# ALCOHOL-AGE CRASH ANALYSIS: Projections of the Effect of Lowering the Legal Drinking Age in Alabama David B. Brown August 16, 2008

## INTRODUCTION

This analysis was performed at the request of Dr. Russ Fine, Director of the Injury Control Research Center at the University of Alabama in Birmingham. He requested it for the purpose of providing an estimate of the effect that a lowering of the legal alcohol drinking age in Alabama from its current level of 21 to the projected age of 18. As background, it is important to note that those who were around before the drinking age was raised from 18 to 21 in Alabama, including this author, can recall when age 18 was quite over-represented in alcohol-related crashes. With the change in the law, the most over-represented age became age 21, and it has remained at that age to this day.

The basic theory behind the following analysis is that a reduction in the drinking age will result in an age distribution of DUI crashes that once again returns the major overrepresentation to age 18. This premise is not really subject to debate. The lethal combination of inexperienced drinking with inexperienced driving has been so well established that the analysis given below may well err on the side of a conservative estimate of increased injuries and fatalities. This is because the "inexperience factor" would certainly apply to the 18 year old much more than it applies to a 21 year old. Thus, applying the odds ratios based on the 21 year olds' over-representation is, if anything, quite conservative.

The approach given below assumes that the over-representations (as measured by the odds ratios) that currently apply to ages 19 through 23 will shift to be centered on 18 as opposed to 21. So these odds ratios will apply to 16 through 20 if the permissible alcohol age is reduced to 18.

## FATALITY ANALYSIS

The four year period of 2004 thru 2007 was also used for the fatality analysis. The results output from CARE are for fatal alcohol crashes, not number of fatalities. However, the number of fatalities is easily calculated below since over the four year period there were 1.127 fatalities per alcohol fatal crash.

The figure and table in Display 1 below demonstrates the over-representations for the ages of 19, 20 and 21, which continue for the ages through 30. Note that the red bars are alcohol-involved fatal crashes, while the blue bars are non-alcohol-involved fatal crashes. The Over Rep column is commonly called the Odds Ratio – it is the ratio for each age of the probability of the causal driver being in that particular age first for alcohol related fatal crashes (red) and then for the non-alcohol fatal crashes. The percentages given in the table would be the probability of someone coming up on a crash and finding that someone of that age caused the crash.

#### Display 1. CARE IMPACT Comparison of Alcohol and Non-Alcohol Fatal Crashes Calendar Years 2004-2007

Nome       Over Regimention       Over Regimention       Threaded       2         Number C       36000000000000000000000000000000000000		<u>Filters</u> <u>Analysis</u> <u>Locations</u>	<u>Search</u> <u>Continuous</u> Impact <u>T</u>	ools <u>H</u> elp		Filter Loris				-
Image: Second constraint of the second constraints of	ilt Data	a Source 2004-2007 Alabama Cra	ash-Road Data 🔻 Default Filter 🛛 Al	cohol Related And Fatal Cr	ashes	ONLY OR	DFCR OPINION SOBRI	TY DR C = DRUGS ONLY	OR OFCR OPINION S	OBRIET
Durand       Other freq       Other freq       Other freq       Other freq       New Reg in the second seco	r By:	Natural Order 🗸	- Suppress					<ul> <li>Over Representation</li> </ul>	Threshold 2.0	
Value         Subset Free         Other Free         Other Free         Other Free         Other Free         New Gart         1           15         4         0.44         65         2.766         0.157         -2.142         1           16         12         2.336         106         3.502         0.813         1-028         1		Descending v	Zero-Valued Rows					Max Gain	Thirdenoid	
Value         Subset Free         Other Free	23: RA	AW AGE DRIVER C							V023: RAW AGE DR	IVER C
1       22       2.38       108       5.502       0.681       -10.28         19       36       3.555       109       3.554       1.105       3.415         19       36       3.555       109       3.554       1.105       3.415         21       43       4.664       39       3.200       1.453       1.303         22       37       4.013       1.759       1.756       1.358         23       39       4.230       85       2.756       1.358       1.338         24       25       2.111       76       5.1515       1.358         25       28       3.037       55       1.783       1.1077       1.155         26       28       3.037       55       1.783       1.1077       1.155         26       28       3.037       55       1.783       1.1077       1.156         27       2.85       1.93       1.417       1.356       1.138       1.139       1.137       1.1354         28       29       2.175       55       1.138       1.109       3.56       1.138       1.139       3.56       1.138       1.139       3.56       1.138	Val	lue	Subset Freq.	Subset Per.	Other Freq.	Other Per.	Over Rep.	Max Gair 🔺		
19       2.061       102       3.37       0.623       11.44         19       3.6       3.055       109       3.534       1105       3.144         20       4.4       4.772       131       4.248       1123       4.635       109         21       4.3       4.644       4.772       131       4.248       1123       4.635       109         22       3.3       4.013       115       3.779       10.76       2.2161       100       2.275       135       13.54       100       2.275       13.55       13.56       13.55	16		4	0.434	85	2.756	0.157	-21.412		
19       36       395       19       334       1105       3315       341       19         20       44       4772       131       428       1123       438       1340       19         21       43       464       99       3201       1453       1340       19         22       39       420       15       2.766       1555       13589         22       25       2111       76       244       1057       1734       1057         25       2111       76       1544       1057       155       13589       1057       1384       0359       -1041         26       28       3037       55       1733       1702       1157       1734       1784       1057         28       20       2169       61       1739       107       1541       1557       138       2442       2603       52       1689       1188       2445       1393       1071       9547       33       23       24       2603       68       2205       1181       3571       24       265       218       1933       1191       3571       25       24       263       68	17									
20       44       477       131       448       1123       438       1330       433       1323       433       1330       143       1330       15       273       1076       2219       21       239       4230       15       275       155       1338       16       175       1755       1735       1735       1737       11357       1358       1417       7351       1357       1357       1358       1357       1358       1357       1358       1357       1358       1357       1358       1359       1357       1358       1359       1359       1357       1358       1359       <										
21       43       464       99       3.210       1433       13.400         22       39       4230       85       2.766       1535       13.80         23       39       4230       85       2.766       1535       13.80         24       25       2.711       76       2.44       100       2.774         25       2.711       75       2.44       1.00       2.797         26       2.83       3.037       55       1.733       1.737       11.557         27       28       3.037       55       1.733       1.737       1.735         28       3.037       55       1.738       1.703       1.735         30       10       2.02       2.168       1.158       2.44         28       2.12       2.205       1.181       3.874         31       1522       52       2.010       9.971       9.574         32       24       2.603       68       2.205       1.81       3.874         32       24       2.603       68       2.205       1.81       3.874         34       1.922       2.010       0.971       9.53										
22       37       4 013       115       3.729       1.076       2.191         23       39       4.200       85       2.756       1.558       1.558         24       25       2.711       76       2.44       1.000       2.291         25       2.711       76       2.44       1.000       2.291         25       2.83       3.037       54       1.731       1.734       11.856         26       28       3.037       54       1.733       1.734       11.856         28       2.65       2.711       59       1.913       1.417       7.381         30       2.00       2.199       61       1.735       1.744       11.856         31       1.81       1.952       52       1.686       1.118       2.445         31       2.13       1.911       3.361       93       2.010       0.971       -0.556       95       56       1.911       3.561       95       1.911       3.561       95       1.911       3.561       95       1.911       3.561       95       1.911       3.561       95       95       1.911       1.951       95       95       1.911										
23       39       4 200       85       2.756       1.556       1.558       1.558       1.558       1.556       1.556       1.556       1.556       1.556       1.556       1.557       1.558       1.556       1.556       1.556       1.556       1.556       1.556       1.557       1.557       1.557       1.557       1.557       1.557       1.557       1.557       1.557 </td <td></td>										
24       25       2711       76       2444       1100       2279         25       28       3007       54       1781       1734'       11866         26       28       3007       54       1781       1734'       11866         26       28       3007       55       1781       1734'       11866         28       25       2711       59       1913       1417       7361         30       26       2771       59       1913       1417       7361         30       20       2159       61       1978       1097       1763         31       18       1952       52       1866       1158       254         32       24       2603       57       1448       1646       559         33       21       2278       59       1913       1191       3361         34       1952       62       2010       0971       -0536       Strby Sum of Max Gam         36       18       1952       62       2010       0971       -0536       Strby Sum of Max Gam         36       18       1952       62       2010       0971       -053										
25 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0										
28       3.007       64       1751       1.724*       11.865         21       28       3.007       55       1733       1.700*       11.857         28       26       2.711       59       1.913       1.417       7.361         29       16       1.725       57       1.848       0.909*       1.701         30       20       2.165       61       1.978       1.097*       1.701         31       18       1.952       52       1.668       1.118       2.454         32       2.45       4.5       1.499       1.710       9.547         32       2.45       4.5       1.499       1.710       9.547         34       2.1       2.275       5.2       2.00       0.571       0.555       2.057       0.571       0.555       2.057       0.571       0.555       0.575       <										
27       28       3.037       55       1733       1.702       11.557         28       25       2.211       59       1913       1.417       7.361         29       16       1.725       57       1.848       0.539       -1.041         30       20       2.169       61       1.978       1.097       1.763         31       18       1.552       52       1.566       1.158       554         32       2.4       2.603       57       1.848       1.408       6.569         32       2.4       2.603       68       2.205       1.1191       3.361         35       2.4       2.603       68       2.205       1.1191       3.361         36       1.8       1.952       62       2.010       0.971       -0.556       -       Soft by Sum of Max Gam         MPACT Results - 2004-2007 Alabama Crash-Road Data - Alcohol Related And Fatal Crashes vs. Alcohol Related NOT And Fatal Crashes         VI22: RAW AGE DRIVER C	26									
28       25       2111       59       1913       1417       781         29       16       1735       57       1848       0.939       -1041         30       20       2169       61       1978       1097       1783         31       13       144       244       2603       57       1848       1488       6.959         31       21       2245       45       1459       1710       9.577         34       21       2245       45       1439       1.710       9.577         35       22       203       68       2205       1.181       3.861         35       24       2603       62       2010       0.971       0.537         36       18       1952       62       2010       0.971       0.551       9       Sont by Sum of Max Gain         IMPACT Results - 2004-2007 Alabama Crash-Road Data - Atcohol Related And Fatal Crashes vs. Atcohol Related NOT And Fatal Crashes         VU22: RAW AGE DRIVER C	27									
30       20       2189       61       1.978       1.097       1.783         31       1892       52       1.586       1.158       2.494         32       24       2.603       57       1.946       1.408       6.959         33       23       2.495       45       1.453       1.710       9.547         35       24       2.603       68       2.205       1.181       3.671         36       18       1.952       62       2.010       0.371       0.585       -       Sot by Sum of Max Gan    IMPACT Results - 2004-2007 Alabama Crash-Road Data - Alcohol Related And Fatal Crashes vs. Alcohol Related NOT And Fatal Crashes          20       20       20       0.00       0.371       0.58       -       Sot by Sum of Max Gan	28									
31       18       1982       52       1.886       1.158       2.494         32       24       2.603       57       1.846       1.408       6.959         33       23       2.495       4.5       1.459       1.710       9.547         34       21       2.278       59       1.913       3.061       3.061         35       224       2.003       68       2.206       1.1181       3.061       3.061         35       18       1.952       62       2.010       0.971       -0.536       -       Sot by Sum of Max Gain         36       18       1.952       62       2.010       0.971       -0.536       -       Sot by Sum of Max Gain         IMPACT Results - 2004-2007 Alabama Crash-Road Data - Alcohol Related And Fatal Crashes vs. Alcohol Related NOT And Fatal Crashes         V023: RAW AGE DRIVER C	29			1.735		1.848	0.939	-1.041		
32       24       2 03       57       1.448       1.408       6.559         33       23       2495       45       1.459       1.710       9.547         34       21       2.278       59       1.913       1.191       3.561         35       24       2.603       68       2.205       1.181       3.671       •       Sort by Sum of Max Gain         36       1       1.952       52       2.010       0.971       0.538       •       Sort by Sum of Max Gain         37       1.448       1.469       1.913       3.1191       3.561       •       Sort by Sum of Max Gain         38       1.52       52       2.010       0.971       •       Sort by Sum of Max Gain         39       1.52       52       52       1.912       •       •       Sort by Sum of Max Gain         IMPACT Results - 2004-2007 Alabama Crash-Road Data - Alcohol Related And Fatal Crashes vs. Alcohol Related NOT And Fatal Crashes         VID23: RAW AGE DRIVER C	30									
33       23       2.495       45       1.499       1.710       9.471         34       21       2.278       59       1.131       1.191       3.361         35       18       1.952       62       2.010       0.971       -0.536       •         36       18       1.952       62       2.010       0.971       -0.536       •       •       Sort by Sum of Max Gain         36       18       1.952       62       2.010       0.971       -0.536       • <td< td=""><td>31</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	31									
34       21       2.278       59       1.913       1.191       3.361         35       24       2.603       68       2.205       1.181       3.671         36       18       1.952       62       2.010       0.971       -0.536       -         36       18       1.952       62       2.010       0.971       -0.536       -       Sott by Sum of Max Gain         36       18       1.952       62       2.010       0.971       -0.536       -       Sott by Sum of Max Gain         36       18       1.952       62       2.010       0.971       -0.536       -       Sott by Sum of Max Gain         IMPACT Results - 2004-2007 Alabama Crash-Road Data - Alcohol Related And Fatal Crashes         V023: RAW AGE DRIVER C										
25       24       2.003       63       2.205       1.181       3.671         36       18       1.952       62       2.010       0.971       -0.536       •       Soft by Sum of Max Gain         36       MA • C       <										
36       18       1952       62       2.010       0.971         Soft by Sum of Max Gam         IMPACT Results - 2004-2007 Alabama Crash-Road Data - Alcohol Related And Fatal Crashes vs. Alcohol Related NOT And Fatal Crashes V023: RAW AGE DRIVER C       IMPACT Results - 2004-2007 Alabama Crash-Road Data - Alcohol Related And Fatal Crashes vs. Alcohol Related NOT And Fatal Crashes										
Image: Image									Sort by Sum of Max	Gain
	9	🌆 • 🖪 💐 🖩 🔶	🔐 #% 🔍							
	<b>8</b>   I	🏨 • 🖪 💐 🖩 🔶		2007 Alabama Crash-Roa	d Data - Alcohol Related An V023: RAW AGE DRIV	d Fatal Crashes vs. Alcoho 'ER C	I Related NOT And Fa	al Crashes		
		<b>▲ • 🛐 🎘 🖩 </b> Φ 🕀   I		2007 Alabama Crash-Roa	d Data - Alcohol Related Ar V023: RAW AGE DRIV	d Fatal Crashes vs. Alcoho 'ER C	ol Related NOT And Fa	al Crashes		
	80 - 60 -	<b>▲ • 🛐 🎘 🖩 </b> Φ 🕀   I		2007 Alabama Crash-Roa	d Data - Alcohol Related An V023: RAW AGE DRIV	d Fatal Crashes vs. Alcoho 'ER C	ol Related NOT And Fa	al Crashes		
	80 - 60 - 40 -	<b>₩ - ⊠   % ⊞</b> Φ ⊕   I		2007 Alabama Crash-Roa	d Data - Alcohol Related An V023: RAW AGE DRIV	d Fatal Crashes vs. Alcoho ER C	ol Related NOT And Fa	al Crashes		
	80 - 60 - 40 - 20 -	<b>₩ • ⊠   % ₩ ∞</b> Φ ⊕   I		2007 Alabama Crash-Roa	d Data - Alcohol Related An V023: RAW AGE DRIV	d Fatal Crashes vs. Alcoho FR C	ol Related NOT And Fa	al Crashes		
	80 - 60 - 40 - 20 - 00 -	<b>₩ - ⊠   % ₩ ∞</b> ↔   I		2007 Alabama Crash-Roa	d Data - Alcohol Related An V023: RAW AGE DRIV	d Fatal Crashes vs. Alcohc ER C	ol Related NOT And Fa	al Crashes		
	80 - 60 - 40 - 20 - 80 -	M ・ 🛛   🤁 🖩 ゆ 令   I		2007 Alabama Crash-Roa	d Data - Alcohol Related An V023: RAW AGE DRIV	d Fatal Crashes vs. Alcoho ER C	ol Related NOT And Fa	al Crashes		
	80 - 60 - 40 - 20 - 80 - 60 -	▲ • ☆ 樂   <b>2</b> • ♣		2007 Alabama Crash-Roa	d Data - Alcohol Related Ar V023: RAW AGE DRIV	d Fatal Crashes vs. Alcoho ER C	ol Related NOT And Fa	al Crashes		
	80 - 60 - 40 - 20 - 80 - 80 - 60 - 40 - 20 -	<b>₩ • ⊠   % ₩ ∞</b> Φ ⊕   1		2007 Alabama Crash-Roa	d Data - Alcohol Related An V023: RAW AGE DRN	d Fatal Crashes vs. Alcoho ER C	ol Related NOT And Fa	al Crashes		
	80 - 60 - 40 - 20 - 00 - 80 - 60 - 40 - 20 - 00 -	<b>▲ ・ 12   兆 部 小 수  </b> 1		2007 Alabama Crash-Roa	d Data - Alcohol Related Ar V023: RAW AGE DRIV	d Fatal Crashes vs. Alcoho ER C	ol Related NOT And Fa	al Crashes		
	80 - 60 - 20 - 20 - 80 - 60 - 40 - 20 - 20 - 80 -	<b>▲ ・ 13</b>   <b>33</b>   13 ( 中 今   1		2007 Alabama Crash-Roa	d Data - Alcohol Related Ar V023: RAW AGE DRIV	d Fatal Crashes vs. Alcoho ER C	ol Related NOT And Fa	al Crashes		
	80 - 60 - 40 - 20 - 00 - 80 - 50 - 40 - 20 - 00 - 80 - 50 -	<b>₩ • ⊠   % ₩ ∞ ↔  </b> 1		2007 Alabama Crash-Roa	d Data - Alcohol Related An V023: RAW AGE DRIV	d Fatal Crashes vs. Alcoho ER C	ol Related NOT And Fa	al Crashes		
	80 - 60 - 40 - 20 - 80 - 60 - 40 - 20 - 80 - 60 - 40 -	<b>₩ • ⊠   ₹</b> ⊠ Φ ↔  1		2007 Alabama Crash-Roa	d Data - Alcohol Related An V023: RAW AGE DRN	d Fatal Crashes vs. Alcoho ER C	ol Related NOT And Fa	al Crashes		
	80 - 60 - 40 - 20 - 80 - 60 - 40 - 20 - 80 - 60 - 40 - 20 -	<b>₩ • 1</b>		2007 Alabama Crash-Roa	d Data - Alcohol Related Ar V023: RAW AGE DRIV	d Fatal Crashes vs. Alcoho ER C	ol Related NOT And Fa	al Crashes		
	80 - 60 - 20 - 20 - 80 - 80 - 60 - 40 - 20 - 80 - 80 - 60 - 40 - 20 - 80 - 80 - 80 - 80 - 80 - 80 - 80 - 8	<b>₩ • 13</b>   <b>%</b> ₪ Φ ↔   1		2007 Alabama Crash-Roa	d Data - Alcohol Related Ar V023: RAW AGE DRIV	d Fatal Crashes vs. Alcoho ER C	ol Related NOT And Fa	al Crashes		
	80 - 60 - 40 - 20 - 00 - 80 - 60 - 40 - 20 - 80 - 40 - 20 - 80 - 80 - 60 - 40 - 20 - 60 -	u · S   º		2007 Alabama Crash-Roa	d Data - Alcohol Related An V023: RAW AGE DRI	d Fatal Crashes vs. Alcoho ER C	ol Related NOT And Fa	al Crashes		
	80 - 60 - 40 - 20 - 00 - 80 - 60 - 40 - 20 - 80 - 60 - 40 - 20 - 80 - 60 - 40 - 20 - 60 - 40 - 20 - 60 - 40 - 20 - 20 - 20 - 20 - 20 - 20 - 20 - 2	u≞ • ⊠   <del>v</del> ≣ @ \$ ÷   1		2007 Alabama Crash-Roa	d Data - Alcohol Related Ar V023: RAW AGE DRN	d Fatal Crashes vs. Alcoho ER C	ol Related NOT And Fa	al Crashes		
	.80 - .60 - .40 - .20 - .00 - .80 - .40 - .20 - .00 - .80 - .60 - .40 - .20 - .80 - .60 - .40 - .20 - .80 - .60 - .40 - .20 -	u • 🖸 🕅 🤁 🖬 🔶 🗍		2007 Alabama Crash-Roa	d Data - Alcohol Related Ar V023: RAW AGE DRIV	d Fatal Crashes vs. Alcoho ER C	ol Related NOT And Fa	al Crashes		
	.80 - .60 - .40 - .20 - .80 - .60 - .40 - .20 - .00 - .80 - .60 - .40 - .20 - .00 - .80 - .60 - .40 - .20 - .00 - .40 - .20 - .00 - .40 - .20 - .00 - .20 - .00 - .20 - .00 - .20 - .00 - .20 -	u · S   º		2007 Alabama Crash-Roa	d Data - Alcohol Related An V023: RAW AGE DRI	d Fatal Crashes vs. Alcoho ER C	ol Related NOT And Fa	al Crashes		
	80 - 60 - 40 - 20 - 20 - 20 - 20 - 20 - 20 - 80 - 40 - 20 - 80 - 80 - 40 - 20 - 20 - 80 - 40 - 20 - 80 - 80 - 80 - 80 - 80 - 80 - 80 - 8	u · <b>□</b>   <b>3</b> i i i i i i i i i i i i i i i i i i i		2007 Alabama Crash-Roa	d Data - Alcohol Related An V023: RAW AGE DRN	d Fatal Crashes vs. Alcoho ER C	ol Related NOT And Fa			
	80 - 60 - 40 - 20 - 80 - 80 - 40 - 20 - 80 - 40 - 20 - 00 - 80 - 60 - 40 - 20 - 00 - 80 - 40 - 20 - 00 -	u · <b>□</b>   <b>3</b> i i i i i i i i i i i i i i i i i i i		2007 Alabama Crash-Roa	d Data - Alcohol Related Ar V023: RAW AGE DRN	d Fatal Crashes vs. Alcoho ER C	ol Related NOT And Fa			

Display 2 below is a copy of the relevant data from Display 1. Note that the odds ratio currently shows under-representations for age 16, 17 and 18. Ages 19 and 20 are somewhat over-represented, perhaps due to their association with their older friends who can obtain alcohol beverages for them. A very high odds ratio (1.453) at age 21 is expected, since this is the first year that these individuals are legally allowed to drink alcohol beverages. There is a carry-over in the over-representation to ages 22 and 23, which is also expected. We remind the reader that these results are for alcohol fatality crashes, and the relatively few crashes tend to make the distribution somewhat choppy.

To provide an estimate of the effect of lowering the legal drinking age to 18, we will apply the over-representations that currently center on age 21 to center them on age 18. The estimate of the number of crashes that 16 through 20 year olds will have (after

the drinking age is lowered) will be the result of taking these odds ratios and applying them to the actual numbers of crashes that these age groups currently have, which will allow for the fact that 16 year olds do not drive as many miles as 21 year olds.

Display 3 applies the odds ratios for the 19-23 age group to the 16-20 age group. Given that these odds ratios apply, the additional number of fatal crashes can be calculated. Applying the factor of 1.127 fatalities per fatal crashes enables the additional number of fatalities per year to be estimated.

	Alcohol Fat	Alcohol	Non-Alcohol	Non- Alcohol	Odds
Age	Crashes	%	Crashes	%	Ratio
16	4	0.43%	85	2.76%	0.157
17	22	2.39%	108	3.50%	0.681
18	19	2.06%	102	3.31%	0.623
19	36	3.90%	109	3.53%	1.105
20	44	4.77%	131	4.25%	1.123
21	43	4.66%	99	3.21%	1.453
22	37	4.01%	115	3.73%	1.076
23	39	4.23%	85	2.76%	1.535

## Display 2. Abstract of Relevant Data from Display 1

## Display 3. Estimate of Number of Additional Fatalities Per Year

	Projected Odds	Projected Alcohol	Additional	Additional	Additional
Age	Ratio	%	Crashes	Fatalities	Fat/Yr
16	1.105	3.04%	24.07	27.13	7
17	1.123	3.93%	14.27	16.09	4
18	1.453	4.81%	25.30	28.52	7
19	1.076	3.80%	-0.93	-1.05	0
20	1.535	6.52%	16.11	18.15	5
TOTALS			78.83	88.84	22

In summary, if the current legal drinking age is reduced to 18, the estimate is that this will result in the death of 22 persons per year. The age distribution for alcohol fatality crashes in Alabama (CY 2004-2007) indicates that the average age of those who were killed in alcohol crashes was 36.3 years of age. This is a conservative figure in that it would be expected that those who were killed in crashes caused by 16-20 year old drivers would be considerably younger than those killed in alcohol crashes in general.

## **INJURY ANALYSIS**

The four year period of 2004 thru 2007 was also used for the injury analysis. In the data that are presented below, "injuries" refer to non-fatal injuries so that these results can appropriately be added to those given above. The results are for injury crashes, not number of injuries. However, the number of injuries can be determined since over the four year period there were 1.364 injuries per alcohol injury crash. The displays below are identical in explanation to those given above, with the exception that rather than applying to fatalities, they apply to non-fatal injury crashes and then to non-fatal injured persons.

## Display 4. CARE IMPACT Comparison of Alcohol and Non-Alcohol (Non-Fatal) Injury Crashes Calendar Years 2004-2007

er By:	Natural Orden	rash-Road Data			Filter Logic     ONLY OR	OPER OPINION SOBRI	DUI OR OFCR OPINION ETY DR C = DRUGS ONLY     Over Representation		DRIET
	Natural Order    Descending	Suppress Zero-Valued Rows					Max Gain	Threshold 2.0	
23: RA	WAGE DRIVER C							V023: RAW AGE DRIVE	ERC
Val	ue	Subset Freq.	Subset Per	Other Freq.	Other Per.	Over Rep.	Max Gair 🔺		
16		98	0.859	4783	4.461	0.193*	-410.596		
17		151	1.324	4966	4.631	0.286*	-377.055		
18		281	2.464	5221	4.869	0.506*	-274.171		
19		363	3.184	4829	4.503	0.707*	-150.488		
20 21		398 478	3.491 4.192	4182 3678	3.900 3.430	0.895	-46.689 = 86.903		
22		478	4.017	3439	3.207	1.252*	92.317		
23		450	3.955	3114	2.904	1.362*	119.875		
24		428	3.754	2860	2.667	1.407*	123.884		
25		398	3.491	2723	2.539	1.375*	108.452		
26		367	3.219	2486	2.318	1.388*	102.653		
27		344	3.017	2369	2.209	1.366*	92.094		
28		297	2.605	2173	2.027	1.285*	65.936		
29		285	2.500	2070	1.930	1.295*	64.888		
30		232	2.035	1910	1.781	1.142	28.902		
31		284	2.491	1955	1.823	1.366*	76.117		
32		285	2.500	1783	1.663	1.503*	95.406		
33		270	2.368	1820	1.697	1.395*	76.472		
34		297	2.605 2.342	1885	1.758	1.482*	96.560	Sort by Sum of Max Ga	
		IMPACT Results - 2004-200	7 Alabama Crash-Road D	ata - Alcohol Related And In V023: RAW AGE DRI	ijury NonFatal vs. Alcoho	ol Related NOT And Inj	ury NonFatal		
.80 -									
.60 -									
.40 -									
20 -									
.00 -									
80 -									
.60 -									
.40 -									
20 - 00 -									
80 -									
.60 -									
40 -			11. I I I I I						
20 -									
00 -									
.80 - .60 -									
.80 - .60 -				liter in the second					
.00 - .80 - .60 - .40 - .20 -									
.80 .60 .40 .20 .00									
.80 - .60 - .40 - .20 - .00 - .80 -									
.80 - .60 - .40 - .20 -					iliin				

	Alcohol	Alcohol	Non-Alcohol	Non-Alcohol	Odds
Age	Crashes	%	Crashes	%	Ratio
16	98	0.86%	4783	4.46%	0.193
17	151	1.32%	4966	4.63%	0.286
18	281	2.46%	5221	4.87%	0.506
19	363	3.18%	4829	4.50%	0.707
20	398	3.49%	4182	3.90%	0.895
21	478	4.19%	3678	3.43%	1.222
22	458	4.02%	3439	3.21%	1.252
23	451	3.96%	3114	2.90%	1.362

.

# Display 5. Abstract of Relevant Data from Display 4

#### Display 6. Estimate of the Number of Additional Injuries Per Year

	Projected Odds	Projected Alcohol	Additional	Additional	Additional
Age	Ratio	%	Crashes	Injuries	lnj/Yr
16	0.707	3.15%	261.54	294.76	74
17	0.895	4.15%	321.61	362.46	91
18	1.222	5.95%	397.53	448.02	112
19	1.252	5.64%	279.89	315.43	79
20	1.362	5.31%	207.67	234.04	59
ΤΟΤΑ	LS		1468.24	1654.71	414

In summary, it will be expected that an additional 414 non-fatal injuries will result from the reduction of the legal drinking age to 18. The age distribution for those injured in alcohol injury crashes in Alabama (CY 2004-2007) indicates that the average age of those who were injured in alcohol crashes was 33.5 years of age. This is a conservative figure in that it would be expected that those who were injured in crashes caused by 16-20 year old drivers would be considerably younger than alcohol crashes in general.

## APPENDIX: Op-ED MINIMUM DRINKING AGE OF 21 REDUCES DRINKING AND DEATHS SAYS UAB INJURY CONTROL RESEARCH CENTER SUPPORTED BY A CAPS CARE RESEARCH STUDY

More than 100 college and university presidents joined together in support of the Amethyst Initiative, which questions the effectiveness of the minimum legal drinking age of 21 (MLDA 21), and suggests the nation reconsider dropping that to age 18. They claim that the current minimum age is not working and actually encourages increased binge drinking in underage students.

Evidence overwhelmingly proves them wrong.

The University of Alabama at Birmingham Injury Control Research Center (UAB ICRC)-created to understand why injuries happen and what can be done to lessen their impact—has reviewed that extensive evidence. Here's the real story.

The lethal combination of inexperienced driving with inexperienced drinking has been well established. The over-representation of 18 to 23 year olds we currently see involved in alcohol-related crashes would shift to center on 18, meaning we'd see more 16 to 20 year olds in crashes involving alcohol.

In a study requested by ICRC, the Center for Advance Public Safety (CAPS) at the University of Alabama estimated that the reduction of the drinking age in Alabama would result in an additional 22 fatalities per year, and an additional 414 persons injured per year if the drinking age in Alabama is reduced to 18 years.

The National Highway Traffic Safety Administration estimates that the MLDA 21 laws have saved more than 30,000 lives nationally since 1975, or approximately 1,000 lives per year. MLDA 21 laws are one of the most studied public health policies ever. The number of traffic fatalities involving underage drunk drivers has been cut in half since the early 1980s and the declines began immediately after the laws were implemented.

What's more, the benefits have occurred with little active enforcement, such that societal costs from injuries and death from underage drinking could likely be further reduced with greater enforcement of the existing laws. Another benefit is that MDLA 21 laws also result in less overall drinking by people under 21, a trend that continues through their early twenties.

The Centers for Disease Control and Prevention (CDC) has concluded, after review of the large body of research on MLDA 21, that lowering the minimum age to 18 would increase fatalities by 10 percent just in those under 21. Instead of calling for the age to be lowered, the UAB ICRC supports continued and increased enforcement of the lifesaving MLDA 21 laws.

To do otherwise would ignore the evidence....and endanger the health and lives of people traveling our roads.

Injury Control Research Center The University of Alabama at Birmingham 205-934-2861