UPDATE

THE EFFECTS OF RAISING AND LOWERING THE MINIMUM LEGAL DRINKING AGE IN VIRGINIA

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by

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SUMMARY

This report updates previous ones on the impact of raising and lowering the legal drinking age. Crash data from Virginia indicate the following:

- The legal drinking age for beer in Virginia was lowered from 21 to 18 years in 1974. The percentage of all crashes that are alcohol-related have increased significantly since 1975 for persons under 16, 16 to 19 years, and 20 to 24 years. Such increases were not noted for other adults. When historical trends were used to predict the number of crashes which would have occurred had the drinking age not been raised, it was found that the number of alcohol-related crashes for persons under 16, 16 to 19 years, and 20-24 years were significantly higher than expected. Numbers of non-alcohol-related crashes and numbers of alcohol-related crashes for adults were not higher than expected. These data indicate that lowering the drinking age for beer from 21 years to 18 years had a selective and deleterious effect on persons under 21.

- In July of 1981, the age at which a person could buy beer in stores for off-premise consumption was raised to 19 years (the age for on-premises sales remained at 18). The percentage of all crashes which were alcohol-related began to decrease in 1982, the first full year in which the age change was enforced. These percentages declined most for persons under 16 and 16 to 19 years; however, they also fell, to a lesser extent, for adults.

  Alcohol-related crashes in 1982 and 1983 were significantly lower than expected given trends which existed after the drinking age was raised for both adults and persons 16 to 19. These data indicate that while the raising of the drinking age to 19 years for the off-premise sale of beer may have resulted in reduced alcohol-related crashes for the affected age groups, something else not specifically related to age reduced alcohol-related crashes for all ages.

- In July of 1983, the age at which a person could buy beer on-premises in restaurants and taverns was also raised to 19 years. Since not enough time has passed to provide data concerning the impact of this change, no conclusions are drawn.

UPDATE

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This report updates those entitled "The Impact of Lowering the Legal Drinking Age in Virginia" and "The Effects of Raising and Lowering the Legal Minimum Drinking Age" (January 1983 and March 1984). It gives the current legal drinking ages in the various states, describes several studies on the impact of raising the legal drinking age, and reexamines the most current Virginia vehicle accident data for young persons.

RECENT EXPERIENCES IN OTHER STATES

The most current information concerning the legal drinking ages among the states appears in Table 1. By the end of 1983, most of the states that had lowered drinking ages had reconsidered and raised them, but not usually back to the original levels. Currently, in only a few states is it legal for persons 18 years of age or under to drink alcohol. Although some states have raised drinking ages somewhat, alcohol-related accidents clearly remain a problem for this age group. According to national statistics compiled from the fatal accident reporting system (FARS), 57% of all fatally injured drivers between the ages of 15 and 19 had positive blood alcohol concentrations (BAC's), with about 13% being over the legal limit.

In Virginia, the age at which beer can be purchased for off-premise consumption was raised to 19 in 1981, the legal limit for purchasing beer for on-premise consumption was raised from 18 to 19 in 1983, and the limit for purchasing wine or liquor remains at 21 years.

In the last few years, several studies on the effects of raising the legal drinking age have been conducted. The Insurance Institute for Highway Safety compared nighttime fatal vehicle crashes for states that had raised their drinking age with those for states that had not. It was found that, on the average, a state that raises the drinking age can expect a 28% decrease in these fatal crashes among young persons. In the states with raised drinking ages, it was estimated that 380 fewer

Table 1

Minimum Legal Drinking/Purchase Ages and Date of Last Legislative Change
for the Fifty States and the District of Columbia

18	19	20	21	18/21
Hawaii (1972)	Alabama (1970)	Connecticut (1983)	Alaska (1983)	Colorado (1945)a
Louisiana (1948)	Florida (1980)	Maine (1977)	Arkansas (1925)	District of Columbia (1941)b
Vermont (1971)	Georgia (1980)	New Hampshire (1979)	California (1925)	Kansas (1949)a
	Idaho (1972)		Delaware (1983)	Mississippi (1966)b
	Iowa (1978)		Illinois (1980)	North Carolina (1983)c
	Minnesota (1976)		Indiana (1934)	Ohio (1935)c
	Montana (1979)		Kentucky (1938)	South Carolina (1984)d
	New York (1982)		Maryland (1982)	South Dakota (1984)f
	Texas (1982)		Michigan (1978)	Virginia (1983)c
	Wyoming (1973)		Missouri (1945)	West Virginia (1983) e
	Wisconsin (1983)		Nevada (1933)	
			New Jersey (1982)	
			New Mexico (1934)	
			North Dakota (1936)	
			Oklahoma (1983)	
			Oregon (1933)	
			Pennsylvania (1935)	
			Utah (1935)	
			Washington (1934)	
			Nebraska (1984)	
			Arizona (1984)	
			Rhode Island (1984)	
			Tennessee (1984)	
			Massachusetts (1984)	

a - 18 (3.2% Beer), 21 (Over 3.2% Beer, Wine & Distilled Spirits)
b - 18 (Beer & Table Wine), 21 (Fortified Wine & Distilled Spirits)
c - 19 (Beer), 21 (Wine & Distilled Spirits)
d - 20 (Beer & Wine), 21 (Distilled Spirits)
e - 19 (Residents: Beer, Wine & Distilled Spirits), 21 (Nonresidents: Beer, Wine & Distilled Spirits)
f - 19 (3.2% Beer), 21 (Over 3.2% Beer, Wine & Distilled Spirits)

young drivers were involved in nighttime fatal crashes each year as a result of the change. It was also estimated that 730 fewer young drivers would be involved if the other states would raise their legal drinking age to 21.(1)

In Maine, where the age limit was raised from 18 to 20 years, nighttime accidents were reduced 18.6% for 18-year-old male drivers and 13.9% for 19-year-old males.(2) In a similar study in Illinois, where the drinking age was raised from 19 to 21, nighttime single vehicle crashes were reduced 10.0% for 19 year olds and 7.4% for 20 year olds.(3) Finally, in Michigan, where the age limit was raised from 18 to 21, total alcohol-related crashes decreased 31.0% for the affected group compared to what would have been expected had the age not been raised.(4)

CURRENT VIRGINIA CRASH EXPERIENCE

In the initial report in this series, Virginia accident data through 1979 were analyzed. Here, the data tables from that report are updated through 1983. All new data used in this document are included in Appendices A, B, and C so the reader can study and use them as convenient. All the analyses are based upon these tables. Data were analyzed by time period, such that the analysis of the 1969 through 1981 period dealt with the impact of lowering the legal drinking age for beer, and the analysis of the 1975 through 1983 period dealt with the raising of the drinking age.

The Impact of Lowering the Legal Drinking Age

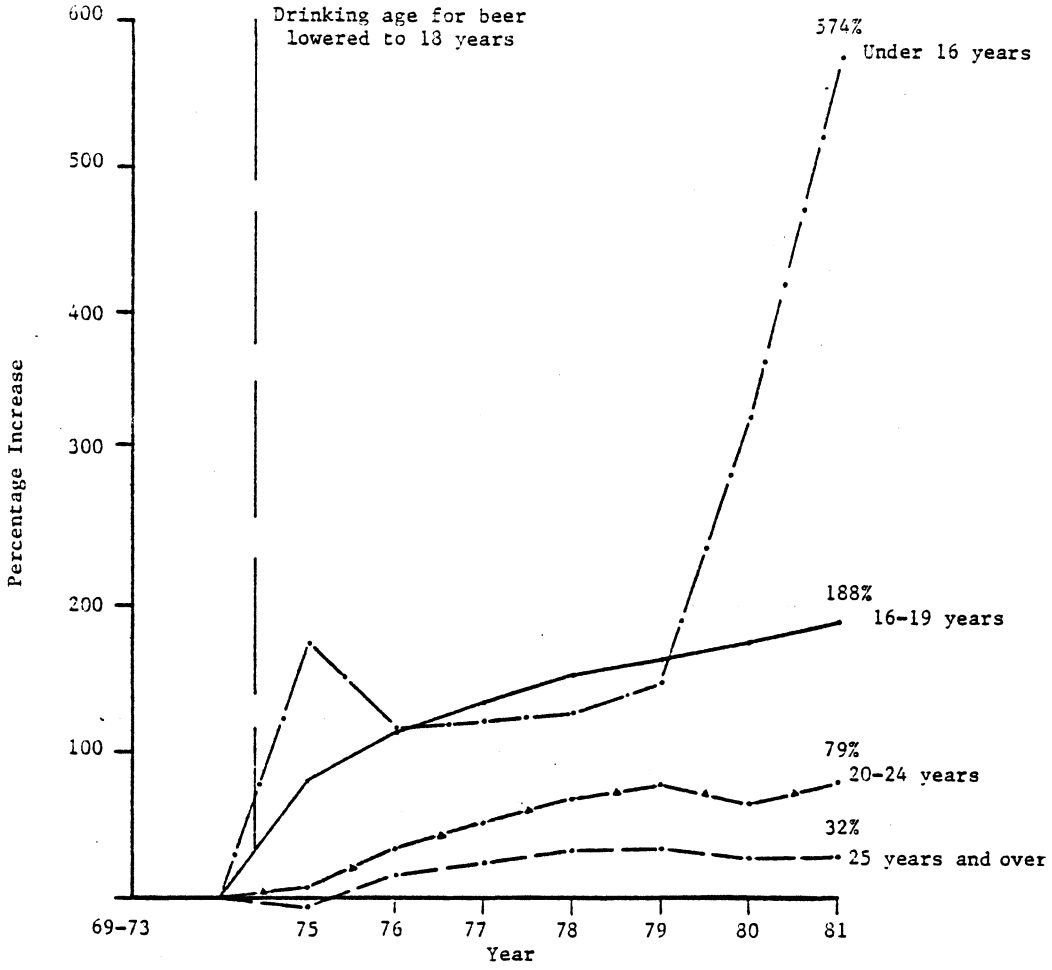
Tables A-1 through A-4 display the numbers of alcohol-related crashes, non-alcohol-related crashes, and the percentage of all crashes which were alcohol related for each age group. Also noted is the percentage of all alcohol-related crashes for which a particular age group is responsible. It can be noted from these tables that numbers of alcohol-related crashes increased disproportionately for persons under 16, 16 to 19 years, and 20 to 24 years after the lowering of the age limit. The percentage of crashes which were alcohol related and the portion of alcohol-related accidents for which these groups were responsible were also disproportionately higher. No such changes were noted for non-alcohol-related crashes. For adults, alcohol-related crashes were not disproportionately higher, and both the percentage of crashes which were alcohol-related and the proportion of alcohol-related accidents for which adults were responsible actually decreased after the age limit was changed.

To determine if these increases and decreases could be part of historical trends, two sets of projects were run. First, crash trends for the period prior to the lowering of the drinking age for beer to 18 (1969-1973) were projected into the period in which the legal age remained at 18 (1975-1981). Second, the historical trends for the period during which the minimum age was 18 were projected into the 1983 period in which the age for off-premise sales of beer was 19. These projections appear in Tables B-1 through B-4.

From these projections, it can be noted that for persons 16 to 19 years of age, alcohol-related crashes were significantly higher than would be expected without the change in drinking age. Non-alcohol-related crashes for these same groups were significantly lower than expected. Their involvement in alcohol-related crashes was differentially and adversely affected coincident with the change in the drinking age. Adult accident trends did not show these patterns. Thus, the lowering of the drinking age had its greatest effect on persons under 16 and 16 to 19, in that many more of their crashes involved alcohol. It had a lesser effect on 20 to 24 year olds and no effect on adults 25 and older.

To illustrate this effect in a different way, these data are displayed graphically in Figures 1 through 3. The ultimate measure of the impact of lowering the legal drinking age is how much the number of alcohol-related accidents increased or decreased after the change. Figure 1 shows the percentage increase in alcohol-related crashes (compared to the pre-age-change average) from 1975 through 1981. While crashes for adults 25 and over increased only slightly, alcohol-related crashes involving drivers in the affected age groups increased dramatically through 1981. Such accidents increased 79% among persons 20 to 24 years old, among whom only 20 year olds were affected by the lowering of the age limit. A more pronounced increase of 188% was noted for 16 to 19 year olds, all of whom were affected. Finally, a whopping 574% increase was noted for drivers under 16. (This increase is artificially large, however, since very few accidents occurred within this group prior to 1974.)

Figure 2 compares the percentage increase in alcohol-related accidents with the same figures for non-alcohol-related crashes for each age group. If increases and decreases in accidents are due to the changes in the drinking age, then only alcohol-related accidents for persons under 21 should change. This, in fact, was the case. For persons 16 to 19 years old, alcohol-related crashes increased dramatically until 1981; non-alcohol-related crashes increased only slightly and actually decreased after 1978. Similar but less pronounced trends were noted for persons 20 to 24 years old. There were essentially no differences between alcohol-related and non-alcohol-related crash patterns for adults 25 and over; neither increased or decreased very

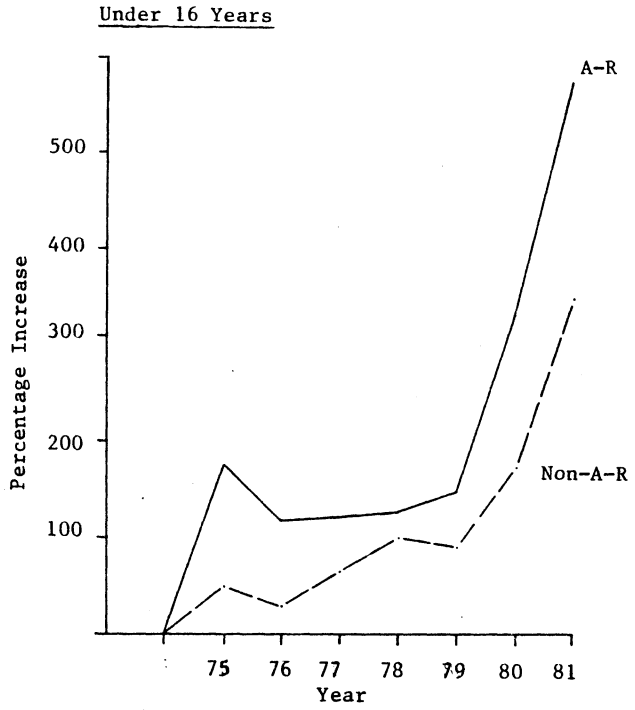


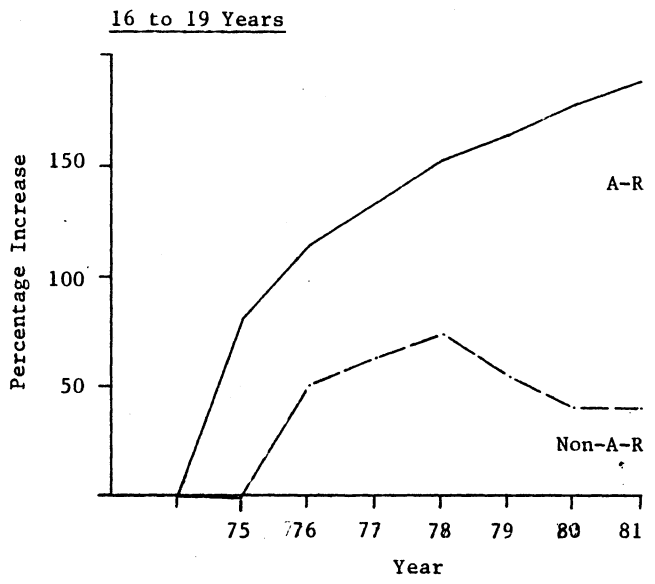
Averages

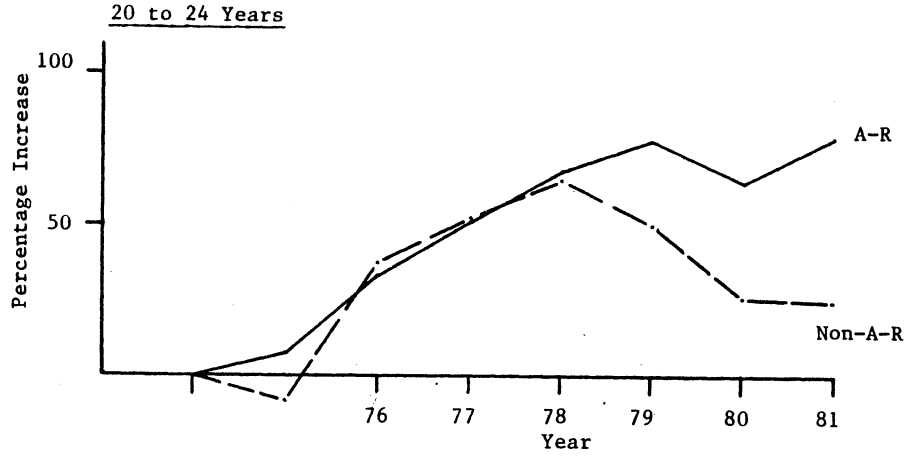
Under 16	23
16-19	1,638
20-24	3,507
25 and Over	9,416

METHOD: Percentage change = $\frac{\text{Current number of accidents - 1969 - 1973 average}}{\text{1969 to 1973 average}}$

Figure 1. Percentage change in alcohol-related accidents by age groups — 1975-1981. (Source: Department of State Police Computer Crash Tape)







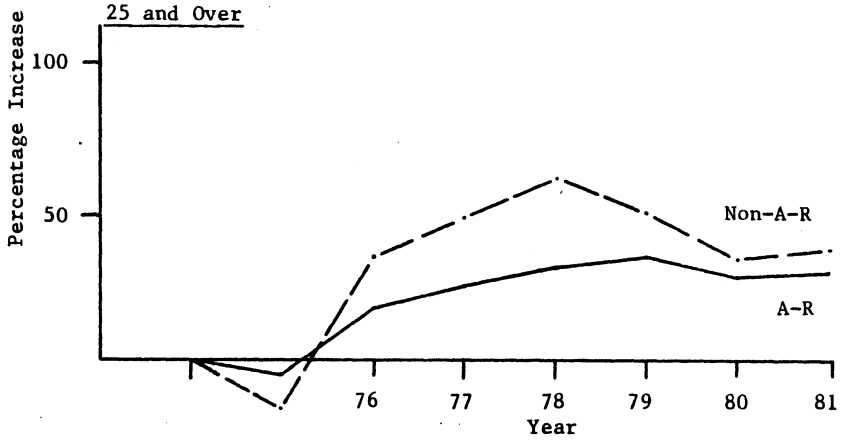


Figure 2. Percentage increase of alcohol-related and non-alcohol-related crashes by age — 1975-1981.

much after the change in the drinking age. Finally, for drivers under 16, alcohol-related crashes increased dramatically from 1975-1981. However, non-alcohol-related crashes also increased dramatically over this time period, which indicates that something other than lowering of the legal drinking age also had a deleterious effect on crashes for this very young age group and that the increased availability of alcohol only exacerbated the situation. (Thus, it is expected that reductions noted in alcohol-related crashes for this age group in 1982 would be accompanied by smaller reductions in non-alcohol-related crashes, as was the case.)

Finally, it was recognized that the numbers of accidents for an age group can be drastically affected by the number of licensed drivers of that age who are thus "eligible" to be in an accident. To determine if numbers of licensed drivers affected increases and decreases in alcohol-related accidents, the accident rate per licensed driver was calculated for each age group for each year (see Appendix C). The percentage increase in alcohol-related accidents was then calculated for 16 to 19 year olds, 20 to 24 year olds, and persons 25 and over. These statistics appear in Figure 3. The alcohol-related accident rate per licensed driver for 16 to 19 year olds increased significantly until 1981, when it hit a high of 128% increase. The rate for persons 20 to 24 rose slightly over time, about 37%, while the rate for other adults decreased about 4%.

The findings of this analysis are not conclusive, since a controlled experimental study was not possible. However, the weight of all the evidence indicates that the increase in alcohol-related accidents was coincident with the age change; that previous trends cannot explain this disproportionate increase; and that the increase was not due to some universally deleterious factor, since no such increases were noted for non-alcohol-related crashes or for either crash category among adults. Thus, it must be concluded that the lowering of the legal drinking age for beer to 18 in 1974 was most likely responsible for increasingly serious accident problems for young persons.

The Impact of Raising The Legal Drinking Age

In July 1981, the age limit for the purchase of beer for off-premise consumption was raised to 19, while the on-premise limit remained at 18. It must be recognized that this is a minimal age change affecting only a small portion of drinking activity among young persons. Thus, dramatic changes in crash patterns would not be expected to be evident. However, as illustrated in the data contained in the appendices, this was not the case.

	1971 to 1973 Averages
16-19	0.73
20-24	0.88
25 and Older	0.47

METHOD: $$\text{Accident rate} = \frac{\text{Number of accidents}}{\text{Number of licensed drivers}} \times 100$$

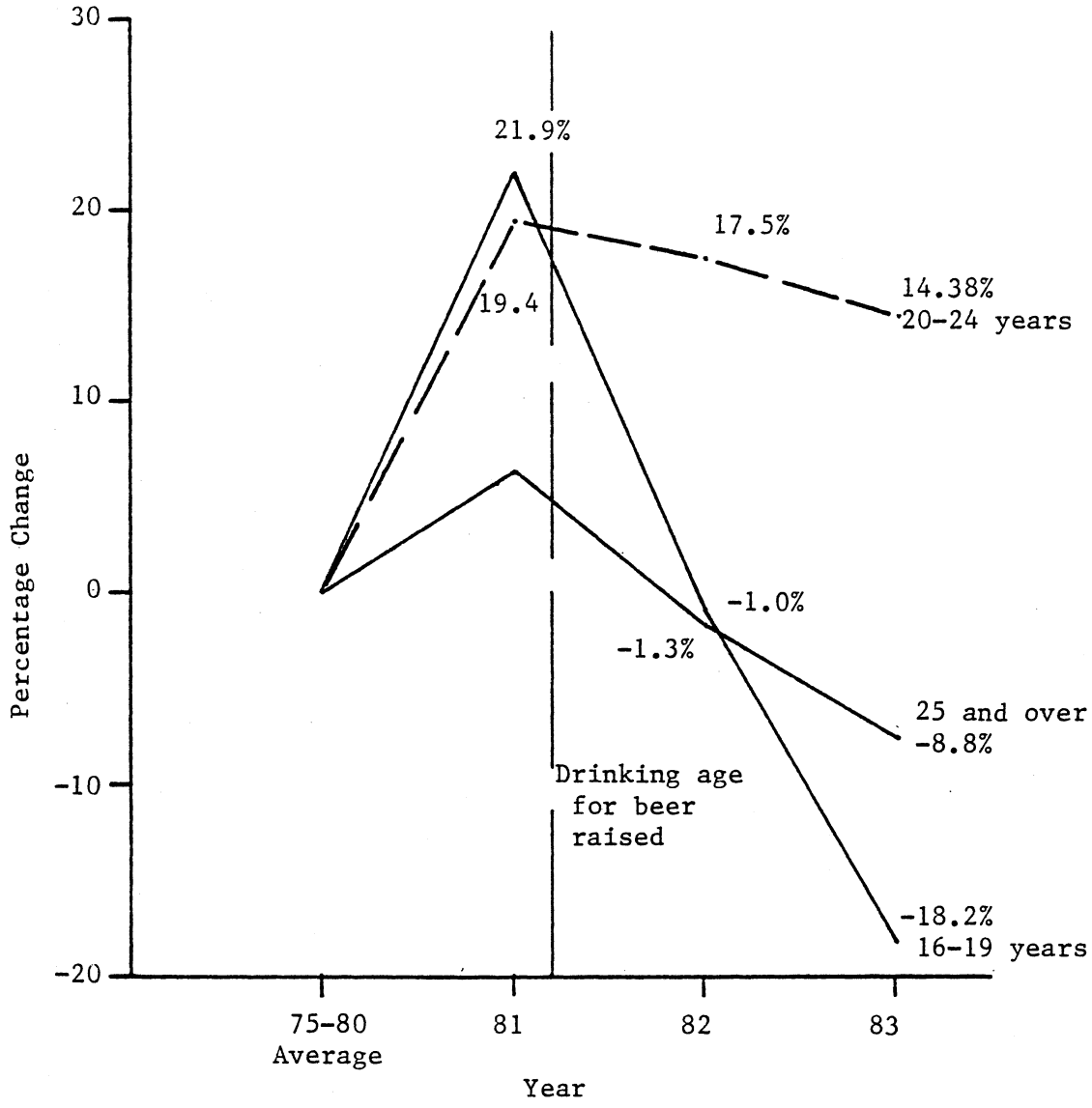
$$\text{Percentage change} = \frac{\text{Accident rate - 1971 to 1973 average}}{\text{1971 to 1973 Average}}$$

Figure 3. Percent change in alcohol-related accident rates — 1975-1981. (Sources: Department of State Police Crash Tape — Accident Data; Division of Motor Vehicles — Licensing Data)

Changes in numbers of accidents since 1981 appear in Figure 4. Since the age change became effective in July of 1981, only half of the year was affected. Thus, numbers of alcohol-related accidents increased, but not as rapidly as would have been expected given the accident trends exhibited after the drinking age was lowered (1975 to 1980). In 1982 and 1983, however, alcohol-related accidents decreased significantly. This decrease was especially pronounced for 16 to 19 year olds, but was minimal for persons 20 to 24 years of age, a group which logically was not affected by the age change. Curiously, alcohol-related accidents for adults 25 and over also decreased in 1982 and 1983, but to a lesser extent. This also occurred with regard to alcohol-related crash rates (see Figure 5). There are several possible explanations for this phenomenon. First, some overall highway safety factor could have been acting upon crashes for all age groups to produce beneficial results. In this case, both alcohol- and non-alcohol-related accidents could be affected. Second, some set of factors related to alcohol could have affected the various age groups differentially; i.e., the drinking age change could have affected the 16 to 20 year old group while changes in the general drunken driving laws could have affected both the older and younger populations.

In order to provide more information, changes in non-alcohol-related accidents were examined (see Figure 6). For adults, while non-alcohol-related crashes increased, alcohol-related accidents decreased. Thus, some factor related to alcohol but not necessarily related to age has improved the drunken driving situation for this group. This factor may also have influenced 16 to 19 year olds. However, since their alcohol-related accidents decreased more than did those for adults, some other factors, including the drinking age, may have been at work. Thus, there is no way to determine how much of the impact on alcohol-related crashes was due to the change in the drinking age and how much due to other factors.

In 1983, the drinking age was again changed when the age for purchasing beer on-premises in restaurants and taverns was also raised to 19. Again, this is an additional factor which may be at work within the 16 to 19 age groups. However, since this law did not take effect until July of 1983 there are insufficient accident data to allow an evaluation of its impact.

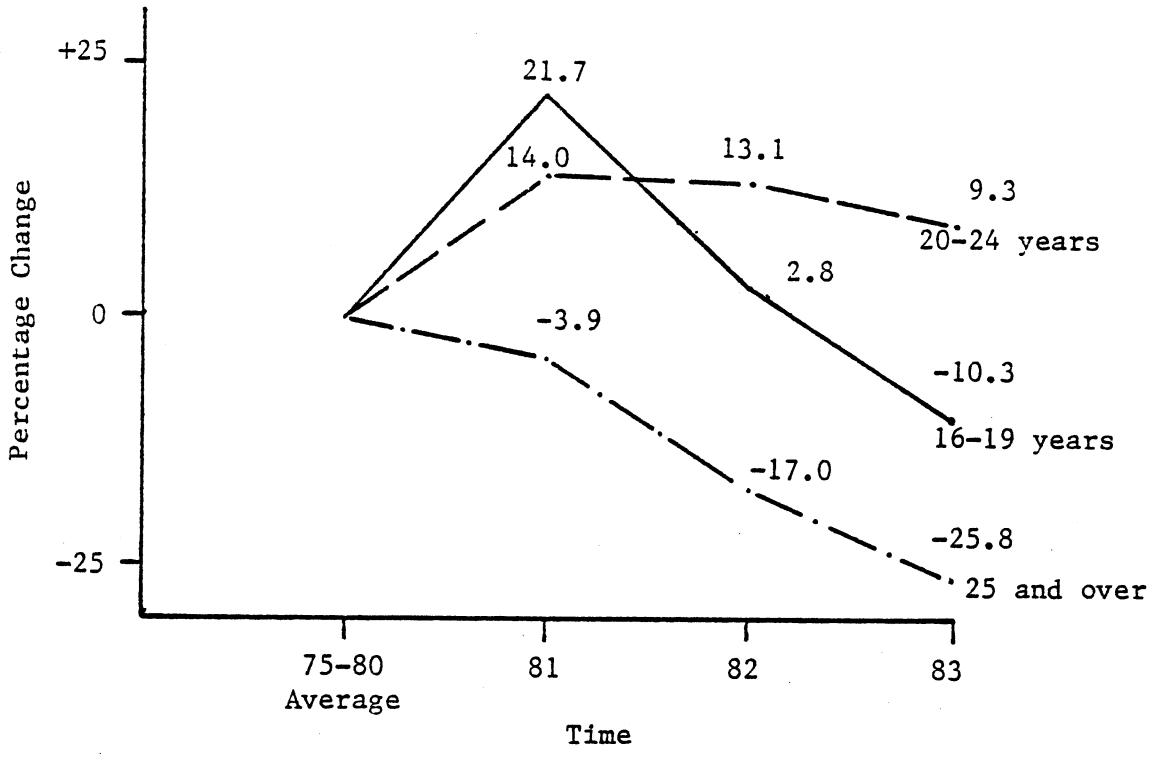


1975 to 1980 Average

16-19 years	3,876
20-24 years	5,271
25 years and over	11,461

Method: Percentage change = $\frac{\text{Number of accidents - 1975 to 1980 average}}{\text{1975 to 1980 average}}$

Figure 4. Percentage change in alcohol-related accidents by age group since 1980. (Source: Department of State Police Crash Tape — Accident Data)



1975 to 1980 Averages	
16-19	1.37
20-24	1.05
25 and over	0.47

METHOD: $$\text{Accident rate} = \frac{\text{Number of accidents}}{\text{Number of licensed drivers}} \times 100$$

$$\text{Percentage change} = \frac{\text{Accident rate} - \text{1975 to 1980 average}}{\text{1975 to 1980 average}}$$

Figure 5. Percentage change in alcohol-related accident rates by age group since 1980. (Sources: Virginia Department of State Police Crash Tape — Accident Data; Virginia Division of Motor Vehicles — Licensing Data)

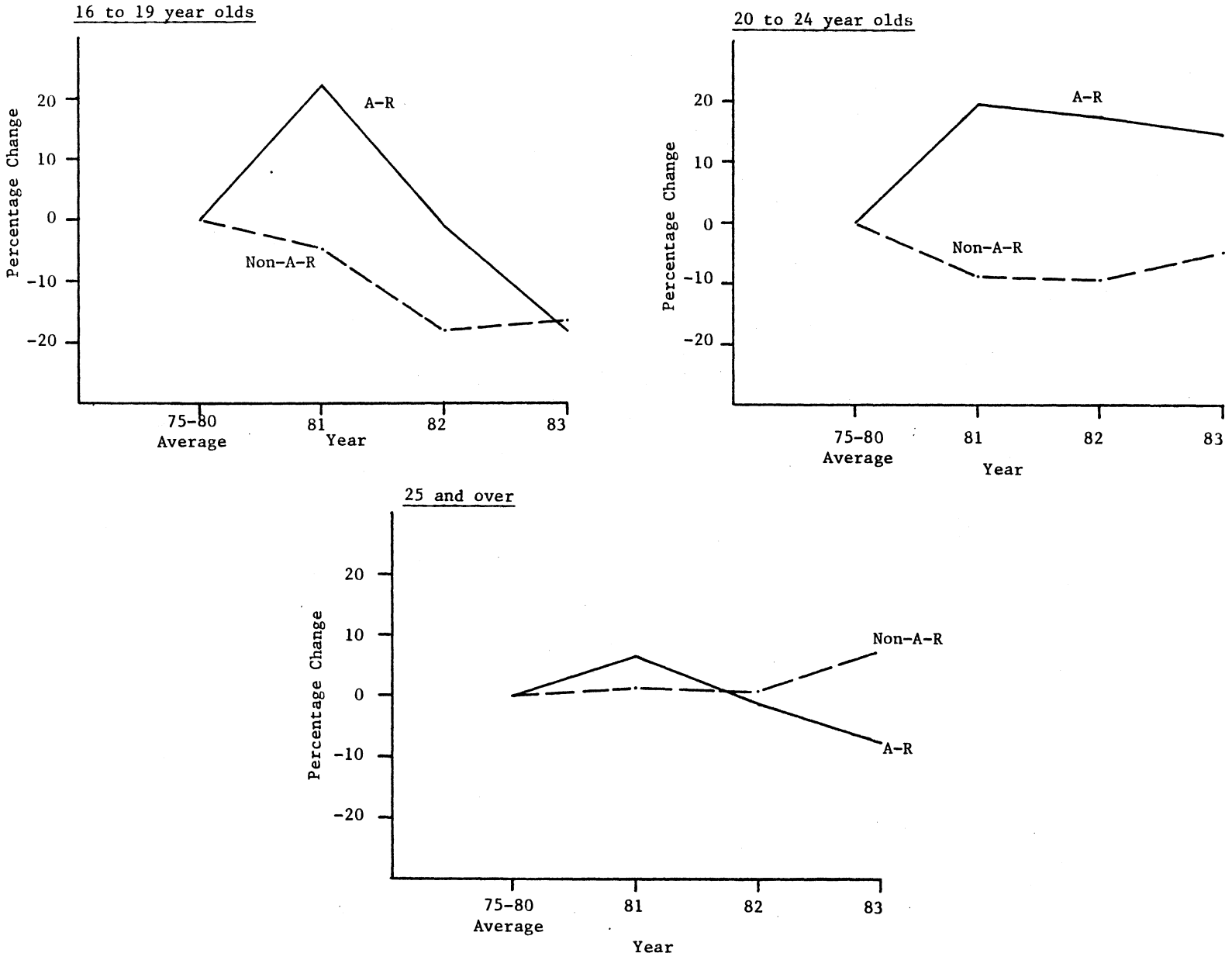


Figure 6. Percentage change in alcohol-related and non-alcohol-related crashes by age since 1981.

CONCLUSIONS

It is clear from these data that the lowering of the legal drinking age has resulted in increasingly serious accident problems for persons under 21 years of age. The impact of raising the drinking age to 19 is not so clear-cut. It appears that several factors, including the raising of the drinking age, have acted upon alcohol-related and non-alcohol-related accident rates for adults and young persons. Additional investigation is recommended.

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APPENDIX A

ALCOHOL-RELATED ACCIDENT DATA BY AGE
1969-1983

Table A-1

Crash Statistics for Persons 16 to 19 Years Old
1969-1983

Year	No. A-R Crashes	No. N-A-R Crashes	Percentage of Crashes That Were A-R	Percentage of All Crashes	
1969	1,535	16,492	8.51	10.88	
1970	1,406	17,226	7.55	10.09	
1971	1,614	20,145	7.43	11.14	
1972	1,732	23,228	6.94	11.39	
1973	1,904	24,335	7.26	12.53	
1974	2,603	22,757	10.26	16.43	Drinking Age for Beer Lowered to 18
1975	2,970	20,094	12.88	18.80	
1976	3,508	30,350	10.36	18.25	
1977*	3,815	33,032	10.35	18.14	
1978	4,122	35,115	10.51	18.04	
1979	4,309	31,299	12.10	18.28	
1980	4,530	28,472	13.73	20.08	
1981	4,724	28,362	14.28	20.01	Drinking age for Off-Premise Beer Sales Raised to 19
1982	3,836	24,297	13.64	17.77	
1983	3,172	24,747	11.36	15.83	

*Estimated

Table A-2

Crash Statistics for Persons Under 16
1969-1983

Year	No. A-R Crashes	No. N-A-R Crashes	Percentage of Crashes That Were A-R	Percentage of All Crashes	
1969	18	339	5.04	0.128	
1970	13	284	4.38	0.093	
1971	20	348	5.43	0.138	
1972	37	552	6.28	0.243	
1973	26	397	6.15	0.272	
1974	46	656	6.55	0.290	Drinking Age for Beer Lowered to 18
1975	63	572	9.92	0.399	
1976	50	490	9.26	0.260	
1977*	51	629	7.50	0.242	
1978	52	769	6.33	0.228	
1979	57	734	7.21	0.242	
1980	99	1,044	8.66	0.439	
1981	155	1,720	8.27	0.657	Drinking Age for Off-Premise Beer Sales Raised to 19
1982	88	1,125	6.48	0.408	
1983	61	1,143	5.07	0.304	

*Estimated

Table A-3

Crash Statistics for Persons 20 to 24 Years Old
1969-1983

Year	No. A-R Crashes	No. N-A-R Crashes	Percentage of Crashes That Were A-R	Percentage of All Crashes	
1969	3,591	20,453	14.97	25.45	
1970	3,409	21,818	13.51	24.47	
1971	3,511	24,739	12.43	24.23	
1972	3,540	27,435	11.43	23.29	
1973	3,486	27,654	11.19	22.94	
1974	3,456	23,933	12.62	21.28	Drinking Age for Beer Lowered to 18
1975	3,773	22,559	14.33	23.89	
1976	4,687	33,577	12.25	24.38	
1977*	5,284	36,918	12.50	25.12	
1978	5,881	40,259	12.75	25.74	
1979	6,236	36,628	14.55	26.46	
1980	5,764	30,791	15.77	25.55	
1981	6,292	30,511	17.10	26.66	Drinking Age for Off-Premise Beer Sales Raised to 19
1982	6,195	30,262	16.99	28.69	
1983	6,029	31,631	16.01	20.51	

*Estimated

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Table A-4

Crash Statistics for Persons 25 Years and Older
1969-1983

Year	No. A-R Crashes	No. N-A-R Crashes	Percentage of Crashes That Were A-R	Percentage of All Crashes	
1969	8,964	66,005	11.96	65.54	
1970	9,103	69,879	11.53	65.34	
1971	9,344	75,725	10.98	65.49	
1972	9,890	82,149	10.74	65.07	
1973	9,781	82,254	20.63	64.36	
1974	9,739	73,908	11.64	61.47	Drinking Age for Beer Lowered to 18
1975	8,990	63,016	12.48	56.91	
1976	10,980	100,816	9.82	57.11	
1977*	11,727	110,484	9.60	55.85	
1978	12,475	120,152	9.41	54.60	
1979	12,676	112,312	10.14	53.78	
1980	11,917	100,012	10.65	52.82	
1981	12,189	102,681	10.61	51.64	Drinking Age for Off-Premise Beer Sales Raised to 19
1982	11,281	101,984	9.96	52.25	
1983	10,597	108,576	8.89	52.84	

*Estimated

APPENDIX B

CRASH PROJECTIONS

Table B-1

Projections for Persons 16 to 19 Years Old

(1) Projecting Pre-Age-Change Trends (1969-1973) Into The Post-Age-Change Period (1975-1981)

Year	Alcohol-Related Crashes	Non-Alcohol-Related Crashes	
1969	1,535	16,492	
1970	1,406	17,226	
1971	1,614	20,145	
1972	1,732	23,228	
1973	1,904	24,335	
1974	2,603*	22,757**	Drinking Age for Beer Lowered to 18 (July 1974)

Year	Projection	Actual	Projection	Actual
1975	2,064	2,970*	28,960	20,094**
1976	2,170	3,508*	31,129	30,350
1977	2,277	3,815*	33,298	33,032
1978	2,383	4,122*	35,467	35,115
1979	2,489	4,309*	37,636	31,299**
1980	2,596	4,530*	39,804	28,472**
1981	2,702	4,724*	41,973	28,362**

(2) Projecting Lowered-Drinking-Age Trends (1975-1980) Into The Raised-Drinking-Age Period (1982 - 1983)

Year	Alcohol-Related Crashes	Non-Alcohol-Related Crashes	
1975	2,970	20,094	
1976	3,508	30,350	
1977	3,815	33,032	
1978	4,122	35,115	
1979	4,309	31,299	
1980	4,530	28,472	Drinking Age For Beer Sold Off-Premises Raised to 19 (July 1981)
1981	4,724	28,362	

Year	Projection	Actual	Projection	Actual
1982	5,227	3,836**	No Distinguisable Pattern	24,297
1983	5,527	3,712**		24,747

* Significantly higher than expected
** Significantly lower than projection

Table B-2

Projections for Persons Under 16

(1) Projecting Pre-Age-Change Trends (1969-1973) Into The Post-Age-Change Period (1975-1981)

Year	Alcohol-Related Crashes	Non-Alcohol-Related Crashes	
1969	18	339	
1970	13	284	
1971	20	348	
1972	37	552	
1973	26	397	
1974	46	656	Drinking Age For Beer Lowered to 18 (July 1974)

Year	Projection	Actual	Projection	Actual
1975	39	63	538	572
1976	43	50	576	490
1977	47	51	614	629
1978	57	52	653	769
1979	55	57	691	734
1980	59	99	729	1,044
1981	63	155*	768	1,720*

(2) Projecting Lowered-Drinking-Age Trends (1975-1980) Into the Raised-Drinking Age Period (1982)

Year	Alcohol-Related Crashes	Non-Alcohol-Related Crashes	
1975	63	572	
1976	50	490	
1977	51	629	
1978	52	769	
1979	57	734	
1980	99	1,044	
1981	155*	1,720*	Drinking Age For Off-Premise Beer Sales Raised to 19 (July 1981)

Year	Projection	Actual	Projection	Actual
1982	88	88	1,122	1,125
1983	94	61	1,214	1,143

* Significantly higher than expected

Table B-3

Projections for Persons 20 to 24 Years Old

(1) Projecting Pre-Age-Change Trends (1969-1973) Into The Post-Age-Change Period (1975-1981)

Year	Alcohol-Related Crashes	Non-Alcohol-Related Crashes	
1969	3,591	20,453	
1970	3,409	21,818	
1971	3,511	24,739	
1972	3,540	27,435	
1973	3,486	27,654	
1974	3,456	29,933**	Drinking Age For Beer Lowered to 18 (July 1974)

Year	Projection	Actual	Projection	Actual
1975	3,476	3,773*	32,427	22,559**
1976	3,468	4,687*	34,429	33,577
1977	3,460	5,284*	36,431	36,918
1978	3,452	5,881*	38,433	40,259
1979	3,444	6,236*	40,435	36,628
1980	3,436	5,764*	42,437	30,791**
1981	3,428	6,292	44,439	30,511**

(2) Projecting Lowered-Drinking-Age Trends (1975-1980) Into The Raised-Drinking-Age Period (1982)

Year	Alcohol-Related Crashes	Non-Alcohol-Related Crashes	
1975	3,773	22,559	
1976	4,687	33,557	
1977	5,284	36,918	
1978	5,881	40,259	
1979	6,236	36,628	
1980	5,764	30,791	
1981	6,292	30,511	Drinking Age For Off-Premise Beer Raised to 19 (July 1981)

Year	Projection	Actual	Projection	Actual
1982	7,225	6,195	No Distinguishable Pattern	30,263
1983	7,660	6,029**		31,631

* Significantly higher than expected
** Significantly lower than expected

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Table B-4

Projections for Persons 25 Years and Older

(1) Projecting Pre-Age-Change Trends (1969-1973) Into The Post-Age-Change Period (1975-1981)

Year	Alcohol-Related Crashes	Non-Alcohol-Related Crashes	
1969	8,964	66,005	
1970	9,103	69,879	
1971	9,344	75,725	
1972	9,890	82,149	
1973	9,781	82,254	
1974	9,739	73,908	Drinking Age For Beer Lowered to 18 (July 1974)

Year	Projection	Actual	Projection	Actual
1975	10,385	8,990**	93,110	63,016**
1976	10,627	10,890	97,586	100,816
1977	10,869	11,727*	102,063	110,484*
1978	11,111	12,475*	106,540	120,152*
1979	11,353	12,676*	111,017	112,312
1980	11,595	11,917	115,494	100,012**
1981	11,837	12,189	119,970	102,681**

(2) Projecting Lowered-Drinking-Age Trends (1975-1980) Into The Raised-Drinking-Age Period (1982)

Year	Alcohol-Related Crashes	Non-Alcohol-Related Crashes	
1975	8,990	63,016	
1976	10,890	100,816	
1977	11,727	110,484	
1978	12,475	120,152	
1979	12,676	112,312	
1980	11,917	100,012	
1981	12,189	102,681	Drinking Age For Off-Premise Beer Sales Raised To 19 (July 1981)

Year	Projection	Actual	Projection	Actual
1982	14,092	11,281**	130,592	101,984
1983	14,677	10,597**	137,139	108,576

* Significantly lower than expected
** Significantly higher than expected

APPENDIX C

LICENSED DRIVERS AND ACCIDENT RATES BY AGE

Table C-1

Licensed Drivers by Age
1971-1982

Year	Age 16	17	18	19	16-19 Total
1971	31,765	54,134	65,226	68,286	219,411
1972	35,259	58,126	72,087	76,634	242,107
1973	36,368	62,164	75,283	84,395	258,228
1974	38,520	63,625	79,115	86,117	267,377
1975	40,146	64,477	80,049	88,800	273,472
1976	40,854	66,549	81,022	90,595	279,020
1977	42,735	67,416	83,063	91,155	284,369
1978	41,810	68,831	83,806	93,102	287,549
1979	41,354	68,002	84,462	93,386	187,204
1980	41,293	67,853	83,673	94,116	286,935
1981	38,697	67,008	83,126	93,324	282,155
1982	36,792	61,042	81,858	92,249	271,941
1983	40,249	58,824	69,798	88,075	256,946

Year	Age 20	21	22	23	20-24 Total
1971	69,175	68,760	72,166	76,355	370,225
1972	77,689	77,199	76,631	79,625	392,778
1973	86,347	88,222	88,986	87,718	442,165
1974	91,626	91,767	94,605	93,371	463,467
1975	95,541	94,708	95,904	96,069	477,855
1976	92,604	93,862	98,736	97,441	481,025
1977	98,922	101,644	103,295	107,383	517,307
1978	94,917	99,178	102,544	103,378	502,802
1979	95,870	99,181	104,422	107,427	510,038
1980	95,919	101,360	104,913	110,034	519,798
1981	96,919	101,248	105,837	110,188	523,925
1982	95,931	101,515	105,894	110,185	522,294
1983	94,994	102,488	106,462	112,744	526,573

Table C-1 (Continued)

Year	25 And Over Total	Total Drivers In Virginia
1971	1,956,020	2,545,656
1972	2,035,608	2,670,493
1973	2,253,761	2,954,154
1974	2,236,091	3,066,935
1975	2,288,432	3,039,739
1976	2,453,307	3,213,352
1977	2,202,772	3,104,448
1978	2,529,187	3,319,538
1979	2,522,296	3,319,538
1980	2,614,176	3,430,909
1981	2,776,516	3,582,596
1982	3,008,648	3,803,023
1983	3,120,673	3,904,360

Source: Virginia Division of Motor Vehicles, Driver Services

TABLE C-2

Accident Rates for Various Age Groups

Year	16 to 19 Alcohol-Related	16 to 19 Non-Alcohol-Related	20 to 24 Alcohol-Related	20 to 24 Non-Alcohol-Related	
1971	0.74	9.18	0.95	6.68	
1972	0.72	9.59	0.90	6.98	
1973	0.74	9.42	0.79	6.25	Drinking Age
1974	0.97	8.51	0.75	5.16	For Beer
1975	1.09	7.35	0.79	4.72	Lowered
1976	1.26	10.88	0.97	6.98	
1977	-	-	-	-	
1978	1.43	12.21	1.17	8.01	
1979	1.50	10.90	1.22	7.18	
1980	1.58	9.92	1.11	5.92	Drinking Age
1981	1.67	10.05	1.20	5.82	For Beer
1982	1.41	8.93	1.19	5.78	Raised
1983	1.23	9.63	1.15	6.01	

Source -- Accident Data -- Virginia Department of State Police
Licensing Data -- Division of Motor Vehicles

Method -- For 16 to 19 year olds and 20 to 24 year olds, accident rate is defined as:

$$\text{Accident Rate} = \frac{\text{Number of Accidents}}{\text{Number of Licensed Drivers}} \times 100$$

The rate is multiplied by 100 simply to provide a number which is more easily understood.

Table C-2 (Continued)

	25 And Over		
Year	Alcohol-Related	Non-Alcohol-Related	
1971	0.48	3.87	
1972	0.49	4.04	
1973	0.43	3.65	Drinking Age
1974	0.44	3.31	For Beer Lowered
1975	0.39	2.75	
1976	0.45	4.11	
1977	-	-	
1978	0.49	4.75	
1979	0.50	4.45	
1980	0.46	3.83	Drinking Age
1981	0.44	3.70	For Beer Raised
1982	0.38	3.39	
1983	0.34	3.48	