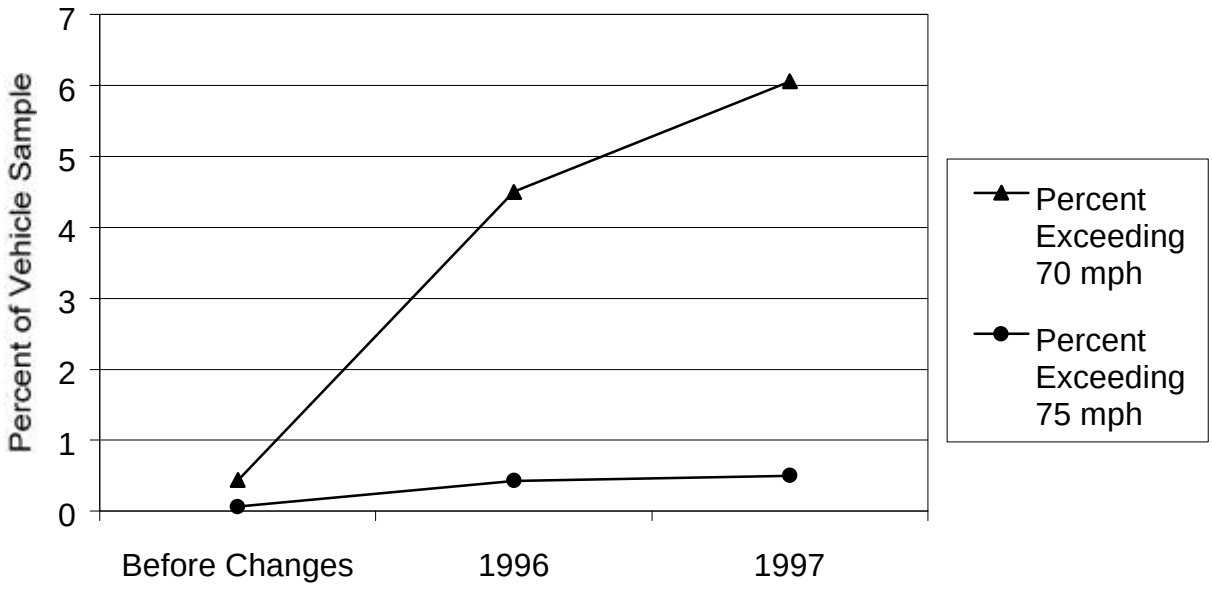


**Figure 4 Percent Exceeding High Speeds on 65 mph Iowa Expressways**

## CRASH DATA FOR IOWA RURAL EXPRESSWAYS

The data contained in this section was limited to the rural sections of Iowa Expressways that had their speed limits raised on or before September 4, 1996 and had at least limited crash data available after the increase. This includes approximately 170 miles located in 13 Rural Expressway sections. Table 5 and Table 6 show summary information while Table 7 and Table 8 show more detailed “Before” and “After” crash and fatality comparisons for these sections.

In Tables 5, 6, and 7, the “After” data is based on crash experience from approximately the date of change to the end of 1996. In most cases, this was July through December. The “Before” data includes the corresponding months for each section for the years 1993, 1994 and 1995, except for the two sections that were not four-lane for the entire three-year “Before” period. Because of the short time periods available in the “After” data, fatal and injury crashes were combined and injury information is categorized as “Fatal Plus Major” and “Other” injuries.

Table 5 shows a summary of the crash and injury data shown in Table 7, with data from the longer “Before” period adjusted to account for the difference in the total months analyzed in the “Before” and “After” periods.

**Table 5 Weighted Before and After Crash and Injury Totals on Iowa Expressways**

| | Adjusted “Before” Totals | After Totals | Percent Change |
|---|---|---|---|
| Crashes | | | |
| Fatal Plus Injury | 54 | 72 | +33% |
| Total | 173 | 255 | +47% |
| Injuries | | | |
| Fatal Plus Major | 14 | 17 | +21% |
| Other Injuries | 75 | 84 | +12% |

Rates per 100 Million Vehicle Miles (HMVM) of travel are another common way to compare crash and injury experience. Table 6 summarizes the data from Table 7 in the

form of rates, and demonstrates an almost identical pattern as seen in Table 5 for the corresponding numbers of crashes and injuries.

**Table 6 Before and After Crash and Injury Rates on Iowa Expressways**

| | "Before" Rates (per HMVM) | After Rates (per HMVM) | Percent Change |
|---|---|---|---|
| Crashes | | | |
| Fatal Plus Injury | 25 | 33 | +32% |
| Total | 82 | 118 | +44% |
| Injuries | | | |
| Fatal Plus Major | 6.4 | 7.8 | +22% |
| Other Injuries | 35 | 39 | +11% |

Table 8 shows fatal crash and fatality experience for a full year after the speed limit increase on the 13 Expressway sections. The "Before" data includes the three full years prior to the increase, except again the two sections that were not four-lane facilities for the entire three-year period. As noted, the 1997 fatality information is preliminary, but should be complete for the time periods covered.

The three-year "Before" time period shows a total of five fatal crashes involving five fatalities while the one-year "After" period shows ten fatal crashes with eleven fatalities. The 11 fatalities calculate to a rate of 2.33 fatalities per HMVM. This fatality rate of 2.33 for the one-year period after the speed limit increase is almost six times higher than the rate of 0.39 during the three years prior to the increase.

For the *1996 Report on Speed Limits and Safety for Iowa Highways*, a study was conducted on 128 miles of Rural Expressway for which data was available from 1989 through 1993. This data was shown in Table B-9 in Appendix B of that report. The fatality rate for that time period on those sections was 0.90 fatalities per HMVM. It is important to note that fatalities are statistically rare events. As seen from the three rates previously mentioned, fatality experience can fluctuate from year-to-year, especially on a system with relatively few miles.

# Table 7 Iowa 65 mph Expressway Crashes and Crash Rates

## Comparison of Crash Experience Before and After Speed Limit Increase to 65 mph on Expressway Sections Where Speed Limits were Increased on or Before September 4, 1996

**After Data: Based on Crashes From or After Month of Increase Through December 1996**

**Before Data: Corresponding Months for 1993, 1994, and 1995 Except as Noted**

| Route | Location | Months of Each Year Included in Study | BEFORE SPEED LIMIT CHANGE - 1993, 1994, & 1995 | | | | | | | AFTER SPEED LIMIT CHANGE - 1996 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Total Months Included | Vehicle Miles (Millions) | Number of Crashes | | | No. of Injuries | | Total Months Included | Vehicle Miles (Millions) | Number of Crashes | | | No. of Injuries | |
| | | | | | Fatal Plus Injury | Property Damage | Total | Fatal Plus Major | Other | | | Fatal Plus Injury | Property Damage | Total | Fatal Plus Major | Other |
| US 20 | Iowa 38 to Near Dubuque | Jul - Dec | 18 | 36.9 | 25 | 72 | 97 | 4 | 31 | 6 | 12.8 | 13 | 22 | 35 | 2 | 13 |
| US 20 | Grundy Co Line to I-380/US 218 | Jul - Dec | 18 | 59.5 | 6 | 8 | 14 | 2 | 11 | 6 | 21.6 | 4 | 8 | 12 | 2 | 4 |
| US 20 | US 169 to West Jct Iowa 17 | Jul - Dec | 18 | 32.4 | 6 | 12 | 18 | 1 | 9 | 6 | 11.9 | 5 | 10 | 15 | 0 | 7 |
| US 20 | I-29 to West of Moville | Jul - Dec | 18 | 70.7 | 20 | 38 | 58 | 2 | 27 | 6 | 27.9 | 7 | 22 | 29 | 3 | 6 |
| US 30 | Ogden to Nevada | Aug - Dec | 15 | 108.3 | 31 | 62 | 93 | 10 | 50 | 5 | 38.3 | 7 | 28 | 35 | 0 | 3 |
| US 30 | Iowa 201 to East Jct US 151 | Jul - Dec | 18 | 103.0 | 12 | 23 | 35 | 4 | 17 | 6 | 35.8 | 13 | 17 | 30 | 2 | 13 |
| US 30 | East of US 61 to Near Clinton | Jul - Dec | 18 | 30.9 | 6 | 17 | 23 | 0 | 10 | 6 | 10.8 | 3 | 15 | 18 | 3 | 4 |
| US 218 | North of Iowa 92 to Iowa 22 | Jul - Dec | 0 * | 0.0 * | 0 * | 0 * | 0 * | 0 * | 0 * | 6 | 12.4 | 4 | 6 | 10 | 1 | 7 |
| US 71 | North of Spencer to Near Milford | Jul - Dec | 12 ** | 20.7 ** | 6 ** | 11 ** | 17 ** | 1 ** | 7 ** | 6 | 11.1 | 6 | 11 | 17 | 0 | 13 |
| US 65/69 | North of Indianola to Des Moines | Sep - Dec | 12 | 40.2 | 18 | 24 | 42 | 7 | 21 | 4 | 13.7 | 3 | 15 | 18 | 1 | 3 |
| US 151 | Iowa 13 to Near Springville | Sep - Dec | 12 | 15.6 | 1 | 22 | 23 | 0 | 1 | 4 | 5.4 | 2 | 13 | 15 | 1 | 4 |
| Iowa 13 | US 151 to Near Central City | Sep - Dec | 12 | 21.6 | 1 | 7 | 8 | 2 | 0 | 4 | 7.6 | 2 | 7 | 9 | 0 | 2 |
| US 34 | I - 29 to US 275 | Jul - Dec | 18 | 22.1 | 11 | 22 | 33 | 3 | 15 | 6 | 7.8 | 3 | 9 | 12 | 2 | 5 |
| **Totals** | | | 189 | 561.9 | 143 | 318 | 461 | 36 | 199 | 71 | 217.0 | 72 | 183 | 255 | 17 | 84 |
| **Rates Per 100 Million Vehicle Miles** | | | | | 25 | 57 | 82 | 6.4 | 35 | | | 33 | 84 | 118 | 7.8 | 39 |

**NOTE: Before Data not Included if Section not Expressway**
* No Crash Data in Before Time Period
** Before Data Based on 1994 and 1995 Crashes Only

**Prepared January, 1998 by :**
**Office of Transportation Safety**
**Engineering Division**
**Iowa Department of Transportation**

# Table 8 Iowa 65 mph Expressway Fatalities and Fatality Rates

## Fatal Crashes, Fatalities, and Rates Before and After Speed Limit Increase on Expressway Sections Where Speed Limits Were Increased on or Before September 4, 1996

**After Data : One Year After Speed Limit Increase**

**Before Data : Three Years Before Except as Indicated**

| | | Three Years Before Increase | | | | One Year After Increase | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Route | Location | Time Period | Vehicle Miles (Millions) | Fatal Crashes | Fatalities | Time Period | Vehicle Miles (Millions) | Fatal Crashes | Fatalities | Comments |
| US 20 | Iowa 38 to Near Dubuque | 7/93 - 6/96 | 74.1 | 0 | 0 | 7/96 - 6/97 | 25.3 | 1 | 1 | |
| US 20 | Grundy Co Line to I-380/US 218 | 7/93 - 6/96 | 121.4 | 0 | 0 | 7/96 - 6/97 | 42.8 | 2 | 2 | |
| US 20 | US 169 to West Jct Iowa 17 | 6/93 - 5/96 | 66.3 | 0 | 0 | 7/96 - 6/97 | 23.5 | 0 | 0 | 10/26/97 One Killed |
| US 20 | I-29 to West of Moville | 6/93 - 5/96 | 148.8 | 0 | 0 | 7/96 - 6/97 | 55.3 | 2 | 2 | |
| US 30 | Ogden to Nevada | 7/93 - 6/96 | 263.5 | 3 | 3 | 8/96 - 7/97 | 91.3 | 2 | 3 | |
| US 30 | Iowa 201 to East Jct US 151 | 7/93 - 6/96 | 207.4 | 1 | 1 | 7/96 - 6/97 | 71.1 | 1 | 1 | |
| US 30 | East of US 61 to Near Clinton | 7/93 - 6/96 | 62.2 | 0 | 0 | 7/96 - 6/97 | 21.4 | 0 | 0 | |
| US 218 | North of Iowa 92 to Iowa 22 | * | 0.0 | 0 | 0 | 7/96 - 6/97 | 24.6 | 0 | 0 | 8/14/97 One Killed |
| US 71 | North of Spencer to Near Milford | 7/94 - 6/96 | 42.6 | 0 | 0 | 7/96 - 6/97 | 22.1 | 0 | 0 | Two years of "Before" data |
| US 65/69 | North of Indianola to Des Moines | 9/93 - 8/96 | 121.3 | 0 | 0 | 9/96 - 8/97 | 41.1 | 1 | 1 | |
| US 151 | Iowa 13 to Near Springville | 9/93 - 8/96 | 47.4 | 1 | 1 | 9/96 - 8/97 | 16.3 | 0 | 0 | |
| Iowa 13 | US 151 to Near Central City | 9/93 - 8/96 | 65.9 | 0 | 0 | 9/96 - 8/97 | 22.7 | 0 | 0 | |
| US 34 | I - 29 to US 275 | 7/93 - 6/96 | 44.6 | 0 | 0 | 7/96 - 6/97 | 15.4 | 1 | 1 | |
| **Totals** | | **35 years** | **1266** | **5** | **5** | **13 years** | **473** | **10** | **11** | |
| **Rates (per 100 Million Vehicle Miles)** | | | | **0.39** | **0.39** | | | **2.12** | **2.33** | |

NOTES: 1997 Fatal Accident Information is Preliminary

* No time in "Before" period.

Prepared December 1997 by :
Office of Transportation Safety
Engineering Division
Iowa Department of Transportation

The increase in fatalities on these Expressway sections was greater than predicted in the 1996 Report. In that report, it was estimated that increasing the speed limit to 65 mph on 128 miles of Rural Expressway would result in three additional fatalities. Based on 1989 through 1995 experience, three to five fatalities per year could be expected on 170 miles of Rural Expressway. The increase to eleven fatalities recorded in the one-year “After” period was about twice what was predicted in the 1996 Report

It is still too early to tell if this will be a trend, or if it is a coincidental increase that sometimes happens with fatal crashes. The crash data available after the speed limit increase on the Rural Expressway sections is still insufficient to provide a statistically reliable trend. Crash experience on these Rural Expressways will be monitored for the next few years in order to make a better evaluation of the impact of the increased speed limit.

# SURVEY OF SPEED LIMITS AND SPEEDS IN OTHER STATES

As was done for the January 1997 *Report on Results of Speed Limit Changes After Repeal of the National Maximum Speed Limit*, a survey was done with several states to obtain information on changes in speed limits. Included were the states bordering Iowa and nine(9) other selected states, some of which raised their speed limits and others which did not. There were two basic areas of interest: (1) have there been further changes in speed limits from what was reported a year ago and (2) how have operating speeds changed in 1997. The following sections summarize the findings from these surveys.

## States Surrounding Iowa

This category includes the six states that border Iowa (South Dakota, Nebraska, Missouri, Illinois, Wisconsin and Minnesota) as well as Kansas because of their close proximity to Iowa. The following paragraphs explain what has happened in these states relative to speed limits and travel speeds during 1997. There has been little change in posted speed limits. Overall, operating speeds have been relatively stable with 85$^{th}$ percentile speeds up from 1 mph to 3 mph. Minnesota, the only state to change speed limits in 1997, went from 65 mph to 70 mph on their Interstates only. The following paragraphs summarize the limited data collected from the survey of surrounding states. Some comparison data is shown in Table 9.

### South Dakota

South Dakota had no changes in speed limits in 1997. The Interstate is posted at 75 mph and all other Primary and Secondary routes are posted at 65 mph. These changes were made in April of 1996.

Speed monitoring data shows that in the past year, the 85$^{th}$ percentile speed on the Interstate has increased 0.4 mph from 77.3 mph to 77.7 mph. This small increase compares with a 4.5 mph change from 1995 to 1996 when the speed limit was increased 10 mph. In 1995, it was 72.8 mph (posted 65 mph) and in 1996, it was 77.3

## Table 9 Speed Limits and Speeds in Surrounding States

| STATE | CHANGE IN 1997 YES | CHANGE IN 1997 NO | SYSTEM | CURRENT SPEED LIMIT | 85th PERCENTILE (MPH) 1996 | 85th PERCENTILE (MPH) 1997 |
|---|---|---|---|---|---|---|
| South Dakota | | X | Interstate | 75 MPH | 77.3 | 77.7 |
| | | | Primary | 65 MPH | 69.2 | 70.2 |
| | | | Secondary | 65 MPH | N/A | N/A |
| Nebraska | | X | Interstate | 75 MPH | 78 | 78 |
| | | | Expressway/Primary | 65 MPH | 59 | 63 |
| | | | Secondary | 55 MPH | 64 | 65 |
| Kansas | | X | Interstate | 70 MPH | N/A | N/A |
| | | | Expressway | 70 MPH | N/A | N/A |
| | | | Primary | 65 MPH | N/A | N/A |
| | | | Secondary | 65 MPH | N/A | N/A |
| Missouri | | X | Interstate | 70 MPH | N/A | 73.9 |
| | | | Expressway | 70 MPH | N/A | 74.1 |
| | | | Primary | 65 MPH | N/A | 65.8 |
| | | | Secondary | 65 MPH | N/A | N/A |
| Illinois * | | X | Interstate | 65 MPH | 70.0 | 71.6 |
| | | | Expressway | 65 MPH | N/A | N/A |
| | | | Primary | 55 MPH | 64.3 | 65.4 |
| | | | Secondary | 55 MPH | 63.0 | 62.8 |
| Wisconsin | | X | Expressway | 65 MPH | | 71.3 |
| Minnesota | X | | Interstate | 70 MPH | | 72.0 (Avg.) |
| | | | Expressway | 65 MPH | | 68.0 (Avg.) |
| | | | Primary | 55 MPH | | N/A |
| | | | Secondary | 55 MPH | | N/A |
| Iowa | | X | Interstate | 65 MPH | 74.0 | 73.8 |
| | | | Expressway | 65 MPH | 67.6 | 68.2 |
| | | | Primary | 55 MPH | 66.6 | 66.3 |
| | | | Secondary | 55 MPH | 63.4 | 64.8 |

* Illinois has a car / truck differential. The car maximum is 65 mph and the truck maximum is 55 mph

mph (posted 75 mph). It was found that 22.9 percent of the motorists were exceeding the 75 mph rural Interstate speed limit.

The results were similar on Arterial Primary routes. In 1997, the 85th percentile speed increased 1.0 mph from 69.2 mph to 70.2 mph. There was a 4.8 mph increase between 1995 and 1996 when the speed limit on these routes was raised 10 mph from 55 mph to 65 mph. The proportion of motorists exceeding the 65 mph Primary Highway speed limit was 38.4 percent.

The percent compliance with posted speed limits is within the acceptable range used in setting speed limits. The lower violation figure for the Interstate (22.9%) compared with the Primary (38.4%) shows that there may be a carryover factor from Interstate to Primary or that a speed limit higher than 65 mph is preferred by some motorists on the Primary.

## Nebraska

Posted speed limits in Nebraska have remained the same since 1996, with the exception of a few locations where the roadways have been improved. Rural Interstates have posted speed limits of 75 mph, while all other road types are set at 55, 60, or 65 mph, depending on their design. Expressways have a maximum limit of 65 mph, while Primary Highways are all 55 or 60 mph.

A representative from the Nebraska Department of Roads expressed concern that the motoring public was having difficulty recognizing the difference between a two-lane state roadway and a two-lane county roadway, and their subsequent differences in maximum speed limits.

## Kansas

The State of Kansas advised that they had not changed their speed limits this past year. In 1996, Interstates and Expressways were raised to 70 mph while all other routes were raised to 65 mph. Also, they noted they were not aware of any changes in operating speeds or any shifts in traffic patterns.

## Missouri

Missouri has only made minor changes in their posted speed limits since their major changes in 1996. They have maximum allowable limits of 70 mph on rural Interstates and Expressways, 60 mph on urban Interstates, and 65 mph on Primary, and Secondary facilities. Furthermore, the 65 mph speed limit on Primary, and Secondary facilities is only posted on approved highways. Many of those facilities have posted speed limits of 55 mph or 60 mph.

## Illinois

Illinois has had a rural speed limit of 65 mph on Freeways (Interstate and other Freeways) since April 1987 and, since December 1995, on some Expressways as well. In December 1995 an additional 126 Freeway miles were increased to 65 mph and 118 Expressway miles were increased from 55 mph to 65 mph. All other Primary and Secondary routes in Illinois carry a 55 mph speed limit. There is a car/truck differential

with trucks over 4 tons, campers, and vehicles towing trailers limited to 55 mph on all routes.

There were some minor changes in 85th percentile operating speeds on Illinois highways in 1997 compared to 1996. For the Freeways, there was an increase of 1.6 mph from 70.0 to 71.6 mph. Data are not available for Expressways. On Primary routes, there was a 1.1 mph increase in speed from 64.3 to 65.4 mph. Secondary speeds went down 0.2 mph from 63.0 to 62.8 mph. All of these changes were relatively minor with one of them going in an opposite direction (down) from what might be expected.

**Wisconsin**

Wisconsin did not change their speed limits this past year. They indicate that operating speeds on Expressways, other Freeways and 2-lane highways have increased 1 to 5 mph. It was also noted that traffic volumes have increased on the highways with increased speed limits. However, this could not be positively attributed to the change in speed limit.

**Minnesota**

The State of Minnesota changed speed limits in 1997 on Interstates from 65 to 70 mph and on Expressways from 55 to 65 mph. A total of 700 miles of each class was reported. Travel speeds on Interstates appear to be up approximately 2 mph with a 1 mph increase on 55 mph highways. They reported no apparent shift in traffic patterns. The before/after 85th percentile speed on Freeway/Expressway routes showed an increase of 1-3 mph.

## Other Survey States

The same nine states surveyed for the January 1997 Report were contacted again to discuss changes in 1997. They included Montana, Nevada, California, Arizona, Texas, Florida, Ohio, Indiana and New York. The following paragraphs discuss the findings and comparison results are shown in Table 10.

## Table 10 Speed Limits and Speeds in Other Survey States

| STATE | CHANGE IN 1997 YES | CHANGE IN 1997 NO | SYSTEM | CURRENT SPEED LIMIT | 85th PERCENTILE (MPH) 1996 | 85th PERCENTILE (MPH) 1997 |
|---|---|---|---|---|---|---|
| Montana * | | X | Interstate | R & P **(cars only) | 75.9 | 78.1 |
| | | | Primary | R & P **(cars only) | 68.1 | 68.8 |
| | | | Secondary | R & P **(cars only) | 68.1 | 68.8 |
| Nevada | | X | Interstate | 75 MPH | 79.8 | 80.4 |
| | | | Expressway | 70 MPH | 80.3 | 81.9 |
| | | | Primary | 70 MPH | 74.8 | 75.9 |
| | | | Secondary | 70 MPH | 73.8 | 75.3 |
| California | | | Interstate | 70 MPH | N/A | N/A |
| | | | Expressway | 65 MPH | N/A | N/A |
| Arizona | | X | Interstate | 75 MPH | 73-75(50th %) | 73-75(50th %) |
| | | | Expressway | 65 MPH | N/A | N/A |
| Texas *** | X | | Interstate | 70 MPH | N/A | N/A |
| | | | Expressway | 70 MPH | N/A | N/A |
| | | | Primary | 70 MPH | N/A | N/A |
| | | | Secondary | 70 MPH | N/A | N/A |
| Florida | X | | Interstate | 70 MPH | N/A | N/A |
| | | | Expressway | 70 MPH | N/A | N/A |
| | | | Primary | 65 MPH | N/A | N/A |
| | | | Secondary | 60 MPH | N/A | N/A |
| Ohio | | | Expressway | 65 MPH | N/A | N/A |
| Indiana | | X | Interstate | 65 MPH | 73.5 | N/A |
| New York | | | Interstate | 65 MPH | 71.0 | 74.0 |

* Montana has day/night speed limits. The night maximum is 65 MPH Interstate, 55 MPH Others
** R & P means Reasonable and Prudent
*** Texas has a car / truck differential. The car maximum is 70 MPH and the truck maximum is 60 MPH
Texas has day/night speed limits. The night maximums are cars 65 MPH, trucks 55 MPH

### Montana

The State of Montana continues to operate with a “Reasonable and Prudent” daytime speed limit for passenger vehicles. The truck speed limit is 65 mph on the Interstate and 60 mph on all other routes. Some motorists are concerned about the variance in speeds caused by this differential posting, but it is offset somewhat by trucks exceeding the speed limit. The nighttime speed limit for all vehicles is 65 mph on the Interstate and 55 mph on all other routes.

The 85th percentile speed on the Montana Interstate System increased a moderate 2.2 mph from 75.9 mph to 78.1 mph in 1997. For the Primary and Secondary Systems, the increase was much less at 0.7 mph from 68.1 mph to 68.8 mph.

### Nevada

There were no changes in speed limits in Nevada in 1997. Travel speeds were up slightly on all systems as follows:

| | | |
|---|---|---|
| Interstate | +1.6 to +2.6 | mph |
| Expressways | +2.5 | mph |
| US Routes | +0.1 to +1.3 | mph |
| State Routes | -0.2 to +1.5 | mph |
| Routes Posted 55 mph | -1.3 to +1.2 | mph |

They did not find any shifts in traffic to other routes due to higher speed limits.

**California**

Data is not available from California.

**Arizona**

Arizona maintained the maximum Interstate speed limit of 75 mph that was adopted in 1996. They also increased speed limits on approximately 175 miles of Interstate and 600 miles of Expressway which had not been increased previously.

Arizona also reported using differential speed limits for cars and trucks in a few specific locations. In those locations, cars were allowed to go 65 or 75 mph while trucks are limited to 55 mph. The Arizona Department of Transportation official did not identify any problems at those locations.

**Texas**

The speed limit on Texas highways, set by legislation, remains at 70 mph for all classes of their 77,000 mile system. The Legislature gave the Highway Department the authority to conduct studies and adjust this speed limit downward if conditions warrant. Meetings were conducted at 26 locations across the state to obtain citizen input on speed limit adjustments. There was considerable support to lower speed limits on some routes. To date, the speed limit has been rolled back to 55, 60 or 65 mph on approximately 30,000 miles or 40 percent of their system. This has been mostly in the 2-lane Farm to Market category.

In Texas, there is a truck differential with trucks limited to 60 mph. Also, there is a day / night speed limit with night maximums being 65 mph for cars and 55 mph for trucks.

Data is not available on current operating speeds in Texas. In February of 1997, Texas A&M published a speed study for the State Highway Department. It was based on 1996 data and showed 85$^{th}$ percentile speeds in the range of 72.3 mph to 74.0 mph, compared to the 70 mph speed limit. A similar study using 1997 data is now being developed for release in early 1998.

**Florida**

The State of Florida is still in the process of changing speed limits. The Interstate as well as Expressways is 70 mph. Florida officials believe speeds are up 3-4 mph on Interstates, but have no data on Primary systems. They indicate no measurable shift in traffic to systems with higher speed limits.

**Ohio**

Data is not available from Ohio.

**Indiana**

Indiana changed the speed limit on an additional 11 miles of Interstate from 55 mph to 65 mph in 1997. There is a speed differential with the car maximum at 65 mph and the truck maximum at 60 mph. They are not aware of any safety problems due to this differential.

Their speed monitoring data reported for 1995 and 1996 indicated very little difference on all systems (1 mph or less).

**New York**

Speed limits in New York were raised to 65 mph on the rural Interstate in August of 1995 before the NMSL was repealed. New York has not made any speed limit changes since then.

In the past year, operating speeds on New York Interstate routes have increased 2 to 3 mph from 71 mph to 73 or 74 mph.

# TRAFFIC INJURIES AND FATALITIES IN OTHER STATES

## Rural Traffic Injuries in Surrounding States

The Speed Limit Task Force gathered traffic injury data from Iowa's neighboring states. This was particularly useful for comparing states which did and did not raise speed limits on rural Interstate and Primary road systems. Data was reviewed on 1995 and 1996 rural traffic injury totals for the states of Illinois, Kansas, Minnesota, Missouri, Nebraska, South Dakota and Wisconsin. Table 11 and Table 12 summarize the data. Illinois did not have 1996 Injury data available.

**Table 11 Rural Traffic Injuries in Surrounding States With Speed Limit Increases**

| State | 1995 Rural Injuries | 1996 Rural Injuries | Percent Change |
|---|---|---|---|
| Kansas | 10,049 | 11,014 | +9.6% |
| Missouri | 19,069 | 20,707 | +8.6% |
| Nebraska | 7,482 | 7,845 | +4.9% |
| South Dakota | 3,033 | 3,213 | +5.9% |
| Total | 39,633 | 42,779 | +7.9% |

**Table 12 Rural Traffic Injuries in Surrounding States Without Speed Limit Increases**

| State | 1995 Rural Injuries | 1996 Rural Injuries | Percent Change |
|---|---|---|---|
| Illinois | 24,575 | NA | -- |
| Iowa | 12,439 | 12,588 | +1.2% |
| Minnesota | 15,382 | 15,982 | +3.9% |
| Wisconsin | 22,078 | 22,016 | -0.3% |
| Total* | 49,899 | 50,586 | +1.4% |

*Illinois figures not included.

The Tables separate states which enacted statewide rural Interstate and Primary speed limit increases (Kansas, Missouri, Nebraska and South Dakota) from those that either did not enact statewide increases or had very limited speed increases (Illinois, Iowa, Wisconsin, and Minnesota[3]). The latter group included states with speed increases on selected portions of rural four-lane Expressways.

[3] On July 1, 1997, Minnesota changed their Interstate speed limit to 70 mph.

Results of these analyses indicate that the four states with system-wide speed increases experienced rural injury increases from 4.9 to 9.6 percent in 1996 with a collective increase in rural injuries of 7.9 percent for 1996.

By comparison, the states with no or limited speed limit increases experienced 1996 rural injury totals from 3.9 percent higher to 0.3 percent lower than comparable 1995 figures[4]. The average increase in rural traffic injuries in 1996 for these states was 1.4 percent, considerably less than the 7.9 percent increase experienced by the states with statewide rural Interstate and rural Primary speed limit changes.

While the rural injury information represents just a one-year comparison, 3,146 additional rural traffic injuries occurred in the four speed limit increase states during 1996 as opposed to an increase of 687 injuries in the non-speed limit increase states.

### Traffic Fatalities in Other States

Traffic fatalities were examined before and after speed limits were raised in a representative cross section of states across the nation. Midwestern states that border or are very close to Iowa included Illinois, Kansas, Minnesota, Missouri, Nebraska, South Dakota, and Wisconsin. Other states surveyed included Arizona, California, Florida, Indiana, Massachusetts, Montana, Nevada, New York, Ohio, Pennsylvania, and Texas. These were the same states used in the Speed Limit Reports published in 1996 and 1997. Detailed data on fatalities in these states is contained in Tables A-1 through A-3 in the Appendix.

### Fatalities on Interstate Highways

It is on the Interstate Highways where traffic fatalities in states that raised their speed limits above 65 mph provide a contrast with the states that did not raise their speed limits. This is understandable because all states that raised their speed limits above 65 mph did so on Interstate Highways. Some states raised only Interstates, while some states raised limits on selected other roads and still other states raised limits on virtually all roads.

Figure 5 and Table A-1 in the Appendix show fatality data gathered from 11 states that increased Interstate speed limits for 1996. The data shows that in 1996, all of the states that raised speed limits, except Kansas, experienced a three-year high for Interstate traffic deaths. In fact, from 1995 to 1996, Massachusetts, Missouri, Montana, Nebraska, Nevada, South Dakota, and Texas experienced increases in Interstate fatalities ranging from 13 percent in Montana, to 63 percent in Nebraska (See Table A-1 in Appendix). By contrast, Figure 6 shows that no state that kept a 65 mph Interstate speed limit experienced a three-year high for Interstate deaths in 1996. Massachusetts, which raised its Interstate speed limit from 55 mph to 65 mph also experienced a three-year high in Interstate deaths.

In the four neighboring states where Rural Interstate speed limits were increased to 70 or 75 mph (Kansas, Missouri, Nebraska and South Dakota), total Interstate fatalities were up 36 percent from 1995 to 1996. This compares to an increase of 16 percent for states that did not raise Interstate speed limits above 65 mph (Illinois, Iowa, Minnesota[5], and Wisconsin).

**The Midwest Experience—All Roads**

In the Midwest as of the end of 1996, four states raised their speed limits beyond 65 mph (South Dakota, Nebraska, Kansas and Missouri), and four states did not (Iowa, Illinois, Wisconsin and Minnesota). Of the states that raised their speed limit above 65 mph, all saw an increase in their total fatalities. Of the states that did not raise their speed limits above 65 mph, three had decreases in total traffic fatalities and one, Wisconsin, experienced an increase in traffic fatalities during what a transportation safety official described as “an unusually treacherous Autumn” in 1996.

[4] Illinois data was omitted from this comparison since 1996 data is not yet available.

[5] On July 1, 1997, Minnesota changed their Interstate speed limit to 70 mph. However, it is still too soon to collect and evaluate valid data on behavioral habits or traffic crashes at the new speed limit.

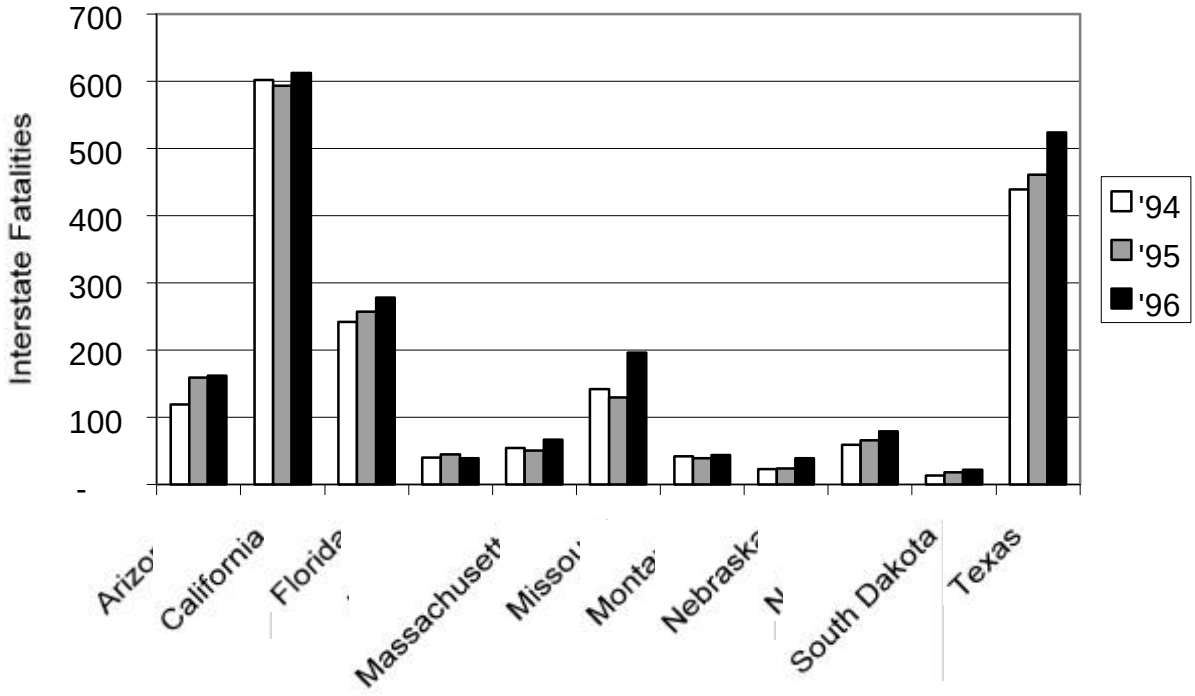


**Figure 5 Interstate Traffic Fatalities in States that Increased Speed Limits**

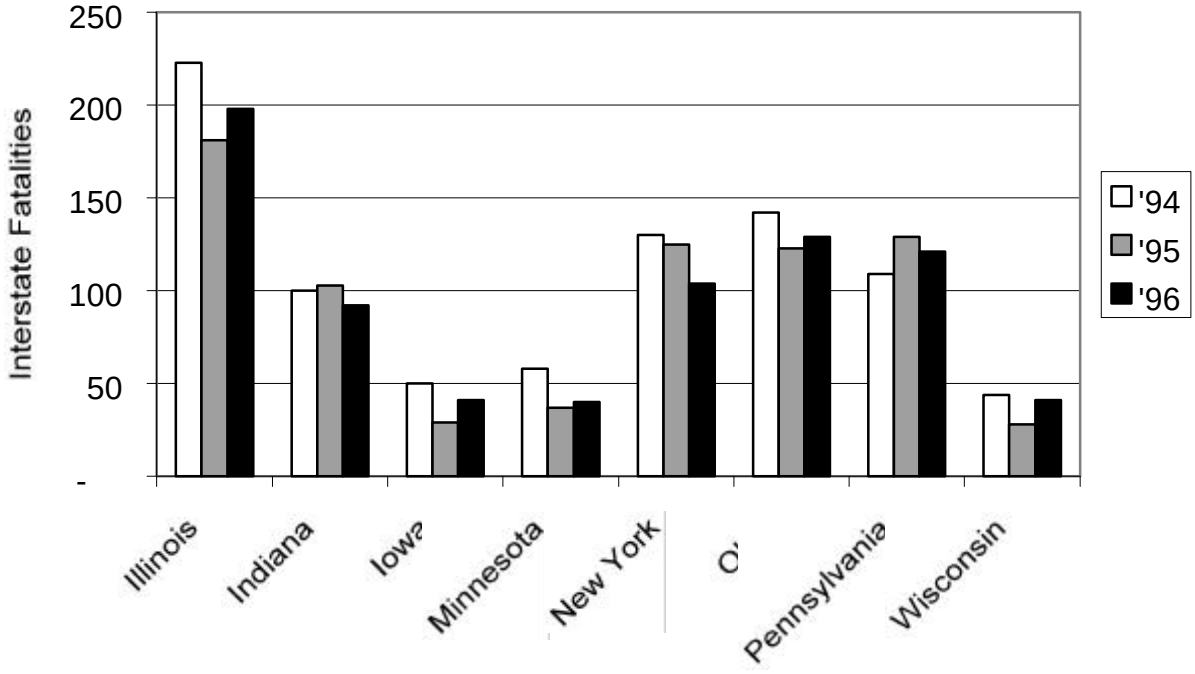


**Figure 6 Interstate Traffic Fatalities in States with Constant Speed Limits**

Included in Table A-2, in the Appendix of this Report, is a chart that lists the fatalities for the January-August time period for the years 1995, 1996 and 1997. Using the January-August time allows the use of complete data for those months for the year 1997 (which will be the first complete year with speed limit increases) and compare it with the same months in 1995, (the last complete year of the old speed limits).

The states that did not raise their speed limit above 65 mph during 1996[6], all had a decrease in fatalities when comparing January to August 1997 with the same period in 1995. Of the states that raised their speed limit above 65 mph, Missouri, Kansas, and Nebraska have experienced increases in their traffic fatalities as shown in Table 13. South Dakota, the other state bordering Iowa that raised its speed limit, had an initial increase in fatalities of 20.8 percent in 1996 when compared with the same period in 1995. Then, in the first eight months of 1997, South Dakota had an 8.9 percent decrease in fatalities when compared to the same period in 1995.

**Table 13 Changes in July Through August Traffic Fatalities from 1995 to 1997**

| States that **Did Not** Change Speed Limits Above 65 mph | | States that **Did** Change Speed Limits Above 65 mph | |
|---|---|---|---|
| Iowa | -14.7% | Kansas | + 5.3% |
| Illinois | - 4.0% | Missouri | + 12.0% |
| Minnesota[6] | - 6.4% | Nebraska | + 4.2% |
| Wisconsin | - 6.8% | South Dakota | - 8.9% |

## The Experience of Other States—All Roads

The experience of other states around the country, both who have raised their speed limits and those who have not, yields mixed results when looking at total fatalities. Some states raised speed limits on all roads, some on just Interstates, and some raised limits on selected roadways.

States with more miles of rural highway which raised speed limits, like Arizona, Nevada, Montana, Texas, and Florida, all had increases in traffic fatalities. States known more

[6] On July 1, 1997, Minnesota changed their Interstate speed limit to 70 mph. However, it is still too soon to collect and evaluate valid data on behavioral habits or traffic crashes at the new speed limit.

for their urbanized traffic, such as California, experienced a slight decrease. New York and Massachusetts, which did not raise their speed limits above 65 mph, saw traffic deaths decrease. Ohio and Pennsylvania raised their speed limits to 65 mph on a limited number of miles and experienced small increases in traffic fatalities.

## SPEED LIMIT ENFORCEMENT

In reviewing the past five years of Iowa State Patrol speed citation information in Table 14, it appears that citations issued by the Iowa State Patrol have remained fairly constant.

Enforcement activity on Interstate Highways and restricted zones increased slightly each year from 1993 through 1996 and then leveled off again in 1997. Enforcement activity on Primary Highways remained constant from 1993 through 1996 with a slight decrease in 1997. Secondary Highway speed enforcement was constant each year with the exception of 1994, when a slight increase was observed. Total speed citations were fairly constant from 1994 through 1996 with slight decreases observed in 1993 and 1997.

The Iowa State Patrol will continue to actively enforce the speed limit, regardless of what speed limits are set.

**Table 14 Iowa State Patrol Speed Limit Citations Issued**

| Year | Interstate | Primary | Secondary | Restricted Zones | Total Citations |
|---|---|---|---|---|---|
| 1993 | 21,294 | 72,691 | 11,390 | 1,540 | 106,915 |
| 1994 | 22,750 | 73,595 | 13,259 | 1,513 | 111,117 |
| 1995 | 26,142 | 72,497 | 12,654 | 1,724 | 113,017 |
| 1996 | 27,156 | 71,856 | 12,153 | 1,963 | 113,128 |
| 1997 | 25,956 | 68,369 | 12,538 | 1,847 | 108,710 |

# DISCUSSION ON SPEED LIMIT MODIFICATIONS

*Note: The following section is included verbatim from the January 1996* Report on Speed Limits and Safety for Iowa Highways *to provide historical perspective for readers unfamiliar with the issues and as a review for others. Previous sections of this Report, organized in the same format as the 1996 and 1997 Reports, have provided current information. Particular attention should be directed to the section in this Report titled Crash Data for Iowa Rural Expressways, starting on Page 13. Comparison of that section to the projections made in the 1996 Report reveal that the actual increase in fatalities on Iowa's Rural Expressways was essentially double the initial projection of the Task Force.*

The consensus of the Task Force was that this report should not contain specific speed limit recommendations. The purpose of this report is to point out safety factors and to consider the impacts of speed on each. The task of weighing all of the relevant information and deciding whether speed limits should be modified is left to the Legislature and other policy makers. The Task Force urges these groups to be guided by the facts. The welfare of Iowans and visitors to the state should be considered.

### All Classes of Highways

- In general, when speed limits are increased, accidents and fatalities will increase. Along with this is an increased cost to society for more severe injuries suffered in accidents.
- Differential speeds between cars, trucks and other vehicles are detrimental to traffic safety.
- If speed limits are increased, consideration should be given to repealing the "Right to Speed" law (Iowa Code 321.210(2)d).
- If speed limits are increased, consideration should be given to a day/night differential. Accident rates are three times higher during hours of darkness than during the day.
- Changing speed limits will require additional expenditures for changing sign messages or adding new signs.

- The increased kinetic energy in an accident at higher speeds may contribute to more severe injuries. An 18 percent increase in speed from 55 mph to 65 mph results in a 40 percent increase in the kinetic energy associated with a moving vehicle. Increasing the speed from 65 mph to 70 mph (an 8 percent increase in speed) results in a 16 percent increase in the kinetic energy.
- A vehicle traveling at 55 mph will require 540 feet to stop and the same vehicle traveling at 65 mph will require 725 feet to stop, a 34 percent increase in required stopping distance for an 18 percent increase in speed. A vehicle traveling at 70 mph will need 840 feet to stop. The additional stopping distance required when vehicle speed is increased from 65 mph to 70 mph, an 8 percent increase in speed, is 115 feet, or a 16 percent increase.

**Urban Interstate**

- An increase in Urban Interstate speed limits from 55 mph to 65 mph will likely result in an increase of at least three to six fatalities at an economic loss of $1.5 million to $3.0 million annually, using the Iowa DOT fatality costs.
- Since there is considerable variation in design and use of Urban Interstates, speed limits should be set by site-specific engineering studies rather than by the Legislative process.

**Rural Interstate**

- An increase in the speed limit from 65 mph to 75 mph on Rural Interstate will likely result in at least 31 additional fatalities at a cost of $15.5 million annually, using Iowa DOT fatality costs.
- Interstate speed limits should be based on the characteristics of the surrounding environment as opposed to arbitrary rural/urban boundaries. There should be continuity and uniformity of speed limits in suburban sections of metropolitan areas.

**Freeways and Expressways**

- An increase in the speed limit from 55 mph to 65 mph on Rural Expressways that “look like” Interstates will likely result in at least 3 additional fatalities at a cost of $1.5 million annually, using Iowa DOT fatality costs.

- The public does not perceive the subtle differences in these classifications of highways. Therefore, it may be acceptable to set speed limits on all rural multi-laned divided routes (Interstates, Freeways and Expressways) at the same posted limit.

**Other Two-Lane Primary**

- An increase in the speed limit from 55 mph to 65 mph on Rural Primary will likely result in at least 50 additional fatalities and a cost of $25 million annually, using Iowa DOT fatality costs.
- An increase in the Rural Primary speed limit will require a substantial additional expenditure to resurvey, remark and relocate signs for No Passing Zones.
- An increase in speed limits will lengthen the distance required to pass, while at the same time passing opportunities are reduced because of longer No Passing Zones.

**Secondary Roads**

- An increase in the speed limit from 55 mph to 65 mph on Secondary Roads will likely result in at least 44 additional fatalities and a cost of $22 million annually, using Iowa DOT fatality costs.
- The fatality rate on Secondary Roads is the highest of any of the road systems.
- Generally, the design characteristics and safety features of Secondary Roads are not sufficient to safely accommodate higher speed limits.
- The public tends to drive at higher speeds on the Secondary system than on the Rural Primary System. If the speed limit is increased on Rural Primaries, the speed on paved Secondaries will likely increase, regardless of the posted speed limit.
- An increase in the Rural Secondary speed limit will require a substantial additional expenditure to resurvey, remark and relocate signs for No Passing Zones.
- An increase in speed limits will lengthen the distance required to pass at the same time passing opportunities are reduced because of longer No Passing Zones.
- If different speed limits are posted on the Primary and Secondary Systems, it will require counties to install more signs.

# VEHICLE OPERATING COSTS AT HIGHER SPEEDS

Many factors are impacted by raising speed limits, such as travel times, user costs, pollution, and user preference. Although most of those factors are outside of the scope of this Report, the Speed Limit Task Force was able to gather information on the impact of higher speeds on vehicle operating costs.

## Trucks

The motor carrier industry has two primary considerations regarding speed limits. The first is safety. The second consideration is the cost of operation at various speeds. In 1987, The Maintenance Council (TMC) of the American Trucking Associations (ATA) conducted a study of the costs of operating trucks at 55 mph vs. 65 mph.

The study was conducted with the following three objectives in mind.

1. Determine the test fuel economy penalties of operating at a 65 mile per hour maximum speed with both old and new equipment.

2. Obtain the best possible estimates of component degradation at higher vehicle operating speeds.

3. Determine productivity gains to be realized by operating at 65 mph rather than 55.

Although the study was done 10 years ago, the three major truck engine manufacturers confirm that the study's conclusions on fuel economy and oil consumption remain relatively accurate. The study conclusions are listed below.

1. Speed costs money. The rule of thumb for all heavy trucks is that for every one mile per hour increase in average vehicle speed there is a 2.2 percent increase in fuel consumption or a 0.14-mile per gallon penalty in fuel economy. Current estimates are a 0.10-mile per gallon penalty.

2. Operating equipment at speeds higher than 55 mph generally decreases component service life and shortens preventative maintenance intervals. Some examples include:

   - A 10-mph increase in operating speed results in a 10 to 15 percent decrease in miles-to-engine overhaul.
   - Oil consumption can be expected to increase by 15 percent.
   - Tread life on tires was estimated to decrease 5 to 16 percent from 55 mph to 65 mph.
   - Brake life was estimated to decrease up to 15 percent with the speed limit increase.

3. On the issue of productivity gains, TMC concluded that it was not possible to prove any productivity gains by increasing the speed limit from 55 mph to 65 mph. The Task Force could not locate statistics to support or refute the productivity arguments.

**Passenger Cars**

The passenger vehicle segment of the motor vehicle industry has operated under the following “rules of thumb” as it relates to fuel economy and increased speeds. This information is based on all passenger cars and light trucks.

Fuel economy “rules of thumb”:

- As a vehicle’s speed increases from 65 mph to 70 mph there is typically a 10 percent decrease in fuel economy.
- The 10 percent decrease is not a linear relationship, meaning there is an increasingly greater decrease in economy as speed increases.
- Sport utility vehicles, as a class, experience approximately a 20 percent decrease in fuel economy for an increase in speed from 65 to 75 mph.
- Air resistance is the largest contributor to a decrease in fuel economy. More aerodynamic vehicles will incur a lower decrease in economy.

# OTHER REPORTS

Three reports about the effects of increased speed limits on safety came to the Task Force's attention. The first two reports link increased highway speeds to increased fatalities. The third report identifies speed variance as a more important element in traffic fatalities and claims that the 65 mph speed limit saved lives. The reports are as follows:

> *Impact of the 65 mph speed limit on Iowa's rural Interstate highways: An integrated Bayesian forecasting and dynamic modeling approach*, November 1997. Sponsored by the Center for Transportation Research and Education, Ames, IA. Authored by Shanmuganathan Raju, Reginald Souleyrette, and T.H. Maze.
>
> *Effect of 1996 Speed Limit Changes on Motor Vehicle Occupant Fatalities*, October 1997. Sponsored by the Insurance Institute for Highway Safety, Arlington, VA. Authored by Charles M. Farmer, Richard A. Retting, and Adrian K. Lund.
>
> *Did the 65 mph speed limit save lives?*, 1994. Authored by Charles Lave and Patrick Elias, Department of Economics, University of California, Irvine, CA.

Copies of these reports are available by calling the Engineering Division at the Iowa Department of Transportation at 515-239-1545. Requests may also be made by e-mail at tcrouch@iadot.e-mail.com.

Other studies, reports and media articles are available. The Task Force did not do a literature search nor intend this report to be a summary of other's work. The Task Force compiled information believed to be helpful to Iowa's decision makers.

# APPENDIX

# Table A-1 State Traffic Fatalities by Route Classification

**1994, 1995 and 1996**

| State | Year | Interstate | One Year % Change Interstate | U. S. Highways | State Highways | County Roads | Municipal Roads | Other Roads | Total |
|---|---|---|---|---|---|---|---|---|---|
| **States Surrounding Iowa that did NOT Increase Limits** | | | | | | | | | |
| **Illinois** | 94 | 223 | | 146 | 515 | 175 | 116 | 378 | 1553 |
| | 95 | 181 | -19% | 141 | 541 | 164 | 556 | 3 | 1586 |
| | 96 | 198 | 9% | 169 | 428 | 158 | 523 | 1 | 1477 |
| **Iowa** | 94 | 50 | | 101 | 93 | 164 | 68 | 3 | 479 |
| | 95 | 29 | -42% | 134 | 127 | 175 | 61 | 1 | 527 |
| | 96 | 41 | 41% | 112 | 94 | 165 | 53 | 0 | 465 |
| **Minnesota** | 94 | 58 | | 119 | 186 | 204 | 76 | 3 | 646 |
| | 95 | 37 | -36% | 92 | 153 | 219 | 94 | 2 | 597 |
| | 96 | 40 | 8% | 80 | 176 | 201 | 77 | 2 | 576 |
| **Wisconsin** | 94 | 44 | | 129 | 196 | 171 | 170 | 2 | 712 |
| | 95 | 28 | -36% | 114 | 241 | 189 | 168 | 5 | 745 |
| | 96 | 41 | 46% | 147 | 248 | 166 | 159 | 0 | 761 |
| **States Surrounding Iowa that DID Increase Limits** | | | | | | | | | |
| **Kansas** | 94 | 40 | | 116 | 59 | 179 | 45 | 3 | 442 |
| | 95 | 45 | 13% | 120 | 53 | 154 | 70 | 0 | 442 |
| | 96 | 39 | -13% | 153 | 62 | 195 | 42 | 0 | 491 |
| **Missouri** | 94 | 142 | | 222 | 470 | 93 | 143 | 19 | 1089 |
| | 95 | 130 | -8% | 198 | 506 | 109 | 146 | 20 | 1109 |
| | 96 | 196 | 51% | 205 | 481 | 93 | 150 | 24 | 1149 |
| **Nebraska** | 94 | 23 | | 77 | 54 | 73 | 44 | 0 | 271 |
| | 95 | 24 | 4% | 71 | 46 | 83 | 30 | 0 | 254 |
| | 96 | 39 | 63% | 79 | 50 | 87 | 38 | 0 | 293 |
| **South Dakota** | 94 | 14 | | 32 | 44 | 47 | 17 | 0 | 154 |
| | 95 | 18 | 29% | 31 | 33 | 55 | 20 | 1 | 158 |
| | 96 | 22 | 22% | 52 | 37 | 49 | 4 | 11 | 175 |
| **Other States that did NOT Increase Limits** | | | | | | | | | |
| **Indiana** | 94 | 100 | | 156 | 270 | 164 | 157 | 124 | 971 |
| | 95 | 103 | 3% | 164 | 231 | 238 | 209 | 15 | 960 |
| | 96 | 92 | -11% | 195 | 251 | 203 | 195 | 48 | 984 |
| **New York** | 94 | 130 | | 115 | 478 | 217 | 636 | 102 | 1678 |
| | 95 | 125 | -4% | 124 | 419 | 230 | 670 | 111 | 1679 |
| | 96 | 104 | -17% | 92 | 550 | 232 | 555 | 31 | 1564 |
| **Ohio** | 94 | 142 | | 170 | 415 | 301 | 339 | 3 | 1370 |
| | 95 | 123 | -13% | 159 | 403 | 288 | 375 | 12 | 1360 |
| | 96 | 129 | 5% | 192 | 383 | 290 | 398 | 13 | 1405 |
| **Pennsylvania** | 94 | 109 | | 245 | 864 | 2 | 218 | 3 | 1441 |
| | 95 | 129 | 18% | 266 | 832 | 2 | 251 | 0 | 1480 |
| | 96 | 121 | -6% | 243 | 860 | 2 | 238 | 5 | 1469 |
| **Other States that DID Increase Limits** | | | | | | | | | |
| **Arizona** | 94 | 119 | | 117 | 163 | 115 | 318 | 72 | 904 |
| | 95 | 159 | 34% | 84 | 167 | 142 | 403 | 80 | 1035 |
| | 96 | 162 | 2% | 111 | 180 | 125 | 349 | 66 | 993 |
| **California** | 94 | 602 | | 201 | 1023 | 922 | 1446 | 38 | 4232 |
| | 95 | 594 | -1% | 199 | 1016 | 928 | 1431 | 24 | 4192 |
| | 96 | 613 | 3% | 180 | 1033 | 773 | 1376 | 14 | 3989 |
| **Florida** | 94 | 242 | | 637 | 753 | 251 | 804 | 0 | 2687 |
| | 95 | 257 | 6% | 661 | 738 | 283 | 866 | 0 | 2805 |
| | 96 | 278 | 8% | 620 | 737 | 247 | 434 | 437 | 2753 |
| **Massachusetts** | 94 | 55 | | 42 | 142 | 0 | 0 | 201 | 440 |
| | 95 | 51 | -7% | 39 | 161 | 0 | 0 | 193 | 444 |
| | 96 | 67 | 31% | 32 | 127 | 0 | 0 | 191 | 417 |
| **Montana** | 94 | 42 | | 67 | 20 | 44 | 6 | 23 | 202 |
| | 95 | 39 | -7% | 60 | 31 | 30 | 13 | 42 | 215 |
| | 96 | 44 | 13% | 61 | 36 | 33 | 3 | 23 | 200 |
| **Nevada** | 94 | 59 | | 61 | 57 | 16 | 100 | 1 | 294 |
| | 95 | 66 | 12% | 61 | 57 | 4 | 123 | 2 | 313 |
| | 96 | 79 | 20% | 72 | 50 | 11 | 136 | 0 | 348 |
| **Texas** | 94 | 439 | | 639 | 524 | 298 | 528 | 759 | 3187 |
| | 95 | 461 | 5% | 606 | 545 | 278 | 521 | 772 | 3183 |
| | 96 | 524 | 14% | 782 | 614 | 347 | 572 | 902 | 3741 |

## Table A-2 January Through August Traffic Fatalities

### Surrounding States' Traffic Fatalities in January through August of 1995, 1996, and 1997

| State | Year | Jan. | Feb. | March | April | May | June | July | Aug. | Total | Percent Change from 1995 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **States that Did NOT Increase Speeds** | | | | | | | | | | | |
| **Illinois** | 1995 | 121 | 107 | 107 | 123 | 119 | 113 | 136 | 159 | 985 | |
| | 1996 | 106 | 115 | 131 | 96 | 98 | 146 | 121 | 131 | 944 | -4.2% |
| | 1997 | 101 | 100 | 94 | 98 | 140 | 143 | 139 | 134 | 949 | -3.7% |
| **Iowa** | 1995 | 37 | 36 | 33 | 25 | 42 | 57 | 51 | 60 | 341 | |
| | 1996 | 29 | 23 | 33 | 37 | 24 | 47 | 48 | 39 | 280 | -17.9% |
| | 1997 | 36 | 26 | 28 | 38 | 37 | 46 | 40 | 40 | 291 | -14.7% |
| **Minnesota** | 1995 | 34 | 40 | 46 | 43 | 49 | 57 | 70 | 54 | 393 | |
| | 1996 | 31 | 32 | 35 | 45 | 44 | 52 | 62 | 75 | 376 | -4.3% |
| | 1997 | 33 | 40 | 29 | 50 | 48 | 54 | 50 | 64 | 368 | -6.4% |
| **Wisconsin** | 1995 | 57 | 37 | 46 | 52 | 51 | 82 | 77 | 82 | 484 | |
| | 1996 | 58 | 45 | 46 | 51 | 52 | 61 | 69 | 85 | 467 | -3.5% |
| | 1997 | 51 | 50 | 36 | 47 | 64 | 63 | 67 | 73 | 451 | -6.8% |
| **Totals** | **1995** | | | | | | | | | **2203** | |
| | **1996** | | | | | | | | | **2067** | **-6.2%** |
| | **1997** | | | | | | | | | **2059** | **-6.5%** |
| **States that DID Increase Speeds** | | | | | | | | | | | |
| **Kansas** | 1995 | 25 | 32 | 31 | 25 | 30 | 46 | 46 | 49 | 284 | |
| | 1996 | 34 | 25 | 31 | 41 | 55 | 44 | 40 | 41 | 311 | 9.5% |
| | 1997 | 42 | 32 | 29 | 32 | 36 | 48 | 43 | 37 | 299 | 5.3% |
| **Missouri** | 1995 | 61 | 76 | 91 | 74 | 80 | 107 | 85 | 103 | 677 | |
| | 1996 | 79 | 63 | 95 | 102 | 79 | 91 | 111 | 130 | 750 | 10.8% |
| | 1997 | 79 | 53 | 88 | 71 | 125 | 119 | 124 | 99 | 758 | 12.0% |
| **Nebraska** | 1995 | 12 | 18 | 21 | 15 | 12 | 23 | 33 | 32 | 166 | |
| | 1996 | 20 | 11 | 28 | 21 | 25 | 33 | 26 | 24 | 188 | 13.3% |
| | 1997 | 22 | 13 | 20 | 17 | 28 | 17 | 23 | 33 | 173 | 4.2% |
| **South Dakota** | 1995 | 8 | 9 | 8 | 6 | 6 | 19 | 20 | 25 | 101 | |
| | 1996 | 11 | 6 | 17 | 9 | 13 | 24 | 19 | 23 | 122 | 20.8% |
| | 1997 | 17 | 7 | 3 | 8 | 7 | 11 | 17 | 22 | 92 | -8.9% |
| **Totals** | **1995** | | | | | | | | | **1228** | |
| | **1996** | | | | | | | | | **1371** | **11.6%** |
| | **1997** | | | | | | | | | **1322** | **7.7%** |

# Table A-3 Annual Fatal Traffic Crashes

## A Comparison of Fatal Crashes by Month for 1994 through 1996

| State | Year | Jan | Feb | Mar | Apr | May | June | July | Aug | Sep | Oct | Nov | Dec | Total Crashes | Percent Change from Prev. Year | Total Fatalities | Percent Change from Prev. Year |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| States Surrounding Iowa that did NOT Increase Limits | | | | | | | | | | | | | | | | | |
| **Illinois** | 1994 | 98 | 74 | 94 | 111 | 106 | 136 | 131 | 150 | 123 | 153 | 105 | 113 | 1394 | | 1554 | |
| | 1995 | 100 | 99 | 97 | 107 | 107 | 101 | 124 | 137 | 150 | 138 | 107 | 135 | 1402 | 0.6% | 1586 | 2.1% |
| | 1996 | 93 | 105 | 113 | 87 | 92 | 124 | 120 | 142 | 128 | 108 | 96 | 100 | 1308 | -6.7% | 1475 | -7.0% |
| **Iowa** | 1994 | 29 | 22 | 31 | 29 | 40 | 33 | 53 | 32 | 28 | 29 | 51 | 39 | 416 | | 479 | |
| | 1995 | 32 | 32 | 30 | 23 | 37 | 51 | 45 | 50 | 52 | 42 | 29 | 23 | 446 | 7.2% | 527 | 10.0% |
| | 1996 | 25 | 19 | 29 | 35 | 21 | 43 | 38 | 35 | 37 | 48 | 44 | 37 | 411 | -7.8% | 465 | -11.8% |
| **Minnesota** | 1994 | 31 | 30 | 37 | 43 | 42 | 50 | 62 | 44 | 58 | 52 | 47 | 56 | 552 | | 644 | |
| | 1995 | 28 | 35 | 37 | 39 | 41 | 48 | 54 | 48 | 42 | 57 | 43 | 43 | 515 | -6.7% | 597 | -7.3% |
| | 1996 | 5 | 26 | 35 | 39 | 37 | 42 | 52 | 70 | 60 | 49 | 31 | 37 | 483 | -6.2% | 576 | -3.5% |
| **Wisconsin** | 1994 | 42 | 43 | 38 | 58 | 51 | 52 | 73 | 61 | 51 | 59 | 49 | 45 | 622 | | 715 | |
| | 1995 | 54 | 31 | 39 | 43 | 49 | 86 | 66 | 72 | 65 | 66 | 54 | 48 | 673 | 8.2% | 745 | 4.2% |
| | 1996 | 54 | 35 | 40 | 45 | 52 | 53 | 59 | 74 | 59 | 52 | 71 | 64 | 658 | -2.2% | 759 | 1.9% |
| States Surrounding Iowa that DID Increase Limits | | | | | | | | | | | | | | | | | |
| **Florida** | 1994 | 200 | 188 | 221 | 212 | 218 | 181 | 177 | 195 | 176 | 202 | 209 | 240 | 2419 | | 2687 | |
| | 1995 | 205 | 191 | 269 | 220 | 207 | 202 | 217 | 195 | 197 | 192 | 209 | 242 | 2546 | 5.3% | 2805 | 4.4% |
| | 1996 | 205 | 224 | 236 | 221 | 197 | 177 | 180 | 194 | 171 | 224 | 221 | 246 | 2496 | -2.0% | 2813 | 0.3% |
| **Kansas** | 1994 | 24 | 24 | 24 | 33 | 34 | 35 | 41 | 44 | 22 | 34 | 35 | 31 | 381 | | 442 | |
| | 1995 | 24 | 28 | 27 | 23 | 27 | 44 | 38 | 44 | 36 | 41 | 36 | 26 | 394 | 3.4% | 442 | 0.0% |
| | 1996 | 28 | 25 | 30 | 39 | 51 | 37 | 37 | 39 | 30 | 38 | 46 | 43 | 443 | 12.4% | 491 | 11.1% |
| **Missouri** | 1994 | 65 | 58 | 61 | 74 | 96 | 83 | 84 | 80 | 96 | 89 | 67 | 94 | 947 | | 1089 | |
| | 1995 | 55 | 63 | 79 | 68 | 67 | 100 | 76 | 92 | 107 | 109 | 82 | 87 | 985 | 4.0% | 1109 | 1.8% |
| | 1996 | 70 | 59 | 80 | 86 | 69 | 82 | 97 | 116 | 94 | 84 | 68 | 101 | 1006 | 2.1% | 1148 | 3.5% |
| **Nebraska** | 1994 | 18 | 17 | 13 | 22 | 24 | 23 | 21 | 19 | 16 | 22 | 19 | 15 | 229 | | 271 | |
| | 1995 | 11 | 14 | 21 | 13 | 12 | 20 | 29 | 28 | 17 | 24 | 24 | 13 | 226 | -1.3% | 254 | -6.3% |
| | 1996 | 15 | 11 | 19 | 19 | 23 | 25 | 20 | 21 | 18 | 28 | 22 | 19 | 240 | 6.2% | 293 | 15.4% |
| **South Dakota** | 1994 | 3 | 6 | 9 | 14 | 13 | 10 | 12 | 18 | 11 | 14 | 15 | 15 | 140 | | 154 | |
| | 1995 | 7 | 8 | 8 | 6 | 6 | 15 | 16 | 23 | 15 | 16 | 10 | 10 | 140 | 0.0% | 158 | 2.6% |
| | 1996 | 8 | 4 | 11 | 7 | 10 | 20 | 15 | 22 | 11 | 18 | 11 | 5 | 142 | 1.4% | 175 | 10.8% |
| Other States that did NOT Increase Limits | | | | | | | | | | | | | | | | | |
| **Massachusetts** | 1994 | 25 | 23 | 34 | 30 | 28 | 35 | 32 | 33 | 33 | 36 | 44 | 52 | 405 | | 440 | |
| | 1995 | 27 | 35 | 27 | 34 | 30 | 33 | 41 | 37 | 35 | 46 | 41 | 32 | 418 | 3.2% | 444 | 0.9% |
| | 1996 | 21 | 24 | 29 | 25 | 31 | 32 | 44 | 30 | 45 | 48 | 37 | 26 | 392 | -6.2% | 417 | -6.1% |
| **New York** | 1994 | 95 | 91 | 93 | 105 | 119 | 126 | 164 | 132 | 137 | 162 | 158 | 155 | 1537 | | 1658 | |
| | 1995 | 116 | 84 | 107 | 111 | 144 | 125 | 158 | 167 | 151 | 155 | 121 | 128 | 1567 | 2.0% | 1674 | 1.0% |
| | 1996 | 84 | 96 | 89 | 95 | 123 | 143 | 125 | 147 | 123 | 133 | 128 | 135 | 1421 | -9.3% | 1562 | -6.7% |
| **Ohio** | 1994 | 74 | 66 | 94 | 95 | 98 | 110 | 117 | 111 | 108 | 124 | 96 | 114 | 1207 | | 1371 | |
| | 1995 | 80 | 72 | 96 | 91 | 101 | 122 | 115 | 141 | 102 | 116 | 83 | 100 | 1219 | 1.0% | 1366 | -0.4% |
| | 1996 | 73 | 76 | 93 | 106 | 94 | 147 | 106 | 109 | 124 | 119 | 103 | 97 | 1247 | 2.3% | 1393 | 2.0% |
| **Pennsylvania** | 1994 | 67 | 88 | 82 | 93 | 132 | 112 | 131 | 140 | 94 | 137 | 105 | 139 | 1320 | | 1441 | |
| | 1995 | 106 | 97 | 91 | 101 | 114 | 127 | 116 | 144 | 119 | 105 | 119 | 98 | 1337 | 1.3% | 1480 | 2.7% |
| | 1996 | 79 | 89 | 105 | 121 | 104 | 124 | 96 | 127 | 118 | 113 | 147 | 130 | 1353 | 1.2% | 1470 | -0.7% |
| Other States that DID Increase Limits | | | | | | | | | | | | | | | | | |
| **Arizona** | 1994 | 51 | 74 | 70 | 58 | 62 | 73 | 65 | 60 | 66 | 73 | 68 | 75 | 795 | | 903 | |
| | 1995 | 59 | 55 | 76 | 65 | 74 | 89 | 68 | 93 | 72 | 100 | 83 | 83 | 917 | 15.3% | 1031 | 14.2% |
| | 1996 | 61 | 58 | 77 | 75 | 64 | 70 | 74 | 80 | 59 | 77 | 87 | 75 | 857 | -6.5% | 993 | -3.7% |
| **California** | 1994 | 283 | 236 | 291 | 317 | 309 | 305 | 310 | 382 | 346 | 355 | 317 | 336 | 3787 | | 4226 | |
| | 1995 | 254 | 222 | 281 | 259 | 264 | 317 | 313 | 368 | 348 | 347 | 354 | 342 | 3669 | -3.1% | 4192 | -0.8% |
| | 1996 | 314 | 269 | 304 | 266 | 309 | 303 | 292 | 322 | 293 | 311 | 303 | 290 | 3576 | -2.5% | 3972 | -5.2% |
| **Montana** | 1994 | 10 | 4 | 8 | 16 | 17 | 25 | 21 | 23 | 20 | 12 | 16 | 10 | 182 | | 202 | |
| | 1995 | 10 | 13 | 8 | 11 | 14 | 17 | 24 | 29 | 14 | 17 | 13 | 16 | 186 | 2.2% | 215 | 6.4% |
| | 1996 | 13 | 9 | 10 | 14 | 8 | 19 | 24 | 23 | 22 | 11 | 14 | 12 | 179 | -3.8% | 198 | -7.9% |
| **Nevada** | 1994 | 26 | 15 | 26 | 20 | 15 | 12 | 28 | 34 | 33 | 19 | 20 | 24 | 272 | | 294 | |
| | 1995 | 20 | 28 | 18 | 17 | 26 | 26 | 29 | 23 | 19 | 25 | 17 | 29 | 277 | 1.8% | 313 | 6.5% |
| | 1996 | 25 | 23 | 24 | 36 | 23 | 26 | 23 | 28 | 31 | 28 | 26 | 22 | 315 | 13.7% | 348 | 11.2% |
| **Texas** | 1994 | 219 | 175 | 233 | 261 | 237 | 209 | 261 | 246 | 246 | 225 | 217 | 223 | 2752 | | 3186 | |
| | 1995 | 197 | 205 | 223 | 220 | 211 | 230 | 275 | 245 | 217 | 254 | 243 | 279 | 2799 | 1.7% | 3181 | -0.2% |
| | 1996 | 244 | 214 | 267 | 260 | 280 | 276 | 272 | 290 | 234 | 311 | 287 | 303 | 3238 | 15.7% | 3738 | 17.5% |