U.S. Department
of Transportation
**National Highway
Traffic Safety
Administration**

NHTSA
www.nhtsa.gov

DOT HS 811 661

August 2012

State Blood Alcohol Concentration (BAC) Testing and Reporting for Drivers Involved in Fatal Crashes: Current Practices, Results, and Strategies, 1997-2009

DISCLAIMER

This publication is distributed by the U.S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. The opinions, findings, and conclusions expressed in this publication are those of the authors and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its contents or use thereof. If trade names, manufacturers' names, or specific products are mentioned, it is because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products or manufacturers.

Suggested APA Format Citation:

Casanova, T., Hedlund, J., & Tison, J. (2012, August). State blood alcohol concentration (BAC) testing and reporting for drivers involved in fatal crashes: Current practices, results, and strategies, 1997-2009. (Report No. DOT HS 811 661). Washington, DC: National Highway Traffic Safety Administration.

Technical Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
DOT HS 811 661		

4. Title and Subtitle	5. Report Date
State Blood Alcohol Concentration (BAC) Testing and Reporting for Drivers Involved in Fatal Crashes: Current Practices, Results, and Strategies, 1997-2009	August 2012
	6. Performing Organization Code

7. Author(s)	8. Performing Organization Report No.
Tara Casanova, James Hedlund, and Julie Tison	

9. Performing Organization Name and Address	10. Work Unit No. (TRAIS)
Preusser Research Group, Inc. 7100 Main Street Trumbull, CT 06611	
	11. Contract or Grant No. DTNH22-06-D-00047 Task Order 007

12. Sponsoring Agency Name and Address	13. Type of Report and Period Covered
U.S. Department of Transportation National Highway Traffic Safety Administration Office of Impaired Driving and Occupant Protection 1200 New Jersey Avenue SE. Washington, DC 20590	Final Report September 22, 2009 to March 21, 2011
	14. Sponsoring Agency Code

15. Supplementary Notes

Maureen Perkins served as the NHTSA Contracting Officer's Technical Representative for the study.

This report documents current State blood alcohol concentration (BAC) testing and reporting practices and results for drivers involved in fatal crashes. It summarizes known BAC results by State for the years 1997 to 2009 for both fatally injured and surviving drivers. It provides an overview of State practices using information obtained from telephone discussions with all States and all NHTSA Regions. It documents case studies of 9 States (Alaska, Hawaii, Indiana, Kansas, Maryland, Missouri, New Mexico, Oklahoma, and South Dakota), each of which has improved or maintained high rates of BAC testing and reporting. Successful BAC testing and reporting involves three components: high testing rates, accurate and complete reporting, and careful management. This can be accomplished through laws, policies, or practices. The process involves testing, reporting, tracking, and follow-up. The context involves education, training, and management. A summary presents good practices and strategies for States that wish to improve their BAC testing and reporting.

22. Key Words	18. Distribution Statement
Blood Alcohol Concentration Testing and Reporting, Impaired Driving, Fatality Analysis Reporting System	Document is available to the public from the National Technical Information Service www.ntis.gov

19. Security Classif.(of this report)	20. Security Classif.(of this page)	21. No. of Pages	22. Price
Unclassified	Unclassified	98	

TECHNICAL SUMMARY

Introduction and Purpose

This report documents current State blood alcohol concentration (BAC) testing and reporting practices and results for drivers involved in fatal crashes. It summarizes known BAC results by State for the years 1997 to 2009 for both fatally injured and surviving drivers. It provides an overview of State practices using information obtained from telephone discussions with National Highway Traffic Safety Administration Regions and States. It documents case studies of 9 States, each of which has improved or maintained high rates of BAC testing and reporting. It combines information from all sources in a summary of good practices and provides strategies for States to improve their BAC testing and reporting.

The objectives of the project were to:

- Identify States that have recently improved their BAC test reporting or have had consistently high levels of BAC test reporting;
- Determine what steps were taken by States to improve or establish their BAC test reporting programs; and
- Produce a publication of the case studies of State BAC test reporting including procedures, benefits, and lessons learned.

Background

Accurate and complete data on BAC levels for drivers in fatal crashes is critical to developing alcohol-impaired-driving programs, evaluating their effectiveness, and monitoring overall alcohol-impaired-driving levels. This data is reported in the Fatality Analysis Reporting System (FARS) and comes from the individual States, the District of Columbia, and Puerto Rico. The reporting levels vary substantially from State to State and, in some States, from year to year. In 2009, BACs were known for 71 percent of fatally injured drivers and 27 percent of surviving drivers. This report examines how some States have maintained high rates of BAC testing and reporting and how other States have made substantial progress.

The Preusser Research Group (PRG) conducted a study of State alcohol testing, reporting methods, and rates for drivers involved in fatal traffic crashes, and produced a report for NHTSA called *State Laws and Practices for BAC Testing and Reporting Drivers Involved in Fatal Crashes* (Hedlund et al., 2004). That study's goals were to identify the best practices for and the barriers and problems that hinder obtaining BAC data for drivers involved in fatal crashes, and to provide for States to improve their BAC testing and reporting. It conducted case studies in 10 States, selected to include a full range of laws, BAC testing practices, testing rates and trends, and geographic diversity. The current study updates and extends the 2004 study. The 2004 study conclusions on strategies to achieve high rates of BAC testing are incorporated in the current study conclusions and strategies.

Methods

The study was conducted in three phases. First, BAC testing and reporting information for each State for the period 1997 to 2009 was obtained from FARS. Next, each NHTSA Regional Office and then FARS staff was contacted by telephone. They were asked about:

a) Any changes in State laws, practices, and processes for BAC testing and reporting during the period 1997 to 2008;

b) Reasons for any substantial changes – increases or decreases – in either testing or reporting rates for either fatally injured or surviving drivers;

c) Contacts for further information on these issues.

Finally, case studies were conducted in 9 States, selected in consultation with NHTSA: Alaska, Hawaii, Indiana, Kansas, Maryland, Missouri, New Mexico, Oklahoma, and South Dakota. The case study States were chosen to be broadly representative of States that either had maintained a high rate of BAC testing and high reporting rate for several years or had improved substantially. They include States that have overcome obstacles and States that use creative strategies to improve their BAC testing and reporting. They include both large and small States across the country. They include a range of BAC testing and reporting laws. States that were studied and documented in the previous review of BAC testing and reporting (Hedlund et al., 2004) were not studied again.

Project staff visited or conducted telephone discussions with people in each State, including law enforcement officers, medical examiners or coroners, testing laboratories, FARS analysts, Highway Safety Office staff, and others. After all visits or calls for a State were completed, project staff drafted a report that was reviewed for accuracy by the Governor's Representative or designated key staff person.

Results

BAC testing and reporting rates: Nationwide, the known BAC rate for driver fatalities was constant at approximately 70 percent from 1997 through 2006 and increased to 75.9 percent in 2008. The rate likely rose again in 2009 based on all available data. Note, final data for the 2009 BAC reporting rates was not available when this report was written. The annual report file known BAC rate for driver fatalities rose from 70.5 percent in 2008 to 71.1 percent in 2009. The known BAC rates for surviving drivers followed a similar pattern: constant at about 26 percent through 2007, increasing to 29.3 percent in 2008, and likely rising in 2009 (final data was not available at time of publication). The annual report file's known BAC rate for surviving drivers rose from 25.7 percent in 2008 to 27.2 percent in 2009. The rates for individual States vary substantially. In 2008, they ranged from 25.0 percent to 98.6 percent for fatally injured drivers and from 1.3 percent to 91.3 percent for surviving drivers. Some States have high rates of BAC testing and reporting, while others have room for improvement.

State laws and practices: The States divide almost equally into those requiring, by law, testing for all or almost all fatally injured drivers (25 States) and those with no law (22 States), for which the standard probable-cause requirement for an impaired driving investigation applies.

The basic standard for a law enforcement officer to request BAC tests from a driver is that the officer has probable cause or reasonable grounds to believe that the driver was operating in violation of the State's impaired driving law (Hedlund et al, 2004). In 2009, the median and average testing rates were 13 to 15 percentage points higher for the law States than for the probable- cause States. However, West Virginia achieved 95.3 percent without a law, while Utah's rate was 44.6 percent with a mandatory testing law. In fact, 10 probable-cause States exceeded 80 percent known rates. These results suggest that testing policies can achieve high rates without a law, while a mandatory testing law will not produce high rates without strong policies to implement it.

Only 7 States require testing for surviving drivers while a majority of the remaining States has no requirement beyond probable cause. The median rate for surviving drivers in 2009 was more than 30 percentage points higher and the average rate 23 percentage points higher for the law States than probable-cause States. There are, however, exceptions. Minnesota achieved the highest surviving driver testing rate of 89.4 percent without a law, with New Mexico and South Dakota close behind, while Georgia tested 20.7 percent with a law. Nine of the probable-cause States tested more than half of all surviving drivers, while 7 tested fewer than 10 percent. To achieve an increase in the overall testing and reporting rate, it is critical to establish testing policies for surviving drivers.

Case studies: Each case study State either maintained a high rate of BAC testing and reporting for several years or had improved substantially. This includes States that have overcome obstacles and States that use creative strategies to improve their BAC testing and reporting. This includes both large and small States and across the country with a range of BAC testing and reporting laws.

The case studies provided a wealth of information on BAC testing and reporting. In examining the case studies it was found that there are several key components identified in each State: clear responsibility and policy, standard procedures, inter-agency cooperation, and follow-up, dedicated staff and excellent personal relations, and strong BAC laws. Reports from each State are contained in the appendices. They form the basis for the following conclusions and strategies.

Conclusions and Strategies

Successful BAC testing and reporting involves three components that are simple to identify but often difficult to achieve: high testing rates, accurate and complete reporting, and careful management. A breakdown in any of the three may substantially reduce known BAC rates. Strategies used by high testing and reporting States are outlined below.

In order to obtain a high testing rate, States test as many drivers involved in fatal crashes as possible. This could be accomplished though laws, policies, or practices. A law that requires testing for all drivers involved in fatal crashes can be useful, but by itself does not guarantee a high testing rate (Hedlund, 2004). States should seek to change statutes or case law that prohibit or strongly discourage testing surviving drivers without probable cause. Testing policies can achieve high rates without a law, while a mandatory testing law will not produce high rates without strong polices to implement it. States can adopt policies of testing all drivers whenever

possible as permitted by State law. Medical examiner and coroners may not test all fatally injured drivers without suspicion of alcohol involvement in the motor vehicle crash or due to lack of resources. Medical examiners and coroners can adopt a policy of attempting to test all fatally injured drivers. Practices followed by all of those in a State that are responsible for testing can increase testing rates. Medical examiners, coroners, and law enforcement can receive standard training offered in coordination with the FARS analyst. The State can pay for testing costs or provide blood test kits to local jurisdictions if costs for processing the sample prohibit medical examiners and coroners from testing all fatally injured drivers.

Once a blood or breath sample is obtained and tested for alcohol, the results need to be reported to the FARS analyst. Complexity in the reporting process can hinder complete and timely BAC reporting. States can establish simple and routine reporting. Electronic reporting methods can simplify and speed up the reporting process. Tracking and follow-up on missing BACs are critical because some BAC results may not be available until after the crash report has been filed with FARS. The FARS analysts track missing BACs and directly request information by contacting law enforcement investigating officers, State toxicology laboratories, medical examiners and coroners. FARS analysts can also obtain missing information indirectly through examination of reports, death certificates, and other sources. Some States have used law enforcement liaisons to locate missing BACs from law enforcement agencies.

The BAC testing and reporting process will not succeed unless the people and agencies involved know their responsibilities and have the knowledge, resources, and management support to carry them out. Several independent agencies or organizations are involved in a State's BAC testing and reporting process. These agencies need to agree on roles, responsibilities and relationships. Some States have formal Memoranda of Understanding or cooperative agreements between relevant agencies on BAC testing and reporting issues. Communication between agencies can be improved by holding interagency meetings to discuss matters concerning BAC reporting. The FARS analyst's relationship with key staff in each organization or agency is critical. Establishing BAC testing and reporting as a high priority in the State brings resources of both staff and funding.

High Testing Rates – Testing as Many Drivers as Possible

- Laws
  - Require a law to test for all drivers in fatal crashes
  - Eliminate laws or policies that require probable cause for a surviving driver to be tested
- Policies
  - Adopt policies for testing all drivers as permitted by State law
  - Medical examiners and coroners should test all fatally injured drivers whenever possible
  - Law enforcement should test all surviving drivers whenever possible
- Practices
  - Medical examiners and coroners may be able to use BACs from hospital records for drivers who die after admission to hospitals

- Train medical examiners, coroners, and law enforcement officers in BAC testing laws, policies, responsibilities, and practices; provide blood test kits as needed; pay testing costs

Accurate and Complete Reporting of All Test Results

- Allow medical examiners and coroners access to hospital records for drivers who die after admission
- Establish simple and routine reporting
  - Implement electronic reporting or electronic access to appropriate data files if possible
  - Use standardized paper or electronic reporting forms; develop special forms if needed
  - Use redundant reporting methods, for example using both crash and laboratory reports
- FARS analysts track all fatalities and follow up on all missing BACs
  - Direct follow-up from FARS to person responsible for reporting (law enforcement, medical examiner, coroner)
  - Indirect follow-up through testing laboratory reports, death certificates, and other sources
  - Use law enforcement liaisons to track long-overdue BACs

Careful Management of the Process

- Establish and maintain close relationships, communication, and trust among all agencies involved in BAC testing and reporting
  - Interagency Memoranda of Understanding or cooperative agreements may be useful
  - Hold interagency meetings to address problems as needed
  - Individual staff working relationships and communications are critical
- Establish and maintain a high priority for BAC testing and reporting in all agencies
  - Provide necessary funding and staff
  - Train all people involved, especially those responsible for obtaining a test: law enforcement, medical examiners, and coroners

Table of Contents

Tables

Figures

State Blood Alcohol Concentration Testing and Reporting for Drivers Involved in Fatal Crashes: Current Practices, Results, and Strategies, 1997-2009

Introduction and Purpose

This report documents current State Blood Alcohol Concentration (BAC) testing and reporting practices and results for drivers involved in fatal crashes. It summarizes known BAC results by State for the years 1997 to 2009 for both fatally injured and surviving drivers. It provides an overview of State practices obtained from telephone discussions with all National Highway Traffic Safety Administration Regions and States. It documents case studies of 9 States, each of which has maintained or improved high rates of BAC testing and reporting. It combines information from all sources in a summary of good practices and provides strategies for States that wish to improve their BAC testing and reporting.

The objectives of this project were to:

- Identify States that have recently improved their BAC test reporting or have had consistently high levels of BAC test reporting;
- Determine what steps were taken by States to improve or establish their BAC test reporting programs; and
- Produce a publication of the case studies of State BAC test reporting including procedures, benefits, and lessons learned.

Background

The Fatality Analysis Reporting System (FARS) is a census of fatal police-reported traffic crashes within the 50 States, the District of Columbia, and Puerto Rico. To be included in FARS, a crash must involve a motor vehicle traveling on a public roadway, and result in the death of an occupant of a vehicle or a non-occupant within 30 days of the crash. NHTSA has an agreement with an agency in each State's government to provide information on all qualifying fatal crashes in the State. Trained State employees, called "FARS analysts," are responsible for gathering, translating, and transmitting their State's data to NHTSA (NHTSA 2010a).

Any fatal crash involving a driver or motorcycle operator with a BAC at or above the illegal *per se* limit of .08 grams per deciliter (g/dL)[1] or higher is considered to be an alcohol-impaired driving crash, and fatalities occurring in those crashes are considered to be alcohol-impaired driving-fatalities. In 2008, 11,773 people were killed in alcohol-impaired-driving crashes, accounting for 32 percent of the total motor vehicle fatalities (NHTSA, 2009). In 2009, 10,839 people were killed in alcohol-impaired-driving crashes (NHTSA, 2010b). The total decreased by 872, or 7.4 percent, from 2008; however, the percentage of traffic fatalities that are alcohol-impaired-driving fatalities remained at 32 percent. Measures to reduce driving or operating a motorcycle at illegal blood alcohol levels – alcohol-impaired driving – remain one of NHTSA's highest priorities.

[1] Measuring the amount or concentration of alcohol in a driver involves testing a body fluid sample, often blood or breath. The concentration is typically expressed as the percent of alcohol by weight per volume of the sample, for example grams of alcohol per deciliter of blood or grams of alcohol per 210 liters of breath.

Accurate and complete data on BAC levels for drivers in fatal crashes is critical to developing alcohol-impaired-driving programs, evaluating their effectiveness, and monitoring overall alcohol-impaired-driving levels. This data is reported in FARS by the individual States, the District of Columbia, and Puerto Rico. The reporting levels vary substantially from State to State and, in some States, from year to year. Some States have high reporting rates for fatally injured drivers, others have high rates for surviving drivers, and a few have high rates for both. Some States have maintained consistently high reporting rates over the past 10 years; others have improved, while still others have regressed. Nationwide reporting levels improved slightly from 1997 to 2008 and 2009, as shown in Table 1.

BAC test results are not available for all fatal crashes. Missing data can occur for a number of reasons. When the alcohol test results are unknown, NHTSA uses a statistical method to estimate the BAC values of drivers and non-occupants involved in fatal crashes. More information on the multiple imputation method is available in the NHTSA Technical Report, *Transitioning to Multiple Imputation: A New Method to Estimate Missing Blood Alcohol Concentration (BAC) Values in FARS* (Subramanian, 2002*).* The differences in BAC reporting levels affect the accuracy and reliability of the estimates. States with higher rates of known BACs have more reliable State estimates (NHTSA, 2010c).

Table 1. Known BAC test results

Fatal drivers	U.S.	Highest State	Lowest State	States over 80%
1997	68.1 %	HI 96.4 %	DC 9.5 %	20
2008	75.9 %	HI 98.6 %	IA 25.0 %	31
2008 annual	70.5 %	ME 94.8 %	AK 22.0 %	22
2009 annual	71.1 %	HI 97.3 %	MS 21.4 %	25

Surviving drivers	U.S.	Highest State	Lowest State	States over 60%
1997	26.0 %	AK 76.1 %	NC 0.1 %	7
2008	29.3 %	MN 91.3 %	NC 1.3 %	11
2008 annual	25.7 %	SD 80.0 %	VA 0.6 %	9
2009 annual	27.2 %	MN 89.4 %	NC 0.6 %	9

Source: FARS 1997 and 2008 final files; 2008 and 2009 annual report file

The Preusser Research Group conducted a study of State alcohol testing and reporting methods and rates for drivers involved in fatal traffic crashes, and produced a report for NHTSA called *State Laws and Practices for BAC Testing and Reporting Drivers Involved in Fatal Crashes* (Hedlund et al., 2004). That study's goals were to identify the best practices for and the barriers and problems that hinder obtaining BAC data for drivers involved in fatal crashes, and to provide strategies for States that wish to improve their BAC testing and reporting. It developed the process flowcharts of Figures 2, 3 and 4. It conducted case studies in 10 States selected to include a full range of laws, BAC testing practices, testing rates and trends, and geographic diversity. The current study updates and extends the 2004 study. The 2004 study conclusions on strategies to achieve high rates of BAC testing are incorporated in the current study conclusions and strategies.

State implied consent laws define the circumstances under which a law enforcement officer can request a motorist to submit to a chemical test for alcohol. In a typical DWI investigation, the law allows this request when the law enforcement officer has reasonable grounds or probable cause to believe that the motorist was operating in violation of the State's impaired-driving law. The probable-cause standard is that a test must be conducted when there are reasonable grounds or probable cause to believe that the driver was under the influence of alcohol (or equivalent). In the previous study, results showed that the 5 mandatory test law States had the highest testing rates by far, followed by States with no special law. At least 1 State in each law category (with the exception of the statistical purposes law) tested more than 70 percent of the surviving drivers (Hedlund et al 2004). The 2002 BAC test rates for surviving drivers by State law type are shown below in Table 2. Building upon the earlier report, this report shows such information by State in order to provide a deeper level of detail. The focus of this report is to provide best practices templates for States that have reported difficulty in increasing low BAC testing and reporting rates. Part of this study included these best practices from case study States that have overcome challenges concerning BAC testing and reporting as well as those who have consistently shown high reporting rates.

Table 2. BAC Testing rates by State law type, surviving drivers, FARS 2002*

State law type	2002 State BAC Testing Rates		
	Lowest State's rate	Median State's rate	Highest State's rate
Mandatory test	47%	79%	90%
Reduced standard	9%	22%	76%
Required if DWI	4%	32%	74%
Statistical purposes		22%	
No law	1%	33%	72%

*Hedlund et al, NHTSA 2004

Methods

FARS produces a data file for the previous year's crashes annually. NHTSA uses this data file for annual reports and Traffic Safety Fact Sheets, and refers to it as the annual report file. FARS continues to accept crash data for a full year after the crash date, and produces the final annual file, referred to as the final file. This additional time provides the opportunity for submission of important variable data requiring outside sources, which may lead to changes in the final counts. BAC testing and reporting information for each State for the period 1997 to 2009 was obtained from FARS. The data for the years 1997 to 2008 is taken from the final FARS files for those years while the 2009 data is from the annual report file. Because of this, some States' 2009 testing and reporting rates may increase when the final 2009 data is available.

PRG staff contacted by telephone each NHTSA Regional Office and FARS staff. Regional and State staffs were asked about:

a) Changes in State laws, practices, and processes for BAC testing and reporting during the period 1997 to 2008;

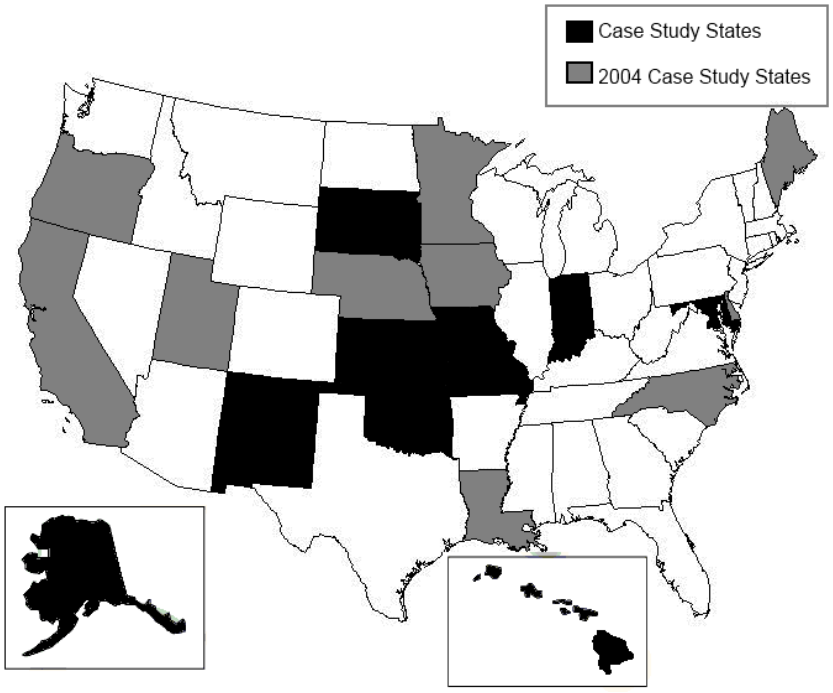
b) Reasons for any substantial changes – increases or decreases – in either testing or reporting rates for either fatally injured or surviving drivers;
c) Contacts for further information on these issues.

Regional calls provided the first contacts in each State. In some States one or two calls to one person addressed the questions, sometimes supplemented with e-mails. In other States several people were called. The information obtained through these calls provides an overview of common successes and obstacles. However, it does not provide detailed documentation of any individual State's practices.

We conducted case studies in 9 States, selected in consultation with NHTSA: Alaska, Hawaii, Indiana, Kansas, Maryland, Missouri, New Mexico, Oklahoma, and South Dakota. Each case study State either had maintained a high rate of BAC testing and reporting for several years or had improved substantially. The case studies include States that have overcome obstacles and States that have used creative strategies to improve their BAC testing and reporting. They include both large and small States across the country. The case study States have several different BAC testing laws. In terms of fatally injured drivers, 4 case study States require a test, 1 has a reduced testing standard, 1 can test for statistical purposes, and 3 rely on the probable-cause standard for an impaired driving investigation. In terms of surviving drivers, 3 case study States require a test, 1 has a reduced standard, and 5 rely on probable cause.

States in which case studies were conducted in the 2004 study were not included. Figure 1 shows the 9 case study States for the current project, together with the 10 States from the 2004 study.

Figure 1. Case Study States in 2010 and 2004



Project staff visited or conducted telephone discussions with people in each Case Study State. Contacts began with calls to the NHTSA Regional Administrator, followed by the State's

Governor's Representative or designated key staff person, and a FARS analyst or supervisor. They in turn recommended law enforcement officers, medical examiners or coroners, testing laboratory staff, and others who were visited or contacted by telephone. After all visits or calls for a State were completed, project staff drafted a report that was sent to, and reviewed for accuracy by the Governor's Representative or designated key staff person. The final reports from these efforts are provided in the Appendices.

BAC testing and reporting rates and trends

The Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users (SAFETEA-LU) contains an alcohol-impaired- driving countermeasure incentive grant program (under Section 410 of chapter 4 of Title 23) to encourage States to adopt and implement effective programs to reduce traffic safety problems resulting from individuals driving while under the influence of alcohol. A State may use these grant funds to implement countermeasures that address impaired driving. A State is eligible either by meeting alcohol-impaired-driving fatality rate criteria or by meeting certain programmatic criteria. One of the programmatic criteria is a program to increase the rate of BAC testing of drivers involved in fatal crashes. The measure used to determine if a State has met the BAC reporting programmatic criteria is an increase in the BAC reporting rate of all drivers involved in fatal crashes regardless of their injury status. Tables 3-6 present BAC reporting rates by injury or survivability status of the driver.

Tables 3 to 5 present summary rates – percentages of known BACs – for 1997 to 2009 for all States, the District of Columbia and Puerto Rico, and for the Nation. For ease of presentation, only the years 1997, 2000, and 2003 to 2009 are shown. Rates for 1997 to 2008 are taken from the final FARS files for those years. Rates for 2009 are taken from the annual report file. States with delays in reporting some BACs may have higher 2009 rates in the final 2009 file.

Table 3 presents rates for driver fatalities for each State, listed alphabetically. Table 4 lists the States by their 2009 rate. In Table 4, States exceeding NHTSA's suggested level of 80 percent known BACs for driver fatalities are shaded. Similarly, Tables 4 and 5 present the rates for surviving drivers, first alphabetically and then sorted by the 2009 rate. In Table 6, States exceeding NHTSA's suggested 60-percent level for surviving drivers are shaded.

Nationwide, the known BAC rate for driver fatalities was essentially constant at about 70 percent from 1997 through 2006 and increased to 75.9 percent in 2008. The rate probably increased again in 2009, though final data were not available when this report was written. The annual report file rate increased from 70.5 percent in 2008 to 71.1 percent in 2009. The rates for surviving drivers followed a similar pattern: remaining constant at approximately 26 percent through 2007, increasing to 29.3 percent in 2008, and probably increasing again in 2009. The Annual Report file rate increased from 25.7 percent in 2008 to 27.2 percent in 2009. Any individual State with a proportion of known BAC results greater than the national percentage is considered good (NHTSA, 2010c).

Table 3. Percent known BAC for driver fatalities, 1997-2009

State	1997	2000	2002	2003	2004	2005	2006	2007	2008	2009
Alabama	45.2	48.5	43.3	52.9	10.3	55.6	40.9	59.4	64.0	56.7
Alaska**	63.8	58.8	41.5	50.0	33.3	82.6	36.2	30.4	85.0	66.7
Arizona	30.2	56.8	53.9	52.4	49.1	49.4	69.9	78.9	81.6	57.6
Arkansas	66.3	72.4	72.9	76.1	77.3	76.1	80.2	77.5	80.7	83.1
California*	89.3	90.9	88.7	89.7	89.6	84.5	90.5	91.8	91.6	87.7
Colorado	84.5	86.4	88.4	88.3	62.8	65.7	72.1	87.5	80.1	76.5
Connecticut	88.0	84.8	86.1	85.7	58.9	70.0	86.4	88.6	86.3	77.7
Delaware*	88.1	84.6	81.9	77.8	67.5	52.7	51.9	50.0	75.7	53.6
District of Columbia	9.5	0.0	0.0	2.9	84.0	78.9	83.3	85.7	31.3	90.0
Florida	56.6	65.4	64.5	63.8	61.3	61.9	65.4	68.9	67.2	65.2
Georgia	83.7	69.5	69.8	70.4	48.5	47.1	48.4	54.7	56.2	59.4
Hawaii**	96.4	79.5	89.1	92.8	93.2	97.5	96.4	100.0	98.6	97.3
Idaho	65.4	69.3	71.5	70.8	77.0	67.4	69.0	73.5	82.9	73.5
Illinois	88.6	87.4	90.3	88.6	89.5	88.1	88.7	90.4	91.3	88.9
Indiana**	61.1	58.0	70.1	63.8	72.6	60.9	59.9	66.6	68.6	63.1
Iowa*	56.1	56.2	44.4	41.4	33.7	37.3	34.1	36.5	25.0	28.5
Kansas**	67.0	63.3	24.1	42.7	52.3	59.8	58.1	68.9	72.1	56.8
Kentucky	60.1	57.0	57.5	50.6	57.0	68.2	66.8	71.5	72.4	75.0
Louisiana*	39.9	58.1	47.9	31.5	44.2	38.1	45.9	57.4	61.1	64.9
Maine*	90.7	91.4	91.8	85.2	87.0	91.7	85.4	86.0	94.8	88.4
Maryland**	84.5	85.2	84.1	84.6	85.3	88.8	87.6	88.6	89.4	86.4
Massachusetts	86.7	76.6	48.1	60.7	31.8	55.2	69.0	75.8	75.7	44.3
Michigan	75.4	75.9	71.9	67.5	68.1	66.9	69.8	80.4	77.5	71.2
Minnesota*	90.2	92.8	85.3	87.9	85.6	91.3	92.7	88.7	91.3	89.4
Mississippi	78.9	72.9	68.0	55.1	43.7	48.7	40.4	42.0	46.7	21.4
Missouri**	73.7	75.7	79.8	78.2	82.2	83.1	83.2	81.4	78.6	80.5
Montana	74.0	30.4	81.1	78.9	83.8	84.0	83.6	86.1	85.6	87.6
Nebraska*	79.1	80.2	85.0	84.3	87.7	82.7	87.9	88.5	86.5	78.7
Nevada	86.2	84.7	80.5	81.7	77.8	71.0	81.4	88.6	97.0	83.8
New Hampshire	82.9	83.5	90.0	90.2	97.5	89.8	90.3	84.9	91.3	87.3
New Jersey	84.4	80.4	83.7	86.2	85.4	87.4	84.8	87.1	89.4	82.8
New Mexico**	85.7	86.5	83.8	89.2	88.4	92.1	92.5	94.5	91.7	94.1
New York	49.8	63.9	42.4	39.5	51.9	63.2	65.3	74.0	81.7	75.6
North Carolina*	79.0	21.1	74.9	93.0	94.1	84.6	89.9	86.6	96.1	61.0
North Dakota	47.9	75.5	80.9	87.7	82.7	84.9	80.8	92.6	88.4	86.8
Ohio	46.6	68.4	82.2	93.6	88.3	88.0	89.5	90.4	93.2	88.1
Oklahoma**	43.8	78.5	76.1	83.9	84.9	81.0	87.4	89.8	92.6	88.1
Oregon*	93.8	91.3	85.9	79.9	86.2	89.2	89.3	90.6	93.3	88.3
Pennsylvania	67.0	81.3	91.5	85.3	80.6	80.1	78.0	84.0	84.8	75.7
Rhode Island	97.7	98.0	86.4	94.0	85.5	87.8	91.7	95.0	86.4	47.8
South Carolina	41.9	23.6	68.8	69.7	80.3	69.3	72.0	73.3	74.5	76.5
South Dakota**	74.5	78.4	83.2	88.0	79.1	76.5	82.8	81.8	83.8	80.9
Tennessee	75.8	71.5	71.6	32.2	38.5	28.2	32.6	39.1	45.8	31.4
Texas	45.7	33.0	48.1	51.5	54.8	46.6	33.4	42.3	60.7	59.7
Utah*	74.2	56.4	56.4	62.4	65.9	53.4	41.2	43.2	43.1	44.6
Vermont	65.6	88.7	98.1	97.9	95.5	96.4	98.5	95.8	89.4	92.9
Virginia	74.6	73.8	43.0	69.0	51.2	60.2	76.3	67.7	63.4	83.0
Washington	86.9	90.5	90.9	88.3	85.9	92.0	94.3	94.5	92.9	92.8
West Virginia	82.0	96.3	89.0	89.2	87.9	82.4	86.2	82.2	90.5	95.3
Wisconsin	89.3	85.7	79.7	90.4	90.3	88.1	88.8	91.4	92.2	92.7
Wyoming	78.9	77.4	76.3	72.5	75.2	80.5	75.2	80.9	76.2	80.2
Nationwide	68.1	67.2	70.2	70.3	68.0	68.3	69.1	73.1	75.9	71.1
Puerto Rico	n/a	85.5	89.4	83.9	81.4	82.6	84.1	92.0	n/a	n/a

*indicates case study State in 2004 report

**indicates case study State in 2009-2010 report

Table 4. Percent known BAC for driver fatalities, 1997-2009, by 2009 rate

State	1997	2000	2002	2003	2004	2005	2006	2007	2008	2009
Hawaii**	96.4	79.5	89.1	92.8	93.2	97.5	96.4	100.0	98.6	97.3
West Virginia	82.0	96.3	89.0	89.2	87.9	82.4	86.2	82.2	90.5	95.3
New Mexico**	85.7	86.5	83.8	89.2	88.4	92.1	92.5	94.5	91.7	94.1
Vermont	65.6	88.7	98.1	97.9	95.5	96.4	98.5	95.8	89.4	92.9
Washington	86.9	90.5	90.9	88.3	85.9	92.0	94.3	94.5	92.9	92.8
Wisconsin	89.3	85.7	79.7	90.4	90.3	88.1	88.8	91.4	92.2	92.7
District of Columbia	9.5	0.0	0.0	2.9	84.0	78.9	83.3	85.7	31.3	90.0
Minnesota*	90.2	92.8	85.3	87.9	85.6	91.3	92.7	88.7	91.3	89.4
Illinois	88.6	87.4	90.3	88.6	89.5	88.1	88.7	90.4	91.3	88.9
Maine*	90.7	91.4	91.8	85.2	87.0	91.7	85.4	86.0	94.8	88.4
Oregon*	93.8	91.3	85.9	79.9	86.2	89.2	89.3	90.6	93.3	88.3
Ohio	46.6	68.4	82.2	93.6	88.3	88.0	89.5	90.4	93.2	88.1
Oklahoma**	43.8	78.5	76.1	83.9	84.9	81.0	87.4	89.8	92.6	88.1
California*	89.3	90.9	88.7	89.7	89.6	84.5	90.5	91.8	91.6	87.7
Montana	74.0	30.4	81.1	78.9	83.8	84.0	83.6	86.1	85.6	87.6
New Hampshire	82.9	83.5	90.0	90.2	97.5	89.8	90.3	84.9	91.3	87.3
North Dakota	47.9	75.5	80.9	87.7	82.7	84.9	80.8	92.6	88.4	86.8
Maryland**	84.5	85.2	84.1	84.6	85.3	88.8	87.6	88.6	89.4	86.4
Nevada	86.2	84.7	80.5	81.7	77.8	71.0	81.4	88.6	97.0	83.8
Arkansas	66.3	72.4	72.9	76.1	77.3	76.1	80.2	77.5	80.7	83.1
Virginia	74.6	73.8	43.0	69.0	51.2	60.2	76.3	67.7	63.4	83.0
New Jersey	84.4	80.4	83.7	86.2	85.4	87.4	84.8	87.1	89.4	82.8
South Dakota**	74.5	78.4	83.2	88.0	79.1	76.5	82.8	81.8	83.8	80.9
Missouri**	73.7	75.7	79.8	78.2	82.2	83.1	83.2	81.4	78.6	80.5
Wyoming	78.9	77.4	76.3	72.5	75.2	80.5	75.2	80.9	76.2	80.2
Nebraska*	79.1	80.2	85.0	84.3	87.7	82.7	87.9	88.5	86.5	78.7
Connecticut	88.0	84.8	86.1	85.7	58.9	70.0	86.4	88.6	86.3	77.7
Colorado	84.5	86.4	88.4	88.3	62.8	65.7	72.1	87.5	80.1	76.5
South Carolina	41.9	23.6	68.8	69.7	80.3	69.3	72.0	73.3	74.5	76.5
Pennsylvania	67.0	81.3	91.5	85.3	80.6	80.1	78.0	84.0	84.8	75.7
New York	49.8	63.9	42.4	39.5	51.9	63.2	65.3	74.0	81.7	75.6
Kentucky	60.1	57.0	57.5	50.6	57.0	68.2	66.8	71.5	72.4	75.0
Idaho	65.4	69.3	71.5	70.8	77.0	67.4	69.0	73.5	82.9	73.5
Michigan	75.4	75.9	71.9	67.5	68.1	66.9	69.8	80.4	77.5	71.2
Alaska**	63.8	58.8	41.5	50.0	33.3	82.6	36.2	30.4	85.0	66.7
Florida	56.6	65.4	64.5	63.8	61.3	61.9	65.4	68.9	67.2	65.2
Louisiana*	39.9	58.1	47.9	31.5	44.2	38.1	45.9	57.4	61.1	64.9
Indiana**	61.1	58.0	70.1	63.8	72.6	60.9	59.9	66.6	68.6	63.1
North Carolina*	79.0	21.1	74.9	93.0	94.1	84.6	89.9	86.6	96.1	61.0
Texas	45.7	33.0	48.1	51.5	54.8	46.6	33.4	42.3	60.7	59.7
Georgia	83.7	69.5	69.8	70.4	48.5	47.1	48.4	54.7	56.2	59.4
Arizona	30.2	56.8	53.9	52.4	49.1	49.4	69.9	78.9	81.6	57.6
Kansas**	67.0	63.3	24.1	42.7	52.3	59.8	58.1	68.9	72.1	56.8
Alabama	45.2	48.5	43.3	52.9	10.3	55.6	40.9	59.4	64.0	56.7
Delaware*	88.1	84.6	81.9	77.8	67.5	52.7	51.9	50.0	75.7	53.6
Rhode Island	97.7	98.0	86.4	94.0	85.5	87.8	91.7	95.0	86.4	47.8
Utah*	74.2	56.4	56.4	62.4	65.9	53.4	41.2	43.2	43.1	44.6
Massachusetts	86.7	76.6	48.1	60.7	31.8	55.2	69.0	75.8	75.7	44.3
Tennessee	75.8	71.5	71.6	32.2	38.5	28.2	32.6	39.1	45.8	31.4
Iowa*	56.1	56.2	44.4	41.4	33.7	37.3	34.1	36.5	25.0	28.5
Mississippi	78.9	72.9	68.0	55.1	43.7	48.7	40.4	42.0	46.7	21.4
Nationwide	68.1	67.2	70.2	70.3	68.0	68.3	69.1	73.1	75.9	71.1
Puerto Rico	n/a	85.5	89.4	83.9	81.4	82.6	84.1	92.0	n/a	n/a

Shaded States exceeded the NHTSA suggested level of 80 in 2009.
*indicates case study State in 2004 report
**indicates case study State in 2009-2010 report

Table 5. Percent known BAC for surviving drivers, 1997-2009

State	1997	2000	2003	2004	2005	2006	2007	2008	2009
Alabama	12.8	21.0	9.3	9.6	15.6	15.4	12.8	14.7	14.0
Alaska**	76.1	56.1	45.8	51.5	42.1	47.5	57.1	74.5	67.3
Arizona	6.5	7.4	6.9	6.4	5.6	24.8	28.9	29.5	28.0
Arkansas	37.6	53.8	53.3	53.8	50.0	50.2	59.0	63.7	65.2
California*	22.5	22.5	21.2	21.0	18.8	17.2	19.0	24.4	21.2
Colorado	33.0	29.8	24.6	15.1	7.1	14.3	8.5	10.8	10.9
Connecticut	28.6	25.1	29.0	20.4	24.0	26.7	32.4	36.2	23.1
Delaware*	57.3	56.1	33.6	31.8	13.1	10.4	15.7	27.7	11.8
District of Columbia	24.2	40.0	16.1	31.8	42.1	43.2	47.1	40.7	51.9
Florida	16.1	21.0	23.3	20.2	16.7	15.8	15.4	18.4	19.2
Georgia	72.8	67.3	64.3	24.5	22.7	23.2	20.5	19.7	20.7
Hawaii**	35.1	26.9	41.1	46.0	40.6	53.3	45.2	51.5	53.8
Idaho	27.8	45.7	39.3	33.5	31.3	36.5	34.6	38.4	34.3
Illinois	16.7	18.9	19.7	21.7	18.8	26.2	32.7	33.8	31.6
Indiana**	45.2	53.3	63.5	71.2	59.7	62.1	66.7	71.5	57.2
Iowa*	35.6	41.6	34.0	32.8	34.4	29.5	34.0	25.5	26.2
Kansas**	46.5	51.3	32.6	47.6	64.4	47.7	48.8	63.5	50.7
Kentucky	37.1	39.6	31.7	28.8	27.5	36.1	40.2	45.7	42.4
Louisiana*	55.2	63.0	49.4	50.5	53.2	54.7	59.9	72.4	72.4
Maine*	68.9	91.9	71.9	72.0	76.7	79.8	82.3	72.7	82.6
Maryland**	4.4	8.2	15.4	16.6	13.3	13.6	18.6	21.2	14.2
Massachusetts	0.6	6.9	1.2	0.9	0.6	2.5	1.7	4.0	0.9
Michigan	32.3	35.9	32.0	34.8	35.1	38.2	39.9	45.8	43.3
Minnesota*	50.3	65.9	59.3	64.2	73.8	49.4	43.1	91.3	89.4
Mississippi	73.7	64.2	24.7	21.5	23.7	18.3	18.1	18.7	11.1
Missouri**	7.9	10.9	19.2	24.6	29.3	41.5	46.4	53.0	57.9
Montana	64.8	25.7	57.6	54.9	57.0	59.8	63.6	67.2	67.3
Nebraska*	72.4	68.8	76.5	76.5	68.0	80.9	76.4	79.5	67.7
Nevada	37.9	30.6	32.8	33.8	30.1	34.5	40.6	38.6	34.7
New Hampshire	46.4	46.8	45.2	23.9	31.6	39.5	50.0	50.0	58.9
New Jersey	38.4	34.2	34.0	31.4	33.8	37.4	37.4	37.3	32.2
New Mexico**	17.7	17.6	20.5	23.1	34.8	38.0	40.8	69.7	85.8
New York	2.8	2.4	3.6	5.1	4.2	3.4	5.0	4.2	6.0
North Carolina*	0.1	0.7	1.2	0.9	1.7	1.1	1.0	1.3	0.6
North Dakota	15.0	34.0	32.8	13.3	32.6	19.6	34.6	32.4	26.0
Ohio	17.0	25.3	34.7	44.1	35.1	32.2	33.7	29.2	29.0
Oklahoma**	3.1	1.7	14.7	14.0	17.5	22.5	26.1	40.0	33.5
Oregon*	43.5	38.7	49.8	34.9	37.8	45.0	45.3	46.6	41.4
Pennsylvania	13.3	18.8	16.4	15.8	21.2	24.5	24.9	22.0	20.7
Rhode Island	14.8	6.5	4.1	0.0	3.1	5.9	2.6	10.8	3.8
South Carolina	4.2	4.0	3.9	80.4	3.6	5.5	7.1	6.9	7.6
South Dakota**	57.1	60.0	75.8	71.8	61.8	73.5	78.1	80.6	85.2
Tennessee	46.3	46.1	24.1	27.7	19.8	27.9	31.3	38.4	25.8
Texas	25.8	16.5	22.0	21.1	20.6	17.0	13.0	18.3	16.7
Utah*	62.6	49.1	51.7	56.8	36.3	35.7	37.9	50.0	36.0
Vermont	25.6	57.9	31.4	47.5	36.2	32.4	29.7	23.6	24.4
Virginia	0.8	0.6	1.5	1.5	0.2	0.7	12.6	21.9	2.4
Washington	20.9	24.2	20.0	22.2	19.0	19.9	23.6	26.2	34.8
West Virginia	19.2	26.8	20.9	11.0	13.6	16.7	17.7	11.9	9.2
Wisconsin	39.4	32.3	40.5	38.6	43.2	48.2	49.0	49.1	50.3
Wyoming	36.6	42.9	27.4	29.9	27.6	28.8	26.9	35.4	40.3
Nationwide	26.0	26.9	25.8	26.1	23.4	24.5	25.9	29.3	27.2
Puerto Rico	n/a	57.2	60.6	53.8	58.6	68.0	65.4	n/a	n/a

*indicates case study State in 2004 report

**indicates case study State in 2009-2010 report

Table 6. Percent known BAC for surviving drivers, 1997-2009, by 2009 rate

State	1997	2000	2003	2004	2005	2006	2007	2008	2009
Minnesota*	50.3	65.9	59.3	64.2	73.8	49.4	43.1	91.3	89.4
New Mexico**	17.7	17.6	20.5	23.1	34.8	38.0	40.8	69.7	85.8
South Dakota**	57.1	60.0	75.8	71.8	61.8	73.5	78.1	80.6	85.2
Maine*	68.9	91.9	71.9	72.0	76.7	79.8	82.3	72.7	82.6
Louisiana*	55.2	63.0	49.4	50.5	53.2	54.7	59.9	72.4	72.4
Nebraska*	72.4	68.8	76.5	76.5	68.0	80.9	76.4	79.5	67.7
Alaska**	76.1	56.1	45.8	51.5	42.1	47.5	57.1	74.5	67.3
Montana	64.8	25.7	57.6	54.9	57.0	59.8	63.6	67.2	67.3
Arkansas	37.6	53.8	53.3	53.8	50.0	50.2	59.0	63.7	65.2
New Hampshire	46.4	46.8	45.2	23.9	31.6	39.5	50.0	50.0	58.9
Missouri**	7.9	10.9	19.2	24.6	29.3	41.5	46.4	53.0	57.9
Indiana**	45.2	53.3	63.5	71.2	59.7	62.1	66.7	71.5	57.2
Hawaii**	35.1	26.9	41.1	46.0	40.6	53.3	45.2	51.5	53.8
District of Columbia	24.2	40.0	16.1	31.8	42.1	43.2	47.1	40.7	51.9
Kansas**	46.5	51.3	32.6	47.6	64.4	47.7	48.8	63.5	50.7
Wisconsin	39.4	32.3	40.5	38.6	43.2	48.2	49.0	49.1	50.3
Michigan	32.3	35.9	32.0	34.8	35.1	38.2	39.9	45.8	43.3
Kentucky	37.1	39.6	31.7	28.8	27.5	36.1	40.2	45.7	42.4
Oregon*	43.5	38.7	49.8	34.9	37.8	45.0	45.3	46.6	41.4
Wyoming	36.6	42.9	27.4	29.9	27.6	28.8	26.9	35.4	40.3
Utah*	62.6	49.1	51.7	56.8	36.3	35.7	37.9	50.0	36.0
Washington	20.9	24.2	20.0	22.2	19.0	19.9	23.6	26.2	34.8
Nevada	37.9	30.6	32.8	33.8	30.1	34.5	40.6	38.6	34.7
Idaho	27.8	45.7	39.3	33.5	31.3	36.5	34.6	38.4	34.3
Oklahoma**	3.1	1.7	14.7	14.0	17.5	22.5	26.1	40.0	33.5
New Jersey	38.4	34.2	34.0	31.4	33.8	37.4	37.4	37.3	32.2
Illinois	16.7	18.9	19.7	21.7	18.8	26.2	32.7	33.8	31.6
Ohio	17.0	25.3	34.7	44.1	35.1	32.2	33.7	29.2	29.0
Arizona	6.5	7.4	6.9	6.4	5.6	24.8	28.9	29.5	28.0
Iowa*	35.6	41.6	34.0	32.8	34.4	29.5	34.0	25.5	26.2
North Dakota	15.0	34.0	32.8	13.3	32.6	19.6	34.6	32.4	26.0
Tennessee	46.3	46.1	24.1	27.7	19.8	27.9	31.3	38.4	25.8
Vermont	25.6	57.9	31.4	47.5	36.2	32.4	29.7	23.6	24.4
Connecticut	28.6	25.1	29.0	20.4	24.0	26.7	32.4	36.2	23.1
California*	22.5	22.5	21.2	21.0	18.8	17.2	19.0	24.4	21.2
Georgia	72.8	67.3	64.3	24.5	22.7	23.2	20.5	19.7	20.7
Pennsylvania	13.3	18.8	16.4	15.8	21.2	24.5	24.9	22.0	20.7
Florida	16.1	21.0	23.3	20.2	16.7	15.8	15.4	18.4	19.2
Texas	25.8	16.5	22.0	21.1	20.6	17.0	13.0	18.3	16.7
Maryland**	4.4	8.2	15.4	16.6	13.3	13.6	18.6	21.2	14.2
Alabama	12.8	21.0	9.3	9.6	15.6	15.4	12.8	14.7	14.0
Delaware*	57.3	56.1	33.6	31.8	13.1	10.4	15.7	27.7	11.8
Mississippi	73.7	64.2	24.7	21.5	23.7	18.3	18.1	18.7	11.1
Colorado	33.0	29.8	24.6	15.1	7.1	14.3	8.5	10.8	10.9
West Virginia	19.2	26.8	20.9	11.0	13.6	16.7	17.7	11.9	9.2
South Carolina	4.2	4.0	3.9	80.4	3.6	5.5	7.1	6.9	7.6
New York	2.8	2.4	3.6	5.1	4.2	3.4	5.0	4.2	6.0
Rhode Island	14.8	6.5	4.1	0.0	3.1	5.9	2.6	10.8	3.8
Virginia	0.8	0.6	1.5	1.5	0.2	0.7	12.6	21.9	2.4
Massachusetts	0.6	6.9	1.2	0.9	0.6	2.5	1.7	4.0	0.9
North Carolina*	0.1	0.7	1.2	0.9	1.7	1.1	1.0	1.3	0.6
Nationwide	26.0	26.9	25.8	26.1	23.4	24.5	25.9	29.3	27.2
Puerto Rico	n/a	57.2	60.6	53.8	58.6	68.0	65.4	n/a	n/a

Shaded States exceeded the NHTSA suggested level of 60 in 2009.
*indicates case study State in 2004 report
**indicates case study State in 2009-2010 report

State BAC testing and reporting laws and practices

Recent changes in State laws

One-third of the States reported that they had recent law or policy changes that affect BAC testing and reporting since the 2004 report.

- Alaska changed its implied consent law from DWI (driving while impaired) to DUI (driving under the influence) in 2001 to expand the definition of impairment and include drugs other than alcohol.
- Arkansas required all drivers in fatal crashes to be tested, starting in 2009. Driver consent is not required in crashes that produced or are likely to produce a fatality. The data will be used for statistical purposes only.
- Colorado required tests for all surviving drivers with probable cause and all fatally injured drivers.
- Georgia no longer required all fatally injured drivers to be tested as of 2003, only those for whom there is probable cause.
- Idaho changed its law to now require coroners to test fatally injured drivers, rather than morticians as its law previously stated.
- Iowa reduced its per se BAC limit to .08 g/dL; BAC testing requires probable cause that a driver exceeds .08. Iowa permitted BAC testing without a warrant where the suspect has been arrested for DWI and where an officer believes that he or she would not be able to obtain a warrant in time to obtain an accurate BAC test.
- Kansas law changed to allow testing any driver in a serious injury or fatal crash (citation for any offense serves as probable cause).
- Massachusetts enacted *Melanie's Law* in 2005 that included stronger penalties for refusing a BAC test, an ignition interlock requirement, and increased penalties for multiple DWI offenses.
- Mississippi changed its law in 2008 from allowing a test based on reasonable grounds to requiring probable cause.
- Missouri changed its policy for fatally injured drivers from accepting only BAC data from coroners, to allowing law enforcement officers to use data from other sources.
- New Hampshire has a more stringent interpretation of its "reduced standard" law for surviving drivers after HIPAA (the Health Insurance Portability and Accountability Act), which made hospitals more reluctant to release BAC data.
- New Mexico's new policy requires all driver fatalities to be tested as well as all surviving drivers with probable cause. However, a warrant must be obtained.
- North Carolina changed its implied consent law in 2006. For surviving drivers, a test requires probable cause. The penalty for refusing a test is revoking the driver's license for up to one year. In addition, the officer can obtain a warrant and obtain a blood sample, by force if necessary.
- North Dakota enacted a law in 2009 that allows officers to require a BAC test for surviving drivers in a serious injury or fatal crash with probable cause, or if the driver has committed one of several moving violations.
- Rhode Island enacted a law authorizing an officer to obtain a warrant, with probable cause, for a BAC test for surviving drivers in a fatal or serious injury crash.

- South Dakota in 2006 required a blood test (rather than breath test) for all drivers arrested for DUI. If a driver refuses, a blood sample may be obtained by force if necessary.
- Wisconsin made a minor change to its implied consent law in 2007.

Tables 7 and 8 summarize State laws, for fatally injured and surviving drivers, respectively, in three broad categories: States with laws requiring tests for all drivers, States with no law making any substantive distinction between drivers in fatal crashes and other drivers (with a "probable cause" requirement for impaired driving), and a few States that either allow or require testing in some circumstances. Each State's classification is assumed to be accurate. The classifications are used to compare BAC testing rates between the groups of States with and without mandatory testing laws, not to draw conclusions on any individual State.

Laws and practices may differ

Table 9 compares each State's laws (from Tables 7 and 8) with its testing rates (from Tables 3 and 5) and with a subjective assessment of practices from our calls to the States of "who gets tested." The clear conclusion is that mandatory testing laws help, but certainly do not assure, high testing and reporting rates. On the other hand, some States have achieved high rates with no mandatory testing laws.

Table 10 summarizes the relation between BAC testing laws and 2009 testing rates for fatally injured drivers. The States divide almost equally into those requiring testing for all or almost all fatally injured drivers (25 States) and those with no law, for which the standard probable-cause requirement for an impaired driving investigation applies (22 States). The median and average testing rates were 13- to 15 percentage points higher for the law States than for the probable-cause States. However, West Virginia achieved 95.3 without a law, while Utah tested 44.6 with a mandatory testing law. In fact, 10 probable-cause States exceeded 80 percent.

Table 7. BAC testing laws for driver fatalities by State ***

State	Mandatory	Probable Cause	Other
Alabama		22-19-80(d) (Reasonable Grounds)	
Alaska**		AS 28.35.030	
Arizona		28-668 (A) (Probable cause)	
Arkansas	5-65-208 (A) Mandatory		
California*	27491.25 Mandatory		
Colorado	42-4-1304 (1)		
Connecticut	14-227 (c)		
Delaware*		Title 21 §2740(a)	
District of Columbia		50-1902(b)	
Florida		Title 23 Section 316.1933(1)(a)	
Georgia		4055-55 (Probable cause)	
Hawaii**			841-3 reduced
Idaho	49-1314 (1)		
Illinois	55 ILCS 5/3-3013		
Indiana**		IC9-30-6	
Iowa*		Title 8 §321J.6	
Kansas**	22-2502		
Kentucky			KRS 189A.010(1) reduced
Louisiana*	32-661 A (2)(b)		
Maine*		29-A MRSA §2522(1)	
Maryland**		16-205.1(c)(1)	
Massachusetts		14-90 §24(f)(1)	
Michigan	257.625a(6)(f)		
Minnesota*	169.09 Subd. 11		
Mississippi		§63-11-5 (1)	
Missouri**	58.445.2		
Montana		61-8-402(2)(a)	
Nebraska*	60-6,103		
Nevada	43-484.383.1		
New Hampshire	21 265-93		
New Jersey	26:2B-24 (Statistical)		
New Mexico**	66-8-111 A		
New York	11-17A-674.3 (b)		
North Carolina*		20-16.2(a)	
North Dakota	39-20-01.1		
Ohio		4511.191(A)	
Oklahoma**		47 §751(2)	
Oregon*	146.113 (2)		
Pennsylvania	75-3749(b)		
Rhode Island		21-28-1.02(7)	
South Carolina	17-7-80		
South Dakota**	34-25-22.1		
Tennessee			55-10-406(a)(1) reduced
Texas		Title 7 §724.012(a)	
Utah*	26-1-30(q)		
Vermont		23 §1202(a)(4)	
Virginia		18.2-266	
Washington	46.52.065		
West Virginia		17C-5-4(c)	
Wisconsin	346.71		
Wyoming		31-6-102(a)	
Puerto Rico		No. 22, § 7.03. 5209	

*indicates case study State in 2004 report
**indicates case study State in 2009-2010 report
*** law information taken from actual State law statutes

Table 8. BAC testing laws for surviving drivers by State***

State	Mandatory Test	Probable Cause	Other
Alabama		X	
Alaska**		X	
Arizona		X	
Arkansas		X	
California*		X	
Colorado		X	
Connecticut		X	
Delaware*		X	
District Of Columbia		X	
Florida		X	
Georgia	X		
Hawaii**		X	
Idaho		X	
Illinois		X	
Indiana**	X		
Iowa*		X	
Kansas**	X		
Kentucky		X	
Louisiana*	X		
Maine*	X		
Maryland**		X	
Massachusetts		X	
Michigan		X	
Minnesota*		X	
Mississippi		X	
Missouri**			Reduced standard
Montana		X	
Nebraska*	X		
Nevada		X	
New Hampshire			Reduced standard
New Jersey			Statistical purposes
New Mexico**		X	
New York		X	
North Carolina*		X	
North Dakota		X	
Ohio		X	
Oklahoma**	X		
Oregon*		X	
Pennsylvania		X	
Rhode Island		X	
South Carolina		X	
South Dakota**		X	
Tennessee		X	
Texas		X	
Utah*		X	
Vermont		X	
Virginia		X	
Washington		X	
West Virginia		X	
Wisconsin		X	
Wyoming		X	
Puerto Rico		X	

*indicates case study State in 2004 report.
**indicates case study State in 2009-2010 report.
*** law information taken from actual State law statutes

Table 9. State BAC testing laws, practices, and testing rates (percentage)

	Fatally injured drivers			Surviving drivers		
State	**Law*** **	**Practice**	**2009 Rate**	**Law*** **	**Practice**	**2009 Rate**
Alabama	prob cause	most	56.7	prob cause	few	14.0
Alaska**	prob cause	many	66.7	prob cause	prob cause	67.3
Arizona	prob cause	many	57.6	prob cause	prob cause	28.0
Arkansas	all	most	83.1	prob cause	many	65.2
California*	all	most	87.7	prob cause	prob cause	21.2
Colorado	all	all	76.5	prob cause	few	10.9
Connecticut	all	most	77.7	prob cause	prob cause	23.1
Delaware*	prob cause	most	53.6	prob cause	prob cause	11.8
District of Columbia	prob cause	prob cause	90.0	prob cause	prob cause	51.9
Florida	prob cause	many	65.2	prob cause	prob cause	19.2
Georgia	prob cause	many	59.4	all	few	20.7
Hawaii**	reduced	all	97.3	prob cause	varies	53.8
Idaho	all on scene	most	73.5	prob cause	prob cause	34.3
Illinois	all	most	88.9	prob cause	prob cause	31.6
Indiana**	prob cause	many	63.1	all	many	57.2
Iowa*	prob cause	prob cause	28.5	prob cause	prob cause	26.2
Kansas**	all	many	56.8	all	many	50.7
Kentucky	reduced	many	75.0	prob cause	some	42.4
Louisiana*	all	some	64.9	all	many	72.4
Maine*	prob cause	all	88.4	all	many	82.6
Maryland**	prob cause	most	86.4	prob cause	few	14.2
Massachusetts	prob cause	many	44.3	prob cause	few	0.9
Michigan	all	many	71.2	prob cause	prob cause	43.3
Minnesota*	all w/in 4 hrs	most	89.4	prob cause	many	89.4
Mississippi	prob cause	prob cause	21.4	prob cause	few	11.1
Missouri**	all	most	80.5	reduced	many	57.9
Montana	prob cause	most	87.6	prob cause	many	67.3
Nebraska*	all	most	78.7	all	most	67.7
Nevada	all	most	83.8	prob cause	prob cause	34.7
New Hampshire	all	all	87.3	reduced	many	58.9
New Jersey	all	most	82.8	stat	some	32.2
New Mexico**	all	most	94.1	prob cause	many	85.8
New York	all	many	75.6	prob cause	few	6.0
North Carolina*	prob cause	most	61.0	prob cause	few	0.6
North Dakota	all	most	86.8	prob cause	some	26.0
Ohio	prob cause	most	88.1	prob cause	prob cause	29.0
Oklahoma**	prob cause	most	88.1	all	some	33.5
Oregon*	all	most	88.3	prob cause	many	41.4
Pennsylvania	all	many	75.7	prob cause	prob cause	20.7
Rhode Island	prob cause	many	47.8	prob cause	few	3.8
South Carolina	all	many	76.5	prob cause	few	7.6
South Dakota**	all	many	80.9	prob cause	many	85.2
Tennessee	reduced	prob cause	31.4	prob cause	prob cause	25.8
Texas	prob cause	some	59.7	prob cause	prob cause	16.7
Utah*	all	some	44.6	prob cause	many	36.0
Vermont	prob cause	most	92.9	prob cause	prob cause	24.4
Virginia	prob cause	some	83.0	prob cause	few	2.4
Washington	all	all	92.8	prob cause	prob cause	34.8
West Virginia	prob cause	most	95.3	prob cause	prob cause	9.2
Wisconsin	all	most	92.7	prob cause	prob cause	50.3
Wyoming	prob cause	many	80.2	prob cause	prob cause	40.3
Puerto Rico	prob cause	many	n/a	prob cause	many	n/a

*indicates case study State in 2004 report
**indicates case study State in 2009-2010 report
*** pulled from actual State legislative documents

Table 10. BAC testing rates by law type, fatally injured drivers, 2009***

Law type	Number of States	Lowest State's rate %	Median State's rate %	Average State's rate %	Highest State's rate %
All	23	44.6	80.9	79.5	94.1
All on-scene or die in 4 hours	2	73.5	81.5	81.5	89.4
Reduced standard *	3	31.4	75.0	67.9	97.3
Statistical **	1	63.1	63.1	63.1	63.1
Probable cause	22	21.4	66.0	66.3	95.3
Total	51	21.4	78.7	71.1 *	97.3

* Law enforcement may request a test in some circumstances without having to demonstrate probable cause.
** Testing authorized for statistical purposes only.
*** FARS testing rate and law type compiled from various State legislative documents

These results suggest that testing policies can achieve high rates without a law, while a mandatory testing law will not produce high rates without strong policies to implement it. They provide background for the detailed investigation of testing laws and policies in the case studies.

Table 11 provides a similar summary for surviving drivers. Only 7 States require testing while most of the rest have no requirement beyond probable cause, though some States expand probable cause to include drivers who caused or contributed to the fatal crash. The probable-cause standard is that a test must be conducted when there are reasonable grounds or probable cause to believe that the driver was under the influence of alcohol (or equivalent). The differences between the States with different testing requirements are large, with the median rate more than 30 percentage points higher and the average rate 23 percentage points higher for the law States. But, there are exceptions. Minnesota achieved the highest surviving driver testing rate of 89.4 percent without a law with New Mexico and South Dakota close behind, while Georgia tested only 20.7 percent with a law.

Table 11. BAC testing rates by law type, surviving drivers, 2009***

Law type	Number of States	Lowest State's rate %	Median State's rate %	Average State's rate %	Highest State's rate %
All	7	20.7	57.2	55.0	82.6
Reduced standard *	2	57.9	58.4	58.4	58.9
Statistical **	1	32.2	32.2	32.2	32.2
Probable cause	41	0.6	26.2	31.9	89.4
Total	51	0.6	32.2	27.2 *	89.4 %

* Law enforcement may request a test in some circumstances without having to demonstrate probable cause.
** Testing authorized for statistical purposes only.
*** FARS testing rates and law type compiled from various State legislative documents

Almost one-quarter of all drivers nationwide in fatal crashes are impaired by alcohol (NHTSA, 2009), therefore States with a probable-cause requirement for testing could be expected to test

about 20 to 25 percent of the surviving drivers. That is consistent with the 26.2 percent median testing rate for States with probable cause in Table 11. Note that half the probable-cause States tested more than this -- 9 States testing more than half of all surviving drivers (Table 9). Seven probable-cause States tested fewer than 10 percent of surviving drivers, which means they probably failed to test over half of those who are impaired by alcohol. To achieve an increase in the overall testing and reporting rate, it is critical to establish testing policies for surviving drivers.

Key features of States with high rates of BAC testing and reporting

High rates of BAC testing and reporting involve six critical components. The process itself has four parts: testing, reporting test results to FARS, tracking, and follow-up. The context in which the process is carried out has two components: education and training, and management. Each of these is discussed below, using information obtained from the case studies, supplemented by information from the State contacts and other sources.

The process; testing, reporting, tracking, and follow-up

BAC testing

There are three fundamentally different scenarios for BAC testing and reporting for a driver in a fatal crash:

(1) Driver dies at the crash scene;
(2) Driver is uninjured, or driver's injuries do not require immediate treatment at a hospital or emergency room;
(3) Driver is taken to a hospital or emergency room; the driver may die later or survive.

Each scenario has a different process for obtaining a BAC and reporting the BAC to FARS. Each has different people in critical roles, different barriers to obtaining a test, and different potential solutions. Each scenario is outlined in a flow chart and then discussed in turn. The discussion omits some rare circumstances.

1. Driver dies at the crash scene – medical examiner or coroner takes the lead

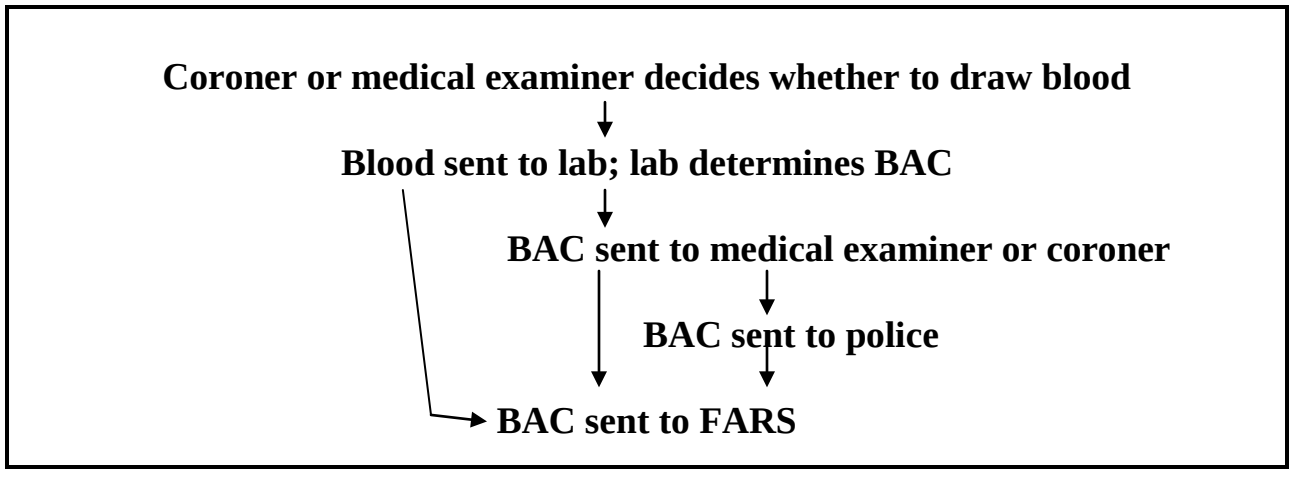


Figure 2. BAC testing and reporting for drivers who die at the crash scene

All States have medical examiners or coroners responsible for investigating all accidental deaths and determining the cause of death. Medical examiners typically are physicians who are appointed to their position. Coroners may be physicians or lay people, such as law enforcement officers or morticians, and may be appointed or elected. In the 9 case study States, four have medical examiners, three have coroners, and two have mixed systems with medical examiners in larger jurisdictions and coroners in smaller ones.

When a driver dies at the crash scene, or before being admitted to a hospital, law enforcement or emergency medical personnel notify the appropriate medical examiner or coroner. Usually a medical examiner or coroner will travel to the scene; if this is not feasible, they will travel to the morgue or hospital to which the body is transported.

About half the States require the medical examiner or coroner to draw a blood sample and conduct a BAC test from all fatally injured drivers; perhaps with minor exceptions (see Table 7). Lacking a law, some State's medical examiners or coroners have a statewide policy of obtaining a blood sample and BAC test whenever possible. In other States, some medical examiners or coroners routinely test BACs while others do not. In general, medical examiner systems typically follow more consistent practices statewide than coroner systems, especially when coroners are elected. In the 9 study States, only South Dakota has a law requiring a test from all fatally injured drivers. Missouri law requires a test for drivers who die within eight hours, but in practice Missouri's medical examiners and coroners attempt to test all fatally injured drivers. Kansas law requires a test from all drivers who "caused" a fatal crash or who "contributed to" the crash and can be cited for a traffic offense. Hawaii allows an officer to request a test from drivers suspected of negligent injury or homicide.

Table 12 summarizes the medical examiner or coroner systems, laws, practices, and 2009 testing rates for the case study States. The testing rates include driver fatalities with a BAC test status of either tested with known results (results reported to FARS) or tested with unknown results (results not reported to FARS). In the Practice column, "policy" means a statewide policy (or, for Hawaii, individual policies in each of its four jurisdictions) of obtaining a test from all fatally injured drivers, while "standard practice" means that some jurisdictions, medical examiners, or coroners routinely attempt to obtain a test from all fatally injured drivers, while others do not.

Table 12. BAC testing for fatally injured drivers, case study States, 2009

State	System	Law	Practice	2009 test rate
Alaska	medical examiner	none	policy	93.9 %
Hawaii	mixed	reduced standard	policy	97.3 % *
Indiana	coroner	statistical	standard practice	67.6 %
Kansas	coroner	caused or cited	standard practice	56.8 % *
Maryland	medical examiner	none	policy	87.3 %
Missouri	mixed	die in 8 hours	standard practice	80.5 %
New Mexico	medical examiner	none	policy	100.0 %
Oklahoma	medical examiner	none	standard practice	88.1 %
South Dakota**	coroner	all	all	85.4 %

Source: FARS 2009 annual report file

* Rates may be higher in the final file if "unknown if tested" cases are resolved: 2.7 percent in HI, 28.0 percent in KS.

** In South Dakota coroners are required to take blood samples for all fatally injured drivers as part of their investigation of fatal crashes. (24-25-22.1)

The five study States either with a law covering all fatally injured drivers or with a medical examiner system, all tested over 85 percent. So did Hawaii, with a mixed system but a policy in each jurisdiction.

The 3 States with lower testing rates, Indiana, Kansas, and Missouri, all have coroner systems (Missouri has medical examiners in larger counties and coroners in smaller ones). The obstacles to BAC testing in these States are straightforward. Blood samples must be drawn within three or four hours of the crash to obtain an accurate BAC reading. Coroners may not reach the crash scene within the time period necessary for an accurate BAC reading, especially in rural areas. Some coroners may not choose to test a driver for whom there is no suspicion of alcohol involvement or for whom the cause of death is obvious. Some coroners may lack the proper training or equipment for a blood draw, again especially in rural areas with few fatal crashes. Some coroners may not wish to draw blood samples if they must pay the laboratory fees for analyzing the samples.

Several of these obstacles are not difficult to overcome:

- In the absence of a law requiring testing, adopt a statewide policy of attempting to test every fatally injured driver.
- Provide coroners with the necessary training, and equipment for drawing blood samples.
- Pay blood analysis costs with State funds, not county funds.

2. Driver uninjured at the crash scene – law enforcement takes the lead

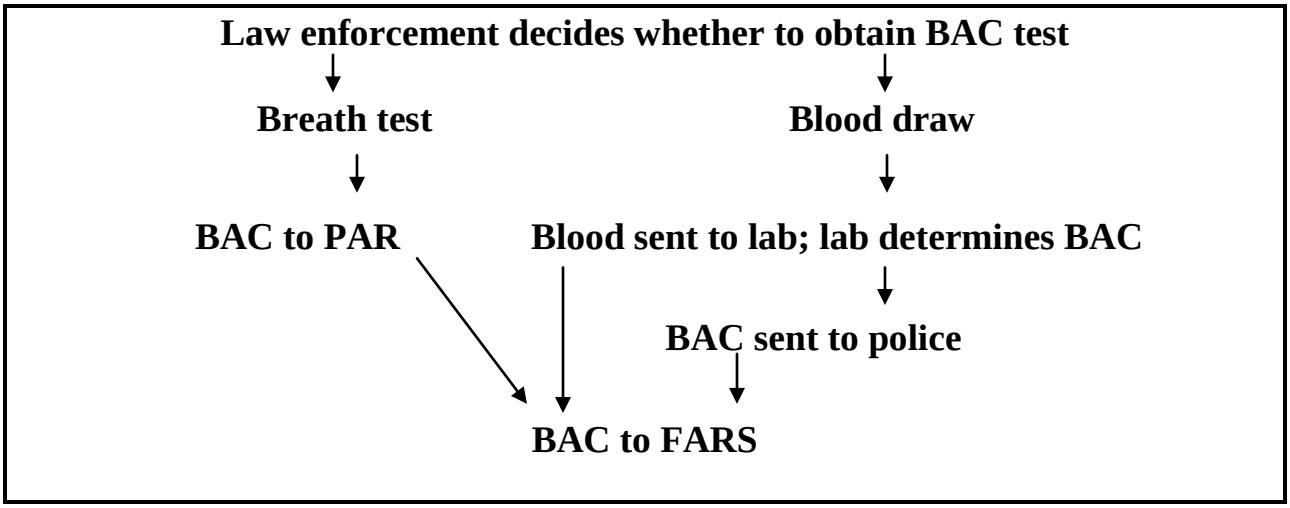


Figure 3. BAC testing and reporting for drivers who remain at the crash scene

When a driver is uninjured, or the injuries do not require the driver to be transported from the crash scene, law enforcement officers are responsible for determining whether or not to administer a BAC test. Crashes involving serious injuries or fatalities often are complex and chaotic situations. The investigating officers' first priorities are to secure the safety of the scene and to care for injured people. After that, officers must deal with any criminal or traffic violation charges, including DWI. Only after these more pressing needs are addressed at a fatality crash scene will officers consider BAC testing for drivers not suspected of DWI.

Most States do not require any BAC testing for surviving drivers in fatal crashes (Table 8). All States authorize a test if the investigating officer has reason to suspect that the driver was impaired by alcohol. Three of the 9 case study States – Alaska, Maryland, and New Mexico – have no law requiring testing for surviving drivers without probable cause. Alaska and Maryland do not allow drivers to refuse a test when there is probable cause. Indiana and Missouri require tests for all drivers in fatal crashes. The remaining 4 States have laws authorizing tests for surviving drivers in some circumstances: if a driver caused the crash or could be cited for a traffic violation (Kansas and Oklahoma), if the driver is suspected of negligent injury or homicide (Hawaii), or merely if an officer requests a test (South Dakota).

Table 13 summarizes the laws, practices, and 2009 testing rates for the case study States. The testing rates include surviving drivers with a BAC test status of either tested with known results (results reported to FARS) or tested with unknown results (results not reported to FARS). Maryland and Oklahoma, with no laws, tested only drivers suspected of alcohol impairment, which results in low testing rates. Laws vary in Alaska, Hawaii, Indiana, and Kansas from no test requirements to a testing all drivers. Testing rates in these States ranged from 50.7 percent in Kansas, with a "caused or cited" law, to 78.6 percent in Alaska, with no law. In each of these States, testing varied substantially by jurisdiction or by individual officer. Some officers attempt to test most surviving drivers and others test only those suspected of alcohol impairment. Missouri, with a law requiring all drivers to be tested, has a reporting rate of 57.9 percent for surviving drivers. Of the two States that tested over 85 percent, New Mexico has no law, while South Dakota's law requires a test if an officer requests one, but does not require the officer to request a test.

Law enforcement policy plays a critical role. If a State's statutes or case law prohibit or strongly discourage testing without probable cause, little can be done to raise testing much above about 30 percent. But many State laws will allow testing under some circumstances. If they do, then law enforcement policy and practices determine the testing rate.

Table 13. BAC testing for surviving drivers, case study States, 2009

State	Law	Practice	2009 test rate
Alaska	None	varies by officer: all or probable cause	78.6 %
Hawaii	caused or cited	varies by officer: all or probable cause	55.3 %
Indiana	All	varies by officer: all or probable cause	63.0 %
Kansas	caused or cited	varies by officer: all or probable cause	50.7 % *
Maryland	None	probable cause	14.2 % *
Missouri	All	most	57.9 %
New Mexico	None	most	85.8 %
Oklahoma	caused or cited	probable cause	33.5 %
South Dakota	all if requested	all	85.2 %

Source: FARS 2009 annual report file

* Rates may be higher in the final file if "unknown if tested" cases are resolved: 18.9% in KS, 4.1 percent in MD.

Several case study States use each of the following three strategies to achieve high testing rates for surviving drivers.

- Adopt a statewide policy of requesting a test from all surviving drivers that meet the State's laws and regulations for testing.
- Train officers to request a test from all surviving drivers that meet the State's laws and regulations for testing.
- Use preliminary breath test (PBT) equipment for quick tests of surviving drivers not suspected of being impaired.

Officers always should request a test under standard DWI procedures if they suspect that a driver involved in a fatal crash was impaired by alcohol.

States should seek to change statutes or case law that prohibit or strongly discourage testing without probable cause. The case study States provide several examples of how testing can be expanded beyond probable cause. This involves officers asking drivers who appear to be sober for a voluntary PBT test. The officer can use the explanation that a "no alcohol" PBT reading will provide useful evidence if the crash produces any criminal charges. If the PBT reading indicates alcohol or if a driver refuses a PBT test, then the officer can look for additional evidence of impairment to provide grounds for a DWI investigation.

3. Driver taken to hospital or emergency department – lead varies by circumstances and outcome

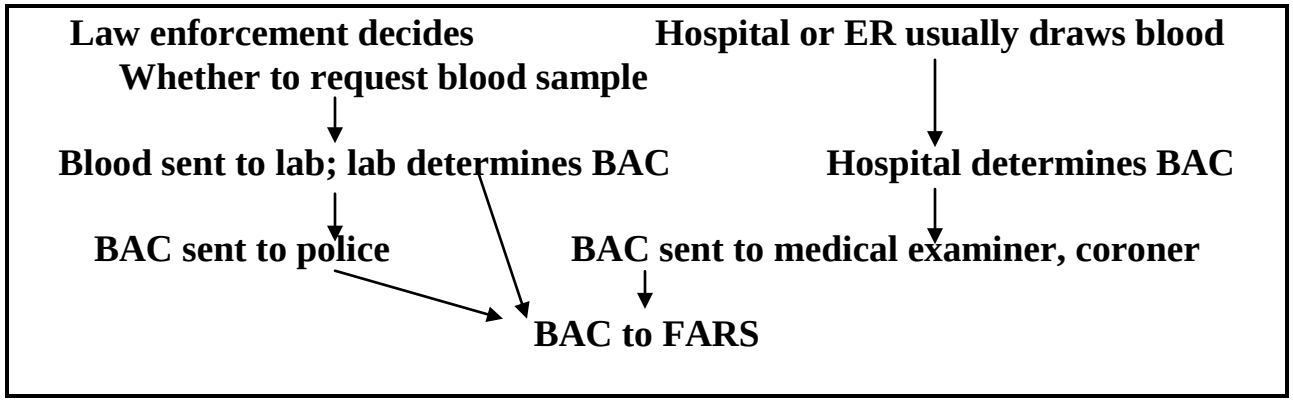


Figure 4. BAC testing and reporting for drivers transported to a hospital or emergency department

When a driver is transported to a hospital (or emergency department), the processes and responsibilities for BAC testing and reporting become a complex mix of those for drivers who die at the crash scene and those for drivers who are uninjured. If the driver is alive, responsibility for testing rests with law enforcement. If and when the driver dies, the medical examiner or coroner becomes responsible for the BAC test.

Most hospitals routinely draw a blood sample from seriously injured patients when they are admitted, to use for medical purposes. The blood sample is usually for BAC and enters the results into the hospital records. Some paramedics or emergency medical technicians responding to a crash will draw a blood sample at the scene and send the sample to the hospital along with the victim. Most hospitals, however, interpret HIPAA regulations as preventing the release of a portion of their blood sample or any BAC test results without some specific authorization.

Law enforcement officers make the initial decision of whether to obtain a BAC test from a seriously injured driver. While procedures differ in each study State, the usual practice is for officers to travel to the hospital for all drivers that meet the State's laws and policies for obtaining a test (Table 13). At the hospital, an officer asks the driver for a blood test. If the driver consents, the hospital draws a blood sample and gives the sample to the officer, who will arrange for testing in a toxicology laboratory. If the driver refuses or is not able to consent, most hospitals in most study States will draw a blood sample if the officer obtains a warrant. Warrants are typically granted only if the officer has probable cause to suspect that the driver was impaired by alcohol. BACs from hospital records usually cannot be obtained except by subpoena for drivers involved in a DWI investigation.

If a driver dies after being admitted to a hospital, the medical examiner or coroner will attempt to obtain a BAC following the same guidelines as for drivers who die at the crash scene. The medical examiner or coroner frequently cannot rely on an independent blood sample because a valid BAC requires that a blood sample be drawn within four hours of the crash and before any medications have entered the driver's blood. Thus, medical examiners and coroners have two options. In some States, hospitals will give medical examiners or coroners a portion of their admission blood sample. In other States, medical examiners or coroners may access hospital records, by subpoena if necessary. Medical examiners or coroners in all case study States usually can obtain a BAC by one of these methods if they wish.

A case in which a driver is in a crash in one State and is transported to a hospital in an adjoining State introduces additional complications. In a few case study States, officers from the crash State will travel to the out-of-State hospital and request a blood test if there is probable cause to suspect alcohol impairment. Hospitals determine whether they will comply with the officer's request. If the driver dies in the hospital, the medical examiner or coroner in the hospital's State is responsible for reporting the death but the driver's BAC must be entered on the crash report in the crash State. Some officers are able to obtain some BACs from the hospital State's autopsy or coroner reports. Some States, including Indiana and South Dakota, have written or verbal agreements with adjoining State law enforcement agencies to obtain and share BAC information for these crashes. Maryland's FARS analyst routinely checks with neighboring jurisdiction FARS analysts to share BAC information on drivers transported across State lines.

Table 14 illustrates the consequences of this complexity for fatally injured drivers. In 2008, the national testing rate (including both known and unknown BACs) was 84.1 percent for drivers who died within four hours of their crashes and 61.8 percent for those who died subsequently. Almost all the drivers who died after four hours were transported to hospitals. While FARS reports that 34.1 percent of the drivers who died after four hours were not tested, each of the case study States reported that most were in fact tested for medical purposes and probably had BACs in their hospital records. To improve BAC test reporting for these drivers, States should consider two steps:

- Allow medical examiners or coroners to access hospital records of fatally injured drivers and/or admission blood samples to assist their investigation of the death; and
- Follow up with medical examiners or coroners by State FARS analyst to obtain BACs from death certificates or other medical examiner or coroner records.

Table 14. BAC testing for fatally injured drivers, 2008

FARS 2008	Total	Die in four hours	Die after four hours	Percentage died in four hours
Total	24,254	18,390	5,864	75.8
Known BAC **%**	18,415 75.9	15,032 81.7	3,383 57.7	81.6
Unknown BAC **%**	676 2.8	433 2.4	243 4.1	64.1
Not Tested **%**	4,501 18.6	2,501 13.6	2,000 34.1	55.6
Unknown if Tested **%**	662 2.7	424 2.3	238 4.1	64.0

Source: FARS 2008

The results are different for surviving drivers. Table 15 shows that 38.2 percent of surviving drivers who were transported to hospitals were tested in 2008, compared to 28.1 percent of drivers who were not transported. More than half of the surviving drivers were not transported. To improve their testing and reporting rates for surviving drivers, States should address drivers who are not transported, using the strategies discussed in the previous section.

Table 15. BAC testing for surviving drivers, 2008

FARS 2008	Total	Transported to Hospital	Not Transported	Unknown if Transported
Total	26,162	11,257	14,515	390
Known BAC **%**	7,656 29.3	3,851 34.2	3,751 25.8	54 13.8
Unknown BAC **%**	787 3.0	446 4.0	333 2.3	8 2.1
Not Tested **%**	15,810 60.4	6,107 54.3	9,403 64.8	300 76.9
Unknown if Tested **%**	1,909 7.3	853 7.6	1,028 7.1	28 7.2

Source: FARS 2008

Reporting BAC test results to FARS

Once a blood or breath sample is obtained and tested for alcohol, the BAC must be reported to FARS. Blood samples are sent to public or private laboratories where they are analyzed. The laboratories report the results to the medical examiners, coroners, or law enforcement officers who requested them; they in turn submit the information to the State's FARS analyst. In some States, State laboratories analyze most blood samples, and may report the results directly to the FARS analysts. In the case of a breath test administered by a law enforcement officer, the

officer should enter the breath test BACs onto the crash report and send the report to the FARS analyst. Figures 2-4 illustrate these reporting processes.

Delays in obtaining blood test BACs may result in underreporting. While the result of a breath test is available very soon after a crash, the result from a blood test is not. A blood sample may take days to reach the testing laboratory. At the laboratory it may not be tested for days, or even weeks, depending on the laboratory's priorities and workload. This means that a BAC result may not be reported back to the medical examiner, coroner, or investigating officer until well after the crash report has been filed with FARS. These delayed BAC reports may not be reported to FARS if they "get lost" or are neglected in the press of high-priority work.

Complexity in the reporting process also can hinder complete and timely BAC reporting. Each step in the process from testing laboratory to FARS can add delays due to equipment or staffing shortages, transcribing information into additional forms or databases, missing information, clerical errors, or poor communication between agencies.

Case study States use three BAC reporting strategies: standard reporting processes with good communications and tracking, redundant reporting, and electronic reporting. All FARS analysts receive fatal crash reports from the law enforcement agencies that investigated the crashes. The agencies send supplemental reports for BACs received after the original reports were submitted. Several State testing laboratories also report results directly to FARS. Several States created special forms to assist reporting. For example, Alaska and Indiana use supplemental fatal crash reports that law enforcement officers submit directly to FARS.

Electronic reporting methods can simplify and speed up the reporting process. Indiana has electronic systems for crashes – Automatic Records Information Exchange System (ARIES) – and for coroners – CoronerME. Coroner ME is a commercially available Web-based case management software program. All Indiana crash reports are entered into ARIES. Law enforcement officers enter crash reports into ARIES, including breath test BACs; coroners enter blood test results into CoronerME. FARS analysts have direct electronic access to both ARIES and CoronerME. Each State has different levels of access for the FARS analyst. For example, in Maryland, FARS analysts have direct electronic access to the medical examiners' data. When the FARS analyst enters a fatal crash report number into the medical examiner Web site, each fatally injured driver's BAC and any other toxicology information are transmitted directly into the FARS file. The Missouri FARS office receives all fatal crash death certificates electronically. The New Mexico FARS office has direct electronic access to data files in both the Office of the Medical Investigator (New Mexico's medical examiner office) and the State toxicology laboratory files.

Tracking and follow-up

Tracking and follow-up on missing BACs are critical because some BAC results may not be available until after the crash report has been filed with FARS. All case study States' FARS analysts track missing BACs and send requests for information to law enforcement investigating officers, State toxicology laboratories, medical examiner, or coroners.

Hawaii, Indiana, and Kansas use law enforcement liaisons to track down missing BAC information from investigating law enforcement agencies, medical examiners, or coroners when needed. Oklahoma State Troopers sometimes contact agencies to track down missing test results.

The context: education, training, and management

The tracking process will not succeed unless the many people and agencies involved know their responsibilities and have the knowledge, resources, and management support to carry them out. Law enforcement officers, medical examiners and coroners, hospitals, toxicology laboratories, and staff at the State's traffic records and FARS offices are all involved. States with high testing and reporting rates use these key components: regular education and training, and careful management, including appropriate staffing and funding.

Education and training

Education and training begins with those who are responsible for deciding whether to test, and who conduct testing: law enforcement officers and medical examiners or coroners. Most case study States reported that standard law enforcement training at their academies emphasizes chemical testing for drivers involved in fatal or serious injury crashes.

The Missouri FARS office participates in training for new coroners every year. Indiana created a State Coroners Training Board and enacted a law requiring coroners and deputy coroners to take a 40-hour training course that includes BAC reporting instruction. South Dakota conducts education and training programs for Oglala Sioux tribe leaders to obtain BAC information from crashes that occur on their reservations. The South Dakota Department of Transportation, Federal Highway Administration (FHWA), and highway safety offices conducted a two-day tribal summit in 2010 to discuss how to expand these programs to other South Dakota Native American tribes.

Communication between agencies also can be critical. Several case study States reported holding regular interagency meetings to discuss matters concerning BAC reporting. In Hawaii, all county traffic commanders, the NHTSA law enforcement liaison (LEL), staff from Hawaii's level 1 trauma unit, FARS staff, highway safety office staff, and prosecutors meet quarterly to discuss BAC reporting, training, and planning as well as other impaired-driving issues.

Missouri's FARS analysts send letters annually to all chiefs of municipal and county agencies that may investigate fatal crashes. These letters remind the chiefs of the requirement to attempt to obtain BACs for all surviving drivers in fatal crashes.

Management

The first critical component of good BAC testing and reporting management is to make BAC testing and reporting a high priority, as with all case study States. Priority brings resources of both staff and funding. Priority also means that agencies, offices, and staff involved in BAC testing and reporting take ownership of the process and results, use creative strategies, and generally exceed expectations in order to test and report all possible BACs. While the case study States have different laws, policies, and processes, they all have the characteristics of high priority, and dedicated, creative staff.

The second critical component of good management in a process that involves several different independent agencies or organizations is to agree on the roles, responsibilities, and relationships between the agencies involved. These agencies may include Federal, State, county, and local law enforcement; State and private toxicology laboratories; State health departments; medical examiners and coroners; prosecutors; hospital staff; law enforcement liaisons; tribal leaders; State highway safety offices; State traffic records offices; and FARS staff.

Some States, including Alaska, New Mexico, and South Dakota, have formal Memoranda of Understanding (MOU) or cooperative agreements between relevant agencies on BAC testing and reporting issues. These MOUs provide the mechanism for long-term relationships and sustained communications between these agencies regarding the sharing of data on fatal crashes.

Case study States have established less formal policies or relationships to address specific issues. For example, the Alaska State medical examiner formed a relationship with the Alaska Scientific Crime Detection Laboratory to ensure that all blood samples are analyzed and sent back to the medical examiner in a timely manner. The Maryland FARS analyst and the Maryland Automated Accident Records System (MAARS) analyst compare their data on each fatal crash from the previous year for missing BAC results. Maryland's Highway Safety Office coordinates with the trauma nurse coordinators in each of Maryland's eight trauma hospitals to obtain surviving driver BAC data. New Mexico FARS staff regularly visit tribal headquarters to obtain missing information on crashes occurring on tribal lands.

The third component is establishing close personal relationships, good communications, and trust among key staff in each organization. All case study States share this characteristic. Several States noted that their FARS analysts know "everybody" in the system, know who to call to find a missing BAC, and generally won't rest until they have tracked down every possible BAC. Many case study States noted that, in the end, "this is what makes it all work." As just one example, Missouri's FARS analysts have established close and personal relationships with many coroners, medical examiners, and law enforcement officers. They participate in training for new coroners every year and supply coroners with free blood test kits.

Several case study States use their law enforcement liaisons to help with personal relations and communications. LELs usually are retired officers who are widely respected. They can encourage officers to make BAC testing and reporting a priority. Some States use LELs to locate missing BACs from law enforcement agencies, medical examiners, and coroners.

The final component is providing adequate staff and funding resources. States address these resource needs in different ways. Approximately half of all States reported that Federal Sec. 410 grants provide an incentive, sometimes a strong incentive, to increase testing and reporting rates. To qualify for these grants, States must satisfy several criteria, one of which can be year-to-year improvement in their BAC testing and reporting rates. In turn, grant funds can support education, training, and equipment for BAC testing and reporting or can help implement electronic reporting systems.

Conclusions and Strategies

In examining the case studies it was found that there are several key components identified in each State: clear responsibility and policy, standard procedures, inter-agency cooperation and follow-up, dedicated staff and excellent personal relations, and strong BAC laws. Reports from each State are contained in the Appendices. They form the basis for the following conclusions and strategies.

Successful BAC testing and reporting involves three components that are simple to identify but often difficult to achieve: high testing rates, accurate and complete reporting, and careful management. A breakdown in any of the three may reduce known BAC rates substantially. Strategies used by high testing and reporting States are outlined below.

In order to obtain a high testing rate, States test as many drivers involved in fatal crashes as possible. This could be accomplished though laws, policies, or practices. A law that requires testing for all drivers involved in fatal crashes can be useful, but by itself does not guarantee a high testing rate (Hedlund, 2004). States should seek to change statues or case law that prohibit or strongly discourage testing surviving drivers without probable cause. Testing policies can achieve high rates without a law, while a mandatory testing law will not produce high rates without strong polices to implement it. States can adopt policies of testing all drivers whenever possible as permitted by State law. Medical examiner and coroners may not test all fatally injured drivers without suspicion of alcohol involvement in the motor vehicle crash or due to lack of resources. Medical examiners and coroners can adopt a policy of attempting to test all fatally injured drivers. Practices followed by all of those in a State that are responsible for testing can increase testing rates. Medical examiners, coroners, and law enforcement can receive standard training offered in coordination with the FARS analyst. The State can pay for testing costs or provide blood test kits to local jurisdictions if costs for processing the sample prohibit medical examiners and coroners from testing all fatally injured drivers.

Once a blood or breath sample is obtained and tested for alcohol, the results need to be reported to FARS. Complexity in the reporting process can hinder complete and timely BAC reporting. States can establish simple and routine reporting. Electronic reporting methods can simplify and speed up the reporting process. Tracking and follow-up on missing BACs are critical because some BAC results may not be available until after the crash report has been filed with FARS. The FARS analysts track missing BACs and directly request information by contacting law enforcement investigating officers, State toxicology laboratories, medical examiners and coroners. FARS analysts can also obtain missing information indirectly through examination of reports, death certificates, and other sources. Some States have used law enforcement liaisons to locate missing BACs form law enforcement agencies.

The BAC testing and reporting process will not succeed unless the people and agencies involved know their responsibilities and have the knowledge, resources, and management support to carry them out. Several independent agencies or organizations or involved in a State's BAC testing and reporting process. These agencies need to agree on roles, responsibilities and relationships. Some States have formal MOUs or cooperative agreements between relevant agencies on BAC testing and reporting issues. Communication between agencies can be improved by holding interagency meeting to discuss matters concerning BAC reporting. The FARS analyst's

relationship with key staff in each organization or agency is critical. Establishing BAC testing and reporting as a high priority in the State brings resources of both staff and funding.

High Testing Rates – Testing as Many Drivers as Possible

- Laws
  - Require a law to test for all drivers in fatal crashes
  - Eliminate laws or policies that require probable cause for a surviving driver to be tested
- Policies
  - Adopt policies for testing all drivers as permitted by State law
  - Medical examiners and coroners should test all fatally injured drivers whenever possible
  - Law enforcement should test all surviving drivers whenever possible
- Practices
  - Medical examiners and coroners may be able to use BACs from hospital records for drivers who die after admission to hospitals
  - Train medical examiners, coroners, and law enforcement officers in BAC testing laws, policies, responsibilities, and practices; provide blood test kits as needed; pay testing costs

Accurate and Complete Reporting of all Test Results

- Allow medical examiners and coroners access to hospital records for drivers who die after admission
- Establish simple and routine reporting
  - Implement electronic reporting or electronic access to appropriate data files if possible
  - Use standardized paper or electronic reporting forms; develop special forms if needed
  - Use redundant reporting methods, for example using both crash and laboratory reports
- FARS analysts track all fatalities and follow up on all missing BACs
  - Direct follow-up from FARS to person responsible for reporting (law enforcement, medical examiner, coroner)
  - Indirect follow-up through testing laboratory reports, death certificates, and other sources
  - Use law enforcement liaisons to track long-overdue BACs

Careful Management of the Process

- Establish and maintain close relationships, communication, and trust among all agencies involved in BAC testing and reporting
  - Interagency MOUs or cooperative agreements may be useful
  - Hold interagency meetings to address problems as needed
  - Individual staff working relationships and communications are critical
- Establish and maintain a high priority for BAC testing and reporting in all agencies

- Provide necessary funding and staff
- Train all people involved, especially those responsible for obtaining a test: law enforcement, medical examiners, and coroners

References

Hedlund, J. H., Ulmer, R. G., & Northrup, V. S. (2004, August). *State laws and practices for BAC testing and reporting drivers in fatal crashes.* (Report No. DOT HS 809 756). Washington, DC: National Highway Traffic Safety Administration. Available at www.nhtsa.gov/people/injury/alcohol/bac-testing/images/State%20Laws_low.pdf.

NHTSA. (2009). Alcohol-Impaired Driving: Traffic Safety Facts, 2008 Data. (Report No. DOT HS 811 155). Washington, DC: National Highway Traffic Safety Administration. Available at www-nrd.nhtsa.dot.gov/Pubs/811155.PDF.

NHTSA. (2010a) *Traffic safety facts 2009: A compilation of motor vehicle crash data from the Fatality Analysis Reporting System and the General Estimates System*. Early edition. (Report No. DOT HS 811 402). Washington DC: National Highway Traffic Safety Administration. Available at www-nrd.nhtsa.dot.gov/Pubs/811402EE.pdf.

NHTSA. (2010b, August). Highlights of 2009 Motor Vehicle Crashes. (Report No. DOT HS 811 363). Washington, DC: National Highway Traffic Safety Administration. Available at www-nrd.nhtsa.dot.gov/Pubs/811363.PDF.

NHTSA. (2010c) State Alcohol-Impaired Driving Estimates: Traffic Safety Facts 2009 Data. (Report No. DOT HS 811 398). Washington, DC: National Highway Safety Administration. Available at www-nrd.nhtsa.dot.gov/Pubs/811398.pdf.

Subramanian, R. (2002, January, revised October 2002). Transitioning to Multiple Imputation: A New Method to Estimate Missing Blood Alcohol Concentration (BAC) Values in FARS. (Report No. DOT HS 809 403). Washington, DC: National Highway Traffic Safety Administration. Available at www-nrd.nhtsa.dot.gov/Pubs/809-403.PDF.

Appendix

State case study reports

Alaska

BAC testing and reporting status and trends

Table AK-1 shows Alaska's 2008 and 2009 BAC testing and reporting rates for drivers in fatal crashes. Alaska increased its known BACs for fatally injured drivers from 85.0 percent in 2008 to 93.9 percent in 2009. The remaining two fatally injured drivers were not tested. Testing status was known for all drivers for 2008 and 2009 and there were no missing test results. For surviving drivers, 76.0 percent had known BACs in 2008 and 18.0 percent were not tested, again very few with unknown test status or missing test results. Known BACs increased to 78.6 percent in the 2009 annual report FARS file. FARS produces a data file for the previous year's crashes annually. NHTSA uses this data file for annual reports and Traffic Safety Fact Sheets, and refers to it as the annual report file. FARS continues to accept crash data for a full year after the crash date, and produces the final annual file, referred to as the final file. This additional time provides the opportunity for submission of important variable data requiring outside sources, which may lead to changes in the final counts.

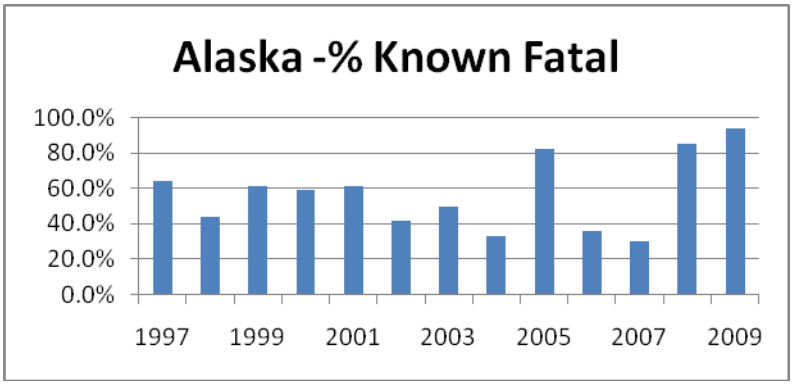
Table AK-1. Alaska BAC testing and reporting, 2008 and 2009

Drivers	Fatally injured			Surviving		
	2008 Annual	2008 Final	2009 Annual	2008 Annual	2008 Final	2009 Annual
Total	41	40	33	50	50	56
Known BAC	9	34	31	33	38	44
%	22.0	85.0	93.9	66.0	76.0	78.6
Unknown BAC	14	0	0	6	3	0
%	34.1	0.0	0.0	12.0	6.0	0.0
Not Tested	16	6	2	9	9	12
%	39.0	15.0	6.1	18.0	18.0	21.4
Unknown if Tested	2	0	0	2	0	0
%	4.9	0.0	0.0	4.0	0.0	0.0

Source: FARS Annual Report and final files

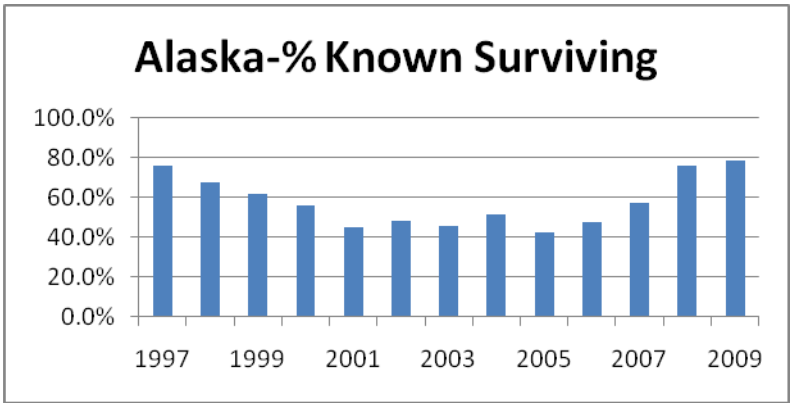
Figures AK-1 and AK-2 show the trends in the percentage of known BACs from 1997 to 2009 for fatally injured and surviving drivers, respectively. BACs were recorded intermittently for fatally injured drivers through 2007. There was a marked increase in 2008 and 2009 in known BACs for fatally injured drivers from 30.4 percent in 2007 to 85.0 percent in 2008, then 93.9 percent in 2009. The high known BAC rate in 2005 is thought to be a clerical error. Known BACs for surviving drivers rose steadily from 42.1 percent in 2005 to 78.6 percent in 2009.

Figure AK-1. Alaska known BAC trend, fatally injured drivers, 1997-2009



1997-2008: FARS final file; 2009: FARS annual report file

Figure AK-2. Alaska known BAC trend, surviving drivers, 1997-2009



1997-2008: FARS final file; 2009: FARS annual report file

Structure and roles of key organizations

Alaska's FARS office is located within the Alaska Highway Safety Office (AHSO), within the Division of Program Development in the Department of Transportation and Public Facilities. The Alaska State Troopers (AST) are part of the Alaska Department of Public Safety. AST investigates about 64 percent of Alaska's traffic fatalities. The Bureau of Highway Patrol (BHP) consists of both Alaska State Troopers and municipal law enforcement agencies funded by the AHSO.

Laws and policies

The Alaska Medical Examiner's Office is responsible for investigating all motor vehicle fatalities (AS 12.65.020). The Medical Examiner's Office attempts to obtain BAC tests from all fatally injured drivers as part of their investigations or autopsies.

Alaska law allows investigating officers to ask drivers in fatal or serious injury crashes to voluntarily submit breath or blood samples for testing. Additionally, the Alaska implied consent law gives law enforcement the authority to seize blood samples, without the driver's consent or obtaining a search warrant, from a driver involved in a crash that causes death or serious physical injury where there is probable cause to believe that the driver committed a crime and that blood testing will produce evidence relevant to the crime (AS. 28.35.031(g)).

Obtaining a BAC test

Drivers who die at the crash scene. The Medical Examiner's Office is notified of the death and a medical examiner responds to the crash scene if the crash occurs in Anchorage. Outside of Anchorage, a funeral director or private contractor responds and transports the body to the State Medical Office in Anchorage where the medical examiner obtains a blood sample. The blood samples are sent to the Alaska Scientific Crime Detection Laboratory for alcohol toxicology screening.

Drivers who are seriously injured. Most seriously injured drivers are taken to hospitals for treatment. Hospitals routinely draw blood samples for medical purposes when a seriously injured person is admitted. If the driver dies in transport or while at the hospital, the State medical examiner is notified and the body will be transported to the State Medical Examiner's Office where the medical examiner obtains a blood sample. In some cases, the hospital blood sample results will be requested or subpoenaed by the medical examiner if needed.

If the investigating officer believes a surviving driver has contributed to the serious injury or death of another person, or if there is probable cause to believe that the driver was impaired by alcohol, the officer may request the hospital to provide a blood sample. Hospitals usually will draw a blood sample if the driver consents. If the driver refuses or is not able to consent, the hospital still is authorized to provide a blood sample. If the driver does not consent, or the hospital will not comply, a blood draw may be taken by force, as permitted by the Alaska implied consent law. In practice, most officers will obtain a warrant for a blood sample if a test is refused. Officers send blood samples to the Alaska Scientific Crime Detection Laboratory.

Law enforcement officers have been trained not to rely on medical draws to determine blood alcohol levels and to use their own legal draws when possible. However, medical treatment often takes precedence over drawing legal samples. The injection or transfusion of blood, drugs, and other substances necessary for medical care commonly compromises the accuracy of any blood draw from seriously injured drivers.

Drivers who are not seriously injured. Investigating officers are trained to request a BAC test from a driver in a serious injury or fatal crash as authorized by Alaska's implied consent law. However, some officers will request a test only from the at-fault driver or if they suspect alcohol impairment. Standard DWI procedures are followed. Depending on the agency's policy, a breath or blood sample is requested for a BAC test. If an officer requests a blood sample, the driver is taken to the hospital for a blood draw. If the driver refuses, a blood sample may be obtained by force, but most drivers comply.

Reporting BAC results to FARS

All legal blood samples obtained by law enforcement are sent to the Washington State Toxicology Laboratory since the Alaska Scientific Crime Detection Laboratory currently does not perform toxicology testing. Similarly, the Alaska Medical Examiner's Office sends samples to other States for testing. Blood samples drawn for medical reasons are tested in-house at the hospital that provided care. Law enforcement generally obtains BAC reports from all of these sources and enters the results onto the crash reports. The crash reports, in turn, are sent to FARS. In addition, the FARS analyst sends a monthly request to the Alaska Scientific Crime Detection Laboratory for the reports related to all people involved in fatal crashes. The State Crime Detection Laboratory sends the reports directly to the FARS analyst.

Tracking, follow-up, and communications

The BHP commander notifies the FARS analyst by phone or e-mail when a fatal crash occurs within Alaska State Trooper (AST) jurisdiction. The FARS analyst checks statewide Internet news services daily for non-AST fatal crashes and then contacts the appropriate local law enforcement agency to request fatal crash reports. In 2010 the Alaska FARS analyst created a Supplemental Fatal Crash Report form to accompany the current and outdated Alaska crash report form 12-200, which was last revised in 2001. The 12-200 form is standard for all Alaska law enforcement agencies. The supplemental report form collects more detailed information missing from the 12-200 such as the BAC test status, test type, and the method of alcohol determination by police.

The FARS analyst will also request and receive driver and vehicle data from DMV records, roadway inventory data from the Alaska Highway Analysis System (HAS), on-scene details from EMS providers, commercial vehicle data from Commercial Vehicle Enforcement, and death certificate data from the Bureau of Vital Statistics. The Bureau of Vital Statistics sends a list of fatalities to FARS upon request, or when the Bureau's information is updated.

The FARS analyst is responsible for entering all fatal crash information into both the FARS database and the Alaska crash records system, HAS, to prevent discrepancies between FARS and HAS.

Highways in Denali Park are considered Federal land. A village public safety officer acts as a liaison/medic/law enforcement officer and notifies the Alaska State Troopers when a fatal or serious injury crash occurs. The Alaska State Troopers then notify FARS.

The BHP was formed under the Department Public Safety in 2008 as a cooperative statewide law enforcement agency, including local law enforcement agencies, the Division of Measurement, Standards and Commercial Vehicle Enforcement and the Alaska State Troopers. The BHP responds to traffic patrol calls on a regional basis. In addition, a Memorandum of Understanding for the Improvement of Accuracy and Validity of Motor Vehicle Fatality Data was created in June 2010 between the Department of Health and Social Services, the Department of Public Safety, the Department of Transportation, and the Department of Administration. This MOU

provides the mechanism for long-term relationships and sustained communications between these agencies regarding the sharing of data related to fatal crashes.

Who is missed?

FARS has BAC rates for over 80 percent of Alaska's fatally injured drivers in the last two years. The reasons why the remaining drivers are not tested include:

- Some fatally injured drivers in rural areas are not being transported to the State Medical Examiner's Office in a timely manner.
- In some rural areas, there is not a place or person to do a blood draw.

Law enforcement training includes testing all drivers involved in fatal or serious injury crashes. Recent case law supports blood testing where officers have probable cause to suspect alcohol involvement. Law enforcement officers are now changing their procedures to obtain breath tests with preliminary breath testers (PBTs) for some surviving sober drivers. The 76.0 to 78.6 percent known BAC rates in 2008 and 2009 suggest that some surviving sober drivers, and virtually all surviving drivers with positive BACs, were tested.

Summary

Fatally injured drivers

Alaska's improved testing and reporting is due to several factors.

Clear responsibility and policy: The Medical Examiner's Office is responsible for obtaining and reporting BACs for all fatal crash victims, with jurisdiction throughout Alaska. Blood draws are standard procedure during investigations and autopsies.

Standard procedures: The bodies of all fatally injured drivers are transported to the State Medical Office in Anchorage where the medical examiner obtains blood samples. The blood samples are sent to the Washington State Toxicology Laboratory. BAC results are reported back to the State Medical Office and then to FARS.

Excellent follow-up: The FARS analyst sends monthly requests for missing BACs to the State Scientific Crime Detection Laboratory.

Results: Known BACs for fatally injured drivers increased 30.4 percent in 2007 to 85.0 percent in 2008, then 93.9 percent in 2009.

Surviving drivers

Alaska has increased its BAC testing and reporting substantially since 2007.

Useful law: Alaska law allows investigating officers to ask drivers involved in fatal or serious injury crashes to voluntarily submit breath or blood samples for testing. Additionally, the Alaska implied consent law gives law enforcement the authority to

seize blood samples, without the driver's consent or having to first obtain a search warrant, from a driver involved in a crash that causes death or serious physical injury where there is probable cause to believe that the driver committed a crime and that blood testing will produce evidence relevant to the crime

Clear responsibility: Investigating officers are trained to obtain blood or breath samples from all drivers in fatal or serious injury crashes. When tests are obtained, officers include the BAC in their crash report.

Excellent follow-up: The FARS analyst periodically checks for missing BACs and follows up with the State Scientific Crime Detection laboratory.

Results: Known BACs for surviving drivers rose steadily from 42.1 percent in 2005 to 78.6 percent in 2009.

Overall

High priority, excellent staff, and close personal relationships: BAC testing is a high priority with the Alaska Highway Safety Office, State and local law enforcement, the Alaska Scientific Crime Detection Laboratory, the State Medical Examiner's Office, and FARS. The dedicated FARS analyst, the commander of the BHP, the Crime Detection Laboratory alcohol program manager, and the State medical examiner work tirelessly to record all BAC test results. The establishment of close personal relationships, good communications, and trust with key staff in each organization, including the FARS analyst, the Alaska State Troopers, other law enforcement agencies, the Alaska Scientific Crime Detection Laboratory, and the Medical Examiner's Office are critical and commendable. Under the current State medical examiner, a relationship with the Alaska Scientific Crime Detection Laboratory ensures that all blood samples are analyzed and sent back to the medical examiner in a timely manner. Increased training and education for law enforcement by the Highway Safety Office and FARS has educated law enforcement as to why BAC testing is important. The formation of the BHP in 2008 and the MOU created in 2010 provides the mechanism for continuing collaborative efforts between DPS, DOT&PF and the Department of Administration.

References

Meeting on September 14, 2010, at the Alaska Scientific Crime Detection Laboratory
Tara Casanova, Preusser Research Group
Joanna Reed, Research Analyst, FARS, Alaska Highway Safety Office
Cindy Cashen, Administrator, Alaska Highway Safety Office
Captain Hans Brinke Jr., Commander, Alaska Bureau of Highway Patrol, Alaska State Troopers, Department of Public Safety
Nita J. Bolz, Laboratory Quality Manager, Forensic Alcohol Supervisor, Scientific Director, Alaska Alcohol Program, Alaska Scientific Crime Detection Laboratory
Orin Dym, Forensic Laboratory Manager
Dr. Kathy Raven, State Medical Examiner, Alaska State Medical Examiner's Office

Hawaii

BAC testing and reporting status and trends

Table HI-1 shows Hawaii's 2008 and 2009 BAC testing and reporting rates for drivers in fatal crashes. Hawaii had over 97 percent known BACs for fatally injured drivers for both years. One fatally injured driver in 2008 was not tested. Testing status was known for all drivers in 2008 and all but two drivers in the 2009 Annual Report file. For surviving drivers, over 50 percent had known BACs in 2008 and 2009. Only one surviving driver had unknown BAC test results in the 2009 Annual Report file. The remaining drivers were not tested. Known BACs increased from 51.5 percent in 2008 to 53.8 percent in the 2009 Annual Report file. FARS produces a data file for the previous year's crashes annually. NHTSA uses this data file for annual reports and Traffic Safety Fact Sheets, and refers to it as the annual report file. FARS continues to accept crash data for a full year after the crash date, and produces the final annual file, referred to as the final file. This additional time provides the opportunity for submission of important variable data requiring outside sources, which may lead to changes in the final counts.

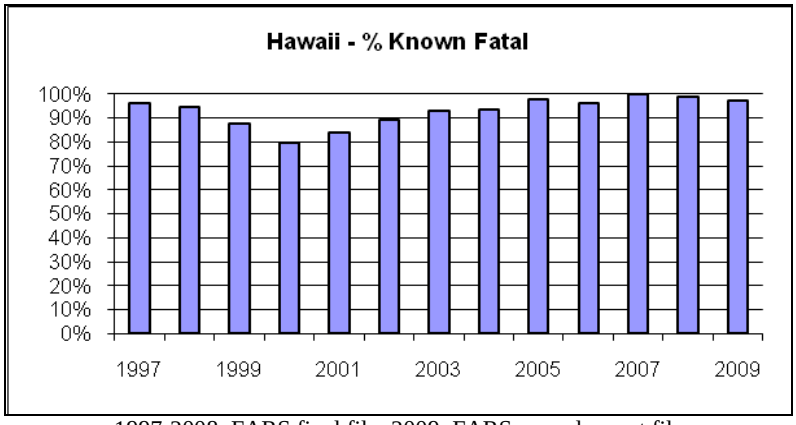
Table HI-1. Hawaii BAC testing and reporting, 2008 and 2009

Drivers	Fatally injured			Surviving		
	2008 Annual	2008 Final	2009 Annual	2008 Annual	2008 Final	2009 Annual
Total	71	71	74	68	68	65
Known BAC	66	71	72	32	35	35
%	93.0	98.6	97.3	47.1	51.5	53.8
Unknown BAC	0	0	0	0	0	1
%	0.0	0.0	0.0	0.0	0.0	1.5
Not Tested	1	1	0	32	33	29
%	1.4	1.4	0.0	47.1	48.5	44.6
Unknown if Tested	4	0	2	4	0	0
%	5.6	0.0	2.7	5.9	0.0	0.0

Source: FARS annual report and final files

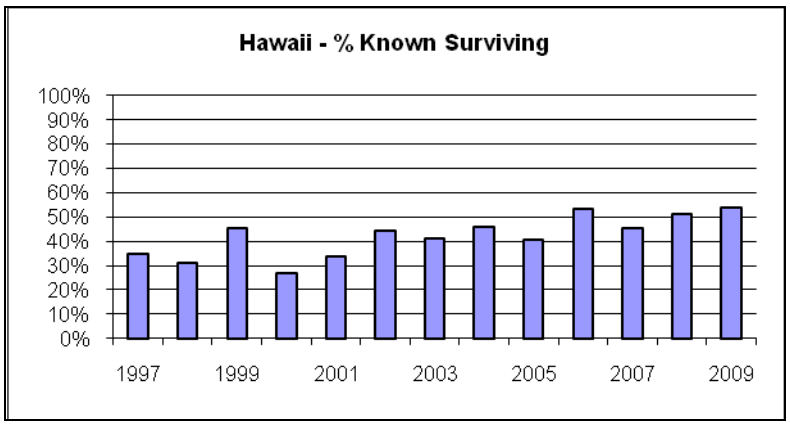
Figures HI-1 and HI-2 show the trends in the percentage of known BACs from 1997 to 2009 for fatally injured and surviving drivers, respectively. Known BACs rates for fatally injured drivers have consistently been over 90 percent since 2003 and reached 100 percent in 2007. Known BACs for surviving drivers have fluctuated over the years but show a rising trend, from 26.9 percent in 2000 to 53.8 percent in 2009.

Figure HI-1. Hawaii known BAC Trend, fatally injured drivers, 1997-2009



1997-2008: FARS final file; 2009: FARS annual report file

Figure HI-2. Hawaii known BAC trend, surviving drivers, 1997-2009



1997-2008: FARS final file; 2009: FARS annual report file

Structure and roles of key organizations

Hawaii's FARS office is located within the Safe Community Office of the Motor Vehicle Safety Office (MVSO) within the Department of Transportation. Law enforcement is county-based with no State agency. Hawaii has four counties, consisting of the four major islands; services such as police, medical examiners, and coroners operate at the county level. The four county police agencies are the Honolulu Police Department on Oahu, the Kaua'i Police Department on Kaua'i, the Maui Police Department on Maui, and the Hawaii Police Department on Hawaii.

Laws and policies

Hawaii has a mixed death investigation system. The County of Honolulu has a medical examiner. It is Honolulu County policy to perform autopsies for all motor vehicle fatalities. Autopsies are performed by the medical examiner at the County Medical Examiner Office. A blood draw is part of the autopsy and definitive determinations and screening for alcohol are made on-site at the County Medical Examiner Office. The other three counties have a coroner system where the chief of police of the county's police department is the coroner and all county

law enforcement officers are deputy coroners (§841-1). County traffic unit officers investigate all fatal crashes and contracted forensic pathologists perform autopsies on all fatalities at the request of the county officer. It is policy in Maui County, Hawaii County, and Kaua'i County that the officer requests an autopsy including a blood sample for a BAC test from all fatal drivers. Motor vehicle crashes account for 20 to 25 percent of autopsy population in Hawaii.

Hawaii law allows an investigating officer to request a BAC blood test from any driver involved in a fatal or serious injury crash where there is probable cause that the driver is suspected of alcohol impairment, negligent injury, or negligent homicide (§291E-21). In practice, Honolulu County investigating officers request breath BAC tests for surviving drivers. If the breath test shows a positive BAC, a Honolulu County officer will then require a blood test. The other three counties always request blood tests from drivers in serious injury or fatal crashes. In all counties, if a driver refuses an officer's request in a fatal or serious injury crash where negligent injury or negligent homicide is suspected, a blood sample may be drawn without the driver's consent (§291E-21). If there is no suspicion of negligent injury, homicide, or alcohol involvement, a blood test may be refused. A hospital may not refuse a blood draw for blood test when requested by a law enforcement officer (§291E-2). Medical staff are also required to alert law enforcement officers when there is suspected alcohol impairment of drivers admitted to the hospitals (§453-14).

Obtaining a BAC test

Drivers who die at the crash scene.

Honolulu County-Medical Examiner Jurisdiction. Upon arrival at the scene, emergency medical services (EMS) call an on-duty emergency room doctor to certify the death based on EMS evaluation. The medical examiner and officers within the Vehicular Homicide Section (VHS) of the Honolulu Police Department's (HPD) Traffic Unit will be called to investigate the death. VHS and the medical examiner conduct their investigations simultaneously yet independent of each other. The medical examiner transports the body to the Honolulu Medical Examiner's Office upon completion of the on-scene investigation. It is standard policy for the medical examiner to perform autopsies for all motor vehicle crashes in Honolulu County. Toxicology screens for alcohol are performed at the medical examiner's office. The BAC results are recorded in the autopsy report and added to the HPD crash investigation report. The HPD crash report is then forwarded to FARS.

Maui County, Hawaii County, and Kaua'i County -- Coroner Jurisdiction. EMS will call an on-duty emergency room doctor to certify the death. All law enforcement officers in these counties act as deputy coroners. Patrol officers notify dispatch that a fatal crash has occurred. Dispatch notifies the county traffic commander. The traffic unit will then be dispatched. In Hawaii County, the traffic unit is only dispatched for a fatal crash. For all counties, a criminal investigation is conducted for every fatal crash. All traffic unit officers are certified in crash reconstruction. The traffic unit contacts a contracted mortuary to transport the body to a morgue (which may be located at a hospital). A traffic unit officer follows the body to the morgue and files a written request for an autopsy and a blood draw for complete toxicology testing, including a BAC test. In Maui, blood draws for BAC testing are standard procedure for autopsies and do

not need to be requested. For all counties, the autopsy will be performed by a contracted forensic pathologist who may be from any of the islands (§841-14.6). The traffic unit officer will attend the autopsy with the contracted forensic pathologist and take notes for the investigation report. The blood samples are sent to contracted clinical laboratories for analysis. Results will be sent back to the forensic pathologist and then documented in the autopsy report. The forensic pathologist forwards the autopsy report to the traffic unit. BAC results are added to the crash investigation report.

Drivers who are seriously injured. Most seriously injured drivers are taken to hospitals for treatment. For all serious injury or fatal crashes, each county assigns a hospital end officer – an officer sent to the hospital to meet the injured driver and request a blood draw if there is probable cause (as described for surviving drivers) (§291E-21). If the driver dies in transport or while at the hospital in Honolulu County, the medical examiner is notified and the body will be transported to the Honolulu County Medical Examiner's office where the procedures for on-scene fatalities are followed. If the driver dies in transport or while at the hospital in Maui, Hawaii, or Kaua'i Counties, the hospital end officer acts as the deputy coroner and follows the same procedures as an on-scene fatality.

For seriously injured surviving drivers, if the investigating officer has probable cause to believe the driver was under the influence of alcohol or has caused negligent homicide, the officer may request the hospital to draw a blood sample (§291E-21). In practice, in Maui, Kaua'i and Hawaii Counties, a blood draw for BAC testing is always requested. In Honolulu County, officers will request a blood draw for BAC testing only if alcohol impairment is suspected. At the hospital, medical personnel perform the blood draw at the officer's request. If the driver refuses or is not able to consent, the hospital is authorized to provide a blood sample (§291E-2). In Honolulu County, blood samples are taken to the Honolulu Health Department to be analyzed. In Hawaii and Maui Counties, blood samples are analyzed at the hospitals and BAC results are sent back to the hospital end officers. The hospital end officer gives the results to the traffic unit commander who passes it to the lead crash investigator to be included in the investigation report. In Kaua'i, the blood draw will be done at the hospital and the blood sample is sent to contracted clinical laboratories to be analyzed. BAC results are sent back to the traffic commander. The procedures for reporting results to FARS are the same as with fatally injured drivers.

The Queen's Medical Center in Oahu is the only Level 1 Trauma Unit in Hawaii. When crash victims are flown in from other islands to Queen's Medical Center, the Honolulu traffic commander is notified by the victim's county traffic commander. The Honolulu traffic commander requests a blood draw and analysis. The Honolulu Health Department analyzes the blood sample and sends the results to the Honolulu traffic commander, who then sends the BAC information back to the requesting traffic unit. The results are reported to FARS.

Drivers who are not seriously injured. Investigating officers may request BAC tests from drivers in serious injury or fatal crashes where negligent homicide or injury have been committed, or if the officers have probable cause to suspect the drivers of alcohol impairment. However, some officers will request a test from a driver only if they suspect alcohol impairment, in which case standard DWI procedures are followed. In Honolulu County, it is policy to obtain a breath sample on scene to gain probable cause to request a blood sample for a BAC test when

needed. However the breath test may be refused. The other three counties request blood samples in all cases. In all counties, if an officer requests a blood sample where there is probable cause to suspect alcohol impairment, negligent injury or negligent homicide and the driver refuses, a blood sample may be taken by force. All blood samples are taken at the hospital by hospital personnel.

Reporting BAC results to FARS

In Honolulu, the blood samples from surviving drivers are sent to the Honolulu Health Department for analysis. With fatal drivers, the medical examiner's office will conduct the BAC analysis that becomes part of the autopsy report. The autopsy report is sent to the investigating officer and becomes part of the crash investigation report sent to the FARS analyst. The other three counties send the blood samples to a contracted clinical laboratory. The laboratory sends the BAC test results to the requesting law enforcement agency. Officers enter blood or breath test results in the crash investigation report sent to FARS. For all four counties, the FARS analyst then receives the crash investigation report from the county traffic commander.

Maui and Hawaii counties have national parks where park rangers investigate fatal crashes and county officers will assist. County officers assisting National Park Rangers will obtain BAC information through the appropriate procedures for their county, then supply BAC information to the FARS analyst. In some cases no county officers are involved in the investigation of a crash occurring in a national park. When this happens, the analyst is usually notified of the fatal crash through media outlets, and will contact the National Park Ranger for crash information including BAC information if available. National Park Rangers are trained to take breath samples for BAC information.

Tracking, follow-up, and communications

The FARS analyst tracks serious injury and fatal crashes through the newspaper and news releases. HPD has a news release phone number for media to call for information on crashes to prevent media from contacting HPD directly. All fatal crashes are announced to the media in Honolulu through this recording. Kaua'i and Hawaii counties may send a press release to the FARS analyst. Maui traffic unit sends the initial report electronically the day of or day after the crash for every crash. Kaua'i and Honolulu counties send the investigation report of fatally injured drivers to the FARS analyst within two weeks after a fatal crash occurs. The FARS analyst will follow up on each traffic fatality by sending a questionnaire to the reporting agency. The FARS analyst developed a spreadsheet to track fatal crashes from the time of notification until the BAC information is entered and that crash report is closed.

All county traffic commanders, the NHTSA law enforcement liaison (LEL), Queen's Medical Center Staff, FARS staff, MVSO staff, and prosecutors meet quarterly to discuss all matters concerning BAC reporting, public education, law enforcement education as well as training and planning issues. The LEL fosters excellent communication between island county police departments through regular traffic commander meetings. Social norming programs involving these agencies have been developed to educate the public about the dangers of alcohol impairment while driving. The Queen's Medical Center works closely with the HPD and hosted

a campaign to address problem drinkers two years ago and was approved for another similar campaign for 2011. For this campaign, medical staff plan to screen all injured people admitted to Queen's emergency room for drugs and alcohol (i.e., not just drivers) to assess the incidence of alcohol impairment with trauma-related injuries.

Who is missed?

A driver suspected of alcohol impairment or causing negligent injury or homicide that is seriously injured and needs immediate treatment may not have a blood draw taken for BAC purposes. However, admissions blood is usually drawn by hospital staff for hospital screening tests. These hospital records will need to be subpoenaed for BAC information for drivers involved in fatal or serious injury crashes suspected of alcohol impairment, negligent injury or negligent homicide for this scenario. It is not difficult to get a subpoena for BAC results in this case. No fatal crashes are missed. BACs will not be obtained from surviving drivers who are not seriously injured and who refuse a breath test.

Summary

Fatally injured drivers

Hawaii's consistently high testing and reporting is due to several factors.

Law Support: If a driver is involved in a fatal or serious injury crash where negligent injury, homicide or the involvement of alcohol is suspected, a blood sample will be taken.

Clear and uniform responsibility: The Honolulu County Medical Examiner's Office, which has jurisdiction throughout Honolulu County, will conduct an autopsy on all fatal crashes. Blood draws are standard procedure during autopsies. Maui, Kaua'i and Hawaii County officers are deputy coroners who request an autopsy and blood draw as standard policy for BAC analysis on all fatal accidents.

Standard procedures: In Honolulu County, all accidental deaths are investigated by the medical examiner who obtains a blood draw and BAC analysis is performed at the Honolulu Medical Examiner Office. In Maui, Kaua'i, and Hawaii Counties, county officers are deputy coroners who are responsible for requesting autopsies and blood draws for BAC information. In all counties, most seriously injured drivers are taken to hospitals where a blood draw is requested by the hospital end officer. Blood samples are analyzed at the hospital, and then test results are reported to the hospital end officer, who reports them to the traffic commander of the traffic unit involved with the crash. The investigating officer reports to FARS. In addition, the laboratories send the results for all people tested in fatal crashes to the FARS analyst upon request.

Excellent follow-up: The FARS analyst sends requests for missing BACs to the reporting agencies.

Results: BACs were known for over 90 percent of fatally injured drivers in each year since 2002, with 100 percent in 2007.

Surviving drivers

Hawaii has increased its BAC testing and reporting substantially since 2000.

Useful law: An officer may request a blood draw for BAC test from any driver involved in a fatal or serious injury crash where the officer has probable cause that alcohol has been involved or the driver has caused negligent homicide or negligent injury.

Clear responsibility: Investigating officers are trained to obtain a blood or breath BAC test from all drivers in fatal or serious injury crashes, but some officers won't request tests unless they suspect the drivers were impaired by alcohol. When a BAC test is obtained, the officer includes it in the crash report.

Excellent follow-up: The FARS analyst periodically checks for missing BACs and follows up with the individual county police departments.

Results: Known BACs for surviving drivers rose steadily from 26.9 percent in 2000 to 53.8 percent in 2009.

Overall

High priority, excellent staff, and close personal relationships: BAC testing is a high priority with the Hawaii MVSO, law enforcement in all four counties, the Honolulu county Medical Examiner Office, and FARS. The dedicated FARS analyst, the county traffic commanders and the Queens Medical Center track down and record all possible BAC test results. The close personal relationships, good communications, and trust among key staff in each organization are critical and commendable. Increased training and education for law enforcement by the MVSO and FARS has educated law enforcement and hospital personnel on the importance of BAC testing.

References

Meetings of Tara Casanova, Preusser Research Group

On August 30, 2010, at the Hawaii Department of Transportation
Scott Haneberg, Motor Vehicle Safety Administrator
Lee Nagano, Highway Safety Manager, FARS Analyst
Robert Lung, Law Enforcement Liaison
Sean Hiraoka, Department of Transportation Traffic Branch
Dr. William Goodhue, Acting Medical Examiner

On August 31, 2010, at the Hawaii Law Enforcement County Agencies
Sgt. Kelly Kaaumoana-Matsumoto, Hawaii Police Department

Lt. Mark Scribner, Kauai Police Department
Sgt. Danton Nakama, Honolulu Police Department
Lt. Dave Nilsen, Honolulu Police Department
Sgt. Barry Aoki, Maui Police Department
Robert Lung, Law Enforcement Liaison

On September 1, 2010, at The Queen's Medical Center
Sally Jones, Trauma Coordinator, The Queen's Medical Center
Cesar Ursic, Medical Director, The Queen's Medical Center

On September 3, 2010, at the Hawaii County Prosecutor's Office
Mitch Roth, Traffic Safety Resource Prosecutor

Indiana

BAC testing and reporting status and trends

Table IN-1 shows Indiana's 2008 and 2009 BAC testing and reporting rates for drivers in fatal crashes. Over 63 percent of the fatally injured drivers had known BACs each year. The small percentage of unknown BACs increased slightly from 1.6 percent to 4.5 percent in the 2009 Annual Report file. The percentage of drivers not tested was 29.7 percent in 2008 and 32.5 percent in 2009. BAC test status refers to whether or not a driver has been tested for BAC and if so, whether the results are known or unknown in FARS. Indiana's testing status was known for all drivers. For surviving drivers, 71.5 percent had known BACs in 2008 compared to 57.2 percent in the 2009 annual report file. The percentage of surviving drivers who were not tested increased from 27.3 percent in 2008 to 36.9 percent in the 2009 annual report file. FARS produces a data file for the previous year's crashes annually. NHTSA uses this data file for annual reports and Traffic Safety Fact Sheets, and refers to it as the annual report file. FARS continues to accept crash data for a full year after the crash date, and produces the final annual file, referred to as the final file. This additional time provides the opportunity for submission of important variable data requiring outside sources, which may lead to changes in the final counts.

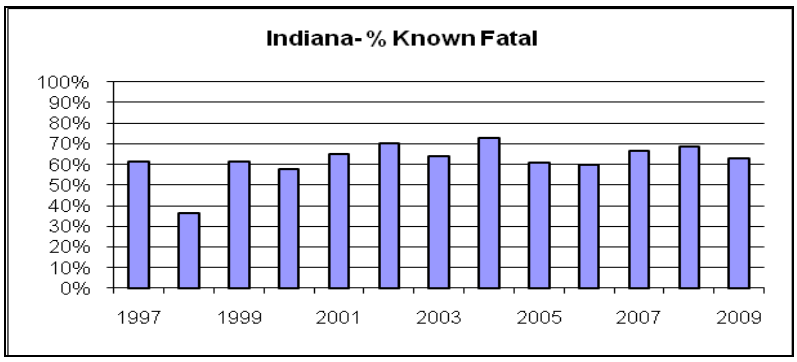
Table IN-1. Indiana BAC testing and reporting, 2008 and 2009

Drivers	Fatally injured			Surviving		
	2008 Annual	2008 Final	2009 Annual	2008 Annual	2008 Final	2009 Annual
Total	552	558	493	566	568	498
Known BAC	383	383	311	404	406	285
%	69.4	68.6	63.1	71.4	71.5	57.2
Unknown BAC	8	9	22	8	7	29
%	1.4	1.6	4.5	1.4	1.2	5.8
Not Tested	161	166	160	154	155	184
%	29.2	29.7	32.5	27.2	27.3	36.9
Unknown if Tested	0	0	0	0	0	0
%	0.0	0.0	0.0	0.0	0.0	0.0

Source: FARS annual report and final files

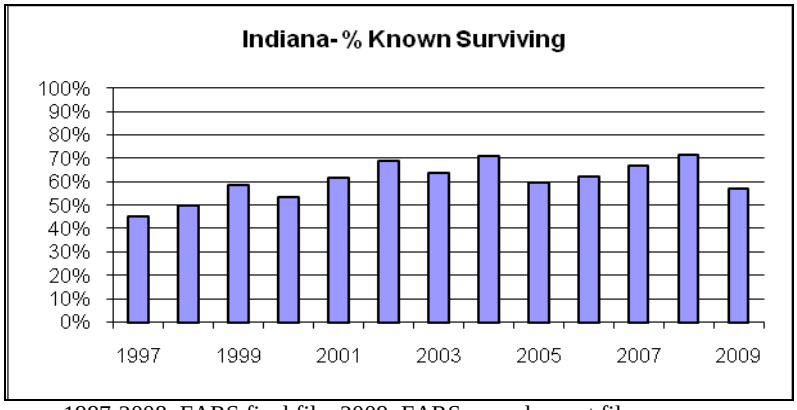
Figures IN-1 and IN-2 show the trends in the percentage of known BACs from 1997 to 2009 for fatally injured and surviving drivers, respectively. BACs were recorded for at least 60 percent of fatally injured drivers since 2001. There was a gradual increase in known BACs for fatally injured drivers from 59.9 percent in 2007 to 66.6 percent in 2007, then 68.6 percent in 2008. Known BACs for surviving drivers rose steadily from 59.7 percent in 2005 to 71.5 percent in 2008.

Figure IN-1. Indiana known BAC trend, fatally injured drivers, 1997-2009



1997-2008: FARS final file; 2009: FARS annual report file

Figure IN-2. Indiana known BAC trend, surviving drivers, 1997-2009



1997-2008: FARS final file; 2009: FARS annual report file

Structure and roles of key organizations

The Indiana Criminal Justice Institute (ICJI) serves as the State's planning agency for criminal justice, juvenile justice, traffic safety, and victim services. The Traffic Safety division of ICJI is responsible for implementing programming and administers State funds and Federal dollars awarded to Indiana from the NHTSA, U.S. Department of Transportation, Federal Highway Administration, and the Federal Motor Carrier Safety Administration. In this role, the Traffic Safety division manages grants, organizes media campaigns, produces educational and informational materials, and coordinates special enforcement efforts with State and local law enforcement agencies. ICJI is the only institute of its kind in the nation and is completely independent from the Indiana Department of Transportation (INDOT). INDOT is divided into six districts for the purpose of organizing and managing highway construction, maintenance, traffic, development, and testing.

Indiana's FARS office is located within the Indiana State Police Department (ISP). Traffic records is a separate division within the ISP, however the FARS supervisor also acts as the Traffic Records Manager. ISP investigates about 50 percent of Indiana's traffic fatalities. In

addition to the ISP, Indiana has a county-based sheriff system as well as 506 local town law enforcement agencies. The Indiana State Toxicology Laboratory is housed under the Indiana University Department of Pharmacology and Toxicology.

Laws and policies

Indiana operates on a coroner-based system at the county level. The coroner is responsible for determining and reporting the manner of death for all accidental deaths **(**IC 36-2-14-6). The coroner is elected and can serve a maximum of two 4-year terms **(**IC 36-2-14-2). Coroners and deputy coroners must undergo a 40-hour training course provided by the Indiana State Coroners Training Board in consultation with the Indiana Law Enforcement Academy (IC 4-23-6.5-3).

Under Indiana State law, a law enforcement officer "shall offer a portable breath test or chemical test to any person who the officer has reason to believe operated a vehicle that was involved in a fatal accident or an accident involving serious bodily injury" **(**IC 9-30-7-3). A person who refuses to submit to a preliminary breath test or chemical test offered under this chapter commits a Class C infraction and could have their license suspended for one year (IC 9-30-7-5). Additionally, the Indiana implied consent law gives law enforcement the authority to seize blood samples, without the driver's consent or having to first obtain a search warrant, from a driver involved in a crash that causes death or serious physical injury **(**IC 9-30-6).

Obtaining a BAC test

Drivers who die at the crash scene. Coroners are required to investigate all accidental deaths **(**IC 36-2-14-6). The coroner is notified of the death by law enforcement officers on scene and responds to the crash scene. The autopsy is being performed at the coroner's discretion. It is common practice that a coroner will request a blood draw for BAC testing as part of the investigation of the death if no autopsy is required. The coroner will arrange for the body to be transported to the morgue, which may be housed at the local hospital. A blood sample will be taken either as part of the coroner's investigation or during the autopsy by a contracted forensic pathologist. The blood sample for BAC testing is sent to either the Indiana State Toxicology laboratory or to a contracted private laboratory. The coroner is responsible for testing fees. Toxicology results will be sent back to the requesting coroner and entered into the investigation or autopsy report. All coroner reports are documented electronically in a software program called CoronerME that is accessible to all coroners in Indiana, the FARS analyst, and the traffic records coordinator (TRC). Initial CornonerME costs were funded through SAFETEA-LU Section 408 grant funds. Section 408 provides incentive grants to encourage States to improve the timeliness, accuracy, completeness, uniformity, integration, and accessibility of their traffic safety data systems.

Drivers who are seriously injured. Most seriously injured drivers are taken to hospitals for treatment. Most hospitals routinely draw a blood sample for medical purposes when a seriously injured person is admitted. If the driver dies in transport or while at the hospital, the county coroner is notified. The body will be transported to the morgue where the coroner obtains a blood sample either during the coroner's investigation or during the autopsy, if requested. In

some cases, the hospital blood sample results will be requested or subpoenaed by the coroner if needed.

If a surviving driver has been involved in a crash that has contributed to the serious injury or death of another person, or if there is probable cause to believe that the driver was impaired by alcohol, the officer may request the hospital to provide a blood sample. Hospitals usually will draw blood samples. Wishard Hospital in Indianapolis provides the blood sample kits for BAC testing in these cases. If the driver refuses or is not able to consent, the hospital still is authorized to obtain a blood sample. If the driver does not consent, a blood draw may be taken by force, as permitted by the Indiana implied consent law. In practice, most officers obtain warrants for blood samples if tests are refused. Officers send blood samples to the Indiana State Toxicology Laboratory or to a private contracted toxicology laboratory for testing.

Drivers who are not seriously injured. Investigating officers are trained to request preliminary breath tests or chemical tests from drivers in a serious injury or fatal crashes as authorized by Indiana law **(**IC 9-30-7-3). It is standard practice that an officer request a breath test without reasonable suspicion of alcohol impairment. With probable cause for alcohol impairment, standard DWI procedures are followed. If an officer requests a blood sample, the driver is taken to a hospital for a blood draw. If the driver refuses, a blood sample may be obtained by force, but most drivers comply. Wishard Hospital has an accessory jail where restrained drivers are held for forcible blood draws by assigned officers and forensic nurses.

Reporting BAC results to FARS

Blood samples obtained by coroners and law enforcement are sent to the Indiana State Toxicology Laboratory or to a private toxicology lab. In the past, private laboratories were used despite the cost due to the slow turnaround times at the State lab. Since May 2010, the State toxicology laboratory has acquired two more machines for analysis, hired more staff, and has incorporated more stringent quality control measures to address this problem. Turnaround time has improved and the State laboratory is more likely to be used by law enforcement agencies and coroners in the future. Relying on the State toxicology laboratory will eliminate testing costs to the coroner or requesting law enforcement agency. The toxicology laboratories send the report back to the coroner or requesting officer.

The coroner enters the BAC information into CoronerME and sends the results to the investigating officer. The investigating officer enters the BAC information into the supplemental material of the crash report that will be uploaded into the electronic reporting system – the Automatic Records Information Exchange System (ARIES). ARIES is a software system developed by Open Portal Solutions (OPS), a private contractor that operates and maintains the system. ARIES is self-sustaining with no cost to the agency, as OPS holds the rights to sell the crash reports for a $12 fee. For each report uploaded to ARIES, $8 is given back to the reporting agency. The FARS analyst has direct and immediate access to ARIES and CoronerME to obtain fatal crash information. When a fatal crash is entered into ARIES, it is automatically directed into the fatal queue and alerts the FARS analyst of this new entry. The FARS analyst sends a monthly request to the law enforcement agencies when there is missing BAC information. The FARS analyst also retrieves listings from biostatistics on death certificates and cross references

these with the fatal crashes in ARIES. The FARS analyst and TRC work closely together and share fatal crash information regularly. Indiana has 100 percent electronic crash reporting from ISP, sheriff and local law enforcement agencies.

Tracking, follow-up, and communications

The FARS analyst tracks serious injury crashes and fatal crashes through newspapers and news releases. The FARS analyst researches statewide internet news services daily for fatal crashes and then contacts the appropriate local law enforcement agency to request fatal crash reports. The FARS analyst and supervisor created an electronic PDF fatality report separate from the crash report form. Law enforcement agencies download this fatality report from ARIES and fax it to FARS within 24 hours of a fatal crash. The FARS analyst also queries ARIES and CoronerME for missing BAC information on crash and autopsy reports. If fatal crash supplemental material is not sent to FARS within 30 days, the FARS analyst sends a letter to the investigating agency requesting BAC information. If there is no response within 60 days, a second letter is written and forwarded to ICJI. ICJI then uses their law enforcement liaisons to encourage the investigating agency to report the BAC information requested by FARS.

Who is missed?

For a fatal crash, a coroner decides whether an autopsy is performed. A blood sample for BAC testing is standard during autopsies. However, in a case where an autopsy is not requested by the coroner, it is the coroner's responsibility to obtain a blood sample. In more rural areas, this may not occur. Previous problems with testing turnaround times with the State toxicology laboratory discouraged coroners from sending the State laboratory the blood samples even though there would be no cost. The coroner is responsible for paying for the toxicology test when a private laboratory is used. Counties with limited budgets may not be able to afford these costs and thus may not request toxicology screens as part of their investigations.

Although law enforcement training includes chemical testing for all drivers involved in fatal or serious injury crashes, it is standard practice that most officers will use preliminary breath instruments and not request a blood sample for BAC testing. In cases where there are no reasonable suspicion that alcohol was involved, drivers can refuse this test with the risk of losing their license; however, officers cannot forcibly obtain blood tests. It is at this point in the process where most BACs of surviving drivers are missed. Indiana was the recipient of a 2010 Mothers Against Drunk Driving grant to provide further training and equipment for law enforcement agencies to enforce these procedures and educate officers to obtain blood samples for BAC information on all fatal or serious injury crashes.

Summary

Fatally injured drivers

Indiana's improved testing and reporting is due to several factors.

Clear responsibility and policy: Blood samples for BAC testing are standard procedure during autopsies. Most coroners will request blood samples for BAC testing as part of their investigations when autopsies are not required.

Standard procedures: The bodies of all fatally injured drivers are transported to the morgue where the coroner requests blood samples either through their investigations or through requested autopsies. The blood samples are sent to the Indiana State Toxicology Laboratory or contracted private laboratories. BAC results are reported back to the coroners who then enter the BAC information into CoronerME and send the BAC information to the investigating law enforcement officers. The investigating law enforcement officer will enter the BAC information into ARIES. The FARS analyst accesses ARIES and CoronerME for fatal crash information.

Electronic Reporting: There is no cost to the agency for ARIES. Reports can be processed within five days of a crash. The FARS analyst has immediate access to coroner and crash reports through ARIES.

Excellent follow-up: The FARS analyst sends monthly requests for missing BACs to the investigating law enforcement agencies. ICJI is contacted if there is no response within 60 days. ICJI uses county law enforcement liaisons to help track down missing BAC information from the investigating agencies.

Results: BACs were known for 60 percent or more of fatally injured drivers in each year since 2001.

Surviving drivers

Indiana has increased its known BACs for surviving drivers from 59.7 percent in 2005 to 71.5 percent in 2008.

Useful law: Indiana law allows investigating officers to ask drivers involved in fatal or serious injury crashes to voluntarily submit breath or blood samples for testing. Additionally, the Indiana implied consent law gives law enforcement the authority to seize blood samples without the drivers' consent or having to first obtain search warrants, from drivers involved in crashes that cause death or serious physical injury.

Clear responsibility: Investigating officers are trained to obtain blood or breath samples from all drivers in fatal or serious injury crashes. When a test is obtained, the officer includes the BAC in the crash report.

Excellent follow-up: The FARS analyst periodically checks for missing BACs and follows up with investigating law enforcement officers and ICJI.

Results: Known BACs for surviving drivers rose steadily from 59.7 percent in 2005 to 71.5 percent in 2008.

Overall

High priority, excellent staff, and close personal relationships: BAC testing is a high priority with the ICJI, State, county, and local law enforcement, prosecutors, county coroners, and FARS. The FARS analyst, ICJI, and the TRC work tirelessly to track down and record all possible BAC test results. These agencies have established close personal relationships, good communications, and trust with key staff in each organization. Use of law enforcement liaisons by the ICJI to help track down missing tests is vital. The electronic reporting system ARIES has decreased turnaround times for BAC reporting and allows access to crash records by FARS personnel. CoronerME standardizes coroner forms and information and allows immediate access to coroner records by FARS. Increased training and education for law enforcement by the ICJI and FARS has educated law enforcement why BAC testing is important. ICJI is a unique agency and acts as a conduit between law enforcement agencies and FARS and provides the mechanism for continuing collaborative efforts between coroners, law enforcement, FARS, the State Toxicology Laboratory, and the Department of Health.

References

Meetings of Tara Casanova, Preusser Research Group

On October 5, 2010, at the Indiana Criminal Justice Institute (ICJI)
Ryan Klitzsch, Division Director, Traffic Safety Division, ICJI
Dan Jeffries, Alcohol Countermeasures Manager, Traffic Safety Division, ICJI
Nils King, Traffic Records Coordinator, Traffic Safety Division, ICJI
Deb Reasoner, Traffic Safety Resource Prosecutor

On October 5, 2010, at the Center for Criminal Justice Research
Dona Sapp, Senior Policy Analyst

On October 6, 2010, at the Indiana State Police
Lt. Jerry A. Berkey, Firearms & Traffic Records Operation Manager, FARS Supervisor, Indiana State Police
Angelique Cubel, Program Coordinator, FARS Records, Indiana State Police
Michelle Dunn, Program Coordinator, FARS Records, Indiana State Police

On October 6, 2010, at the Indiana Department of Health
Tracie Pettit, Indiana Trauma Registry Manager

On October 7, 2010, at the Indiana State Department of Toxicology
Michael F. Neerman, Ph.D. FACB, Interim Director

On October 7, 2010, at the Clinton County Coroner Office
Ed Cripe, Clinton County Coroner

Kansas

BAC testing and reporting status and trends

Table KS-1 shows Kansas's 2008 and 2009 BAC testing and reporting rates for drivers in fatal crashes. In 2008, 72.1 percent of the fatally injured drivers had known BACs, 25.4 percent were not tested, and test results were unknown for the remaining 2.5 percent. For surviving drivers, 63.5 percent had known BACs, 35.6 percent were not tested, and only 0.9 percent had unknown test results. Known rates were lower in the 2009 annual report file but likely will increase in the final file. FARS produces a data file for the previous year's crashes annually. NHTSA uses this data file for annual reports and Traffic Safety Fact Sheets, and refers to it as the annual report file. FARS continues to accept crash data for a full year after the crash date, and produces the final annual file, referred to as the final file. This additional time provides the opportunity for submission of important variable data requiring outside sources, which may lead to changes in the final counts.

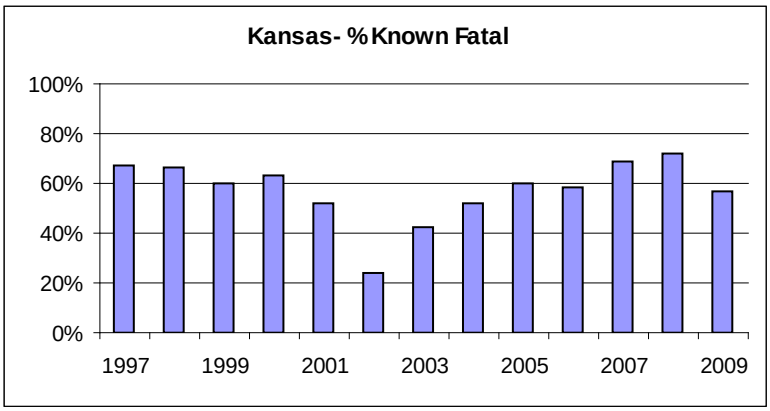
Table KS-1. Kansas BAC testing and reporting, 2008 and 2009

Drivers	Fatally injured			Surviving		
	2008 Annual	2008 Final	2009 Annual	2008 Annual	2008 Final	2009 Annual
Total	277	276	271	219	219	227
Known BAC	178	199	154	126	139	115
%	64.3	72.1	56.8	57.5	63.5	50.7
Unknown BAC	3	7	0	0	2	0
%	1.1	2.5	0.0	0.0	0.9	0.0
Not Tested	74	70	76	82	78	69
%	26.7	25.4	28.0	37.4	35.6	30.4
Unknown if Tested	22	0	41	11	0	43
%	7.9	0.0	15.1	5.0	0.0	18.9

Source: FARS annual report and final files

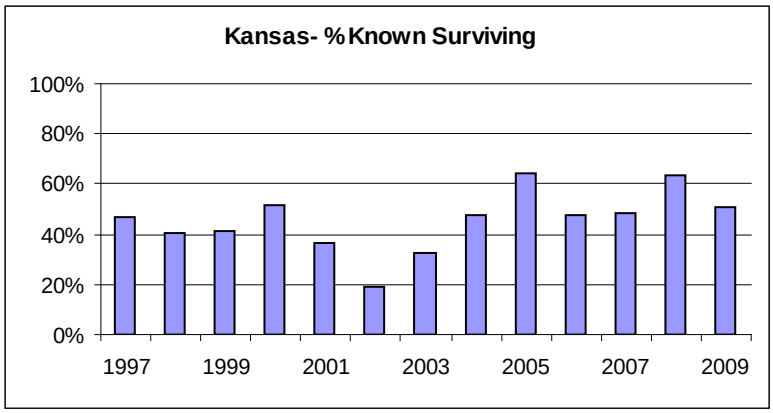
Figures KS-1 and KS-2 show the trends in the percentage of known BACs from 1997 to 2009 for fatally injured and surviving drivers, respectively. BACs were known for about 60 percent of fatally injured drivers in every year since 2004. Known BACs for surviving drivers rose from 19.0 percent in 2002 to 57.5 percent in 2008.

Figure KS-1. Kansas known BAC trend, fatally injured drivers, 1997-2009



2008: FARS final file; 2009: FARS annual report file

Figure KS-2. Kansas known BAC trend, surviving drivers, 1997-2009



2008: FARS final file; 2009: FARS Annual Report file

Structure and roles of key organizations

FARS and the Kansas Bureau of Traffic Safety are units of the Kansas Department of Transportation. The Kansas Highway Patrol (KHP) is an independent agency that investigates more than half of all traffic fatalities, especially those in rural areas.

Laws and policies

Kansas law requires a BAC test for any driver suspected of causing a fatal or serious injury crash (§8-1001 (p)) or who is suspected of contributing to a fatal or serious injury crash and could be cited for a traffic offense (§8-1001 (b) (2)). A blood sample may be taken by force if necessary from a driver who caused a death or serious injury. There is no requirement to test a fatally injured driver who has not caused or contributed to the crash, but many coroners and hospitals routinely draw blood samples from all fatally injured drivers.

The investigating officer is responsible for obtaining the required BAC tests. In practice, officers usually will attempt to obtain BAC tests from all fatally injured drivers and from those surviving drivers who the officer suspects are impaired by alcohol or drugs.

Coroners investigate all accidental deaths in Kansas. There are 31 coroner districts, each consisting of one to seven counties. Coroners must be physicians. They are appointed by the county commissioners to four-year terms. Coroners perform autopsies on some fatally injured drivers, more frequently in larger cities and less frequently in rural areas. Autopsy reports include the driver's BAC.

Obtaining a BAC test

The procedures vary depending on the driver's status.

Drivers who die at the crash scene. A driver who dies at the crash scene is taken to a hospital or morgue where a coroner draws a blood sample. An investigating officer accompanies the body to the hospital or morgue. If an autopsy is not conducted, the coroner gives a blood sample to the officer. If an autopsy will be conducted, the coroner obtains a BAC and will report the results to the investigating officer.

Drivers who are seriously injured. A seriously injured driver is taken to a hospital. If the investigating officer suspects that the driver is impaired, the officer usually gets a blood sample. If the driver is not incapacitated, the officer reads the driver the standard implied consent language and requests a blood sample. If the driver refuses, a blood sample may be obtained without the driver's consent. If the driver is incapacitated, the officer gets a warrant for information from the hospital's records. As a hospital routinely draws blood and analyzes it for medical purposes when a seriously injured person is admitted, the hospital records include the driver's BAC. Some officers and hospital staff have established good working relations so that the hospitals will provide the officers with blood samples from all drivers admitted for treatment.

Hospitals typically keep a portion of the blood sample drawn at admission for four or five days. If a driver dies within this time, the coroner can obtain this admission blood sample. As with drivers who die at the crash scene, the coroner analyzes the blood and provides a BAC if an autopsy is conducted and gives a portion of the sample to the investigating officer if an autopsy is not conducted.

Officers send blood samples either to the Kansas Bureau of Investigation (KBI) laboratory or, in large cities, to city laboratories for analysis. Due to limited resources, KBI may not analyze all blood samples from drivers, including those not involved in DWI investigations or other legal proceedings.

There are crashes where drivers are injured in a Kansas crash and taken to hospitals in adjoining States. In some cases the hospitals draw blood samples for the investigating officers. In others, the officers get BAC from the drivers' autopsies or coroners' reports. There are also hospitals in adjoining States that will not provide blood samples or BAC test results.

Drivers who are not seriously injured. If the investigating officer suspects that a driver is impaired by alcohol or drugs, the usual DWI procedures are followed. Officers are trained to request BAC tests from all drivers who caused or contributed to fatal crashes even if they do not appear to be impaired. In practice, some officers will use PBTs to request BAC tests from all

drivers in fatal crashes. Other officers, especially in rural areas, may not request tests from drivers who do not appear to be impaired.

BAC tests for drivers suspected of DWI may use blood or breath. Blood samples are sent to the KBI laboratory for analysis. Law enforcement agencies use evidential test equipment when conducting their breath tests.

Reporting BAC results to FARS

KBI or city toxicology laboratories and coroners report BAC results back to the investigating officer. Officers add the BAC results to the crash report and send the report on to FARS. BACs are available immediately from breath tests and are entered onto the crash report.

Tracking, follow-up, and communications

There are several reasons why BAC results from a blood test may not be available when the fatal crash report is submitted to FARS: the blood sample was not analyzed, the testing laboratory did not forward the BAC report to the investigating officer, or the report has been misplaced at the investigating agency. FARS analysts monitor all fatal crash reports for missing BACs. Four or five times each year they send letters to the officers who investigated crashes with overdue BACs. If an officer fails to respond to an overdue BAC letter, a Kansas law enforcement liaison (LEL) will contact the officer personally in the officer's agency, as the LEL travels around Kansas. The LELs also will check with coroners to obtain any BACs from autopsy reports that have not been reported to FARS. Kansas LELs are experienced officers who have personal contacts with law enforcement officers and management throughout Kansas.

Who is missed?

Fatally injured drivers who fail to have a BAC test may include:

- Drivers who are not transported promptly to a hospital or coroner.
- Drivers who die at the crash scene and are taken to a coroner who does not draw a blood sample promptly.
- Drivers who die several days after the crash for whom there was no reason to suspect impairment by alcohol.
- Drivers who are transported to a hospital in an adjoining State that will not provide a blood sample.

Surviving drivers who are not tested may include:

- Drivers who are not seriously injured and are not suspected of being impaired by alcohol.
- Drivers, especially in rural areas, who are not transported promptly to hospitals or law enforcement agencies for blood samples or breath tests.
- Drivers in rural areas where "everybody knows everybody."

Summary

Several factors contribute to Kansas's high rate of BAC testing and reporting.

Strong law: Kansas requires BAC testing for all drivers who caused fatal crashes or who could be cited for a traffic offense and contributed to causing a fatal crash.

Clear responsibility: Law enforcement officers are responsible for obtaining these BAC test results for all drivers.

Hospital and coroner cooperation: Hospitals and coroners usually draw blood and provide blood samples to officers to satisfy this legal requirement.

Regular and aggressive tracking and follow-up: FARS analysts check regularly for missing BACs and follow up with the investigating officer.

Excellent communications and personal relations: FARS analysts, law enforcement, coroners, and hospital staff have excellent working relations. LELs use their personal contacts to unearth many missing BACs.

Inter-agency cooperation: As one example, the Bureau of Traffic Safety purchased new BAC testing equipment for the KBI toxicology laboratory.

High priority: BAC testing is a high priority for the Bureau of Traffic Safety and for officers who investigate fatal crashes.

Dedicated FARS analysts and LELs: They make every effort to track down all missing BACs.

Grants: SAFETEA-LU Section 410 alcohol-impaired-driving grants provide additional incentives for increasing BAC testing and reporting.

Results: BACs were known for about 60 percent of fatally injured drivers for each year since 2004. Known BACs for surviving drivers rose steadily from 19 percent in 2002 to 58 percent in 2008.

References

Calls on June 30, July 1, and August 3, 2010, and follow-up e-mails with
Michael and Teresa Havenstein, FARS analysts
David Corp, Law Enforcement Liaison
Call on October 21, 2010, with
Dr. Alan Hancock, President, Kansas Coroners Association

Maryland

BAC testing and reporting status and trends

Table M-1 shows Maryland's 2008 and 2009 BAC testing and reporting rates for drivers in fatal crashes. In 2008, 89.4 percent of the fatally injured drivers had known BACs, 9.0 percent were not tested, and testing status was unknown for 0.8 percent. For surviving drivers, 77.9 percent were not tested, 21.2 percent had known BACs and testing status was unknown for 0.4 percent. Known BAC rates decreased in the 2009 annual report file but may increase in the final file. FARS produces a data file for the previous year's crashes annually. NHTSA uses this data file for annual reports and Traffic Safety Fact Sheets, and refers to it as the annual report file. FARS continues to accept crash data for a full year after the crash date, and produces the final annual file, referred to as the final file. This additional time provides the opportunity for submission of important variable data requiring outside sources, which may lead to changes in the final counts.

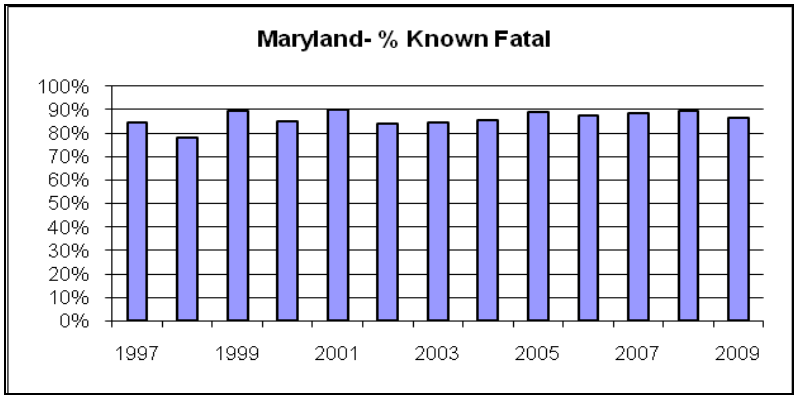
Table MD-1. Maryland BAC testing and reporting, 2008 and 2009

Drivers	Fatally injured			Surviving		
	2008 Annual	2008 Final	2009 Annual	2008 Annual	2008 Final	2009 Annual
Total	357	357	338	460	458	438
Known BAC	300	319	292	35	97	22
%	84.0	89.4	86.4	7.6	21.2	14.2
Unknown BAC	1	3	3	1	2	0
%	0.3	0.8	0.9	0.2	0.4	0.0
Not Tested	27	32	22	395	357	358
%	7.6	9.0	6.5	85.9	77.9	81.7
Unknown if Tested	29	3	21	29	2	18
%	8.1	0.8	6.2	6.3	0.4	4.1

Source: FARS annual report and final files

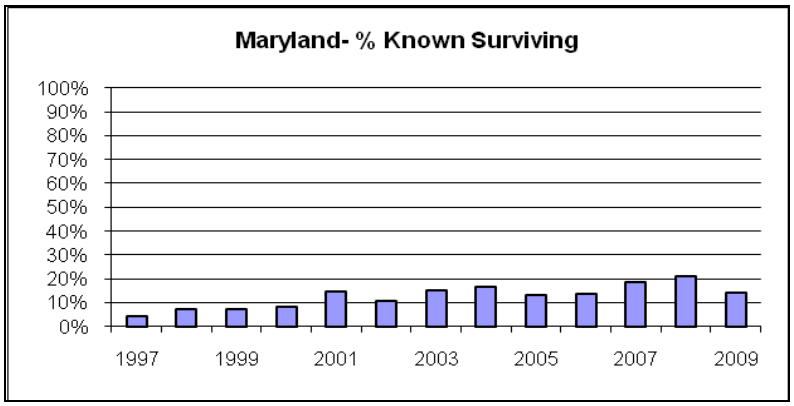
Figures M-1 and M-2 show the trends in the percentage of known BACs from 1997 to 2009 for fatally injured and surviving drivers, respectively. BACs were known for 80-90 percent of fatally injured drivers in every year since 1999 and for 10-21 percent of surviving drivers in every year since 2001.

Figure MD-1. Maryland known BAC trend, fatally injured drivers, 1997-2009



1997-2008: FARS final file; 2009: FARS annual report file

Figure MD-2. Maryland known BAC trend, surviving drivers, 1997-2009



1997-2008: FARS final file; 2009: FARS annual report file

Structure and roles of key organizations

FARS is housed in the Maryland State Police (MSP). MSP also has a unit responsible for overseeing chemical tests for alcohol and that contains a toxicology laboratory. MSP officers investigate 30 to 35 percent of traffic fatalities. The Maryland Medical Examiner's Office is responsible for determining the cause of all accidental deaths, including traffic fatalities. Each county has one or more medical examiner assistants.

Laws and policies

Maryland law does not require a BAC test for a driver in a fatal crash. If an investigating officer has a reasonable suspicion that a driver was impaired by alcohol, the officer may request a BAC test. Transportation Article 16-205.1(c) requires a person submit to a test of blood and/or breath if involved in a fatal or life-threatening injury crash. If a driver in a fatal or life-threatening crash refuses a BAC test request, then Maryland law allows a blood sample to be obtained by force. The approved use of force is authorized by an attorney general opinion referenced in the footnotes to Annotated Code of Maryland Transportation Article "TR" §16-205.1(Compulsory

Testing Law) (page 336 of the 2009 edition of the Maryland Vehicle Law annotated by LexisNexis). Some law enforcement agencies use this law's authority if a driver in a fatal crash refuses a BAC test while others do not. Maryland has considered but has not enacted legislation requiring a BAC test for all drivers involved in a fatal or serious injury crash.

The Medical Examiner's Office attempts to obtain a BAC test for every fatally injured driver to assist in determining the cause of death. For surviving drivers, law enforcement officers usually request a BAC test when they have reason to suspect that a driver was impaired by alcohol; they almost never request a test otherwise.

Obtaining a BAC test

Drivers who die at the crash scene. A medical examiner's assistant responds to a fatal crash, if possible. Almost all drivers who die at the crash scenes are taken to a medical examiner's office for inspection, sometimes followed by autopsy. A blood sample is drawn and sent to the State medical examiner laboratory in Baltimore where it is tested for alcohol and also may be tested for various drugs.

Drivers who are seriously injured. Most seriously injured drivers are taken to hospitals. Sometimes EMTs or paramedics draw blood samples at the crash scenes and send them to the hospitals along with the victims. Most hospitals routinely draw blood samples from drivers admitted for treatment or from drivers who have died before they can be admitted. If a driver appears to be brain-injured or close to death and is a candidate for organ donation, a blood sample is required upon admission. Maryland's eight trauma hospitals routinely test these blood samples for BAC and for other substances to assist in treating the victims. A community hospital may only conduct a BAC test if there is some suspicion that the victim is impaired by alcohol. Occasionally an attending physician will dispense with a blood sample or a family will request that a BAC test not be conducted for religious reasons.

If the investigating officer has reason to suspect that a seriously injured driver was impaired by alcohol, the officer may take a toxicology kit to the hospital and request the hospital to draw a blood sample. The blood sample is sent to the MSP laboratory for analysis. Some hospitals do not comply with officers' requests for blood samples because they may require hospital staff to spend time in court: If a driver's BAC test result is used as evidence, the hospital staffer may be called upon to testify on his or her qualifications to draw blood and on the chain of custody of the blood sample. Maryland recently considered, but failed, to pass legislation to exempt hospital staff from such court appearances.

Drivers who are not seriously injured. Officers investigating fatal or serious injury crashes usually request BAC tests for drivers suspected of alcohol or drug impairment. If the crash involves several drivers, officers usually pursue BAC tests only from the drivers who contributed substantially to causing the crashes. Standard DWI procedures are followed: If the officer has sufficient evidence, the driver is arrested, taken to a law enforcement agency, and a BAC is obtained from an evidentiary breath or blood test, depending on the agency's practices. As noted previously, BAC tests may be obtained by force if necessary from drivers in fatal or serious injury crashes. Blood samples are sent to the MSP laboratory for analysis.

Obtaining access to BAC test results from hospitals

If a driver dies in a hospital, the medical examiner may obtain a portion of the blood sample drawn by the hospital, which then can be analyzed at the medical examiner's laboratory. Alternatively, the driver's BAC may be recorded in the driver's hospital records, and the medical examiner has access to all hospital records for any fatally injured person.

Hospitals generally do not release BAC results to law enforcement officers. If a driver is charged with DWI, then the hospital's BAC records or a portion of the driver's admission blood sample may be subpoenaed.

Maryland's Highway Safety Office coordinates with the trauma nurse coordinators in each of Maryland's trauma hospitals to obtain some surviving driver BAC data. In the fall, the FARS analyst sends each nurse coordinator a list of drivers from the previous years who were treated at that hospital and for whom FARS does not have a BAC. The nurse coordinators then supply FARS with any BAC data for these drivers. Authority is provided by NHTSA's exemption from HIPAA as a public health agency. The BAC data is not given to law enforcement and are not used for legal purposes. This process typically adds a few BACs annually.

Reporting BAC results to FARS

Since 2006 the FARS analyst has had direct electronic access to the medical examiner's data. When the FARS analyst enters a fatal crash report number into the medical examiner Web site, each fatally injured driver's BAC and any other toxicology information are transmitted directly into the FARS file. This direct electronic access provides BAC results to FARS quickly and accurately, with no intermediate steps.

Law enforcement officers enter BACs for surviving drivers into the crash report and then forward the crash report to FARS.

Tracking, follow-up, and communications

After a reasonable time, the FARS analyst regularly checks with the Medical Examiner's Office regarding fatally injured drivers without BAC data.

Each spring, the FARS analyst and the Maryland Automated Accident Records System analyst compare their data on each fatal crash from the previous year for information that has been reported to one file but not to the other.

Who is missed?

A few fatally injured drivers are taken to hospitals in adjoining jurisdiction, where blood samples may not be drawn or BAC tests may not be given. Maryland's FARS analyst routinely checks with adjoining State FARS analysts to exchange BAC data on drivers transported across State

lines. A spreadsheet has been developed that is sent to neighboring State analysts to share BAC information on drivers transported across State lines.

A few fatally injured drivers may not have blood samples drawn quickly enough to provide valid BACs.

Most surviving drivers who are not suspected of alcohol impairment will not have BACs reported. If they are not seriously injured they probably will not be tested. If they are taken to community hospitals they may be tested for medical reasons but the hospitals usually will not release the BAC results to law enforcement.

Summary

Fatally injured drivers

Several factors contribute to Maryland's excellent BAC reporting rate for fatally injured drivers.

Clear and uniform responsibility: The Medical Examiner's Office, which has jurisdiction throughout the State, is responsible for conducting and reporting a BAC test for every fatally injured driver in the course of determining the cause of death.

Standard procedures: A majority of the drivers who die at the crash scene are taken to a Medical Examiner's Office where a blood sample is drawn and sent to the medical examiner laboratory for analysis. For drivers who are taken to hospitals, the Medical Examiner's Office almost always obtains either blood samples from the hospitals or BACs from hospital records.

Electronic reporting: The FARS analyst has direct electronic access to the medical examiner's data. BACs are transmitted directly into the FARS file.

Excellent communications and follow-up: The FARS analyst regularly checks for missing BACs with the Medical Examiner's Office and with FARS analysts in adjoining States.

Results: Maryland has reported BACs for 85 to 90 percent of all fatally injured drivers each year since 2003.

Surviving drivers

Maryland's BAC reporting rate for surviving drivers, while low, has improved in recent years.

Useful law: Any driver involved in a fatal or life threatening crash must submit to a BAC test if the investigating officer has a reasonable suspicion that the driver was impaired by alcohol. A blood sample may be obtained by force, if necessary.

Clear responsibility: Investigating officers are trained to obtain BAC tests from drivers in fatal or serious injury crashes, but most officers will not request tests unless there is probable cause to suspect alcohol impairment.

Excellent follow-up: The FARS office checks for missing BACs with Maryland Automated Accident Records System personnel and with trauma nurse coordinators in the eight trauma hospitals.

Results: Known BACs increased from 4.4 percent in 1997 to 21.2 percent in 2008.

Overall

High priority and dedicated staff: BAC testing is a high priority for the Maryland Highway Safety Office and FARS. Maryland's FARS analyst work tirelessly to track down and record all possible BAC test results.

Excellent communications and relationships: BAC testing and reporting involves many organizations. With the help of the Highway Safety Office, the FARS analyst has developed close personal relationships, good communications, and trust with key staff in other organizations, including MSP, other law enforcement agencies, the Medical Examiner's Office, the eight Maryland trauma nurse coordinators, and FARS analysts in adjoining jurisdictions.

References

Meeting on July 6, 2010, at the Maryland Highway Safety Office with
Jim Hedlund, Preusser Research Group
Tara Casanova, Preusser Research Group
Liza Lemaster, Impaired Driving Prevention Coordinator/Grant Manager, Maryland Highway Safety Office
Suzy Wellman, Maryland Automated Accident Records System
Lt. Tom Woodward, Chemical Tests for Alcohol Unit, Maryland State Police
Sergeant Michael Tagliaferri, FARS Supervisor, Maryland State Police
Charlene Rock, FARS Analyst, Maryland State Police
Michael Eagle, Computer Network Specialist, Office of the Chief Medical Examiner

Meeting on July 7, 2010, at the National Study Center for Trauma and Emergency Medical Systems, University of Maryland, with
Jim Hedlund, Preusser Research Group
Tara Casanova, Preusser Research Group
Tim Kerns, National Study Center
Cindy Burch, National Study Center

Missouri

BAC testing and reporting status and trends

Table MO-1 shows Missouri's 2008 and 2009 BAC testing and reporting rates for drivers in fatal crashes. In each year, approximately 80 percent of the fatally injured drivers had known BACs, about 13 percent were not tested, and testing status was unknown for the remainder of the drivers. For surviving drivers, about 55 percent had known BACs and 45 percent were not tested, with few unknown BACs or unknown testing status. Missouri expects the 2009 results to change very little, from the annual report to the final FARS file. FARS produces a data file for the previous year's crashes annually. NHTSA uses this data file for annual reports and Traffic Safety Fact Sheets, and refers to it as the annual report file. FARS continues to accept crash data for a full year after the crash date, and produces the final annual file, referred to as the final file. This additional time provides the opportunity for submission of important variable data requiring outside sources, which may lead to changes in the final counts.

Table MO-1. Missouri BAC testing and reporting, 2008 and 2009

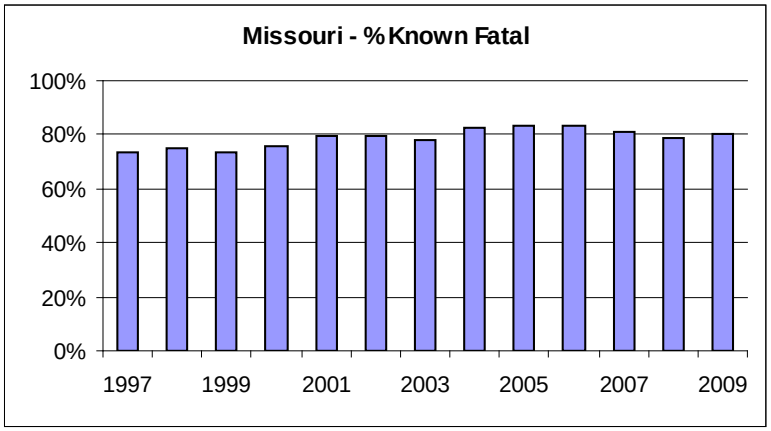
.

Drivers	Fatally injured			Surviving		
	2008 Annual	2008 Final	2009 Annual	2008 Annual	2008 Final	2009 Annual
Total	665	665	600	581	581	541
Known BAC	522	523	483	308	308	313
%	78.5	78.6	80.5	53.0	53.0	57.9
Unknown BAC	0	0	0	6	6	0
%	0.0	0.0	0.0	1.0	1.0	0.0
Not Tested	86	86	84	263	263	223
%	12.9	12.9	14.0	45.3	45.3	41.2
Unknown if Tested	57	56	33	4	4	5
%	8.6	8.4	5.5	0.7	0.7	0.9

Source: FARS annual report and final files

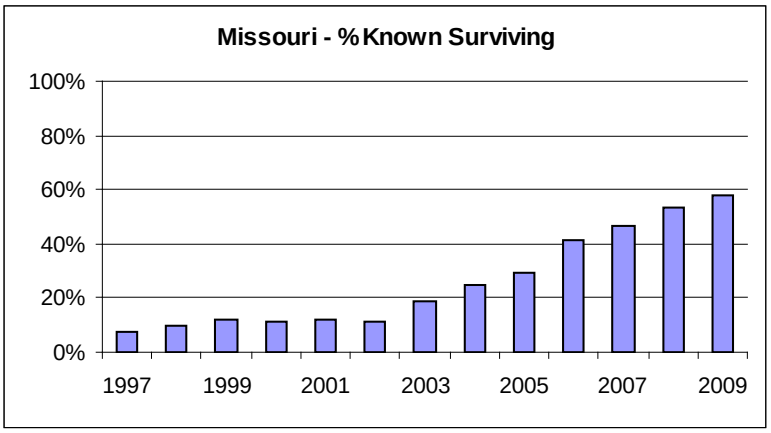
Figures MO-1 and MO-2 show the trends in the percentage of known BACs from 1997 to 2009 for fatally injured and surviving drivers, respectively. BACs were known for 80-85 percent of fatally injured drivers in every year since 2004. Known BACs for surviving drivers increased steadily from 11.0 percent in 2002 to 57.9 percent in 2009.

Figure MO-1. Missouri known BAC trend, fatally injured drivers, 1997-2009



2008: FARS final file; 2009: FARS annual report file

Figure MO-2. Missouri known BAC trend, surviving drivers, 1997-2009



2008: FARS final file; 2009: FARS annual report file

Structure and roles of key organizations

FARS is housed in the Traffic Records Division of the Missouri State Highway Patrol (MSHP). MSHP officers investigate about 65 to 70 percent of Missouri's fatal crashes. MSHP operates several toxicology laboratories. The Missouri Highway Safety Division (HSD) is located in the Missouri Department of Transportation.

Accidental deaths in Missouri are investigated by county medical examiners or coroners. Larger counties have medical examiners, who are physicians appointed to this position by their county commissions. Smaller counties have coroners, who are elected to three-year terms and who need not have medical training.

Laws and policies

Medical examiners or coroners are required to obtain blood samples from all drivers who die within eight hours of a crash and to test for alcohol or drugs (§58.455). In practice, medical

examiners and some coroners attempt to obtain BACs for all fatally injured drivers. There is no penalty for not acquiring a blood sample.

The law enforcement officer investigating a fatal or serious injury crash is required to make all reasonable efforts to obtain BAC information on all surviving drivers (§577.021). Officers are trained to seek BACs and most officers will attempt to obtain them.

Obtaining a BAC test

Drivers who die at the crash scene. A medical examiner or coroner will respond to the crash scene to certify the cause of death. The body will be taken to a funeral home or hospital where the medical examiner or coroner will draw a blood sample. The blood sample may be sent to the MSHP laboratory for testing, at no cost to the medical examiner or coroner, or it may be sent to a private laboratory. The Traffic Records Division of the MHSP gives blood sample kits to coroners who request them.

Drivers who are seriously injured. The majority of seriously injured drivers are taken to hospitals. Hospitals routinely draw blood samples upon admission for medical purposes, but hospitals will not release BAC or toxicology results from these medical samples to law enforcement. If a seriously injured driver is suspected of being impaired by alcohol, at the request of an investigating officer the hospital will draw a blood sample for use in DWI proceedings.

If a driver dies while being transported to a hospital or very shortly after being admitted, the medical examiner or coroner will come to the hospital and draw a blood sample. If a driver dies subsequently, the medical examiner or coroner usually can obtain the hospital's record of the driver's BAC at admission. Medical examiners and coroners are exempt from HIPPA regulations, so most hospitals will provide medical examiners and coroners with this information. If necessary, records for fatally injured drivers can be obtained by subpoena.

An EMS technician may draw a blood sample from a seriously injured driver at the crash scene or while transporting the driver to a hospital. Missouri is attempting to make EMS records available to FARS, to provide another source of BAC data.

Drivers who are not seriously injured. The investigating officer usually requests a BAC test from all drivers involved in a fatal crash, as authorized by Missouri law. If the officer has probable cause to suspect the driver was impaired, then standard DWI procedures are followed and an evidentiary BAC test is given, with the usual penalties if the test is refused. Tests for other drivers may use a PBT, evidentiary breath test equipment, blood, or urine. Drivers rarely refuse these tests.

Reporting BAC results to FARS

MHSP laboratories send FARS the toxicology results, including the BAC, from blood samples obtained from coroners, medical examiners, or law enforcement officers. Private laboratories report BACs back to the medical examiners or coroners, who submit the reports to FARS using

MSHP Coroner Report forms and prepaid mailers. Officers report BACs for surviving drivers from preliminary breath testers, evidentiary breath tests, and/or blood tests to FARS using MSHP Surviving Driver BAC Test Results forms, separate from the crash reports.

Tracking, follow-up, and communications

FARS analysts receive electronically all relevant information from the death certificates for all motor vehicle crash fatalities. If no BAC has been reported, the crash report is automatically flagged and a FARS analyst will follow up with the appropriate coroner or medical examiner and, if necessary, with the investigating officer.

FARS analysts track fatal crash reports with missing BACs and follow up regularly with the appropriate investigating officers, coroners, or medical examiners.

A training session for new coroners is held each March. Traffic Records Division staff participate in the training to explain the requirements and needs for BAC reporting, discuss the procedures used, and distribute blood sample kits to coroners who request them. FARS analysts work through the Missouri Coroners Association to obtain BAC reports from any coroners who fail to report within a reasonable time.

Traffic Records Division staff participate in the annual training conference for Missouri law enforcement agencies to discuss BAC testing and reporting requirements, policies, and procedures.

FARS analysts send letters annually to all chiefs of municipal and county agencies that may investigate fatal crashes. These letters remind the chiefs of the requirement to obtain BACs for all surviving drivers in fatal crashes. They explain why good BAC data is important to help Missouri reduce alcohol-impaired driving (and also to help qualify for Sec. 410 funds) and they remind the chiefs of the procedures for obtaining and reporting BACs. FARS analysts have regular informal communications with law enforcement agencies.

Who is missed?

The few fatally injured drivers without BAC tests include:

- Drivers who die at the crash scenes but coroners or medical examiners are not notified promptly or are not available to draw timely blood samples.
- Drivers who are severely burned, so that blood samples cannot be drawn.
- Injured drivers taken to hospitals in adjoining States that do not have Missouri's requirement for BACs from all drivers in fatal crashes. These hospitals may not draw blood samples or may not release BAC test results to Missouri.
- Injured drivers taken to hospitals in other Missouri counties. As of 2008, the medical examiner or coroner in the county in which a crash occurred is responsible for reporting BACs for any fatally injured driver. Some coroners in rural counties may not follow up with hospitals in other counties to request blood samples or a copies of the hospitals' BAC test results.

Over half of Missouri's surviving drivers have a known BAC. Two groups of drivers who may not be tested are:

- Injured drivers, taken to hospitals, who are not suspected of being impaired by alcohol.
- Some drivers in multi-vehicle crashes with no suspicion of alcohol involvement and who did not contribute to causing the crash.

Summary

Several factors contribute to Missouri's excellent BAC testing and reporting.

Fatally injured drivers

Strong law: A BAC is required for every fatally injured driver.

Clear responsibility: Each county's coroner or medical examiner is responsible for determining and reporting the BAC for drivers who die within eight hours of a crash.

Standard procedures: MHSP laboratories send toxicology results directly to Missouri's FARS analysts. Coroners and medical examiners who send their blood samples to laboratories report the BAC results to the FARS analysts using a simple form provided by the FARS analysts.

Excellent communications and follow-up: FARS analysts regularly check for missing BACs and follow up with the appropriate medical examiners and coroners. FARS supplies coroners with free blood test kits. FARS participates in training for new coroners every year.

Results: BACs were known for 80 to 85 percent of Missouri's fatally injured drivers in every year since 2004.

.

Surviving drivers

Strong law and clear responsibility: An officer investigating a fatal crash is expected to make all reasonable efforts to obtain a BAC for each surviving driver.

Clear procedures: FARS provides investigating officers with simple forms for BAC results.

Excellent follow-up: FARS analysts regularly check for missing BACs and follow up with the investigating officers.

Results: Known BACs for surviving drivers rose steadily from 11 percent in 2002 to 58 percent in 2009.

Overall

High priority and dedicated staff: BAC testing is a high priority for FARS and for the Missouri Highway Safety Division. FARS analysts track down and report all BAC test results.

Excellent communications and relationships: The FARS analysts have established close and personal relationships with many coroners, medical examiners, and law enforcement officers. The location of FARS within MHSP helps communications with officers and with MHSP toxicology laboratories.

References

Call on May 6, 2010, and follow-up e-mails with
Capt. Brad Jones, Director, Traffic Records Division, Missouri State Highway Patrol
Russell Dunwiddie, Assistant Director, Traffic Records Division
Sheila Ponder, FARS analyst
Sandi Cole, FARS analyst
Call on October 13 with
Eddie Wilson, Executive Director, Missouri Coroner's Association
Call on October 26 with
Dr. Mary Case, St. Louis County Medical Examiner

New Mexico

BAC testing and reporting status and trends

Table NM-1 shows New Mexico's 2008 and 2009 BAC testing and reporting rates for drivers in fatal crashes. In both years, all fatally injured drivers were tested. Known BACs increased from 91.7 percent in 2008 to 94.1 percent in 2009. In 2008, 77.6 percent of surviving drivers were tested, with known BACs for 69.7 percent. In 2009, the testing rate increased to 94.0 percent with 85.8 percent known BACs. FARS produces a data file for the previous year's crashes annually. NHTSA uses this data file for annual reports and Traffic Safety Fact Sheets, and refers to it as the annual report file. FARS continues to accept crash data for a full year after the crash date, and produces the final annual file, referred to as the final file. This additional time provides the opportunity for submission of important variable data requiring outside sources, which may lead to changes in the final counts.

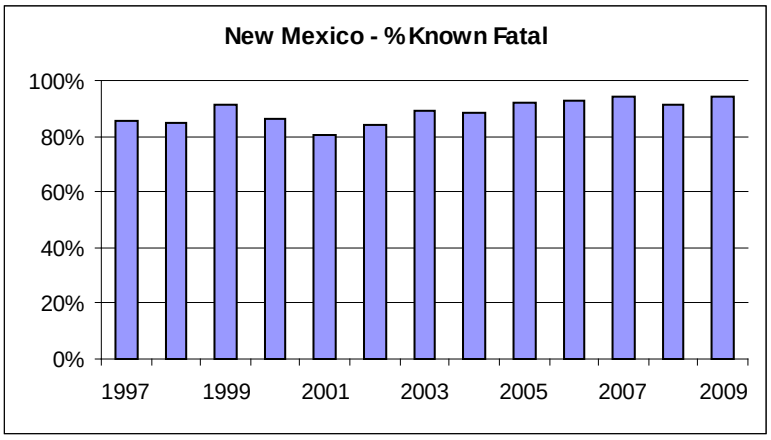
Table NM-1. New Mexico BAC testing and reporting, 2008 and 2009

Drivers	Fatally injured			Surviving		
	2008 Annual	2008 Final	2009 Annual	2008 Annual	2008 Final	2009 Annual
Total	204	204	221	241	241	233
Known BAC	187	187	208	168	168	200
%	91.7	91.7	94.1	69.7	69.7	85.8
Unknown BAC	17	17	13	19	19	19
%	8.3	8.3	5.9	7.9	7.9	8.2
Not Tested	0	0	0	51	51	12
%	0.0	0.0	0.0	21.2	21.2	5.2
Unknown if Tested	0	0	0	3	3	2
%	0.0	0.0	0.0	1.2	1.2	0.9

Source: FARS annual report and final files

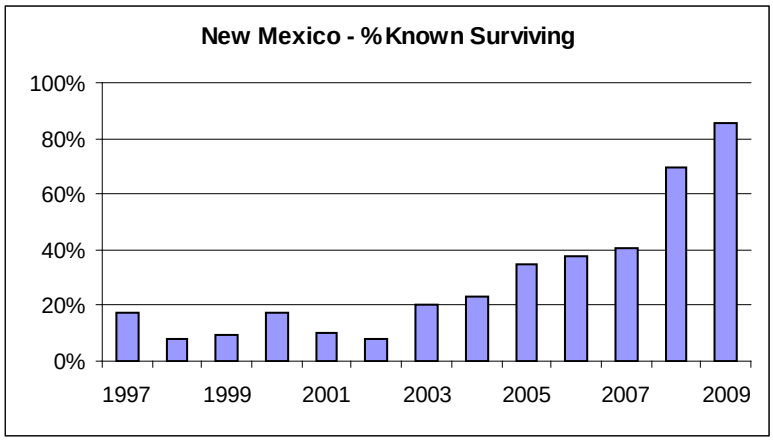
Figures NM-1 and NM-2 show the trends in the percentage of known BACs from 1997 to 2009 for fatally injured and surviving drivers, respectively. BACs are known for over 80 percent of fatally injured drivers in every year and over 90 percent in every year from 2005 on. Known BACs for surviving drivers increased steadily from 8.3 percent in 2002 to 85.8 percent in 2009.

Figure NM-1. New Mexico known BAC trend, fatally injured drivers, 1997-2009



1997-2008: FARS final file; 2009: FARS annual report file

Figure NM-2. New Mexico known BAC trend, surviving drivers, 1997-2009



1997-2008: FARS final file; 2009: FARS annual report file

Structure and roles of key organizations

FARS and the New Mexico Traffic Safety Bureau are units of the New Mexico Department of Transportation. The New Mexico State Police (NMSP) are in the Department of Public Safety. NMSP has jurisdiction throughout New Mexico except for tribal and military lands. NMSP investigates all traffic fatalities in their jurisdiction occurring outside city limits.

The Office of the Medical Investigator (OMI), which replaced the county coroner system in 1973, investigates all traffic fatalities except for some occurring on tribal lands. The OMI is a special program within the Department of Pathology at the University Of New Mexico School Of Medicine. Every county in New Mexico has trained and certified field deputy medical investigators.

The New Mexico State Laboratory in the Department of Health provides all toxicology services, including BAC analyses, for the OMI and also serves many law enforcement agencies.

Laws and policies

New Mexico's laws do not require a BAC test for any drivers in fatal crashes. The OMI's policy is to attempt to obtain a blood sample and BAC test for all fatally injured drivers.

New Mexico has very strict DWI laws, among the strongest in the nation. For example, first offense penalties include a mandatory six month license revocation followed by one year of alcohol interlock. A second offense leads to a mandatory four days in jail and two year license revocation followed by two years of interlock, and test refusal is treated as aggravated DWI with increased penalties (http://www.dps.nm.org/lawEnforcement/dwi/dwiPenalties.php). Because of these strict laws, defense attorneys challenge many DWI charges. As a result, law enforcement officers are very aware of the value of an accurate and well-documented BAC and work hard to obtain BACs whenever possible. NHTSA's Sec. 410 grants have provided an additional incentive to increase and maintain BAC testing and reporting rates.

New Mexico has steadily raised the priority of reducing alcohol-impaired driving over the last 15 years. In 2010, 83 New Mexico law enforcement agencies conducted and reported the results of checkpoints or saturation patrols. These special enforcement activities regularly reinforce the importance of reducing DWI in general, and of BAC testing in particular, with participating officers and agencies.

Obtaining a BAC test

The procedures vary depending on the driver's status.

Drivers who die at the crash scene. An officer from the NMSP or a city police department responds to the crash. A field medical investigator is called to the crash scene, draws a blood sample, and sends the sample to the State Laboratory for a BAC analysis.

Drivers who are seriously injured. Most seriously injured drivers are taken to hospitals. When a seriously injured driver is admitted, hospitals routinely draw a blood sample for medical purposes, analyze the sample, and enter the BAC on the driver's hospital record. If the driver subsequently dies, a medical investigator will respond. The medical investigator has access to the hospital's records and can obtain the driver's BAC from them. If needed, the medical investigator can subpoena the hospital records, but the process is so well-established throughout New Mexico that subpoenas are rarely needed.

HIPAA requirements do not allow hospitals to release BACs for surviving drivers without a subpoena. Investigating officers usually subpoena BACs only for drivers involved in a DWI investigation.

Drivers who are not seriously injured. Most officers will request a BAC test from all drivers involved in a fatal crash. If there is no evidence that a driver has been drinking, the driver may refuse the test, but most agree to the test.

Officers almost always will request a test for all drivers with any suspicion of alcohol involvement and certainly for all drivers for whom there is enough evidence to pursue a DWI charge. Again, a driver may refuse the test, but test refusal results in a charge of aggravated DWI, with a one-year license suspension and a mandatory two-day jail sentence (§66-8-102D & E). The BAC test can be either breath or blood, depending on the investigating agency's policy. Blood samples must be drawn by a qualified phlebotomist or medical staff person. Blood samples are sent for analysis to the State Laboratory or to a city laboratory for analysis.

Reporting BAC test results to FARS

Investigating officers call the FARS office directly, within a day, to report each fatal crash. The officer reports any drivers suspected of having been drinking and what BAC tests were given.

FARS obtains BACs from three sources: from a breath test administered by law enforcement, from analysis of a blood sample requested by law enforcement or a medical investigator, or from hospital records. Breath-test BACs are straightforward: the investigating officer enters breath test BAC results immediately on the crash report, which is sent to FARS.

Blood samples obtained by medical investigators from fatally injured drivers are sent to the State Laboratory for analysis. The Laboratory sends BAC results back to the OMI that in turn sends them to the investigating officer. The officer reports the results to FARS, either on the original crash report or, more usually, on a crash report supplement, if the original crash report already has been submitted (New Mexico requires all crash reports to be submitted promptly). The State Laboratory also enters the BAC on the laboratory's database and sends BACs directly to FARS in a bimonthly report. FARS staff can call the laboratory to obtain BACs for specific drivers.

Blood samples obtained by investigating officers from surviving drivers are sent to the State Laboratory or to another laboratory. The same overall process is followed. The laboratories report results directly to the investigating officer who passes them along to FARS.

BACs obtained by medical investigators from hospital records are entered into the OMI database and reported to FARS.

Tracking, follow up, and communications

If a blood sample was drawn and sent to the State Laboratory, the FARS office will check with the laboratory a few days after the crash to get the BAC results. The FARS staff has direct electronic access to both the OMI and Scientific Laboratory databases. They check these databases periodically for missing BACs. The FARS staff has excellent relations with staff in the State and other laboratories.

Fatal crashes on tribal lands

Some tribes have agreements with the NMSP to investigate fatal or serious injury crashes. The usual NMSP procedures are used for crashes on these tribal lands. There are no standard procedures for investigating crashes on lands of the remaining tribes, so it's highly uncertain whether a crash on these lands will be reported or investigated. Medical investigators do not have

jurisdiction on tribal lands. Medical investigators are called to some fatal crashes on tribal lands but not to others. FARS staff visit tribal headquarters two or three times each year to examine fatal crash records and obtain missing information. FARS staff estimate that BACs are not obtained for about 40 percent of crashes on tribal lands.

Who is missed?

Drivers who fail to have a BAC test may include:

- Drivers in crashes on tribal lands where the NMSP or medical investigators are not called.
- Surviving drivers who are not suspected of alcohol involvement.

Summary

Several factors contribute to New Mexico's extremely high rate of BAC testing and reporting.

Clear responsibility and strong policy: New Mexico's Office of the Medical Investigator (OMI), with jurisdiction throughout the States except on tribal lands, attempts to obtain a BAC for every fatally injured driver. Investigating law enforcement officers are responsible for obtaining BACs for surviving drivers. Most officers request tests from most drivers involved in fatal crashes.

Standard and straightforward procedures: The OMI responds to all traffic fatalities and obtains a blood sample, from drivers fatally injured at the crash scene, or a BAC from hospital records, for drivers who die after admission to hospitals. All blood samples are sent to the State Laboratory for analysis.

Prompt and regular reporting: Investigating officers call the FARS office directly to report each fatal crash. Both the OMI and the State Laboratory report results directly to FARS.

Excellent follow up and communications: FARS has direct electronic access to both the OMI and State Laboratory data files so can check for missing BACs. FARS staff has excellent personal relations with OMI and State Laboratory staff and will call to follow up on missing BACs. FARS staff visit tribal headquarters to obtain missing information on crashes occurring on tribal lands.

High priority: New Mexico has given high priority over many years to reducing DWI. It supports this priority with strong DWI laws and with regular checkpoints, saturation patrols, and public awareness activities throughout the State. BAC data are important both to help target DWI enforcement and also in overall DWI program design and evaluation.

Results: BACs are known for over 90 percent of fatally injured drivers in every year from 2005 on. Known BACs for surviving drivers rose from 8 percent in 2002 to 86 percent in 2009.

References

Calls and follow up emails

October 14, 2010: Robert Archuleta, Bureau Chief, Alcohol Enforcement Programs, TSB
October 21, 2010: Jimmy Montoya and Clarence Parea, FARS
October 25, 2010: Rong Hwang, New Mexico Scientific Laboratory
November 8, 2010: Amy Boulé, Director of Operations, Office of the Medical Investigator
November 10, 2010: Jim Allison, LEL, retired from the New Mexico State Police
November 22, 2010: Major Pete Kassetas, New Mexico State Police
December 9, 2010: Jim Davis, consultant, retired from University of New Mexico

Oklahoma

BAC testing and reporting status and trends

Table OK-1 shows Oklahoma's 2008 and 2009 BAC testing and reporting rates for drivers in fatal crashes. About 90 percent of the fatally injured drivers had known BACs each year. The remaining 10 percent were not tested. Testing status was known for all but one driver and there were no missing test results. For surviving drivers, 40.0 percent had known BACs in 2008 and 59.2 percent were not tested, again with very few with unknown test status or missing test results. Known BACs dropped to 33.5 percent in the 2009 annual report FARS file but may increase in the final file. FARS produces a data file for the previous year's crashes annually. NHTSA uses this data file for annual reports and Traffic Safety Fact Sheets, and refers to it as the annual report file. FARS continues to accept crash data for a full year after the crash date, and produces the final annual file, referred to as the final file. This additional time provides the opportunity for submission of important variable data requiring outside sources, which may lead to changes in the final counts.

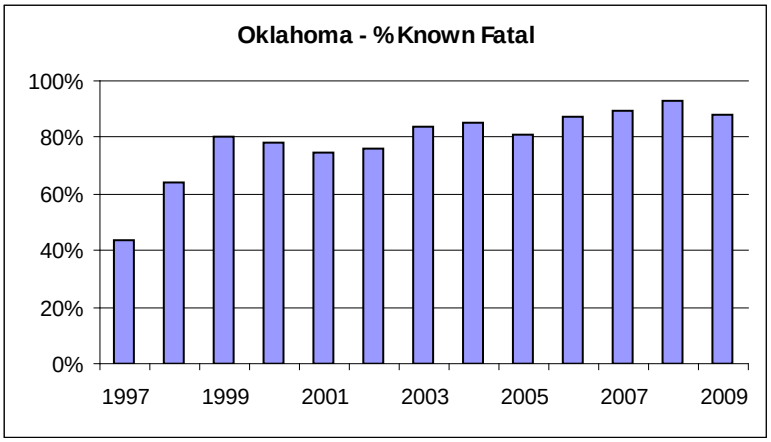
Table OK-1. Oklahoma BAC testing and reporting, 2008 and 2009

Drivers	Fatally injured			Surviving		
	2008 Annual	2008 Final	2009 Annual	2008 Annual	2008 Final	2009 Annual
Total	514	515	521	488	493	421
Known BAC	464	477	459	190	197	141
%	90.3	92.6	88.1	38.9	40.0	33.5
Unknown BAC	0	0	0	1	1	0
%	0.0	0.0	0.0	0.2	0.2	0.0
Not Tested	49	37	62	294	292	277
%	9.5	7.2	11.9	60.2	59.2	65.8
Unknown if Tested	1	1	0	3	3	3
%	0.2	0.2	0.0	0.6	0.6	0.7

Source: FARS annual report and final files

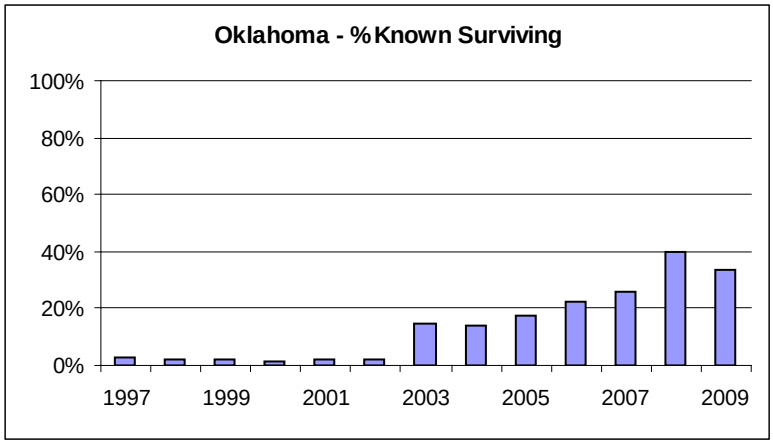
Figures OK-1 and OK-2 show the trends in the percentage of known BACs from 1997 to 2009 for fatally injured and surviving drivers, respectively. BACs were recorded for over 80 percent of fatally injured drivers in each year since 2003, with 90 percent or more in 2007 and 2008. Known BACs for surviving drivers rose steadily from 1.8 percent in 2002 to 40.0 percent in 2008 before dropping slightly in the 2009 annual report file.

Figure OK-1. Oklahoma known BAC trend, fatally injured drivers, 1997-2009



1997-2008: FARS final file; 2009: FARS annual report file

Figure OK-2. Oklahoma known BAC trend, surviving drivers, 1997-2009



1997-2008: FARS final file; 2009: FARS annual report file

Structure and roles of key organizations

Oklahoma's FARS office is located within the Highway Safety Office (HSO). The HSO and the Oklahoma Highway Patrol are part of the Oklahoma Department of Public Safety (DPS). The Highway Patrol investigates about 75 percent of Oklahoma's traffic fatalities. The Oklahoma Medical Examiner's Office is responsible for investigating all traffic fatalities.

Laws and policies

The Oklahoma Medical Examiner's office, which has jurisdiction throughout the State, is responsible for investigating deaths as defined by State statutes. Medical Examiner rules require a BAC test for all drivers who die within four hours of a crash **(**455:10-1-6) and the Medical Examiner's Office is responsible for obtaining a blood sample and conducting and reporting

these BAC tests. In practice, the Medical Examiner's Office attempts to obtain a BAC test from all driver fatalities.

Oklahoma law allows, but does not require, an investigating officer to request a BAC test for any driver involved in a fatal or serious injury crash who could be cited for any traffic offense – the citation establishes probable cause for this purpose (§47-10-104B). In practice, many investigating officers request a BAC test for surviving drivers only if they believe the driver was impaired by alcohol. If a driver refuses an officer's request in a fatal or serious injury crash, a blood sample may be drawn without the driver's consent (§47-753).

BAC tests for surviving drivers may be breath or blood, depending on the investigating agency's policy. Blood tests are standard for seriously injured drivers.

Obtaining a BAC test

Drivers who die at the crash scene. The Medical Examiner's Office is notified of the death and a medical examiner responds to the crash scene. The body is taken to a hospital, morgue, or funeral home, where the medical examiner obtains a blood sample. The blood samples are sent to the Oklahoma toxicology laboratory for testing.

Drivers who are seriously injured. Most seriously injured drivers are taken to hospitals for treatment. Most hospitals routinely draw a blood sample for medical purposes when a seriously injured person is admitted. If a driver dies within four hours of the crash, hospitals will release a portion of this admission blood sample to a medical examiner. If a driver survives more than four hours but dies, some hospitals will release a portion of the admission blood sample to a medical examiner.

If the investigating officer has probable cause to believe a surviving driver is impaired by alcohol, the officer may request the hospital to provide a blood sample. Hospitals usually will draw a blood sample if the driver consents. If the driver refuses or is not able to consent, the hospital still is authorized to provide a blood sample. Some hospitals will draw blood or provide the officer with a portion of the hospital's blood sample without the driver's consent but some will not. In Oklahoma, a blood sample must be drawn within two hours of a crash for the BAC to be used as evidence in a DWI charge. Officers send blood samples to the Oklahoma toxicology laboratory.

If there is no probable cause to suspect alcohol impairment, hospitals will not release their blood samples or BAC test results for surviving drivers due to HIPAA requirements.

Drivers who are not seriously injured. Investigating officers are trained to request a BAC test from drivers in a serious injury or fatal crash who could be cited for a traffic offense, as authorized by law. However, most officers will request a test only if they suspect alcohol impairment. Standard DWI procedures are followed. The driver is taken to a law enforcement agency. Depending on the agency's policy, a breath or blood sample is requested for a BAC test. If the driver refuses, a blood sample may be obtained by force, however, most agencies will not do this.

Reporting BAC results to FARS

All blood samples are sent to the Oklahoma toxicology laboratory for analysis. For drivers who die within four hours of the crash, the laboratory reports BAC test results to the Medical Examiner's Office, which reports them to the State Health Department that submits reports regularly to FARS. For drivers who survive more than four hours, the laboratory reports BAC test results directly to the FARS analyst.

Officers enter breath test results onto the crash report that is then sent to FARS.

Tracking, follow-up, and communications

A FARS analyst periodically checks fatal crash reports for missing BACs and sends a list to the Medical Examiner's Office. If there's no response in a reasonable time, a FARS analyst will call the Medical Examiner's Office or the investigating agency. State troopers sometimes contact agencies to track down missing test results.

Who is missed?

FARS has BACs for about 90 percent of Oklahoma's fatally injured drivers in recent years. The reasons why the remaining few are not tested include:

- Some fatally injured drivers in rural areas may not be transported to hospitals or a funeral home in time for a blood sample to be drawn within the four hours required for an accurate BAC reading.
- Some seriously injured drivers are taken to hospitals in an adjoining State where they subsequently die. The Oklahoma Medical Examiner's Office is responsible only for deaths that occur within Oklahoma, so they have no jurisdiction over these drivers. Hospitals in other States may not draw a blood sample promptly or may not release a portion of the sample or the BAC test results.
- A medical examiner may not be able to obtain a valid blood sample for some drivers who survive more than four hours before dying.

Surviving drivers usually are tested only if the investigating officer suspects they were impaired by alcohol. The 33 - 40 percent known BAC rates in 2008 and 2009 suggests that virtually all surviving drivers with a positive BAC were in fact tested. The rare exceptions likely include drivers in hit-and-run crashes, drivers who cannot be tested within the two-hour limit required for an evidential BAC, and drivers taken for treatment to hospitals in other States.

Summary

Fatally injured drivers

Oklahoma's outstanding testing and reporting is due to several factors.

Strong policy: Oklahoma medical examiner policy requires a BAC test for all drivers who die within four hours of a crash.

Clear and uniform responsibility: The Medical Examiner's Office, which has jurisdiction throughout Oklahoma, is responsible for conducting and reporting these BAC tests.

Standard procedures: A medical examiner responds to deaths at the crash scene and obtains a blood sample from the hospital, morgue, or funeral home. A majority of seriously injured drivers are transported to hospitals where blood is drawn upon admission. A medical examiner can obtain a portion of this blood sample for many of the drivers who subsequently die. All blood samples are sent to the Oklahoma toxicology laboratory for testing. The laboratory reports test results to the Medical Examiner's Office, who reports them to the State Health Department that in turn reports to FARS.

Excellent follow-up: A FARS analyst periodically checks for missing BACs and sends a list to the medical examiner.

Results: BACs were known for over 80 percent of fatally injured drivers in each year since 2003, with 90 percent or more in 2007 and 2008.

Surviving drivers

Oklahoma has increased its BAC testing and reporting substantially since 2002.

Useful law: Officers may request a BAC test from any driver involved in a fatal or serious injury crash who could be cited for a traffic offense.

Clear responsibility: Investigating officers are trained to obtain a BAC test from drivers in fatal or serious injury crashes who could be cited for a traffic offense, but most officers won't request a test unless they suspect the driver was impaired by alcohol. When a test is obtained, officers include the BAC in their crash report.

Excellent follow-up: The FARS analysts periodically check for missing BACs and follow up with investigating agencies. State troopers sometimes contact agencies to track down missing test results.

Results: Known BACs for surviving drivers rose steadily from 1.8 percent in 2002 to 40.0 percent in 2008 before dropping slightly in the 2009 annual report FARS file.

Overall

High priority, excellent staff, and close personal relationships: BAC testing is a high priority with the Highway Safety Office and FARS. Dedicated FARS analysts track down and record all possible BAC test results. The FARS analysts have established close personal relationships, good communications, and trust with key staff in other

organizations, including the Highway Patrol, other law enforcement agencies, and the Medical Examiner's Office.

References

Conference call on May 6, 2010, and follow-up emails with
Garry Thomas, Chief, Plans and Programs, Oklahoma Highway Safety Office
Kevin Behrens, Assistant Director, Oklahoma Highway Safety Office
Kathy Evans, data analyst, Oklahoma Highway Safety Office
Sue Rooks, FARS analyst, Oklahoma Highway Safety Office

Conference call on September 7, 2010, with
Cherokee Ballard, Medicolegal Executive Administrator, Office of the Chief Medical Examiner
Tim Dwyer, Investigator, Office of the Chief Medical Examiner

South Dakota

BAC testing and reporting status and trends

Table SD-1 shows South Dakota's 2008 and 2009 BAC testing and reporting rates for drivers in fatal crashes. About 80 percent of the fatally injured drivers had known BACs each year. The small percentage of unknown BACs increased slightly from 1.3 percent to 4.5 percent in the 2009 annual report file. The remaining 15 percent were not tested. Testing status was known for all drivers. For surviving drivers, 80.6 percent had known BACs in 2008 and 19.4 percent were not tested, again with almost none with unknown test status or missing test results. Known BACs increased to 85.2 percent in the 2009 annual report FARS file and the percentage of surviving drivers who were not tested dropped to 13.0 percent from 19.4 percent. FARS produces a data file for the previous year's crashes annually. NHTSA uses this data file for annual reports and Traffic Safety Fact Sheets, and refers to it as the annual report file. FARS continues to accept crash data for a full year after the crash date, and produces the final annual file, referred to as the final file. This additional time provides the opportunity for submission of important variable data requiring outside sources, which may lead to changes in the final counts.

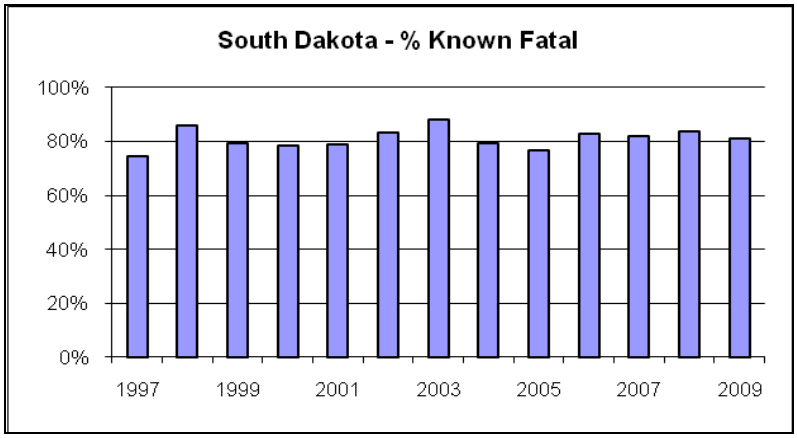
Table SD-1. South Dakota BAC testing and reporting, 2008 and 2009

Drivers	Fatally injured			Surviving		
	2008 Annual	2008 Final	2009 Annual	2008 Annual	2008 Final	2009 Annual
Total	80	80	89	65	67	54
Known BAC	67	67	72	52	54	46
%	83.8	83.8	80.9	80.0	80.6	85.2
Unknown BAC	1	1	4	0	0	1
%	1.3	1.3	4.5	0.0	0.0	1.9
Not Tested	12	12	13	13	13	7
%	15.0	15.0	14.6	20.0	19.4	13.0
Unknown if Tested	0	0	0	0	0	0
%	0.0	0.0	0.0	0.0	0.0	0.0

Source: FARS annual report and final files

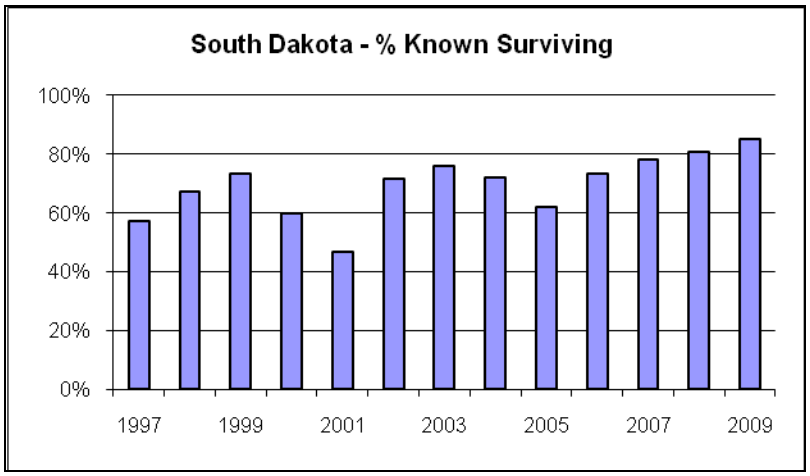
Figures SD-1 and SD-2 show the trends in the percentage of known BACs from 1997 to 2009 for fatally injured and surviving drivers, respectively. BACs were recorded for over 80 percent of fatally injured drivers in each year since 2006. Known BACs for surviving drivers rose steadily from 61.8 percent in 2005 to 85.2 percent in 2009 in the annual report file.

Figure SD-1. South Dakota known BAC trend, fatally injured drivers, 1997-2009



1997-2008: FARS final file; 2009: FARS annual report file

Figure SD-2. South Dakota known BAC trend, surviving drivers, 1997-2009



1997-2008: FARS final file; 2009: FARS annual report file

Structure and roles of key organizations

The Department of Public Safety (DPS) houses the South Dakota Highway Safety Office (HSO) and the South Dakota Highway Patrol (SDHP). FARS is housed in the Office of Accident Records within the enforcement section of the DPS. SDHP officers investigate about 80 percent of South Dakota's fatal crashes. The South Dakota Public Health Laboratory in Pierre, South Dakota, analyzes most blood samples from fatal crashes. Elected coroners investigate and sign the death certificate for all unattended accidental deaths in South Dakota.

Laws and policies

Coroners are required to take blood samples or cause to have blood samples taken for all fatally injured drivers as part of their investigation of a fatal accident. (34-25-22.1) The coroner is responsible for determining and reporting the BAC for all unattended deaths.

All surviving drivers in fatal or serious injury crashes must submit to a breath test at the request of an officer (32-23-1.2). The officer does not need to have reasonable suspicion of impairment by alcohol to administer a breath test. If the breath test indicates that alcohol is present, a blood test may be given. An officer may request a blood test upon reasonable suspicion of drugs or alcohol without the driver having the right to refuse (implied consent statute 32-23-10). This law was amended in 2006 and eliminated the right to refuse a blood test if requested by an officer upon reasonable suspicion of drugs or alcohol.

Obtaining a BAC test

Drivers who die at the crash scene. The coroner is notified of the death by law enforcement and the coroner responds to the crash scene. The body is taken to a hospital, morgue, or funeral home, where the coroner obtains a blood sample. The coroner sends the blood sample to the Public Health Laboratory in Pierre, South Dakota.

Drivers who are seriously injured. Most seriously injured drivers are taken to hospitals for treatment. Most hospitals routinely draw a blood sample for medical purposes when a seriously injured person is admitted. If the driver dies in transport to the hospital or while being treated in the hospital, the attending physician is responsible for determining the death and signing the death certificate. A coroner will be called to investigate the death. The coroner will request a blood sample if the law enforcement officer has not already requested one. Coroners or requesting law enforcement officers are responsible for transporting blood samples to the State Public Health Laboratory for those fatally injured drivers who died while under a physician's care.

If the investigating officer has reasonable suspicion that a seriously injured surviving driver is impaired by alcohol, the officer may request the hospital to draw a blood sample (using a kit provided by the law enforcement officer). Hospitals usually will cooperate and draw a blood sample. If the driver refuses or is not able to consent, the blood sample may still be taken by force if necessary but this scenario is rare. South Dakota Highway Patrol has existing contracts with on-call certified medical technicians in each county. If the hospital refuses to draw a blood sample, then a contract technician is called. Law enforcement officers send blood samples to the Public Health Laboratory in Pierre, South Dakota or to a private contracted toxicology laboratory.

If a driver received medical attention and there was no initial request for a blood draw at the time the driver was admitted to the hospital, medical records may be subpoenaed to obtain BAC information if further investigation of the crash determines that alcohol was involved. This happens very rarely. Very few alcohol impaired drivers are missed.

Drivers who are not seriously injured. Investigating officers are trained to request a breath test from all drivers in a serious injury or fatal crash, as authorized by law (32.23.1.2). It is standard procedure for all law enforcement agencies to administer a breath test with a PBT (Preliminary Breath Test) to all surviving drivers on scene. A positive PBT reading establishes reasonable suspicion of alcohol. The officer then requires a blood draw for a blood sample. Standard DWI procedures are followed. If the driver is arrested and in custody, a blood sample can be taken by

force if necessary. The blood sample is drawn by the contracted medical technician for that county and is sent to Public Health Laboratory in Pierre, South Dakota or a private contracted toxicology laboratory.

Reporting BAC results to FARS

Coroners are responsible for obtaining and reporting BAC results for all fatally injured drivers. The testing laboratory sends the BAC results to the requesting coroner who then sends the results to the law enforcement officer involved in the crash investigation. The law enforcement officer adds the BAC information to the crash report. Once the Department of Public Safety, Office of Accident Records receives the crash report from the investigating law enforcement agency, a copy of the crash report is sent to the FARS analyst. This occurs on a regular schedule since FARS is housed within the Office of Accident Records. When a BAC is not reported on the crash report, the BAC results are obtained from a monthly listing supplied by the SD Public Health Laboratory listing the crash victims and their BAC results.

South Dakota Highway Patrol files a major incident report for every fatal crash investigated and sends it to the FARS analysts. The South Dakota Public Health Laboratory also sends FARS a monthly listing of all BACs for fatal crash victims.

If a fatal crash is investigated by a police agency other than the South Dakota Highway Patrol, FARS may not be notified immediately but will learn that a crash accident occurred when the crash report is submitted or when the Office of Vital Records supplies them with a monthly listing of victims with the cause of death listed as car accident. FARS will search for non-reported fatal crashes by checking media outlets for broadcasts of fatal crashes. FARS also refers to preliminary fatality reports through the State radio dispatch. This is the South Dakota Highway Patrol teletype system where local sheriff offices and other police departments call in fatal accidents either by phone or over the State radio. A listing of all fatal crashes that occur in the State is compiled through the State radio dispatch. South Dakota Highway Patrol prints and distributes this list to FARS staff.

Reservations and Sovereign Nations

FARS often isn't notified of fatal crashes occurring on reservations. Without notifications of fatal crashes from tribal police, FARS will access vital records to find these fatally injured drivers, but these records will not include BAC or surviving driver information. FARS analysts must attempt to find BAC information on those fatal crashes by other means. This is where some BAC information is missed.

Law enforcement liaisons are an integral part of developing relationships with tribal leaders in the Native American reservations. A recent memorandum of understanding between one of the nine tribal leaders and the Department of Public Safety has been established as a result of these growing relationships. The Oglala-Sioux tribe now works more closely with the South Dakota Highway Patrol in the event of a serious injury or fatal crash. Oglala Sioux Tribal police will contact the South Dakota Highway Patrol to request aid in crash investigations on reservation highways. Continued efforts will be an on-going process until all reportable crashes are shared with the Accident Records program. The investigation procedures for these crashes will follow

the standard South Dakota Highway Patrol protocol for serious injury or fatal crashes including obtaining blood samples for BAC information. The SDDOT, FHWA, and highway safety offices conducted a two day tribal summit on October 26th, 2010, to discuss potential future involvement to achieve this same memorandum with other South Dakota Native American Tribes.

Tracking, follow-up, and communications

A FARS analyst periodically checks fatal crash reports for missing BACs and sends a list to the South Dakota Public Health Laboratory and to the South Dakota Accident Records Department. If there's no response in a reasonable time, a FARS analyst will call the South Dakota Public Health Laboratory or the investigating agency.

Who is missed?

FARS has BACs for about 80 percent of South Dakota's fatally injured drivers in recent years. The reasons why the remaining few are not tested include:

- Blood draws for blood tests will not be taken for most drivers admitted to hospitals that did not sustain traumatic injuries at the time of the crash and are not suspected of alcohol impairment. If a driver with only minor injuries dies days later from complications of the crash then no BAC is likely to be available.

- Fatal injury crashes that occur on reservations other than the Oglala-Sioux may also be missed.

For surviving drivers who are not seriously injured, blood draws for blood tests are not taken without reasonable suspicion of alcohol. If a PBT is not administered on scene, there will be no BAC information for surviving drivers who are not suspected of alcohol. The 80.6 percent and 85.2 percent known BAC rates in 2008 and 2009 suggests that virtually all surviving drivers with a positive BAC were tested.

Summary

Fatally injured drivers

South Dakota's outstanding testing and reporting is due to several factors.

Strong law: A BAC test is required for drivers killed in traffic crashes.

Clear responsibility: The coroner is responsible for determining and reporting the BAC for unattended deaths. The attending medical physician is responsible for determining the death and signing the death certificate of fatally injured drivers who die during their care. Coroners or SDHP officers are responsible for requesting and transporting blood samples to the State Public Health Laboratory for drivers who die while under a physician's care.

Standard procedures: The State Public Health laboratory sends toxicology results upon completion directly to the coroner or requesting officer.

Excellent communications and follow-up: FARS analysts regularly check for missing BACs and follow up with the appropriate law enforcement and coroners when needed, which is rare. The South Dakota State Toxicology laboratory sends monthly BAC listings to FARS.

Results: BACs were known for 75-85 percent of South Dakota's fatally injured drivers in every year since 1997.

Surviving drivers

South Dakota has increased its BAC testing and reporting substantially since 2001.

Strong law and clear responsibility: Officers investigating a fatal crash are expected to make all reasonable efforts to obtain a BAC for each surviving driver. Revision of the implied consent law in 2006 allows no one to refuse a blood test at the request of an officer.

Clear procedures: Officers are trained at the academy level to administer PBTs to all drivers involved in fatal or serious injury crashes, with or without reasonable suspicion of alcohol.

Excellent follow-up: FARS analysts regularly check for missing BACs and follow up with the investigating officer if necessary.

Results: Known BACs for surviving drivers rose steadily from 61.8 percent in 2005 to 80.6 percent in 2008.

Overall

High priority, excellent staff, and close personal relationships: BAC testing is a high priority for the South DPS. FARS analysts, SDHP officers, and South Dakota HSO staff track down and report all BAC test results.

Excellent communications and relationships: All agencies involved have established close and personal relationships with many coroners, hospitals, EMS, LELs, tribal leaders, law enforcement officers, and toxicology laboratories. The location of FARS within traffic records also increases access to crash reports.

References

Meeting July 19, 2010, at the Department of Public Safety
Tara Casanova, Preusser Research Group
Secretary Tom Dravland, Department of Public Safety Secretariat Office
Lee Axdahl, Director, Office of Highway Safety
Paul Bachand, Traffic Safety Resource Prosecutor, Attorney
Pat Englehart, Management Analyst, Office of Highway Safety

Meeting July 20, 2010, at the South Dakota State Health Laboratory
Tara Casanova, Preusser Research Group
Sergeant Ryan Mechaley, DRE Coordinator, South Dakota Highway Patrol
Chuck Fergen, FARS Supervisor, Office of Highway Safety, Accident Records
Lee Axdahl, Director, Office of Highway Safety
Robin Gadd, St. Mary's Healthcare Center, Director of Nursing
Paul Bachand, Traffic Safety Resource Prosecutor, Attorney
Vevette Walker, FARS Analyst, Office of Highway Safety, Accident Records
Stacey Ellwanger, South Dakota State Health Laboratory
Danny Hayes, Director EMS, Department of Public Safety
Roland Loudenburg, M.P.H., Mountain Plains Evaluation
JC Carpenter, Director of Homeland Security
Pat Englehart, Management Analyst, Office of Highway Safety

DOT HS 811 661
August 2012

U.S. Department
of Transportation
**National Highway
Traffic Safety
Administration**

8439-092712-v5