



Research Note

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Alcohol Involvement in Fatal Motorcycle Crashes

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The National Highway Traffic Safety Administration's (NHTSA) National Center for Statistics and Analysis (NCSA) released a comprehensive analysis of fatal motorcycle crashes titled "*Recent Trends in Fatal Motorcycle Crashes*" (DOT HS 809 271) in July 2001 and two research notes "*Motorcyclist Fatalities in 2000*" (DOT HS 809 387) in December 2001 and "*Motorcyclist Fatalities in 2001*" (DOT HS 809 548) in February 2003. The report examined trends and rates of motorcycle riders (motorcyclists) killed in motor vehicle crashes during the ten year period 1990-1999 and the research notes compared the trends and rates in the report with the 2000 and 2001 data. This research note focuses in detail on the problem of alcohol involvement in fatal motorcycle crashes based on who are involved, where and when the crashes occur and other crash characteristics.

Background

Motorcyclist fatalities, following a longer-term trend, declined each year from 1993 to 1997, reaching an historic low of 2,116 in 1997. Fatalities among motorcycle riders then increased in 1998 to 2,294 (an 8.4 percent jump), in 1999 to 2,483 (a 8.2 percent increase) and again in 2000 to 2,897 (a 16.7 percent jump). These increases in motorcyclist fatalities, reversing a long-term trend, prompted NCSA to examine factors related to fatal motorcycle crashes and resulted in the aforementioned report and research notes. The 2001 Fatality Analysis Reporting System (FARS) data show that motorcyclist fatalities increased to 3,181, an increase of 9.8 percent

from 2000. The total increase in fatalities between 1997 and 2001 is 1,065 or 50.3 percent.

FARS Data

NCSA collects and analyzes data, conducts research, and disseminates statistical information to support efforts by NHTSA and the highway safety community aimed at reducing deaths, injuries and economic losses resulting from motor vehicle crashes. The FARS database, a national census of police-reported motor vehicle crashes resulting in fatal injuries, developed and run by NCSA, is one of the tools used to support these efforts. To be included in FARS, a crash must involve a motor vehicle traveling on a traffic way customarily open to the public, and result in the death of a person (either an occupant of a vehicle or a non-motorist) within 30 days of the crash. For a complete description of FARS, go to:

<http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/FARS.html>.

Alcohol Methodology

In 2001, NHTSA began using a revised method – **multiple imputation** – to estimate missing information about blood alcohol concentration (BAC) levels for persons involved in fatal crashes. The alcohol estimates in this research note are based on the new imputation method. The new method will enable NHTSA to improve the scope of alcohol involvement statistics generated from FARS.

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Instead of estimating alcohol involvement in the three categories used in the past (0.00, 0.01-0.09, and 0.10+ grams per deciliter [g/dl]), the new method estimates BAC levels over the entire range of plausible values from 0.00 to 0.94 g/dl. As a result, NHTSA will have the ability to report alcohol involvement at any BAC level. Because many states have adopted 0.08 g/dl as the legal threshold for alcohol intoxication, NHTSA now calculates alcohol involvement in the following three categories: 0.00 g/dl, no alcohol; 0.01-0.07 g/dl, impaired; and 0.08+, intoxicated. More information on the new multiple imputation method, including detailed tabulations of alcohol involvement in various categories (age, sex, time of day, etc.), is available in NHTSA Technical Report DOT HS 809 430, *Transitioning to Multiple Imputation: A New Method to Estimate Missing Blood Alcohol Concentration (BAC) Values in FARS*.

Occupant Fatality Rate per 100M Vehicle Miles Traveled by Vehicle Type and Year

Table 1 shows the occupant fatality rate per 100M vehicle miles traveled (VMT) by vehicle type and year. The data shows that per vehicle mile, motorcyclists were about 26 times as likely as passenger car occupants to die in a traffic crash in 2001. Similarly, motorcyclists were about 28 times as likely as light truck occupants to die in a traffic crash. This may be attributed to the distinct differences in the operation and vehicle body characteristics and safety provided to passenger car and light truck occupants compared to motorcycle occupants (riders).

Vehicle Type	Year		
	1999	2000	2001
Pass Cars	1.33	1.31	1.28
Light Trucks	1.25	1.22	1.20
Motorcycles	23.46	27.67	33.38

Source: NCSA, NHTSA, FARS 1999-2001 and Federal Highway Administration VMT data

Driver Alcohol Involvement in Fatal Crashes by Vehicle Type in 2001

Table 2 shows the alcohol involvement of passenger vehicle and motorcycle drivers in 2001 by driver BAC. Motorcycle drivers had the highest alcohol involvement (37 percent) among all vehicle types.

Vehicle Type	Alcohol Involvement			
	BAC 0.00		BAC≥0.01	
	No.	%	No.	%
Pass Cars	19,874	73	7,413	27
SUVs	4,327	73	1,562	27
Vans	3,102	84	605	16
Pickups	7,531	69	3,362	31
Motorcycles	2,054	63	1,191	37

Source: NCSA, NHTSA, FARS 2001

The difference in the vehicle body structure and operation of passenger cars and light trucks to motorcycles provides some of the needed safety to the occupants of passenger cars and light trucks. Alcohol involvement among motorcycle drivers was higher than passenger car and light truck drivers in fatal crashes in 2001. Hence, when these two factors are combined and compared to other vehicle types, the operation of a motorcycle combined with alcohol can lead to deadly consequences for motorcycle occupants.

Definition of Involvement

Alcohol involved or alcohol-positive in a crash is defined as an operator or actively involved non-occupant (pedestrian, pedalcyclist) with a BAC≥0.01. An *operator involved (operator can either be killed or survived in the crash)* in a fatal crash means that at least one fatality occurred in the crash, meaning the fatally injured person can either be the operator, passenger, pedestrian, pedalcyclist or occupant of another vehicle involved in the crash.

Data Analysis

The results of alcohol involvement among motorcyclists in fatal crashes are based on the analysis of the above FARS variables and are presented below.

1. **Person Type:** Table 3 shows the number and percent of motorcyclists involved in fatal crashes by year and person type. In 2001, 88 percent of the motorcyclists involved were motorcycle operators (drivers). This proportion has not changed significantly in the past 10 years. *Since a majority of the motorcyclists involved in fatal crashes are operators, all further analysis of the data relating to alcohol involvement will be based on operators involved, by their BAC in crashes.* The number of operators involved reached an historic low of 2,159 in 1997 since FARS started collecting data in 1975. Since 1997, the number of operators involved has increased each year. In 2001, 3,245 operators were involved in fatal crashes, an increase of over 50 percent from 1997.

Table 3 Motorcyclists Involved in Fatal Crashes by Year and Person Type				
Year	Person Type			
	Operator		Passenger	
	No.	%	No.	%
1992	2,435	85	433	15
1993	2,471	85	445	15
1994	2,330	86	373	14
1995	2,262	85	394	15
1996	2,175	85	376	15
1997	2,159	86	357	14
1998	2,333	86	379	14
1999	2,528	87	379	13
2000	2,971	87	443	13
2001	3,245	88	461	12

Source: NCSA, NHTSA, FARS 1992-2001

2. **Sex of Operator:** Table 4 shows the number and percent of motorcycle operators involved in fatal crashes by their sex (gender). In 2001, there were 3,139 (97 percent) male operators involved in fatal crashes. This proportion of male to female has not changed much since 1992. The number of male operators involved has increased each year since 1997. The number of male operators involved between 1997 and 2001 increased over 49 percent.

Table 4 Motorcycle Operators Involved in Fatal Crashes by Year and Sex (Gender)				
Year	Operator Sex (Gender)			
	Male		Female	
	No.	%	No.	%
1992	2,386	98	49	2
1993	2,412	98	57	2
1994	2,267	97	62	3
1995	2,199	97	63	3
1996	2,116	97	58	3
1997	2,101	97	58	3
1998	2,274	97	58	2
1999	2,454	97	72	3
2000	2,873	97	96	3
2001	3,139	97	104	3

Source: NCSA, NHTSA, FARS 1992-2001

3. **Motorcycle Operators Involved in Fatal Crashes by Year and Age Group:** The number of motorcycle operators involved by year and age group is shown in Table 5. Between 1992 and 2001, the highest number of operators involved among all age groups was in the 20-29 year old age group. However, the number of operators involved in the 40-49 and over 49-year old age group has increased each year between 1992 and 2001. The number of operators in the 40-49 year old age group increased by 2.6 times, the over 49 year old age group by 3.2 times. These increases indicate a shift in trend of 40 year old and over operator involvement in fatal motorcycle crashes. From 1992 to

2001 the number of operators in the under 20 and 20-29 year old age group declined. The number of operators in the 30-39 year old age group showed a small increase between these same years. Refer to the “Recent Trends in Fatal Motorcycle Crashes” (DOT HS 809 271) report for motorcyclist fatality rates by age group.

Year	Age Group				
	<20	20-29	30-39	40-49	>49
1992	416	892	667	288	169
1993	364	898	687	338	179
1994	353	814	615	346	199
1995	283	811	604	358	204
1996	264	690	565	429	225
1997	219	648	562	425	304
1998	237	684	627	487	296
1999	192	709	633	584	408
2000	257	760	732	698	519
2001	284	843	828	745	541

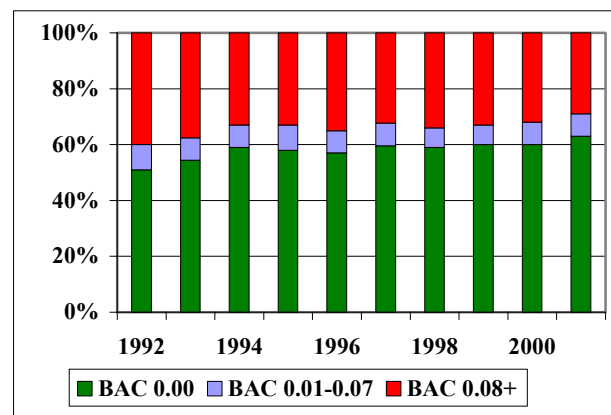
Source: NCSA, NHTSA, FARS 1992-2001

4. **Motorcycle Operators Involved in Fatal Crashes by Year and BAC Level:** Table 6 and Chart 1 show the alcohol involvement among motorcycle operators involved in fatal crashes by year and operator BAC level from 1992 to 2001. The alcohol involvement has slowly but steadily declined from 49 percent in 1992 to 37 percent in 2001. However, in 2001, over one-third of operators involved were still found to have been drinking and riding at the time of the crash. A majority of the operators were intoxicated (BAC≥0.08) among alcohol-positive operators. In fact, the ratio of intoxicated motorcycle operators to impaired operators was nearly 4 to 1. These numbers indicate that though alcohol involvement has shown a steady decline in the past ten years, it still continues to be a major problem among motorcycle operators.

Year	Alcohol Involvement					
	0.00		0.01-0.07		0.08+	
	No.	%	No.	%	No.	%
1992	1,248	51	214	9	973	40
1993	1,351	55	188	8	932	38
1994	1,376	59	185	8	769	33
1995	1,320	58	195	9	747	33
1996	1,229	57	178	8	768	35
1997	1,278	59	182	9	699	32
1998	1,375	59	155	7	803	34
1999	1,515	60	183	7	830	33
2000	1,784	60	244	8	944	32
2001	2,054	63	249	8	942	29

Source: NCSA, NHTSA, FARS 1992-2001

**Chart 1
Motorcycle Operators Involved in Fatal Crashes by Year and BAC Level**



Source: NCSA, NHTSA, FARS 1992-2001

5. **Motorcycle Operators Involved in Fatal Crashes in 2001 by Age Group and BAC:** Table 7 and Chart 2 show motorcycle operators involved in fatal crashes in 2001 by age group and operator BAC. The highest percentage of alcohol involvement among all motorcycle operator age groups was in the 40-49 year old age group, followed by the 30-39 year old age group. In 2001, almost half (46 percent) of all 40-

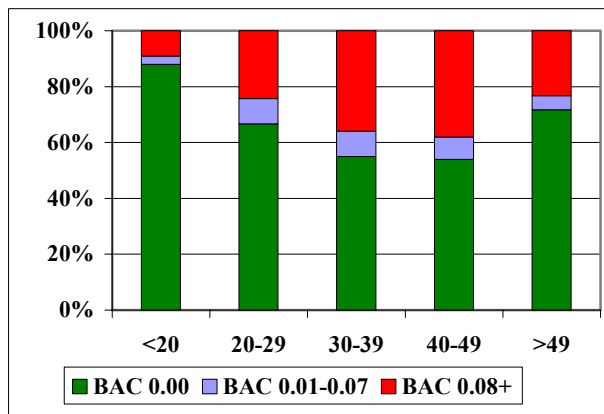
49 year old age group operators were alcohol-positive. Out of the 344 operators in the 40-49 year old age group, 282 (82 percent) were intoxicated ($BAC \geq 0.08$). Similarly, in the 30-39 year old age group, over 80 percent were intoxicated out of the 373 alcohol-positive operators.

Table 7
Motorcycle Operators Involved in Fatal Crashes in 2001 by Age Group and BAC

Age Group	Alcohol Involvement					
	0.00		0.01-0.07		0.08+	
	No.	%	No.	%	No.	%
< 20	249	88	8	3	27	9
20-29	560	66	77	9	206	24
30-39	455	55	72	9	301	36
40-49	401	54	62	8	282	38
> 49	386	71	29	5	126	23
Unknown	3	78	0	0	1	23
Total	2,054	63	249	8	942	29

Source: NCSA, NHTSA, FARS 2001

Chart 2
Motorcycle Operators Involved in Fatal Crashes in 2001 by Age Group and BAC



Source: NCSA, NHTSA, FARS 2001

6. **Motorcycle Operators Involved in Fatal Crashes in 2001 by Land Use and BAC:** Table 8 shows motorcycle operators involved in fatal crashes in 2001 by land use (rural/urban) and operator BAC. There is no significant difference in proportion of

alcohol involvement between rural and urban roads. The number of operators involved on rural roads was slightly higher than the number involved on urban roads. *The number of unknowns in 2001 could change with release of the final FARS 2001 file.*

Table 8
Motorcycle Operators Involved in Fatal Crashes in 2001 by Land Use and BAC

Land Use	Alcohol Involvement					
	0.00		0.01-0.07		0.08+	
	No.	%	No.	%	No.	%
Rural	1,004	63	116	7	473	30
Urban	901	63	124	9	412	29
Unknown	149	69	10	5	57	26
Total	2,054	63	244	8	942	29

Source: NCSA, NHTSA, FARS 2001

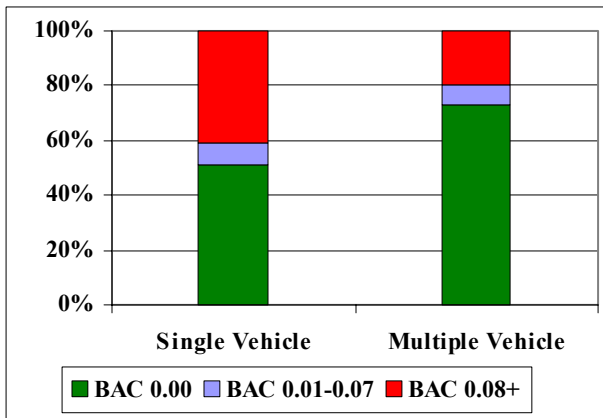
7. **Motorcycle Operators Involved in Fatal Crashes in 2001 by Type of Crash and BAC:** Table 9 and Chart 3 show motorcycle operators involved in fatal crashes in 2001 by type of crash (single vehicle/multiple vehicle) and operator BAC. Motorcycle operators were almost twice as likely to be alcohol-positive in single vehicle crashes compared to multiple vehicle crashes (49 percent vs. 27 percent).

Table 9
Motorcycle Operators Involved in Fatal Crashes in 2001 by Type of Crash and BAC

Type of Crash	Alcohol Involvement					
	0.00		0.01-0.07		0.08+	
	No.	%	No.	%	No.	%
Single Vehicle	742	51	120	8	591	41
Multiple Vehicle	1,312	73	129	7	351	20
Total	2,054	63	249	8	942	29

Source: NCSA, NHTSA, FARS 2001

Chart 3
Motorcycle Operators Involved in Fatal Crashes in 2001 by Type of Crash and BAC



Source: NCSA, NHTSA, FARS 2001

8. Motorcycle Operators Involved in Fatal Crashes by Year and Engine Size:

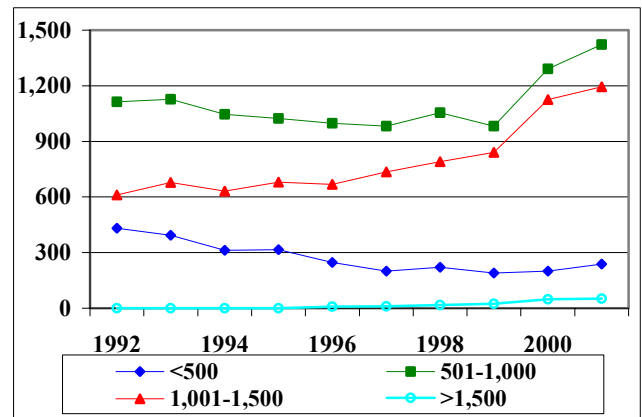
Table 10 and Chart 4 show motorcycle operators involved in fatal crashes by year and engine size in cubic centimeters (cc) from 1992 to 2001. The data show that there has been a noticeable increase in operators involved within the 1,001-1,500 cc engine size group in the past 10 years. The number of operators involved in this engine size group has increased each year since 1996. The overall increase between 1992 and 2001 within this engine size category is 95 percent (from 611 in 1992 to 1,194 in 2001). The largest number of operators involved is still in the 501-1,000 cc engine size group. However, the number of operators involved in the 1,001-1,500 cc engine size group is fast approaching the 501-1,000 cc levels. Operators involved in the 500 cc and less engine size group declined by 45 percent between 1992 and 2001. Starting in 1996, a very small number of operators involved in fatal crashes are reported involving motorcycles with engine displacements greater than 1,500 cc. The data show the popularity of riding larger displacement motorcycles.

Table 10
Motorcycle Operators Involved in Fatal Crashes by Year and Engine Size (cc)

Year	Engine Size (cubic centimeters)			
	<501	501-1,000	1,001-1,500	>1,500
1992	431	1,114	611	0
1993	394	1,128	678	0
1994	313	1,046	632	0
1995	316	1,023	680	0
1996	246	998	668	8
1997	201	983	736	11
1998	221	1,054	790	18
1999	190	983	840	24
2000	201	1,292	1,125	49
2001	238	1,423	1,194	52

Source: NCSA, NHTSA, FARS 1992-2001

Chart 4
Motorcycle Operators Involved in Fatal Crashes by Year and Engine Size (cc)



Source: NCSA, NHTSA, FARS 1992-2001

9. Motorcycle Operators Involved in Fatal Crashes in 2001 by Engine Size (cc) and BAC:

Table 11 and Chart 5 show motorcycle operators involved in fatal crashes in 2001 by engine size (cc) and operator BAC. Motorcycle operators on 1,001-1,500 cc engine size had the highest (44 percent) alcohol involvement among all engine size groups. Among the alcohol-positive operators on 1,001-1,500 cc engine

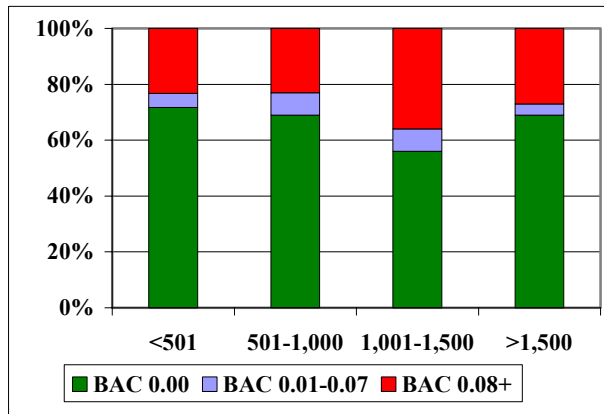
size motorcycles 82 percent were intoxicated with a BAC \geq 0.08.

Table 11
Motorcycle Operators Involved in Fatal Crashes in 2001 by Engine Size and BAC

Engine Size (cc)	Alcohol Involvement					
	0.00		0.01-0.07		0.08+	
	No.	%	No.	%	No.	%
< 500	170	71	12	5	56	23
501-1,000	988	69	112	8	323	23
1,001-1,500	665	56	96	8	433	36
> 1,500	36	69	2	4	14	27
Unknown	195	58	26	8	116	34
Total	2,054	63	249	8	942	29

Source: NCSA, NHTSA, FARS 2001

Chart 5
Motorcycle Operators Involved in Fatal Crashes in 2001 by Engine Size (cc) and BAC



Source: NCSA, NHTSA, FARS 2001

10. Motorcycle Operators Involved in Fatal Crashes by Year and Time of Day: Table 12 and Chart 6 show the number and percent of motorcycle operators involved in fatal crashes by year and time of day (day/night) from 1992 to 2001. NHTSA defines daytime crashes as those that occur between 6:00 AM and 5:59 PM and nighttime crashes between 6:00 PM and 5:59 AM. The data show that there has been a

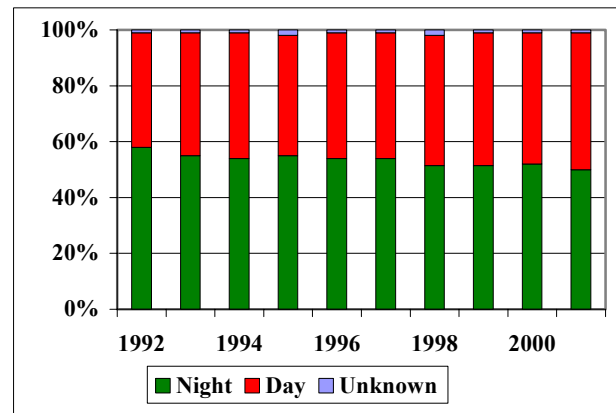
noticeable shift in the number and proportion of operators involved in fatal crashes during the daytime between 1992 and 2001 (41 percent vs. 49 percent). These data suggest that there are more motorcycles being used during the daytime than in the past or that daytime use is becoming more dangerous to motorcyclists due to the widespread availability of daytime running lamps on passenger vehicles.

Table 12
Motorcycle Operators Involved in Fatal Crashes by Year and Time of Day

Year	Time of Day					
	Night		Day		Unknown	
	No.	%	No.	%	No.	%
1992	1,411	58	996	41	28	1
1993	1,363	55	1,084	44	24	1
1994	1,265	54	1,045	45	20	1
1995	1,242	55	983	43	37	2
1996	1,171	54	983	45	21	1
1997	1,169	54	969	45	21	1
1998	1,207	52	1,089	47	37	2
1999	1,305	52	1,204	48	19	1
2000	1,541	52	1,406	47	24	1
2001	1,622	50	1,600	49	23	1

Source: NCSA, NHTSA, FARS 1992-2001

Chart 6
Motorcycle Operators Involved in Fatal Crashes by Year and Time of Day



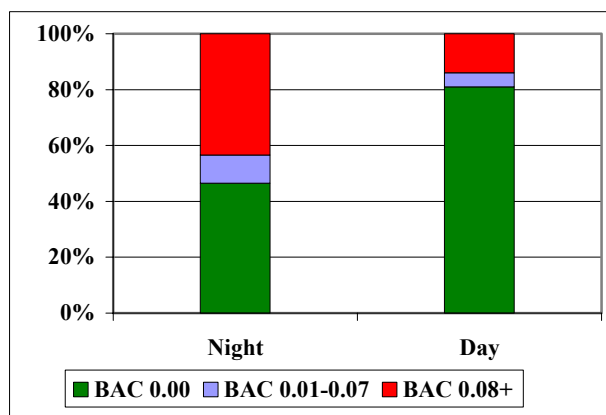
Source: NCSA, NHTSA, FARS 1992-2001

11. Motorcycle Operators Involved in Fatal Crashes in 2001 by Time of Day and BAC: Table 13 and Chart 7 show motorcycle operators involved in fatal crashes in 2001 by time of day (day/night) and operator BAC. Motorcycle operators during nighttime crashes were almost three times more likely to be alcohol-positive than daytime crashes (54 percent vs. 19 percent).

Time of Day	Alcohol Involvement					
	0.00		0.01-0.07		0.08+	
	No.	%	No.	%	No.	%
Night	752	46	165	10	705	43
Day	1,296	81	83	5	221	14
Unknown	5	23	1	6	17	72
Total	2,054	63	249	8	942	29

Source: NCSA, NHTSA, FARS 2001

**Chart 7
Motorcycle Operators Involved in Fatal Crashes in 2001 by Time of Day and BAC**



Source: NCSA, NHTSA, FARS 2001

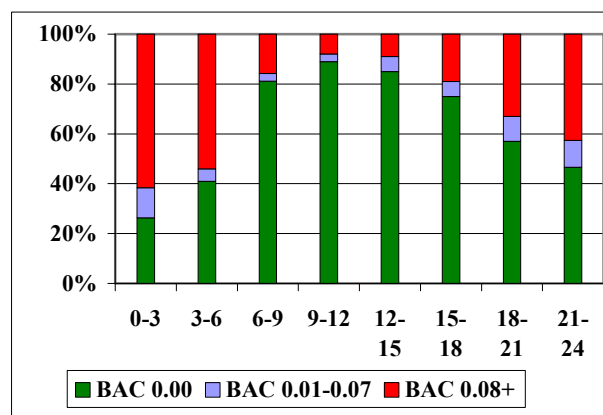
12. Motorcycle Operators Involved in Fatal Crashes in 2001 by Time of Day (3-hours) and BAC: Table 14 and Chart 8 show motorcycle operators involved in fatal crashes in 2001 by time of day and operator BAC. The highest number of operators involved during any 3-hour period was between 3 PM and 6 PM. The highest

alcohol involvement during any 3-hour period of the day was between midnight and 3 AM (74 percent). The next highest alcohol involvement was between 3 AM and 6 AM. In fact, more than half of the operators were alcohol-positive between 6 PM and 6 AM. This shows that alcohol involvement is a continuing problem, especially during nighttime crashes.

Time of Day	Alcohol Involvement					
	0.00		0.01-0.07		0.08+	
	No.	%	No.	%	No.	%
0-3	94	26	44	12	217	61
3-6	43	41	5	5	56	54
6-9	105	82	4	3	20	16
9-12	232	89	8	3	21	8
12-15	420	85	29	6	47	9
15-18	540	75	43	6	133	19
18-21	390	57	65	10	225	33
21-24	226	47	51	11	17	72
Unknown	5	23	1	6	17	72
Total	2,054	63	249	8	942	29

Source: NCSA, NHTSA, FARS 2001

**Chart 8
Motorcycle Operators Involved in Fatal Crashes in 2001 by Time of Day and BAC**



Source: NCSA, NHTSA, FARS 2001

13. Motorcycle Operators Involved in Fatal Crashes in 2001 by Weekday/Weekend and BAC:

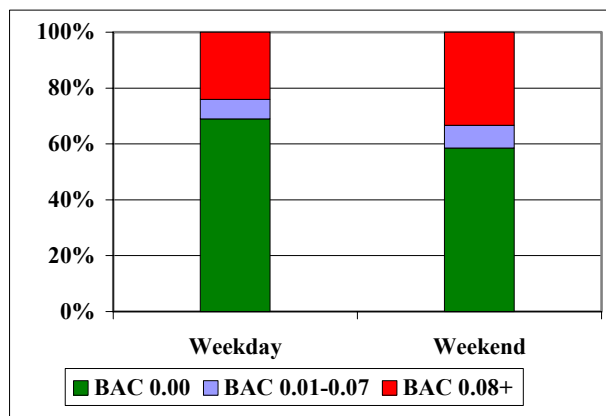
Table 15 and Chart 9 show motorcycle operators involved in fatal crashes in 2001 by time of day and day of the week (weekday/weekend) and operator BAC. NHTSA defines a weekday as between 6:00 AM Monday through 5:59 PM Friday and a weekend as from 6:00 PM Friday through 5:59 AM Monday. The alcohol involvement during weekends is higher by about 10 percentage points, compared to weekdays.

Table 15
Motorcycle Operators Involved in Fatal Crashes in 2001 by Weekday/Weekend and BAC

Weekday/ Weekend	Alcohol Involvement					
	0.00		0.01-0.07		0.08+	
	No.	%	No.	%	No.	%
Weekday	1,061	69	107	7	367	24
Weekend	990	58	141	8	568	33
Unknown	3	28	1	11	7	61
Total	2,054	63	249	8	942	29

Source: NCSA, NHTSA, FARS 2001

Chart 9
Motorcycle Operators Involved in Fatal Crashes in 2001 by Weekday/Weekend and BAC Level



Source: NCSA, NHTSA, FARS 2001

14. Motorcycle Operators Involved in Fatal Crashes in 2001 by Day of the Week and BAC:

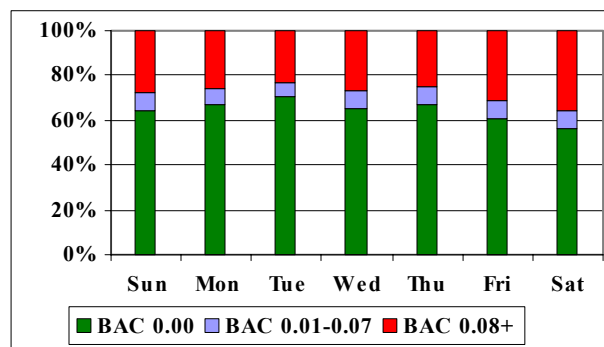
Table 16 and Chart 10 show motorcycle operators involved in fatal crashes in 2001 by day of the week and operator BAC. The highest number of operators involved was on Sunday followed by Saturday. Alcohol involvement on Saturdays was the highest among all days of the week with 45 percent of operators involved with alcohol followed by Friday, with 40 percent of the operators involved with alcohol.

Table 16
Motorcycle Operators Involved in Fatal Crashes in 2001 by Day of the Week and BAC

Day of the Week	Alcohol Involvement					
	0.00		0.01-0.07		0.08+	
	No.	%	No.	%	No.	%
Sunday	476	65	58	8	204	28
Monday	225	67	24	7	89	26
Tuesday	224	71	22	7	72	23
Wednesday	203	65	24	8	84	27
Thursday	246	67	29	8	91	25
Friday	277	60	38	8	144	31
Saturday	402	56	55	8	259	36
Total*	2,054	63	249	8	942	29

Source: NCSA, NHTSA, FARS 2001
*Includes unknowns.

Chart 10
Motorcycle Operators Involved in Fatal Crashes in 2001 by Day of the Week and BAC Level



Source: NCSA, NHTSA, FARS 2001

15. Motorcycle Operators Involved in Fatal Crashes in 2001 by Month and BAC:

Table 17 shows motorcycle operators involved in fatal crashes in 2001 by month and operator BAC. The proportion of alcohol involvement does not show any significant differences. The month of July had the highest number of operators involved in fatal crashes. However, February month had the highest alcohol involvement among all months (42 percent).

Month	Alcohol Involvement					
	0.00		0.01-0.07		0.08+	
	No.	%	No.	%	No.	%
January	48	66	3	4	22	30
February	56	58	10	11	30	31
March	101	65	10	7	45	29
April	193	63	23	7	93	30
May	233	65	28	8	97	27
June	252	63	37	9	112	28
July	271	62	40	9	129	29
August	256	60	36	9	132	31
September	251	65	21	5	112	29
October	175	65	18	7	76	28
November	127	64	13	6	58	29
December	92	66	11	8	37	26
Total	2,054	63	249	8	942	29

Source: NCSA, NHTSA, FARS 2001

16. Motorcycle Operators Involved in Fatal Crashes in 2001 by Helmet Use and BAC:

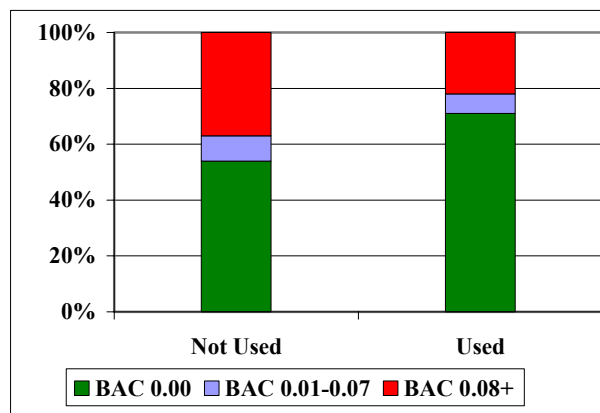
Table 18 and Chart 11 show motorcycle operators involved in fatal crashes in 2001 by helmet use and operator BAC. The operators that did not wear a helmet were more likely to be alcohol-positive than were operators who were wearing a helmet (46 percent vs. 29 percent).

**Table 18
Motorcycle Operators Involved in Fatal Crashes in 2001 by Helmet Use and BAC**

Helmet Use	Alcohol Involvement					
	0.00		0.01-0.07		0.08+	
	No.	%	No.	%	No.	%
Not Used	805	54	134	9	551	37
Used	1,169	71	107	7	362	22
Unknown	80	68	8	7	29	25
Total	2,054	63	249	8	942	29

Source: NCSA, NHTSA, FARS 2001

**Chart 11
Motorcycle Operators Involved in Fatal Crashes in 2001 by Helmet Use and BAC**



Source: NCSA, NHTSA, FARS 2001

17. Motorcycle Operators Involved in Fatal Crashes in 2001 by License Status and BAC:

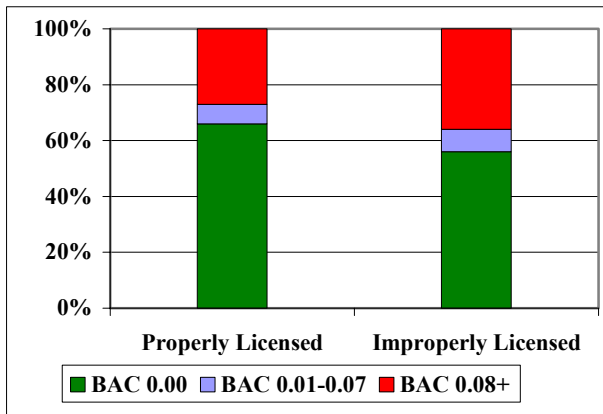
Table 19 and Chart 12 show motorcycle operators involved in fatal crashes in 2001 by license status and operator BAC. NHTSA defines properly licensed as a valid driver license with a motorcycle endorsement, a motorcycle only license, learner's permit, and a temporary license or no license required for operating a motorcycle type vehicle such as a moped. The operators improperly licensed were more likely to be alcohol-positive than were operators properly licensed (44 percent vs. 34 percent).

Table 19
Motorcycle Operators Involved in Fatal Crashes in 2001 by License Status and BAC

License Status	Alcohol Involvement					
	0.00		0.01-0.07		0.08+	
	No.	%	No.	%	No.	%
Properly Licensed	1,538	66	175	7	621	27
Improperly Licensed	490	56	73	8	313	36
Unknown	26	73	1	4	9	24
Total	2,054	63	249	8	942	29

Source: NCSA, NHTSA, FARS 2001

Chart 12
Motorcycle Operators Involved in Fatal Crashes in 2001 by License Status and BAC



Source: NCSA, NHTSA, FARS 2001

18. Motorcycle Operators Involved in Fatal Crashes in 2001 by Speeding and BAC:

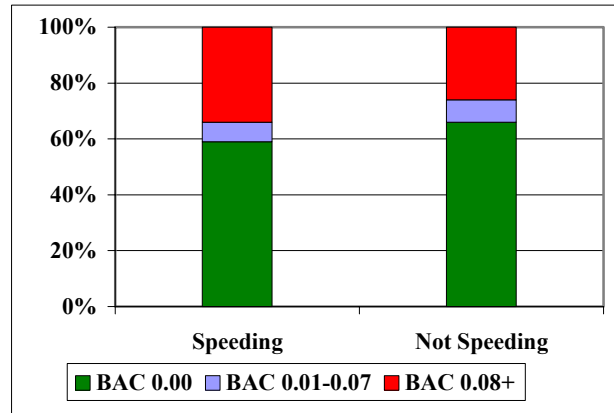
Table 20 and Chart 13 show motorcycle operators involved in fatal crashes in 2001 by speeding and operator BAC. The operators speeding at the time of the crash were more likely to be alcohol involved than operators not speeding (41 percent vs. 34 percent).

Table 20
Motorcycle Operators Involved in Fatal Crashes in 2001 by Speeding and BAC

Speeding	Alcohol Involvement					
	0.00		0.01-0.07		0.08+	
	No.	%	No.	%	No.	%
Speeding	731	59	88	7	431	34
Not Speeding	1,323	66	161	8	512	26
Total	2,054	63	249	8	942	29

Source: NCSA, NHTSA, FARS 2001

Chart 13
Motorcycle Operators Involved in Fatal Crashes in 2001 by Speeding and BAC



Source: NCSA, NHTSA, FARS 2001

Conclusions

Motorcycle operators involved in fatal crashes increased for the fourth year in a row after reaching an historic low in 1997 since FARS starting collecting data in 1975. The conclusions in this research note are based on motorcycle operators involved in fatal crashes by operator BAC.

- Almost 90 percent of persons involved in fatal crashes are motorcycle operators.
- An overwhelming majority of the motorcycle operators involved in fatal crashes are male (97 percent).

- Alcohol involvement in fatal crashes among motorcycle operators as a longer-term trend has shown a slow but steady improvement from 49 percent in 1992 to 37 percent in 2001. However, still over one-third of operators were alcohol-positive in fatal crashes in 2001, with a majority of them intoxicated ($BAC \geq 0.08$).
- In 2001, among all motorcycle operator age groups 40-49 year old age group had the highest percentage of alcohol involvement (46 percent).
- In 2001, alcohol involvement among motorcycle operators in single vehicle crashes was almost twice the involvement than in multiple vehicle crashes (49 percent vs. 27 percent).
- Motorcycle operators riding on 1,001-1,500 cc engine size motorcycles had the highest alcohol involvement in fatal crashes (44 percent) among all engine size groups.
- Alcohol involvement in nighttime crashes was almost three times the involvement than that of daytime crashes (54 percent vs. 19 percent).
- Three-fourths of operators involved in fatal crashes between midnight and 3 AM were alcohol-positive.
- Motorcycle operators not wearing a helmet or who were improperly licensed or speeding at the time of a fatal crash were more likely to be alcohol-positive than other operators.

For additional copies of this research note, please call 1-800-934-8517 or fax your request to (202) 366-3189. For questions regarding the data reported in this research, contact Umesh G. Shankar [202-366-5558]. This research note and other general information on highway traffic safety may be accessed by internet users at: <http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/AvailInf.html>

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