The Repeal of Helmet Use Laws and Increased Motorcyclist Mortality In the United States, 1975-1978

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Abstract: Monthly mortality figures for motorcyclists for each state in the United States were obtained for the period January 1975 through December 1978. Twenty-four states revealed or weakened their helmet use laws at various dates within this period. Two of these states subsequently reintroduced a strengthened law. This paper measures the effects of these law changes on motorcyclist mortality.

The states that repealed or weakened their helmet laws were matched with one or more states from the same geographic region that either did not have helmet use laws or did not change such existing laws in this four-year period. The effect of weakening the law in each state was then estimated in three steps: 1) the mortality data from each state for the period prior to repeal were regressed on smoothed data from the matched states; 2) these equations were used to predict the numbers of motorcyclist deaths that would have been expected in each state in the period following the repeal or weakening of the law if the laws had not been changed; 3) these numbers of expected deaths were then compared with the actual numbers of deaths that occurred.

Of the 26 law changes, it was found that 23 resulted in a greater number of actual deaths in the period following the repeal or weakening of the law than were predicted to occur if the law had not been changed. It is estimated that the repeals or weakening of motorcyclist helmet use laws were typically followed by almost 40 per cent increases in the numbers of fatally injured motorcyclists. (*Am J Public Health* 70:579-585, 1980.)

Introduction

Travel by motorcycles resulted in 4,082 deaths and over 350,000 injuries in 1977[1] in the United States. The fatality rate for motorcyclists per mile of motorcycle travel was more than seven times that of automobile occupants[1-3] in the same year. Motorcycle travel is particularly hazardous for young people: people 17 years of age or younger account for only 12 per cent of total ownership, but suffer 19 per cent of the fatalities; also, fatalities suffered by 18-24 year olds exceeded their share of motorcycle ownership in the same proportion (50 per cent).[2-4]

It has been known for almost 40 years that head injuries are a major cause of death among motorcyclists who crash and that helmets are effective in preventing or reducing the severity of such injuries.[5-8] In particular, data summarized[8] from seven recently completed studies show that among riders in such crashes the head injury rates of riders without helmets are between two and three times greater than the head injury rates of helmeted riders. Among fatally injured riders the difference is even bigger—head injury rates for riders not wearing helmets were between three and nine times greater than for riders wearing helmets.[8]

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Well-designed helmets, when worn properly, can be expected to alleviate head injury severity on physical grounds alone because such helmets not only absorb a portion of the energy that in their absence would have to be absored by the skull, but also distribute the impact loads over the skull and over a longer time, and thereby result in lower peak rates of energy transfer.[9]

Before 1967, only three states had motorcycle helmet use laws. In 1967, a federal standard for State Highway Safety Programs was issued requiring states to have motorcycle helmet use laws in order to qualify for certain federal safety program and highway funds, and 37 states enacted such laws between 1967 and 1969. By 1975, all but three states had laws requiring all motorcycle riders to wear helmets.

Following the removal of financial penalty provisions against states without helmet use laws by Congress in 1976, such laws were repealed in 26 states between 1976 and 1978 to permit most or all motorcyclists to ride without helmets. Seven states repealed their laws in 1976, 14 in 1977, and five during the first five months of 1978.

In 19 of the states that repealed their laws during this period, helmet use requirements were retained for young motorcyclists, usually those 18 years of age or younger. In the remaining seven states, use requirements were removed for all motorcyclists.

Observations of helmet use by motorcyclists in states with varying helmet laws have been reported in several research studies.[10-16] The findings of these studies are summarized in Table 1. It can be seen from the Table that use of

TABLE 1—Summary of Motorcycle Rider Helmet Use Surveys

State	Date of Survey	Usage Rate (%)	Type of Use Law
Arizona[11]	Sept–Nov 1978	46	17 years and younger—helmets required
California[10, 11]	Sept 1975	61	No helmets required
	Sept–Nov 1978	46	
Colorado[12]	July–Sept 1976	100	All cyclists-helmets required
	July–Sept 1977	58	No helmets required
Florida[11]	Sept–Nov 1978	100	All cyclists—helmets required
Georgia[10]	Sept 1975	100	All cyclists—helmets required
Illinois[10, 16]	Sept 1975	25	No helmets required
	Aug 1975	37	
Kansas[14]	July–Sept 1977	47	15 years and younger—helmets required
Louisiana[11]	Sept–Nov 1978	39	17 years and younger—helmets required
Maryland[10, 11]	Sept 1975	100	All cyclists—helmets required
	Sept–Nov 1978	98	
Oklahoma[13]	June–Sept 1977	52	17 years and younger—helmets required
South Dakota[15]	July–Sept 1976	D* = 100	
		P* = 99	All cyclists—helmets required
	July–Sept 1977	D* = 57	17 years and younger—helmets required
		P* = 61	
Texas[11]	Sept–Nov 1978	63	17 years and younger—helmets required

*D = Driver, P = Passenger

helmets was virtually universal in states which had helmet use laws applicable to all motorcyclists. By contrast, in states without helmet use laws or in states where the helmet use laws apply to a limited segment of the population of motorcyclists only, the rate of use varied between 25 per cent and 61 per cent, with 48 per cent as the average. Helmet use rates were determined[11] for motorcyclists 17 years old or younger in two states in which mandatory helmet use laws were in effect for this age group; only 55 per cent of these young riders were observed to be in compliance with the law. These survey results thus show that laws requiring helmet use by a limited segment of the motorcyclist population have limited impact on overall as well as on age specific use rates.

Research during the 1970s has also shown that the adoption of helmet use laws is effective not only in leading to higher use rates, but also in reducing fatal injuries to motorcyclists and the severities of non-fatal injuries to motorcyclists. Results published by Robertson[10] showed that the "average fatal involvement rate for eight states that enacted helmet use laws declined from more than 10 per 10,000 registered motorcycles the year before the laws' enactment to about seven per 10,000 registered motorcycles, both in the years of enactment and the following years." No similar drop was found by Robertson in eight matched control states that did not enact helmet laws during comparable periods.

The National Highway Traffic Safety Administration[17] (NHTSA) reported in 1978 that "Fatalities in the 14 states that repealed their laws in 1977 increased 41 per cent compared to the 21 per cent increase for the states that retained their laws." Dramatic increases in motorcycle fatalities and injury frequencies following the repeal of helmet use laws were reported in a number of studies that examined the aftermath of repeals in individual states.[18–20]

Despite the strong evidence implicating repeal of helmet use laws as the cause of the large recent increases in fatally injured motorcyclists, the American Motorcyclist Association claimed that "after an examination of available current data on motorcycle accidents, fatalities, registration and licensure, in addition to such relevant topics as weather conditions, we find that the NHTSA [was] altogether premature in its judgment . . ." in faulting the widespread repeal of helmet use laws.[21] The Motorcycle Safety Foundation has also recently suggested that the NHTSA has selected information supporting helmet use laws and disregarded information to the contrary.[22] These claims by the American Motorcyclist Association and by the Motorcycle Safety Foundation, while not based on substantial new evidence, underscore the need for an accurate determination of the influence of the repeal of helmet use laws on motorcyclist fatalities.

The purpose of the present study was to determine—using carefully chosen statistical methods—the influence of the repeal of helmet use laws on the frequency of fatally injured motorcyclists in the United States between 1975 and 1978.

Method and Data

To assess the impact of helmet use law repeals on the frequency of all fatally injured motorcyclists, we chose to determine what this frequency was after a change, *to estimate what this frequency would have been had there been no change*, and then to compare the actual and estimated frequencies.

The data on motorcyclist fatalities were obtained from the Fatal Accident Reporting System (FARS), a comput-

erized data base maintained by NHTSA containing information on fatal motor vehicle crashes occurring in the US. The primary source for fatality data in FARS are police accident reports which are supplemented with data from medical examiners and other sources. For this paper, the number of motorcyclist fatalities each month from January 1975 to December 1978 inclusive was obtained from the FARS data file for each state.

Since some of the states retained helmet use requirements for some age groups, it would have been desirable to study the effect in these states for different age groups. This was not attempted in the present study, however, because the number of motorcyclist deaths per month in each age class would have been too small.

Month-to-month variations in the frequency of motor vehicle fatalities in general, and motorcyclist fatalities in particular, are influenced by the complex interplay of many factors. Among these factors are changes in the volume of travel, the speed of travel, the composition of vehicle and rider populations, and the highway environment, as well as changes in weather, e.g., temperature and precipitation. Superimposed on these is the combined influence of innumerable other factors, the results of which are usually attributed to statistical fluctuations.

Data are either not available or not reliable enough to control or adjust for most of these influences. For example, in studies of this type, vehicle registration counts are often used as a proxy measure for the volume of travel. However, an examination of published sources of such data for motorcycles and contacts with national organizations concerned with motorcycles (Federal Highway Administration, National Highway Traffic Safety Administration, National Safety Council, American Motorcyclist Association, Motorcycle Industry Council), as well as contacts with numerous state departments of transportation, led to the conclusion that uniform and consistent motorcycle registration data are not available for the study period. As an illustration, the Federal Highway Administration reported a 0.6 per cent increase in the number of motorcycle registrations in one state between 1976 and 1977, but the state data showed 37.2 per cent decrease over the same period; it was not possible to reconcile this and other discrepancies in data from different sources. Because credible registration data were not available, we felt that no such data could be used in this study.

To overcome these difficulties, our design was based on the fact that most factors affecting motor vehicle fatalities in general and motorcyclist fatalities in particular are likely to be similar in adjacent states or in states in the same geographic region. In other words, these factors will tend to vary similarly within geographic regions unless such regional similarity is upset by differential changes in laws governing motor vehicle traffic. Therefore, states in which helmet use laws were changed during the study period were matched with one or more states from the same general geographical region in which either there were no helmet use laws or in which the same helmet use law remained in force throughout the study period. Since motorcyclist fatalities display strong seasonal variation, the similarity of such variation was an important part of the matching criteria. Clearly, there is some arbitrariness in this procedure, and some states were hard to match. Thus, the analysis included a special study to verify that the choices did not lead to any bias.

The Appendix Tables display a list of repeal states and their comparison states, the effective dates for the repeals and law changes, and the types of laws in effect before and after the law changes, as ascertained from the applicable state statutes and from contacts with state authorities.

Analysis

The data series for each state consists of 48 monthly fatality counts. Such counts tend to be Poisson-like so the series of square roots have a more constant variance and somewhat more normal distribution than the original series. In equation (1) below, this series will be denoted by "(deaths)$^{1/2}$."

Each comparison series consisted of the square roots of the total monthly fatalities for the comparison states. These series still contained much random variation, so they were smoothed by a procedure recommended by Tukey.*[23] Thus, we obtained a comparison series for each state, denoted by f(t) where t = 1, 2 . . ., 48 since there are 48 months of data. The choice of the comparison states will be examined below.

To study the effect of repealing or changing a helmet law in a state, the equation

$$(\text{deaths})_t^{1/2} = A + B\, f(t) + \text{error} \qquad (1)$$

was fitted separately for the periods before and after the law change. For most of the states, the earlier law was "stronger" than the law after the change so, as a matter of convenience, our notation and usage identifies "before" and stronger. The fitted coefficients are denoted by A_1, B_1 (before) and A_2, B_2 (after).

Had there been no law change, equation (1) with coefficients A_1 and B_1 would hold in the second period. This then provides a way of predicting the number of deaths that would have occurred in the second period if the law had not been changed. The estimate is of

$$\hat{N}_2 = \sum_t (A_1 + B_1\, f(t))^2, \qquad (2)$$

where the summation is over the months t in the second period. The percentage effect of changing the law is thus estimated by

$$\hat{P} = \frac{N_2 - \hat{N}_2}{\hat{N}_2} \times 100, \qquad (3)$$

where

N_2 = actual number of deaths in a second period.

*The details of this family of smoothing methods may be found in Tukey[23], 234 and 526. They are designed to be less affected by "wild" values than the more familiar moving average methods. A standard member, denoted by 3RSSHT, of this family was used.

Since $(A_1 + B_1 f(t))^2$ estimates deaths + prediction error variance, $\hat{N}_2$ may be an over-estimate, and so $\hat{P}$ may be an under-estimate.

The percentage (3) was calculated for each law change state. If "weakening" the helmet law increases motorcycle fatalities above what would be predicted, $\hat{P}$ will be positive. Statistical fluctuations and genuine differences between states will ensure that $\hat{P}$ will vary from state to state. If, however, the bulk of the $\hat{P}$ values are positive, this is evidence that stronger helmet laws save lives. The best measure of their effectiveness will be some kind of average of the calculated values of $\hat{P}$ for the various change states.

The presence of outliers means that the usual statistics (means and standard deviations) do not provide a good summary of the batch of $\hat{P}$ values unless these highly deviant values are either rejected or down-weighted. The latter procedure (called robust estimation) is now usually advocated—see e.g., Tukey and Mosteller,[25] Chapter 10. The new method is iterative. If T is the final estimate of the center of the sample and s'^2 the final estimate of the sample variance, then

$$T = \frac{\Sigma \hat{P}_i w(u_i)}{\Sigma w(u_i)} \tag{4}$$

$$s'^2 = \frac{n \Sigma(\hat{P}_i - T)^2 w^2(u_i)}{(\Sigma \psi'(u_i))(-1 + \Sigma \psi'(u_i))} \tag{5}$$

In (4) and (5), the various quantities are defined by

$$w(u) = \begin{cases} (1 - u^2)^2 & , |u| \leq 1 \\ 0 & , |u| > 1 \end{cases}$$

$u_i = (\hat{P}_i - T)/6S_{mad}$
S_{mad} = median absolute deviation of the residuals, r_i
$r_i = \hat{P}_i - T$
$\psi(u) = u(1 - u^2)^2$, $\psi'(u) = (1 - u^2)(1 - 5u^2)$

It will be noted that the "biweight" function w(u) is 1 when u = 0 and falls off to zero as $|u| \to 1$. Thus it downweighs data away from the center. The unusual look of (5) is due to its being an approximation to the variance formula $E\psi^2(X - \theta)(E^2(\psi'))^{-1}$ for n var (T).

To verify the method, it was applied to each set of comparison states in the following way. In turn, each state in the set was assumed to be a "repeal" state and the remainder its "comparison" states. The "repeal" date was taken to be 24. The above calculations were made. The observed and predicted monthly deaths were plotted in every one of the 31 cases to check that there were no systematic deviations. The results were excellent except for small sets and counts. In each case $\hat{P}$ was calculated. Since there are no repeals in these cases, the values of $\hat{P}$ should be distributed around zero. They had a mean of −22.0 with a standard deviation of 60.6. Twenty of the 31 values were negative, but this is not significantly different from expectation, because

$(20\text{–}31/2)\ (31/4)^{-1/2} = 1.6$ is non-significant.

Thus, if there is any bias in $\hat{P}$, it is downward.

Results

Table 2 gives the actual (N_2) and predicted ($\hat{N}_2$) numbers of deaths in the second period and the percentage increase ($\hat{P}$). After the other sources of variation had been taken into account, only three of the 26 states had an estimated decrease in deaths following repeal or weakening of their helmet laws. If the changes had had no effect, $\hat{P}$ would be just as likely to be positive as negative. The chance, on this assumption, of seeing three or less negative $\hat{P}$'s out of 26 is only one in 23,000. This establishes without doubt that stronger laws do reduce the fatality rate.

The only states with negative $\hat{P}$'s were Maine (−61), Nebraska (−6) and Oklahoma (−8). The last case was for the second law change in Oklahoma. In the eighth month of the study period, Oklahoma repealed its law which applied only to motorcyclists traveling above 35 mph, and in the seventeenth month implemented a helmet law for 17-year-olds and under. Thus, in all of the periods, the laws in Oklahoma were either weak or non-existent. There is nothing obviously exceptional about the situation in Nebraska. Maine had the fewest deaths, only about 12 per year on average, and is not easy to match. While the negative numbers for Nebraska and Oklahoma are simply at the lower end of the distribution of the other percentages, Maine is a complete outlier. Looking at its data carefully suggests the result is due to its having very small numbers of deaths, either 0, 1, or 2, in the middle months of 1978 instead of the expected 4 or 5 for several of these months.

Using the methods described in the analysis section, the following results were obtained for (i) the group of nine states changing from a full law to no law, (ii) the group of 11 states changing from full law to one covering 17-year-olds and younger, (iii) all 26 change states:

(i) T = 23.7, s′ = 40.9
(ii) T = 45.8, s′ = 30.9
(iii) T = 37.7, s′ = 33.9

The results from groups (i) and (ii) do not differ significantly.** Thus the estimate T = 37.7 in group (iii) leads to the main conclusion—that the weakening of the laws has coincided with an increase of about 40 per cent in the motorcyclist fatalities.

The mean ($\bar{x}$) and standard deviation (s) of the data are:

Case (i) $\bar{x}$ = 25.9, s = 42.4,
Case (ii) $\bar{x}$ = 47.6, s = 21.8,
Case (iii) $\bar{x}$ = 38.8, s = 34.1.

The similarity to the robust estimates given above is striking.

In both cases, the overall percentage change is very significantly positive, a 95 per cent confidence interval for the overall change is $37.7 \pm 1.96\ (33.9/\sqrt{26})$ or 37.7 ± 13.0.

Discussion

From the evidence in Table 1, the repeal of helmet use laws in the United States dropped the usage from 100 per

**Comparing $T_{(ii)} - T_{(i)}$ with the square root of $s_i'^2/9 + s_{ii}'^2/11$.

TABLE 2—Differences between Expected and Actual Motorcycle Fatalities Following Helmet Law Repeal by State

Type of Law*					
Before Repeal	After Repeal	State**	Actual Deaths N_2	Expected Deaths without Repeal $\hat{N}_2$	Per Cent Increase from Expected to Actual Deaths $\hat{P}$
1	0	Colorado	113	62	82.3
1	0	Connecticut	168	140	20.0
1	0	Indiana	157	95	65.3
1	0	Iowa	53	34	55.9
1	0	Iowa***	156	123	26.8
1	0	Maine	9	23	−60.9
1	0	Nebraska	34	36	− 5.6
1	0	Rhode Island	47	35	32.3
1	0	Washington	130	113	15.0
1	2	Arizona	194	129	50.4
1	2	Idaho	24	15	60.0
1	2	Louisiana	189	143	32.2
1	2	Minnesota	195	127	53.5
1	2	Montana	28	15	86.7
1	2	New Hampshire	39	24	62.5
1	2	New Mexico	43	28	53.6
1	2	North Dakota	17	14	21.4
1	2	Oregon	77	71	8.5
1	2	South Dakota	24	15	60.0
1	2	Texas	419	310	35.2
1	4	Kansas	128	84	52.4
1	5	Ohio	139	83	67.5
1	6	Wisconsin	106	76	39.5
2	0	Oklahoma	22	24	− 8.3
6	0	Oklahoma***	22	21	4.8
7	2	Utah	43	22	95.5

*See footnotes to Appendix A2 for code descriptions of type of law.
**States arranged alphabetically within type of law change.
***There were two law changes in Iowa and Oklahoma.

cent down to about 50 per cent. The present study shows that the repeal has increased the motorcyclist mortality rate by about 38 per cent. The finding of a 38 per cent increase in motorcyclist mortality rate following repeal is in close agreement with the earlier finding of a 30 per cent decrease[10] in motorcyclist mortality rate following the enactment of helmet use laws, since a 38 per cent *increase* is equivalent to a 28 per cent *decrease* (38 ÷ 138 = 0.28).

The finding of this study implies that the mortality rate among unhelmeted riders is almost twice as high as that among helmeted riders.***

The repeals of motorcycle helmet laws have been one of the most tragic decisions made recently in the USA from the standpoint of public health. Despite the growing body of evidence that such repeals lead to increases in deaths, they continue to be active issues in many state legislatures. The State of Maryland repealed its law effective July 1979 and repeals have been actively considered in a number of other states this year. The retention of existing laws and the reinstatement of repealed laws should be an urgent issue for public health workers and everyone else concerned with lowering unnecessary mortality and morbidity, and the huge medical and other economic losses that result.

It was noted earlier that motorcyclist mortality rate is particularly high among younger people. Many state laws have attempted to promote helmet use among the youngest motorcyclists by retaining mandatory use provisions for those in their teens. When helmet use laws apply to all motorcyclists, they result in near universal helmet use, but limited use laws result in substantially lower compliance by the affected age groups as well as by age groups not affected by the limited use laws. Clearly the most effective way to protect young motorcyclists from premature death and injury is to protect them together with everybody else—by reinstating the helmet use requirements for *all* motorcyclists.

Given the current energy shortage, high gasoline prices, and the likelihood of these continuing in the future, it is probable that motorcycles (and mopeds, their diminutive cousins) will become an increasingly used mode of transportation. This will be followed by predictable increases in the numbers of deaths and injuries of riders and much of this increase will occur because of the absence of helmet laws.

***If 1.38 r = 0.5 r + 0.5 r* then r* = 1.76 r, where r and r* are the mortality rates for helmeted and unhelmeted riders respectively.

Reinstating helmet use laws would be the most effective way of reducing some of this predictable carnage.

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APPENDIX

The list of repeal states and their comparison states are shown in Table A1.

Type of helmet use law in effect is shown in Table A2 by state and by time period for 1/1975-12/1978. If a new law became effective on or before the 15th of a month, it was regarded as being effective throughout the month. If an old law was replaced by a new law on or later than the 16th of the month, the old law was considered as being in effect throughout the month. Thus, Table A2 expresses periods in whole months and month 1 refers to January 1975. For instance, in Alabama, all motorcyclists were required to wear helments during the 4th month corresponding to January 1975-December 1978.

TABLE A1—States with Helmet Use Law Repeals and their Matched Comparison States

States with Use Law Changes*	States without Use Law Changes during the Study Period
Arizona	California, Nevada
Colorado	Nevada, Wyoming
Connecticut	Massachusetts, New Jersey, New York, Pennsylvania
Idaho	Nevada, Wyoming
Indiana	Illinois, Kentucky, Michigan, Missouri
Iowa	Illinois, Michigan, Missouri
Kansas	Arkansas, Illinois, Missouri
Louisiana	Alabama, Arkansas, Mississippi
Maine	Massachusetts, New York, Vermont
Minnesota	Illinois, Michigan, Missouri
Montana	Nevada, Wyoming
Nebraska	Illinois, Michigan, Nevada, Wyoming
New Hampshire	Massachusetts, New York, Vermont
New Mexico	Arkansas, Florida, Georgia
North Dakota	Illinois, Michigan, Missouri
Ohio	Kentucky, Michigan, Pennsylvania, West Virginia
Oklahoma	Arkansas, Florida, Georgia
Oregon	California
Rhode Island	Massachusetts, New Jersey, New York, Pennsylvania
South Dakota	Illinois, Michigan, Missouri
Texas	Arkansas, Florida, Georgia
Utah	Nevada, Wyoming
Washington	California
Wisconsin	Illinois, Michigan, Missouri

*Alaska, Delaware and Hawaii are not included. Alaska and Hawaii because their isolated location precluded matching, and Delaware because the post-repeal period data were insufficient for meaningful analyses.

TABLE A2—Helmet Laws in Effect by State, by Type of Law and Period

State	Type	Period*	Law	Period*
Alabama	1[b]	1-48		
Alaska	1	1-18	2[c]	19-48
Arizona	1	1-17	2	18-48
Arkansas	1	1-48		
California	0[a]	1-48		
Colorado	1	1-29	0	30-48
Connecticut	1	1-17	0	18-48
Delaware	1	1-41	3[d]	42-48
Florida	1	1-48		
Georgia	1	1-48		
Hawaii	1	1-29	2	30-48
Idaho	1	1-39	2	40-48
Illinois	0	1-48		
Indiana	1	1-32	0	33-48
Iowa†	0	1-8	1	9-18
Kansas	1	1-18	4[e]	19-48
Kentucky	1	1-48		
Louisiana	1	1-21	2	22-48
Maine	1	1-34	0	35-48
Maryland	1	1-48		
Massachusetts	1	1-48		
Michigan	1	1-48		
Minnesota	1	1-27	2	28-48
Mississippi	1	1-48		
Missouri	1	1-48		
Montana	1	1-30	2	31-48
Nebraska	1	1-32	0	33-48
Nevada	1	1-48		
New Hampshire	1	1-31	2	32-48
New Jersey	1	1-48		
New Mexico	1	1-39	2	40-48
New York	1	1-48		
North Carolina	1	1-48		
North Dakota	1	1-30	2	31-48
Ohio	1	1-42	5[f]	43-48
Oklahoma†	6[g]	1-8	0	9-16
Oregon	1	1-33	2	34-48
Pennsylvania	1	1-48		
Rhode Island**	1	1-17	0	18-48
South Carolina	1	1-48		
South Dakota	1	1-30	2	31-48
Tennessee	1	1-48		
Texas	1	1-32	2	33-48
Utah	7[h]	1-28	2	29-48
Vermont	1	1-48		
Virginia	1	1-48		
Washington	1	1-33	0	34-48
West Virginia	1	1-48		
Wisconsin	1	1-39	5	40-48
Wyoming	1	1-48		

*1 = Jan. 1975, 48 = Dec. 1978.

**Passengers still required to wear helmets.

†Type 0 law was in effect during months 19-48 in Iowa, and Type 2 law was in effect during months 17-48 in Oklahoma.

(a) No applicable law.

(b) Law applies to all cyclists.

(c) Law applies to cyclists 17 years old and younger.

(d) Law applies to cyclists 18 years old and younger and all cyclists must carry a helmet (i.e., have helmet in their possession).

(e) Law applies to cyclists 15 years old and younger.

(f) Law applies to cyclists 17 years old and younger, and to cyclists having a motorcycle driver's permit less than 1 year.

(g) Law applies to cyclists 20 years old and younger.

(h) Law applies to cyclists traveling on a public highway posted for speeds higher than 35 miles per hour.