



U.S. Department
of Transportation

National Highway
Traffic Safety
Administration



DOT HS 808 686

February 1998

Technical Report

Alcohol Involvement in Fatal Crashes--1996

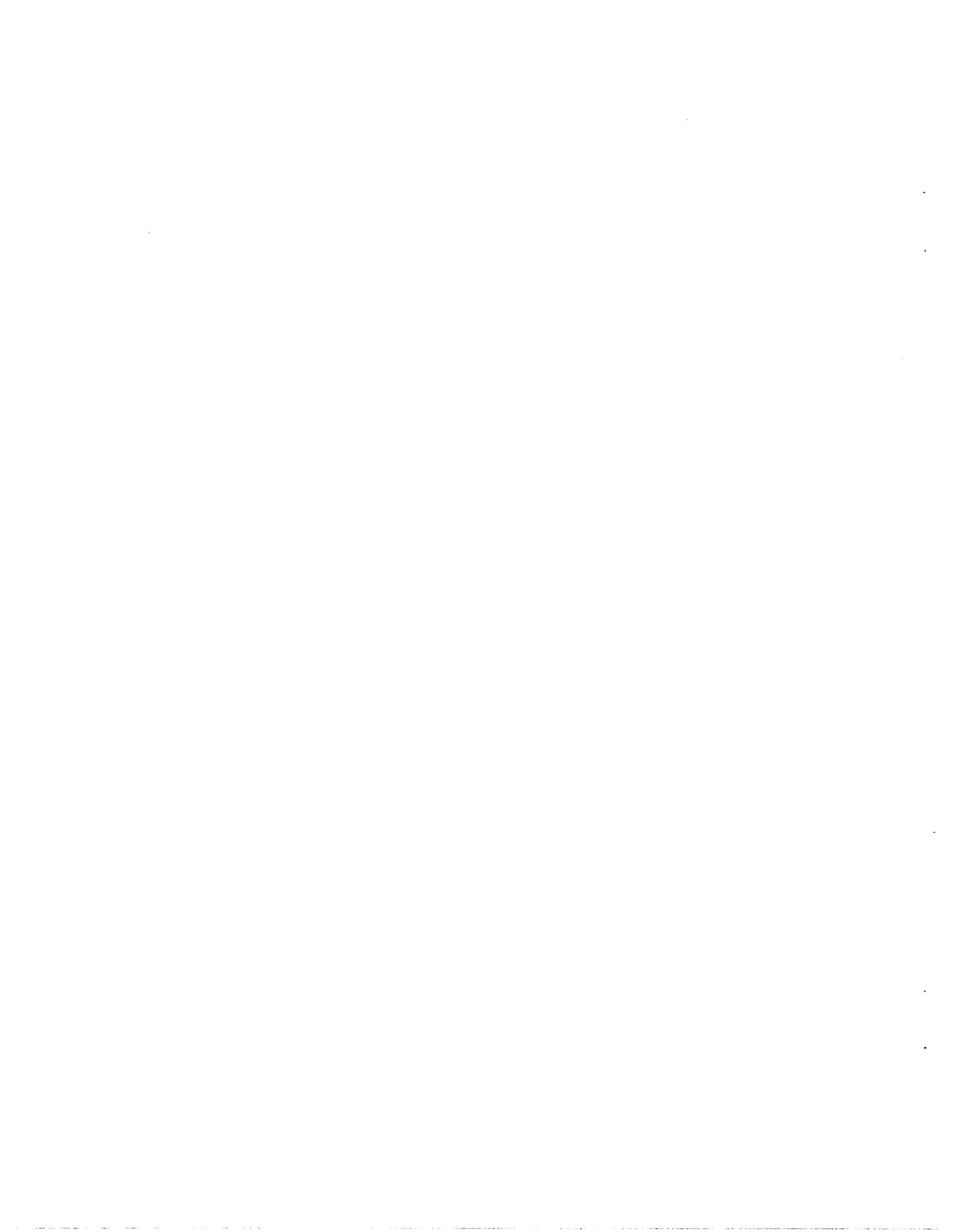
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Technical Report Documentation Page

1. Report No. DOT HS 808 686		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle Alcohol Involvement in Fatal Crashes - 1996		5. Report Date February 1996		6. Performing Organization Code NRD-31	
		8. Performing Organization Report No.		10. Work Unit No. (TR AIS)	
		7. Author(s) Marilouise Burgess, Tonja Lindsey		11. Contract or Grant No.	
9. Performing Organization Name and Address Mathematical Analysis Division; National Center for Statistics and Analysis; Research and Development, National Highway Traffic Safety Administration; U. S. Department of Transportation 400 7th Street, S. W. Washington, D. C. 20590		12. Sponsoring Agency Name and Address		14. Sponsoring Agency Code	
15. Supplementary Notes					
16. Abstract <p>This report presents estimates of alcohol involvement in fatal traffic crashes that occurred during 1996. The data represent a combination of actual blood alcohol concentration (BAC) test results recorded in FARS and estimated BAC for those drivers and nonoccupants for whom BAC test results are not available. BAC estimates are obtained using a statistical model developed by NHTSA. In 1996, 32% of all fatalities occurred in crashes with a driver or nonoccupant with a BAC of at least 0.10. This represents a 30.9% reduction compared to 1982, when 46.3 % of all fatalities occurred in crashes involving an intoxicated (BAC ≥ 0.10) driver or nonoccupant. Occupant fatalities resulting from crashes involving an intoxicated driver or nonoccupant totalled 10,992. Almost 42% (41.9%) of the occupant fatalities in single-vehicle fatal crashes involved an intoxicated driver, compared with 21.2% of the occupant fatalities in multi-vehicle fatal crashes. An estimated 38.1% of the fatalities in nonoccupant crashes involved an intoxicated driver or nonoccupant. Almost two-thirds (65.8%) of the driver fatalities in single-vehicle fatal crashes on weekend nights were intoxicated. Male drivers involved in fatal crashes were almost twice as likely as female drivers to be intoxicated (21.4% vs. 11.1%, respectively). Drivers aged 25-29 exhibit the highest rates of intoxication (27.2%) followed by drivers aged 21-24 (27%). Drivers aged 16-20 were intoxicated 14.1% of the time. Between 1982 - 1996, estimated reductions in the proportion of intoxicated drivers in fatal crashes are 39% for passenger car drivers, 37% for light trucks and vans, 69% for heavy trucks and 25% for motorcycles.</p>					
17. Key Words alcohol, BAC; intoxication; FARS; fatal crashes; fatalities			18. Distribution Statement Document is available to the public through the National Technical Information Service.		
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 27	22. Price

TABLE OF CONTENTS

	Page
Executive Summary	iii
Introduction	1
Section I - Fatalities	3
Section II - Crashes	5
Section III - Drivers and Nonoccupants	9
Section IV - Alcohol Trends, 1982-1996	15
References	19
Index of Tables	21

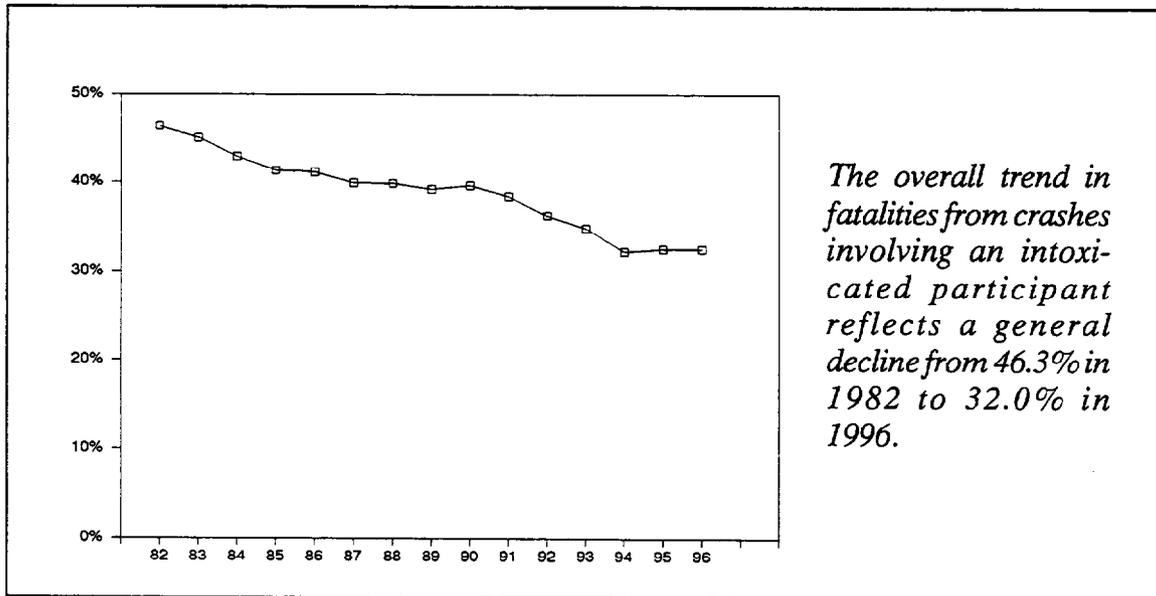


EXECUTIVE SUMMARY

This report presents estimates of alcohol involvement in fatal traffic crashes that occurred during 1996. Several comparisons of alcohol involvement for the period 1982-1996 are presented to investigate changes and trends. The data are abstracted from the Fatality Analysis Reporting System (FARS) and represent a combination of actual blood alcohol concentration (BAC) test results and estimated BAC distributions for those drivers and nonoccupants for whom no BAC test results are available. The estimates are made using a model developed by the National Highway Traffic Safety Administration.

In 1996, 32.0 percent of all fatalities involved at least one driver or nonoccupant with BAC of 0.10 or greater (in this report, a BAC of 0.10 or greater is synonymous with intoxication). This represents a 30.9 percent reduction compared to 1982, when 46.3 percent of all fatalities occurred in crashes that involved an intoxicated active participant. Occupant fatalities resulting from crashes involving an intoxicated driver or nonoccupant totalled 10,992. Less than one-half (41.9 percent) of the occupant fatalities in single-vehicle crashes involved an intoxicated driver, compared with 21.2 percent of the occupant fatalities in multi-vehicle crashes. An estimated 38.1 percent of the fatalities in nonoccupant crashes involved an intoxicated driver or nonoccupant.

Almost two-thirds (65.8 percent) of the fatally injured drivers in single-vehicle fatal crashes on weekend nights were drunk. Overall, male drivers involved in fatal crashes were almost twice as likely as female drivers to be drunk (21.4 percent vs. 11.1 percent, respectively).



Drivers of age 25-29 years exhibited the highest rates of intoxication (27.2 percent) followed by drivers of age 21-24 (27.0 percent). Drivers of age 16-20 years were intoxicated 14.1 percent of the time.

Between 1982 and 1996, estimated reductions in the proportion of intoxicated drivers in fatal crashes are 39 percent for drivers of passenger cars, 37 percent for light trucks and vans, 61 percent for medium trucks, 69 percent for heavy trucks, and 25 percent for motorcycles.

Drivers of motorcycles continue to exhibit a high rate of intoxication in fatal crashes, with 30.3 percent of involved drivers exhibiting a BAC of at least 0.10, compared to 21.9 percent for drivers of light trucks and vans, and 18.8 percent for drivers of passenger cars.

The following comparisons are drawn between 1996 and 1995:

- In 1996, 32.2 percent of all fatal crashes involved a driver or nonoccupant with BAC of 0.10 or greater, a slight decrease from 32.6 percent in 1995.
- The decrease in alcohol involvement in single-vehicle crashes occurred for fatal crashes in rural areas, but not for those in urban areas. Alcohol involvement in multi-vehicle crashes decreased in both rural and urban areas. Alcohol involvement in nonoccupant crashes decreased in rural areas, but increased in urban areas.
- Alcohol involvement decreased for involved male drivers but remained unchanged for involved female drivers. However, female drivers continue to exhibit lower rates of alcohol involvement in fatal crashes.
- The decrease in alcohol involvement in single-vehicle crashes occurred in rural areas, but not urban areas. Alcohol involvement in multi-vehicle crashes decreased in both rural and urban areas. Alcohol involvement in nonoccupant crashes decreased in rural areas, but increased in urban areas.
- Alcohol involvement decreased for involved male drivers, but remained unchanged for involved female drivers. However, female drivers continue to exhibit lower rates of alcohol involvement in fatal crashes.

INTRODUCTION

It is a well-established fact that drunk driving plays a major role in fatal crashes. Research has demonstrated that alcohol in a driver's bloodstream greatly impairs one's ability to operate a vehicle safely.

This report presents data obtained from the Fatality Analysis Reporting System (FARS) and analyzed using a procedure to estimate the BAC level for drivers and nonoccupants involved in fatal crashes. The report describes the magnitude of the drunk driving problem in the United States, highlights the circumstances under which fatal crashes are frequently associated with alcohol, and shows recent trends in alcohol involvement in fatal crashes.

1. Data

FARS contains data on all fatal traffic crashes from each of the states. The data include the results of chemical blood alcohol tests of drivers involved in fatal crashes when they are available. These blood-alcohol concentration (BAC) tests form the basis of the statistics reported here. However, no state reports a BAC value for every driver, for various technical, practical or economic reasons. The missing data rate ranges from a few percent in some states to nearly complete absence of testing in others. **Although the nationwide BAC reporting rate has risen from about 54% to 68% for fatally injured drivers and from 16% to 25% for surviving drivers during the past fifteen years, there are still too many unknown BAC values to ignore.** Alcohol involve-

ment for drivers with unknown BAC values must be estimated before valid statistics on the role of alcohol in fatal crashes can be determined. The same is true for nonoccupants.

2. Estimation

Several methods have been used previously to estimate BAC values for drivers who had not been tested. Each method has substantial limitations. To overcome many of these limitations, and in particular to estimate BAC values for surviving drivers, the National Center for Statistics and Analysis has developed a method based on discriminant analysis to estimate BAC values for all drivers involved in fatal crashes. The method is documented completely in Reference 2. Briefly, the method estimates unknown BACs from the known BAC data of drivers with similar characteristics (such as sex, crash time, police alcohol indication, and vehicle type). This method was used to produce all statistics in this report.

3. Presentation

BAC test results range from 0.00 to more than 0.30. The numbers represent the amount of alcohol, by weight, per amount of blood, by volume. In practice, BAC test results measure the percentage of alcohol contained in the blood. For the purposes of this report, it is impractical to treat BAC as a continuous variable. Instead, BAC is classified into three groups which tell the story of drunk driv-

ing in a concise and directly accessible way:

- the 0.00 group of drivers (sober drivers) whose blood contains no alcohol;
- the 0.01-0.09 group of drivers, whose blood contains some alcohol, but less than 0.10 percent; and
- the 0.10+ group of drivers (intoxicated or drunk drivers) whose BAC is at or above the usual level of legal intoxication.

In the tables of this report, alcohol involvement is shown by listing either the percentages of drivers in each of the three groups, or the percentage of drivers in the high-BAC (0.10+) group only, together with the total number of crashes or drivers, as appropriate. Note that disaggregated tables may not sum to the aggregate total, due to missing data. For example, the total of day and night crashes is less than the total of all crashes since crash time is unknown for a few crashes.

4. Interpretation of Estimates

The procedure used throughout this report produces estimates, not exact counts. The possible error of these estimates is not known precisely. However, extensive validation tests suggest that the error of any one estimate is relatively small and, more importantly, does not appreciably affect comparisons such as those in the section on trends.

In addition, it is necessary to emphasize that none of the tabulations presented can be interpreted as implying a direct

causal relationship between alcohol use and any other attribute of fatal crashes. Inferences concerning causality can only be made on the basis of additional information that is independent of the FARS data.

5. Reporting Level

Alcohol involvement in motor vehicle crashes is customarily reported for crashes or for participants. For persons, the BAC status of each active participant (driver, pedestrian, or bicyclist) in the crash is reported individually.

For crashes, the entire crash is classified at the highest BAC level of any active participant. In crashes in which individual BACs are known, the crash is given a count of 1 at the appropriate BAC level. Thus, a 0.00 crash is one in which all drivers and nonoccupants are sober, a 0.01-0.09 crash has at least one driver or nonoccupant at this level, but none at higher BAC, and a 0.10+ crash has at least one driver or nonoccupant at the 0.10+ level.

For crashes in which not all individual BACs are known, the count of 1 is distributed among the three BAC levels according to the probability distributions for alcohol involvement of each active participant. In crashes with only one active participant, the crash level BAC distribution will be identical to that of the one participant. Where two or more persons are actively involved, joint probabilities are calculated from the individual BAC probability distributions to arrive at the crash level BAC distribution.

SECTION I - FATALITIES

As a result of traffic crashes, 41,907 persons were killed in 1996. Of these fatalities, 32.0 percent (13,395) occurred in crashes in which a driver or nonoccupant was intoxicated. An additional 8.9 percent (3,732) involved a driver or nonoccupant who had been drinking but whose BAC was below 0.10. Overall, 40.9 percent (17,126) of all traffic fatalities involved driver or nonoccupant alcohol at some level.

Tables 1 and 2 show age distributions for occupant (driver/passenger) and nonoccupant fatalities, respectively.

The pattern of intoxicated occupant fatalities by age group (Table 1) is similar to that for nonoccupants (Table 2) with peak involvement occurring in the 30-34 year old age group for occupant fatalities

and the 30-34 year old age group for nonoccupant fatalities.

Overall, the proportion of nonoccupants who died in crashes (38.1 percent), involving at least one intoxicated participant, is greater than that for occupants (30.9 percent). However, in comparison to occupant fatalities, the proportion of nonoccupant fatalities where at least one driver or nonoccupant was intoxicated is higher for all age groups 16-20 and older.

Figures 1 and 2 show age distributions for the percentage of intoxicated drivers and intoxicated nonoccupants in these crashes. Similarly, the proportion of intoxicated nonoccupants exceeds that of intoxicated drivers for the same age groups; however, peak involvement for

Person Age	0.00	0.01-0.09	0.10 +	Total Fatalities
00-15	77.4%	8.1%	14.5%	2,260
16-20	63.3%	11.3%	25.4%	5,427
21-24	43.5%	13.0%	43.5%	3,786
25-29	43.5%	10.8%	45.7%	3,658
30-34	43.5%	10.0%	46.5%	3,080
35-39	46.7%	8.5%	44.9%	2,976
40-44	51.7%	8.6%	39.7%	2,465
45-49	56.7%	8.3%	35.0%	2,055
50-54	65.3%	7.2%	27.5%	1,539
55-64	72.0%	7.0%	21.0%	2,461
65 +	85.8%	4.9%	9.3%	5,814
Total	60.1%	9.0%	30.9%	35,579

Person Age	0.00	0.01-0.09	0.10 +	Total Fatalities
00-15	82.2%	5.7%	12.1%	997
16-20	48.5%	8.6%	42.9%	356
21-24	36.2%	11.7%	52.1%	322
25-29	29.7%	10.0%	60.3%	368
30-34	29.6%	8.3%	62.0%	491
35-39	32.0%	9.6%	58.5%	546
40-44	34.5%	9.7%	55.9%	520
45-49	42.6%	8.8%	48.6%	426
50-54	47.1%	9.3%	43.5%	333
55-64	54.9%	7.9%	37.2%	548
65 +	75.5%	8.0%	16.6%	1,261
Total	53.5%	8.4%	38.1%	6,240

drivers occurs at an earlier age and drops more sharply than for nonoccupants.

currence in single-vehicle crashes is much higher, as shown in Table 3.

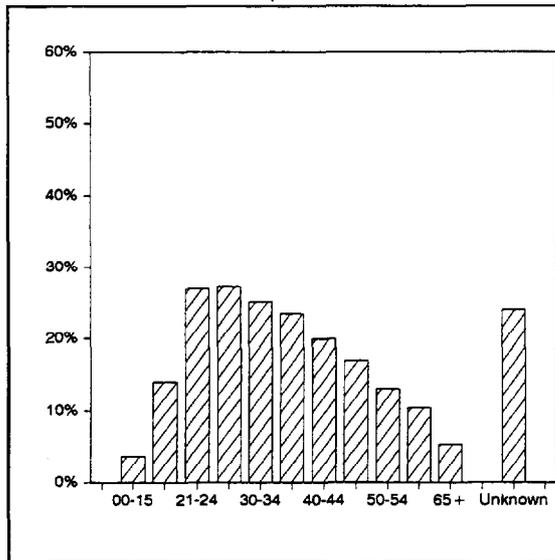


Fig. 1 - Percentage of Drivers with BAC 0.10+ by Age

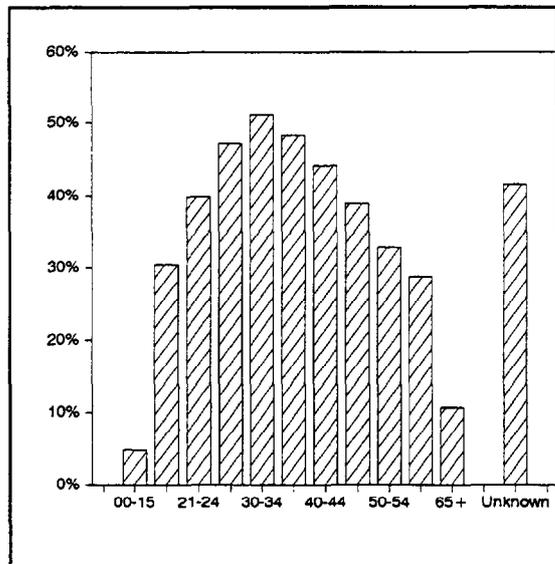


Fig. 2 - Percentage of Nonoccupants with BAC 0.10+ by Age

There were almost as many fatalities in single-vehicle as multi-vehicle crashes. However, the frequency of alcohol oc-

Crash Type	0.00	0.01-0.09	0.10+	Total Fatalities
Single-Vehicle	48.9%	9.2%	41.9%	16,717
Multi-Vehicle	70.0%	8.8%	21.2%	18,913
Nonoccupant	53.5%	8.4%	38.1%	6,277

Table 4 presents the BAC distribution of male vs. female fatalities that occurred in 1996. Of the 27,958 male fatalities, 37.2 percent occurred in crashes in which a driver or nonoccupant had a BAC of 0.10 or greater, compared with 21.5 percent of the 13,936 female fatalities.

Sex	0.00	0.01-0.09	0.10+	Total Fatalities
Male	53.3%	9.5%	37.2%	27,958
Female	70.8%	7.7%	21.5%	13,936
Total	59.1%	8.9%	32.0%	41,907

SECTION II - CRASHES

In 1996, 37,351 traffic crashes resulted in the death of one or more persons. In 32.2 percent of these crashes, at least one driver or nonoccupant (pedestrian or bicyclist) was at or above the level of intoxication (0.10) as shown in Table 5.

0.00	0.01-0.09	0.10 +	Total Crashes
59.2%	8.7%	32.2%	37,351

The development of effective countermeasures depends on the ability of safety experts and government agencies to understand the conditions under which drunk driving is particularly prevalent. To assist in this understanding, the summary data of Table 5 can be disaggregated to reveal relationships between alcohol and other fatal crash attributes. Note that the disaggregated data may not add up to the crash total of 37,351 due to unknown values for some variables.

1. Day and Time

Alcohol is more prevalent in fatal crashes at night than during the day, and on weekends compared to weekdays. The following tables summarize these BAC distributions.

Time	0.00	0.01-0.09	0.10 +	Total Crashes
Day *	81.9%	5.6%	12.5%	18,215
Night	37.6%	11.5%	50.8%	18,812

* Day is defined as 6:00 a.m. to 5:59 p.m.

Period	0.00	0.01-0.09	0.10 +	Total Crashes
Weekday*	68.7%	7.5%	23.9%	21,978
Weekend	45.7%	10.4%	44.0%	15,272

* Weekday is defined as Monday 6:00 a.m. to Friday 5:59 p.m.

Table 8 classifies fatal crashes by both variables simultaneously. During the day on weekdays, 10.1 percent of all fatal crashes involved at least one intoxicated driver or nonoccupant. On weekends during the day, this percentage almost doubled; on weekend nights, almost three-fifths of all fatal crashes involved one or more intoxicated drivers or non-occupants.

Table 8
Fatal Crash BAC Distribution
By Time of Day and
Period of Week
1996

Period	0.00	0.01-0.09	0.10 +	Total Crashes
Daytime				
-Weekday	84.7%	5.2%	10.1%	13,284
-Weekend	74.3%	6.9%	18.9%	4,931
Nighttime				
-Weekday	44.3%	11.0%	44.8%	8,594
-Weekend	32.1%	12.0%	55.9%	10,218

It is apparent from these tables that drunk driving is much more prevalent during non-working hours than during the business day.

2. Crash Type

Fatal crashes may be classified into three broad types:

- Single-vehicle crashes, not involving a nonoccupant (pedestrian or bicyclist),
- Multi-vehicle crashes, involving two or more vehicles;
- Nonoccupant crashes, involving a vehicle and a nonoccupant (almost always a single vehicle and a single fatally injured nonoccupant).

Table 9 shows the BAC distributions for these crash types. (See Section 5 of the Introduction on page 2 for a discussion about how alcohol-related crashes are counted.)

Table 9
Fatal Crash BAC Distribution
By Crash Type
1996

Crash Type	0.00	0.01-0.09	0.10 +	Total Crashes
Single-Vehicle	48.7%	9.1%	42.3%	15,328
Multi-Vehicle	71.5%	8.4%	20.1%	15,859
Nonoccupant	53.5%	8.4%	38.1%	6,164

Here again, a breakdown by day and time is revealing, as shown by Tables 10 through 12.

Table 10
Fatal Crash BAC Distribution
By Time of Day and Period of Week
Single-Vehicle Crashes
1996

Period	0.00	0.01-0.09	0.10 +	Total Crashes
Daytime				
-Weekday	79.8%	4.7%	15.4%	3,908
-Weekend	66.6%	7.1%	26.3%	1,978
Nighttime				
-Weekday	37.7%	10.4%	51.9%	3,942
-Weekend	27.7%	11.9%	60.4%	5,214

Note from Table 10 that 61 percent (9,156/15,042) of the single-vehicle crashes occur between 6 p.m. and 5:59 a.m., when alcohol involvement is relatively high. In contrast, Table 11 indicates that only 37 percent (5,799/15,844) of the multi-vehicle fatal crashes occur during these hours. The majority of multi-vehicle crashes (63 percent) occur during the daytime when alcohol involvement is relatively low.

Table 11
Fatal Crash BAC Distribution
By Time of Day and Period of Week
Multi-Vehicle Crashes
1996

Period	0.00	0.01-0.09	0.10 +	Total Crashes
Daytime				
-Weekday	87.5%	5.4%	7.2%	7,613
-Weekend	80.3%	7.0%	12.7%	2,432
Nighttime				
-Weekday	54.2%	12.4%	33.4%	2,779
-Weekend	40.3%	13.5%	46.2%	3,020

The higher rate of alcohol involvement in nonoccupant crashes (Table 12) at all time periods compared to multi-vehicle crashes (Table 11), requires a closer look at both the driver and nonoccupant alcohol involvement.

Table 12
Fatal Crash BAC Distribution
By Time of Day and Period of Week
Nonoccupant Crashes
1996

Period	0.00	0.01-0.09	0.10 +	Total Crashes
Daytime				
-Weekday	83.4%	5.5%	11.1%	1,763
-Weekend	75.2%	5.7%	19.1%	521
Nighttime				
-Weekday	43.4%	9.9%	46.7%	1,873
-Weekend	31.1%	10.3%	58.7%	1,984

Table 13 shows the BAC distribution for drivers and nonoccupants (most of whom are pedestrians) in nonoccupant fatal crashes. Row and column totals in Table 13 show plainly that nonoccupants are legally intoxicated (30.3 percent) more frequently than are vehicle drivers (12.1 percent) in nonoccupant fatal crashes.

Table 13
BAC Distribution
For Drivers and Nonoccupants in
Nonoccupant Crashes
1996

Nonocc. BAC	Driver BAC			Total
	0.00	0.01-0.09	0.10 +	
0.00	54.2%	3.4%	6.1%	63.7%
0.01-0.09	4.4%	0.6%	1.0%	6.0%
0.10 +	22.5%	2.8%	5.0%	30.3%
Total	81.1%	6.8%	12.1%	100.0%

3. Crash Environment

Fatal crash BAC distributions for urban vs. rural crash location for each crash type are shown in Table 14.

For single-vehicle and multi-vehicle crashes, alcohol involvement was greater in urban than rural fatal crashes, while for nonoccupant fatal crashes, alcohol involvement was greater in rural fatal crashes.

Table 14
Fatal Crash BAC Distribution
By Crash Type and Land Use
1996

Crash Type/ Land Use	0.00	0.01-0.09	0.10 +	Total Crashes
Single-Vehicle				
-Urban	47.0%	9.8%	43.2%	4,783
-Rural	49.4%	8.7%	41.9%	10,498
Multi-Vehicle				
-Urban	69.4%	9.0%	21.7%	6,764
-Rural	73.1%	7.9%	19.0%	9,025
Nonoccupant				
-Urban	53.8%	8.5%	37.7%	4,294
-Rural	52.7%	8.0%	39.3%	1,846

Alcohol involvement in nonoccupant fatal crashes tends to increase as the crash roadway's speed limit increases, as shown in Table 15. Roads posted 65 mph appear to be an exception to this pattern, existing primarily in rural areas.

Speed Limit	0.00	0.01-0.09	0.10+	Total Crashes
25 mph	68.8%	6.4%	24.8%	568
30	61.7%	8.6%	29.7%	797
35	53.3%	9.0%	37.8%	1,071
40	54.1%	7.9%	38.0%	612
45	48.8%	8.1%	43.1%	834
50	48.8%	8.2%	43.0%	263
55	46.1%	8.4%	45.4%	1,208
65	45.9%	9.9%	44.1%	337

There is no apparent relationship between alcohol involvement and speed limit for single- or multi-vehicle crashes

Speed Limit	Single Vehicle	Multi-Vehicle
25 mph	43.7%	20.1%
30	43.1%	21.9%
35	45.4%	21.7%
40	47.5%	20.7%
45	48.1%	20.8%
50	46.5%	19.8%
55	44.6%	18.9%
60	46.8%	24.3%
65	31.4%	21.9%
70	24.2%	19.4%
75	19.5%	14.1%

(Table 16). Estimates for roads posted 60 mph are based on very small samples.

Alcohol involvement in fatal crashes also varies as a function of roadway type. Table 17 gives crash counts and high-BAC (0.10 +) percentages for the principal roadway types.

Roadway Fct. Class	Single Vehicle		Multi-Vehicle		Non-Occupant	
	Count	Pct	Count	Pct	Count	Pct
Interstate	2,291	26.8%	1,632	22.7%	560	43.8%
Principal Arterial	2,721	40.1%	5,837	20.4%	2,230	42.0%
Minor Arterial	2,320	44.3%	3,458	18.8%	1,236	38.4%
Major Rural Collector	2,768	48.0%	2,113	19.7%	415	38.6%
Local Street/Road	3,737	45.4%	1,817	19.8%	1,248	31.0%

The percentage of crashes involving an intoxicated participant (BAC of 0.10 or more) varies both as a function of the type of crash and type of roadway. For example, the highest percentage of single-vehicle fatal crashes in which a participant was intoxicated was on major rural collectors and for multivehicle fatal crashes it was on the Interstate system. It is also interesting that the highest percentage for nonoccupant fatalities is also on the Interstate.

SECTION III - DRIVERS AND NONOCCUPANTS

1. Overview

In 1996, 56,793 drivers were involved in fatal crashes. Of these drivers, 75.1 percent were sober, 6.2 percent fell in the 0.01-0.09 group, and 18.8 percent were at or above a 0.10 BAC. Similarly, of the 6,240 fatally injured nonoccupants, 63.9 percent were sober, 6.1 percent fell in the 0.01-0.09 group, and 30.0 percent were at or above a 0.10 BAC.

Person Type	0.00	0.01-0.09	0.10 +	Total Persons
All Drivers	75.1%	6.2%	18.8%	56,793
Fat. Inj. Drivers	63.0%	6.9%	30.0%	24,456
Surv. Drivers	84.2%	5.6%	10.2%	32,337
Fat. Inj. Nonocc.	63.9%	6.1%	30.0%	6,240

Table 18 shows that, on the average, drivers surviving a fatal crash are much less frequently intoxicated than are fatally injured drivers. Some of the difference may be due to reporting. BAC levels are known more frequently for fatally injured drivers than for survivors. While the alcohol estimation methodology attempts to correct alcohol underreporting, some bias may still remain.

Fatally injured drivers show higher alcohol levels than surviving drivers in all

Crash Type/ Person Type	0.00	0.01-0.09	0.10 +	Total Persons
Single-Vehicle Crashes				
All Drivers	48.7%	9.0%	42.3%	15,271
Fat. Inj. Drivers	46.3%	7.8%	45.9%	11,601
Surv. Drivers	56.3%	12.8%	30.8%	3,670
Multi-Vehicle Crashes				
All Drivers	85.3%	4.9%	9.8%	34,934
Fat. Inj. Drivers	78.2%	6.1%	15.8%	12,840
Surv. Drivers	89.4%	4.2%	6.4%	22,094
NonOccupant Crashes				
All Drivers	82.1%	6.4%	11.5%	6,588
Fat. Inj. Drivers	71.4%	14.0%	14.6%	15
Surv. Drivers	82.1%	6.4%	11.5%	6,573
Nonoccupants	63.9%	6.1%	30.0%	6,240

crash types and time periods (Tables 19 through 21).

In multi-vehicle fatal crashes (Table 20), fatally injured drivers are about twice as likely as surviving drivers to have a BAC of 0.10 +, in each day and time class. The absolute differences range from 4-6 percentage points (weekday and weekend daytime) to 17-19 percentage points (weekday and weekend nighttime).

In single-vehicle fatal crashes (Table 21), the proportion of fatally injured drivers with a BAC of 0.10 + exceeds the proportion for surviving drivers by 6-11 percentage points during the weekday and weekend daytime, and by 20-21 percent-

Table 20
BAC Distribution of Drivers
By Crash Outcome, Day and Time
Multi-Vehicle Fatal Crashes
1996

Crash Outcome	Day/ Time	0.00	0.01-0.09	0.10 +	Total Drivers
Fatally Injured Drivers	Daytime				
	Wkday	90.8%	3.7%	5.5%	6,299
	Wkend	84.9%	5.2%	9.8%	1,861
	Nighttime				
Surviving Drivers	Daytime				
	Wkday	96.1%	1.9%	2.0%	10,786
	Wkend	93.2%	2.8%	4.0%	3,477
	Nighttime				
Surviving Drivers	Daytime				
	Wkday	83.5%	6.6%	9.9%	3,676
	Wkend	74.1%	8.9%	17.0%	4,137
	Nighttime				

age points during the weekend and week-day nighttime periods.

2. Driver Sex

Table 22 shows that male drivers involved in fatal crashes are drunk considerably more frequently than are female drivers.

Table 22
BAC Distribution of Drivers
Involved in Fatal Crashes
By Driver Sex
1996

Driver Sex	0.00	0.01-0.09	0.10 +	Total Drivers
Male	71.9%	6.7%	21.4%	41,223
Female	84.5%	4.5%	11.1%	14,798

Table 23 shows that this conclusion holds for all day and time periods.

Alcohol involvement differences between male and female drivers show up

Table 21
BAC Distribution of Drivers
By Crash Outcome, Day and Time
Single-Vehicle Fatal Crashes
1996

Crash Outcome	Day/ Time	0.00	0.01-0.09	0.10 +	Total Drivers
Fatally Injured Drivers	Daytime				
	Wkday	78.5%	4.8%	16.7%	3,031
	Wkend	64.1%	6.7%	29.2%	1,451
	Nighttime				
Surviving Drivers	Daytime				
	Wkday	84.7%	4.3%	11.0%	868
	Wkend	73.2%	8.3%	18.6%	522
	Nighttime				
Surviving Drivers	Daytime				
	Wkday	48.7%	15.6%	35.7%	899
	Wkend	36.8%	18.0%	45.2%	1,362
	Nighttime				

Table 23
BAC Distribution of Drivers
Involved in Fatal Crashes
By Sex, and Crash Day and Time
1996

Driver Sex	Day/ Time	0.00	0.01-0.09	0.10 +	Total Drivers
Male Drivers	Daytime				
	Wkday	90.3%	3.3%	6.4%	15,806
	Wkend	81.5%	5.0%	13.5%	5,497
	Nighttime				
Female Drivers	Daytime				
	Wkday	61.6%	8.8%	29.6%	9,001
	Wkend	49.3%	10.7%	40.0%	10,678
	Nighttime				
Female Drivers	Daytime				
	Wkday	95.0%	2.0%	3.0%	6,914
	Wkend	90.7%	3.3%	6.0%	2,323
	Nighttime				
Female Drivers	Daytime				
	Wkday	72.4%	6.8%	20.8%	2,656
	Wkend	65.9%	9.0%	25.2%	2,838
	Nighttime				

Table 24
BAC Distribution of Fatally Injured Drivers
by Sex, and Crash Day and Time
1996

Driver Sex	Day/Time	0.00	0.01-0.09	0.10+	Total Drivers
Male Drivers	Daytime				
	Wkday	83.4%	4.9%	11.6%	6,139
	Wkend	71.2%	6.7%	22.1%	2,296
	Nighttime				
Female Drivers	Daytime				
	Wkday	93.3%	2.4%	4.3%	3,196
	Wkend	86.3%	3.9%	9.8%	1,016
	Nighttime				
Male Drivers	Wkday	44.0%	9.3%	46.6%	4,150
	Wkend	32.1%	10.0%	57.9%	5,023
Female Drivers	Wkday	57.3%	7.9%	34.8%	1,177
	Wkend	50.4%	9.5%	40.1%	1,183

even more markedly for fatally injured drivers, as shown in Table 24.

3. Driver Age

The overall distribution of alcohol involvement by driver age is shown in Table 25. The percentage of drunk drivers is highest at ages 25-29, and decreases steadily to about 5.4 percent for drivers 65 years or older.

The age-alcohol pattern shown here for all drivers in fatal crashes -- a rapid increase to a peak in the 25-29 age group, followed by a slower decrease -- remains unchanged when specific groups are considered, for example driver fatalities or drivers in single-vehicle crashes.

Table 25
Drivers in Fatal Crashes with
BAC of 0.10 or Greater
1996

Age Group	Total Drivers	BAC 0.10+ Count	BAC 0.10+ Percent
00-15	414	15	3.7%
16-20	7,804	1,100	14.1%
21-24	6,172	1,666	27.0%
25-29	6,617	1,802	27.2%
30-34	6,233	1,569	25.2%
35-39	5,952	1,396	23.5%
40-44	4,966	995	20.0%
45-49	4,097	698	17.0%
50-54	3,000	393	13.1%
55-64	4,216	445	10.5%
65+	6,364	342	5.4%
Unknown	958	230	24.0%

4. Driver Age Groups

To highlight the differences between ages, driver age has been classified into three groups: 15-20, 21-44, and 45 or older. Drivers of age 15-20 years can no longer legally purchase alcohol in any state. Table 26 gives the BAC distribution of all drivers for these groups.

Two observations from Table 26 merit special mention.

- The percentages of legally intoxicated drivers in the three age groups differ markedly from each other.

Table 26
Fatal Crash Driver BAC Distribution
By Age Group
1996

Driver Age	0.00	0.01-0.09	0.10	Total Drivers
15-20	78.8%	7.4%	13.8%	8,054
21-44	68.0%	7.2%	24.8%	29,940
45 +	85.7%	3.7%	10.6%	17,677

- The percentage of persons with BAC 0.01 - 0.09 decreases with increasing age.

Tables 27 and 28 disaggregate the fatal crash driver BAC distribution by crash type, day, and time. To simplify the presentation, only the percentage of fatally injured drivers in the high-BAC (0.10 +) group is given.

Table 27
Percentage of Fatally Injured Drivers with
High BAC (0.10 +) in Single-Vehicle Crashes
By Driver Age and Crash Day and Time
1996

Period	Driver Age Groups		
	15-20	21-44	45 +
Daytime			
-Weekday	7.3%	22.7%	14.3%
-Weekend	16.9%	39.0%	22.4%
Nighttime			
-Weekday	35.0%	65.0%	48.5%
-Weekend	47.0%	73.8%	56.7%

Table 28
Proportion of Fatally Injured Drivers with
High BAC (0.10 +) in Multi-Vehicle Crashes
By Driver Age and Crash Day and Time
1996

Period	Driver Age Groups		
	15-20	21-44	45 +
Daytime			
-Weekday	1.6%	8.9%	4.0%
-Weekend	5.8%	15.2%	6.7%
Nighttime			
-Weekday	11.0%	35.7%	19.8%
-Weekend	21.0%	46.1%	24.1%

For both single- and multi-vehicle fatal crashes, drivers of age 21-44 years have the highest alcohol involvement in each day and time period.

5. Vehicle Class

All but about 3 percent of the vehicles involved in fatal crashes fall into one of the following types:

- Motorcycles,
- Passenger cars,
- Light trucks and vans (including utility vehicles),
- Medium trucks, or
- Heavy trucks.

Table 29 shows the number of vehicles of each type involved in fatal crashes in 1996, together with the BAC distribution

Table 29
Fatal Crash Driver BAC Distribution
By Vehicle Type
1996

Vehicle Type	0.00	0.01-0.09	0.10 +	Total Vehicles
Motorcycles	58.0%	11.7%	30.3%	2,175
Pass. Cars	74.5%	6.7%	18.8%	30,466
Lt. Trks/Vans	72.3%	5.8%	21.9%	18,054
Med. Trucks	96.1%	1.8%	2.1%	483
Heavy Trucks	97.5%	1.2%	1.3%	4,205

of their drivers. The highest proportion of intoxicated drivers are motorcyclists, followed by drivers of light trucks and vans, and drivers of passenger cars.

6. Vehicle Age

Drivers of older vehicles are more likely to have been drinking when their fatal crash occurred than are drivers of newer vehicles.

Table 30
Fatal Crash Driver BAC Distribution
By Vehicle Model Year
1996

Model Year	0.00	0.01-0.09	0.10 +	Total Vehicles
Older than '81	65.6%	7.6%	26.8%	5,488
1981-1984	69.2%	6.5%	24.3%	6,108
1985-1988	74.9%	6.2%	19.0%	13,361
1989-1997	78.3%	5.7%	16.0%	30,715

The vehicle-age effect shown in Table 30 holds true for all driver age groups (Table 31).

Table 31
Percentage of High BAC (0.10+) Drivers
in Fatal Crashes
By Vehicle Model Year and Driver Age
1996

Driver Age	Model Year			
	Older than '81	1981-1984	1985-1988	1989-1997
15-19	11.8%	12.8%	11.2%	12.1%
20-24	29.5%	32.4%	25.8%	24.4%
25-29	36.8%	35.2%	30.5%	22.7%
30-44	35.6%	32.2%	24.7%	18.2%
45-59	24.3%	19.7%	14.5%	11.6%
60 +	10.2%	7.3%	6.4%	5.5%

7. Restraint Use

Sober drivers in fatal crashes are considerably more likely reported as having used their safety belts than are intoxicated drivers.

Table 32 presents the proportion of fatally injured and surviving drivers reported to have used belts for each BAC group. Note that sober drivers are belted almost 50 percent more often than are drivers in the 0.01-0.09 group; intoxi-

Table 32
Percentage of Safety Belt Use
for Passenger Vehicles
Fatally Injured and Surviving Drivers
By BAC Group
1996

Crash Outcome	0.00	0.01-0.09	0.10 +
Fatally Injured Drivers	47.5%	30.2%	18.4%
Surviving Drivers	78.7%	56.8%	42.5%

cated drivers are restrained much less frequently than either group.

Likewise, Table 33 indicates that drivers who use their safety belts are much less likely to have been drinking than unrestrained drivers regardless of whether or not they were fatally injured.

Crash Outcome	Belt Use	0.00	0.01-0.09	0.10+	Total Drivers
Fatally-Injured Drivers	Yes	79.5%	5.3%	15.3%	7,363
	No	52.4%	7.3%	40.3%	12,337
Surviving Drivers	Yes	89.4%	4.5%	6.1%	17,754
	No	67.6%	9.6%	22.8%	6,362

SECTION IV - ALCOHOL TRENDS, 1982-1996

Alcohol involvement in fatal crashes decreased between 1982 and 1996 (Table 34). The decrease was not uniform; alcohol involvement dropped more for some crash types than for others. This section presents some of the major changes.

Table 34 gives the year-to-year BAC distribution of alcohol involvement in fatal crashes, while Figure 3 shows the year-to-year BAC distribution for drivers in these crashes.

Year	0.00	0.01-0.09	0.10 +	Total Crashes
1982	43.3%	10.7%	46.1%	39,092
1983	45.0%	10.4%	44.7%	37,976
1984	46.7%	10.6%	42.7%	39,631
1985	48.5%	10.3%	41.2%	39,196
1986	48.3%	10.9%	40.8%	41,090
1987	49.3%	10.7%	40.0%	41,438
1988	50.1%	10.2%	39.7%	42,130
1989	51.1%	9.8%	39.1%	40,741
1990	50.6%	9.7%	39.7%	39,836
1991	52.1%	9.4%	38.5%	36,937
1992	54.5%	9.1%	36.4%	34,942
1993	56.5%	8.5%	34.9%	35,780
1994	59.1%	8.4%	32.5%	36,254
1995	58.7%	8.6%	32.6%	37,241
1996	59.2%	8.7%	32.2%	37,351

Tables 35-37 display several facts of special interest. The reduction in alcohol involvement is especially large for drivers under 21 years of age, and is seen in all time periods. For the 21-44 year age group the average reduction is much

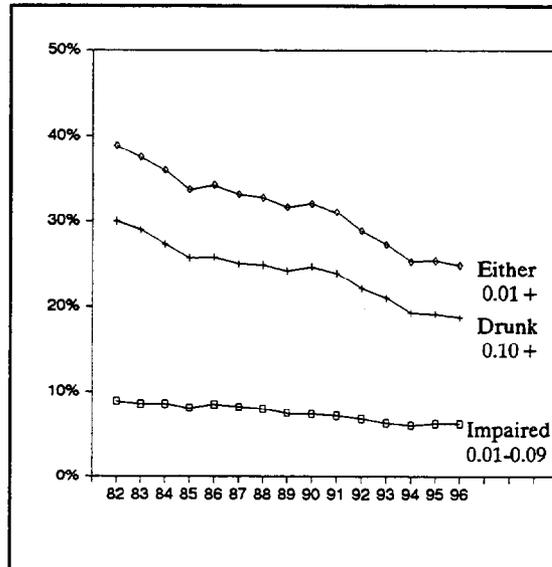


Fig. 3 - Estimated Proportion of Drivers in Fatal Crashes Who Were Impaired or Drunk

Year	Impaired 0.01-0.09	Drunk 0.10 +	Either 0.01 +
1982	8.9%	30.0%	38.9%
1983	8.6%	29.0%	37.5%
1984	8.6%	27.3%	36.0%
1985	8.1%	25.7%	33.8%
1986	8.5%	25.8%	34.3%
1987	8.2%	25.0%	33.2%
1988	8.0%	24.9%	32.8%
1989	7.5%	24.2%	31.7%
1990	7.4%	24.7%	32.1%
1991	7.2%	23.9%	31.1%
1992	6.8%	22.1%	28.9%
1993	6.3%	21.0%	27.3%
1994	6.0%	19.3%	25.3%
1995	6.2%	19.2%	25.4%
1996	6.2%	18.8%	24.9%

smaller, especially during nighttime driving, when alcohol involvement is notoriously high. For drivers of age 45

Table 35
Reduction in High-BAC (0.10 +) Drivers
By Fatal Crash Day and Time
for Age Group 16-20 Years Old
(Excluding Nonoccupant Crashes)
1982 vs.1996

Period	1982	1996	Reduction
Daytime			
Weekday	9.2%	2.7%	71%
Weekend	15.0%	7.2%	52%
Nighttime			
Weekday	40.0%	18.9%	53%
Weekend	46.6%	28.6%	39%

Table 37
Reduction in High-BAC (0.10 +) Drivers
By Fatal Crash Day and Time
for Age Group 45 Years and Older
(Excluding Nonoccupant Crashes)
1982 vs. 1996

Period	1982	1996	Reduction
Daytime			
Weekday	8.8%	4.6%	48%
Weekend	13.7%	8.0%	42%
Nighttime			
Weekday	30.1%	21.4%	29%
Weekend	34.0%	27.6%	19%

years or older there is a large reduction in drunk driving during the day as well as a smaller but substantial reduction at night.

Table 38 shows the reduction in drunk driving by vehicle type. Although alcohol involvement is generally low for drivers operating commercial vehicles (medium

and heavy trucks), sizeable reductions occurred for drivers of these vehicle types between 1982-1996. Motorcycle drivers not only have the highest percent of alcohol involvement, but exhibit the smallest reduction in drunk driving between 1982 and 1996.

Table 36
Reduction in High-BAC (0.10 +) Drivers
By Fatal Crash Day and Time
for Age Group 21-44 Years Old
(Excluding Nonoccupant Crashes)
1982 vs.1996

Period	1982	1996	Reduction
Daytime			
Weekday	12.0%	7.0%	42%
Weekend	23.6%	15.6%	34%
Nighttime			
Weekday	47.6%	37.8%	21%
Weekend	53.0%	48.2%	9%

Table 38
Reduction in High-BAC (0.10 +) Drivers
in Fatal Crashes
By Vehicle Type
1982 vs. 1996

Vehicle Type	1982	1996	Reduction
Motorcycles	40.5%	30.3%	25%
Passenger Cars	30.6%	18.8%	39%
Light Trucks/Vans	34.7%	21.9%	37%
Medium Trucks	5.4%	2.1%	61%
Heavy Trucks	4.2%	1.3%	69%

Figure 4 shows that the involvement rate for motorcycle drivers remained fairly constant between 1982 and 1986, then dropped sharply in 1987 and 1988, and rose in 1989. In contrast, the involvement rate for passenger car drivers declined steadily during the same time frame. For

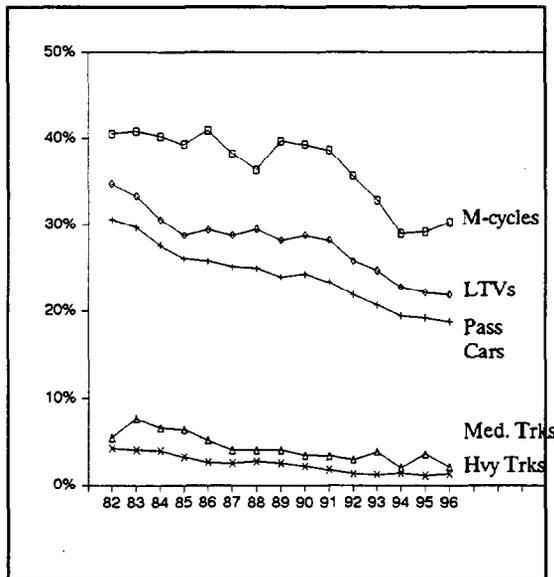


Fig. 4 - Estimated Proportion of Drivers in Fatal Crashes Who Had BAC 0.10+

Year	M/C	Pass. Cars	LTV	Med. Trks.	Hvy. Trks.
1982	40.5%	30.6%	34.7%	5.4%	4.2%
1983	40.8%	29.7%	33.3%	7.6%	4.0%
1984	40.2%	27.6%	30.6%	6.5%	3.9%
1985	39.3%	26.1%	28.7%	6.3%	3.2%
1986	40.9%	25.8%	29.4%	5.1%	2.6%
1987	38.2%	25.1%	28.7%	4.0%	2.5%
1988	36.3%	25.0%	29.4%	4.0%	2.7%
1989	39.7%	24.0%	28.2%	4.0%	2.5%
1990	39.3%	24.3%	28.8%	3.4%	2.2%
1991	38.6%	23.4%	28.2%	3.3%	1.8%
1992	35.6%	21.9%	25.8%	2.9%	1.3%
1993	32.8%	20.7%	24.7%	3.8%	1.2%
1994	29.0%	19.4%	22.8%	2.0%	1.4%
1995	29.2%	19.2%	22.2%	3.5%	1.1%
1996	30.3%	18.8%	21.9%	2.1%	1.3%
Pct. Chg. '82-'96	-25%	-39%	-37%	-61%	-69%

light trucks and vans, the lowest involvement rate occurred in 1985, after which the rate increased, then leveled off before a sharp drop in 1996. Driver of medium and heavy trucks continue to exhibit low rates of alcohol involvement.

Female drivers are not only less frequently drunk than are males but also show a greater reduction in alcohol involvement from 1982-1996 (Table 39).

Driver Sex	1982	1996	Reduction
Male	32.4%	21.4%	34%
Female	18.9%	11.1%	41%
All Drivers	30.0%	18.8%	37%

A different aspect of alcohol trends is shown in Table 40, which presents the 1982-1996 reduction at the crash level.

Land Use	Crash Type	1982	1996	Reduction
Urban	Single.	56.2%	43.2%	23%
	Multi.	38.5%	21.7%	44%
	Nonocc.	42.3%	37.7%	11%
Rural	Single.	55.2%	41.9%	24%
	Multi.	34.4%	19.0%	45%
	Nonocc.	51.1%	39.3%	23%

Overall, the proportion of high BAC fatal crashes dropped 26 percent in urban areas and 31 percent in rural areas.

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INDEX OF TABLES

Table	Page
Section I - Fatalities	
1. Occupant Fatalities by Person Age and Crash BAC	3
2. Non-Occupant Fatalities by Person Age and Crash BAC	3
3. Fatalities by Crash Type and Crash BAC	4
4. Fatalities by Sex and Crash BAC	4
Section II - Crashes	
5. All Fatal Crashes BAC Distribution	5
6. Fatal Crash BAC Distribution by Time of Day	5
7. Fatal Crash BAC Distribution by Period of Week	5
8. Fatal Crash BAC Distribution by Time of Day and Period of Week	6
9. Fatal Crash BAC Distribution by Crash Type	6
10. Single-Vehicle Crashes by Time of Day and Period of Week	6
11. Multi-Vehicle Crashes by Time of Day and Period of Week	7
12. Non-Occupant Crashes by Time of Day and Period of Week	7
13. Driver and Non-Occupant BACs in Non-Occupant Crashes	7
14. Fatal Crash BAC Distribution by Crash Type and Land Use	7
15. Non-Occupant Crash BAC Distribution by Posted Speed Limit	8
16. High-BAC Fatal Crashes by Crash Type and Posted Speed Limit	8
17. High-BAC Fatal Crashes by Crash Type and Roadway Function Class	8
Section III - Driver and Non-Occupant BAC Distributions in Fatal Crashes	
18. Driver and Non-Occupant Fatal Crash BAC Distributions	9
19. Driver and Non-Occupant Fatal Crash BAC Distributions by Crash Type	9
20. Driver BACs in Multi-Vehicle Crashes by Crash Outcome, Day and Time	10
21. Driver BACs in Single-Vehicle Crashes by Crash Outcome, Day and Time	10
22. Driver BAC Distributions by Driver Sex	10
23. Driver BAC Distributions by Driver Sex, Day and Time	10
24. Fatally Injured Driver BAC Distributions by Driver Sex, Day and Time	11
25. High-BAC Drivers by Age Group	11
26. Driver BAC Distributions by Age Group	12
27. High-BAC Fatally Injured Drivers in Single-Vehicle Crashes by Day and Time	12
28. High-BAC Fatally Injured Drivers in Multi-Vehicle Crashes by Day and Time	12
29. Driver BAC Distributions by Vehicle Type	13
30. Driver BAC Distributions by Vehicle Model Year	13

31. High-BAC Drivers by Vehicle Model Year and Driver Age	13
32. Safety Belt Use by Crash Outcome and BAC Group	13
33. Driver BAC Distributions by Crash Outcome and Safety Belt Use	14

Section IV - Alcohol Trends, 1982-1996

34. Fatal Crash BAC Distributions, 1982-1996	15
35. Reduction in High-BAC Drivers, Age 16-20 Years, by Day and Time	16
36. Reduction in High-BAC Drivers, Age 21-44 Years, by Day and Time	16
37. Reduction in High-BAC Drivers, Age 45 + Years, by Day and Time	16
38. Reduction in High-BAC Drivers by Vehicle Type	16
39. Reduction in High-BAC Drivers by Driver Sex	17
40. Reduction in High-BAC Drivers by Land Use and Crash Type	17