

CTR/TTI (Misc) MS 7461

**THE SAFETY IMPACT OF THE 65 MPH SPEED LIMIT IN TEXAS:  
A THIRTY SIX MONTH EVALUATION**

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**This report was prepared in cooperation with the  
State Department of Highways and Public Transportation  
and the National Highway Traffic Safety Administration**

**September 1990**

## **DISCLAIMER**

The conclusions and opinions expressed in this document are those of the authors, and do not necessarily represent those of the State of Texas, the State Department of Highways and Public Transportation or any political subdivision of the State or Federal government.

## **ACKNOWLEDGEMENT**

The authors wish to express their appreciation to James Taylor of the State Department of Highways and Public Transportation for his diligent efforts in creating the accident data sets used in the analyses reported in this study and Robbie Pateder of the Texas Transportation Institute for his assistance in analyzing this data and creating the graphical presentations.

**THE IMPACT OF THE 65 MPH SPEED LIMIT IN TEXAS:  
A THIRTY SIX MONTH EVALUATION  
SUMMARY OF FINDINGS - SEPTEMBER 1990**

O This report updates a twenty four month evaluation of the effects of raising the speed limit on rural interstates from 55 to 65 mph. In Texas, the speed limit was changed May 7, 1987.

O The current study compares speed and accident data from the thirty six months after the speed limit on rural interstates was raised (5/87-4/90) to that of the equivalent thirty six month period before the change (5/84-4/87). Comparisons were made for: (1) the rural interstates currently zone 65 mph; (2) the entire, state-maintained, road system; (3) those sections of interstate zoned 55 mph but are contiguous to 65 mph sections; and (4) those sections of state and US highways that intersect with rural interstates zoned 65 mph.

O Rural Interstates (65 mph). Speeds continued to increase on rural interstates. The mean speed, 85th percentile speed, and the percentage of motorists exceeding 65 mph in first quarter of 1990 were 67.3 mph, 74.8 mph, and 58.0 percent, respectively. This is in contrast to 61.40 mph, 67.9 mph, and 24.4 percent in the quarter prior to the limit change. **Serious Accidents** also increased significantly, from an average of 208 per month prior to the change to 259 per month after. The serious accident rate also increased from 23.8 to 27.4 serious accidents per 100 million vehicle miles traveled. This represents an increase of 15.1 percent. An examination of the profile of these accidents indicate that more of the increase is attributable to **passenger vehicles** rather than heavy trucks, **single vehicle** rather multi-vehicle accidents, crashes in non-construction areas, and to accidents occurring in less populated areas rather than near urban centers. There was no significant change in accidents attributable to driving at unsafe speeds or driving while intoxicated.

O Statewide System. Speeds did not significantly change on State and US highways, but there was a slight increase in speeds on urban interstates from the period before the speed limit changed when compared to the period after. **Serious Accidents** on the system statewide increased slightly from an average of 6705 per month to 6730 per month. This increase was not statistically significant.

O Intersecting and Contiguous Roadways. Speeds increased significantly on contiguous interstates zoned 55 mph. However, these increases do not approach, in magnitude, those observed on 65 mph interstates. Mean speeds, for example, increased from 59.4 mph to 61.2 mph from May, 1987 to September, 1988. On intersecting roadways there was little consistent change in speed parameters. **Serious accidents** on these roadways did not change significantly between the two comparison periods.

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**THE IMPACT OF THE 65 MPH  
SPEED LIMIT IN TEXAS  
A THIRTY-SIX MONTH EVALUATION  
SEPTEMBER 1990**

**INTRODUCTION**

This is the fourth in a series of evaluations commissioned by the State Department of Highways and Public Transportation (SDHPT) to assess the impact of raising the speed limit on rural interstate highways on speeds and accidents. The first report entitled "The Safety Impact of The 65 MPH Speed Limit" was published in September of 1988. That report provided data that indicated that the percentage of motorist exceeding 65 mph on rural interstates increased from 24.4 to 44.37 percent after the speed limit was raised. In addition, serious accidents (injury and fatal accidents combined) increased 20.5 percent from an average of 210 per month to 253. This increase occurred during a year when serious accidents statewide decreased by 2.7 percent. However, the report concluded that there was insufficient data to determine if the observed increases were "the beginnings of a significant increasing trend or a transitory fluctuation."(1)

The most recent report presented the results of a Time Series analysis based on twenty four months of post limit change accident experience. Using serious accidents on rural interstate highways as a dependent measure, a model was produced that accounted for approximately 55 percent of the variability in the data. According to the model, the monthly average of serious accidents was increasing by approximately .68 each year prior to the speed limit being raised. In the twenty four months after the change, the monthly average of serious accidents increased 23.4 each year. The trend observed after the speed limit change approached statistical significance ( $p < .055$ ).

A Time Series analysis of serious accidents occurring on the entire state maintained road system produced a model that suggested that the trend in monthly serious accidents was actually stable both prior to and after the law change, with no significant change in the monthly average of serious accidents from one year to the next.(2)

This report updates the twenty four month evaluation using thirty-six months of post change data (5/87 - 4/90). The analyses performed compare data from this thirty-six month period to data from an equivalent period prior to the speed limit change (5/84 - 4/87). Also provided are data and analyses intended to further define the effects of the speed limit change. Historical data is presented for informational purposes.

**OBJECTIVE**

The objective of this evaluation was to determine the safety



impact of the new 65 mph speed limit on rural interstates and on non 65 mph highways in Texas. This evaluation involved the use of two sets of data, speed and accidents. The components of each data set are described in the following section.

## METHOD

### SPEED

There were three groups of roadways pertinent to this evaluation:

1. The 65 mph interstate roadways - that portion of rural interstate on which the speed limit was raised.
2. The contiguous roadways - those sections of interstate highway that are still zoned for 55 mph but are adjacent to those 65 mph. They are mainly located in urban areas.
3. The intersecting roadways - those segments of state and U.S. highways that intersect with rural interstates zoned for 65 mph.

Speed data, taken from the statewide speed monitoring system operated and maintained by the SDHPT, were used to examine the changes in traffic speeds on different classes of roadways. Although the results of speed surveys conducted on rural interstates were no longer formally reported after the speed limit was raised, speed samples continued to be collected. Data from these surveys were obtained and used to make pre and post speed limit change comparisons. These data were supplemented by surveys conducted by the Texas Transportation Institute (TTI) on a sample of roadways from the intersecting and contiguous groups, and to provide information on speeds by vehicle type (commercial truck or other).

Although speed data is collected by the SDHPT on a monthly basis, the data is aggregated and reported quarterly. This aggregation serves to increase the sample size and makes the data more consistent. After the initial pre-change survey of April 1987, the TTI speed surveys were conducted on at least a semiannual basis.

Comparisons of speed data taken from the 65 mph highways for the thirty-six month equivalent periods before and after the speed limit change were made using t-tests. The t-test is an analysis procedure used to determine statistical differences between two sample means. The t-tests were performed on mean and 85th percentile speeds, as well as percentage of motorist exceeding 65 mph. Statistical tests performed in this study used a probability value of 5 percent to determine significance. This value indicates that the difference observed could occur by chance in less than five samples out of one hundred.

Data from the intersecting and contiguous roadways were compared using t-tests, tests of proportion, and F tests. These tests were conducted on sample data collected before the law change and 36 months later in April, 1990. Other data has been collected but not used in the analysis because there were an insufficient number of pre-change surveys to determine trends.

Since the TTI data was available by vehicle type, analyses were performed to assess the effect of the law change on trucks and other vehicles.

## **ACCIDENTS**

Accident data for roadways maintained by the state are recorded by control and section numbers. These numbers represent a convenient method of recording, but are not meant to be equivalent in terms of length, volume, geometry, or any other factor. Consequently, the intersecting roadway group is comprised of road segments of varying characteristics. However, the control and sections in this group, as well as those used in the other two groups, were the same for all periods for which accident data was collected. Thus, all comparisons are made between groups that are equivalent from one period to the next.

The control and section segments for the 65 mph rural interstate group and the contiguous group represent the entire population of such segments. The segments for the intersecting roadways group are a sample of the total number of intersecting roadways.

Accident data for the three groups and for the entire system statewide were provided by SDHPT for the period January 1982 to April 1990. Since the speed limit was changed May 9, 1987, this data represented 64 months of pre-data and 36 months of post change data. These data are presented to provide a historical perspective of the monthly accident experience of each of the roadway groups. However, statistical analyses were performed using only the 36 months of pre and post data taken from equivalent time periods. These analyses focused on those accidents in which injuries or fatalities were reported. Property damage accidents were analyzed but not emphasized because of suspected unreliability in reporting. This unreliability results both from lack of reporting on property damage accidents by citizens and from a policy change that no longer requires self reported accidents to be included in the computerized accident file.

Statewide accident data were used for comparison purposes in some of the analyses. This data was comprised of those accidents occurring on the state maintained highway system, including the rural interstate sections zoned for 65 mph. The statewide comparison was used to account for trends that might be taken for effects of the increased speed limit. For example, if accidents involving driving while intoxicated increased, they would show up both in the statewide accident statistics and the rural interstate

statistics. Thus an increase would be observed in both groups. The effects of the speed limit should show up as an increase in accidents on rural interstates zoned for 65 mph, while the statewide accident figures stay the same, decrease, or increase by a smaller percentage than would be observed on the rural interstate segments.

## RESULTS

### SPEED

65 mph Interstates - Speed surveys conducted quarterly by the SDHPT include a sample of rural interstates. These data are collected from roadways zoned 55 mph and are used to generate a report of speed law compliance for the Department of Transportation. Since the speed limit on rural interstates was raised to 65 mph, these roads are no longer included as part of the formal certification sample. Although the data are not reported, they are still available in raw form. Summary statistics for the speed data collected on rural interstates from 1982 until 1990 are presented in Table 1.

Table 1. Results of Speed Surveys on Rural Interstates  
(SDHPT Surveys)

YEAR	SAMPLE	CALENDAR QUARTER	MEAN SPEED	85%-tile	% > 55	% > 60	% > 65
1990	176569	1	67.30	74.84	92.91	80.47	58.01
1989	218636	4	66.55	74.39	91.98	78.51	54.10
1989	316678	3	67.09	73.93	93.74	80.10	53.58
1989	208515	2	67.42	75.57	94.21	82.31	57.85
1989	195639	1	64.65	72.49	87.64	71.15	43.69
1988	166399	4	66.43	74.29	91.67	77.18	52.56
1988	215180	3	65.41	72.96	89.19	73.62	48.46
1988	206771	2	67.06	74.61	93.79	81.38	56.05
1988	257037	1	64.70	72.55	89.33	72.57	43.79
1987	142758	4	63.57	71.31	84.65	65.31	37.67
1987	103668	3	66.66	73.54	95.34	81.20	54.00
1987	19516	2	65.28	72.50	93.19	75.38	44.37
1987	26458	1	61.40	67.90	83.40	54.10	24.40
1986	35770	4	61.60	68.10	85.60	55.80	25.10
1986	47293	3	61.60	68.70	84.60	59.50	29.50
1986	27454	2	60.30	66.40	82.00	47.60	18.70
1986	37512	1	60.60	67.00	81.10	49.00	20.80
1985	27845	4	59.40	67.40	75.20	44.90	21.30
1985	32379	3	63.20	70.50	77.20	63.80	33.90
1985	32926	2	60.10	66.80	81.30	46.10	19.60
1985	35425	1	60.50	66.80	81.50	49.90	20.30
1984	31777	4	62.30	69.60	83.60	60.40	31.10
1984	48469	3	60.20	67.00	83.30	46.50	20.40
1984	22837	2	60.50	66.50	83.10	48.10	18.90

The results of the t-tests performed indicated that the post change parameters of mean and 85th percentile speeds, and the percentage of motorists exceeding 65 mph were significantly greater than those taken from the equivalent period immediately before the change.

Speed surveys conducted by TTI on selected highways mirror the changes observed in the data collected by the SDHPT. These samples were taken during April 1987, and six months later in September 1987. The speed limit on rural interstates was raised from 55 to 65 mph in May, 1987. Since September 1988, surveys have been conducted semiannually. The results of the speed surveys are summarized for all vehicles by road type in Table 2.

Table 2. TTI Speed Surveys

Road Type	Period	N	Mean Speed	85thtile	SD	%>55	%>60	%>65	%>70
Rural Interstate (Zoned 65mph)	Apr90	1810	62.9	68.2	5.3	94.5	71.9	39.8	7.5
	Sep89	2074	62.9	68.3	5.4	93.8	74.2	36.0	8.9
	Apr89	2406	63.0	68.8	5.8	93.9	72.0	35.5	10.2
	Sep88	2662	64.1	69.6	5.5	95.9	78.6	48.3	11.9
	Jun88	2290	64.1	69.3	5.2	95.4	80.6	47.3	9.7
	Apr88	2596	63.2	68.4	5.2	94.6	77.0	39.5	7.5
	Dec87	3255	63.8	68.8	5.0	97.1	80.3	43.8	8.3
	Sep87	3099	63.3	68.3	5.0	95.4	76.2	42.9	5.8
Apr87	3028	60.5	66.0	5.5	84.2	58.7	22.1	3.0	
Urban Interstate (Zoned 65mph)	Apr90	303	59.2	64.5	5.3	82.2	46.5	14.2	2.3
	Sep89	324	58.4	63.6	5.2	80.3	36.7	12.4	1.2
	Apr89	401	58.4	63.9	5.5	79.6	37.9	11.0	1.8
	Sep88	345	60.5	65.9	5.4	88.7	52.2	24.1	4.1
	Jun88	315	59.9	65.6	5.7	83.5	52.4	18.1	5.1
	Apr88	444	60.9	66.7	5.8	84.5	57.9	25.7	5.0
	Dec87	598	60.2	64.9	4.7	89.5	53.9	16.1	2.2
	Sep87	472	59.9	64.7	4.8	85.8	50.0	15.7	1.7
Apr87	515	59.2	64.8	5.6	78.0	48.4	16.3	1.8	
State & U.S. (Zoned 55mph)	Apr90	1367	58.4	63.4	5.0	79.3	39.4	11.8	1.2
	Sep89	1366	59.0	64.4	5.4	81.1	43.0	14.6	2.1
	Apr89	1415	58.2	63.7	5.5	75.5	37.6	10.8	1.8
	Sep88	1514	58.9	64.4	5.5	75.5	37.6	13.7	1.8
	Jun88	1193	59.1	64.7	5.6	80.1	45.8	13.4	2.4
	Apr88	1473	58.9	64.3	5.4	79.4	42.6	14.2	2.0
	Dec87	1920	59.7	65.0	5.3	84.7	48.2	16.6	2.9
	Sep87	1712	58.8	64.2	5.4	79.6	43.3	12.2	1.9
Apr87	1711	58.6	64.2	5.6	74.8	42.4	12.8	2.2	

Analyses comparing the last sample (Apr90) of these data with the pre-change survey (Apr87) indicated that mean speeds and the

percentage of motorist exceeding 65 mph had increased significantly on rural interstates. Fewer increases were observed on State and U.S. highways, where only the percentage of motorist exceeding 55 mph had increased significantly. Urban interstates also showed a slight increase in the mean speed and percentage of motorist exceeding 55 mph and a decrease in the percentage of motorist exceeding 65 mph.

**Intersecting and Contiguous Roads** - The data collected by TTI can also be grouped to summarize the speed distributions on those sections of interstate highways that are still zoned 55 mph but are adjacent to those zoned 65 mph and to summarize speed distributions on a sample of state and U.S. highways that intersect rural interstates zoned 65 mph. These distributions are presented as Table 3.

**Table 3. Speeds on Intersecting and Contiguous Roadways (TTISurvey)**

Road Type	Period	N	Mean Speed	85%tile	SD	%>55	%>60	%>65	%>70
Interstate Contiguous to 65 mph Zone	Apr90	669	61.0	66.2	5.2	89.5	59.2	26.5	3.9
	Sep89	832	61.0	66.5	5.4	87.7	59.4	25.1	5.4
	Apr89	995	61.2	66.8	5.7	89.7	57.4	24.5	6.4
	Sep88	1018	62.8	68.3	5.5	94.6	70.0	36.0	8.0
	Jun88	1408	61.7	67.0	5.3	90.0	65.4	28.8	5.3
	Apr88	1253	61.7	66.7	5.0	91.0	68.2	28.3	3.8
	Dec87	1620	62.0	66.9	4.9	94.1	68.0	29.3	4.6
	Sep87	1742	61.5	66.3	4.8	92.7	62.2	26.1	3.0
	Apr87	1239	59.4	65.4	6.0	77.1	50.8	18.6	2.9
State & U.S. Intersecting with 65mph Zone	Apr90	334	58.0	64.0	5.6	76.7	36.5	12.3	2.1
	Sep89	318	58.5	64.1	5.6	79.9	41.5	12.0	1.9
	Apr89	365	57.9	63.9	6.0	71.5	36.7	12.9	3.6
	Sep88	365	58.5	64.7	6.2	76.6	44.6	12.5	2.0
	Jun88	372	58.6	64.9	6.3	74.7	42.2	14.5	4.0
	Apr88	376	57.9	62.9	5.0	76.6	33.0	8.5	1.6
	Dec87	430	59.7	65.2	5.5	85.6	48.8	17.0	4.6
	Sep87	399	57.5	63.3	5.8	71.0	35.3	10.3	1.0
	Apr87	405	57.7	63.1	5.4	71.4	33.8	9.4	1.5

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These data suggest that speeds on those sections of interstate still zoned for 55 mph, but adjacent to sections zoned 65 mph increased slightly after the speed limit change and continue to remain high. The results of a t-test on the means and tests of proportion on the percentile values for the period before and the latest period after the change are significant in all cases except the percentage exceeding 70 mph. The variances decreased significantly in the post limit period.

Speeds on those roadways intersecting with interstates zoned 65 mph show increases in all parameters after the speed limit was raised. The results of the statistical tests on these periods indicate none were significant differences.

Speeds on 65 mph Interstates by Vehicle Types - The speeds for large trucks and other vehicles are presented in Table 4. Comparisons of the pre period data with the latest post period data by vehicle type indicate significant increases in all speed parameters for vehicles in the "other" category with the exception of speed variance which decreased significantly. Large trucks also showed a significant decrease in variance. However, significant increases were observed in mean speed, as well as in the percentage of large trucks exceeding 65 mph. It should be noted that the speed limit for trucks on rural interstates is 60 mph.

Table 4. Speeds for Large Trucks and Other Vehicles on Rural Interstates (TTI Survey)

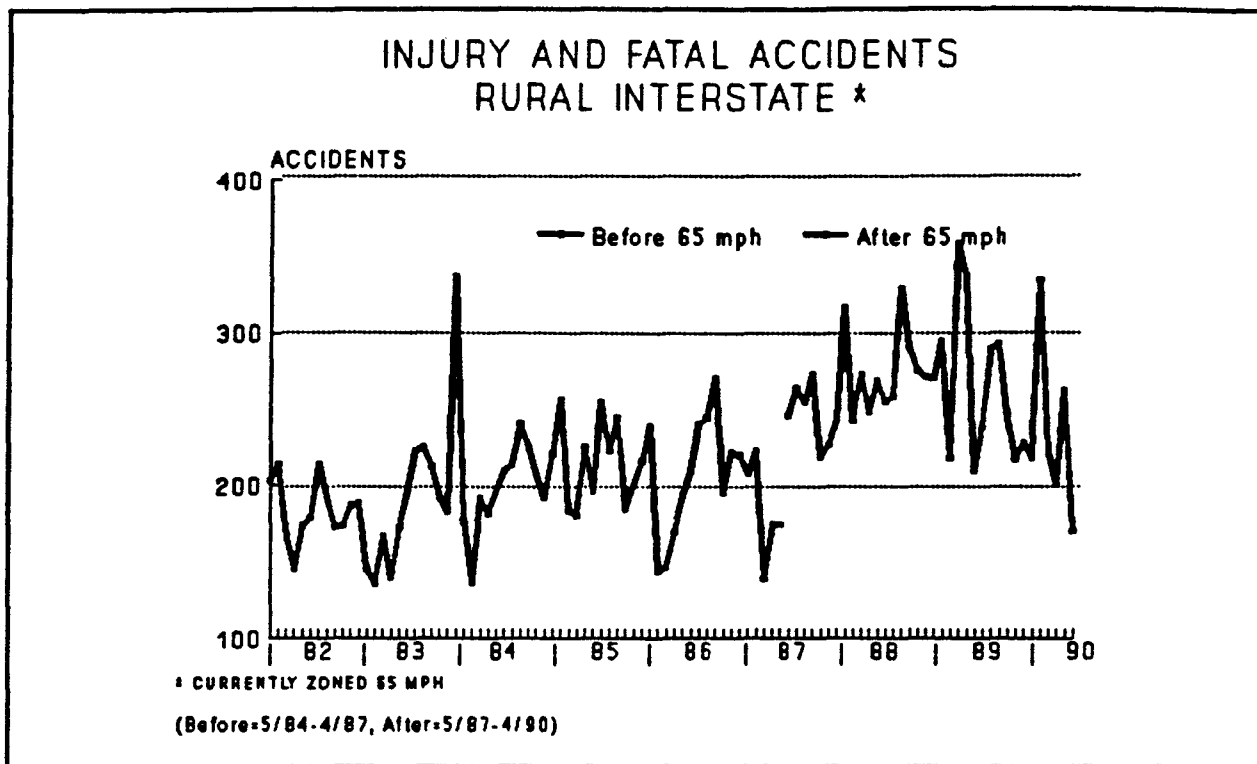
Vehicle Type	Period	N	Mean Speed	85%tile	SD	%>55	%>60	%>65	%>70
Other Vehicles	Apr90	1299	63.4	68.8	5.4	94.5	73.9	44.0	9.0
	Sep89	1456	63.3	68.9	5.6	93.5	76.1	40.4	10.4
	Apr89	1621	63.6	69.8	6.2	93.6	75.0	41.7	13.5
	Sep88	1824	65.4	70.8	5.4	97.0	84.5	59.6	14.5
	Jun88	1581	65.3	70.2	4.9	97.4	87.7	58.2	12.7
	Apr88	1746	63.9	69.2	5.3	95.1	80.7	47.1	9.7
	Dec87	2332	64.7	69.7	5.0	97.9	85.6	51.5	10.4
	Sep87	2083	64.3	69.2	4.9	96.8	81.9	52.1	7.8
	Apr87	1996	60.6	66.3	5.7	83.5	59.8	23.2	3.8
	Large Trucks	Apr90	511	61.8	66.6	4.8	92.2	66.9	29.2
Sep89		618	61.9	66.7	4.8	94.7	69.6	25.6	5.3
Apr89		785	61.6	66.3	4.7	94.4	65.9	22.7	3.4
Sep88		838	61.5	66.2	4.7	93.4	65.8	23.8	4.1
Jun88		709	61.3	66.0	4.7	91.0	64.7	23.0	2.8
Apr88		850	61.6	66.2	4.6	93.5	69.5	23.8	2.9
Dec87		985	61.7	66.2	4.5	95.0	67.2	25.3	3.3
Sep87		1016	61.2	65.7	4.5	92.3	64.6	23.8	1.8
Apr87	1032	60.2	65.3	5.1	85.7	56.7	20.1	1.7	

## ACCIDENTS

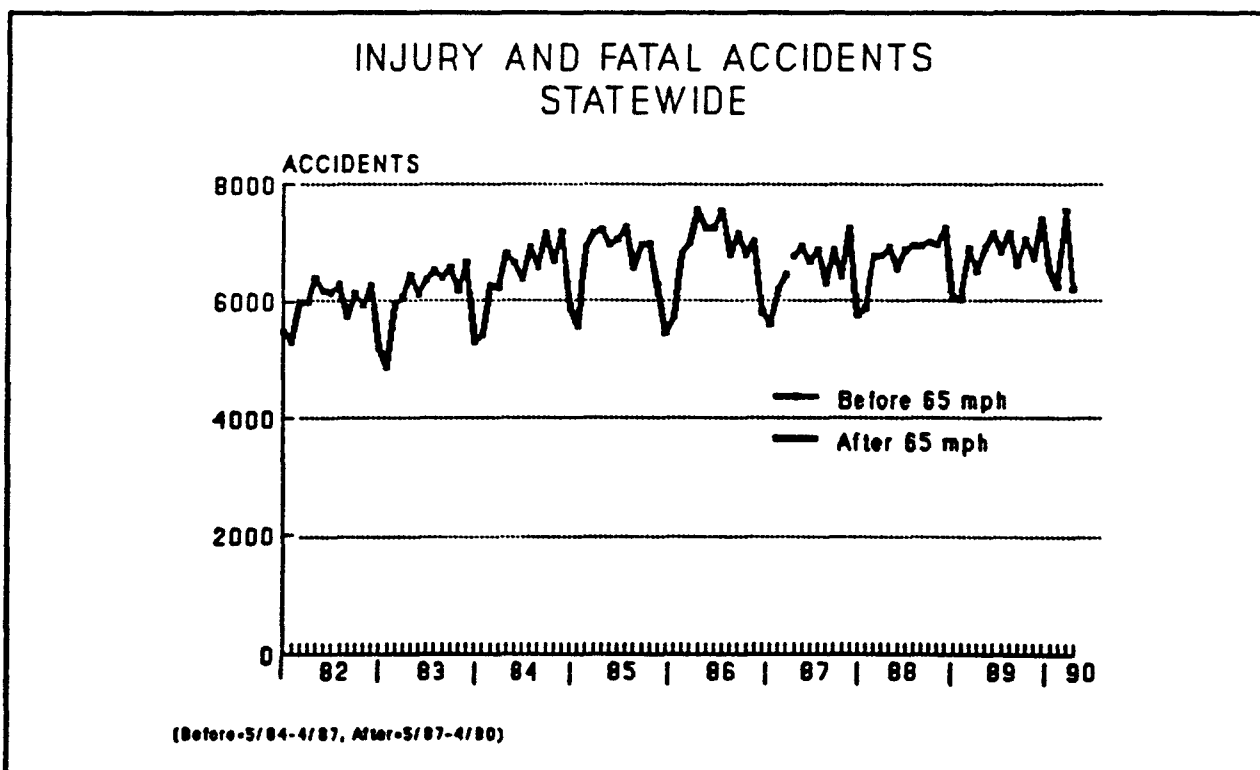
65 mph Interstates - Monthly accident frequencies for rural interstate highways were developed using combined fatal and injury accident frequencies (hereafter referred to as serious accidents). These frequencies were taken from those control and section segments that are currently zoned for 65 mph. A plot of these frequencies from January of 1982 to April 1989 is presented as Figure 1. As can be seen in this figure, a large increase in serious accidents occurred in December of 1983. This anomaly is thought to be weather related.

The data in Figure 1 suggest a gradually increasing trend in accidents over time. The slope of this general trend appears to increase in April or May of 1987. The speed limit was officially changed on these roadways on May 9, 1987.

Monthly accident frequencies, using serious accidents combined, for all roadways in the state are presented in Figure 2. As with rural interstates, there appears to be an increasing trend with time. However, unlike the interstate data, this trend seems to plateau in 1987.



**Figure 1.**



**Figure 2.**



In an attempt to smooth the variability in the data, averages were developed using monthly accident frequencies. These averages were computed from data for the months of May through December of one year combined with January through April of the following year. This is a convenient twelve month period of experience with the 65 mph speed limit for which accident data are available. Plots of these averages for each year for rural interstates are presented in Figure 3.

The statewide averages, which were derived in a like manner, are presented in Figure 4. Again the increasing trend in accidents on rural interstates appears to accelerate in 1987 (up 22% the first year and 34% the second) then drop slightly in the last year while the statewide trend begins to level out.

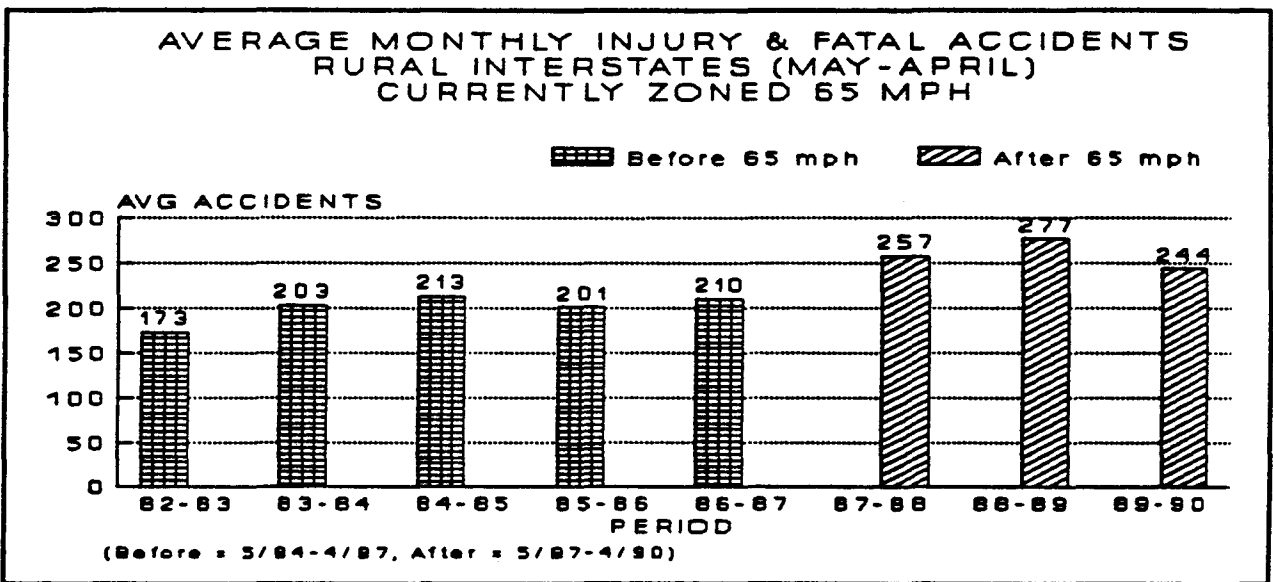


Figure 3.

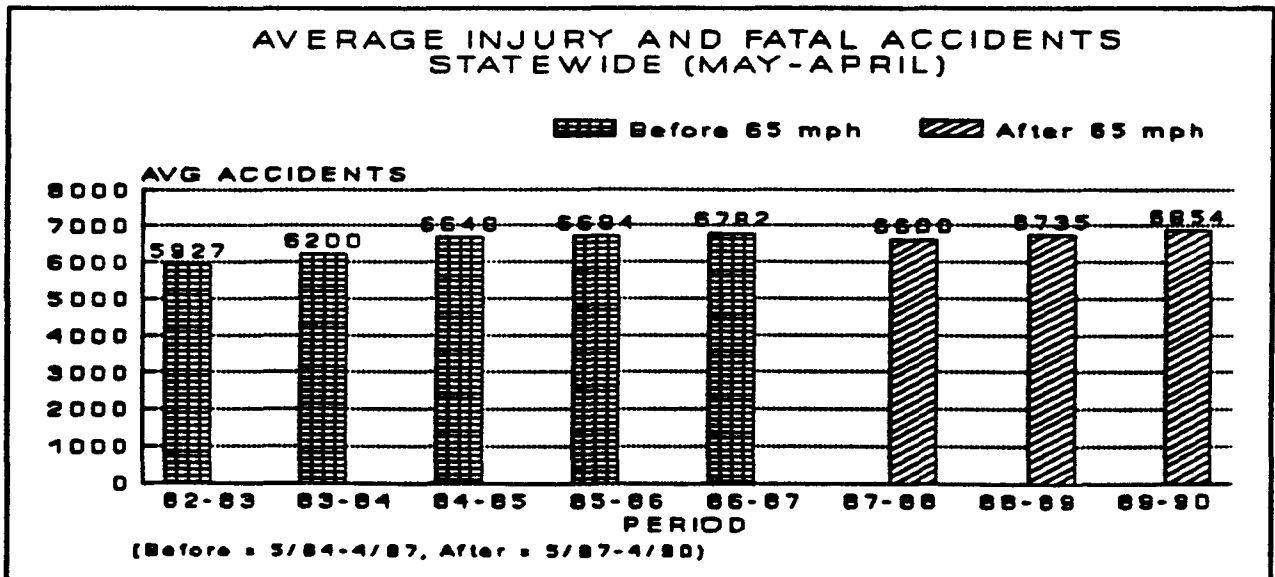


Figure 4.

The results of analyses conducted using equivalent 36 month time periods before and after the speed limit change indicate significant increases in injury, property damage (PDO), total, and serious accidents for rural interstate roads (see Figures 5). However, data for the roadway system statewide indicate no change in fatal and injury accidents, and a significant decrease in property damage accidents (see Figure 6). The decrease in statewide property damage accidents is thought to be due to a change in the processing of self reported accidents. These accidents are no longer being entered onto the computerized accident file.

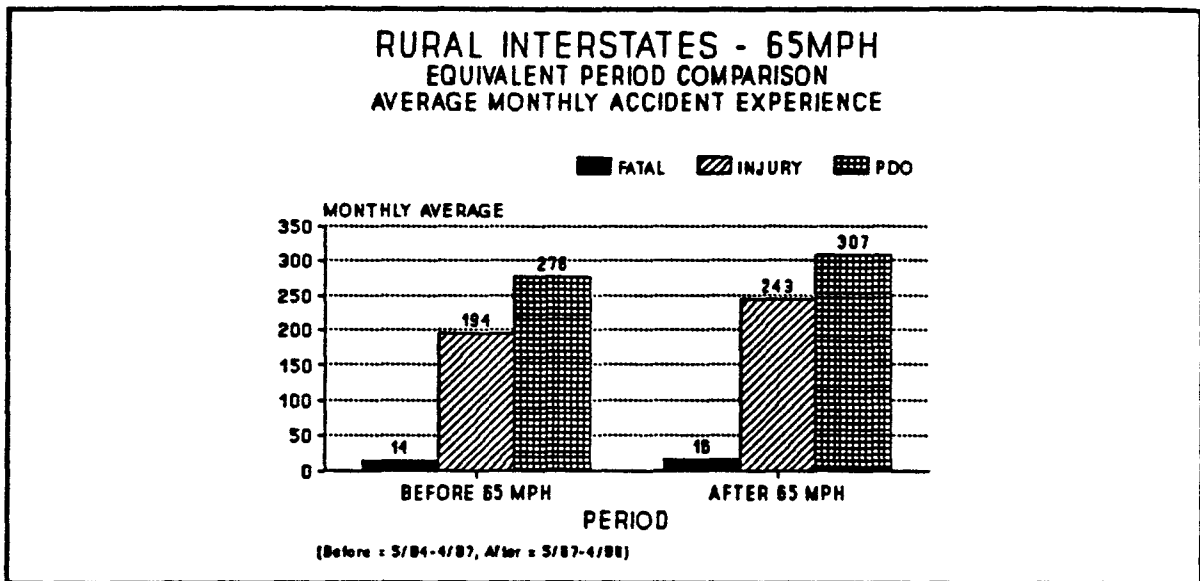
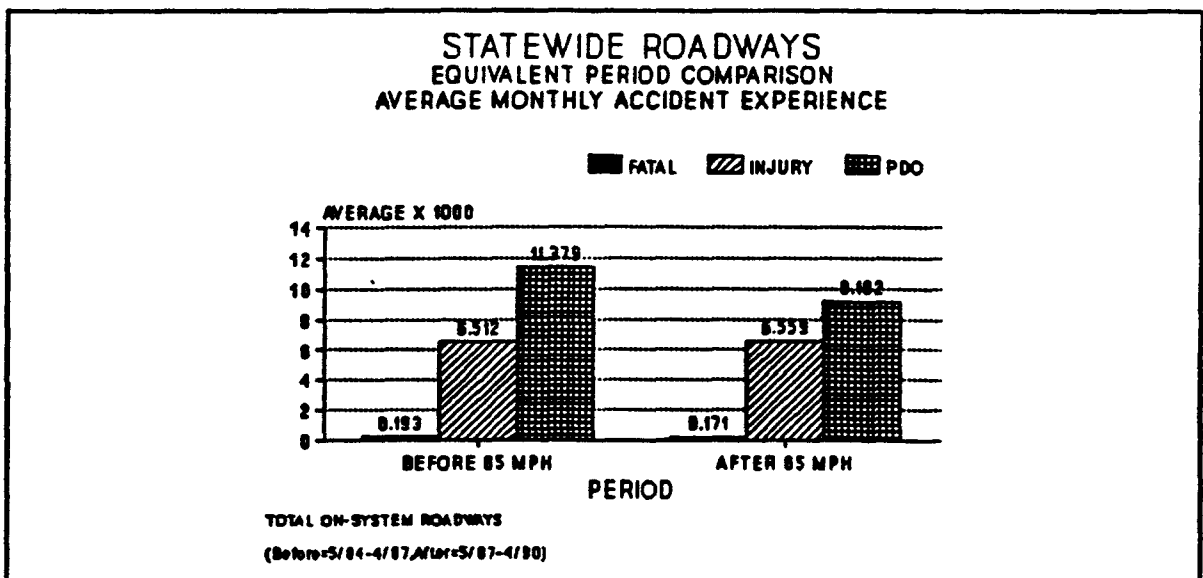


Figure 5.



These analyses support the hypothesis that accidents on rural interstates have increased after the change in the speed law. However, these data do not account for increases in exposure, measured in terms of 100 million vehicle miles (100 MVM) traveled, which occurred each year. Further analyses were conducted on the data after it had been converted to average monthly accident rates per 100 MVM. It should be noted that this conversion process involved estimating the volume for a road segment based on the average of the volumes recorded across the entire segment. Further, the entire length of the control and section segment was used regardless of how much of the segment was zoned for 65 mph and traffic volumes on access or frontage roads were included in the total volume for interstates. These frontage road volumes were not included in interstate volume estimates after 1987, consequently total interstate volume was projected from data obtained prior to that year. The rate of increase used was approximately 4.4 percent. Lastly, the period used to calculate miles traveled to coincide with the monthly accident period was thirty days. Consequently, the rates presented are estimates and should not be used for comparison with annually computed rates for either the state or the nation.

The computed rates for each category of accidents for equivalent periods are presented in Figure 7. The t-tests performed indicated significant increases in the injury accident and property damage rates after the limit was raised. There were no significant changes in the fatal accident rate.

The serious accident rate also significantly increased. This rate changed from 23.1 to 29.1 per 100 MVM after the speed limit was raised. This represents a 25.9 percent increase. There was also a significant increase in the total accident rate.

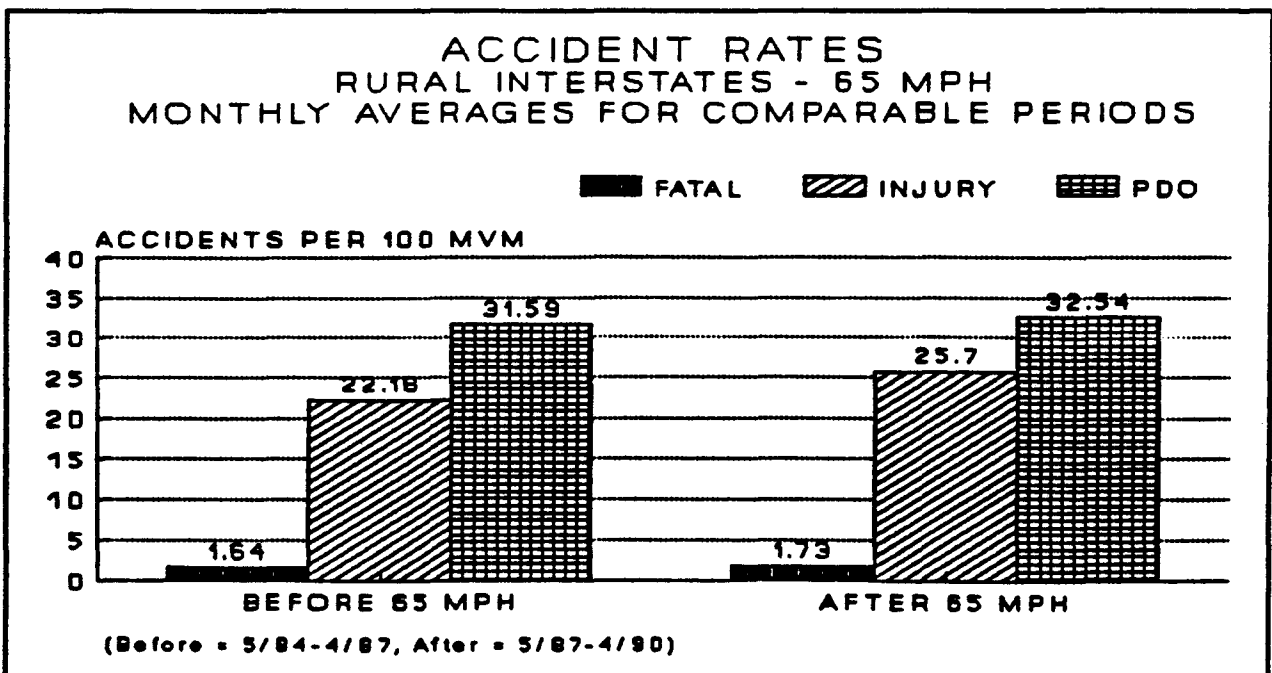


Figure 7.

The fatal and injury accident rates for the four major rural roadway classifications are presented in Figures 8 and 9, respectively. Rural interstate facilities, for which the speed limit was increased, were the only road experiencing an increase in crash rates. All other roadways experience decreases in crash rates. In a few cases, these decreases were statistically significant. However, it is also apparent from these Figures that the interstate system has the lowest overall crash experience of the four types of rural roadways compared.

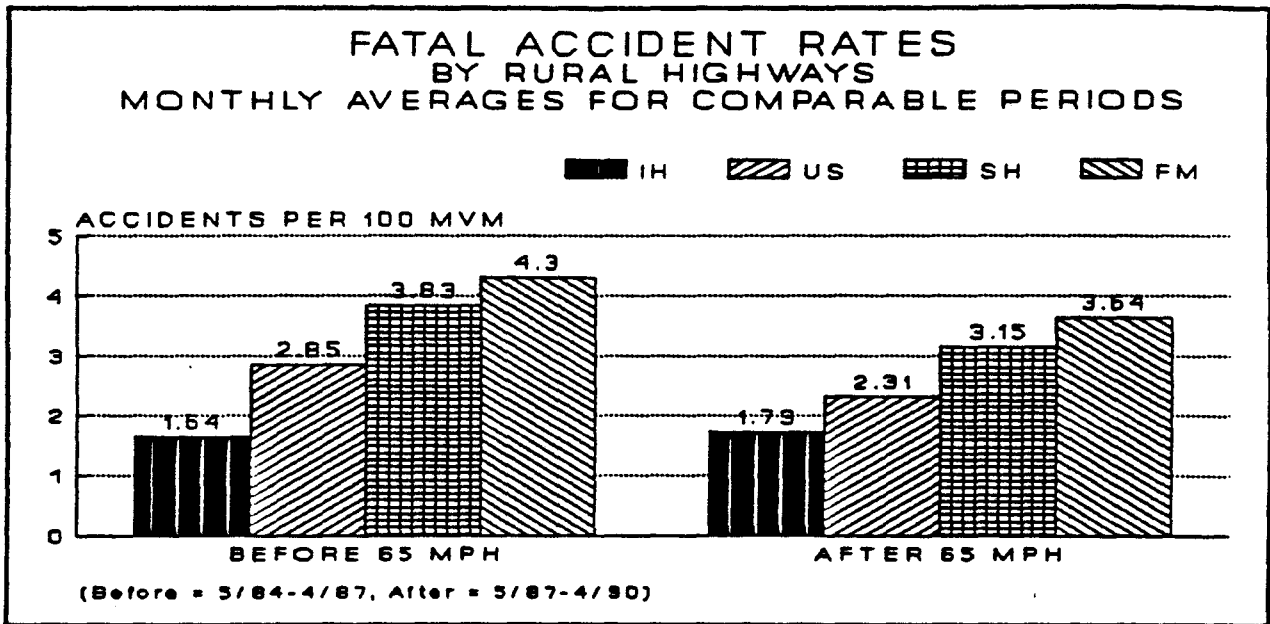


Figure 8.

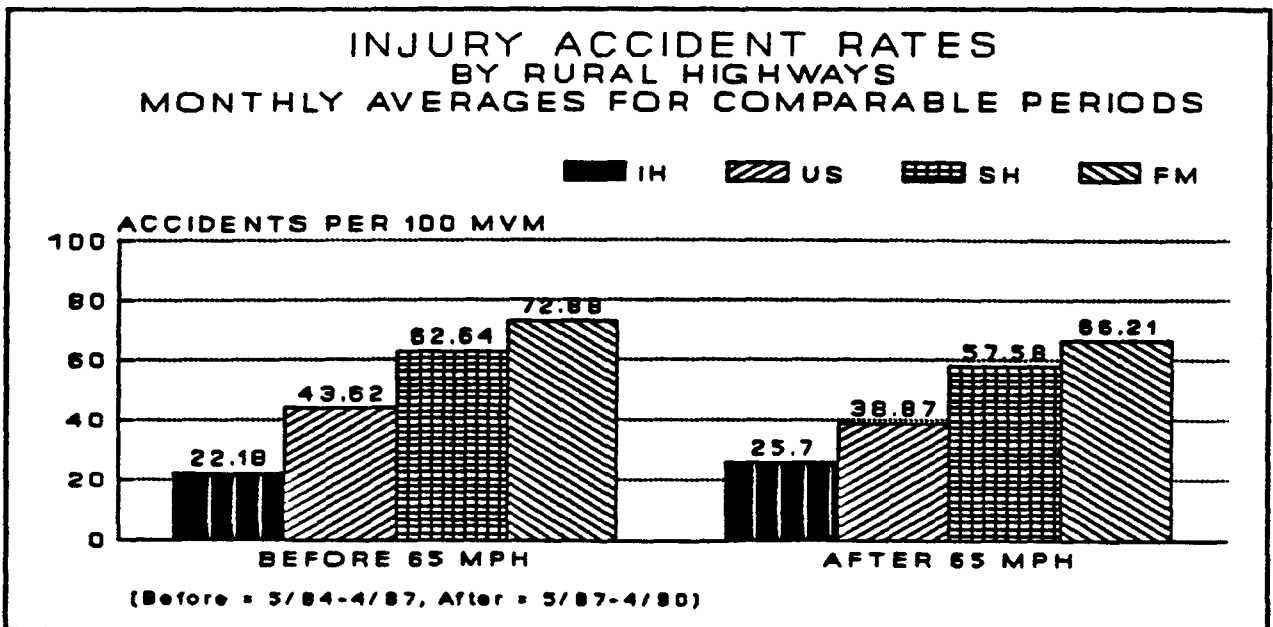


Figure 9.

**Contiguous and Intersecting Roadways** - Monthly serious accidents for the contiguous and intersecting segments are presented in Figures 10 and 11. As can be seen in these graphs, there appears to be a plateau or a slight decreasing trend in monthly accident experience for both groups of roadways. This is the case for the contiguous segments despite the increase in the percentage of motorists exceeding 65 mph.

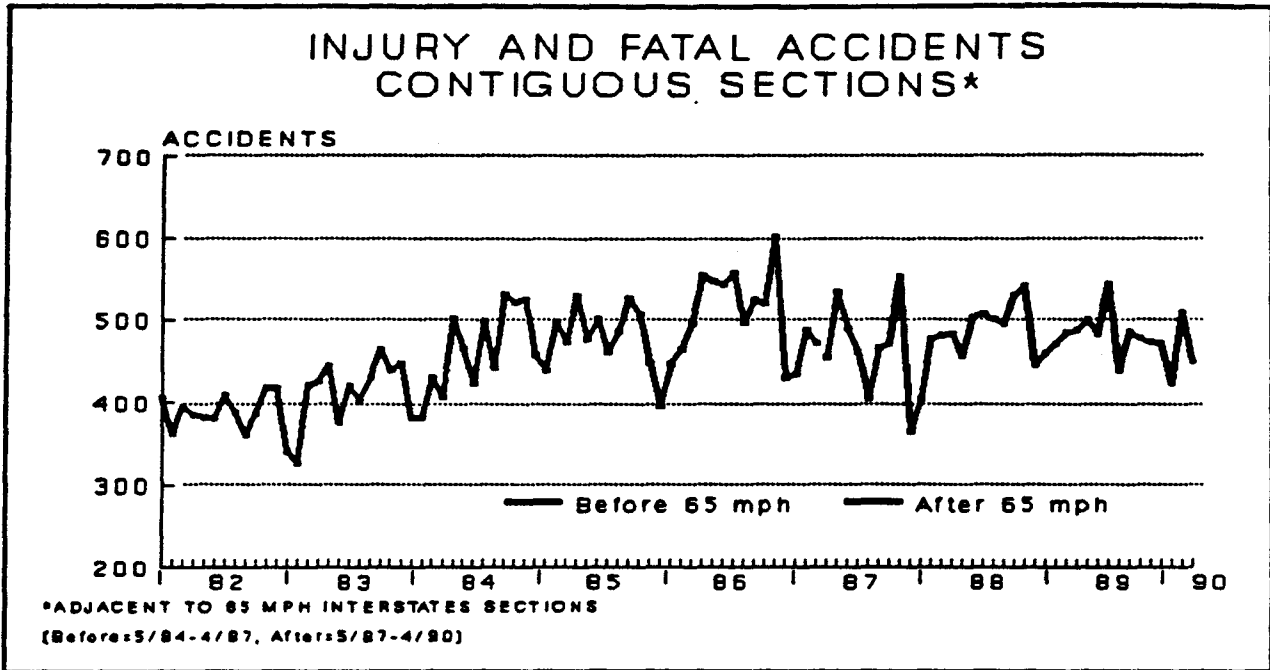


Figure 10.

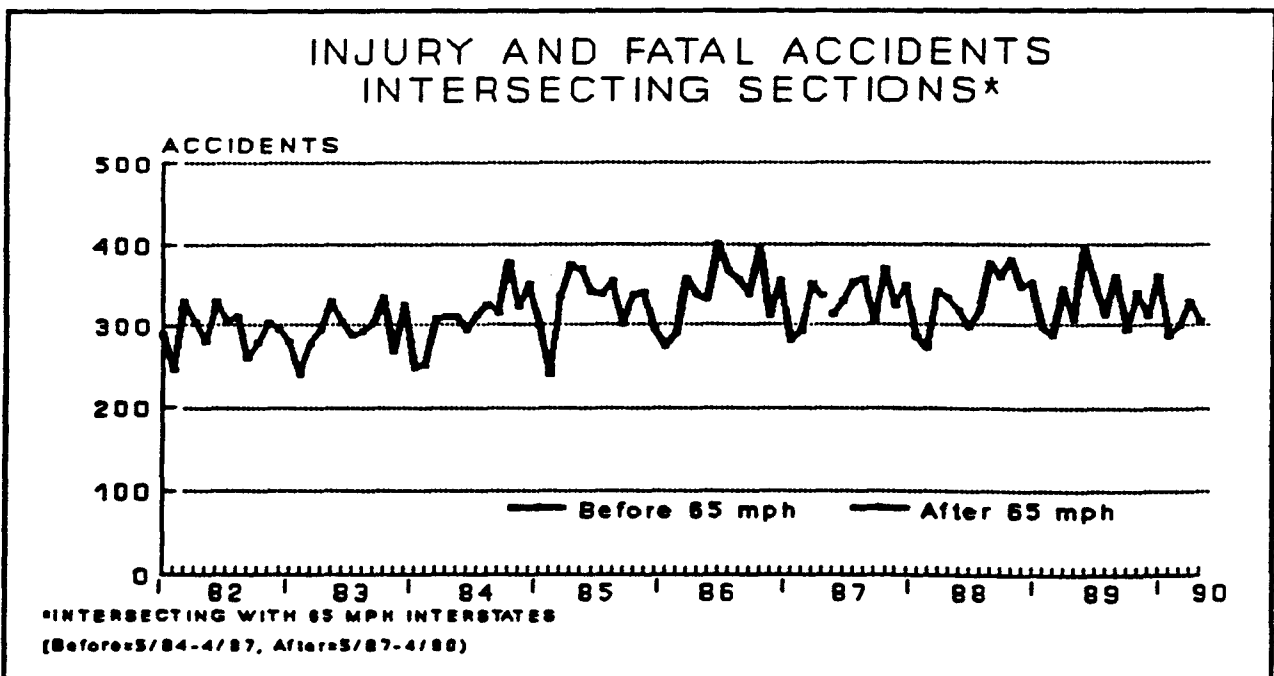


Figure 11.

The t-tests performed on accident data from these roadways for the 36 month, equivalent time periods indicate no significant changes in fatal or injury accidents. Property damage accidents decreased significantly. Again, this is probably an artifact of the change in processing of self reported accidents (see Figures 12 and 13).

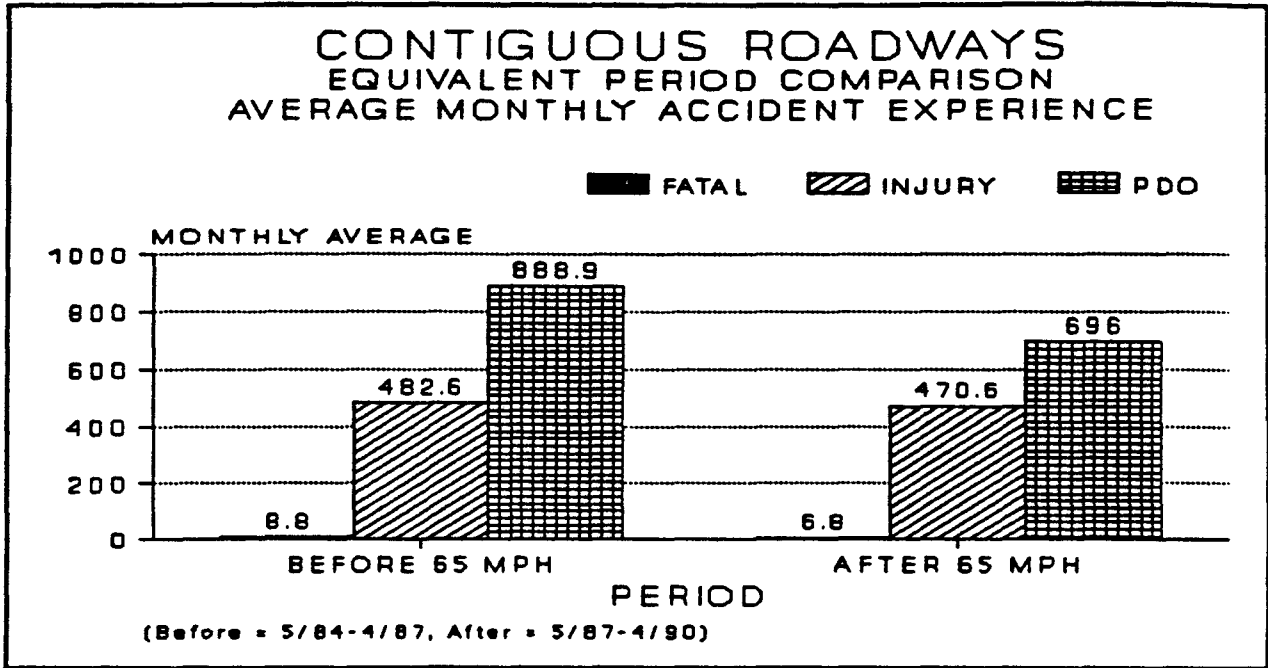


Figure 12.

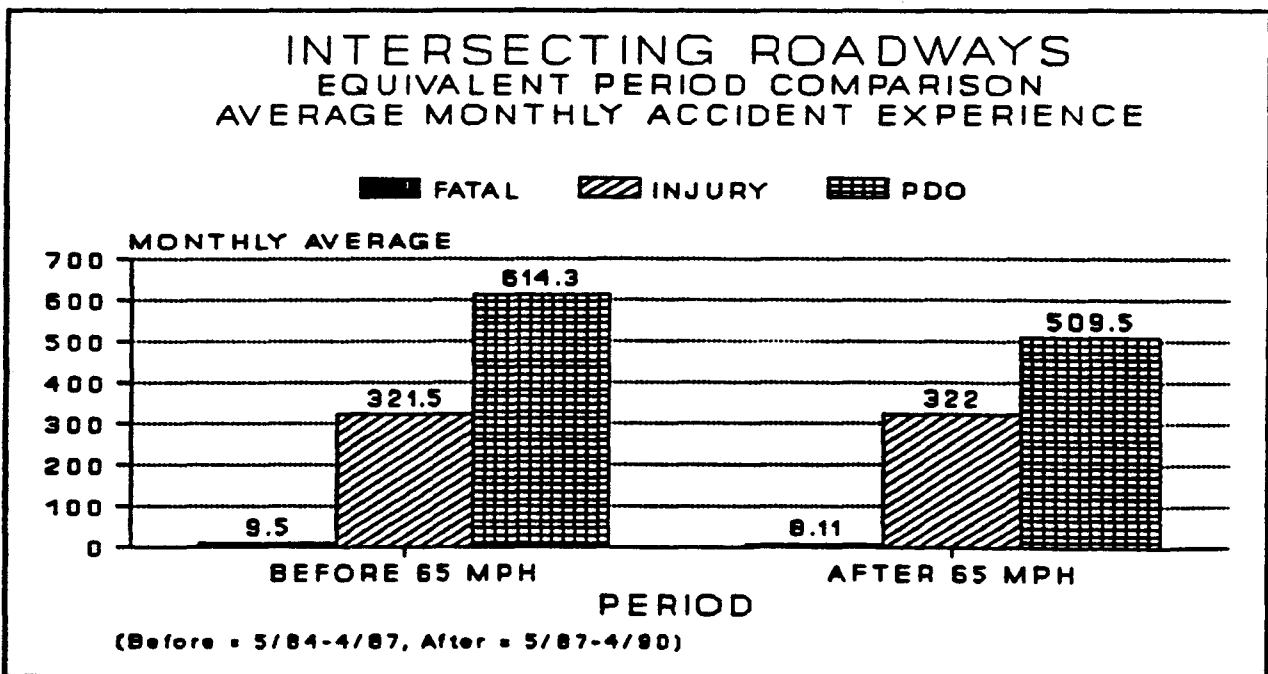


Figure 13.

## DETAILED ANALYSIS OF 65 MPH INTERSTATE ACCIDENTS

Serious accident data taken from rural interstates currently zoned 65 mph was further subdivided by location of accident, the types of vehicles involved, number of vehicles involved, and by whether or not the accident occurred in a construction area. These subsets of data were created for the 36 month, equivalent time periods immediately before and after the speed limit was raised. These data were compared using analysis of variance (ANOVA). In addition, t-tests were used to compare the speed and DWI related accident experience of the year prior to changing the speed limit to the most recent post change year.

**Location** - An accident location data set was created by dividing those segments of rural interstate into two groups; those that were near urban areas (populations greater than 10,000) and those that were rural. It was considered possible that the increase in serious accidents might be occurring in conjunction with volume increases that would be observed in these near urban sections.

The analysis performed using this data set indicated a significant increase in serious accidents in the post 65 mph period for roadway locations. However, the rural control and section locations increased a significantly greater amount. These results are displayed in Figure 14.

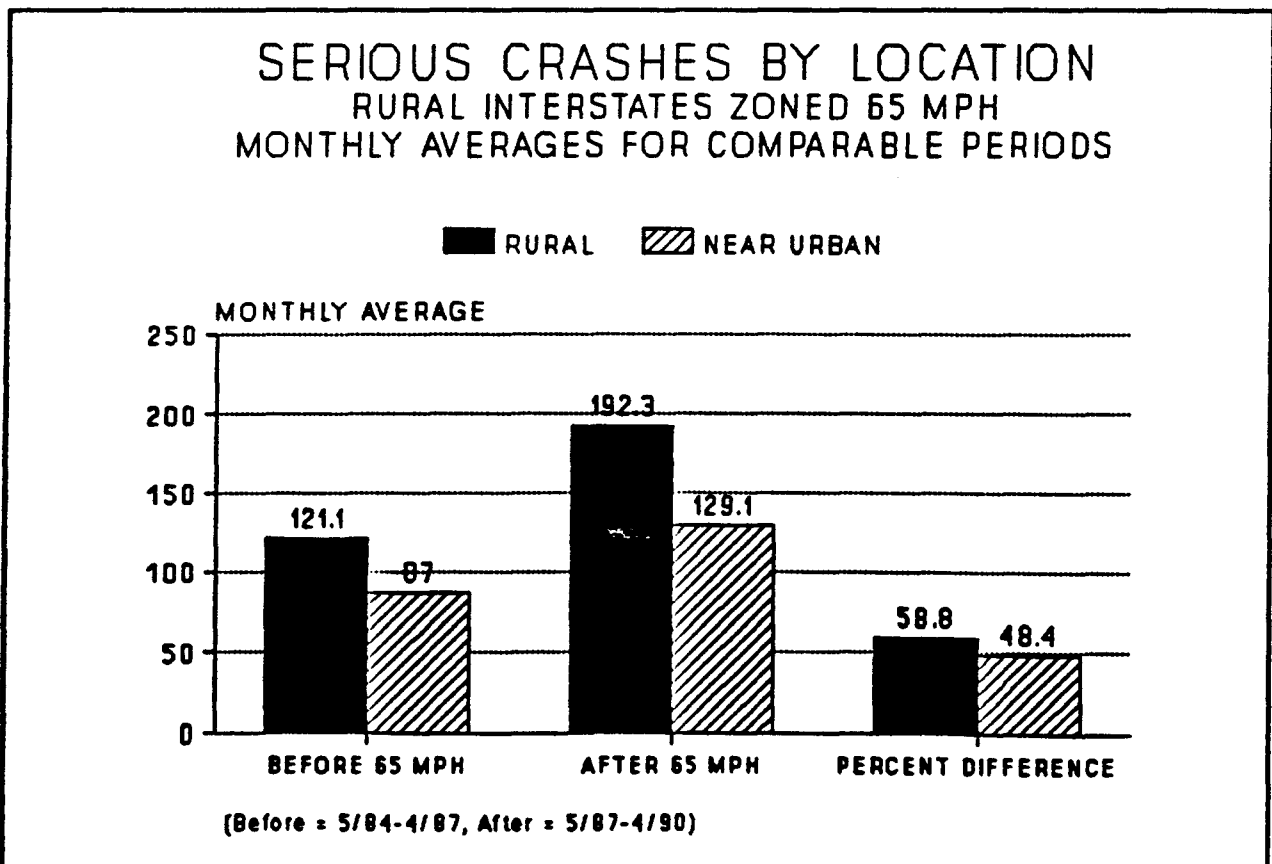
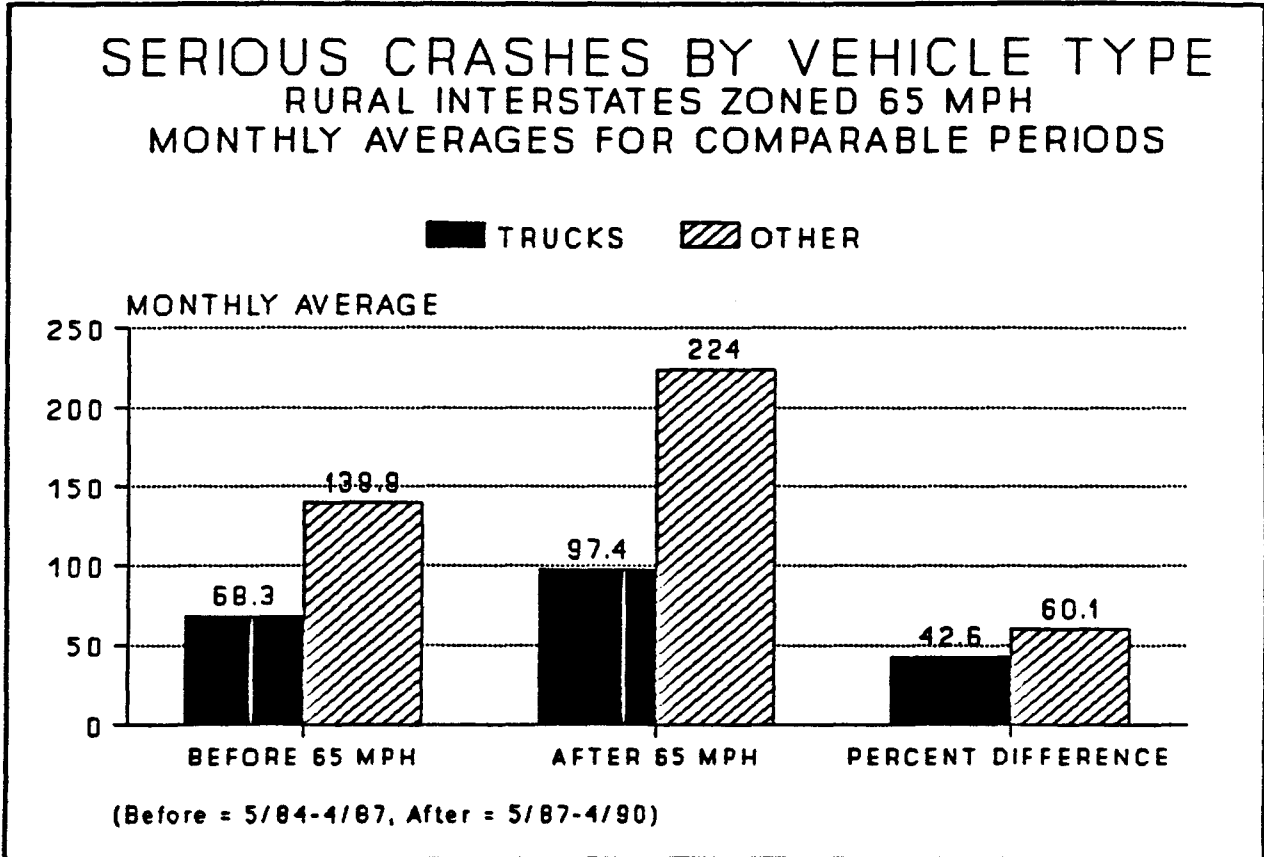


Figure 14.

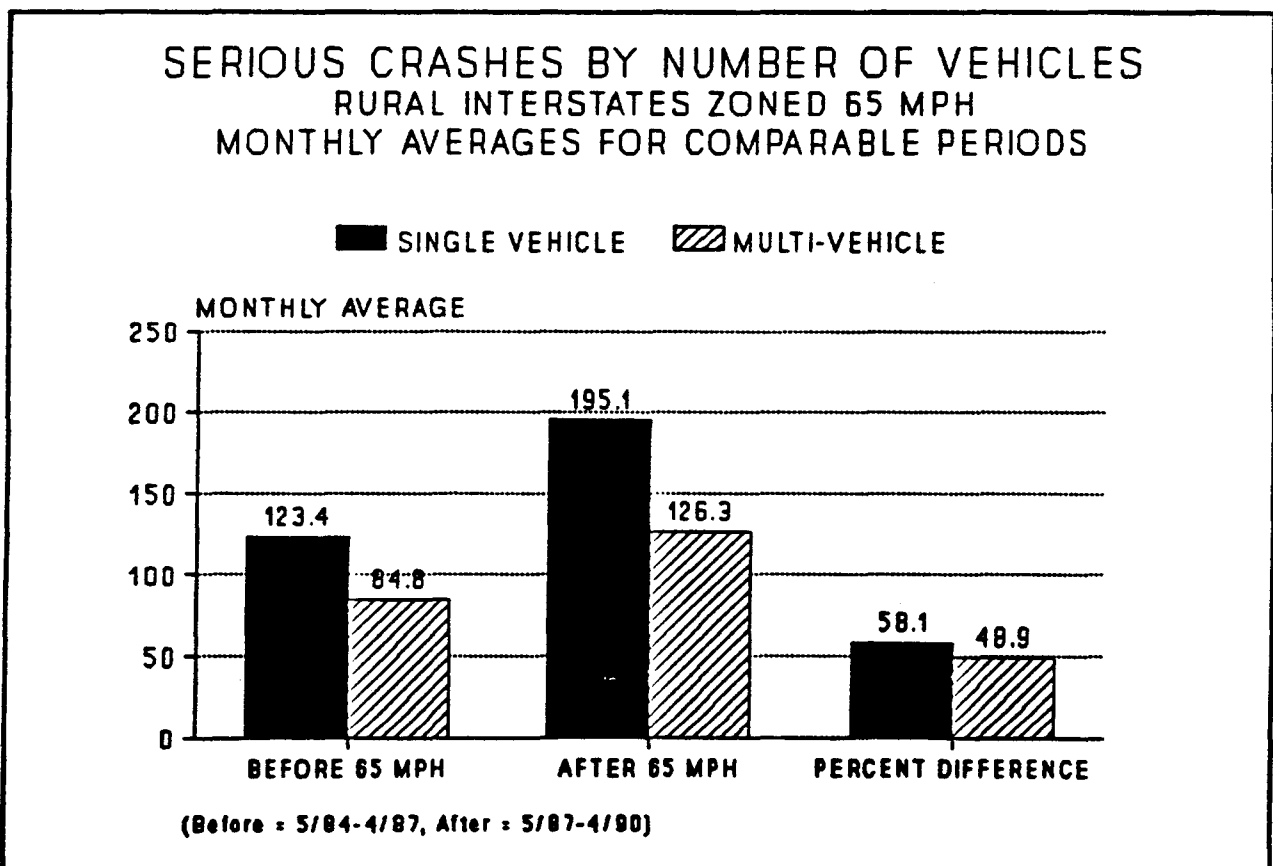
**Vehicle Type** - Serious accidents were also divided into those that involve large trucks and those that only involved other vehicles (passenger cars, pickup trucks, etc.). An analysis of these groups indicated a significant increase in both after the limit was raised but a much greater increase for vehicles other than trucks. These results are displayed in Figure 15.



**Figure 15.**

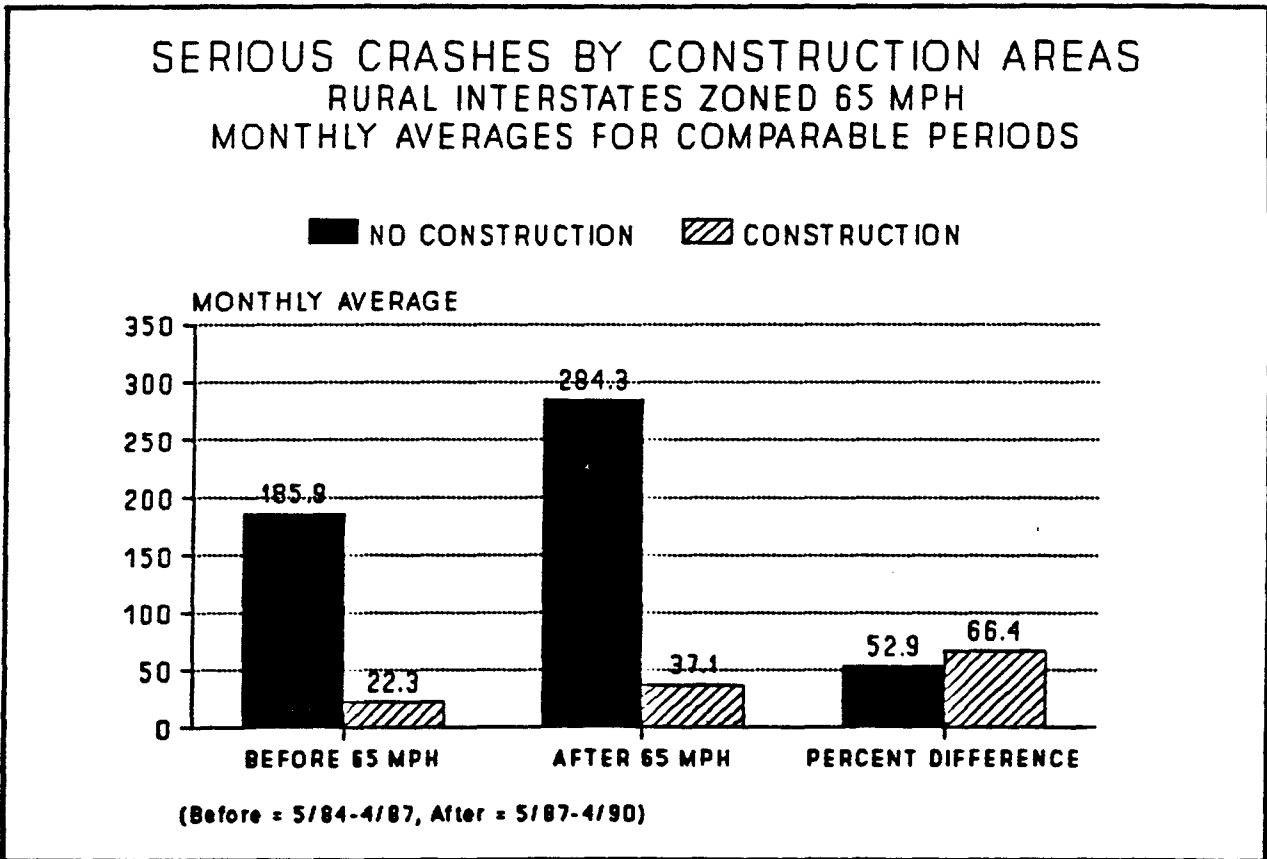


**Number of Vehicles** - The serious accident data set was divided into two groups based on the number of vehicles involved. One group included only single vehicle accidents, the other multi-vehicle accidents. Again, the results of the analysis indicated an increase in accidents for both groups after the limit was raised. However, single vehicle accidents increased significantly more than multi-vehicle accidents (see Figure 16.)



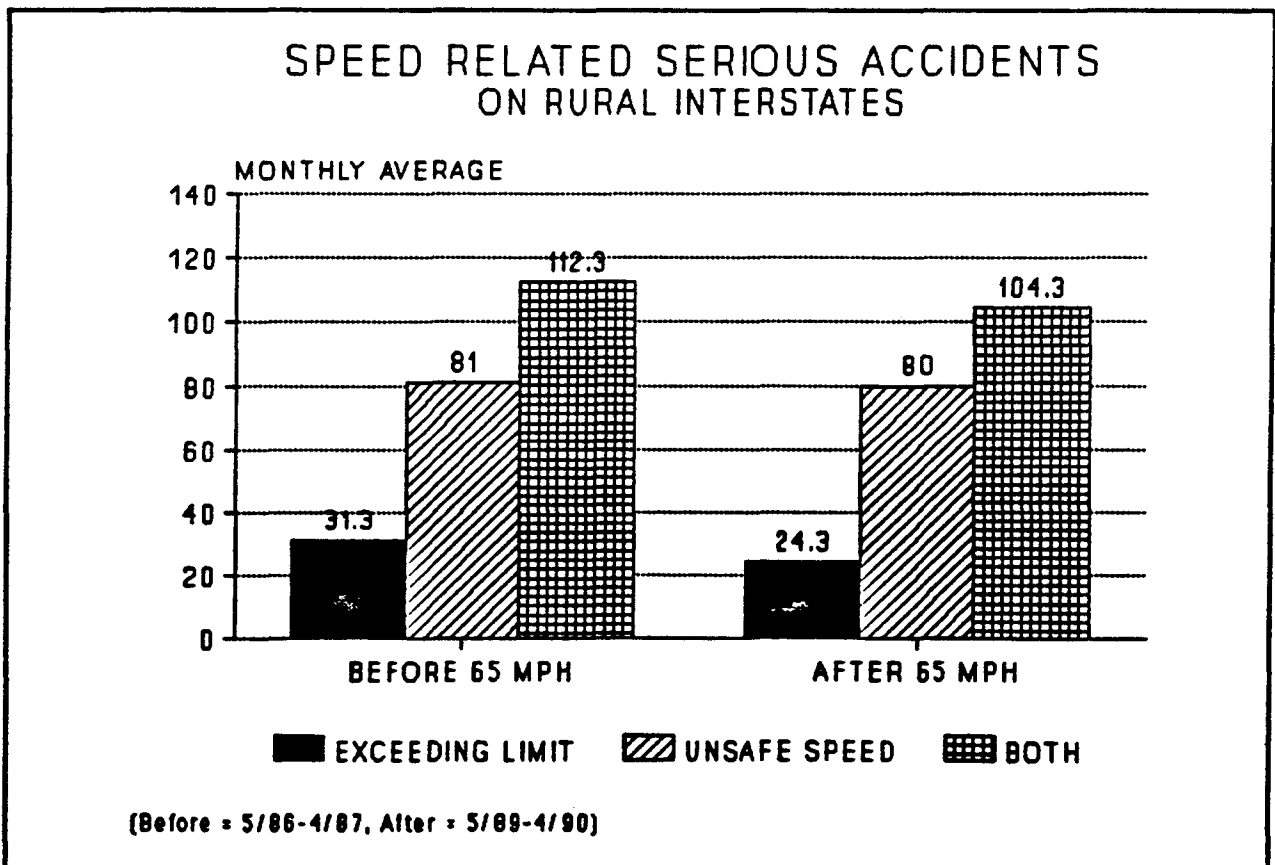
**Figure 16.**

**Construction Areas** - Due to the unprecedented increase in construction activity on rural interstates, it was hypothesized that the increase in serious accidents could be construction related. An analysis was conducted on accidents occurring in, or related to construction areas, and those not occurring in construction areas. The results of this analysis indicate increases in both types of accidents after the speed limit was raised (see Figure 17.). However, the greatest increase occurred in those accidents that were unrelated to construction areas.



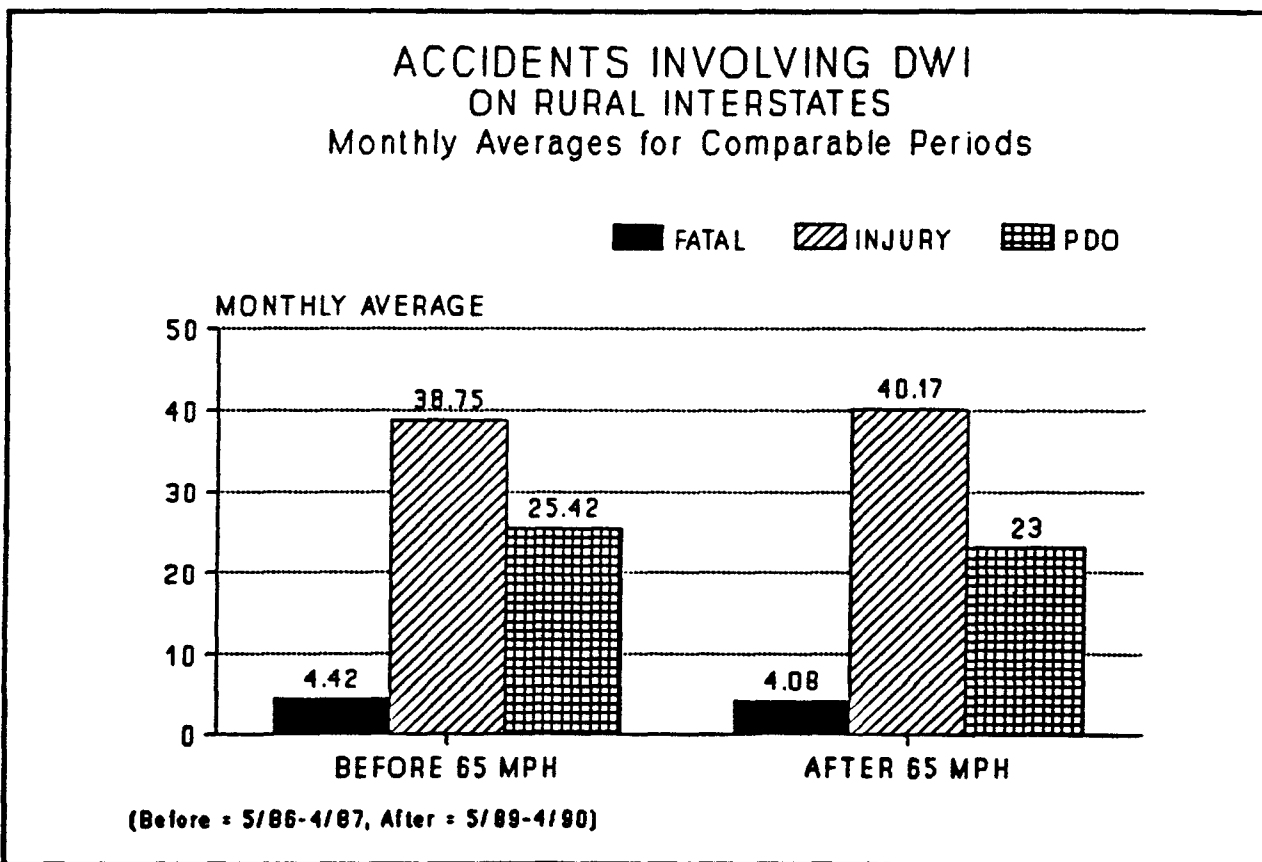
**Figure 17.**

**Speed Related Accidents** - There are two categories of speed related "contributing causes" listed on accident report form used in Texas. One is exceeding the speed limit, the other is unsafe speed. These causes are often based on the subjective judgements of officers present at the accident scene. However, there is no reason to believe that this subjective process has substantially changed since the speed limit was raised. It has been hypothesized that the increase in serious accidents observed after the limit was raised is attributable to some factor other than speed. A series of t-tests were performed using monthly average serious accident experience for one year of pre and one year of post speed limit data. The results of these analyses indicate that there was a significant decrease in the serious accidents where exceeding the limit was cited as a contributing factor. Logically, since the speed limit was raised, this number should decrease (see Figure 18.). There was no change in accident experience where unsafe speed was given as a contributing factor and no change in accident experience when combining data using both contributing factors.



**Figure 18**

**DWI Related Accidents** - Driving while intoxicated has been suggested as a possible cause of the increase in serious accidents observed after the speed limit was raised on rural interstates. A comparison of DWI related accidents for one year period before the limit was raised to the most recent years experience was made using t-tests. The results of these test indicate no significant changes in fatal, injury, or property damage accidents for which DWI was cited as a contributing factor (see Figure 19.).



**Figure 19**

## CONCLUSIONS AND RECOMMENDATIONS

### Conclusions

**Speeds** - The speed surveys conducted on rural interstates, currently zoned for 65 mph, continue to indicate an increase in all speed parameters. Likewise the increase in speeds continues for those sections of interstate contiguous to those that experienced a change in speed limit. The magnitude of the increase in speeds on these contiguous sections was less than that observed on those sections where the limit was raised. Although there were increases in speeds on the roadways intersecting with those sections of interstate currently zoned 65 mph, they were not statistically significant. There was, however a slight but significant increase in the speed variance on these roadways.

**Accidents** - In general, the accident data indicate increases in all types of accidents on rural interstates where the speed limit changed. Most increases were statistically significant for the 36 months of available data when compared with an equivalent 36 month period prior to the change in the speed limit. These increases occurred coincident with the speed limit change and at a time when accident trends statewide were decreasing. The weight of evidence suggests that accidents and accident severity have increased on the 65 mph roadways. After thirty six months experience, the number of serious accidents have increased 24.5 percent, from an average of about 208 per month to 259 per month. Correspondingly, the average monthly serious accident rate increased from 23.8 per 100 MVM in the pre-change period to 27.4 per 100 MVM in the post period. This represents an increase of approximately 15 percent. However, it should be noted that the most recent 12 month experience indicates a decrease in serious accidents when compared with the previous 12 months experience (from an average of 277 per month to 244 per month). It remains to be determined if this decrease marks the beginning of a stable or decreasing trend in serious accident experience on rural interstates.

The accident experience of the intersecting and contiguous road sections generally follow the decreasing pattern exhibited statewide.

A profile analyses of the serious accidents on the rural interstates suggest the majority of the increase observed occurred in rural areas rather than near urban areas, and were not in construction areas. They also involved single vehicles rather than multiple vehicles and passenger cars and pickups rather than large trucks. As would have been expected there has been a decrease in accidents attributed to speeding over the limit, but there was no change in those attributed to unsafe speed. There has been no change in the occurrence of accidents attributable to driving while intoxicated.

## **Recommendations**

It is recommended that accident and speed data continue to be monitored on the rural interstate sections zoned for 65 mph. This data should be re-analyzed when 48 months of data are available. If the accident pattern observed in the current data continues to develop, then measures should be taken to effect a reversal. Such measures might include increased enforcement efforts to control speeds coupled with public information and education campaigns concerning the effects of speeding behavior. However, caution should be exercised when considering increased enforcement to insure that resources are not removed from roadways that have greater crash experiences. One method of speed enforcement that needs to be explored is the use of automated enforcement devices. Such devices have the potential for controlling speeds without dedicating large aggregates of human resources.

It is also recommended that accident and speed data continue to be monitored on the intersecting and contiguous roadways. Should increases in accidents be detected, then selective enforcement action should be considered for these locations.