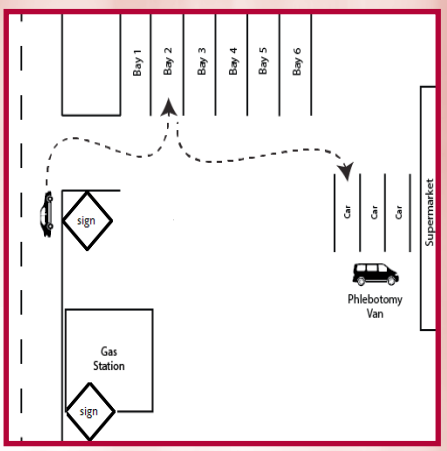
2013–2014 National Roadside Study of Alcohol and Drug Use by Drivers

METHODOLOGY



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Suggested APA Format Citation:

Kelley-Baker, T., Lacey, J. H., Berning, A., Ramirez, A., Moore, C., Brainard, K., … Pell, K. (2016, July). *2013-2014 National Roadside Study of alcohol and drug use by drivers: Methodology* (Report No. DOT HS 812 294). 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 812 294		

4. Title and Subtitle	5. Report Date
2013-2014 National Roadside Study of Alcohol and Drug Use by Drivers: Methodology	July 2016
	6. Performing Organization Code
7. Author(s) Tara Kelley-Baker, John H. Lacey, Amy Berning, Anthony Ramirez, Christine Moore, Katharine Brainard, , Julie Yao, A. Scott Tippetts, Eduardo Romano, Katherine Carr, and Karen Pell	8. Performing Organization Report No.
9. Performing Organization Name and Address Pacific Institute for Research and Evaluation 11720 Beltsville Drive, Ste. 900, Calverton, Maryland 20705	10. Work Unit No. (TRAIS)
	11. Contract or Grant No. DTNH22-11-C-00216
12. Sponsoring Agency Name and Address National Highway Traffic Safety Administration Office of Behavioral Safety Research 1200 New Jersey Avenue SE. Washington, DC 20590	13. Type of Report and Period Covered Final Report
	14. Sponsoring Agency Code

15. Supplementary Notes

Amy Berning served as the project manager for this project.
The National Institute on Drug Abuse (NIDA) provided funding for a prescription survey.
The Insurance Institute for Highway Safety (IIHS) also provided funding.

16. Abstract

This report describes the methodology for the National Roadside Study (NRS), a national field study to estimate the prevalence of alcohol-, drug-, and alcohol-plus-drug-involved driving primarily among nighttime weekend drivers, but also daytime Friday drivers. This study involved randomly stopping drivers at 300 locations across the continental United States. The locations were selected through a stratified random sampling procedure. Researchers collected the data during a 2-hour Friday daytime session (either 9:30 a.m. to 11:30 a.m. *or* 1:30 p.m. to 3:30 p.m.) at 60 locations and during four 2-hour nighttime periods (10 p.m. to midnight and 1 a.m. to 3 a.m. on Friday and Saturday nights) at 240 locations, for a total of 300 locations. Data included both self-report and biological measures. Self-report portions were funded by the National Institute of Drug Abuse (NIDA) and the Insurance Institute for Highway Safety (IIHS). An objective was to obtain at least 7,500 oral fluid samples for analysis. Oral fluid and blood samples were subjected to laboratory screening and liquid chromatography-mass spectrometry (LC/MS/MS; the term MS/MS is the combination of two mass analyzers in one mass spec instrument) and gas chromatography-mass spectrometry (GC/MS) confirmation respectively for alcohol and six classes of drugs, allowing researchers to estimate a national prevalence of alcohol and other drugs in drivers. This report describes the field methods used to conduct this study, including data collection procedures. The report also details overall response rates. Two additional reports will present the results of the data collection and analyses. One will focus on alcohol-use prevalence estimates among drivers and compare them with previous NRS results from studies conducted in 1973, 1986, 1996, and 2007. The other will provide drug-use prevalence estimates among drivers, including comparison to the 2007 numbers. This will then present the first trend data on on-road drug-positive driving in the United States. All drivers' responses were completely voluntary and anonymous.

17. Key Words	18. Distribution Statement
Alcohol and driving, drugs and driving, roadside survey, impaired driving, drugged driving, alcohol-involved driving, drug-involved driving	Document is available to the public from NHTSA at www.nhtsa.gov and 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	183	

Form DOT F 1700.7 (8/72) **Reproduction of completed page authorized**

Acknowledgements

We appreciate the assistance from State and local officials. Data collection procedures were not routine, and the willingness of State officials to help identify local police agencies, and the willingness of those agencies to participate in the project, were essential. Without their help, this research could not have been conducted.

The Pacific Institute for Research and Evaluation (PIRE) obtained an investigator-initiated grant to study issues on alcohol and drug use. This NHTSA-funded study of alcohol and drug use by drivers provided a unique opportunity for PIRE to collect information relevant to NHTSA's grant. PIRE requested and received NHTSA permission to collect this information in conjunction with its survey of alcohol and drug use by drivers, after a determination was made that doing so would not detract or impede the NHTSA-funded activities.

To ensure the anonymity of drivers in the survey, none of the photos of "drivers" in this report include actual subjects. These photos were taken during staff training to illustrate the study's protocol.

Acronyms and Abbreviations

AUD	alcohol use disorders
AUDADIS	Alcohol Use Disorders and Associated Disabilities Diagnostic Interview Schedule
AUDIT	Alcohol Use Disorders Identification Test
BAC	blood alcohol concentration
BrAC	breath alcohol concentration
CoC	chain of custody
CNS	central nervous system
DAST	Drug Abuse Screening Test
DIN	driver identification number
DOT	Department of Transportation
DSM	Diagnostic and Statistical Manual of Mental Disorders
DUD	drug use disorders
ELISA	enzyme-linked immunosorbent assay
GC/MS	gas chromatography-mass spectrometry
g/dL	grams per deciliter
GHSP	Governor's Highway Safety Programs
IDP	impaired driver protocol
IIHS	Insurance Institute for Highway Safety
lc/ms/ms	liquid chromatography-mass spectrometry
LEA	law enforcement agency
MDMA	methylenedioxymethamphetamine
mg/dL	milligram per deciliter
mL	milliliter
NASS/CDS	National Automotive Sampling System/Crashworthiness Data System
NASS/GES	National Automotive Sampling System/General Estimates System
NHTSA	National Highway Traffic Safety Administration
NIDA	National Institute on Drug Abuse
NRS	National Roadside Study
PAS	passive alcohol sensor
PBT	preliminary breath tester
PCP	phencyclidine
PI	principal investigator
PIRE	Pacific Institute for Research and Evaluation
PPS	probability proportion to size
PSU ….	primary sampling unit
QC	quality control
SAS	Statistical Analysis System
SM…	survey manager
SSRI	selective serotonin reuptake inhibitor
THC-Hydroxy	11-hydroxy- delta-9-tetrahydrocannabinol
THC…	delta-9-tetrahydrocannabinol
THC-COOH	11-nor-9-carboxy-delta -9 tetrahydrocannabinol

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Executive Summary

Background

Since 1973, five national surveys of U.S. drivers have estimated the prevalence of drinking and driving, and determined how this prevalence has changed over time.

The National Highway Traffic Safety Administration (NHTSA) sponsored the first National Roadside Survey (NRS) in 1973 (Wolfe, 1974). The second NRS was sponsored by the Insurance Institute for Highway Safety (IIHS) in 1986 (Lund & Wolfe, 1991). The third NRS was jointly sponsored by the IIHS and NHTSA in 1996 (Voas, Wells, Lestina, Williams, & Greene, 1998). These three studies used the same basic methodology, which included a brief verbal survey and a breath sample to measure driver breath alcohol concentration (BrAC)[1].

The fourth NRS, sponsored by NHTSA, was conducted in 2007, with additional funding from the National Institute on Alcohol Abuse and Alcoholism (NIAAA), the National Institute on Drug Abuse (NIDA), and the National Institute of Justice. As in the prior studies, this study included a verbal survey and breath sample, but also added additional self-administered surveys and the collection of oral fluid and blood to determine the presence of other drugs in the driving population (Lacey, Kelley-Baker, Furr-Holden, Voas, Moore, et al., 2009). Self-report elements of the 2007 NRS were funded by NIDA and NIAAA.

This fifth NRS was funded by NHTSA, with additional funding from NIDA and IIHS. This 2013-2014 NRS replicated the basic methodology used in the 2007 NRS, with protocol updates to include recent technological advancements and incorporate lessons learned during the 2007 study. Self-report elements of the 2013-2014 NRS were funded by NIDA and IIHS. A prescription drug survey, funded by NIDA, was added.

All five studies were based on a national probability sample from the 48 contiguous states.

Objective

The objective of this study was to estimate the prevalence of alcohol and/or other drugs in drivers across the country. Researchers interviewed more than 11,000 drivers to determine their alcohol concentrations and identify the presence of various over-the-counter, prescription, and illegal drugs in their systems. All interactions with subjects were voluntary and anonymous.

Methodology

Data included self-reported information, breath samples, oral fluid samples, and blood samples. The goal for each of the 60 sites was 125 oral fluid samples. Each site included 5 different locations, for a total of 300 locations.

[1] In this report, most references to alcohol concentration, both in the text and in tables, concern breath test alcohol concentrations, which will be referred to as BrAC. A few references, mostly in tables, include both breath alcohol concentrations and blood alcohol concentrations. In those instances, we will note that we are referring to both BrAC and BAC.

The sites were selected from the primary sampling units (PSUs) of the NHTSA National Analysis Sampling System/General Estimates System (NASS/GES). The NASS/GES PSUs are cities, large counties, or groups of counties from within four regions of the country and three levels of population density. Researchers recruited assistance from law enforcement agencies (LEAs) in these 60 sites. When law enforcement agencies declined to support the study, replacement sites were selected. Within each PSU, researchers randomly selected 30 specific square-mile grid areas and identified five data collection locations (a safe area to conduct the survey, with sufficient traffic flow for an adequate number of subjects[2]). Drivers were randomly selected from the traffic flow. This multistage sampling system replicated the one used in the four prior NRSs (1973, 1986, 1996, and 2007).

Researchers used a self-report screening instrument to detect alcohol use disorders (AUDs); and a similar instrument for drug use disorders (DUD), and the Drug Abuse Screening Test (DAST) examined potential drug abuse. Administration of these surveys was funded by NIDA and IIHS. New to the 2013-2014 NRS was the inclusion of a self-report prescription drug use questionnaire, funded by NIDA. These data will be reported through the funding partners.

The protocol is summarized below. One or two law enforcement officers were present at each site for the safety of the drivers and the research teams. The law enforcement officers were not involved with interviewing drivers or any component of data collection. Large reflective orange roads signs indicated that the survey was voluntary.

Vehicles guided into survey area: Randomly-selected drivers were guided into the research location, usually an empty parking lot. In some locations, the police officers assisted with traffic direction.
Vehicles guided into individual research bay: A traffic director guided the vehicle into a specific research bay. Typically, six bays were set up; each was marked by orange traffic cones.
Observational driver data: The data collector noted easily observable information about the driver(e.g., estimated age and race/ethnicity), and he or she recorded those data into an electronic tablet.
Consent for interview: The data collector briefly explained the purpose of the study and that it was voluntary and anonymous. The data collector asked the driver for verbal consent for continuing the discussion. Researchers offered drivers financial incentives for completing additional parts of the survey. If the driver declined to participate, the data collector asked the driver if they were willing to provide an anonymous breath sample before the driver left the location. Drivers who were not willing, drove on.
PAS reading: The data collector obtained an initial passive alcohol sensor (PAS) reading for the driver and recorded the result into the tablet.
Survey interview questions: If the driver consented, the data collector asked a few questions regarding the subject's general drinking behavior, driving patterns, and driving on that particular night (or day); the data collector entered this information into the tablet.
Breath test: The data collector requested a breath sample from the driver. For drivers who consented, the sample was collected using a preliminary breath test (PBT) device, which masked the result, so neither the data collector nor driver knew the alcohol concentration. No identifying information was collected about the driver.

[2] This report uses the terms "driver" and "subject" interchangeably. The same is true of the terms "PSU" and "site."

Oral fluid test: The data collector requested an oral fluid sample from the driver. If the driver consented, the driver placed an oral fluid collection swab in his/her mouth for three to five minutes to collect approximately 1 milliliter (mL) of saliva.
Self-administered questionnaire: While the swab was in the driver's mouth, s/he completed self-administered anonymous alcohol and drug surveys on the tablet while the oral fluid swab was in his/her mouth.

a. *Drug-use survey:* Use of illicit drugs and, if the driver had used a drug, how long ago he or she had done so.
b. *Prescription drug survey:* Use of medications and/or prescribed drugs/medicines.
c. *DAST survey:* use of selected drugs, excluding alcohol and tobacco, during the past 12 months.
d. *DUD survey*: Use of marijuana, cocaine, and pain killers.
e. *AUD survey*: Use of alcohol, and to detect alcohol problems experienced in the past year.

Passenger survey: If there was a front-seat passenger, researchers asked the passenger to complete a paper-and-pencil self-report survey while the driver was responding to the self-administered questionnaire.
Payment: The subject received payment for completing the initial phases of the survey ($10 for oral fluid sample). Front-seat passengers who completed the passenger survey received $5.
Blood sample: The data collector requested a blood sample. If the driver consented, the data collector led the subject to a nearby van, where a certified phlebotomist drew blood according to Occupational Safety and Health Administration (OSHA) standards. The subject received a $50 money order for providing the blood sample.
Observational Vehicle Information: The data collector noted easily observable information about the vehicle and recorded those data (e.g., type of vehicle, number of passengers, and seat belt usage) into an electronic tablet. No personally identifiable information, such as license plate, driver's license, or vehicle registration, was collected or recorded.
Completion: The traffic director guided the driver from the research bay and back onto the roadway.
Driver information card: The data collector completed this form to facilitate tracking and merging of data.
Impaired driver protocol (IDP): If the data collector suspected the driver may have been drinking to any degree, or was otherwise impaired, a supervisor intervened and obtained a breath alcohol reading using an unmasked PBT device. If the driver's BrAC was at or above .05,[3] the research team ensured he or she got home safely.

Slight modifications to protocol during data collection: In the beginning of the study, a small sample of drivers who initially declined to participate was offered an additional $100 incentive to reconsider participation. Halfway through the study, however, researchers stopped attempting to convert such drivers. Further, approximately two-thirds of the way through the study, researchers made a slight change to the protocol for using the passive sensors to accommodate feedback from law enforcement and the general public. An initial passive reading (collected prior to consent) was eliminated.[4] Also, two-thirds of the way into the study, subjects were guided to the

[3] This threshold was deliberately selected for the safety of the drivers in our study.
[4] This initial passive reading measured ambient air coming from the vehicle interior. This reading does not measure BrAC, but rather alcohol concentration in the ambient air, in order to provide the researcher with an indication of

data collection location only by members of the research team. Additional variable message signage was also added – the sign indicated that the survey was paid and voluntary.

Results

This report presents only the methodology for the 2013-2014 study; results are in two separate reports - one on the prevalence of alcohol among drivers; and one on the prevalence of drugs among drivers.

As indicated in Table 1, we selected more than 14,167 vehicles to participate in the 2013-2014 NRS; of these, 11,322 entered the data collection location, and 11,100 drivers were eligible to participate (e.g., commercial vehicles such as pizza delivery cars, emergency vehicles such as ambulances, drivers under the age of 16, and drivers who could not communicate in either English or Spanish were ineligible to participate). Almost 80% of eligible drivers participated in the survey, and because some drivers who declined to participate in the survey agreed to provide a breath sample, BrACs from the PBTs were available for 85% of the eligible drivers. Among eligible drivers, 71% provided an oral fluid sample, 67% completed a drug questionnaire and/or the AUD questionnaire, and 42% of drivers provided a blood sample.

Table 1. Participating Drivers

				2007			2013-2014		
	1973	1986	1996	Daytime	Nighttime	Total	Daytime	Nighttime	Total
Signaled to enter location	--	3,260	6,480	3,516	9,553	13,069	3,385	10,782	14,167
Did not enter location [a]	--	217	182	933	1,016	1,949	711	2,134	2,845
Stopped and entered location	--	--	--	2,583	8,537	11,120	2,674	8,648	11,322
Eligible	3,698	3,043	6,298	2,525	8,384	10,909	2,617	8,483	11,100
Entered location and interviewed	3,353 90.7%	2,971 97.6%	6,045 96.0%	2,174 86.1%[b]	6,920 82.5%[b]	9,094 83.4%[b]	2,174 83.1%[b]	6,630 78.2%[b]	8,804 79.3%[b]
Valid breath sample	3,192 86.3%	2,850 93.7%	6,028 95.7%	2,254 89.3%[b]	7,159 85.4%[b]	9,413 86.3%[b]	2,361 90.2%[b]	7,094 83.6%[b]	9,455 85.2%[b]
Oral fluid sample	--	--	--	1,850 73.3%[b]	5,869 70.0%[b]	7,719 70.7%[b]	1,986 75.9%[b]	5,895 69.5%[b]	7,881 71.0%[b]
Blood sample	--	--	--	N/A[c]	3,276 39.1%[b]	N/A[c]	1,263 48.3%[b]	3,423 40.4%[b]	4,686 42.2%[b]
AUD and/or drug questionnaire	--	--	--	1,889 75.2%[b]	5,983 71.4%[b]	7,882 72.2%[b]	1,848 70.6%[b]	5,592 65.9%[b]	7,440 67.0%[b]
Passenger questionnaire	--	--	--	220 8.7%[b]	1,393 16.6%[b]	1,613 14.8%[b]	Pending	Pending	Pending

[a] When this number was not available (i.e., for six locations and 21 sessions), researchers estimated it based on the type of police involvement at the location.
[b] Percentage of eligible drivers.
[c] N/A (not applicable) because blood samples were not collected at daytime sessions.

whether someone in the vehicle had been drinking. This information would assist the researcher in ensuring that the driver was capable of consenting to participate, and also to ensure the safety of the driver and the passenger(s).

Introduction

Purpose

This study examined the prevalence of alcohol[5]- and drug-positive driving on U.S. roads on weekends. Primary funding for this study was from NHTSA. NHTSA's contractor, the Pacific Institute for Research and Evaluation (PIRE) obtained an investigator-initiated grant to study issues on alcohol and drug use from the National Institute on Drug Abuse (NIDA).[6] The Insurance Institute for Highway Safety (IIHS) also provided funding for self-reported data on alcohol and drug use and abuse directly to PIRE.

This report describes the sampling plan and data collection methodology, and summarizes the response rates at various stages of this multipart survey. A separate report presents the prevalence estimates for alcohol-positive driving and compares them with the four previous NRS studies. Another report presents the prevalence estimates of drug-positive drivers and compares them with those found in the 2007 NRS.

Background

Four NRSs have previously been conducted, in 1973, 1986, 1996, and 2007 (Lacey, Kelley-Baker, Furr-Holden, Voas, Moore, et al., 2009; Lund & Wolfe, 1991; Voas, et al., 1998; Wolfe, 1974). In these surveys, researchers selected drivers at random from weekend night (and Friday day in the 2007 survey) traffic on representative roadways across the 48 contiguous U.S. States. In the first three surveys, once the driver was pulled to the side of the road, he or she was asked to provide a breath sample and to answer a few questions about general driving behavior, and about drinking and driving behavior. In the 2007 survey, for the first time, researchers also asked drivers to provide a voluntary oral fluid and blood sample. They also asked drivers to answer questions on drug use as well as complete an Alcohol Use Disorder (AUD) screening instrument.

These studies provide critical trend data on the prevalence of alcohol-positive drivers on the road, and the alcohol concentrations of drivers. There were declines in the prevalence of drivers who were alcohol-positive, and drivers at or above the current illegal *per se* limit of .08 grams per deciliter (g/dL[7]) (Figure 1). Between 1973 and 2007, there was a decrease in alcohol-positive drivers (BrAC $\leq$ .049) on Friday and Saturday nights from 22.3% to 7.9%, and drivers who had a BrAC of .08 g/dL or higher decreased from 7.5% to 2.2%.

[5] The term alcohol in this report refers to ethanol or ethyl alcohol.

[6] NIDA Grant #1R21DA034950, "Characterizing Prescription Drug Use in a Representative Sample of U.S. Drivers"

[7] "BAC" – blood alcohol concentration – has typically been used in the research literature on alcohol-positive driving, regardless of whether the specimen measured was blood or breath. NHTSA is now using the more specific BrAC – Breath Alcohol Concentration - when the data or concept is specific to breath, rather than to breath *or* blood. At times, the more general alcohol concentration" (AC) is also appropriate. When measured in blood, the unit of measurement is grams per deciliter (g/dL). When measured in breath, the unit of measurement is grams per 210 liters (g/210 L).

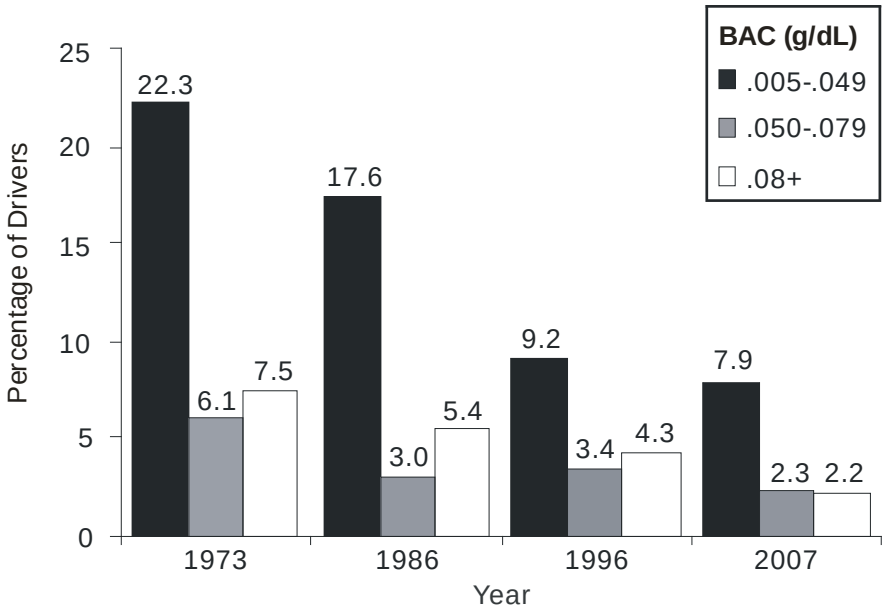

Figure 1. Percentage of Nighttime Drivers in Three BAC Categories in the prior Four NRSs

The 2007 survey provided a first look at the prevalence of drug-positive drivers on the road. Researchers tested subjects' oral fluid and blood samples for the presence of a large number of potentially impairing drugs including over-the-counter, prescription, and illegal drugs such as stimulants, sedatives, antidepressants, marijuana, and narcotic analgesics.

This report describes the methods used in the sampling and data collection and biological specimen analysis portions of the 2013-2014 NRS.

Project Objectives

The overall objective of this study was to estimate the prevalence of alcohol- and drug-positive driving on U.S. roadways. More than 11,000 drivers were involved. The objectives included:

- determine the prevalence of drivers at various BACs/BrACs,
- determine the prevalence of drivers having various types of drugs (i.e., over-the-counter, prescription, and illegal) in their system,
- determine the prevalence of drivers with alcohol *and* drugs in their system, and
- analyze alcohol and drug data, including trend and other analyses, using data from this survey and past roadside surveys.

This methodology report describes the steps to collect self-report data and biological specimens that, when analyzed, answer the following key research questions, among others:

- What is the prevalence of alcohol-positive nighttime weekend (and Friday daytime) drivers on the road?
- What is the BrAC distribution for those drivers?
- What percentage of those drivers has a BrAC of .08 or higher?
- What is the prevalence and concentrations of selected over-the-counter, prescription, and illegal drugs in drivers on the road?
- What percentage of drivers are both alcohol-positive and drug-positive?
- What percentage of .08 and higher BrAC drivers are also drug-positive?
- What information is available to characterize the drivers who declined to participate in the study or provide a breath and/or oral fluid sample (e.g., driver demographics and the percentage of alcohol-positive drivers as determined by a PAS reading)?
- To what extent do such data reveal potential biases in the data, and to what extent can researchers use such measures to correct the results for such biases?
- Do the drivers who provide oral fluid samples but not blood samples differ in a systematic way from those who provide both?
- How does the data regarding the prevalence of alcohol in drivers in the 2013-2014 survey compare to 1973, 1986, 1996, and 2007 survey data?
- How does the data regarding the prevalence of drugs in drivers in the 2013-2014 survey compare to 2007 survey data?
- What is the prevalence of alcohol use disorders among the sampled driver population? How does the driver self-report information and the observations of drivers relate to drinking and drug-use patterns?

Survey Sampling Procedures

Because it is not feasible to conduct surveys on all the roads in the U.S., constructing a nationally representative sampling system was necessary. This effort required interviewing several thousand of the more than 212 million licensed drivers using U.S. roads (Federal Highway Administration, 2006, 2012; Lunn et al., 1979). The first three NRSs (conducted in 1973, 1986, and 1996) limited the area of coverage to the 48 contiguous states. Researchers conducted the studies between 10 p.m. and midnight, and between 1 a.m. and 3 a.m. on Friday and Saturday nights, when heavy drinking was most likely to occur and alcohol-involved crashes were most frequent (Lestina, Greene, Voas, & Wells, 1999). From a practical standpoint, these national surveys had to limit survey locations to roadways with sufficient traffic to provide enough interviews to justify the expense of employing a survey crew. Thus, researchers did not survey counties with populations of less than 20,000. In counties with larger populations, researchers only surveyed roadways with 2,000–4,000 average daily traffic counts. The surveys excluded commercial and emergency vehicle operators and motorcycles. Thus, the first three NRSs provided information on private four-wheel vehicle operators at randomly selected locations during periods when drinking and driving was most prevalent.

The fourth NRS, conducted in 2007, differed from the first three NRSs in several key points. Similar to the previous surveys, the objective of the 2007 NRS location sampling plan was to select a representative sample of locations in the contiguous United States that would provide an

adequate number of drivers for analysis and a safe environment for both the drivers and the research team. New in 2007, NHTSA added daytime data collection periods (Fridays from either 9:30 a.m. to 11:30 a.m. or 1:30 p.m. to 3:30 p.m.). Researchers randomly selected these daytime collections for each PSU[8] along with the weekend evening data collection periods covered in the previous NRS.

Although the 1996 survey did not include counties with populations of fewer than 20,000 people or, in larger counties, roadways with less than a 2,000–4,000 average daily traffic count; the 2007 survey did not exactly follow these guidelines because the number of drivers who could feasibly be surveyed at the locations was smaller. However, traffic flow was considered when identifying survey locations. Also, motorcycles were included in the sampling frame in the 2007 and 2013-2014 studies.

The basic sampling plan of the 2013-2014 study generally mirrors that of the 2007 study, which mirrored that of the 1996 survey (Lestina, et al., 1999). However, the 1996 survey collected data from the 24 PSUs from NHTSA's NASS/Crashworthiness Data System[9] (NASS/CDS), whereas the 2007 and the current 2013-2014 study used the 60 PSUs from NHTSA's larger NASS/General Estimate System (National Highway Traffic Safety Administration, 2013). This provides a more comprehensive sample of the continental United States.

Researchers conducted location identification and recruitment in several stages, using the following procedures (from the most general to the most specific):

- Select PSUs. The 60 NASS/GES PSUs are composed of cities, large counties, or groups of counties from within four regions of the country and three levels of population density. Researchers attempted to recruit cooperation in all 60 of these PSUs.
- Select Square-Mile Grid Areas. A grid area is a square-mile area within the PSU within which researchers would select a survey location. To determine these, researchers created a grid identifying every square mile within a PSU, and then randomly selected 30 specific grid areas. These randomly selected grids areas were then typically examined in sequential order for feasible survey locations.
- Identify Survey Locations. Beginning with the first randomly selected grid area in the sequence, researchers identified survey locations. These were safe areas large enough to accommodate the survey operation with sufficient traffic flow for an adequate number of drivers. The goal was to identify at least five data collection locations within each site.
- Select Vehicles. Researchers selected vehicles at random from the traffic stream for their driver participation.

This multistage sampling system (detailed in Figure 2), used in both the 2007 and 2013-2014 surveys, built upon the protocol used in the prior studies, while improving the methodology with new technology and refined protocols.

[8] PSUs are cities, large counties, or groups of counties from within four regions of the country and three levels of population density.

[9] The NASS/CDS is a nationwide crash data collection program sponsored by the U.S. DoT. It is operated by the National Center for Statistics and Analysis (NCSA) of NHTSA.

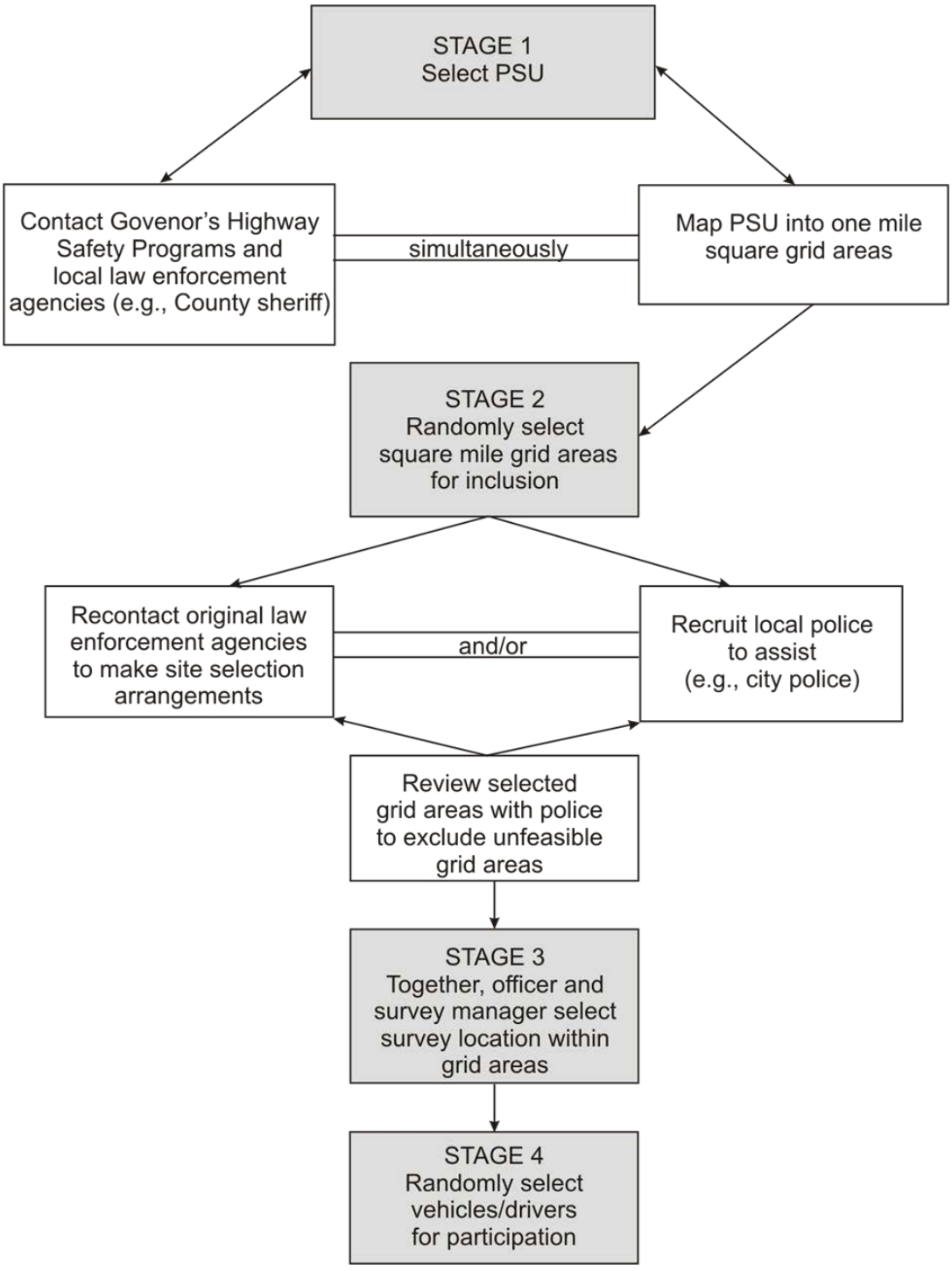

Figure 2. Multistage Sampling System Flowchart

Selection of PSUs

As described by NASS (National Highway Traffic Safety Administration, 2013), the 60 PSUs in the NASS/GES have been sampled using a probability proportion to size (PPS) procedure from a nationwide stratification by NHTSA of 1,195 city/county regions. The number of fatal and serious injury crashes within a PSU serves as the measure of size in terms of PPS sampling. Thus, data collected from these PSUs may be interpolated to reflect population parameters of crash injury in the U.S.

Extensive crash data extracted by NHTSA from local law enforcement records are available for these PSUs. Crash frequency data may be used to weight the sample (as an alternative to using population counts), as these may produce a smaller sampling variance (National Highway Traffic Safety Administration, 1995).

In addition to being representative of the national population in terms of crash injury, the 60 NASS/GES PSUs provide ideal sampling units because some police agencies in those regions are already cooperating with NHTSA on other matters, which could increase the chance of their participation in the study.

To obtain cooperation of local law enforcement, NHTSA's regional offices helped establish contact of individual State Highway Safety Offices (SHSO). SHSOs then provided information on local law enforcement agencies (LEAs). Researchers sought cooperation from LEAs that had broad jurisdiction, such as sheriff's departments or county police agencies, and then other agencies within the PSU. Not all agencies choose to participate, but researchers obtained as broad a geographic coverage of the PSU as possible. This study encountered many obstacles and challenges in securing participation at the state and local levels and had to seek replacement PSUs in a number of instances. In the 1996 and 2007 surveys, approximately 25–30% of the intended sites were unusable due to lack of agreement by local officials and were replaced by alternate locations not included within the 24 NASS/CDS locations (in 1996) or 60 NASS/GES locations (in 2007).[10] In 2013-2014, it was necessary to replace 32% of the intended sites with alternate sites.

In some localities, city attorneys or the police leadership believed assisting in a research study of this type was not within their responsibilities. In other cases, the police departments reported that they lacked the personnel resources to support the effort. These types of objections resulted in the necessity of making substitutions for initially selected sites where enforcement support was not available.

Researchers minimized the effect of these departures from the original sample structure by ensuring that the substitute was selected from the same geographical and population stratum. For example, if cooperation was not forthcoming from state or local officials for the initially selected site, researchers replaced the unavailable site with a similar alternate site taken from among the 1,195 candidate PSUs (from which the 60 final NASS/GES PSUs were selected). Replacement sites were as similar as possible to the unavailable sites; they were chosen from within the same geographic region (GES defines four geographic strata: Northeast, South, Midwest, and West)

[10] Substitutions were required for 5 of 24 PSUs in the 1973 survey, 9 out of 24 in the 1986 survey, 5 out of 24 in the 1996 survey, and 17 out of 60 in the 2007 study.

and the same GES category of PSU type (e.g., city, large suburban area) as the unavailable sites. Further, the replacement site had other similar characteristics, including:

- Average population density and percentage of PSU population contained within an urban area (largely implicit within the three PSU types),
- Number of fatal crashes occurring in the five-year period prior to the current survey (while this addresses factors such as volume of travel and other roadway safety/access factors, it also serves as a surrogate for the unknown number of total crashes, as the number of fatal crashes correlates well with injury crashes),
- Number of injury crashes (and to a lesser extent, property-damage-only crashes) in the data used by NHTSA's National Center for Statistics and Analysis (NCSA) to select the current NASS/GES PSUs,[11]
- Current socioeconomic conditions (median household income, unemployment rate, etc.).

Researchers standardized scores for each of these variables, separately within each region and PSU type. They tabulated the standardized measures for each of these factors for the smaller subset of potential PSUs within that region and PSU category. Researchers ranked the similarity (or proximity) scores for each candidate site from the most similar to the least similar.

Figure 3 shows the 2013-2014 data collection sites; Table 2 names the sites.

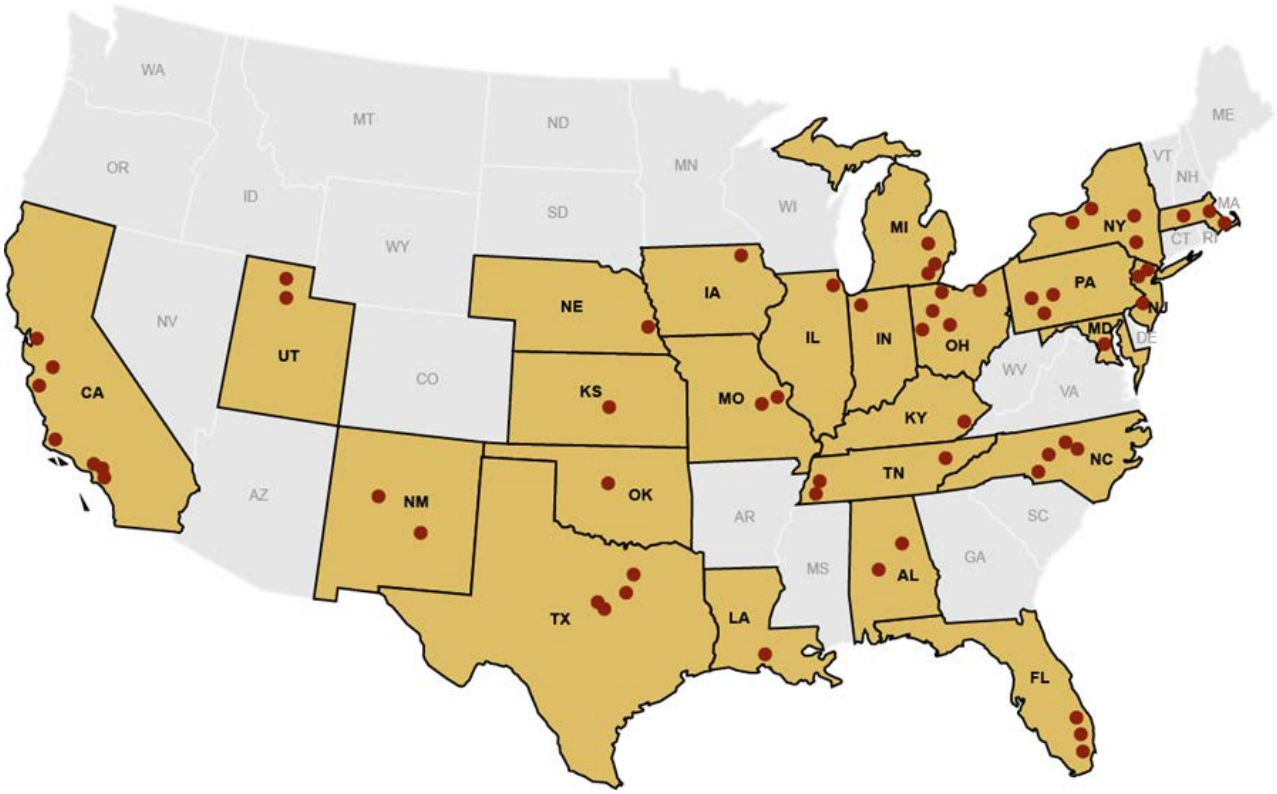

Figure 3. 2013-2014 NRS Locations

[11] Based on 1992 data (National Highway Traffic Safety Administration, n.d.).

Table 2. 2013-2014 NRS: 60 Locations in Four Regions

South	Midwest	Northeast	West
Alabama	**Illinois**	**Massachusetts**	**California**
Bibb County	Will County	Hampshire County	Contra Costa County
St. Claire County		Middlesex County	Los Angeles City
	Indiana	Plymouth County	Los Angeles County
Florida	Lake County		Orange County
Fort Lauderdale		**New Jersey**	(Anaheim)
Dade County	**Iowa**	Camden County	San Jose (city)
Palm Beach County	Howard County	Jersey City	San Mateo County
		Newark (city)	Santa Barbara County
Kentucky	**Kansas**		Ventura County
Harlan & Letcher	Wichita County	**New York**	
Counties		Monroe County	**New Mexico**
	Michigan	Schenectady County	Bernalillo County
Louisiana	Detroit	Syracuse	Lincoln County
East Baton Rouge	Genesee County	Ulster County	
	Wayne County		**Oklahoma**
Maryland		**Pennsylvania**	Oklahoma City (city)
Charles & Prince	**Missouri**	Westmoreland County	
George's Counties	St. Charles	Montgomery County	**Texas**
	County	Allegheny County	Hood County
North Carolina	St. Louis County		Dallas (city)
Cleveland County			Dallas County
Greensboro	**Nebraska**		Ft. Worth
Orange County	Douglas County		
Wake County			**Utah**
	Ohio		Davis County (Bountiful)
Tennessee	Clark County		Salt Lake City
Memphis (city)	Franklin County		
Knox County	Logan County		
Tipton County	Lorain County		
	Preble County		

Selection of Square-Mile Grid Areas

Within each site, researchers randomly selected 30 square-mile grid areas from which site survey locations could be selected (see Figure 4, Step 1), to be representative of the PSU. Researchers created a map for each site and divided that map into a grid of approximately one-square-mile squares. Squares containing fields, parks, airports, harbors, etc., or which contained few road segments, were eliminated. Using simple random sampling procedure (without replacement) of all the eligible "survey squares," researchers identified 30 possible square-mile grid areas. One location would potentially be selected from each sampled grid area. Typically, researchers selected grid areas from the total PSU area, and if cooperation was not forthcoming from that LEA, they excluded that grid area.

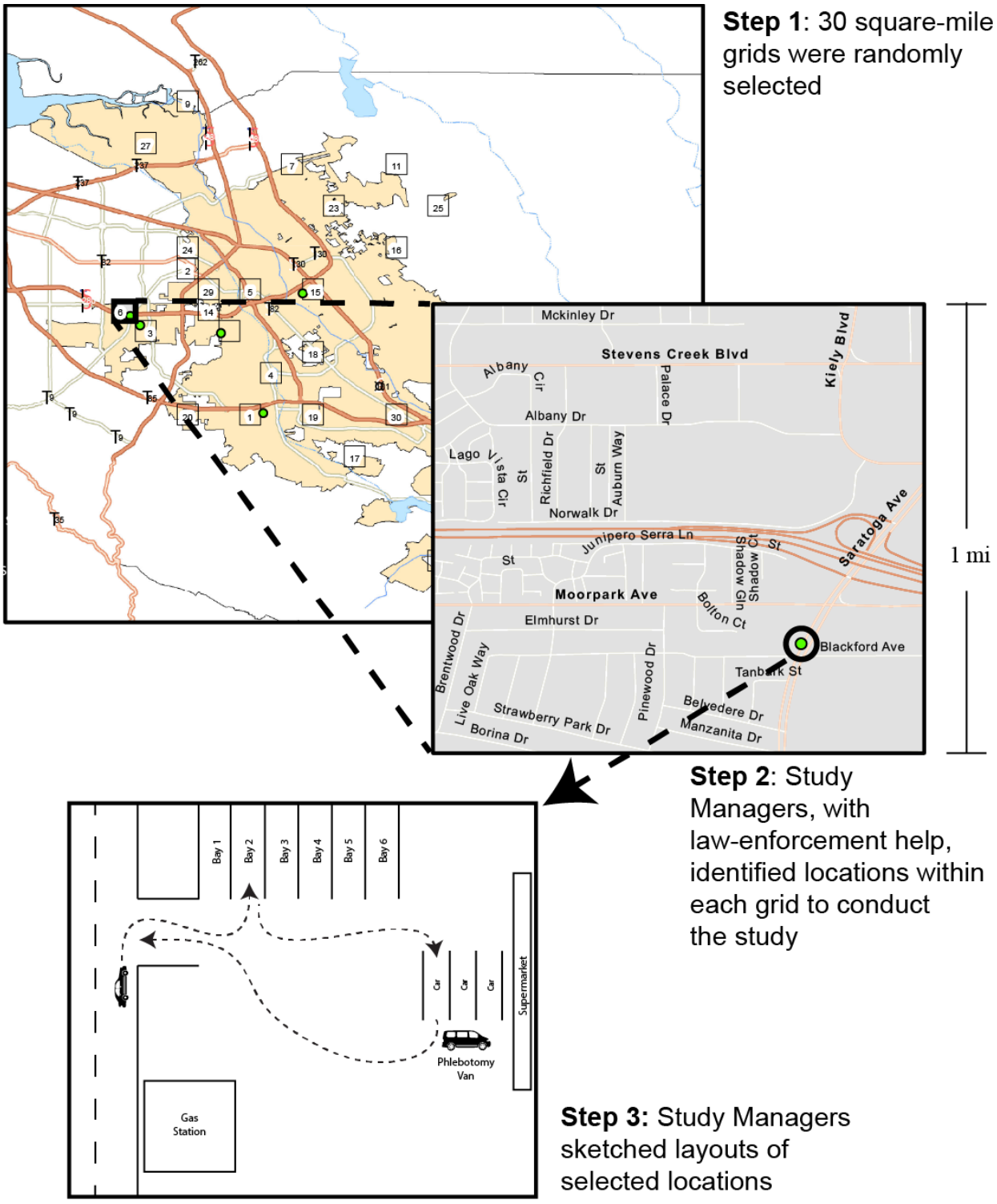

Figure 4. 2013-2014 NRS Survey Site Selection Flowchart

Researchers recorded the number of geographic squares within police jurisdictions from which the locations were sampled. This allowed them to adjust the collected sample values by traffic volume based on an estimate of the PSU's total traffic volume[12].

Thus, for the overall study, researchers appropriately weighted each site as they generalized to the driving population as a whole. Within each site, researchers randomly selected five "survey squares" along with five additional sets of five replacement areas for a total of 30 possible grid areas.

Once researchers selected a geographic area, they contacted the originally identified LEA (e.g., county police/sheriff) and/or contacted the local police department with jurisdiction of that area. In several instances, multiple police departments were involved within a site. In practice, researchers only investigated the feasibility of specific grid areas where police cooperation was available. The police department and Survey Manager (SM) reviewed the selected grid areas and selected the actual locations. Researchers used the replacement areas when there were no viable survey locations (e.g., roads with sufficient traffic where the survey could be conducted safely, or when it was apparent that no potential location was available in an area of parkland, military reservation, or waterway) within the grid area or if the associated police department would not cooperate or did not have jurisdiction over that area.

Identification of Survey Locations

After researchers selected and reviewed the grid areas, the SMs and local police officers found a safe and effective survey location within the selected square area (with a back-up survey location if available). To be considered safe, the location had to provide enough viewing distance of the roadway to permit signaling oncoming vehicles. This distance varied with the typical speed of the traffic on the roadway. The best locations were lighted, and had off-road parking areas (e.g., gas station, church parking lot). Daytime data collection locations required parking areas that were vacant during the day. In all cases, police department approval of the survey location was necessary.

Figure 4, step 2 illustrates a grid area (number 6) in a site within which researchers identified a survey location.

When the SM and police officer agreed on the survey location, the SM sketched a map for data collection setup. These maps outlined entrances and exits, position of bays for data collection, the position of officers, and the position of the phlebotomy van (see Figure 4, step 3 and Figure 5).

[12] Traffic volume was estimated at each survey site by a team member or officer using a hand-held counter to determine the number of passing vehicles.

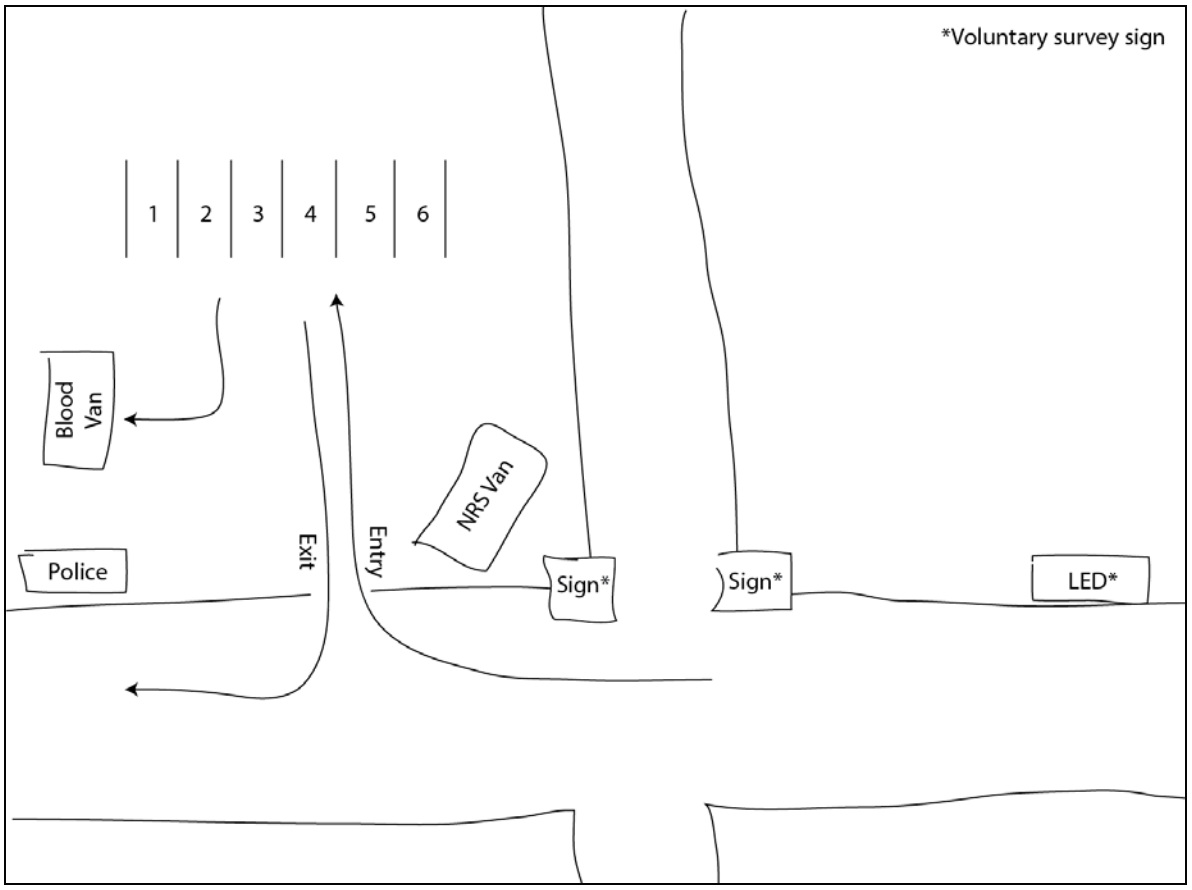

Figure 5. A Survey Manager's Location and Traffic Flow Sketch

This procedure for selecting locations was repeated to yield five locations and backups. Typically, each location came from a different grid area.

Overall, the study included 60 sites (PSUs), with five separate data collection survey locations within each site, for a total of 300 survey locations - each of which was used for data collection for a two-hour time period.

Figure 6. A "Paid Voluntary Survey" Sign Was Placed before each Location.

Figure 7. A "National Roadside Survey" Banner Was Prominently Placed at Each Location.

Vehicle Recruitment

The next sampling step involved the sampling of drivers. The protocol used the uniformed officer or traffic director (survey staff) at the data collection entrance. The police officer and/or traffic director guided drivers from traffic on the roadway, safely to the entrance. To ensure unbiased selection of the vehicle at each location, the officer and/or traffic director waved in the third vehicle passing the location after initiation of data collection. Vehicles were then guided into research bays designated by orange traffic cones. Each time a data collector completed a survey, the officer and/or traffic director signaled the next third car to approach. This procedure is typical of roadside surveys and results in a random selection of eligible vehicles not biased toward any particular class of driver.

A team member participated as traffic control, and guided vehicles into the location. Police officers were present at all locations, sometimes they remained in their vehicle. Officersprovided legitimacy and local support for the effort, and would assist if any problems arose.

Officers had handheld counters to record all vehicles passing the location so that driver selection probabilities could be estimated. In the 1973 and 1986 surveys, data were initially weighted based on both the traffic volume and average traffic speed (Lund & Wolfe, 1991; Wolfe, 1974). The use of average speed at the survey locations is intended to be a correction for the fact that motorists driving at higher average speeds were more likely to be selected in the survey. However, the correction was found to have only a minor effect. In any case, the desire was to estimate the probability of encountering a driver at a given BrAC rather than record the absolute number of such motorists on the highways. The speed correction was not applied in the Lund and Wolfe (1991) report on the 1973 or 1986 surveys, or in the analysis of the 1996 survey. Researchers used only the traffic counts in the weighting of data in the 1996 survey[13] and in comparisons across surveys.

Researchers recruited as many drivers as possible during each data collection period. That is, data collectors were encouraged to be as productive as possible while being courteous to the driver, ensuring the voluntary nature of the study, and accurately recording data. The goal in this study was to obtain a minimum of 25 oral fluid samples per survey location to have an overall sample size of 7,500 oral fluid specimens. This procedure resulted in even more breath samples and somewhat fewer blood samples than oral fluid samples because drivers were most willing to provide breath samples and least willing to provide blood samples.

The one departure from the random-sampling procedure related to motorcycle drivers—because motorcycles were rarely encountered, traffic directors were instructed to attempt to direct every possible passing motorcyclist into the survey location. If a data collector was not immediately available, the SM would ask the rider if he or she was willing to wait for the next available data collector.

As noted previously, to ensure a random sample of motorists, the next vehicle was guided into the survey location when a data collector was ready for a subject. However, in practice, a small

[13] Counts were conducted by PIRE staff, generally a research assistant/surveyor.

percentage of the selected motorists were missed because they turned away from the location, the traffic director was unable to signal them in time, or the individual proceeded without entering.[14]

Figure 8. The "National Roadside Survey" Banner at a Survey Location.

One challenge that arose was drivers or passengers using cell phones to alert family and friends to the survey and the incentives. Although this only happened a few times, such behavior posed a threat to the ability to maintain random selection of drivers on the road. To lessen the likelihood of this occurring, researchers asked subjects during their greeting if they had heard about the survey and, if so, how. Subjects who had been summoned to the survey location by acquaintances were then excluded from the study. Additionally, when the research team discovered that subjects were actively seeking to participate in the survey, the team shut down the location and moved to the next survey location (which occurred only rarely).

[14] Motorists encountered large "Paid Voluntary Survey" signs (and later in the study, LED signage) indicating that the survey was voluntary, in advance of encountering the traffic director. As a result, motorists were informed in advance that it was permissible to proceed without entering the survey site.

Figure 9. Team Prepped for Nighttime Data Collection. Equipment and Instruments/Surveys

The equipment and instruments used to conduct the 2013-2014 NRS were extensive, carefully researched, and field-tested. For a detailed description of the field data collection protocol, see "Survey Administration."

Driver Information Cards (Blue Cards)

Driver Information Cards, also known as Blue Cards (see Appendix A), were forms for data collectors to indicate which components of the survey individual drivers participated in.

Tablet

iPad2 tablets were used. The data collector recorded the following into the tablet:

- Observational data
- Responses to survey questions
- PAS results
- PBT test numbers
- Chain of Custody (CoC) label numbers from oral fluid and blood samples

Subjects used the tablet to record responses to the self-administered surveys. Passenger surveys were administered on paper.

Passive Alcohol Sensor (PAS) Device

Obtaining the highest percentage of alcohol tests possible was critical to attaining valid data on alcohol-positive driving. One way to accomplish this was through a PAS reading.

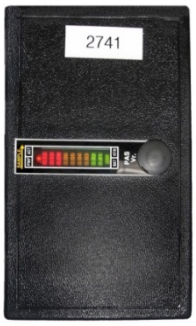

Figure 11. The PAS Vr.

As in the 2007 NRS, for passive readings, researchers used the PAS Vr. manufactured by PAS Systems International, of Fredericksburg, Virginia (Figure 10; see Appendix C for more information). The PAS unit can detect alcohol in expired air around the face (Kiger, Lestina, & Lund, 1993). When the subject spoke, the data collector held the PAS within six inches of the subject's face and activated the small electrical pump that pulled in air from in front of the face (Cammisa, Ferguson, & Wells, 1996; Fiorentino, 1997). The air captured by the PAS fed into the unit's internal fuel cell alcohol detector, which measured alcohol concentration. It then provided a rough indication of the individual's BrAC on a color-coded nine-element LED bar graph and numeric display of the approximate alcohol level. After viewing the PAS level, the data collector entered the number of lighted colored bars into the tablet. If the PAS reading entered was four yellow bars (equating a BrAC of .05) or higher, the tablet would instruct the data collector to call over his or her SM to look for signs of impairment, implementing the Impaired Driver Protocol (IDP) (Appendix D) if necessary.

Figure 10. PBT Device, Mark V Alcovisor

Preliminary Breath Tester (PBT) Device

The data collector obtained breath samples from drivers using a PBT device. Researchers used the Mark V Alcovisor, a handheld device manufactured by PAS Systems International of Fredericksburg, Virginia (Figure 11; Appendix E for more information). This device is listed on the NHTSA Conforming Products List for Evidential Breath Testing Instruments (National Highway Traffic Safety Administration, 2012). The PBT uses an internal fuel cell to measure BrAC when a subject blows directly into the blow tube.

To help ensure anonymity, the PBTs were masked so they would not display individual BrACs at the survey location. Results were stored in the unit's memory and all results for those sessions were later downloaded by researchers after data collection activities ended.

Roadside Survey Questionnaire

The data collector asked the subject to verbally answer questions covering the origin and destination of the current trip, drinking behaviors, drinking and driving behaviors, and whether the subject was acting as a designated driver (Table 3, and also Appendix F). The data collector entered responses onto the tablet. Data collectors were trained to estimate the intoxication level of the driver during the interview to ensure that the IDP (Appendix D) was activated when appropriate.

Table 3. 2013-2014 NRS Interview Questions

Item #	Survey Interview Questions
1	The average driver drives about 15,000 miles a year. Would you say you drive: more than average, average, less than average?
2	About what percent of your total driving takes place at day (daytime)/night (night time)?
	[PROMPT TO TAKE PASSIVE SENSOR READING]
3	Where are you coming from?
4	Where are you going to?
5	About how many miles is it between those two places?
6	How many total miles will you have driven by the end of today?
	[PROMPT TO ENTER PASSIVE SENSOR READING]
	[ASSESS ESTIMATED INTOXICATION LEVEL]
7	Now I have a question about your use of alcohol, such as beer, wine, or liquor: In the past year, how often have you had a drink containing alcohol?
8	Do you ever drink alcoholic beverages or are you a total abstainer?
9	In general, would you describe yourself as: a very light drinker, a fairly light drinker, a moderate drinker, a fairly heavy drinker, a very heavy drinker?
10	About how many alcoholic beverages do you consume in an average week?
11	Have you had anything to drink today?
12	How long ago did you finish your last drink? _____Hours _____Minutes
13	Was that beer, wine, liquor, or other (Malt/Wine coolers, etc.)?
14	In the past year, how often did you have five (male)/four (female) or more drinks in a two-hour period?
15	In the past 12 months, did you ever drive after drinking enough that you might be considered to be legally under the influence of alcohol?
15A	If yes: How many times did that happen?
16	About how old were you when you first started drinking, not counting small tastes or sips of alcohol?
17	Are you (or were you) the designated driver today/tonight? That is, someone who was responsible for safely getting people home after they were drinking alcohol?
17A	If yes: As a designated driver did you: drink less than you otherwise would have, deliberately drink less than the people you were driving, didn't change drinking behavior, not drink at all?
18	Now I have a few background questions for statistical purposes: What is your age? _____ Years
19	How old were you when you obtained your license? _____ Years
20	What is your ZIP code?
21	How far have you gone in school?
22	Are you currently a student?

Item #	Survey Interview Questions
23	Are you currently employed: full-time, employed part-time, unemployed, retired, on disability, a homemaker, or other?
23A	If unemployed: How long have you been unemployed? _____ Months _____ Years
24	Do you consider yourself to be Hispanic or Latino?
25	To which racial group would you say you belong?
26	What range would you say includes your annual household income?
	[PBT CONSENT SCRIPT]

Oral Fluid Sample

After the driver had completed the questions and provided a breath sample, the data collector offered a $10 incentive for an oral fluid sample. We used the Quantisal (manufactured by Immunalysis Corporation, Pomona, California) oral fluid collection device (Figure 12, Appendix G). The subject placed the pad of this device under the tongue; the tip turned blue when 1 ml of oral fluid was collected, indicating an adequate sample. The subject then placed the collection device into a tube containing 3 ml of stabilizing buffer solution. The data collector capped the tube.

Two different research groups have studied the effectiveness of the Quantisal oral fluid collection device across a range of drugs (see Tables 4 and 5). Percentages above 100 are due to slight variations in the amount of the substances added to the scientific control samples.

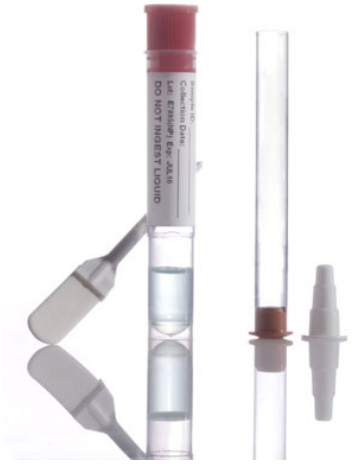

Figure 12. The Quantisal Oral Fluid Collection Device

Table 4. Effectiveness of Quantisal Oral Fluid Collection Device over a Range of Drugs: Quintela

Drug	Target value (ng/ml)[a]	Mean recovery from the pad
Amphetamine	50	94.3%
Methamphetamine	50	103.8%
Cocaine	20	91.2%
Benzoylecgonine	20	86.9%
Codeine	40	95.6%
Morphine	40	92.6%
6-acetylmorphine	4	92.2%
THC[b]	4	91.4%
Methadone	50	99.7%
Oxazepam	20	101.3%

[a] ng/ml = nanograms per milliliter
[b] THC : delta-9-tetrtrahydrocannabinol
Source: (Quintela, et al., 2006)

Table 5. Effectiveness of Quantisal Oral Fluid Collection Device over a Range of Drugs: Moore

Drug	Target value (ng/ml)[a]	Mean recovery from the pad
Meperidine	25	86.7%
Tramadol	25	87.7%
Oxycodone	20	96.6%

[a] ng/ml = nanograms per milliliter
THC recovery from the pad > 80%
Source: Moore, Rana, and Coulter (2007a) and Moore et al. (2006b)

Self-Administered Questionnaires

While the subject had the Quantisal in his or her mouth, he or she completed a few confidential and anonymous surveys on the tablet:

- Drug use questionnaire
- Prescription drug use questionnaire
- DUD questionnaire
- DAST
- AUD questionnaire

Programming, including skip patterns, within the tablet made the self-administered questionnaires user-friendly.

Spanish translations of the questionnaires were available for Spanish speakers.

Drug Use Questionnaire

This survey collected data on over-the-counter and illegal/illicit drug use.

The items on the drug questionnaire (Table 6) included tobacco and cough medicine, other over-the-counter drugs, and illegal/illicit drugs. Subjects indicated the last time they used a particular medication/drug by responding “Past 24 hours,” “Past 2 days,” “Past month,” “Over a month,” or “Beyond a year/Never.”

Table 6. Drug Questions

Item #	Drugs
1	Cough medicines (like, Robitussin, Vicks 44, etc.)
2	Other over-the-counter medicines
3	Tobacco (like, cigarettes, cigars, chewing tobacco)
4	Marijuana (like, pot, hash, weed)
5	Cocaine (like, crack or coke)
6	Heroin
7	LSD (acid)
8	Ecstasy (like, "E", MDMA, "X")
9	Methamphetamine (like, speed, crank, crystal meth)
10	GHB (like, Liquid Ecstasy, Liquid G)
11	PCP (like, Angel Dust)
12	Rohypnol (Roofies)
13	Ketamine (Special K)

Prescription Drug Use Questionnaire

The prescription drug use component collected data on prescription drug use prevalence and misuse, perceived risks of driving while using prescription drugs, and use of alcohol with prescription drugs.

Items 1–12 on the questionnaire (Table 7) comprised medications or drugs that physicians typically prescribe. Subjects indicated the last time they used a particular medication/drug by responding "Past 24 hours," "Past 2 days," "Past month," "Over a month," or "Beyond a year/Never." Subjects who indicated use of a prescription drug within the past month were prompted to answer item A: "Was this drug prescribed for your use?" (Table 8).

Table 7. Prescription Drug Questions 1–13

Item #	Drugs
1	Morphine or codeine (like, Tylenol with codeine)
2	Methadone or buprenorphine (like, Subutex, Suboxone)
3	Other prescription pain medications (like, Oxycontin/oxycodone, Percocet, Opana/Oxymorphone, Vicodin/hydrocodone)
4	ADHD medications (like, Ritalin, Aderall, Concerta)
5	Other amphetamines (like, Benzedrine, Dexedrine)
6	Prescription dietary/appetite suppressant (like, Tenuate, phentermine)
7	Sleep aids (like, Ambien, Lunesta)
8	Muscle relaxants (like, Soma, Flexeril)
9	Antidepressants (like, Prozac, Zoloft, Wellbutrin, Lexapro, Effexor)
10	Benzodiazepines (like, Xanax/alprazolam, Valium/diazepam, Ativan/lorazepam)
11	Barbiturates (Phenobarbital)
12	Medicinal marijuana/cannabis
13	Of the prescription medications you reported using, have you ever taken any with alcohol?

Once the driver completed items 1–12 (Table 7), item A ("Was this drug prescribed for your use?") (Table 8) appeared on the screen, but only for those drugs that the driver answered "Yes" to having used either in the "Past 2 days" or "Past month." If the driver responded positively to item A (Table 8), then items B–H (Table 8) was initiated for each of the drugs the driver responded positively to. Items A–D were "Yes or No" questions, and items E–H had response options "Very Likely," "Somewhat likely," "Somewhat unlikely," and "Very unlikely." Then, item 13 (Table 7), "Of the prescription medications you reported using, have you ever taken any with alcohol?" with "Yes" or "No" response options, concluded the survey.

Table 8. Prescription Drug Questions A–H

Item	Prescribed Drug Questions
A	Was this drug prescribed for your use?
B	Did you take more of this drug than prescribed?
C	Did a health care provider or pharmacy staff warn you that this drug might affect your driving?
D	Was there a label on the packaging warning you that this drug might affect your driving?
E	How likely do you think it is that taking this drug as prescribed could affect a person's ability to drive safely?
F	How likely do you think it is that taking this drug as prescribed could cause a person to crash?
G	How likely do you think it is that a person taking this drug as prescribed could be arrested for impaired driving?
H	How likely do you think it is that a person taking this drug as prescribed could be convicted of impaired driving?

Drug Abuse Screening Test (DAST)

The DAST is a standardized test that evaluates the abuse of drugs. The abbreviated version, the DAST-10, was used (see Table 9) (Skinner, 1982). Although no content was altered; PIRE moved the second DAST-10 question ("Do you abuse more than one drug at a time?") to the end of the survey as it was off-putting to some drivers. See Appendix H for this component.

Subjects received the following information on the content of the DAST prior to beginning:

> *Here is a list of questions concerning information about your use of drugs, excluding alcohol and tobacco, during the past 12 months. When the words "drug use" are used, they mean the use of illegal drugs, prescribed or over-the-counter medications in excess of the directions, and any nonmedical use of drugs. Again, these questions refer to the past 12 months.*

The reminder that "These questions refer to the past 12 months," headed each tablet screen containing DAST questions. If the subject indicated that he or she had not used drugs other than those required for medical use in the past 12 months, they were not asked to complete the remainder of the DAST or the following DUD questionnaire.

DAST and DAST-10

The DAST (Skinner, 1982), is a screening tool. It is a 28-item self-report scale that consists of items that parallel those of the Michigan Alcoholism Screening Test (MAST). The DAST has "exhibited valid psychometric properties" and has been found to be "a sensitive screening instrument for the abuse of drugs other than alcohol."

The DAST-10 is a 10-item, Yes/No, self-report screening instrument that has been shortened from the 28-item DAST and can take less than eight minutes to complete. The DAST-10 was designed to provide a brief instrument for clinical screening and treatment evaluation for adults and older youth (Maisto, Carey, Carey, Gordon, & Gleason, 2000; Yudko, Lozhkina, & Fouts, 2007). It is strongly recommended that subjects take the Short MAST (SMAST) along with the DAST-10 unless there is a clear indication that the client uses no alcohol at all (Selzer, Vinokur, & Rooijen, 1975).

Table 9. Drug Abuse Screening Test (DAST)

Item #	Drugs
1	Have you used drugs other than those required for medical reasons?
2	Are you always able to stop using drugs when you want to? (If you never use drugs, answer "Yes")
3	Have you had "blackouts" or "flashbacks" as a result of drug use?
4	Do you ever feel bad or guilty about your drug use? (If you never use drugs, choose "No")
5	Does your spouse (or parents) ever complain about your involvement with drugs?
6	Have you neglected your family because of your use of drugs?
7	Have you engaged in illegal activities in order to obtain drugs?
8	Have you ever experienced withdrawal symptoms (felt sick) when you stopped taking drugs?
9	Have you had medical problems as a result of your drug use (like, memory loss, hepatitis, convulsions, bleeding, etc.)?
10	Do you abuse more than one drug at a time?

Drug Use Disorder (DUD) Questionnaire

The DUD questionnaire is fashioned after the Alcohol Use Disorders and Associated Disabilities Diagnostic Interview Schedule (AUDADIS) (Cottler et al., 1997; Grant & Dawson, 1997; Pull et al., 1997). The AUDADIS is an assessment tool that has one item per symptom on the Diagnostic and Statistical Manual of Mental Disorders DSM-IV (American Psychiatric Association, 1994) section on Alcohol Abuse and Dependence. Similarly, the DUD questionnaire is constructed to have one item per symptom on the DSM-IV section on Substance Abuse and Dependence. Diagnosis of substance- use disorders requires a separate assessment for each drug of abuse. To minimize respondent burden and capture information on multiple substances, we assessed abuse and dependence for three primary drugs: marijuana, cocaine, and extra-medical use of prescription pain killers.

The DUD has 12 questions (Table 10; Appendix H.). The first four items measured abuse of marijuana, cocaine, and prescription pain killers. This screener is built around statements that describe behaviors or symptoms of abuse and dependence in the DSM-IV of the American Psychiatric Association (American Psychiatric Association, 1994). Screening instruments built on the DSM-IV criteria "translate the operational criteria of the . . . DSM-IV classification system into questions and compile the responses into diagnoses" (Üstün et al., 1997).

The DUD questionnaire has two sections. The first is composed of questions 1–4, and contains the items that measure abuse. If the respondent agrees with any one of those questions, it is a signal of abuse. The second section is composed of items 5-12. This section detects dependence

on the substance indicated. Items 5 and 6 are treated as a single item because they both tap into the same domain of tolerance, a feature of dependence that results in the addict requiring more and more of the drug to obtain the sought-after high. Items 7-12 are each representative of one DSM-IV diagnostic symptom of dependence. Counting an affirmative answer to either 5 or 6 (or both as 1), a total of six diagnostic symptoms are represented across the items 5-12. A positive response to three of the six symptoms is a sign of substance dependence for that drug (Hasin, Carpenter, McCloud, Smith, & Grant, 1997).

Although the content is identical, this survey appears different on paper than on the tablet. Researchers targeted programming toward ease of use for the subject. If the subject indicated on the DAST that he or she had not used drugs other than for medical reasons within the past 12 months, he or she was ineligible for the DUD.

There was also a screening question that assessed eligibility for the DUD questionnaire (reported use of one of the three assessed substances in the past year): "Have you used marijuana, cocaine, and/or prescription painkillers in the past year?" The response options were the three substances as well as "none of the above." Selecting a checkbox next to the substance would ensure that substance was a response option for the 12 DUD questions, whereas not selecting a checkbox would omit that substance from response options.

Table 10. Drug Use Disorder (DUD) Questionnaire

Item #	Drug Questions	Marijuana	Cocaine	Prescription Pain Killers
Screener	The following questions are about your use of marijuana, cocaine, and nonprescribed use or overuse of prescription painkillers in the past year. If not used in the past year, mark "No Use" and turn page.	☐ No Use	☐ No Use	☐ No Use
1	In the past year, did your use often interfere with taking care of your home or family or cause you problems at work or school?			
2	In the past year, did you more than once get into a situation while using or after using that increased your chances of getting hurt—like driving a car or other vehicle or using heavy machinery?			
3	In the past year, did you get arrested, held at a police station or have legal problems because of your use?			
4	In the past year, did you continue to use even though it was causing you trouble with your family or friends?			
5	In the past year, have you found that you have to use more than you once did to get the effect you want?			
6	In the past year, did you find that your usual amount had less effect on you than it once did?			
7	In the past year, did you more than once want to try to stop or cut down on your use, but you could not do it?			
8	In the past year, did you end up using more or using for a longer period than you intended?			
9	In the past year, did you give up or cut down on activities that were important to you or gave you			

Item #	Drug Questions	Marijuana	Cocaine	Prescription Pain Killers
	pleasure in order to use?			
10	In the past year, when the medication/drug effects were wearing off, did you experience some of the bad after effects—like trouble sleeping, feeling nervous, restless, anxious, sweating or shaking, or did you have seizures or sense things that weren't really there?			
11	In the past year, did you spend a lot of time using or getting over the bad after effects of use?			
12	In the past year, did you continue to use even though it was causing you to feel depressed or anxious or causing a health problem or making one worse?			

Alcohol Use Disorder (AUD) Questionnaire

See Table 11 for the 15 AUD questions, and Appendix H for a copy of the instrument with response options. The screening was a two-part screening process that used NRS Questions 7 ("In the past year, how often did you have a drink containing alcohol?") and 8 ("Do you ever drink alcoholic beverages or are you a total abstainer?") to determine eligibility for the AUD. Only subjects indicating no alcohol use in the past year ("None in the past year") or who opted not to answer ("Did not answer") were asked question 8. If the subject indicated he or she was a total abstainer in response to question 8, the subject was ineligible for the AUD. The responses included:

- Response options for item 1: "1–2," "3–4," "5–6," "7–9," and "10 or more"
- Response options for item 2: "Never," "Less than monthly," "Monthly," "Weekly," and "Daily/Almost daily"
- Response options for items 3–14: "Yes/No"
- Response options for item 15A and B: "Never in my life," "Never in the last year," "Less than once a month," "Once a month," "Once a week," "More than once a week," and "Every day"

Table 11. Alcohol Use Disorder (AUD) Questionnaire

Item #	AUD Questions
Screener NRS 7	In the past year, how often did you have a drink containing alcohol?
Screener NRS 8	(Only if "*Never in the past year"* to NRS 7) Do you ever drink alcoholic beverages or are you a total abstainer?
1	In the past year, how many drinks containing alcohol did you have on a typical day when you were drinking?
2	In the past year, how often did you have six (male)/five (female) or more drinks on one occasion?
3	In the past year, did your drinking often interfere with taking care of your home or family or cause you problems at work or school?
4	In the past year, did you more than once get into a situation while drinking or after drinking that increased your chances of getting hurt—like driving a car or other vehicle or using heavy machinery after having had too much to drink?
5	In the past year, did you get arrested, held at a police station or have legal problems because of your drinking?
6	In the past year, did you continue to drink even though it was causing you trouble with your family or friends?
7	In the past year, have you found that you have to drink more than you once did to get the effect you want?
8	In the past year, did you find that your usual number of drinks had less effect on you than it once did?
9	In the past year, did you more than once want to try to stop or cut down on your drinking, but you couldn't do it?
10	In the past year, did you end up drinking more or drinking for a longer period than you intended?
11	In the past year, did you give up or cut down on activities that were important to you or gave you pleasure in order to drink?
12	In the past year, when the effects of alcohol were wearing off, did you experience some of the bad after effects of drinking – like trouble sleeping, feeling nervous, restless, anxious, sweating or shaking, or did you have seizures or sense things that weren't really there?
13	In the past year, did you spend a lot of time drinking or getting over the bad after effects of drinking?
14	In the past year, did you continue to drink even though it was causing you to feel depressed or anxious or causing a health problem or making one worse?
15A	In the past year, how often did you have any kind of high energy (caffeinated) drink like Red Bull, not containing alcohol?
15B	In the past year, how often did you have a high energy drink with alcohol (like, Red Bull + Vodka, or a pre-mixed drink)

The first screener (NRS 7), and AUD items 1 and 2 are derived from the Alcohol Use Disorders Identification Test (AUDIT) and represent the AUDIT consumption subscale, also known as the AUDIT-C (Babor, de la Fuente, Saunders, & Grant, 1992; Chung, Colby, Barnett, & Monti, 2002; Conley, 2001). Responses to the AUDIT-C are coded as 0, 1, 2, 3, and 4, with the first option receiving a score of zero and the last response receiving a score of four, thus for the three-item AUDIT-C "heavy drinking" scale the maximum score is 12.

Scoring methods differ across investigators. We used a score of six or more to indicate heavy drinking for men, and a score of five or more to indicate heavy drinking for women. This follows the scoring system used by Chung, Colby, Barnett, and Monti (2002).

Items 3 through 14 on the AUD questionnaire are derived from the AUDADIS (Cottler, et al., 1997; Grant & Dawson, 1997; Pull, et al., 1997). The AUDADIS is constructed so that there is one item per symptom on the DSM-IV section on Alcohol Abuse and Dependence. A positive response to any of these items signals alcohol abuse. Items 7 and 8 both tap into the domain of tolerance, while items 9 through 14 are each representative of one DSM-IV diagnostic symptom. A total of seven diagnostic symptoms are therefore represented across the eight items. A positive response to three of the seven symptoms signals alcohol dependence (Grant & Dawson, 1997).

The remaining items (15A and 15B) are not part of the formal AUD questionnaire, but rather relate to the use of energy drinks combined with alcohol. As stated by Marczinski and colleagues (2011), "the consumption of alcohol mixed with energy drinks has become a popular and controversial practice among young people." Such popularity has raised concern among health care practitioners and researchers. Energy drinks can mask the signs of alcohol intoxication, which may result in greater levels of alcohol intake and alcohol poisoning, as well as in an increased engagement in risky behaviors such as drinking and driving (Pennay, Lubman, & Miller, 2011). Unfortunately, as indicated by Brache & Stockwell (2011): "there have been few studies into the drinking patterns and risk behaviors that accompany this new form of alcoholic beverage consumption and more information is required to support harm reduction and prevention efforts. This NRS brought a unique and timely opportunity to address this issue by collecting self-reported information on drivers' use of alcohol mixed with energy drinks.

Passenger Survey

In the 2006 pilot study for the 2007 NRS (Lacey, Kelley Baker, Furr-Holden, Moore, & Compton, 2007), drivers with passengers in the car were less likely to complete the entire data collection procedure. Thus, for the 2007 and 2013-2014 NRS studies, researchers engaged passengers as a means to retain eligible drivers in the NRS. (Figure 13.) This effort involved a survey for passengers to complete for a $5 incentive. The passenger survey contained questions that would contribute to the current understanding of driving patterns across the United States. We enhanced the passenger survey for the 2013-2014 NRS to include the DAST and the AUD.

Figure 13. Passenger and Driver Filling out Surveys while Driver Provides Oral Fluid Sample

Passengers eligible for the survey had to be at least 16 years of age. The survey was available in both English and Spanish. Questions on the passenger survey are shown in Table 12 (and see Appendix I).

Table 12. Passenger Survey Questionnaire

Item #	Passenger Survey Questions
1	What is your date of birth?
2	Are you male or female?
3	Are you Hispanic or Latino?
4	To which racial group would you say you belong?
5	Do you have a valid driver's license, learners permit, or neither?
6	Who is the owner of the vehicle you are currently in?
7	Have you been a passenger with this driver before tonight?
8	What is your relationship to the driver?
9	If other than spouse, significant other, parent or child, how close are you to the driver?
10	Is your driver tonight serving as the designated driver, that is, someone who did not drink alcohol so that you could safely get home?
11	Did the driver have any alcohol or use any drugs (including medications) today/tonight?
12	In the past year have you had 5 or more drinks (male)/4 or more (female) in a TWO hour period?
13	Have you had anything to drink today?
13A	(If yes, you have been drinking alcohol) How many whole drinks of alcohol have you had today/this evening?
13B	How many more drinks do you intend to have today/tonight?
14	In the past year, how often have you had a drink containing alcohol such as beer wine or liquor? (If Never in the past year → Skip back of this page and continue to last page of survey.)
15	Your current weight _____ (lbs.)
16	Your current height? _____ (feet)_____ (inches)
PG 2	AUD (See: Table 11) Passenger survey Q14 serves as the AUD Screener
PG 3	DAST (See: Table 9) No screener or skip patterns since this is administered on paper.

Blood Sample

After the oral fluid sample and the questionnaires (if applicable), the data collector requested that the subject provide a blood sample in exchange for a $50 money order. Eligibility for blood draw was age-based following local legal regulations, and in the absence of blood thinning medications.

Subjects were directed to the phlebotomist by onsite traffic directors. All subjects were given a consent form. Spanish-speaking subjects were escorted to the phlebotomist by a Spanish-speaking data collector, and provided with a Spanish consent form. The Spanish-speaking data collector could, if necessary, read the consent form to the subject, and also stayed to answer any questions and translate for the phlebotomist and subject.

Licensed phlebotomists conducted the blood draws. The phlebotomist set up the blood draw station in a passenger van.

The phlebotomist drew one gray-top tube (10 ml) of the subject's blood. Gray top tubes contain two additives, an anticoagulant (potassium oxalate) and a preservative (sodium fluoride). The anticoagulant prevents blood clotting; the preservative is an antibacterial stabilizer that reduces the need for refrigeration. These additives do not interfere with the detection of drugs and are helpful in conducting alcohol analysis because the sodium fluoride inhibits endogenous alcohol production. The preservative also inhibits the degradation of cocaine in storage to its metabolite,

benzoylecgonine (Toennes & Kauert, 2001).

Glass blood collection vials were used, opposed to plastic, to better maintain reliable drug results. In a study on the stability of delta-9-tetrahydrocannabinol (THC), the active chemical compound found in the cannabis plant, whole blood was stored in polystyrene vials and glass vials (Christophersen, 1986). The THC concentration in blood stored in glass vials for four weeks at -20° C remained unchanged; however, blood stored in polystyrene vials lost 60–100% of its THC content during storage. Thus, glass vials are preferred for collection of blood samples for marijuana.

The blood sample tubes were labeled with preprinted chain of custody (CoC) labels that linked the blood sample to the subject's Driver Identification Card (i.e., the Blue Card), so the specimen could be tracked throughout the project without any personally identifying information. The CoC labels contained a unique identifier that corresponded to that sample. The data collector also entered this number into the tablet. CoC numbers were preprinted by the laboratory and provided a documented link between each sample and subject.

Blood samples were packed with ice packs. They were stored in the hotel room refrigerator and then shipped with ice packs to the laboratory.

Team Development and Training

The Data Collection Teams

There were six highly trained teams; on a typical weekend, two to four teams would be deployed. Each team consisted of one SM, one phlebotomist, and six to eight data collectors (Figure 14). SMs chose their data collectors from a pool of available personnel for any given weekend. Data collectors and phlebotomists moved from team to team to meet logistical needs. Four teams were dispatched from PIRE's Calverton, Maryland, office and two from the San Diego, California office.

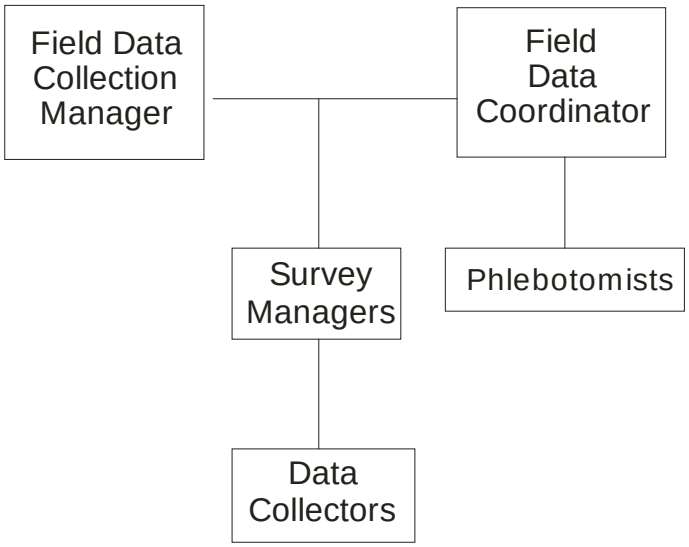

Figure 14. NRS Teams

Field Data Collection Manager

The field data collection manager oversaw and facilitated the data collection activities, including supervising the hiring and training of all team members, scheduling of all field data collection, and serving to conduct quality control (QC) during field implementation. The field data collection manager also led all training sessions and attended all booster training sessions.

Field Data Coordinator

The main role of the field data coordinator was to oversee the phlebotomists and assist in site recruitment. The field data coordinator hired the phlebotomists, conducted training sessions, and directly oversaw the phlebotomists. The field data coordinator also oversaw phlebotomy supplies and ensured that all safety and shipping standards were followed. The field data coordinator, in conjunction with the field data collection manager and the Principal Investigator (PI), conducted site recruitment. This included making initial and follow-up contact with NHTSA regional offices, Governor's Representatives for Highway Safety, and law enforcement officials. Once a

site was secured, the field data coordinator organized all law enforcement logistics for the site, working in tandem with the SMs and the field data collection manager.

Survey Managers

SMs were the team leaders. They oversaw team supervision and ensured that data collectors collected data according to research protocol. SMs attended all training sessions, assisted with the data collector training sessions, and coached data collectors who needed additional training on equipment or protocol. SMs were responsible for their team's conduct, welfare, morale, and effectiveness.

SMs traveled to sites prior to data collection (Wednesday, or Thursday morning) to coordinate with local law enforcement and select locations that adhered to criterion (e.g., randomly-selected square grid areas and locations that were safe, well-lit). While reviewing the locations with law enforcement officers, SMs drew maps of each possible location, outlining entrances and exits, bays, the position of traffic directors and officers on the roadway, and the location of the phlebotomy van. These maps facilitated setup when teams arrived to conduct data collection.

At the hotel, SMs made sure that all supplies had arrived. When teams arrived (usually Thursday night), SMs coordinated transportation from the airport to the hotel in rental vans, and then to and from data collection.

SMs communicated with law enforcement to set up locations in a safe, timely, and orderly manner, and ensured that all procedures were followed. SMs handled any incidents (e.g., impaired drivers, drivers circling to return through the bays trying to be selected again, data collectors who became ill) in a proper manner and reporting such incidents to the field data collection manager.

After data collection activity, SMs transferred data from the PBTs and tablets to the PIRE server, submitted SM Report Forms (Appendix J), and packed biological specimens. On Sunday mornings, SMs shipped specimens to the laboratory, and ensured the team traveled home.

Research Assistants

There were several in-house Research Assistants to this study. One arranged travel logistics, including flights, lodging, vehicle rentals, and researched local restaurants, hospitals, and taxi services.

Another Research Assistant managed all supplies, including re-stocking, checking batteries to keep equipment running, and calibrating PBTs. This assistant packed and shipped all supplies to the hotels. To facilitate packing, a laminated list of all supplies was used to coordinate; it was also made available to SMs.

The Research Assistant packed individual carry-on data collection bags for data collectors that contained all necessary equipment for each data collector's bay. The laminated list of supplies was included in each data collector's bay bag to facilitate packing by the Research Assistant and double-checking by the data collector. The team members carried the bags onto the plane; in the event that planes were delayed or checked luggage was lost, the team could still perform their duties on location because they had kept the specialized materials in their possession.

Data Collectors

The main role of the data collector was to interact face-to-face with drivers at the survey locations to collect data, including:

- Recording initial observations
- Conducting face-to-face interviews
- Obtaining oral fluid and breath samples
- Obtaining PAS readings
- Requesting blood samples
- Giving the subjects the appropriate incentives

For their safety, data collectors and traffic directors were clothed in a "uniform" that included a hat with retro-reflective lettering, a polo shirt, a retro-reflective vest, light-colored khaki pants, and comfortable closed-toe shoes.

Data collectors attended training sessions to learn every aspect of the equipment and the data collection procedures and protocol. All project staff members also had Human Subjects training. A major component of that training focused on how to interact with the public and successfully recruit subjects while also ensuring the voluntary nature of the study. They also received training on obtaining informed consent before conducting the interview. Another important training component was detection of impaired drivers. If data collectors suspected that a driver had been drinking (e.g., through the odor of alcohol, the number of bars lit up on the PAS unit, the driver's actions, etc.), they called over the SM who assessed the situation and made arrangements so that impaired drivers would make it home safely (see Appendix D, IDP).

Generally, each data collector was assigned to a team and traveled with the team to scheduled data collection activities under the supervision of the SM. During travel, each data collector was responsible for their specialized carry-on data collection bag.

On location in the field, data collectors set up their bays in an orderly manner, accurately collected and entered data into the tablet, and carefully filled out the Driver Information Card (Blue Card). After each data collection activity at a location was completed, data collectors were responsible for breaking down their bays and repacking supplies quickly and neatly so that they were ready to get back into the van and travel to the next location with the team.

Traffic Directors

The role of the traffic director was to oversee vehicles entering and exiting the data collection location, ensuring they did so in a safe and efficient manner. If an officer was involved, once the officer indicated the study entrance to a driver, the traffic director took over movement of the vehicle by guiding the driver into a bay. Traffic directors used lighted traffic wands to indicate the direction in which the vehicles should proceed.

In some jurisdictions, police were not authorized to be involved with traffic control. At those times, traffic directors stood near the roadway and guided traffic into the location unassisted.

In all locations, officers were onsite for the safety of the public and the researchers. Police officers were not directly involved with interviewing drivers or any component of data collection. Police officers were stationed outside of the data collection area.

Phlebotomists

The NRS employed a corps of specially trained, licensed phlebotomists who were assigned to the teams and who were overseen by the field data coordinator, who also acted as the lead phlebotomist.

The main role of the lead phlebotomist was to oversee all aspects of blood sample collection, including procedures and protocol for phlebotomists in the field. The role included hiring, training, and providing careful monitoring and reporting on the proficiency of the phlebotomy staff in performing field blood draws. The phlebotomists followed all OSHA rules, received Human Subjects training, and were certified and up-to-date on vaccinations. The lead phlebotomist also packed supplies, kept stock up-to-date, and coordinated shipping of phlebotomy supplies to the team phlebotomists in the field along with the equipment Research Assistant, ensuring that all phlebotomists had what they needed for each data collection activity. The phlebotomist verified the arrival of supplies at hotels; backup shipments of supplies were ready to go in the event that a package was lost.

The lead phlebotomist also worked directly with the laboratory to ensure a smooth set of procedures from drawing blood to shipping to processing of the samples in the laboratory, overseeing proper packing of samples and paperwork to the lab via overnight shipping.

The lead phlebotomist also performed quality assurance checks on blood-related services conducted in the field to ensure that the blood collection protocol was followed at all times, taking special efforts to ensure phlebotomists followed the OSHA Exposure Control Plan on blood-borne pathogens. Federal requirements for handling blood and other biological specimens (see Appendix K) were followed.

Phlebotomists traveled with the team to data collection locations, ensuring that blood supplies were present and in good working order, overseeing the set-up of the phlebotomy van at each location, conducting the blood draws, and packing the biological samples for shipment to the lab.

Training Sessions

Given the importance of this research study and the complexities of the data collection activities, it was critical that all teams be proficient when the first subject was interviewed. The objective was to thoroughly train research staff in the approved protocol and to develop a QC protocol to evaluate and ensure integrity of data collection throughout the entire data collection period. In addition to in-office training, there were several mock simulation sessions to ensure that SMs, data collectors, and phlebotomists were efficient with the equipment and protocol.

Initially there was training of the trainers, which included the Principal Investigator (PI), Co-PIs, field data collection manager, SMs, and the lead phlebotomist (see Appendix L for the training of the trainers' agenda).

Regional trainings (one on the East Coast and another on the West Coast) were conducted for data collectors; including mock surveys in parking lots (see Appendix M for the data collector Training Agenda). Phlebotomists attended a specialized phlebotomy training in addition to the mock surveys to understand their role in the surveys and practice setting up the phlebotomy van under different circumstances (see Appendix N for Phlebotomy Training Agenda).

Quality Control for Training Sessions

Training sessions on the East and West Coasts used the same manuals and support materials. All SMs were to adhere exactly to the documented roadside protocol and train the local staff in the same manner. The field data collection manager attended all regional training sessions.

Quality Control for Data Collection Activities

QC staff attended a half-day training session by the field data collection manager as well as mock training surveys to practice QC skills (see Appendix O for the QC form for data collectors; see Appendix P for the QC form for SMs).

Additionally, the lead phlebotomist developed QC standards for phlebotomists, and all phlebotomists were evaluated in QC assessments, both in training and in the actual roadside surveys.

Initially, the field data collection manager or the lead phlebotomist attended data collection for each team. While onsite in the field, QC staff stood near the data collector, but not so close as to interfere with the survey. They not only assessed data collectors and gave feedback and support in real-time, but also filled out QC forms. Additionally, the QC staff assessed the overall survey set up and procedures implemented by the SM. After each QC assignment, QC staff reported back to headquarters and briefed the core team on skill levels and efficiency in the field. SMs received copies of the QC forms so they could directly address suggestions with their team members. Additional training and support were arranged for teams as a whole, or for individual data collectors, as necessary.

Additionally, the core project team (i.e., the PI, Co-PIs, the lead phlebotomist, and the field data collection manager) met every Tuesday at PIRE headquarters. Also, the field data collection manager held a teleconference call every Wednesday with SMs. The field data collection manager provided location-specific statistics for the team to review. These data provided a basis for ongoing and rapid assessment and evaluation, so staff could address any problems or inconsistencies as needed and provide additional training prior to the next survey data collection period (e.g., one particular data collector entered multiple CoC numbers incorrectly or forgot to enter PAS readings).

Project Operations and Procedures

Travel Logistics

There were two teams on the west coast and four on the east coast. The Research Assistant travel coordinator was responsible for travel logistics, including flight, hotel, and vehicle reservations, as well as the preparation of location summary information for the SM. Typically, two vans were necessary for the team, and the vehicles served as the phlebotomy stations at other times.

When air travel was unnecessary or where airport locations made driving more timely or less expensive than flying, the survey team generally made arrangements to drive in rental vans rather than fly.

Each team received a packet with a Travel Logistics Sheet (see Appendix Q) that included travel information, such as names, travel dates, and confirmation numbers for all team members; all airlines, hotels, and rental agencies; as well as a list of local hospitals, taxi companies, overnight shipping offices, pharmacies, and grocery stores.

Packing and Transportation of Equipment and Supplies

Uniforms

Staff wore uniforms (Figure 15), including a research team hat, safety vest, and polo shirt with PIRE's logo (dark blue for SMs, light blue for data collectors). There were blue research team windbreakers. Data collectors and SMs wore khaki pants because the light color is easier to see during nighttime hours. Data collectors also wore closed-toe shoes.

Figure 15. Data collector in uniform

Supplies

Team members used identical carry-on backpacks as carry-on luggage (Figure 16.) Not only were the team's luggage easy to identify because of the color, but the equipment, forms, and materials for the data collection process at each research bay were all packed and ready to go for quick set up (each bag contained materials for one bay; see Table 13 for a checklist of the items included in each data collector's bag).

Each data collector took the backpack as carry-on luggage—data collection backpacks were not checked luggage.

See Tables 13-15 for a list of supplies and equipment.

Figure 16. Data Collection Bag and Survey Bay Traffic Cone.

Table 13. Data Collector Bag Checklist

Large Pocket	Qty	Packed	Returned
Clipboards	2	☐	☐
Folder with paper surveys	1	☐	☐
File folder	1	☐	☐
Bay box	1	☐	☐
Tablet	1	☐	☐
PBT	2	☐	☐
PAS	2	☐	☐
Lantern	1	☐	☐
Research team jacket	1	☐	☐
Vest	2	☐	☐
Denim carry bag	2	☐	☐
Hat	1	☐	☐
Medium Pocket	**Qty**	**Packed**	**Returned**
Breath tubes	50	☐	☐
Garbage bags	5	☐	☐
	Qty	**Packed**	**Returned**

Small Pocket			
AAA batteries	4	☐	☐
AA batteries	4	☐	☐
9V batteries	2	☐	☐
Stylus	1	☐	☐
Clipboard lights	2	☐	☐
Pens	4	☐	☐
Hand sanitizer	1	☐	☐
Tissues	1	☐	☐

Equipment was shipped to the SMs at their hotels for Thursday delivery (see Table 14). This allowed the SMs time to review the shipment. If something was missing, items could still be shipped. Approximately 16-18 boxes were shipped for each data collection.

Table 14. Equipment Checklist

Items	
Plastic storage bags	☐
Trash bags	☐
Hard-copy survey forms	☐
Large umbrellas	☐
Quantisal oral fluid kits	☐
Return shipping labels	☐
Lighted traffic wands	☐
Reflective road signs	☐
Sign holders	☐
Traffic cones	☐
Water/snack cooler	☐
Large NRS van sign	☐
iPad chargers and extension cords	☐
Variable message board	☐

The head phlebotomist sent the phlebotomy totes with the other equipment for Thursday delivery. Upon arrival at the hotel on Thursday, the phlebotomist reviewed the items (see Table 15 for phlebotomy supplies). This was crucial, as phlebotomy items such as glass tubes and needles cannot be purchased in the general retail market.

Table 15. Phlebotomy Checklist

Items	
Needles	☐
Butterfly needles	☐
Vacutainers	☐
Blood collection tubes	☐
Sharps containers	☐
Gloves	☐
BZK towelettes	☐
Gauze pads	☐
Band-Aids	☐
Hand sanitizer	☐
Tourniquets	☐
Biohazard spill kit	☐
CPR kits	☐
Eye wash	☐
Instant cold packs	☐
Cooler for biological samples	☐

At the Airport

One team member picked up the backpacks and met the others at the airport. All team members checked-in together and went through security together.

Each bag was assigned to a data collector for the weekend's data-collection activity. The data collector may have had to check his or her personal luggage, but always brought the data collection bag onto the plane to store it in an overhead bin.

Equipment in the Field

Setup in the field was quick. The backpack allowed each data collector to organize materials quickly

Team members set up large orange "PAID VOLUNTARY SURVEY" signs, and a large "NATIONAL ROADSIDE SURVEY" banner. Later in the study, a variable message sign was added.

After each data collection activity, breakdown was quick, taking only minutes. This was important when needing to be at the next location in less than an hour.

Team members shipped equipment and biological sample coolers via expedited delivery. SMs and phlebotomists shipped the samples to the laboratory before proceeding to the airport for the return trip on Sunday.

Human Subjects/Institutional Review Board

PIRE operates under a Federal-wide Assurance issued by the Office of Human Research Protection (OHRP), an agency of the Office of the Secretary of the Department of Health and Human Services. OHRP requires that all personnel involved in human subjects' research receive education and training on protecting human subjects. Among the precautions taken were steps to intervene with impaired drivers (persons with BrACs at or higher than .05) and others at special risk (e.g., underage drinkers and possibly pregnant drinkers) (see Appendix D). Research staff completed these modules, which included reading "The Belmont Report" and the "Human Subjects Protection Training Certification."

Prior to the beginning of the data collection sessions, all law enforcement officers also received training on the requirements for protecting human subjects, including the importance of avoiding any indication of coercion.

Data Collection

Overview

The SM and an officer reviewed the selected grid areas (see section "Survey Sampling Procedures") for the five data collection sessions. They identified multiple locations to have alternatives in case of unexpected events when the survey team arrived on location (e.g., cars parked in the lot, lack of lighting, lack of traffic, etc.). Locations were chosen based on safety of the public and research team. Although the grid area had been randomly selected, practical issues came into place occasionally, such as an adequate off-road area to collect data, easy access from the roadway, good lighting, and sufficient traffic volume.

The daytime survey took place on Friday between 9:30 a.m. and 11:30 a.m. *or* between 1:30 p.m. and 3:30 p.m. local time. The time frame was randomly selected morning versus afternoon time periods for most locations, but occasionally police agency schedules determined the morning versus afternoon time frame.

The team, along with the police officers, arrived at the data collection location one hour prior to the start to set up. After the daytime survey, data collectors returned to the hotel to rest, and SMs sent data to the PIRE office and prepared equipment for the nighttime data collections.

General Data Collection Procedures

Data Collection Location Set-Up

Data collectors set up bays marked by orange traffic cones. The phlebotomist set up the blood draw station in the phlebotomy van.

The SM distributed or supplemented consumable supplies such as incentives and Quantisal swabs, and met with the team to ensure everyone entered accurate data for the different survey components (e.g., PSU number, session number, data collector's ID). The SM also briefed the police officers about everyone's role, discussed the logistics of the location, reviewed protocols, and answered questions. Team members set up a large banner sign across one of the rental vans saying "NATIONAL ROADSIDE SURVEY," along with signs that read "PAID VOLUNTARY SURVEY." One sign was approximately 200 feet ahead of the location, while another was at the entrance. Mid-way into the project, an LED sign was added at the entrance, stating this was a paid voluntary survey.

Police involvement varied depending on local law, government, and department liability issues. To identify the level of police involvement per survey location, SMs recorded the following categories on the SM Report Form:

- Full protocol: Officers were uniformed, a cruiser/police vehicle was placed on the street to alert traffic, the cruiser had lights on, and officers guided drivers to the survey location.
- Partial protocol: Police were active in assisting with traffic direction at some level.
- No police involvement: Police were onsite but not visible and did not assist with traffic.

Response rates varied with the different levels of police involvement (see Table 16). These rates are discussed in more detail later in this report under the heading Participation by Police Involvement.

Table 16. Participating Drivers by Police Involvement

	No Involvement	Partial Protocol	Full Protocol
Signaled to enter location	1,457	5,036	7,674
Did not enter location [a]	305	1,320	1,220
Entered location	1,152 (79.1)[b]	3,716 (73.8)[b]	6,454 (84.1)[b]
Eligible	1,142	3,647	6,311
Interviewed	1,014 (88.8)[c]	3,050 (83.6)[c]	4,740 (75.1)[c]
Valid breath sample	1,055 (92.4)[c]	3,166 (86.8)[c]	5,234 (82.9)[c]
Oral fluid sample	952 (83.4)[c]	2,800 (76.8)[c]	4,129 (65.4)[c]
Blood sample	641 (56.1)[c]	1,757 (48.2)[c]	2,288 (36.3)[c]
AUD and/or Drug Questionnaire	931 (81.5)[c]	2,679 (73.5)[c]	3,830 (60.7)[c]
Passenger Questionnaire	Pending	Pending	Pending

[a] When this number was unavailable (i.e., for six locations and 21 sessions), PIRE estimated based on the type of police involvement at the location.
[b] Percentage of eligible.
[c] Percentage of signaled to enter location.

Officers, including those who guided traffic to the survey location, had no other contact with the driver.

Driver Selection

To ensure unbiased selection of vehicles, the third vehicle that could be safely guided was signaled after initiation of data collection. This procedure is typical for roadside surveys and results in a random selection of eligible vehicles that is not biased toward any particular class of driver or vehicle. Once a driver left the data collection location, the traffic director indicated the availability of a bay to the person guiding traffic. The officer's or traffic director's duty was to guide drivers safely to data collection bays. Officers were provided with handheld counters to record all vehicles passing the location during a data collection period so that driver selection probabilities could be estimated.

In practice, a few of the selected motorists were missed. For example, in some cases, they turned away from the location, the officer/traffic director was unable to signal them in time, or they stopped briefly and explained to the officer/traffic director why they were unable to remain (e.g., some drivers were en route to a hospital or to a job and needed to proceed immediately, a situation that occurred more frequently during the daytime surveys than at nighttime).

Field Data Recording and Basic Survey Sequence

Field data collection consisted of these major components:

- Observational demographic measures
- Verbal informed consent
- PAS reading
- Survey interview

- Breath sample collection
- Oral fluid sample collection ($10 incentive)
- Self-report questionnaires, reported by subject on iPad

    a. Drug Use questionnaire (Over-the-counter and illegal drugs)
    b. Prescription Drug Use questionnaire
    c. DAST, self-reported on iPad by subject
    d. DUD questionnaire
    e. AUD questionnaire
- Passenger survey, self-reported on paper by front-seat passenger 16 years of age or older, if any ($5 incentive)
- Blood sample collection ($50 incentive)
- Observational vehicle measures
- Driver Information Card (Blue Card)

Besides these sources of individual driver information, data was collected on reasons for not participating and observational demographics about drivers who declined to participate, and drivers who required an impaired driver protocol (IDP). SMs also recorded overall information about the data collection location (e.g., weather, traffic reports counts, as well as unexpected incidents) on the SM Report Form. These items are discussed in more detail below.

Observational Demographic Measures

As the driver drove into the bay, the data collector recorded basic demographics based on observation, including:

- Driver's age range
- Driver's ethnicity
- Driver's race

Data collectors captured all demographic observations in their tablet as they introduced themselves and invited drivers to participate in the study, prior to reading the informed consent script. Demographic data was for statistical purposes only. No personally identifying observational data such as names, drivers' license numbers, or license plate numbers were collected.

Passive Alcohol Sensor (PAS) Reading

Data collectors used PAS as a tool to detect alcohol present in drivers' breath (see the "Equipment" section). Data collectors also looked for signs of impairment, such as the smell of alcohol or slurred speech. For the safety of the drivers, data collectors alerted SMs of drivers who displayed possible signs of impairment. While PASs are a useful tool, they do not definitively indicate impairment, as they test ambient air rather than a sample given directly from the subject's lungs. Any airborne substance chemically close to or containing ethanol would produce a positive PAS reading (e.g., perfume or cologne, mouth wash, exhaust from an older model vehicle). Data collectors were trained to use sight and smell in addition to the PAS reading to assess impairment.

The 2007 survey used a dual-PAS reading protocol to obtain two passive readings of the driver's breath. The data collector took the first sample immediately, collecting it as he or she introduced the driver to the study; the data collector initiated and collected the second sample after the driver agreed to participate and while the survey occurred. This study initially used the same two sample PAS protocol as the 2007 study; however, mid-way into this study, the first PAS reading was omitted.

The PAS measure provided the researchers with an indication of alcohol level for all drivers and helped identify the potential need for intervention even among those drivers who did not participate in the data collection in order to ensure their safety.

Verbal Informed Consent

After greeting the subject with a brief explanation of the study and recording observational data, the data collector read from the tablet a verbal consent script. In accordance with human subjects' protection procedures, subjects were informed of the nature of the research, that participation was voluntary and anonymous, and that they could end the data collection at any time. If subjects declined the interview, they were invited to provide only a breath test. The initial verbal consent script for the survey is as follows:

> *Hi, my name is _____. You haven't committed any violation. You have been randomly selected to participate in a voluntary and anonymous driver survey that takes just a few minutes. We'd like to ask you some questions about your driving behavior and take a sample of your breath. You may skip any questions or leave at any time. If eligible, you can earn up to $60 for completing some additional parts of the study. May I begin?*

Levels of Participation

Participation in the study was completely voluntary; subjects could skip any question they were not comfortable answering, or stop the data collection at any time. The verbal consent script was designed to maximize participation for all data components within the study by initially asking subjects to participate in the verbal survey and informing them that the data collector would ask for a breath sample upon conclusion of the interview. There were instances where subjects consented to the study but declined to participate in the verbal survey. The different levels of participation include the following.

Preliminary Breath Test (PBT) Only

If a subject declined to participate in the verbal survey after they listened to the consent script, data collectors were prompted in the tablet to request an anonymous breath test with the PBT only consent script:

> *If you don't want to participate in the survey, would you be willing to give us a very quick and completely anonymous breath sample for our research project? I am not able to look at the results of your breath sample and there is no risk to you. This will take just a few seconds. Again, this is voluntary.*

If the subject consented to provide a PBT only, data collectors would assess eligibility (see "Eligibility" section), perform the breath test (see "PBT section" below), and read the PBT-only end script:

> *Thank you for your time and your contribution! I am required to give you this information about the study that contains contact information if you have any questions or concerns. Give me a moment to let my team know that you're leaving so you get out of here safely. Have a great day (daytime)/night (nighttime)!*

Data collectors then gave the subject a participant information sheet (see Appendix R) and directed the subject out of the research bay and the traffic director guided them to the exit area.

If a subject declined to provide a breath sample, data collectors read from the tablet this script:

> *That's no problem; I still appreciate your time. I am required to give you this information about the study that contains contact information in case you have any questions or concerns. Give me a moment to let my team know you're leaving so you get out of here safely. Thanks again for your time! Have a great day (daytime)/night (nighttime)!*

The data collector then gave the subject a non-participant information sheet (see Appendix S), and the traffic director guided them to the exit.

Samples Only

Some subjects only wanted to participate in those data collection activities that provided compensation. Data collectors had a "Samples only" consent option that was programmed in the tablet to record the PBT refusal test number, and then take the subject straight to the consent script for Oral Fluid and self-reported questionnaires (see "Oral Fluid" section). Typically, subjects who consented to samples only would also decline the self-reported questionnaires; however, they were presented with the option to participate in both data components. Upon collection of the oral sample, the data collectors would proceed to the blood collection consent script, after which the data collector would conclude the interview.

Eligibility

Subjects who wished to participate in any data collection activity needed to meet eligibility requirements designed to protect human subjects and data integrity. This section defines the requirements and how data collectors assessed them during data collection.

Age

Subjects had to be 16 years of age or older to participate in the study, but 18 years of age or older to provide a blood sample in most states. State law in Alabama and Nebraska mandate persons be 19 years of age or older, and Indiana required subjects be 21 years of age or older to legally consent to a blood draw. This protocol was programmed into the tablet based on the age the respondent gave during the verbal interview and phlebotomists asked drivers again prior to the draw. If the observed age of a subject was 16–20, the data collector asked, "Are you at least 16 years of age?" If the answer was yes, the survey continued. If the answer was no, the data

collector read the following "not eligible script" from the tablet and terminated the data collection:

> *I'm sorry! You don't meet the eligibility requirements to participate in this study. This sheet contains information about who we are and what the study is about. It also contains contact information if you have any questions or concerns. Thank you very much for your time. Give me a moment to let my team know you're leaving so you may get out of here safely. Have a great day (daytime) / night (nighttime)!*

The data collector provided the driver with a "non-participant information sheet" and the traffic director guided them to the exit. If the subject's age fell outside of the 16–20 range (i.e., 21–34, 35–64, or 65+), the data collector had a "did not have to ask" option for the age eligibility question.

Previous Knowledge

The data collectors asked all drivers, "Did you hear about this survey before you were waved in?" Any subject who sought out the survey due to previous knowledge (e.g., through friends or relatives who had previously participated and called on cell phones) thus was not randomly-selected, and was ineligible. The data collector would then conclude the data collection according to the non-eligible protocol; drivers were read the non-eligible script, provided a "non-participant information sheet" and guided to the exit. There were some instances when subjects indicated they had heard about the survey, either in the media or through an acquaintance that had previously participated, but had not been looking for the location to participate. These subjects were included in the study as long as they had been randomly selected (see "Survey Protocols and Procedures").

Emergency and Commercial vehicles

Emergency and commercial vehicles were not included in the study. There are commercial drivers who work out of unmarked or inconspicuous vehicles, such as detectives or delivery drivers. When these emergency and commercial drivers were waived in, they were thanked and the traffic director guided the driver to the exit.

Intoxicated

To participate, drivers must have been able to comprehend the situation and provide informed consent. If a data collector assessed a driver as unable to provide informed consent due to impairment from alcohol, drugs, or a medical issue, the subject was ineligible and any data obtained up to that point was omitted from analyses. The SM would also assess the driver and enact the IDP. The subject's status was noted in the tablet as "not eligible—intoxicated."

Conversion Protocol

During 2007 NRS data collection, data collectors used a conversion protocol to determine whether any systematic bias was present among data collected from drivers who initially declined participation versus data collected from those who had initially consented. Results from the 2007 NRS revealed no statistically significant differences between the conversion rates of daytime and nighttime subjects. Researchers initially used the 2007 NRS conversion protocol

again in the 2013 NRS data collection. This protocol, however, was discontinued mid-way into the study.

When initially implemented in 2013-2014, the field protocol was identical to that of the 2007 NRS data collection. At the beginning of each session, data collectors notified the SM when a driver declined to participate in the data collection. The data collector did not try to convert the first driver who declined in each session. On the second decline of the session, the data collector called out the word "change"[15] to the SM while continuing to engage the driver and handing him or her the "non-participant information" sheet. When the SM came over to the bay, he or she attempted to convert the driver, saying:

> *It's really important for us to interview as many drivers as we can, so I'd like to offer you an additional $100 money order if you would be willing to participate in our survey. To get the additional $100, you would need to participate in a survey and provide a breath and oral fluid sample.*

If the subject accepted, the SM stated:

> *Thank you. We will be asking you the survey questions and are asking you to provide a breath and saliva sample. In addition to the $100 I just mentioned, you will be given $10 cash for the saliva sample. There will also be an opportunity for you to earn an additional $50 after that.*

The data collector proceeded with the regular protocol, including all consent statements, the breath sample, the oral fluid sample, the self-reported questionnaires, and the blood sample consent. Once the survey was completed, the SM returned and provided the subject with two $50 money orders and thanked the driver.

If the subject declined the conversion offer, the SM thanked him or her and terminated the interview. The traffic director then guided the driver to the exit.

The data collectors continued to notify the SM of subjects who declined participation until two subjects were successfully converted for each 2-hour data collection session, at which time this activity stopped for that session. The goal of two conversions per session was not always reached.

Non-English-Speaking Subjects

Most survey teams included at least one Spanish-speaking interviewer. In some heavily Spanish-speaking locations, such as Miami, Florida; Dallas, Texas; and Los Angeles, California, the team composition consisted of multiple Spanish-speaking interviewers. Additionally, all of the survey components, drug questionnaires, protocols, consent forms, and the passenger survey were available in Spanish.

If a data collector could not communicate with a Spanish-speaking subject, there was an option in the tablet to indicate this concern, and the tablet prompted, "*Voy a encontrar a alguien que hable español para explicar"* (translated: "I'm going to find someone who speaks Spanish to explain"). Once a Spanish-speaking data collector approached, the data collectors would switch

[15] The term "change" was simply a word chosen to obtain the SM's attention without drawing attention from the other drivers.

equipment. The Spanish-speaking interviewer then selected the "switched interviewer" option, which converted all tablet survey content to Spanish, and resumed the data collection beginning with the informed consent script. When the survey was completed, the data collectors returned to their original bays with their original equipment. If a Spanish-speaking subject was initially guided to a Spanish-speaking data collector's bay, the tablet had a "Continue in Spanish" option that converted all data collection material to Spanish.

If the subject did not fully comprehend English or Spanish very well, he or she was considered unable to provide informed consent. The data collector stopped data collection, gave the subject an information sheet, and the driver was guided to the exit. The data collector noted on the tablet and Blue Card that the subject was ineligible due to a language barrier.

Interview and Passive Alcohol Sensor (PAS) Reading

Once the subject gave verbal consent, the data collector indicated in the tablet the level of consent provided (consented to the verbal survey, PBT only, or samples only), then assessed the subject's eligibility.

Once the data collector established the driver's eligibility, the data collector asked the subject about annual mileage, the origin and destination of the current trip, drinking behaviors, drinking and driving behaviors, demographic information, and whether he or she was acting as a designated driver at the time of the interview. If a subject objected to answering survey items and wished to end the survey, the subject was asked to voluntarily provide an anonymous breath sample before leaving.

During the verbal survey, the tablet prompted the data collector to obtain and record the PAS results. The PAS displayed colored bars qualitatively approximating intensity of BrAC (Figure 17). The data collector entered the highest bar obtained; if the PAS reading was "Yellow 4" or higher, it was assumed that alcohol might be present and a message popped up on the tablet to notify the Survey Manager.

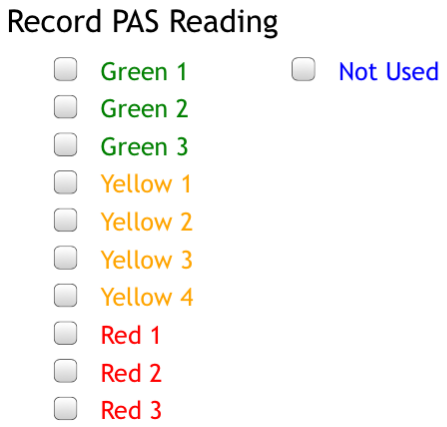

Figure 17. Screen Shot from the Tablet

Data collectors also observed and estimated a level of the driver's impairment. A high PAS reading with a "Level 1" for intoxication could indicate the subject had strong cologne or perfume, which was typically noted by the data collector on the Blue Card. Alternately; this could indicate possible data collection issues when negative PAS results were paired with a high

level of observed impairment. For example, a negative PAS reading with an observed Level 2 or Level 3 observed impairment could indicate that the PAS device needed repair or the interviewer needed direction to obtain a more accurate PAS reading than was currently being achieved. The tablet presented the levels of intoxication in the format shown in Figure 18. When a data collector selected Level 3, the words "Signal Supervisor: 'I need some cards over here' " appeared in a pop-up box, reminding interviewers to notify the SM of a possible impaired driver.

Figure 18. Screen Shot: Assessing the Intoxication Level on the PAS

Breath Sample Collection Procedure

After the interview, the data collector requested a breath sample from the subject. The data collector obtained breath samples using a portable breath alcohol test device (Mark V Alcovisor; see Appendix E).

To request a breath test, the data collector said, "Now I'd like to get an anonymous sample of your breath. Our device does not display any readings and there is no risk to you. [Show respondent PBT.] This will take just a few seconds. Again, this is voluntary." The data collector then held the PBT while reaching into the vehicle window towards the subject and instructed the subject to pull the sanitary plastic wrapping off of the white plastic tube so that the data collector's hands did not touch the breath tube where the subject placed his or her lips. The data collector then instructed the subject to take a deep breath and blow long and steadily into the tube. As the subject blew into the breath tube, the data collector encouraged the subject to continue blowing a steady stream of air by saying, "Keep blowing, keep blowing, keep blowing" (Figure 19.)

Figure 19. Subject Providing a Preliminary Breath Test (PBT).

The PBT would click when it had taken in sufficient air for BrAC determination; at this time, the data collector concluded the breath test and disposed of the breath tube.

If the driver did not (i.e., some subjects held their breath or sucked in air to avoid a breath sample) or could not blow sufficient air into the PBT, the data collector used a manual override which required less air from the subject to obtain a breath sample.

All PBT results were stored in the devices themselves (rather than displaying the result) to be downloaded the following day. Neither the driver nor data collector knew the reading. However, if a driver appeared impaired, the interviewer signaled the SM who administered a breath test with a PBT that displayed the result. If the driver had a BrAC of .05 or above, the SM arranged a ride home

for the driver from another occupant of the vehicle if that person passed a BrAC test, from a friend or relative of the driver, by taxi, or by a member of the research team (see IDP, Appendix D).

Oral Fluid Sample Collection Procedure and Drug Questionnaire

Upon completion of the verbal survey and breath sample collection, the tablet prompted the data collector to obtain consent for an oral fluid specimen collection and offer a $10 incentive. This was in conjunction with the self-reported questionnaires on the tablet, which included the drug use questionnaire, the prescription drug questionnaire, the DAST, the DUD questionnaire, and the AUD questionnaire. Because alcohol disorder diagnoses are sensitive to drinking behavior in the past year, only drivers who had consumed alcohol in the past year were eligible to answer the AUD questionnaire. Depending on how the subject answered the AUD screener question during the verbal portion of the survey (i.e., the question asking whether he or she had consumed alcohol in the past year), the tablet prompted the data collector to read one of the two following consent scripts:

- Oral Fluid and Drug Questionnaire Consent for driver *Not Eligible* for AUD survey:

  For $10 cash we are asking you to VOLUNTARILY participate in two anonymous research activities about prescription and nonprescription drug use. This will only take a few minutes and it involves collecting a sample of your saliva for later analysis in a lab, and answering some questions about your use of substances. Your answers to these questions CAN IN NO WAY BE ASSOCIATED WITH YOU, and there is no risk to you by participating in this anonymous study. As before, you may stop participating at any time.

- Oral Fluid and Drug Questionnaire Consent for driver *Eligible* for AUD survey

  For a total of $10 we are asking you to VOLUNTARILY participate in two anonymous research activities about prescription and nonprescription drug use, and your use of alcohol in the past year. This will only take a few minutes and it involves collecting a sample of your saliva for later analysis in a lab and answering some questions about your use of substances. Your answers to these questions CAN IN NO WAY BE ASSOCIATED WITH YOU, and there is no risk to you by participating in this anonymous study. As before, you may stop participating at any time.

The interviewer held out the Quantisal oral fluid collection device (see Appendix G) and instructed the subject to place it under the tongue so that it could collect saliva. The Quantisal device's color change pad turned blue to indicate when a sufficient fluid volume had been collected. At that time, the subject placed the swab in a vial provided by the data collector, which the data collector then capped.

The oral fluid samples were labeled with preprinted CoC labels that contained an identifier that corresponded to that sample. This number was also entered into the tablet. CoC numbers were used to maintain a documented link between each sample collected and the respondent who provided it. To minimize any possible data-matching problems, Immunalysis Corporation provided three identical CoC labels per form that contained one CoC number. In addition to

entering the CoC number into the tablet, one label was affixed to the vial and another label to a Driver Information Card (Blue Card) for tracking the subject's participation.

The data collectors stored the vials of oral fluid samples in plastic storage bags in their bay boxes. The SM or the phlebotomist frequently walked through the bays, collected the vials, put them in a different plastic storage bag, and stored them with cold packs.

Self-Administered Surveys

The drug questionnaire, the DAST, the DUD questionnaire, and the AUD questionnaire (see Appendix H) were programmed into the tablet and completed by the subject while the oral fluid swab was in his/her mouth. This streamlined data collection.

The self-administered surveys were brief instruments regarding over-the-counter, prescription, and illegal drug use. Subjects were assured that their answers were completely anonymous and confidential.

The drug-use questionnaire collected information on over-the-counter and illegal drug use. This survey asked about drug use prevalence and misuse.

The Prescription Drug Questionnaire collected information on prescription drug use. This survey asked questions about prescription drug use prevalence and misuse, perceived risks of driving while using prescription drugs, and use of alcohol with prescription drugs.

The DAST was a brief screening instrument to determine the presence of potential drug abuse (excluding alcohol). If the subject answered that they did not use drugs other than those required for medical reasons, data collectors did not ask them to complete the remainder of the DAST nor were they asked to complete the DUD.

The DUD questionnaire determined the presence of a drug use disorder regarding marijuana, cocaine, and prescription pain killers. The data collectors asked subjects who reported using marijuana, cocaine, or pain killers in the past year to complete the DUD questionnaire.

The AUD questionnaire determined the presence of an alcohol use disorder exclusive of other drug use. Persons who had not had a drink containing alcohol within the past year were ineligible for the AUD assessment.

Once the subject had completed the oral sample and the self-administered questionnaires, the data collector paid the $10 incentive.

Passenger Survey

An insight from the 2006 pilot test of data collection protocol indicated drivers with passengers were less likely to complete the entire protocol. As such, for the 2007 study, passengers were also engaged with their own brief survey. This procedure was used again for 2013-2014. We provided small incentives (e.g., candy, lollipops, etc.) for children and dog biscuits to drivers with a dog in the vehicle. We also offered a passenger survey (see Appendix I) for passengers in the front seat who were 16 years of age and older, with an incentive of $5. The data collector read the passenger survey consent statement to the passenger:

> *I'd like to invite you to participate in a voluntary and anonymous passenger survey while the driver completes his or her own survey. Your answers will*

> *contribute to our understanding of driving patterns across the United States. You may discontinue at any time and skip any questions you choose. If you choose to participate, I can offer you $5 cash. Would you like to participate?*

This procedure was successful in retaining drivers throughout the brief interview portion of the study. Questions on the passenger survey included month and year of birth, gender, race, ethnicity, driving habits, relationship to the driver, and drinking habits. We also included items from the DAST and the AUD questionnaires (see Appendix H).

Blood Sample Procedure

After completing the oral fluid sample and the self-administered surveys, the data collector requested that the subject provide a blood sample for an additional $50 incentive. The incentive was given as a money order. The tablet prompted data collectors to read this consent statement:

> *We would like to offer you a $50 money order to provide a quick blood sample to measure some components that may reflect alcohol and prescription and nonprescription drug use. This is completely voluntary and anonymous. We have a licensed phlebotomist available who is very skilled and it should take about 5–10 minutes. Would you be willing to participate in this part of the study?*

If the subject agreed to give a blood sample, he or she was instructed to drive to the phlebotomy van - the data collector stated:

> *Great! We need to get you to the phlebotomist. I am going to give you the $10 you have earned, some information about the study, and labels for you to give to the phlebotomist. I need to communicate to my team that you will be moving your car within the location to avoid any confusion. You will find the phlebotomist in that van right there where you will park. Give these stickers to the phlebotomist who will go through an official consent process, perform the draw, and give you your $50 money order. Do you have any questions?"*

Licensed phlebotomists requested each subject's consent for the blood draw. Drivers reviewed the Consent for Blood Draw form (see Appendix T). The phlebotomist set up the blood draw station in the rental van. During blood draws, one gray-top tube of the subject's blood was drawn (10 ml, about 2 teaspoons). The gray-top tube is a glass test-tube that contains a preservative of potassium oxalate/sodium fluoride that reduces the need for refrigeration, but does not affect the ability to detect and quantify drugs.

Phlebotomists were well trained and used standard medical practices to draw the blood safely. Phlebotomists screened subjects for age, use of blood thinners (e.g., Coumadin), and blood disorders, such as hemophilia.

Some individuals had small and/or difficult-to-locate veins, even when using small gauge butterfly needles on the back of the hand. In those cases, the laboratory was able to conduct an initial screening test only, but not a confirmatory analysis.

At the conclusion of the blood draw, the subject received $50. Venipuncture is not entirely without risk and occasionally subjects felt dizzy or faint. In these instances, the subject was offered snacks or a drink while waiting in the van until feeling better.

The blood sample tubes were labeled with preprinted CoC labels that linked the blood sample to the Blue Card. The CoC labels contained the identifier that corresponded to that sample. This number was also entered into the tablet. CoC numbers were preprinted by the laboratory and used to maintain a documented link between each sample and the survey responses and other samples provided by that respondent.

The phlebotomist stored the samples with cold packs. At the hotel, blood samples were kept in refrigerators or with the cold packs. The phlebotomist shipped samples to the laboratory with polar packs as an additional precaution.

If a data collector was using Spanish with a driver, they stayed with that driver through the blood draw to translate for the phlebotomist and driver.

Observational Vehicle Measures

The data collector recorded observations about the driver's vehicle and passengers after the driver left the bay. These observations included:

- Gender
- Vehicle type (e.g., car, truck, SUV)
- Seat belt use by the driver
- Number of passengers
- Seat belt use by the front passenger
- Presence of passengers younger than age 15

Driver Information Card (Blue Card)

The data collector completed a Driver Information Card (also known as the Blue Card; see a sample in Appendix A) for each subject who drove into a bay. Driver Information Cards were made of 8.5" x 11" Blue Cardstock, and the interviewer assigned one to each subject. The card tracked which components of data collection the subject participated in, and detailed key information to link data from a subject.

Each Driver Information Card contained the driver's unique ID number, which consisted of the assigned data collector ID, the site's identifying number, the state abbreviation, time, location number (numbered 1–5), and the case number for each driver entering a bay.[16]

The Driver Information Card contained a checklist of data components of the survey researchers collected and an area to affix the oral fluid sample CoC label and blood sample CoC label. Data collectors recorded the tablet, PAS, and PBT device numbers on the card, as well as whether he or she conducted a Spanish survey, attempted a conversion, and/or enacted the IDP. The Driver Information Card ensured that all data components of one subject were stored together.

[16] As previously noted, no personally identifying information such as name, driver's license number, or license plate number was collected on any subject.

Post-survey Activities

When the last driver had exited, the SM notified data collectors to pack up supplies. After the last Friday and Saturday night sessions, the SM collected all tablets and PBTs from the data collectors and stored them in a separate container for later uploading.

Survey Manager (SM) Report Form

SMs were responsible for filling out a Report Form (Appendix J) for each location at the conclusion of the event. This detailed information about the location, including date, time, address, weather, SM, phlebotomist, officer, staff names and IDs. It included a sketch of the data collection layout. The SM tallied all attempted conversions and wrote details of all instances when they implemented the IDP.

Length of Data Collection

The survey and BrAC test alone averaged approximately 5–7 minutes. The survey with BrAC and oral fluid test averaged 10–12 minutes; adding the blood test increased the data collection time to about 20–30 minutes.

Optimizing Response Rates

Researchers used a number of strategies to optimize subject response rates. Although some subjects will always decline to answer certain questions, evidence suggests that skilled data collectors can minimize refusal rates (Groves, Cialdini, & Couper, 1992). As Snijkers, Hox, and De Leeuw (1999) pointed out, "during the initial moments of contact, the data collector is the initiator and dominant actor in this interaction, and much depends on the data collector's ability to persuade the potential respondent" (p. 173). Evidence suggests response rates vary noticeably between interviewers (Lyberg & Dean, 1992; Lyberg & Lyberg, 1991; Singer, Frankel, & Glassman, 1983) and that better trained, more experienced data collectors tend to obtain better response rates than other data collectors (Couper & Groves, 1992).

Data collector-related strategies to optimize response rates included:

- Selection of outgoing and confident data collectors.
- Clear communication regarding the job's requirement and the data collectors' responsibility.
- Having more data collectors, which allowed them to be rotated, reducing the likelihood of data collectors becoming burned out.
- Using mock data collections, with many practice scenarios, including with apparently impaired drivers.
- Continued training to review protocols and address data collector concerns.
- Having a large team of interviewers, which allowed them to take breaks. This reduced the exhaustion on the second night of data collection.
- Review of procedures by SMs prior to going into the field every week.
- Debriefing after each survey weekend.
- Random Quality Control screenings by experienced senior survey members.

- Requesting a breath sample from all subjects, even if they did not choose to participate in other portions of the study.

Impaired Driver Protocol (IDP)

Initially, the protocol provided that while the data collector conducted the informed consent process for the interview, he or she took a PAS reading on subjects prior to their consent or refusal to participate in the survey. This reading, along with initial observations of the driver's intoxication level, provided the researchers with an indication of alcohol level for all drivers and helped to identify the potential need for intervention measures. Mid-way into the study, this initial PAS reading was no longer taken.

Additionally, throughout the time the subject was engaged with the research team, the data collector continually assessed the driver's impairment level and called the SM if a driver showed signs of risk. Because impaired drivers are unable to consent to participate in the survey, data collection (surveys and sample collection) would end when the IDP was engaged.

If a subject appeared impaired or received a high PAS reading, the data collector signaled the SM who then administered a breath test with a PBT that displayed the result. If the driver's BrAC was .05 or higher, team members arranged an alternate ride home for the subject, so that the subject would not be released onto the roadway. When the SM came to the bay, he or she explained his or her concern to the driver. The SM also explained that the second PBT device did provide results, so that if the subject blew .05 or higher, they would make alternative arrangements to get the driver home safely.

The well-developed and tested procedures in the IDP (described in detail in Appendix D) include several means of alternate transportation:

- Having another licensed occupant of that vehicle drive if he or she passed a BrAC test
- Calling a friend or relative of the driver to the location to pick up the driver
- Calling a local taxicab company for a ride (at no cost to the subject)
- Arranging for a hotel room for out-of-town drivers (at no cost to the subject)
- Calling a tow truck (at no cost to the subject)

In the very rare instance when a driver declined all of these options, the SM called over the police officer, who went over the options again with the driver. In the history of the National Roadside Survey, including the 2013-2014 Survey, no subjects were arrested as a result, either direct or indirect, of participating in data collection.

Oral and Blood Sample Analyses

Oral fluid and blood samples were first screened for the presence of our selected drugs by immunoassay technique. Samples with positive screening results were then subjected to a second, more sensitive and specific confirmation test[17] to identify the individual drug(s) present. When the second test did not confirm the presence of a drug, the sample was recorded as drug-negative. See Table 18 for drug categories and concentration thresholds. The laboratory procedures for the analysis of many of these drugs in oral fluid have been published (Moore, Rana, et al., 2007b; Rana et al., 2006).

No oral fluid or blood samples were analyzed for DNA or other personally-identifying information.

The selected drugs included over-the-counter, prescription medications, and illegal drugs. All the drugs tested for have the potential to impair driving performance. The presence of a drug does not necessarily imply impairment by that drug. This study examined drugs that have the potential to impair driving-related skills. However, our results do not allow determination of whether any individual driver was impaired by a drug. The following provides a brief discussion of some of the drugs of interest.

Alcohol is a central nervous system (CNS) depressant that affects many mental, physical, and psychomotor functions. Use of this drug can have impairing effects on driving-related skills.

THC is the active component of marijuana.[18] THC may have a variety of effects, such as stimulantative, sedative, or hallucinogenic. Detection of the active metabolite[19] "hydroxy," or the inactive metabolite, "carboxy," indicate past use, but not necessarily recent use (Coulter, Garnier, & Moore, 2012; Moore et al., 2011). This 2013-2014 survey added several synthetic cannabinoids to the testing panel.

Cocaine is a central nervous system (CNS) stimulant that, while used medically as a local anesthetic, is also a drug of abuse. At low doses, cocaine might have performance-enhancing effects; however, little is known about its effects on human performance at higher levels as sometimes seen with recreational use, when used with alcohol or as the stimulating effects are wearing off.

Opioids are narcotic analgesics, used both as pain medications (e.g., oxycodone, hydrocodone) or recreationally (e.g., heroin). After an initial rush of euphoria, they act as CNS depressants, which could have negative performance effects.

[17] The lab screened samples using Enzyme-linked Immunosorbent Assay (ELISA). Confirmation tests were performed using gas chromatography-mass spectrometry (GC/MS) or liquid chromatography tandem mass spectrometry (LC/MS/MS).

[18] Marijuana is another name for the cannabis plant. Cannabinoids are drug substances contained with the cannabis plant. The most notable is delta-9-tetrahydrocannabinol (THC).

[19] Metabolites are new drugs that are formed as the body processes the parent (original) drug (e.g., through metabolism in the liver).

Table 17. NRS Drugs and Minimum Detection Concentrations

Drug / Drug Class	Minimum concentration oral fluid (ng/ml)		Minimum concentration blood (ng/ml)	
	Screen	**Confirm**	**Screen**	**Confirm**
Alcohol *(ethyl alcohol)*	.02 g/dL	.02 g/dL	.02 g/dL	.02 g/dL
Amphetamine/Methamphetamine *(MDMA, MDA, MDEA, phentermine)*	25	10	20	10
Barbiturates *(phenobarbital, pentobarbital, secobarbital, butalbital)*	50	50	100	100
Benzodiazepines *(oxazepam, nordiazepam, bromazepam, estazolam, flurazepam, flunitrazepam, lorazepam, chlordiazepoxide, temazepam, diazepam, clonazepam, alprazolam, triazolam, midazolam, nitrazepam)*	5	1	20	10
Buprenorphine	5	2	1	1
Cannabinoids *(THC, THC-COOH)*	4	2	10	1
THC-COOH in oral fluid	0.05	0.02	n/a	n/a
Synthetic Marijuana	0.25	0.25	5	1
Carisoprodol (Soma)	50	50	500	500
Cocaine *(cocaine, cocaethylene, benzoylecgonine)*	20	8	25	10
Dextromethorphan	50	20	50	20
Diphenhydramine	25	10	25	10
Fentanyl	1	0.5	1	0.5
Fluoxetine (Prozac)	50	10	50	10
Ketamine	10	10	10	10
Meperidine (Demerol)	50	25	50	10
Methadone	50	20	50	10
Methylphenidate (Ritalin)	10	10	10	10
Naltrexone	40	10	25	10
Opiates *(6-AM, codeine, morphine, hydrocodone, hydromorphone)*	20	10	25	10
Oxycodone (Percocet) *(oxymorphone)*	20	10	25	10
Phencyclidine	10	10	10	10
Propoxyphene (Darvon)	20	10	20	10
Sertraline (Zoloft)	50	10	50	10
Tramadol (Ultram)	50	25	50	10
Tricyclic antidepressants *(amitriptyline, nortriptyline, amoxapine, chlorpromazine, citalopram, clomipramine, cyclobenzaprine, desipramine, desmethyldoxepin, dothiepin, doxepin, imipramine, mianserine, mirtazipine, paroxetine, protriptyline, trazodone, trimipramine, venlafaxine)*	25	10	25	10
Zolpidem (Ambien)	10	5	10	10

[†]Screening uses ELISA microplate, and confirmation uses GC/MS or LC/MS/MS technology.

Muscle relaxants, such as carisoprodol (Soma also called Miltown), and cyclobenzaprine (Flexeril) may cause driving impairment, due to sedation.

Amphetamines are CNS stimulants. They are used medicinally and may be used recreationally or to enhance alertness or performance. Ecstasy is a psychoactive drug that has similarities to both the stimulant amphetamine and hallucinogens. It produces feelings of increased energy, euphoria, emotional warmth and empathy toward others, and distortions of sensory and time perception. Other CNS stimulants, such as methylphenidate (Ritalin), are prescription drugs commonly used to treat Attention Deficit Hyperactivity Disorder (ADHD), but may be used recreationally.

Phencyclidine (PCP) may be used recreationally. It is related to veterinary tranquilizers that impair motor ability, and may cause hallucinations.

Ketamine has limited medical use in humans but is primarily a veterinary tranquilizer. It is sometimes used recreationally as a psychedelic.

Benzodiazepines are prescribed to reduce anxiety, prevent seizures, and assist in sleep-related disorders. These drugs act as CNS depressants, and may have sedating effects.

Barbiturates are CNS depressants, primarily for migraines and for seizures.

Methadone is a narcotic analgesic. It is used medicinally for pain, and may be used in opiate detoxification and maintenance.

Tricyclic antidepressants (e.g. amitriptyline, nortriptyline and imipramine) may cause sedation.

Newer antidepressants, such as selective serotonin reuptake inhibitors (SSRIs - fluoxetine [Prozac] and sertraline [Zoloft]) can cause impairment, especially in high concentrations or if used outside of therapeutic treatment.

Sleep aids such as zolpidem (Ambien) may cause drowsiness or dizziness.

Dextromethorphan, a CNS depressant, is a synthetic analog of codeine. It is used in cough medicines, and in high doses for recreational use.

Laboratory Quality and Proficiency

Immunalysis Corporation is in the proficiency testing program for oral fluid, administered by Research Triangle Institute. This program serves as an external monitor of quality, accuracy, precision, and timely reporting.

Gas Chromatography-Mass Spectrometry (GC/MS)

Instrumentation:

Agilent 6890 gas chromatography - 5973 or 5975 mass selective detector (GC/MSD); electron impact (EI) mode.

Extraction:

Oral fluid (1 ml) of diluted specimen (1:3 buffer) was extracted using mixed mode solid phase methods with drug specific column phases.

Derivatization:

Drug-specific derivatives if required for maximum detectability and stability.

Liquid Chromatography-Mass Spectrometry (LC/MS/MS)

Instrumentation:

Agilent LC/MS/MS System: 1200 Series LC pump 6410 Triple Quadrupole; or
6430 Tripe Quadrupole

Zorbax Eclipse XDB C18 (4.6 x 50mm x 1.8µm) column

Derivatization:

THC-COOH in oral fluid only (Coulter, Garnier, & Moore, 2012)

Alcohol (Oral Fluid and Blood)

Specimens which screened positive were then analyzed using headspace GC-with flame ionization detection. The dilution technique involves spiking an oral fluid sample with N-propanol (1-propanol) as an internal standard. Both ethanol and the internal standard are volatile; therefore evaporate into the "headspace" of the vial upon heating. The concentration of the volatile substance in the headspace is determined according to calibration standards.

Instrumentation:

Perkin Elmer Turbo Matrix 40 Headspace analyzer

Agilent 5890 Gas Chromatograph with flame ionization detector

Column: DB-624 J&W Scientific (122-1334) (30 meter, 0.25mm ID, 1.4µm thickness)

Specimen Preparation:

Add 0.25mL neat oral fluid + buffer in the Quantisal collection device or blood to a 20mL headspace vial with crimp top closure.

Add 100µL of 20mg/dL N-propanol (internal standard) to all calibrators, controls, and specimens.

Data Handling and Processing

Handling of Data

The data path is shown in Figure 20.

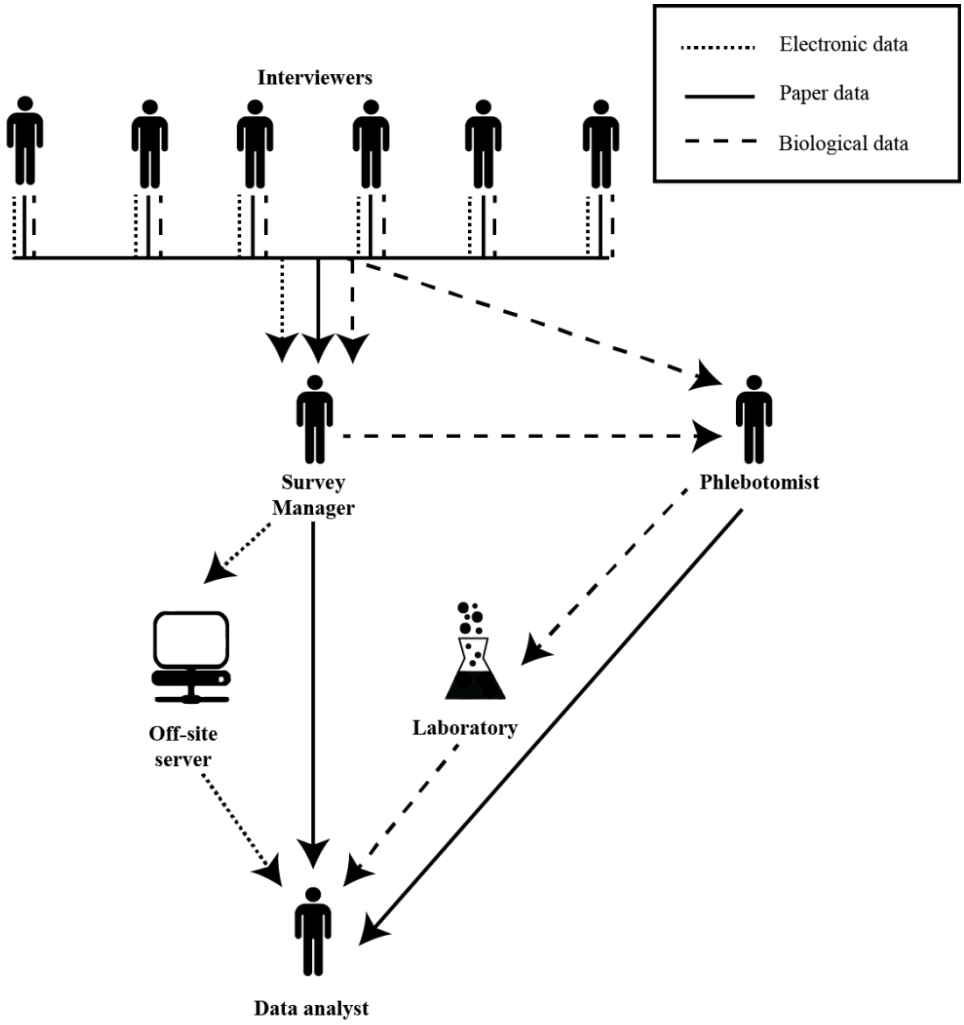

Figure 20. Illustration of the NRS 2013 Data Path

Handling Data in the Field

Data collectors assigned each driver who entered a research location a unique identifier, known as the Driver Identification Number (DIN), which links all data records for that subject. The DIN has five components:

- Data collector Number: A unique two-digit number was assigned to each data collector
- PSU ID Number: A two-digit number for the location
- State Abbreviation: Standard postal abbreviations

- Session Number: There were five data collection sessions per weekend at each site:
    a. Session 1: Friday daytime, at either 9:30 a.m.–11:30 a.m. *or* 1:30 p.m.-3:30 p.m.
    b. Session 2: Friday night, 10 p.m.–midnight
    c. Session 3: Friday night, 1 a.m.–3 a.m. (technically early Saturday)
    d. Session 4: Saturday night, 10 p.m.–midnight
    e. Session 5: Saturday night, 1 a.m.–3 a.m. (technically early Sunday)
- Driver Number: Data collectors assigned each driver they encountered a number that increased incrementally by one for each potential respondent they encountered per session. Driver numbers started at one at the beginning of every session.

Processing of Data

All data coming back into the office were reviewed in a multistep process. Researchers stored data in six categories and processed them in the order in which they were received: PBT results, SM Report Forms, Blue Card data, tablet data, passenger surveys, and lab results. As data were received, researchers reviewed, processed (paper forms entered into databases and filed), and stored them electronically on secure servers.

Preliminary Breath Test (PBT) Results

PBT data were saved as Microsoft Excel files that contained a PBT device number, test (record) number, date and time stamp of sample, calibration date of device, BrAC reading, test mode (identifying sample as recorded automatically, manually, discontinued, or declined), and temperature for all tests taken on each PBT device used during the data collection period. All the PBT data were stored to two separate files; by week number and by PSU number. The analyst used the "by week" file to merge PBT data with tablet data to prepare weekly reports. The data team used the "location number" file to match PBT results with Blue Card data in Excel.

Survey Manager (SM) Report Forms

An analyst reviewed the SM Report Forms electronically submitted by SMs for completion and accuracy. Once all components were confirmed, the analyst printed and stored hard copies for senior staff and merged the SM Report Forms into a master file in Excel. This file was used to finalize weekly reports.

Blue Card Data

Research assistants inventoried Blue Cards per location by DIN in Excel, and noted any data concerns or issues for the analyst to reference during the data merging process. The research assistants then entered into Excel the following items, merging them with PBT results:

- Data components from the Blue Card, such as level of participation
- Oral fluid and blood CoC label numbers
- Driver protocols
- Notes pertaining to the data collection

These were saved in files reflective of when Survey Mangers would have downloaded PBT results: Session 1, Sessions 2–3, and Sessions 4–5. One individual double-checked the Blue Card Excel files against hard copies and compared them to tablet data throughout the entire project; this ensured consistent data entry between multiple Research Assistants. The individual was also

able to note any inconsistencies between Blue Cards and tablet data for later examination by the analyst at the time of the final data merge. After the completion of this quality check, researchers merged the three Session files to create a Location master file. The master files were then used to monitor data collector error trends and match CoC numbers from the Blue Card data to the oral fluid and blood results from the lab using Microsoft Access.

Tablet Data

From the field, tablet data were uploaded to a secure server. Data remained on the tablet until the server sent a confirmation message to the device. This required an Internet connection. If the connection was lost or interrupted, the data would stay on the device. The server stored all original data in one file that was downloaded by the analyst once weekly. Any records recognized by the server as being incomplete or duplicates were stored in a back-up file that could be accessed by an analyst. This measure safeguarded against loss of data due to uploading and downloading procedures. Once a researcher downloaded the tablet data from the server into an Access database, the analyst would convert the Access database into a Statistical Analysis System (SAS) dataset and resolve errors of DINs. The analyst would then export the SAS dataset into Excel, and merge the tablet data with PBT results in individual Excel files. The process was as follows:

- The analyst visually checked to ensure that the PBT device number and test number provided in the tablet data had a corresponding PBT device and test number. If discrepancies were noted, the analyst used the PBT device number assigned to the data collector and date/time stamp provided for each PBT test result to identify the correct PBT device and/or test number for its corresponding subject.
- The analyst merged each PBT test result for each subject into its corresponding tablet record. The analyst located the PBT device number and test number for the first subject. Then he or she opened the PBT file and searched for the corresponding device number, test number, and test results. The analyst copied the result from the file and then pasted it into the neighboring cell in the subject's tablet file. To assist in this process, the analyst paired the date and time stamp generated for each PBT test result with the date and time stamp generated for each tablet survey. These time stamps were associated to resolve potential discrepancies and safeguard data. The analysts repeated this process for each subject. If necessary, the analyst contacted the SM and the data collector to troubleshoot.
- The analyst prepared site-specific statistics reports about each data collection activity conducted over the weekend. These reports focused on key findings. These could indicate a need for adjustments in preparation for the next weekend's data collection. This site-specific report provided information about response rates for each data collector, response rates for the team, potential equipment usage problems that may have distorted output, and any problems that might skew the data. Feedback was provided to personnel responsible for team performance.
- The analyst took each Excel data file and merged it into one working SAS database for the project. This database eventually came to contain all of the subject data from each data collection activity in the study. To begin the merging process, the analyst used "Stat Transfer" software to convert the merged Excel file into an SAS file. The merged data file contained all of the observational data, responses to the surveys, and PBT test results. The weekly preliminary report showed the number of vehicles stopped and the survey

completion rate. The report also specified how many provided breath, oral fluid, and blood samples. A summary distribution of PBT BrACs was also provided. A brief summary included information about weather conditions, any unusual events or circumstances regarding traffic patterns, data collectors who were replaced, and arrangements made for any impaired drivers.

- Research Assistants entered the passenger survey data into a Microsoft Access database. Hard copies were noted as entered and filed by DIN with the corresponding Blue Card. The Research Assistants used an Excel file as an in-house communication tool regarding passenger survey data entry oddities such as DINs that may have been duplicated due to data collection "re-do" locations[20]. Research Assistants then merged the passenger survey data with the cleaned driver data by DIN.
- Immunalysis Corp. processed the biological samples. Immunalysis emailed the oral fluid and blood results in an Excel spreadsheet by batch number. Batch numbers were incremental numbers of shipments received by the lab from phlebotomists in the field. Upon receipt of batch results from the lab, researchers saved the Excel spreadsheets on the PIRE server. These files were kept separate from other data and were collated by the researchers into a master file of lab results. Researchers then used this master file to match results to CoC numbers using the Blue Card data. Once matched, the analyst merged them with tablet data by DIN.

[20] There were a few sites where not all data collection sessions could be completed within one weekend, for example, due to severe weather. In these instances, all the sessions for that site were completed on another weekend.

Response Results and Discussion

An overview of the response rates for the various data elements collected in the survey follow. Data and figures are based on the actual number of sampled records and, thus, are not weighted. Crash volume-based estimates of all variables of interest and a complete analysis of these data will be presented in separate reports.

Basic Survey Components

The 2013-2014 NRS data extends our knowledge of the prevalence of impaired driving on U.S. roads. As with the 1973, 1986, 1996, and 2007 surveys, this NRS measured the BrACs of weekend nighttime drivers. However, similar to the 2007 NRS, the 2013-2014 NRS expanded the survey to daytime hours (Fridays mornings, 9:30 a.m.–11:30 a.m., *or* afternoons, 1:30 p.m.–3:30 p.m.).

The number of drivers who were selected to participate increased by approximately 1,000 from 2007 to 2013-2014, both of which are approximately twice as many as were surveyed in 1996 (see Table 19 for the number of drivers that participated in the five surveys). The 2007 and these data are presented in total, as well as separated by daytime and nighttime data collection hours.

In the 2013-2014 NRS, a total of 14,167 vehicles from the traffic stream across all 60 sites were invited to participate in the study, resulting in the following numbers.

- Drivers who entered the bays and were eligible to participate: 11,100
- Drivers who entered but were not eligible to participate (e.g., too young, language barrier, commercial or emergency vehicle drivers): 222
- Drivers who did not enter the survey location: 2,845.

Table 18. Participating Drivers

	1973	1986	1996	2007			2013		
				Daytime	Nighttime	Total	Daytime	Nighttime	Total
Signaled to enter location	--	3,260	6,480	3,516	9,553	13,069	3,385	10,782	14,167
Did not enter location[a]	--	217	182	933	1,016	1,949	711	2,134	2,845
Stopped and entered location	--	--	--	2,583	8,537	11,120	2,674	8,648	11,322
Eligible	3,698	3,043	6,298	2,525	8,384	10,909	2,617	8,483	11,100
Entered location and interviewed	3,353 90.7%	2,971 97.6%	6,045 96.0%	2,174 86.1%[b]	6,920 82.5%[b]	9,094 83.4%[b]	2,174 83.1%[b]	6,630 78.2%[b]	8,804 79.3%[b]
Valid breath sample	3,192 86.3%	2,850 93.7%	6,028 95.7%	2,254 89.3%[b]	7,159 85.4%[b]	9,413 86.3%[b]	2,361 90.2%[b]	7,094 83.6%[b]	9,455 85.2%[b]
Oral fluid sample	--	--	--	1,850 73.3%[b]	5,869 70.0%[b]	7,719 70.7%[b]	1,986 75.9%[b]	5,895 69.5%[b]	7,881 71.0%[b]
Blood sample	--	--	--	N/A[c]	3,276 39.1%[b]	N/A[c]	1,263 48.3%[b]	3,423 40.4%[b]	4,686 42.2%[b]
AUD and/or drug questionnaire	--	--	--	1,889 75.2%[b]	5,983 71.4%[b]	7,882 72.2%[b]	1,848 70.6%[b]	5,592 65.9%[b]	7,440 67.0%[b]
Passenger questionnaire	--	--	--	220 8.7%[b]	1,393 16.6%[b]	1,613 14.8%[b]	Not available at time of publication		

[a] When this number was not available (i.e., for six locations and 21 sessions), researchers estimated it based on the type of police involvement at the location.
[b] Percentage of eligible drivers.
[c] N/A (not applicable) because blood samples were not collected at daytime sessions.

The participation rates for the 2013-2014 NRS were high (79.3% for the total sample of eligible drivers), though not as high as the 83.4% in the 2007 NRS. If a driver did not want to participate in the interview, data collectors still requested a breath sample. Though some of the participants who agreed to participate were unable to provide a valid breath sample, data collectors were able to capture breath samples from a portion of those who declined to participate in the rest of the survey, resulting in breath samples from 85.2% of eligible drivers. Still, as with the 2007 NRS, even these high response rates were lower than those recorded in previous surveys.

Data collectors now encounter people who have been alerted to the study via media, social media, or friends, and come to the data collection hoping to participate, thus potentially eroding the random selection process. Conversely, persons wary of Federal activity sometimes use social media to generate public outcry against the perceived inconvenience, invasiveness, and "detention" of potential participants. This activity may make local jurisdictions and the law enforcement community hesitant about involvement in studies and potentially upsetting the public.

The 2007 and this 2013-2014 data collection included more research personnel at each data collection site and the data collection was more time-consuming, including providing oral fluid and blood samples. All of these factors may have resulted in a lower response rate than in the previous three NRS studies. Nonetheless, the response rates achieved in the 2007 and 2013-2014 NRS are still impressive and well above those generally obtained with Random Digit Dialing telephone surveys, which are typically lower than 50% (Battaglia, Frankel, & Link, 2008).

Unique to the 2007 and the current NRS, data collectors collected objective information on drug use by drivers. Table 19 shows the number of oral fluid samples collected in the 2013-2014 NRS by time of day, and the number of blood samples, which were collected during nighttime surveys

in the 2007 NRS but during both daytime and nighttime surveys in the 2013-2014 NRS. Interviewers collected 7,881 oral fluid samples (which have been matched to the interview items and breath tests). They represent 71% of the 11,100 eligible participating drivers.

A total of 4,686 drivers provided a blood sample. This is about 42% of eligible drivers, slightly higher than the 2007 NRS.

A total of 7,440 drivers completed at least a portion of the AUD and/or the drug questionnaire. This is about 67% of all drivers who agreed to initiate the 2013-2014 NRS.

In addition, data collectors surveyed 2,351 front-seat passengers. This represents almost 29.8% of all vehicles for which the driver was interviewed. Not all drivers had passengers, and the data collector activated the passenger survey only when the AUD survey was also activated.

Participation by Police Involvement

As the study progressed, media attention grew, resulting in a rise in the number of police departments declining participation. To continue data collection, we adjusted survey protocol by reducing the officer involvement in guiding vehicles into the survey location.

Upon completion of data collection, participation rates were compared by level of police involvement (see Table 20). At sites where there was no or partial police involvement, fewer vehicles stopped and entered the site than in sites with full police involvement (79.1% and 73.8% compared to 84.1%). At sites with no police involvement, a greater percentage of participants opted to be interviewed (88.8%) compared to the percentage at sites with partial police involvement (83.6%) and full police involvement (75.1%).

Table 19. Participating Drivers by Police Involvement

	No Involvement	Partial Protocol	Full Protocol
Directed to enter research location	1,457	5,036	7,674
Did not enter location[a]	305	1,320	1,220
Entered site	1,152 79.1%[b]	3,716 73.8%[b]	6,454 84.1%[b]
Eligible	1,142	3,647	6,311
Entered location and interviewed	1,014 88.8%[c]	3,050 83.6%[c]	4,740 75.1%[c]
Valid breath sample	1,055 92.4%[c]	3,166 86.8%[c]	5,234 82.9%[c]
Oral fluid sample	952 83.4%[c]	2,800 76.8%[c]	4,129 65.4%[c]
Blood sample	641 56.1%[c]	1,757 48.2%[c]	2,288 36.3%[c]
AUD and/or Drug Questionnaire	931 81.5%[c]	2,679 73.5%[c]	3,830 60.7%[c]
Passenger Questionnaire	Pending	Pending	Pending

[a] When this number was unavailable (i.e., for six sites and 21 sessions), researchers estimated it based on the type of police involvement at the site.
[b] Percentage of eligible
[c] Percentage of signaled to enter site.

Refusal Conversions

To better understand the drinking patterns of those who initially declined to participate, interviewers offered a subset of the drivers who refused to participate in the survey an additional $100 incentive to encourage their participation. The number of "refusal conversions" that were attempted and the number that were successful appear in Table 21.

Table 20. Refusal Conversions for 2007 NRS and 2013 NRS

	2007			2013		
	Daytime	Nighttime	Overall	Daytime	Nighttime	Overall
Number of attempts	93	351	444	79	476	555
Successful conversions	52	170	222	27	163	190
% Successful	55.91%	48.43%	50.00%	34.18%	34.24%	34.23%
Unsuccessful conversions	41	181	222	52	313	365
% Unsuccessful	44.09%	51.57%	50.00%	65.82%	65.76%	65.77%

Note: A successful conversion was defined as "agreeing to provide an oral fluid sample."

Data collectors approached 555 drivers who initially declined and offered them an additional $100 to participate. Approximately 34% of those 555 drivers converted, accepted the incentive, and provided at least an oral fluid sample. The 2013 conversion rate was lower than the 2007 50% conversion rate.

Summary

More than 11,000 eligible drivers participated in this voluntary and anonymous data collection; 8,804 (79.3% of those eligible) completed the basic interview, and 9,455 (85.2% of those eligible) provided a breath sample for analysis for alcohol. Additionally, 7,881 (71% of eligible drivers) provided an oral fluid sample and 4,686 (42.2% of eligible drivers) provided a blood sample for analysis for both alcohol and other drugs. Participation rates for 2013-2014 were fairly similar to those in 2007.

To a large extent, survey methods for the 2013-2014 study were used in the 2007 study. These included the collection of biological samples–breath, oral fluid, and blood–and administration of the general NRS survey and the drug, AUD, and passenger questionnaires. The survey questions were administered under a grant from NIAAA. There were adjustments to some of the survey items (primarily for clarity), and some items were removed; however, the only significant addition to the 2013-2014 effort was the DAST.

In 2007, two passive breath readings were collected, one as consent was being requested. For the 2013-2014 NRS, only one passive reading was collected at the last11 sites. We also used a tablet for questions rather than the personal digital assistant device used in 2007. The tablet allowed the data collector and driver to enter responses directly into the device (rather than use paper and pencil for the drug and AUD questionnaires). This simplified data entry, enhanced confidentiality, and improved efficiency.

The most significant difference between the 2007 and 2013-2014 protocol was in procedures reducing police involvement. For four-fifths of data collection, police generally helped with traffic direction and were also visible to drivers entering data collection. Toward the end of the project, police involvement was much less visible. This was in response to concerns about police involvement raised by some in social media.

The prevalence estimates for alcohol and other drug are discussed in separate reports.

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METHODOLOGY

Appendix A: 2013–2014 NRS Driver Information Cards

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

NHTSA

Driver Information Card

DIN Interviewer ID ___ ___ / State Abbrv. ___ ___ / PSU ___ ___ / Session ___ / Case (Driver) ___ ___

Equipment Information

Tablet Device # __ __ __
PAS Device # __ __ __ __
PBT Device # __ __ __ __

Eligibility

□ **Eligible**

□ **Not Eligible**

__ Commercial __ Age
__ Intoxicated __ Language
__ Previous Knowledge __ Other:

Conversion

Converted Refusal Attempt □ Yes
Conversion Successful? □ Yes □ No
Amount Offered: **$**_____

Refusal Information

□ **Refused All**

□ **PBT only**

Spanish Survey

□ Yes

Switched DC New DC# ___ ___

Impaired Driver Protocol

IDP Activated ☐ Yes
Time of IDP: ____:____ PM / AM
PAS Reading: _____ G Y R bars
Survey Completed: ☐ Yes ☐ No
Driver Age: ___ or ☐ ≤ 21 ☐ > 21

Survey Elements Completed

NRS Survey	□ Yes	□ No	
PBT Test	□ Yes	□ No	Test # ___ ___
Drug Questionnaire	□ Yes	□ No	
Quantisal	□ Yes	□ No	
Passenger Survey	□ Yes	□ No	□ No Passenger/Not Eligible
Blood	□ Yes	□ No	

Accounting

Quantisal Cash **$**_____
Passenger Survey **$**_____
Total Cash Given **$**_____

Affix Quantisal CoC Label Here

Affix Blood CoC Label Here

Driver Information Card

Describe Situation, including problems or unusual circumstances:

2013–2014 National Roadside Study of Alcohol and Drug Use by Drivers

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Appendix B:
Apple iPad 2 Tablet

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

NHTSA

Tablet: Apple iPad 2

Appropriate use of the iPad 2

We will be using the iPad 2 to enter, store, and upload most of our data collected in the field. It is important to understand these tablets are data collection tools that belong to PIRE and will be distributed to each Data Collector at the beginning of each session. Any loss of data due to misuse of the tablet could result in your dismissal from the project. Please do not use these tablets for entertainment purposes! Playing video games, watching movies, checking email or social sites, taking pictures, and/or surfing the web are prohibited.

Recording Data Using the iPad 2

All data will be entered into the tablet (with the exception of the Passenger Survey). Data Collectors are responsible for entering observational data, roadside survey data, and all sample data accurately and completely. Once a participant consents to additional portions of our research such as the Drug Questionnaire, Data Collectors will be handing the tablet to the driver to complete the surveys to further protect anonymity. Data Collectors must never let the tablet out of their sight. Not only is the tablet an expensive piece of equipment, but it also will be holding all of the data.

If at any time the tablet "acts up" or seems to malfunction, Data Collectors must let their Survey Manager know immediately. Data Collectors should not try to troubleshoot on their own. Survey Managers will be thoroughly trained on the tablets and the data collection software we use. Data Collectors must address any issue with their Survey Manager if they are experiencing problems.

Software and Data Collection Program

We have had a program designed specifically to fit our data collection and security needs using Microsoft .Net framework and HTML5 technology (.NETHTML5). This .NETHTML5 software enables us to create a fast, efficient, user-friendly application (app) to collect and save data on Windows, Android, or iOS operating systems with or without an internet connection, while having the ability to upload directly to PIRE's servers in Calverton once an internet connection is established.

Logging into the Tablets

To ensure accuracy, at the survey site the team will log into their tablets together to be certain that the required information is entered in a consistent and precise manner. These items include:

- Data Collector Number – This permanent number is assigned to each Data Collector and is unique to him or her from coast to coast.
- State: This is the abbreviation for the state in which the PSU is located.
- Primary Sampling Unit (PSU) ID Number – This is the number assigned to all potential sampling sites across the country. This number identifies the location where data collection takes place.
- Session Number – This number corresponds to the time of day the data is collected (i.e., Friday daytime 1, Friday nighttime time 2 or 3, or Saturday nighttime time 4 or 5).

These four elements are combined with a chronological number that identifies each participant at the survey site. Once each Data Collector has logged on, the driver number (also referred to as the case study number) will automatically appear each time you create a new record, indicating there is a new driver. Each Survey Manager must ensure that each Data Collector logs the correct information at the start of the survey. Failure to do so could result in data grouped with the wrong PSU or session number.

Downloading Data

Syncing the Tablets – Survey Managers will sync the tablets in the hotel after Friday daytime session #1, Friday nighttime session #3, and Saturday nighttime session #5. You must have an established internet connection to sync the data. If the internet connection is interrupted, the data will remain on the tablet until it can be uploaded in its entirety. You will not lose data if you lose an internet connection. It is also important to note that accidentally hitting the button that initiates the sync will not result in a loss of data.

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Appendix C:
PAS Vr. Passive Alcohol Sensor (PAS) Device

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

NHTSA

Passive Alcohol Sensor (PAS Vr.)

The passive sensor is used to obtain an estimate of alcohol level for subjects, including those who choose not to participate in the study; the PAS passively detects alcohol in the air exhaled by drivers. It is important to obtain PAS readings on all drivers pulling into the interview bays, whether they later give a breath test or not, because we need to be able to relate PAS readings to breath test readings for those who fully participate to be able to better understand the values of PAS readings for those who otherwise do not participate.

Initializing

When turning on the passive alcohol sensor VR (PAS Vr.) for testing, you must first initialize the device using the following steps:

1. Note that there are two black switches on the instrument, located on opposite sides of the device. One switch is the on/off button. The other switch is to indicate whether the PAS device is on passive mode (PAS ON) or active mode (AS ON). You ALWAYS want to be in PAS ON mode.

Figure 1. The Passive Alcohol Sensor (PAS Vr.)

2. In the middle of the PAS device is the BAC bar graph (that will light up when alcohol is detected) and a small black button located below the BAC bar graph, known as the sampling button.
3. While facing the front of the instrument and with the sampling port on the top of the device, locate the black power switch on the left side and slide it to the “ON” position.
4. The red lamp located on the far left side of the BAC bar graph, on the left side of the device, will illuminate. The red light will remain on as long as the instrument is in use.
5. At the base of the display or on the far right side of the BAC bar graph, an orange lamp for the heater (HTR on the PAS device) will light up and intermittently cycle on and off. This orange light indicates that the heater is in use. The heater continues to run while the instrument is on in order to maintain the fuel cell at a constant temperature of 104 degrees F +/– 5 degrees.
6. Wait approximately 2 minutes for the instrument to heat up.

7. After 2 minutes have elapsed, press the small round black button located below the orange heater indicator and on the right side of the device. This is the sampling button.
8. A yellow light will illuminate at the top of the BAC bar graph (PMP on the PAS device) and a small green bar will appear at the base of the graph display. After approximately 5 seconds, the yellow light will disappear.
9. Press the round black button again to turn off the sensor and reset the device for the first test (please note that you must turn off).
10. Located next to the orange heater indicator, is a red light battery indicator (BAT on the PAS device). If this red light appears and begins to flash at any time, change the battery.

Figure 2. The color indicator

Passive Sampling Test

1. Before beginning, be certain that the black switch located on the top right side of the device is in the “PAS ON” position. If the switch is in the Active position, the green light (ACT on the PAS device) will illuminate. You NEVER want to have the device on the Active position.
2. Check to ensure that the intake sampling port is free of debris and not blocked by your fingers.
3. Place the device approximately 5 to 7 inches from the face of the respondent.
4. Ask the participant an open ended question that requires a 5 second or longer response.
5. While the participant provides an answer, press the small round sampling button located at the base of the BAC bar graph and on right side of the instrument.
6. One green bar will appear at the base of the BAC bar graph display and the yellow pump light will illuminate above the bar graph once the reading has been taken. This smaller green bar will always appear when the device is activated and indicates a “00” reading. A positive reading occurs when TWO green bars are present (0.01).The survey form will have a bar scale that is equivalent to the PAS light scale – when entering your PAS data onto the survey, simply match the number of bars to the corresponding box (.i.e., one green bar on the PAS = “G1” on the survey; four yellow bars on the PAS = “Y4” on the survey, and so on). Hold the instrument steady during this process.
7. Once the yellow light has turned off, the test has completed and you can remove the instrument from the breath stream of the participant.

8. If alcohol is present, the multicolor display on the bar graph display will begin to rise, from green to yellow to red. The greater the amount of alcohol present, the higher the bar graph will rise.
9. The instrument will reach a peak reading within 5 to 15 seconds after the yellow indicator light goes out.
10. Immediately record the highest illuminated numerical value on the BAC graph display. The numbers range from 0.01 to 0.12.
11. Press the round black sampling button again and the display will turn off while the fuel cell recovers.
12. Remember that you will be activating the PAS device while talking to the participant and continuing with the interview process. You will not have time to stop the interview process while you activate the PAS and wait for the results.
13. You will take two PAS samples during the interview process. The survey instruments will have prompts alerting you when to take the PAS samples and where to record the results. Taking the PAS sample and recording the results will be done in smooth, fluid steps combined with other interviewing steps.

Maintenance Note: the PAS uses a 9-volt battery that will need to be changed out from time to time in the field.

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Appendix D: 2013-2014 NRS Impaired Driver Protocol (IDP)

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

NHTSA

Impaired Driver Protocol

Establishing fitness to complete assessment and/or operate a motor vehicle:

To establish if a subject is fit to complete the survey, as well as safely operate a motor vehicle upon exit, a three-level rating system has been established.

1. **Level 1** indicates that there was no evidence of substance (alcohol or drugs) use.
2. **Level 2** indicates that there is some evidence of use (e.g. the PAS registers 6 bars or less indicating a BAC of approximately less than .05) but the respondent displays no signs of intoxicated behavior such as slurred speech or bloodshot eyes.
3. **Level 3** is evidence of use and signs of intoxication. At Level 3, the Survey Manager will be signaled to take over and will decide whether the interview should proceed and whether the subject needs assistance. We will not continue the survey on obviously inebriated and severely impaired individuals. We will offer safe transportation alternatives to the next destination for individuals who show obvious signs of Level 3 impairment. A PAS reading of 7 bars or more REQUIRES an assessment by the Survey Manager. A BAC of .05 or higher is the standard for arranging alternative transportation.

There will be cases where the subject will show signs of impairment, but is fit to complete the survey. The criteria for participation are that subject is able to understand the informed consent and able to provide informed consent. The criteria for consent to be informed are that the subject can understand the nature of the study as explained to him or her, that he or she understands the risks and benefits of participation, and that he or she understands that participation is voluntary. Simply being intoxicated does not preclude a person from being able to comprehend these basic concepts and process this information. Only Survey Managers can make the determination of whether a subject is fit to proceed with the interview. As soon as a data collector identifies a subject as Level 3, call your Survey Manager over to make the assessment. We have established a code signal to catch the immediate attention of the Survey Manager: **"Can I have some cards over here?"**

To determine ability to complete the survey, the Survey Manager will listen as the interview continues. If it appears that the subject does not understand the questions, the Survey Manager will touch the shoulder of the data collector, indicating that the data collector should step aside. The Survey Manager will then say, *I want to make sure you understand what this study is about so before we continue, can you explain to me what you think this survey is about? Can you tell me whether participation is voluntary or not?* If subject cannot explain the study and/or did not understand that participation was voluntary, the survey will end and the Impaired Driver Protocol will be implemented. In most cases, however, the Survey Manager can make a determination by simply listening to the subject's responses and then intervening with the Impaired Driver Protocol rather than asking the subject if he understands the study.

How to Identify Level 3 Respondents

To identify intoxicated subjects (Level-3), look for a clustering of the following signs and symptoms. No one sign or symptom is a direct indication of alcohol or drug intoxication but, when combined, warrant calling your Survey Manager over to do a more in-depth evaluation. Remember that alcohol affects each individual differently. The effect of alcohol on a person will vary according to the person's height, weight, drinking history, mood, the time of day, amount of

food in the stomach, the mixer used, how fast the person drinks, and what and why they are drinking, etc. If a person displays a combination of the signs and symptoms of intoxication, OR has a PAS reading of 7 bars or more bars you MUST call over your Survey Manager. Also, remember that a person may not have a positive PAS reading (or their BAC is .00) but they may be showing a cluster of other signs of intoxication. Do not ignore these signs just because there is a lack of evidence of alcohol use. The driver may be showing signs of prescription or illicit drug use. Do **not** make the judgment call yourself; rely on the expertise of your Survey Manager to assess the subject and intervene if necessary.

Signs of Intoxication

- A positive PAS reading
- A strong scent of alcohol
- Odors (marijuana, chemicals)
- Being overly friendly
- Talking loudly, bragging, or using foul language
- Being especially annoying or arguing with others
- Inability to light a cigarette, or attempting to light more than one cigarette at the same time
- Slurred or slowed speech or difficulty speaking
- Tending to lose the train of thought
- Glassy eyes, dilated pupils, bloodshot eyes
- Inability to focus, sleepy look, and bobbing head
- Sudden or unexplained mood changes (agitation, anxiety)
- Marked lack of coordination (e.g., inability to stand or walk, unable to hold a pen)
- Confused, disoriented appearance
- Body tremors and perspiring
- Statements suggesting hallucinations

Why this matters and key points to remember

We are required by our IRB to ensure the safety of our subjects. Our goals include:

1. Identifying respondents who may be unable to provide informed consent because they are too intoxicated to understand the risks and benefits of participation and agree to be in the survey.
2. Identifying respondents who may be too impaired to operate a motor vehicle safely.

When you identify a Level 3 intoxicated person, call the Survey Manager over immediately to do an assessment. We have set procedures to assess and evaluate the subject, and also get them safely to their next location. If subjects ask why you are calling someone else over, simply state: “My Survey Manager talks to some of our participants to make sure they are able to be in the study.” Keep your interactions with intoxicated respondents very brief. Do not laugh or make fun of them, or ask questions about their alcohol use.

PROTOCOL FOR HANDLING AN IMPAIRED DRIVER

We will offer safe transportation alternatives to the next destination for any individual who shows obvious signs of substantial impairment.

When you observe behavior, odor, and appearance that lead you to believe that a subject is moderately or heavily intoxicated and therefore a possible danger to him/herself, his/her passengers, other drivers, or pedestrians, please follow this procedure.

Notify the Survey Manager

The Survey Manager will assess the subject by standing behind you to observe. If the Survey Manager determines that the subject is unable to give informed consent, the Survey Manager will stop the interview and the Impaired Driving Protocol will be activated. The Survey Manager will step forward and introduce himself/herself as the site's Survey Manager in charge. The Survey Manager will be equipped a PBT with unmasked BAC numbers, and will request a breath test on the subject. If the BAC is .05 and above, the Survey Manager will present these options to the subject:

1. LET A PASSENGER DRIVE

If a passenger in the vehicle has a valid driver's license, the Survey Manager can give that person a breath test. If the BAC is .049 or below and the individual shows no signs of obvious intoxication, then the Survey Manager will offer to let the passenger drive the subject home. The passenger's BAC must be recorded on the Survey Manager's Site Report Form. Those passengers under age 21, must be below .02 BAC.

2. CALL A FRIEND OR RELATIVE OF THE DRIVER

The Survey Manager can use a cell phone to call a friend or relative of the subject and request that someone come and assist the driver (ideally, two persons should come so that one can drive the subject home and the other can drive the subject's car home). The driver's BAC must be below .049.

If neither of the above alternatives is satisfactory, then:

3. OFFER THE DRIVER A RIDE HOME FROM TAXI or TOWING SERVICES

If the driver does not have funds, then the NRS project will pay for the ride. The subject's vehicle can be left at the site, moved to a nearby parking area, or towed. When using a taxi or towing service, the Survey Manager will get pre-paid receipts. If using a taxi service, the Survey Manager will give the subject the car keys and the address noting where the vehicle will be located when the individual is capable of retrieving it. If a towing service is used, the subject can simply ride with the tow driver to their home.

4. OFFER WAITING OPTION

Drivers with measured BACs under .08 will be given the option of waiting at or in their vehicle until his or her BAC drops to level where it is safer from them to drive. Based on a standard rate of metabolizing alcohol of .015 g/dL per hour, the Survey Manager will estimate the time when the driver's BAC will drop to below .05 (for those age 21 and older), or to below .02 for persons under age 21. The survey manager will collect an additional breath sample(s) at the estimated time and beyond (if necessary) to ascertain if the driver's BAC yet is low enough to drive. Drivers who have not yet reached the BAC criterion within a half-hour before the end of the survey will be encouraged to elect one of the other safe driving alternatives. If they refuse all options, the on-site police officer will repeat the options to the driver.

Drivers with a BAC sufficiently high that it will not drop below the aforementioned thresholds by the time the survey is complete, will not be offered the opportunity to wait. However, if these drivers indicate that they plan to wait (and in doing so decline the proposed transportation alternatives), the survey manager will explain that it is unlikely they will be sufficiently sober by the end of the survey, and that if their BACs are not below the threshold 30 minutes before the end of data collection, they will need to choose one of the other transportation options. If, at the end of the evening, drivers still decline a transportation alternative, the Survey Manager will request that the on-site police officer repeat the options to the driver. Note that drivers who are "waiting" will have their vehicle parked so that they always are in view of either a Data Collector or an on-site officer.

5. SUBJECT'S SUGGESTION TO WALK HOME

Subjects may request to walk to a safe location (home or a friend's home) but before departing on foot, this option must be approved by the Survey Manager and must meet these criteria: the walk is reasonably practical (short enough in distance) and the subject is capable of making it to his/her next location safely. *If a BAC (blood alcohol content) is voluntarily provided with a breath tester display unit*, .08 BAC will be the maximum to allow walking short distances, however obvious signs of impairment will be used to make the decision for those who do not provide a BAC. Further, some subjects will be unsafe to walk at levels lower than .08. If the subject and passengers are <u>not</u> showing obvious signs of impairment (unsteadiness, stumbling, and significant slurring of words) <u>AND are at or below .08</u>, they can be allowed to walk home or to their next location; otherwise they cannot walk and must select another option. Female subjects should not walk alone for safety reasons. Taking a cab, even short distances, is <u>always</u> encouraged first by the Survey Manager.

6. OFFER TO PAY FOR A HOTEL

If the subject lives too far away for any of the above options, the SM may arrange for the subject to stay in a nearby hotel and pay for a one night stay.

7. FINAL OPTION

The officer will be asked (in order of priority) to:

1) Repeat the safe ride options, and if that fails;
2) Tell driver that they will call an on-duty officer/dispatch and warn that an apparently impaired driver has left our site and report the pertinent vehicle information, and if that fails to convince the driver to take on of the options;
3) The officer, if he/she feels that the person is possibly impaired, may request the driver to provide a breath test and/or conduct a field sobriety test to determine the next course of action (, let driver leave, ask driver to stay issue citation, make arrest);
4) Stay with driver or make driver stay at site until BAC drops to an appropriate level that the officer feels is safe;
5) Provide ride home to driver and/or passengers;
6) Cite driver for public intoxication (if officer feels driver is intoxicated);
7) Arrest driver for impaired driving (if officer has conducted appropriate tests/measures to determine if driver is intoxicated).

It is our hope, and experience, that calling the police officer over will increase the chance of the driver taking one of the options and also obviate the possibility of a police intervention.

2013–2014 National Roadside Study of Alcohol and Drug Use by Drivers

METHODOLOGY

Appendix E: Mark V Alcovisor Preliminary Breath Tester (PBT)

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

NHTSA

The Preliminary Breath Tester (PBT)

Data Collectors will use a preliminary breath tester (PBT; Figure 1) to assess a participant's blood alcohol concentration (BAC). PBTs are specialized devices that measure participants BAC by use of a fuel cell inside the instrument. For this study, the BAC result will not be displayed; results will be downloaded to a computer after a shift.

Mark V Testing Device

For the NRS 2013, we will be using a preliminary breath tester (PBT) known as the Mark V Alcovisor®. The Mark V is powered with 4 AAA alkaline batteries. Each Data Collector will have two PBTs and extra AAA batteries in their supply backpack. The Mark V has a 2" x 1.5" display LCD with auto backlite for night use. Below the screen there are two buttons: a red one and green one. Above the screen is the portal where the disposable mouthpiece is inserted.

To turn on the Mark V, press and hold the green on/off button (located below the display screen) for 2 -3 seconds. The display light will come on and a self-test (automatic blank test) is carried out by the microprocessor. In a few seconds, a tone will sound and the display will read "Please Blow." This indicates the device is ready to use.

To turn off the Mark V, press and hold the green on/off button for 2 -3 seconds. Note that the Mark V will automatically shut off after a few minutes if the unit is in the READY mode and no test has been performed.

Taking the Breath Sample

After receiving consent from the participant to obtain a breath sample, follow these steps to instruct participants on how to give the breath sample and the proper method for obtaining a breath sample.

1. Ensure that the PBT is ready to use. The display must read "Please Blow." The PBT sample number will be displayed below "Please Blow."

2. State the following: “The result is stored inside the device and is not displayed. Please take a deep breath and blow slow and steady into the tube until I tell you to stop.” Speak with authority, without a question in your voice.

3. As you speak, remove the disposable mouthpiece from its wrapper, making sure not to touch the end into which the participant will be blowing. Also, pull the wrapper off within sight of the participant) and explain what you are doing.

4. Attach the disposable mouthpiece to the mouthpiece holder. The mouthpiece can be inserted form either side of the Mark V; HOWEVER, for our study, the mouthpiece end that the participant will blow into MUST be positioned away from the Data Collector. Ensure a secure fit.

5. Position the PBT just in front of the participant’s mouth and let the participant know when to start. While there is no way to guarantee that the participant will give a breath sample, interviewing methodology studies show that making requests in a calm, matter-of-fact, and business-like manner will most likely elicit cooperation, and that the vast majority of respondents do try to be helpful. If the participant has difficulty understanding your request, say “Like this,” and demonstrate taking a deep breath and exhaling steadily for few seconds.

6. The participant should continue to blow into the breath tube. A click will occur when the participant supplies a sufficient enough sample of breath. “TEST RESULT” will appear on the screen. The actual result will not appear.

7. To see if the sample was captured, press the green button. The next screen will show the sample case number which should have moved to the next number.

8. If the participant does not provide an adequate breath sample on his or her first try, “TEST AGAIN” will appear on the screen. Press the green button to re-test and ensure that “Please Blow” appears on the screen. Explain the directions again to the participant and attempt to capture the breath sample.
9. Once a breath sample has been taken, the participant can be thanked.
10. At the end of each breath sample, the Data Collector removes the used breath tube, places it in the trash bag, and records the PBT sample case number on the survey and Driver Information Card.
11. If a participant refuses to provide a breath test, wait a few seconds and the screen will change and the following boxes will appear on the screen: Refuse and Test Again. Press the red button (the one below the screen) until the red cursor is over the Refuse box. Press the green button to confirm “Refuse”. The screen will change to say “Test Result” and the word Refuse will also appear. For each participant who does not provide a breath test, the Data Collector must enter Refuse. This action will be recorded and the sample number will move to the next number.

Taking a Manual Reading

If the participant does not provide an adequate breath sample on his or her second attempt, you should be prepared to take a manual reading on the third try. The term “manual” is used because the Data Collector determines when an adequate amount of breath has been expelled to capture a viable sample by manually pressing the appropriate button. Under normal conditions, the PBTs are designed to capture a sample automatically by measuring the duration and strength of air flow past a sensor. Some participants, especially elderly or asthmatic participants, may not be able to provide a long or strong enough sample for the PBT to capture a sample. In these cases, the Data Collector will need to complete the following steps to secure a manual PBT reading:

1. When the PBT is ready to take a sample, ask the participant to blow into the breath tube. The red cursor will highlight the “manual” box on the screen. Press down on the green button while the participant is still blowing into the breath tube. The Data Collector should wait as long as possible before pressing on this button, since the reliability of the BAC reading is a function of how long the participant blows into the breath tube: deep lung air provides a better match to the person’s actual “blood alcohol concentration” therefore the longer the blow the better. However, it is important that the Data Collector

use his or her best judgment in anticipating and taking a manual reading, while the participant is still blowing.

2. Once the green button is pressed, the PBT will react exactly as if a normal reading has been taken.

PROPER CARE NOTES: Each PBT is an expensive piece of scientific equipment and should be treated carefully.

1. **Warning Indicators and Error Messages:** If any warning sounds, lights, or messages appear while using the PBT, switch to your backup PBT (which will be in your bay bag).
2. Moisture (rain/damp night air) can harm the PBTs; thus, the devices need to be protected.
3. If a unit is dropped, it should be switched out with a different unit (a dropped PBT will be sent back to PIRE Headquarters to have its calibration checked). Again, inform the Survey Manager before or at the end of the session.
4. Cigarette smoke can permanently damage the fuel cell. All subjects should be instructed to not smoke (extinguish their cigarette) or chew anything at least 2 minutes prior to collecting the breath sample.

2013-2014 National Roadside Study of Alcohol and Drug Use by Drivers

METHODOLOGY

Appendix F: 2013-2014 NRS Verbal Survey Questionnaire

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

NHTSA

National Roadside Survey 2013

Interviewer: _____ **State:** _____ **PSU:** __ __ **Data Session #:** _____

DIN: __ __ - __ __ - __ __ - __ __ **Driver:** _____ **PAS #:** __ __ __ __ **PBT #:** __ __ __ __

1: **Age** ☐ 16-20 ☐ 21-34 ☐ 35-64 ☐ +65

2: **Race** ☐ White ☐ Black/ African American ☐ Asian ☐ Native American/ Alaskan
☐ Native Hawaiian/ other Pacific Islander ☐ More than one ☐ Unknown
☐ Other: _____

3: **Hispanic/ Latino** (ethnicity) ☐ Yes ☐ No

4: **Smile and Greet Driver! Activate PAS while DRIVER is talking.**

5: ***Roadside Survey Consent Script:*** *Hi, my name is _____. You haven't committed any violation. You have been randomly selected to participate in a voluntary and anonymous driver survey that takes just a few minutes. We'd like to ask you some questions about your driving behavior and use of various substances. We'd also like to take a sample of your breath. You may skip any questions or leave at any time. If eligible, you can earn up to $60 for completing some additional parts of the study. May I begin?*

6: ***Consent to Survey?*** ☐ Yes **(Skip to 12)** ☐ No **(7)** ☐ Left before Consent **(Skip to 16)**
☐ Spanish **(Skip to 20)** ☐ Commercial **(Skip to 15)**

7: PBT ONLY Consent Script: *If you don't want to participate in the survey, would you be willing to give us a very quick and completely anonymous breath sample for our research project? I am not able to look at the results of your breath sample as they are masked on the device and downloaded at a later date. This will take just a few seconds.*

8: ***PBT Only Consent?*** ☐ Yes **(Skip to 12)** ☐ No **(10)**

9: ***Conversion attempt?*** ☐ Yes: Call Survey Manager **(Skip to 11)** ☐ No **(8)**

10: ***Refusal Script:*** *"That's no problem; I still appreciate your time. I am required to give you this information about the study that contains contact information in case you have any questions or concerns. Give me a moment to let my team know you're leaving so you get out of here safely. Thanks again for your time! Have a great day (daytime) / night (night time)!"*

11: **Gave YELLOW sheet?** ☐ Yes **(Skip to 23)** ☐ No **(Skip to 23)**
☐ No, Driver changed mind **(12)** ☐ No, Converted with incentive **(12)**

12: **Age Qualifier: Are you at least 16 years old?**
☐ Didn't ask **(13)** ☐ Yes **(13)** ☐ No **(Skip to 15)**

13: **Previous. Knowledge: Did you hear about this survey before we waved you in?**
☐ Yes **(14)** ☐ No **(Skip to 16)**

14: **How did you hear about this survey?** ☐ Sought out Survey (not eligible) **(15)**
☐ Did not seek survey **(Skip to 16)**

15: **NOT Eligible!** *"I'm sorry! You don't meet the eligibility requirements to participate in this study. This sheet contains information about who we are and what the study is about. It also contains contact information if you have any questions or concerns. Thank you very much for your time. Give me a moment to let my team know you're leaving so you get out of here safely. Have a great day (daytime) / night (night time)!"* ☐ **Gave YELLOW sheet (Skip to 23)**

16: **Eligible for study?** **(ALL Responses to this question will Skip to 23 except "Yes: PBT Only")**

☐ Yes ☐ Yes: PBT Only **(17)** ☐ Yes: Samples only

☐ **No**- Left before consent ☐ **No**-Language barrier ☐ **No**-Intoxicated

☐ **No** -Other: _____

17: PBT sample #: _____ (18)

18: PBT Time: ___:___ AM/PM (19)

19: ***PBT Only End:*** *"Thank you for your time and your contribution! I am required to give you this information about the study that contains contact information in case you have any questions or concerns. Give me a moment to let my team know you're leaving so you get out of here safely. Have a great day (daytime) / night (night time)!"*

Gave WHITE sheet? **(ALL Responses to this question will Skip to 23)**

☐ Yes ☐ No ☐ No, Driver changed mind

20: ☐ Continue in Spanish **(Skip to Spanish Survey)** ☐ Switch Data Collector **(21)**

21: "Voy a encontrar a alguien que hable español para explicar."

22: **New DC number:** DC: ___

23: Record PAS #1 Reading:

☐ Green 1 (00) ☐ Not used

☐ Green 2

☐ Green 3

☐ Yellow 1

☐ Yellow 2

☐ Yellow 3

☐ Yellow 4 – Call a manager

☐ Red 1 – Call a manager

☐ Red 2- Call a manager

☐ Red 3 – Call a manager

DIN: _ _/ _ _ / _ _ / _ / _ _

NRS Questions - Verbal

1. The average driver drives about 15,000 miles a year. Would you say you drive:

- ☐ More than average
- ☐ Average
- ☐ Less than Average
- ☐ Did not answer

2 About what percent of your total driving takes place at day (daytime) / night (night time)?

- ☐ 0-20%
- ☐ 21-40%
- ☐ 41-60%
- ☐ 61-80%
- ☐ 81- 100%
- ☐ Did not answer

Activate PAS while DRIVER is talking

3. Where are you coming from?

- ☐ Own home
- ☐ Someone else's home
- ☐ Work
- ☐ Restaurant/eating place
- ☐ Bar, tavern, club
- ☐ School/church
- ☐ Sport or rec facility/park
- ☐ Store or gas station
- ☐ Hotel/motel
- ☐ Other
- ☐ Did not answer

4. Where are you going to?

- ☐ Own home
- ☐ Someone else's home
- ☐ Work
- ☐ Restaurant/eating place
- ☐ Bar, tavern, club
- ☐ School/church
- ☐ Sport or rec facility/park
- ☐ Store or gas station
- ☐ Hotel/motel
- ☐ Other
- ☐ Did not answer

5 About how many miles is it between those two places?

- ☐ 0-5
- ☐ 6-10
- ☐ 11-20
- ☐ More than 20
- ☐ Did not answer

6. How many total miles will you have driven by the end of today?

- ☐ 0-5
- ☐ 6-10
- ☐ 11-20
- ☐ More than 20
- ☐ Did not answer

Record PAS #2 Reading:

- ☐ Green 1 (00)
- ☐ Green 2
- ☐ Green 3
- ☐ Yellow 1
- ☐ Yellow 2
- ☐ Yellow 3
- ☐ Not Used
- ☐ Yellow 4 – Call a manager
- ☐ Red 1 – Call a manager
- ☐ Red 2- Call a manager
- ☐ Red 3 – Call a manager

Assess intoxication Level

- ☐ Level 1- No signs of alcohol or drug use
- ☐ Level 2: Signs of use but no intoxication

☐ Level 3: Signs of use & INTOXICATED. Signal Supervisor "I need some cards over here"

AUD Screener

Now I have a few questions about your use of alcohol, such as beer, wine, or liquor:

7. In the past year, how often have you had a drink containing alcohol?

- ☐ None in the past year (NOT eligible for AUD)
- ☐ Monthly or less **Skip to Q 9**
- ☐ 2-4 times/ month **Skip to Q 9**
- ☐ 2-3 times/ week **Skip to Q 9**
- ☐ 4 or more times/ week **Skip to Q 9**
- ☐ Did not answer

8. Do you ever drink alcoholic beverages or are you a total abstainer?

- ☐ Yes, sometimes/ occasionally
- ☐ No, total abstainer **Skip to Q. 17**
- ☐ Did not answer

9. In general would you describe yourself as:

- ☐ A very light drinker
- ☐ A fairly light drinker
- ☐ A moderate drinker
- ☐ A fairly heavy drinker
- ☐ A very heavy drinker
- ☐ Did not answer

10. About how many alcoholic beverages do you consume in an average week?

- ☐ 0
- ☐ 1-2
- ☐ 3-4
- ☐ 5-7
- ☐ 8-14
- ☐ More than 14
- ☐ Did not answer

11. Have you had anything to drink today?

- ☐ Yes
- ☐ No **Skip to Q. 14**
- ☐ Did not answer **Skip to Q. 14**

12. How long ago did you finish your last drink? ____Hours ____Minutes ☐ Did not answer

13. Was your last drink beer, wine, liquor, or other?

- ☐ Beer
- ☐ Wine
- ☐ Liquor
- ☐ Other (Malt / Wine coolers, etc.,)
- ☐ Did not answer

14. In the past year, how often did you have five (male) / four (female) or more drinks in a two hour period?

- ☐ Beyond a year/ Never
- ☐ Less than monthly
- ☐ Monthly
- ☐ Weekly
- ☐ Daily/almost daily
- ☐ Did not answer

15. In the past 12 months, did you ever drive after drinking enough that you might be considered to be *legally* under the influence of alcohol?

- ☐ Yes**--> How many times did that happen?** ____ times
- ☐ No
- ☐ Did not answer

16. About how old were you when you first started drinking, not counting small tastes or sips of alcohol?

Age _____

- ☐ Never had alcohol
- ☐ Did not answer

17. Are you (or were you) the designated driver today/ tonight? That is someone who was responsible for safely getting people home after they were drinking alcohol?

- ☐ Yes**--> As a designated driver did you**
  - ☐ Drink less than you otherwise would have
  - ☐ Deliberately drink less than the people you were driving
  - ☐ Didn't change drinking behavior
  - ☐ Not drink at all
  - ☐ Did not answer
- ☐ No
- ☐ Did not answer

Demographic Data

Now I have a few background questions for statistical purposes:

18. What is your age? _____ Years ☐ Did not answer

19. How old were you when you obtained your license? _____ Years

☐ Not licensed ☐ Did not answer

20. What is your zip code? _____ ☐ Did not answer

21. How far have you gone in school?

- ☐ None - 8th grade
- ☐ 9th - 11th grade
- ☐ High school graduate
- ☐ Some college – no degree
- ☐ Associate's degree
- ☐ Bachelor's degree
- ☐ Master's degree
- ☐ Professional degree
- ☐ Doctoral degree
- ☐ Did not answer

22. Are you currently a student?

- ☐ No
- ☐ High School
- ☐ College/ Grad or Law School
- ☐ Other/ Technical or Trade Program
- ☐ Did not answer

23. Are you currently employed, unemployed, retired, on disability, a homemaker, or other?

- ☐ Employed Full-time
- ☐ Employed Part-time
- ☐ Unemployed
  - **(23A.) How long have you been unemployed?**
    _____Months _____Years ☐ Did not answer
- ☐ Homemaker
- ☐ On Disability
- ☐ Retired
- ☐ Other _____
- ☐ Did not answer

24. Do you consider yourself to be Hispanic or Latino?

- ☐ Yes
- ☐ No
- ☐ Don't know
- ☐ Did not answer

25. To which racial group would you say you belong?

- ☐ White
- ☐ Black or African American
- ☐ Asian
- ☐ Native American or Alaska Native
- ☐ Native Hawaiian or other Pacific Islander
- ☐ More than one
- ☐ Other
- ☐ Unknown
- ☐ Did not answer

26. What range would you say includes your annual *household* income

- ☐ $0-$25,000
- ☐ $25,001-$50,000
- ☐ $50,001-$75,000
- ☐ $75,001- $100,000
- ☐ $100,001 or More
- ☐ Did not answer

Now I would like to get an anonymous sample of your breath. I am not able to look at the results of your breath sample as they are masked on the device and downloaded at a later date. This will take just a few seconds.

Consent to PBT

- ☐ Yes
- ☐ No

PBT sample #: __ __ **PBT Time: _____:_____**

DIN: _ _ /_ _ /_ _ /_ /_ _.

1.Oral Fluid and Drug Questionnaire Consent for Driver Not Eligible for AUD Survey

For $10 cash we are asking you to VOLUNTARILY participate in 2 anonymous research activities about prescription and non-prescription drug use. This will only take a few minutes and it involves collecting a sample of your saliva for later analysis in a lab, and answering some questions about your use of substances. Your answers to these questions CAN IN NO WAY BE ASSOCIATED WITH YOU and there is no risk to you by participating in this anonymous study. As before, you may stop participating at any time.

2.Oral Fluid and Drug Questionnaire Consent for Driver Eligible for AUD Survey

For a total of $10 we are asking you to VOLUNTARILY participate in 2 anonymous research activities about prescription and non-prescription drug use, and your use of alcohol in the past year. This will only take a few minutes and it involves collecting a sample of your saliva for later analysis in a lab and answering some questions about your use of substances. Your answers to these questions CAN IN NO WAY BE ASSOCIATED WITH YOU and there is no risk to you by participating in this anonymous study. As before, you may stop participating at any time.

3.Consent to:

☐ Yes **$10 (Cont. IF passenger OR Skip to DQ)**
☐ Oral Fluid only **$10 (Skip to End)**
☐ No **$0 (Skip to End)**
☐ Drug Questionnaire only **$0 (Skip to End)**

Passenger Survey

4.Front Seat passenger 16yrs or older?

☐ Didn't need to ask ☐ Yes ☐ No **(Skip to DQ)** ☐ No Front Passenger **(Skip to DQ)**

5.Passenger Survey Consent Script: *I'd like to invite you to participate in a voluntary and anonymous passenger survey while the driver completes their own survey. Your answers will contribute to our understanding of driving patterns across the United States. You may discontinue at any time and skip any questions you choose. If you choose to participate, I can offer you $5 cash. Would you like to participate?"*

6.Passenger Consent

☐ Yes
☐ No

DIN: _ _ / _ _ / _ _ / _ / _ _

"Thank you for your participation! Please return the tablet to the Data Collector so they can finalize the interview. "

Blood Consent

1. *"We would like to offer you a $50 money order to provide a quick blood sample to measure some components that may reflect alcohol and prescription and non-prescription drug use. This is completely voluntary and anonymous. We have a licensed phlebotomist available who is very skilled and it should take about 5-10 minutes. Would you be willing to participate in this part of the study?"*

NOTE: Subjects must be 18 years old in most states to provide a blood sample. The exceptions are: They must be at least age 19 in Alabama and Nebraska; they must be at least age 21 in Pennsylvania and Indiana.

2.Consent to blood draw?

- ☐ Yes
- ☐ No **(Skip to 5)**
- ☐ Ineligible due to age **(Skip to 5)**

3."*Great! We need to get you to the phlebotomist. I am going to give you the $10 you have earned, some information about the study, and labels for you to give to the phlebotomist. I need to communicate to my team that you will be moving your car within the site to avoid any confusion. You will find the phlebotomist in that van right there where you will park. Give these stickers to the phlebotomist who will go through an official consent process, perform the draw, and give you your $50 money order. Do you have any questions?"*

4.Administer incentives and WHITE sheet. Give driver blood CoC labels to give to the phlebotomist.
"Thank you for your time. Drive Safely!" **(Skip to 6)**

5.(End)Administer incentives and WHITE sheet
"Thank you for your time! Give me just a moment to alert my team that you will be leaving to avoid traffic confusion and make sure you get out of here safely."

6.*Timestamp*

7.Blood CoC Label # __-__-__-__-__

8.Oral Fluid CoC Label #: __-__-__-__-__

Post-interview Observations

9.Gender ☐ Male ☐ Female ☐ Unknown

10.Vehicle type ☐ Car ☐ SUV/ Crossover ☐ Minivan ☐ Van
☐ Pickup ☐ Motorcycle ☐ Unknown ☐ Other_____

11.Driver Safety Belts
☐ Lap and shoulder belts (Helmet Use/Motorcycles) ☐ Shoulder belt only ☐ Lap belt only
☐ No belt / helmet use ☐ Unknown

12: Front-seat Passenger Safety Belts
☐ Lap and shoulder belts (Helmet Use/Motorcycles) ☐ Shoulder belt only ☐ Lap belt only
☐ No belt / helmet use ☐ Unknown ☐ Not applicable (no passengers

13.Number of Passengers (excluding driver)
0 1 2 3 4 5 6+

14.Passengers under age 15 present: ☐ Yes ☐ No

15.Did you write notes on the blue card? ☐ Yes ☐ No

2013–2014 National Roadside Study of Alcohol and Drug Use by Drivers

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Appendix G: Quantisal Oral Fluid Collection Device

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

NHTSA

Collecting Oral Fluid Specimens

Upon completion of the verbal survey and breath sample collection, the next step will be to obtain consent for an oral fluid specimen. If the participant agrees to provide an oral fluid sample, he or she is given the Quantisal™ device to put under their tongue to collect a saliva sample.

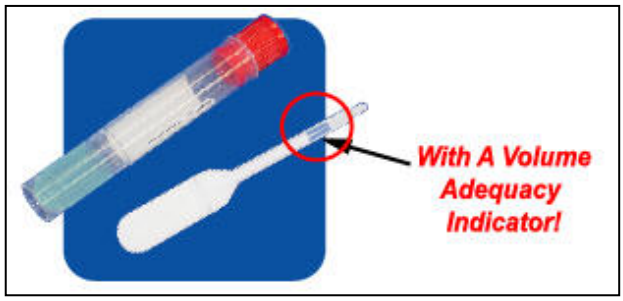

Figure 1. The Quantisal Oral Fluid Collection Device

1. If the participant says "yes" when asked to provide an oral fluid sample and complete the Self-Administered Questionnaire, clearly instruct him or her, "Please DO NOT chew or suck the on pad and DO NOT move pad during collection. Please keep the collector under your tongue until the indicator turns completely blue; this may take a few minutes."

2. Place the Quantisal package in front of the respondent and ask, "Please remove the collector from the pouch, position it under your tongue and close your mouth."

3. Instruct the participant on how to complete the Self-Administered Questionnaire (and AUD if they are eligible). Give the participant the tablet and instruct them on how to fill out the Self-Administered Questionnaire booklet.

4. If the indicator has not turned blue within 5 minutes, the pad should be removed from the mouth and discarded. Another collection attempt with a new device may begin immediately but only after saliva has accumulated in the mouth. The swab should be placed in the same position.

5. Remove cap from transport tube once the indicator is blue.
6. Ask the participant to please open their mouth, lift their tongue, remove the collector from mouth and insert the collector into the transport tub. Fluid from the transport tube should never enter the participant's mouth.
7. Carefully place cap over the top of the collector stem in tube. FORCEFULLY push cap downward until cap "snaps" flush with top of tube.
8. Place the Chain of Custody (COC) Label on the tube, on the DIN card, and enter the COC number into your iPad when/where requested.

Figure 2. The Quantisal™ Oral Fluid Collection Device

9. Mix saturated collector with buffer fluid by gently shaking tube. Return the oral fluid sample to your kit for storage.
10. Provide the respondent with a $10 incentive for their participation.

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Appendix H: 2013-2014 NRS Drug Use Questionnaire; Prescription Drug Use Questionnaire; Drug Abuse Screening Test (DAST); Drug Use Disorder Questionnaire (DUD); and Alcohol Use Disorder Questionnaire (AUD)

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

NHTSA

2013 NRS Drug Use Questionnaire

ID: _ _ /_ _ /_ _ /_ / _ _

The following questions ask about your use of medications and/or drugs. Please indicate the last time you used that particular medication/drug. This is for research purposes only. All your responses are **completely anonymous**.

	Past 24 Hours	Past 2 Days	Past Month	Over a Month	Beyond a year/ Never
1. Cough medicines (like Robitussin, Vicks 44, etc.)	☐	☐	☐	☐	☐
2. Other over-the-counter medicines	☐	☐	☐	☐	☐
3. Tobacco (like cigarettes, cigars, chewing tobacco)	☐	☐	☐	☐	☐
4. Marijuana (like pot, hash, weed)	☐	☐	☐	☐	☐
5. Cocaine (like crack or coke)	☐	☐	☐	☐	☐
6. Heroin	☐	☐	☐	☐	☐
7. LSD (acid)	☐	☐	☐	☐	☐
8. Ecstasy (like "E", MDMA, "X")	☐	☐	☐	☐	☐
9. Methamphetamine (like speed, crank, crystal meth)	☐	☐	☐	☐	☐
10. GHB (like Liquid Ecstasy, Liquid G)	☐	☐	☐	☐	☐
11. PCP (like Angel Dust)	☐	☐	☐	☐	☐
12. Rohypnol (Roofies)	☐	☐	☐	☐	☐
13. Ketamine (Special K)	☐	☐	☐	☐	☐

Prescription Drug Use Questionnaire

Prescription Drug Questionnaire **ID: _ _ / _ _ /_ _ /_ / _ _**

The following is a list of medications/drugs people may use. Please indicate the last time you used that particular medication/drug. This is for research purposes only. All your responses are **completely anonymous**.

	Past 24 Hours	Past 2 Days	Past Month	Over a Month	Beyond a year/ Never	A Was this drug prescribed for your use?	B Did you take more of this drug than prescribed?	C Did a health care provider or pharmacy staff warn you that this drug might affect your driving?	D Was there a label on the packaging warning you that this drug might affect your driving?	E How likely do you think it is that taking this drug **as prescribed** could affect a person's ability to **drive safely**? 1- Very likely 2- Somewhat likely 3- Somewhat unlikely 4- Very unlikely	F How likely do you think it is that taking this drug **as prescribed** could cause a person to **crash**? 1- Very likely 2- Somewhat likely 3- Somewhat unlikely 4- Very unlikely	G How likely do you think it is that a person taking this drug **as prescribed** could be **arrested** for impaired driving? 1- Very likely 2- Somewhat likely 3- Somewhat unlikely 4- Very unlikely	H How likely do you think it is that a person taking this drug **as prescribed** could be **convicted** of impaired driving? 1- Very likely 2- Somewhat likely 3- Somewhat unlikely 4- Very unlikely
1. Morphine or codeine (like Tylenol with codeine)	☐	☐	☐	☐ Go to #2	☐ Go to #2	☐ Yes ☐ No- Go to #2	☐ Yes ☐ No ☐ Don't know	☐ Yes ☐ No ☐ Don't know	☐ Yes ☐ No ☐ Don't know				
2. Methadone or buprenorphine (like Subutex, Suboxone)	☐	☐	☐	☐ Go to #3	☐ Go to #3	☐ Yes ☐ No- Go to #3	☐ Yes ☐ No ☐ Don't know	☐ Yes ☐ No ☐ Don't know	☐ Yes ☐ No ☐ Don't know				
3. Other prescription pain medications (like Oxycontin/ oxycodone, Percocet, Opana/Oxymorphone, Vicodin/hydrocodone)	☐	☐	☐	☐ Go to #4	☐ Go to #4	☐ Yes ☐ No- Go to #4	☐ Yes ☐ No ☐ Don't know	☐ Yes ☐ No ☐ Don't know	☐ Yes ☐ No ☐ Don't know				
4. ADHD medications (like Ritalin, Aderall, Concerta)	☐	☐	☐	☐ Go to #5	☐ Go to #5	☐ Yes ☐ No- Go to #5	☐ Yes ☐ No ☐ Don't know	☐ Yes ☐ No ☐ Don't know	☐ Yes ☐ No ☐ Don't know				
5. Other amphetamines (like Benzedrine, Dexedrine)	☐	☐	☐	☐ Go to #6	☐ Go to #6	☐ Yes ☐ No- Go to #6	☐ Yes ☐ No ☐ Don't know	☐ Yes ☐ No ☐ Don't know	☐ Yes ☐ No ☐ Don't know				

Prescription Drug Use Questionnaire

ID: _ _ /_ _ /_ / _ _

Prescription Drug Questionnaire	Past 24 Hours	Past 2 Days	Past Month	Over a Month	Beyond a year/ Never	A Was this drug prescribed for your use?	B Did you take more of this drug than prescribed?	C Did a health care provider or pharmacy staff warn you that this drug might affect your driving?	D Was there a label on the packaging warning you that this drug might affect your driving?	E How likely do you think it is that taking this drug **as prescribed** could affect a person's ability to **drive safely**?	F How likely do you think it is that taking this drug **as prescribed** could cause a person to **crash**?	G How likely do you think it is that a person taking this drug **as prescribed** could be **arrested** for impaired driving?	H How likely do you think it is that a person taking this drug **as prescribed** could be **convicted** of impaired driving?
										1- Very likely 2- Somewhat likely 3- Somewhat unlikely 4- Very unlikely	1- Very likely 2- Somewhat likely 3- Somewhat unlikely 4- Very unlikely	1- Very likely 2- Somewhat likely 3- Somewhat unlikely 4- Very unlikely	1- Very likely 2- Somewhat likely 3- Somewhat unlikely 4- Very unlikely
1. Prescription dietary / appetite suppressant (like Tenuate, phentermine)	☐	☐	☐	☐ Go to #7	☐ Go to #7	☐ Yes ☐ No- Go to #7	☐ Yes ☐ No ☐ Don't know	☐ Yes ☐ No ☐ Don't know	☐ Yes ☐ No ☐ Don't know				
2. Sleep aids (like Ambien, Lunesta)	☐	☐	☐	☐ Go to #8	☐ Go to #8	☐ Yes ☐ No- Go to #8	☐ Yes ☐ No ☐ Don't know	☐ Yes ☐ No ☐ Don't know	☐ Yes ☐ No ☐ Don't know				
3. Muscle relaxants (like Soma, Flexiril)	☐	☐	☐	☐ Go to #9	☐ Go to #9	☐ Yes ☐ No- Go to #9	☐ Yes ☐ No ☐ Don't know	☐ Yes ☐ No ☐ Don't know	☐ Yes ☐ No ☐ Don't know				
4. Antidepressants (like Prozac, Zoloft, Wellbutrin, Lexapro, Effexor)	☐	☐	☐	☐ Go to #10	☐ Go to #10	☐ Yes ☐ No- Go to #10	☐ Yes ☐ No ☐ Don't know	☐ Yes ☐ No ☐ Don't know	☐ Yes ☐ No ☐ Don't know				
5. Benzodiazepines (like Xanax/alprazolam, Valium/diazepam, Ativan/lorazepam)	☐	☐	☐	☐ Go to #11	☐ Go to #11	☐ Yes ☐ No- Go to #11	☐ Yes ☐ No ☐ Don't know	☐ Yes ☐ No ☐ Don't know	☐ Yes ☐ No ☐ Don't know				
6. Barbiturates (Phenobarbital)	☐	☐	☐	☐ Go to #12	☐ Go to #12	☐ Yes ☐ No- Go to #12	☐ Yes ☐ No ☐ Don't know	☐ Yes ☐ No ☐ Don't know	☐ Yes ☐ No ☐ Don't know				
7. Medicinal marijuana/cannabis	☐	☐	☐	☐ Done	☐ Done	☐ Yes ☐ No- Done	☐ Yes ☐ No ☐ Don't know	☐ Yes ☐ No ☐ Don't know	☐ Yes ☐ No ☐ Don't know				
8. Of the prescription medications you reported using, have you ever taken any with alcohol? ☐ Yes ☐ No													

Drug Abuse Screening Test **ID: _ _ /_ _ /_ _ /_ / _ _**

Here is a list of questions concerning information about your use of drugs, excluding alcohol and tobacco, during the past 12 months. When the words "drug use" are used, they mean the use of **illegal drugs, prescribed or over-the-counter medications in excess of the directions, and any non-medical use of drugs.**

Again, these questions refer to the **past 12 months.**

Question	Yes	No
1 Have you used drugs other than those required for medical reasons?	☐	☐
2 Are you always able to stop using drugs when you want to? (If never use drugs, answer "Yes")	☐	☐
3 Have you had "blackouts" or "flashbacks" as a result of drug use?	☐	☐
4 Do you ever feel bad or guilty about your drug use? (If never use drugs, choose "No")	☐	☐
5 Does your spouse (or parents) ever complain about your involvement with drugs?	☐	☐
6 Have you neglected your family because of your use of drugs?	☐	☐
7 Have you engaged in illegal activities in order to obtain drugs?	☐	☐
8 Have you ever experienced withdrawal symptoms (felt sick) when you stopped taking drugs?	☐	☐
9 Have you had medical problems as a result of your drug use (e.g., memory loss, hepatitis, convulsions, bleeding, etc.)?	☐	☐
10 Do you abuse more than one drug at a time?	☐	☐

Drug Use Disorder Questionnaire

The following questions are about your use of marijuana, cocaine, and/ or non-prescribed use or overuse of prescription pain killers **in the past year.**

		Marijuana	Cocaine	Pain killers
If not used in the past year, mark 'No Use' and turn page.		☐ No Use	☐ No Use	☐ No Use
1.	In the past year, did your use often interfere with taking care of your home or family or cause you problems at work or school?	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No
2.	In the past year, did you more than once get into a situation while using or after using that increased your chances of getting hurt—like driving a car or other vehicle or using heavy machinery?	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No
3.	In the past year, did you get arrested, held at a police station or have legal problems because of your use?	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No
4.	In the past year, did you continue to use even though it was causing you trouble with your family or friends?	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No
5.	In the past year, have you found that you have to use more than you once did to get the effect you want?	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No
6.	In the past year, did you find that your usual amount had less effect on you than it once did?	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No
7.	In the past year, did you more than once want to try to stop or cut down on your use, but you couldn't do it?	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No
8.	In the past year, did you end up using more or using or for a longer period than you intended?	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No
9.	In the past year, did you give up or cut down on activities that were important to you or gave you pleasure in order to use?	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No
10.	In the past year, when the medication/drug effects *w*ere wearing off, did you experience some of the bad after effects – like trouble sleeping, feeling nervous, restless, anxious, sweating or shaking, or did you have seizures or sense things that weren't really there?	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No
11.	In the past year, did you spend a lot of time using or getting over the bad after effects of use?	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No
12.	In the past year, did you continue to use even though it was causing you to feel depressed or anxious or causing a health problem or making one worse?	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No

Alcohol Use Disorder Questionnaire

ID:_ _ / _ _ /_ _ /_ / _ _

The following questions ask about your experiences with **alcohol in the past year:**

1. In the past year, how many drinks containing alcohol did you have on a typical day when you were drinking?
   - ☐ 1-2
   - ☐ 3-4
   - ☐ 5-6
   - ☐ 7-9
   - ☐ 10 or more
2. In the past year, how often did you have six (male) / five (female) or more drinks on one occasion?
   - ☐ Never
   - ☐ Less than monthly
   - ☐ Monthly
   - ☐ Weekly
   - ☐ Daily/almost daily
3. In the past year, did your drinking often interfere with taking care of your home or family or cause you problems at work or school?
   ☐ Yes ☐ No
4. In the past year, did you more than once get into a situation while drinking or after drinking that increased your chances of getting hurt—like driving a car or other vehicle or using heavy machinery after having had too much to drink?
   ☐ Yes ☐ No
5. In the past year, did you get arrested, held at a police station or have legal problems because of your drinking?
   ☐ Yes ☐ No
6. In the past year, did you continue to drink even though it was causing you trouble with your family or friends?
   ☐ Yes ☐ No
7. In the past year, have you found that you have to drink more than you once did to get the effect you want?
   ☐ Yes ☐ No
8. In the past year, did you find that your usual number of drinks had less effect on you than it once did?
   ☐ Yes ☐ No
9. In the past year, did you more than once want to try to stop or cut down on your drinking, but you couldn't do it?
   ☐ Yes ☐ No
10. In the past year, did you end up drinking more or drinking for a longer period than you intended?
    ☐ Yes ☐ No
11. In the past year, did you give up or cut down on activities that were important to you or gave you pleasure in order to drink?
    ☐ Yes ☐ No
12. In the past year, when the effects of alcohol were wearing off, did you experience some of the bad after effects of drinking – like trouble sleeping, feeling nervous, restless, anxious, sweating or shaking, or did you have seizures or sense things that weren't really there?
    ☐ Yes ☐ No
13. In the past year, did you spend a lot of time drinking or getting over the bad after effects of drinking?
    ☐ Yes ☐ No
14. In the past year, did you continue to drink even though it was causing you to feel depressed or anxious or causing a health problem or making one worse?
    ☐ Yes ☐ No
15. In the past year, how often did you:
    A) have any kind of high energy (caffeinated) drink like *Red Bull*, not containing alcohol?
       ☐ Never in my life ☐ Once a month ☐ More than once a week
       ☐ Never in the last year ☐ Once a week ☐ Every day
       ☐ Less than once a month
    B) have a high energy drink with alcohol (e.g., *Red Bull* + Vodka, or a pre-mixed drink)
       ☐ Never in my life ☐ Once a month ☐ More than once a week
       ☐ Never in the last year ☐ Once a week ☐ Every day
       ☐ Less than once a month

2013-2014 National Roadside Study of Alcohol and Drug Use by Drivers

METHODOLOGY

Appendix I: 2013-2014 NRS Passenger Survey

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

NHTSA

Passenger Survey D.I.N. __ __/__ __/__ __/__ /__ __

You are invited to participate in this **anonymous and voluntary** research survey. You may skip any question you choose or discontinue at any time. You will receive $5 for your time and participation.

1. **What is your date of birth?** Month_____ Year_____
2. **Are you male or female?** ☐ Male ☐ Female
3. **Are you Hispanic or Latino?** ☐ Yes ☐ No
4. **To which racial group would you say you belong?**
   - ☐ White
   - ☐ Black or African American
   - ☐ Asian
   - ☐ America Indian or Alaska Native
   - ☐ Native Hawaiian or Other Pacific Islander
   - ☐ More than one
   - ☐ Unknown
   - ☐ Other Race (specify)_____
5. **Do you have a:** ☐ Valid Driver's license ☐ Learner's permit ☐ Neither
6. **Who is the owner of the vehicle you are currently in?**
   - ☐ You
   - ☐ The driver
   - ☐ Both you and the driver
   - ☐ Employer/ Co-worker
   - ☐ Other (Specify) _____
7. **Have you been a passenger with this driver before tonight?** ☐ Yes ☐ No
8. **What is your relationship to the driver?**
   - ☐ Spouse
   - ☐ Partner/Significant Other
   - ☐ Son or Daughter of the driver
   - ☐ Parent of the driver
   - ☐ Other family member
   - ☐ Friend
   - ☐ Co-worker
   - ☐ Other (Specify) _____
9. **If other than spouse, significant other, parent or child, how close are you to the driver?**
   - ☐ Very close
   - ☐ Close
   - ☐ Somewhat close
   - ☐ Not close
   - ☐ Distant/just met
   - ☐ Not Applicable
10. **Is your driver tonight serving as the designated driver, that is someone who did not drink alcohol so that you could safely get home?** ☐ Yes ☐ Yes, but for others, not for me ☐ No
11. **Did the driver have any alcohol or use any drugs (including medications) today/ tonight?**
    ☐ Alcohol ☐ Drugs/ Meds ☐ Both (alcohol and drugs/ meds) ☐ Neither (alcohol nor drugs/ meds)
12. **In the past year have you had 5 or more drinks (male) / 4 or more (female) in a TWO hour period?** ☐ Yes ☐ No
13. **Have you had anything to drink today?** ☐ Yes ☐ No

    If YES, you have been drinking alcohol: How many whole drinks of alcohol have you had today/this evening?
    - ☐ Less than one
    - ☐ One
    - ☐ Two
    - ☐ Three
    - ☐ Four
    - ☐ Five
    - ☐ More than five

    If YES to 13, how many more drinks do you intend to have today/tonight?
    - ☐ None or less than one
    - ☐ One
    - ☐ Two
    - ☐ Three
    - ☐ Four
    - ☐ Five
    - ☐ More than five
14. **In the past year, how often have you had a drink containing alcohol such as beer wine or liquor?**
    - ☐ Never in the past year → *Skip back of this page and continue to last page of survey.*
    - ☐ Monthly or less
    - ☐ 2-4 times/ month
    - ☐ 2-3 times/ week
    - ☐ 4 or more times/ week
15. **Your current weight** _____ (lbs)
16. **Your current height?** _____ (feet) _____ (inches)

The following questions ask about your experiences with alcohol in the past year.

1. **In the past year, how many drinks containing alcohol did you have on a typical day when you were drinking?**
   - ☐ 1-2
   - ☐ 3-4
   - ☐ 5-6
   - ☐ 7-9
   - ☐ 10 or more

2. **In the past year, how often did you have six (males) / five (female) or more drinks on one occasion?**
   - ☐ Never
   - ☐ Less than monthly
   - ☐ Monthly
   - ☐ Weekly
   - ☐ Daily/almost daily

3. **In the past year, did your drinking often interfere with taking care of your home or family or cause you problems at work or school?**
   - ☐ Yes ☐ No

4. **In the past year, did you more than once get into a situation while drinking or after drinking that increased your chances of getting hurt—like driving a car or other vehicle or using heavy machinery after having had too much to drink?**
   - ☐ Yes ☐ No

5. **In the past year, did you get arrested, held at a police station or have legal problems because of your drinking?**
   - ☐ Yes ☐ No

6. **In the past year, did you continue to drink even though it was causing you trouble with your family or friends?**
   - ☐ Yes ☐ No

7. **In the past year, have you found that you have to drink more than you once did to get the effect you want?**
   - ☐ Yes ☐ No

8. **In the past year, did you find that your usual number of drinks had less effect on you than it once did?**
   - ☐ Yes ☐ No

9. **In the past year, did you more than once want to try to stop or cut down on your drinking, but you couldn't do it?**
   - ☐ Yes ☐ No

10. **In the past year, did you end up drinking more or drinking for a longer period than you intended?**
    - ☐ Yes ☐ No

11. **In the past year, did you give up or cut down on activities that were important to you or gave you pleasure in order to drink?**
    - ☐ Yes ☐ No

12. **In the past year, when the effects of alcohol were wearing off, did you experience some of the bad after effects of drinking – like trouble sleeping, feeling nervous, restless, anxious, sweating or shaking, or did you have seizures or sense things that weren't really there?**
    - ☐ Yes ☐ No

13. **In the past year, did you spend a lot of time drinking or getting over the bad after effects of drinking?**
    - ☐ Yes ☐ No

14. **In the past year, did you continue to drink even though it was causing you to feel depressed or anxious or causing a health problem or making one worse?**
    - ☐ Yes ☐ No

15. **In the past year, how often did you:**

    A) have any kind of high energy (caffeinated) drink like Red Bull, not containing alcohol?
    - ☐ Never in my life
    - ☐ Never in the last year
    - ☐ Less than once a month
    - ☐ Once a month
    - ☐ Once a week
    - ☐ More than once a week
    - ☐ Every day

    B) have a high energy drink with alcohol (e.g., Red Bull + Vodka, or a pre-mixed drink)
    - ☐ Never in my life
    - ☐ Never in the last year
    - ☐ Less than once a month
    - ☐ Once a month
    - ☐ Once a week
    - ☐ More than once a week
    - ☐ Every day

Here is a list of questions concerning information about your use of drugs, excluding alcohol and tobacco, during the past 12 months. When the words “drug use” are used, they mean the use of **illegal drugs, prescribed or over-the-counter medications in excess of the directions, and any non-medical use of drugs.**

Again, these questions refer to the **past 12 months.**

Question	Yes	No
1. Have you used drugs other than those required for medical reasons?	☐	☐
2. Are you always able to stop using drugs when you want to? (If never use drugs, answer “Yes”)	☐	☐
3. Have you had "blackouts" or "flashbacks" as a result of drug use?	☐	☐
4. Do you ever feel bad or guilty about your drug use? (If never use drugs, choose “No”)	☐	☐
5. Does your spouse (or parents) ever complain about your involvement with drugs?	☐	☐
6. Have you neglected your family because of your use of drugs?	☐	☐
7. Have you engaged in illegal activities in order to obtain drugs?	☐	☐
8. Have you ever experienced withdrawal symptoms (felt sick) when you stopped taking drugs?	☐	☐
9. Have you had medical problems as a result of your drug use (e.g. memory loss, hepatitis, convulsions, bleeding, etc.)?	☐	☐
10. Do you abuse more than one drug at a time?	☐	☐

THANK YOU FOR COMPLETING THIS SURVEY

2013-2014 National Roadside Study of Alcohol and Drug Use by Drivers

METHODOLOGY

Appendix J: 2013-2014 NRS Survey Manager Report Forms

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

NHTSA

2013-2014 NATIONAL ROADSIDE SURVEY MANAGER REPORT

Data Collection Date:		**Day of Week:** Friday or Saturday		
Street:		**City:**	**County:**	**State:**
Start Time:	**End Time:**	**Direction of Travel Surveyed:**		
Temp & Conditions:		**Survey Manager:**		

PSU:	**Physical Address:** _____ **Landmarks:** _____	**Session #:**

BAY #1 Data Collector Name: _____
PBT ID: _____ **#of PBT Samples:**_____
PAS ID: _____
#of $10s Given:_____ **# of $5s Given:** _____
# of Blue Cards Completed: _____
# of Oral Fluid Samples: _____=$_____
# of Passenger Surveys _____=$_____
# of Incentives Returned: $10_____**$5**_____**Total:**_____

BAY #2 Data Collector Name: _____
PBT ID: _____ **#of PBT Samples:**_____
PAS ID: _____
#of $10s Given:_____ **# of $5s Given:** _____
# of Blue Cards Completed: _____
# of Oral Fluid Samples: _____=$_____
# of Passenger Surveys _____=$_____
# of Incentives Returned: $10_____**$5**_____**Total:**_____

BAY #3 Data Collector Name: _____
PBT ID: _____ **#of PBT Samples:**_____
PAS ID: _____
#of $10s Given:_____ **# of $5s Given:** _____
# of Blue Cards Completed: _____
# of Oral Fluid Samples: _____=$_____
# of Passenger Surveys _____=$_____
# of Incentives Returned: $10_____**$5**_____**Total:**_____

BAY #4 Data Collector Name: _____
PBT ID: _____ **#of PBT Samples:**_____
PAS ID: _____
#of $10s Given:_____ **# of $5s Given:** _____
# of Blue Cards Completed: _____
# of Oral Fluid Samples: _____=$_____
# of Passenger Surveys _____=$_____
# of Incentives Returned: $10_____**$5**_____**Total:**_____

BAY #5 Data Collector Name: _____
PBT ID: _____ **#of PBT Samples:**_____
PAS ID: _____
#of $10s Given:_____ **# of $5s Given:** _____
# of Blue Cards Completed: _____
# of Oral Fluid Samples: _____=$_____
# of Passenger Surveys _____=$_____
# of Incentives Returned: $10_____**$5**_____**Total:**_____

BAY #6 Data Collector Name: _____
PBT ID: _____ **#of PBT Samples:**_____
PAS ID: _____
#of $10s Given:_____ **# of $5s Given:** _____
# of Blue Cards Completed: _____
# of Oral Fluid Samples: _____=$_____
# of Passenger Surveys _____=$_____
# of Incentives Returned: $10_____**$5**_____**Total:**_____

Police Contact Name and Cell#: _____

_____

Officer #1 Name and Cell #: _____

_____

Officer #2 Name and Cell #: _____

_____

Phlebotomist: _____

Money Orders Provided: _____ **= $** _____

Money Order Returned: _____ **= $** _____

Traffic Director: _____

QC: _____

PSU#:	Session#:	Date:

Site Summary	Total Vehicle Counts Completed by Officers
# DICs Completed:	Total Session Count:
# PBTs:	Pulled Over for Interview:
# Oral Fluids:	Non-Qualifying (Emergency, etc):
# Blood Samples:	Evading Site / Refused Before Bay:
# Passenger Surveys:	
# IDPs:	# of Conversions Completed:
# of Conversion Attempts:	Total Spent on Conversions:

Police Role:

□ Full Protocol	□ Officer Initiated Stop	□ Staff Waved in Vehicles
□ Partial Protocol	□ Police Vehicle on Road	□ Officer Used Lights
□ Officer No Involvement	□ Officer Used Cones	□ Officer Assisted TD

Notes:

Sketch the Survey Site: (Include layout of site, where data collectors and police officers were located, any other relevant elements)

Notes: (Brief description of site – unique set-up challenges, population characteristics, etc.)

Impaired Driver Protocol Activities

DIN: __ __ / __ __ / __ __/ __ / __ __	**Action Taken:**
Interviewer Name:	☐ Switched Driver→ New driver BAC:_____
Time of IDP: ____:____ PM / AM	☐ Friend/Family → New driver BAC:_____
Survey Completed: ☐ Yes☐ No	☐ Waited/ BAC was < .05 → final BAC_____
PAS Reading: _____ G Y R bars	☐ Taxi/Tow Truck → Cost of taxi/Tow Truck = $ ______
Driver BAC =	☐ Walked: Distance: With:
NO ACTION TAKEN: ☐	☐ Other (Specify):
Describe Situation, including problems or unusual circumstances: (please indicate if driver was under 21 years old):	

DIN: __ __ / __ __ / __ __/ __ / __ __	**Action Taken:**
Interviewer Name:	☐ Switched Driver→ New driver BAC:_____
Time of IDP: ____:____ PM / AM	☐ Friend/Family → New driver BAC:_____
Survey Completed: ☐ Yes☐ No	☐ Waited/ BAC was < .05 → final BAC_____
PAS Reading: _____ G Y R bars	☐ Taxi/Tow Truck → Cost of taxi/Tow Truck = $ ______
Driver BAC =	☐ Walked: Distance: With:
NO ACTION TAKEN: ☐	☐ Other (Specify):
Describe Situation, including problems or unusual circumstances: (please indicate if driver was under 21 years old):	

DIN: __ __ / __ __ / __ __/ __ / __ __	**Action Taken:**
Interviewer Name:	☐ Switched Driver→ New driver BAC:_____
Time of IDP: ____:____ PM / AM	☐ Friend/Family → New driver BAC:_____
Survey Completed: ☐ Yes☐ No	☐ Waited/ BAC was < .05 → final BAC_____
PAS Reading: _____ G Y R bars	☐ Taxi/Tow Truck → Cost of taxi/Tow Truck = $ ______
Driver BAC =	☐ Walked: Distance: With:
NO ACTION TAKEN: ☐	☐ Other (Specify):
Describe Situation, including problems or unusual circumstances: (please indicate if driver was under 21 years old):	

☐ Check here if there were no IDP activations

Impaired Driver Protocol Activities

DIN: __ __ / __ __ / __ __/ __ / __ __	**Action Taken:**
Interviewer Name:	☐ Switched Driver→ New driver BAC:_____
Time of IDP: ____:____ PM / AM	☐ Friend/Family → New driver BAC:_____
Survey Completed: ☐ Yes☐ No	☐ Waited/ BAC was < .05 → final BAC_____
PAS Reading: _____ G Y R bars	☐ Taxi/Tow Truck → Cost of taxi/Tow Truck = $ ______
Driver BAC =	☐ Walked: Distance: With:
NO ACTION TAKEN: ☐	☐ Other (Specify):
Describe Situation, including problems or unusual circumstances: (please indicate if driver was under 21 years old):	

DIN: __ __ / __ __ / __ __/ __ / __ __	**Action Taken:**
Interviewer Name:	☐ Switched Driver→ New driver BAC:_____
Time of IDP: ____:____ PM / AM	☐ Friend/Family → New driver BAC:_____
Survey Completed: ☐ Yes☐ No	☐ Waited/ BAC was < .05 → final BAC_____
PAS Reading: _____ G Y R bars	☐ Taxi/Tow Truck → Cost of taxi/Tow Truck = $ ______
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Describe Situation, including problems or unusual circumstances: (please indicate if driver was under 21 years old):	

DIN: __ __ / __ __ / __ __/ __ / __ __	**Action Taken:**
Interviewer Name:	☐ Switched Driver→ New driver BAC:_____
Time of IDP: ____:____ PM / AM	☐ Friend/Family → New driver BAC:_____
Survey Completed: ☐ Yes☐ No	☐ Waited/ BAC was < .05 → final BAC_____
PAS Reading: _____ G Y R bars	☐ Taxi/Tow Truck → Cost of taxi/Tow Truck = $ ______
Driver BAC =	☐ Walked: Distance: With:
NO ACTION TAKEN: ☐	☐ Other (Specify):
Describe Situation, including problems or unusual circumstances: (please indicate if driver was under 21 years old):	

□ Check here if there were no IDP activations

2013-2014 National Roadside Study of Alcohol and Drug Use by Drivers

METHODOLOGY

Appendix K: Occupational Safety and Health Administration (OSHA) Standards

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

NHTSA

OSHA

One of the main qualifications you must have as an independent contractor with PIRE is an understanding of the blood drawing technique, infection control, and specimen transportation methods. Phlebotomists must know the Occupational Safety and Health Administration (OSHA) requirements. The key to safety and compliance is to regularly review OSHA's guidelines and to know how to perform venipunctures safely and successfully.

As an independent contractor with PIRE, you must familiarize yourself with and know all of the standards for OSHA before you start. For your convenience, we have reprinted the mandatory information below. It can also be found on http://www.osha.gov/SLTC/bloodbornepathogens/recognition.html.

PLEASE READ. If you have any questions, please contact Katie Carr.

Purpose

"This information document explains OSHA's national policy regarding the disposal of contaminated needles/sharps and blood tube holders following blood-drawing procedures. This is not intended to create new requirements and is not a change of any existing requirement or policy. This document addresses the prohibition against the removal of contaminated needles from medical devices unless no feasible alternative exists or it is necessary for a specific medical or dental procedure, as stated in OSHA's Bloodborne Pathogens Standard [29 CFR 1910.1030(d)(2)(vii)(A)]. This includes a prohibition against the removal of contaminated needles from blood tube holders following a blood drawing procedure.

"Blood collection needles and tube holders are separate devices used in combination to withdraw blood from a patient's vein. A blood collection needle screws into a blood tube holder, prior to use, then a blood tube is inserted into the holder to collect the blood being drawn from the patient. A blood collection needle has two ends: one at the front end that is inserted into a patient's vein and one at the back end which transports the blood from the vein through a rubber stopper into a blood tube. The tube filled with blood is then sent to a laboratory for analysis. While most conventional blood tube holders can be reused multiple times, in order to best control worker exposure to blood, most healthcare facilities

discard the entire device, with needle attached after each use. As healthcare safety research indicates, needlestick injuries after blood draws are most likely to occur while removing the blood-drawing needle from the patient's arm or while disposing of an unprotected needle into a sharps container. Because the reuse of tube holders requires the removal of used needles, exposing healthcare workers to contaminated, unsafe, back-end needles, professional phlebotomists have been urged not to reuse holders.

"OSHA has concluded that the best practice for prevention of needlestick injuries following phlebotomy procedures is the use of a sharp with engineered sharps injury protection (SESIP) (e.g., safety needle) attached to the blood tube holder and the immediate disposal of the entire unit after each patient's blood is drawn."

Background

"The Needlestick Safety and Prevention Act and the enforcement of OSHA's Bloodborne Pathogens Standard have increased awareness of injuries caused by contaminated needles. Safety-engineered medical devices have been improved and have become more available to health care workers. While engineering controls exist to significantly reduce injuries to healthcare workers, hazardous work practices continue to cause injuries. One practice that has gained attention is the removal of contaminated needles in order to reuse blood tube holders when drawing blood.

"The EPINet (Exposure Prevention Information Network) sharps injury database is coordinated by the International Healthcare Worker Safety Center at the University of Virginia and includes data from 90 healthcare facilities around the country that voluntarily participate in the network. EPINet data from 1993-2001 indicate that approximately 5% (1288/25,043) of injuries were caused by vacuum blood collection needles/tube holder sets. Of phlebotomy device injuries, 33% were sustained by phlebotomists and 7% by clinical lab workers; 11% occurred while "disassembling" phlebotomy needles, and 22% during or after disposal. In the most recent two years of EPINet data (2000-2001), 146 percutaneous injuries from phlebotomy needles were reported from network facilities. Of the 146 percutaneous injuries, 114 included descriptions of the incident provided by the healthcare worker. Of those, 12 reported that they were injured by the "back end" (tube-piercing end) of the phlebotomy needle; this translates to approximately 10.5% (12/114) of percutaneous injuries from phlebotomy needles. Since phlebotomy needles are hollow-bore and blood-filled, they pose a high risk for transmission of bloodborne pathogens such as HIV, HCV, and HBV. Therefore, it is important, when using these devices, to utilize engineering and work practice

controls to minimize the risk of needlesticks, which have been documented to occur as a result of removing phlebotomy needles from blood tube holders.

“Previous practice in a number of healthcare facilities was reusing blood tube holders with removable needles in order to reduce costs associated with device purchase and waste removal. However, removing contaminated needles and reusing blood tube holders can pose multiple potential hazards. The manipulation required to remove a contaminated needle, even a safety-engineered needle, from a blood tube holder may result in a needlestick with the back end of the needle, which is only covered with a rubber sleeve.

“The Bloodborne Pathogens Standard (29 CFR 1910.1030) and OSHA Instruction CPL 2-2.69, requires immediate disposal of the entire blood tube holder unit, with needle attached after activation of the safety feature, into a sharps container. OSHA’s Bloodborne Pathogens Standard (29 CFR 1910.1030(d)(2)(vii)(A)) provides: “Contaminated needles and other contaminated sharps shall not be bent, recapped, or removed, unless the employer can demonstrate that no alternative is feasible or that such action is required by a specific medical or dental procedure.” More specifically, the CPL states that “...removing the needle from a used blood-drawing/phlebotomy device is rarely, if ever, required by a medical procedure. Because such devices involve the use of a double-ended needle, such removal clearly exposes employees to additional risk.” In a June 12, 2002, interpretation letter, OSHA stated that in order to prevent potential worker exposure to the contaminated hollow bore needle at both the front and back ends, blood tube holders, with needles attached, must be immediately discarded into an accessible sharps container after the safety feature has been activated.

“Single-use blood tube holders, when used with engineering and work practice controls, provide a level of protection against needlestick injuries that is unattainable with reuse of blood tube holders. OSHA also requires the use of commercially available SESIPs. The following states OSHA requirements during disposal of contaminated needles or sharps.”

Single Use of Blood Tube Holders

“Prevention of needlestick injuries during disposal of sharps, following phlebotomy procedures, depends on immediate disposal of the blood tube holder unit, with SESIP attached, and as a single unit after each patient’s blood is drawn.

“29 CFR 1910.1030(d)(2)(vii)(A) prohibits the removal of contaminated needles or sharps without documentation by the employer that alternatives are infeasible or

that this action is required by a medical procedure. 29 CFR 1910.1030(d)(2)(i) prohibits the use of blood collection needles without SESIPs."

Appropriate Disposal of Contaminated Sharps

"Employers must make available closable, puncture resistant, leakproof sharps containers that are appropriately labeled and color-coded. The containers must also have an opening that is large enough to accommodate disposal of the entire blood collection assembly (i.e. blood tube holder and needle).

"Employees must have access to sharps containers that are easily accessible to the immediate area where sharps are used (29 CFR 1910.1030(d)(4)(iii)(A)(2)(i).

"If employees travel from one location to another (e.g., from one patient room to another or from one facility to another), the employee must be provided with a sharps container which is conveniently placed or portable at each location/facility, and is capable of accommodating the entire blood tube holder and needle assembly.

"Employers must first evaluate, select, and use appropriate engineering controls (e.g., sharps with engineered sharps injury protection), which includes single-use blood tube holders with sharps with engineered sharps injury protection (SESIP) attached.

"The use of engineering *and* work practice controls provide the highest degree of control in order to eliminate potential injuries after performing blood draws. Disposing of blood tube holders with contaminated needles attached after the activation of the safety feature affords the greatest hazard control.

"In very rare situations, needle removal is acceptable.

"If the employer can demonstrate that no feasible alternative to needle removal is available (e.g., inability to purchase single-use blood tube holders due to a supply shortage of these devices).

"If the removal is necessary for a specific medical or dental procedure.

"In these rare cases, the employer must ensure that the contaminated needle is protected by a SESIP prior to disposal. In addition, the employer must ensure that a proper sharps disposal container is located in the immediate area of sharps use and is easily accessible to employees. This information must be clearly detailed and documented in the employer's Exposure Control Plan.

“If it is necessary to draw blood with a syringe, a syringe with engineered sharps injury protection must be used in which the protected needle is removed using safe work practices, and transfer of blood from the syringe to the tube must be done using a needleless blood transfer device.”

OSHA Standards

Protocol for Sharps Containers

Your carrying case will include a sharps container. It is your responsibility to ensure that the sharps container is secured during transportation. It is **VERY IMPORTANT** for you to secure the sharps container so that no needles fall out during transportation of the carrying case to and from site locations. However, do **NOT** lock the sharps container until it has reached the fill line.

When the sharps container (see Figure 2) has reached the fill line and is full, then lock the sharps container. Secure a note on the sharps container indicating that the sharps container has been locked and is ready for disposal so that the Head Phlebotomist, knows to replace it with another sharps container before your next survey.

Figure 1. Sharps Container

Protocol for Shipping Specimens

General Requirements

You must pack diagnostic specimens in good quality packaging, which must be strong enough to withstand the shock sand loadings normally encountered during transport, including trans-shipment between transport units and between transport units and warehouses, as well as any removal from a pallet or overpack for subsequent manual or mechanical handling. Construct and close packaging so as to prevent any loss of contents when prepared for transport that might be caused under normal conditions of transport, by vibration, or by changes in temperature, humidity, or pressure.

Pack primary receptacles inside secondary packaging in such a way that, under normal conditions of transport, they cannot break, be punctured, or leak their contents into the secondary packaging. You must secure secondary packaging in

outer packaging with suitable cushioning material. Any leakage of the contents must not substantially impair the protective properties of the cushioning material or the outer packaging.

PIRE Standards

Shipping Specimens

You must pack diagnostic specimens with the appropriate cushioning to prevent any damage and in good quality packaging, which must be strong enough to withstand the shocks normally encountered during transport (changes in temperature, humidity or pressure; vibration, tossing, tumbling and jolting).

1. Place specimens in red box with absorbent material between every row of vials if possible. (Oral fluid tubes generally fit best in the middle of the box.)
2. Line the bottom of the provided Styrofoam cooler with frozen polar packs.
3. Place red box in the cooler, and completely surround the box with frozen polar packs (about 15).
4. Secure the cooler closed with clear packing tape.
5. Place the cooler in the box for shipping. This box MUST HAVE a Biohazard label that reads “UN3373 Biological Substance Category B”.
6. FedEx labels should be addressed to:
7. It MUST be shipped FedEx Priority Overnight.

At the end of each survey weekend, you must package all the blood specimens and correctly. Please fully read the copy of these packaging directions provided in the phlebotomy kit to avoid any damage to the specimens.

Bloodborne Pathogen Spill Kits

Your phlebotomy kit will include a bloodborne pathogen spill kit (Universal Precaution Kit, or UPK), also known as a Personal Protective Equipment (PPE),

that is specifically designed for protection during body fluid and biohazard clean up. The contents of this kit are listed in Table 2.

Table 1. Contents of the Bloodborne Pathogen Spill Kit

SUPPLIES
Gloves
Protective face shield
Apron
Red Z solidifier/disinfectant
Scoop
Germicidal surface wipe
Antimicrobial hand wipe
Biohazard bag
ID tag
Instructions in sealed, easy-to-store poly bag

A spill kit will be required in the following examples:

- A vial of blood is dropped and shatters
- A participant has excessive bleeding and blood is present on any surface
- A participant gets sick and vomits

Cleaning and Decontaminating Spills of Blood or Other Potentially Infectious Body Fluids

1. Put on appropriate personal protective equipment including **double gloves**, gown, protective eye wear, and or face mask.
2. Control access to area. Prevent people from walking through affected area and thereby tracking the blood or other potentially infectious material to other areas.
3. Contain spill. Use paper towels or other absorbent material to contain spill.
4. Use plastic scoop or other mechanical means to remove any broken glass or other sharp objects from the spill area. Take care not to create aerosols. Place these items into a small cardboard box, thick-walled plastic bag, or other container that will prevent them from puncturing the red bag (or your hand). Place the contained sharp items into the red bag for disposal. Do not seal bag.

5. Apply appropriate disinfectant. To avoid creating aerosols, **never spray a disinfectant directly into spilled material.** Instead, gently pour or dab disinfectant on top of paper towels covering the spill or gently flood affected area first around the perimeter of the spill, then work disinfectant slowly into spilled material.
6. Allow 20 minutes of contact time with disinfectant.
7. Pick-up all absorbent material and place carefully in red bag for disposal. Do not seal red bag.
8. Clean affected area again with disinfectant and new paper towels. Place used paper towels in red bag for disposal. Do not seal red bag.
9. Dry area. Place used paper towels in red bag for disposal. Do not seal red bag.
10. Once spill is completely cleaned, place all used spill control equipment in the red bag for disposal. Do not seal red bag.
11. Remove personal protective equipment and place in red bag for disposal in the following order:
    - Remove soiled gown.
    - Remove outer pair of disposable gloves.
    - Remove face mask and protective eye wear.
    - **Do not** remove personal protective equipment from face with soiled gloves. Remove soiled outer gloves first and place them in the red bag for disposal. Use clean inner glove to remove PPE from face. This prevents the introduction of blood or other potentially infectious material to the mucous membranes of the face via a contaminated glove.
12. Once all used personal protective equipment, spill control equipment, and other potentially contaminated items are in the red bag, seal bag securely.
13. The sealed bag must be shipped back to Calverton separately from all other equipment and labeled using the same steps as for shipping blood to the lab (back-up labeling will be included in your travel packet). Once at the Calverton office, the research assistants will dispose of the used PPE properly.

14. Wash hands.
15. Fill out incident report form included in your travel packet.

Hepatitis Screening

All phlebotomists working for PIRE should have a Hepatitis B vaccine. PIRE will reimburse you for the full cost of the vaccine. If you reject this offer, you must sign a Hepatitis B Vaccination Consent/Waiver form (see Forms at the end of this manual). Before your start date, you must properly complete this form and submit it to the Head Phlebotomist.

Individuals (e.g., nurses, phlebotomists) likely to come into contact with bodily fluids of infected people run a higher risk of contracting the disease themselves. It is important to note that 50 to 70 percent of all individuals infected with Hepatitis B show no visible signs or symptoms.

The Hepatitis B virus is known as a bloodborne virus because it is transmitted from one person to another via blood. Semen and saliva, which contain small amounts of blood, also carry the virus. The virus can be transmitted whenever any of these bodily fluids come in contact with the broken skin or a mucous membrane (in the mouth, genital organs, or rectum) of an uninfected person.

You **CANNOT** get hepatitis B from the following activities:

- Being sneezed or coughed on
- Hugging
- Handshaking
- Eating food or drinking water
- Casual contact (such as an office or social setting)

There is a vaccine against the hepatitis B virus (Engerix-B, Recombivax HB). It is safe and works well to prevent the disease. A total of three doses of the vaccine are given over a 6-month period.

- This vaccine has successfully prevented infection in people exposed to the virus.
- The vaccine is recommended for all children younger than 19 years. It can be given as part of their normal vaccination series.

Phlebotomy Incidents

A range of incidents could occur that would require completion of the Phlebotomist Incident Report form (see Forms at the end of this manual). These incidences may include a bruised arm, spilled blood or oral fluids, or being stuck by a contaminated needle. This form should be filled out entirely and submitted to your Survey Manager. He or she must be informed of an incident as soon as possible and must also sign this form.

Post-Exposure Follow-up Procedure

RECOMMENDATIONS FOR: Independent Contractors (Phlebotomist's services)

NOTE: Post-exposure medical treatment and follow-up is the responsibility of the independent contractor. As an independent contractor, you are self-employed.

If you are involved in an exposure incident, for example:

Needle stick, vial of blood breaks.

- **Taking care of the wound immediately after the accident.** Let the wound bleed for a moment and then cleanse thoroughly with water. Disinfect the wound using an ample amount of soap and water followed by 70% alcohol. In case of contact with mucous membranes (blood splash in the eye) it is important to rinse immediately and thoroughly, using water or a saline solution only, **not alcohol.**
- **Report the incident.** It is important to report the incident immediately to the Survey Manager. The Survey Manager will know all local Emergency rooms to report to for appropriate medical attention.

You must also follow the procedure for a needlestick as stated in the OSHA procedure for Occupational Exposure to Bloodborne Pathogens Standard, 29 CFR 1910.1930, February 13, 1992. (See OSHA guidelines printed herein.]

For example, you must:

- Seek medical treatment within the state-specified OSHA guidelines (will be provided in your travel folder).
- Have baseline testing preformed on your blood for HBV (hepatitis B), HCV (hepatitis C), and HIV.

- Forward test results to the phlebotomist's physician who will provide necessary treatment and/or counseling

Professional Liability Insurance

It is at the UTMOST IMPORTANCE that all independent contractors (phlebotomists) hired through PIRE be covered individually with professional liability insurance (malpractice insurance for allied health providers). PIRE will pay for the insurance described below if you do not already have insurance. We will provide you with the Web address to the liability insurance and reimburse your cost up to $85 for one year. Proof of insurance is required.

Please note that PIRE is not affiliated with Healthcare Providers Services Organization (HPSO) professional liability insurance.

Features and Benefits

Healthcare Providers Services Organization: Hpso.com

Up to $1,000,000 per claim professional liability coverage

- Your coverage protects you for settlement of a claim or damages awarded up to $1,000,000 each claim.

Up to $3,000,000 aggregate professional liability coverage

- Your coverage protects you with up to $3,000,000 aggregate liability protection. This is the maximum limit available to protect you against multiple claims within the policy year.

Occurrence Coverage

- Protects you regardless of when a claim is filed, provided the policy was in force at the time the covered medical incident occurred.

Defense Attorney Provided

- An attorney will be provided to represent you personally, when necessary. Legal fees will be paid for covered claims, in addition to your liability limit—WIN OR LOSE.

Deposition Representation

- You will be Reimbursed up to $5,000 aggregate, up to $2,500 per deposition for attorney fees as a result of your required appearance at a deposition that arises out of professional services.

Defendant Expense Benefit

- You will be reimbursed up to $10,000 aggregate for lost wages and covered expenses incurred when you attend a required trial, hearing, or proceeding as a defendant in a covered claim.

License Protection

- You will be reimbursed for your defense of license or disciplinary action and other covered expenses arising out of a covered incident, up to $25,000 aggregate, up to $10,000 per proceeding.

Worldwide Coverage

- You are protected 24/7 anywhere in the world for covered medical incidents, provided claim is brought against you in the United States, its territories, Puerto Rico, or Canada.

Assault Coverage

- Your medical expenses will be covered or reimbursed for damage to your property, up to $25,000 aggregate, up to $10,000 per incident if you are assaulted at work or while commuting to and from your workplace.

Personal Liability Coverage

- You are protected, up to $1,000,000 aggregate for liability damages for covered claims resulting from incidents at your residence, unrelated to your work.

Personal Injury Coverage

- You are protected, up to the applicable limits of liability, against covered claims arising from charges of privacy violation, slander, libel, assault and battery, and other alleged personal injuries committed in the conduct of your professional services.

First Aid Expense

- You will be reimbursed for expenses you incur in rendering first aid to others, up to $2,500 aggregate.

Medical Payments

- Pays up to $100,000 aggregate, up to $2,000 per person for reimbursement of medical expenses to others injured at your residence or business premises.

Damage to Property of Others

- Pays up to $10,000 aggregate, up to $500 per incident for damage caused accidentally by you to the property of others at your residence or workplace.

To obtain HPSO professional liability insurance, please logon to hpso.com:

- Provide State as Maryland
- Chose phlebotomist as profession
- Click on find annual premium rate
- Next
- Click on “self-employed”
- Click “yes” for full time
- Click “yes” or “no” on how long since graduated
- Continue
- Should state coverage at 85$ per year
- Click apply online

Bloodborne Pathogen Exposure Control Plan

Policy

PIRE is committed to providing a safe and healthful work environment for our entire staff. In pursuit of this endeavor, the following exposure control plan (ECP) is provided to eliminate or minimize occupational exposure to bloodborne pathogens in accordance with OSHA standard 29 CFR 1910.1030, “Occupational Exposure to Bloodborne Pathogens.” (See OSHA guidelines printed herein.)

The ECP is a key document to assist our firm in implementing and ensuring compliance with the standard, thereby protecting you as an affiliate of PIRE. The ECP includes:

- Determination of your exposure
- Implementation of various methods of exposure control, including:
  - Universal precautions
  - Engineering and work practice controls
  - Personal protective equipment
  - Housekeeping
  - Hepatitis B vaccination
  - Post-exposure evaluation and followup
- Communication of hazards to employees and training
- Recordkeeping
- Procedures for evaluating circumstances surrounding an exposure incident

The methods for implementing these elements are discussed in subsequent pages of the ECP.

2013-2014 National Roadside Study of Alcohol and Drug Use by Drivers

METHODOLOGY

Appendix L: 2013-2014 NRS Survey Manager Training Agenda

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

NHTSA

2013 National Roadside Survey
Survey Manager Training
Day One Agenda
Tuesday, April 16, 2013
9:00 AM to 5:30 PM

Time	Topic
9:00am – 9:30am	Complete Hiring Paperwork
9:30am - 10:15am	Welcome and Introductions •Key Staff and SMs introduce themselves •Review Training Agenda
10:15am – 10:30am	Overview: 2013 NRS • What we are trying to accomplish
10:30am – 10:45am	Roles and Responsibilities • Review roles and responsibilities of entire NRS staff • Review the Survey Manager Role
10:45am – 11:00am	BREAK
11:00am – 11:30am	Passive Alcohol Sensor (PAS) • How to use • When to use
11:30am – 12:15pm	Preliminary Breath Test (PBT) • How to use • When to use
12:15pm – 1:15pm	LUNCH
1:15pm – 1:30pm	Collecting oral fluid samples (Quantisal) • How to use • When to use
1:30pm – 2:15pm	Introduction to Tablet • How to use • When to use
2:15pm – 2:30pm	BREAK
2:30pm – 2:45pm	Interacting with the Public • Basics of collecting good data • General interviewing skills
2:45pm – 5:15pm	Survey Forms • NRS Questionnaire • Self-Administered Questionnaire • Blue Card • Survey Manager Form
5:15pm – 5:30pm	Review and Adjourn

2013 National Roadside Survey
Survey Manager Training
Day Two Agenda
Wednesday, April 17, 2013
9:00 AM to 5:30 PM

Time	Topic
9:00am – 9:10am	Review Day's Training Agenda
9:10am – 9:40am	Supplies • Packing equipment • Maintaining and handling supplies • Practice packing backpacks and other supplies
9:40am – 10:10am	Travel • Schedules • TSA requirements • Per diem forms and handling receipts • How to troubleshoot travel issues
10:10am – 11:00am	Site Selection • PSU Sites • Square Mile Grids • Choosing survey sites • Sketches
11:00am – 11:15am	BREAK
11:15am – Noon	Human Subjects and Research Integrity • Importance of human subjects and research integrity • Paperwork and guidance on how to access online training
Noon – 1:00pm	LUNCH
1:00pm – 2:15pm	Survey Procedures • Practice with tablets going through survey procedures
2:15pm – 3:00pm	Data Management • Uploading data from tablets • Uploading data from PBTs • Handling paperwork • Handling incentives
3:00pm – 3:15pm	BREAK
3:15pm – 4:30pm	Implementing a Survey Weekend • Review Day-by-Day Survey Manager Schedule
4:30pm – 5:30pm	Impaired Driver Protocol • Why the need for this protocol • Signs of intoxication • Overview of Survey Manager role in handling an intoxicated driver

2013 National Roadside Survey
Survey Manager Training
Day Three Agenda
Thursday, April 18, 2013
10:00 AM to 7:00 PM

Time	Topic
10:00am - 10:10am	Review Day's Training Agenda
10:10am – 10:45am	Safety • Site and personal safety issues • Maintaining equipment
10:45am – Noon	Converting Non-Participants • How to solicit participation • What to capture • Conversions
Noon – 12:15pm	Staff Agreements
12:15pm – 1:15pm	LUNCH
1:15pm – 1:45pm	Check equipment and supplies • Pack backpacks • Crosscheck supply list
1:45pm – 2:00pm	Load equipment into vans
2:00pm – 2:30pm	Set up simulation site #1 • Drive to parking lot • Practice arranging site to include bays and blood van • Draw sketch of site
2:30pm – 3:30pm	Conduct NRS simulation • Half of survey managers will practice data collecting • Drivers will be assigned roles
3:30pm – 4:00pm	Breakdown site #1 • Load equipment back in van • Fill out necessary paperwork • Debrief
4:00pm – 4:30pm	Set up simulation site #2 • Drive to parking lot • Practice arranging site to include bays and blood van • Draw sketch of site
4:30pm – 5:30pm	Conduct NRS simulation • Half of survey managers will practice data collecting • Drivers will be assigned roles
5:30pm – 5:45pm	Breakdown site #2 • Load equipment back in van • Fill out necessary paperwork
5:45pm – 6:45pm	Downloading/uploading data • Practice downloading/uploading data from tablets and PBT • Fill out Survey Manager Form
6:45pm – 7:00pm	Debrief and adjourn

2013 National Roadside Survey
Survey Manager Training
Day Four Agenda
Friday, April 19, 2013
9:00 AM to 6:00 PM

Time	Topic
9:30am – 10:00am	Do's and Don'ts of Interviewing
10:00am - 10:15am	Review Day's Training Agenda
10:15am – 10:30am	Load vans • Check supplies and load equipment into vans
10:30am – 11:00am	Set up simulation site #3 • Drive to parking lot • Practice arranging site to include bays and blood van • Draw sketch of site
11:00am – Noon	Conduct NRS simulation • Half of survey managers will practice data collecting • Drivers will be assigned roles
Noon – 12:30pm	Breakdown site #3 • Load equipment back in van • Fill out necessary paperwork • Debrief
12:30pm – 1:00pm	LUNCH
1:00pm – 1:30pm	Set up simulation site #4 • Drive to parking lot • Practice arranging site to include bays and blood van • Draw sketch of site
1:30pm – 2:30pm	Conduct NRS simulation • Half of survey managers will practice data collecting • Drivers will be assigned roles
2:30pm – 3:00pm	Breakdown site #4 • Load equipment back in van • Fill out necessary paperwork • Debrief
3:00pm – 3:15pm	Break
3:15pm – 3:30pm	Set up simulation site #5 • Drive to parking lot • Practice arranging site to include bays and blood van • Draw sketch of site
3:30pm – 4:30pm	Conduct NRS simulation • Half of survey managers will practice data collecting • Drivers will be assigned roles
4:30pm – 5:15pm	Breakdown site #5 • Load equipment back in van • Fill out necessary paperwork • Debrief
5:15pm – 5:45pm	Download/upload data • Practice downloading/uploading data from tablets and PBT
5:45pm – 6:00pm	Question and Answer Session

2013-2014 National Roadside Study of Alcohol and Drug Use by Drivers

METHODOLOGY

Appendix M: 2013 NRS Interviewer Training Agenda

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

NHTSA

2013 National Roadside Survey
Interviewer Training
Day One Agenda
Thursday, May 16, 2013
4:00 PM to 11:00 PM

	Topic
4:00 pm – 5:00 pm	Welcome, Staff Introductions and Overview • Overview of NRS Project • Overview of Staff Roles and Responsibilities
5:00 pm – 5:30 pm	Passive Alcohol Sensor (PAS) • How to use • When to use
5:30 pm – 6:15 pm	Preliminary Breath Tester (PBT) • How to use • When to use
6:15 pm – 6:45 pm	Collecting oral fluid samples • How to use • When to use
6:45 pm – 7:15 pm	BREAK
7:15 pm – 8:15 pm	Interacting with the Public • Basics of collecting good data • General interviewing skills
8:15 pm – 8:45 pm	Introduction to Tablet • How to use • Demo use
8:45 pm – 9:00 pm	BREAK
9:00 pm – 11:00 pm	Survey Forms • NRS Questionnaire • Drug Questionnaire • Alcohol Use Disorder Questionnaire • Blue Card
11:00pm	Adjourn

2013 National Roadside Survey
Interviewer Training
Day Two Agenda
Friday, May 17, 2013
1:00 PM to 11:00 PM

Time	Topic
1:00 pm – 1:15 pm	Review Day's Agenda and Q & A
1:15 pm – 2:00 pm	Human Subjects and Research Integrity • Importance of human subjects and research integrity • Paperwork and guidance on how to access online training
2:00 pm – 3:00 pm	Impaired Driver Protocol • Why the need for this protocol • Signs of intoxication
3:00 pm – 3:15 pm	BREAK
3:15 pm – 4:45 pm	Survey Procedures and Data Management
4:45 pm – 5:30 pm	Supplies • Packing equipment • Maintaining and handling supplies • Practice packing backpacks
5:30 pm – 6:30 pm	DINNER BREAK
6:30 pm – 7:00 pm	Safety • Site and personal safety issues • Maintaining equipment
7:00 pm – 7:15 pm	Prepare for NRS Simulation
7:15 pm – 8:45 pm	Conduct a roadside simulation survey
8:45 pm – 9:00 pm	BREAK
9:00 pm – 10:30 pm	Conduct a roadside simulation survey
10:30 pm – 11:00 pm	Breakdown site & return to PIRE

2013 National Roadside Survey
Interviewer Training
Day Three Agenda
Saturday, May 18, 2013
1:00 PM to 9:00 PM

Time	Topic
1:00 pm - 1:10 pm	Review previous simulation
1:10 pm – 1:40 pm	Travel and Survey Weekend • Schedules • TSA requirements • Per Diem forms • Timesheets
1:40 pm – 2:00 pm	Data Collector Responsibilities • Performance Measures • Conduct
2:00 pm – 3:00 pm	Refusal Drill • Practice Hook, Introduction • Practice 1st PAS • Practice converting those who decline to participate • Practice asking for PBTs on people who decline
3:00 pm – 5:00 pm	Conduct a roadside simulation survey
5:00 pm – 6:00 pm	DINNER
6:00 pm – 8:30 pm	Conduct a roadside simulation survey
8:30 pm – 9:00 pm	Debrief and adjourn

2013-2014 National Roadside Study of Alcohol and Drug Use by Drivers

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Appendix N: 2013-2014 NRS Phlebotomist Training Agenda

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

NHTSA

2013 - 2014 National Roadside Survey Phlebotomist Training Agenda 1:00PM to 9:00PM			
Time	**Topic**	**Presenter(s)**	**Item Needed**
1:00pm - 1:15pm	Welcome, Staff Introductions and Overview • Overview of PIRE • Overview of NRS Project • Overview of Staff Roles and Responsibilities		

1:15pm – 2:30pm	Phlebotomist Roles & Responsibilities
	Collecting Blood Samples
	• Phlebotomy Kit
	  • *Checking to ensure all supplies are in kit*
	• Drawing blood in the field
	  • *Preparing and engaging subjects*
	  • *Ensuring hygienic equipment*
	  • *Proper aseptic techniques for handling specimens*
	  • *Getting the blood sample*
	• How to handle challenging subjects
	  • *Hemophiliacs and subjects taking blood thinners*
	  • *Collapsed veins, intoxicated respondents and subjects passing out*
	• Exposure Control Plan
	• Completing necessary paperwork
	  • *Subject consent waiver*
	  • *Incident reports*
	• Packing up and handling samples in the field
	• Review daily schedules
			Projector; laptop, Drawing Blood in the Field and What's Wrong with this Picture PPTs.

2:30pm – 3:30pm	Human Subjects and Research Integrity • Importance of human subjects and research integrity • Paperwork and guidance on how to access online training		Projector; laptop, Human Subject's PPT
3:30pm - 4:45pm	Travel Schedules • TSA requirements • Per Diem forms		
4:45pm – 5:00pm	Safety • Site and personal safety issues • Maintaining equipment		Projector; laptop, Maintaining Site Safety PPT
5:00pm – 6:00pm	DINNER		
6:00pm – 8:00pm	Conduct a roadside simulation survey • Data collectors divided and assigned to a survey manager • Team practices setting up bays • Team conducts surveys • Team practices uploaded tablets and breaking down site		
8:00pm – 9:00pm	Debrief and adjourn		

Supplies/Equipment Needed for Phlebotomist Training NRS 2013 - 2014		
Equipment		
Item Needed	**Quantity**	**Have**
LCD Projector	1	
Laptop	1	
Book bags	10	
Phlebotomy kits	10	
Notebooks	24	
Pens	2 boxes	
Small writing tablets	20	
Bottled Water	1 case	
Training manuals	12	
Name badges	20	
Sharpie	2	
Phlebotomy Kits		
Straight needles	1 box	
Butterfly needles	1 box	
Tourniquets	1 box	
Vacutainers	1 bag	
Toolboxes	10	
Red boxes	20	
Glass Tubes	½ case	
Styrofoam Coolers	10	
Hand sanitizer	10	
Clorox wipes	10	

UPK	10	
BZK wipes	10 boxes	
Bandaids	1 box	
Gauze pads	10 boxes	
Heat packs	10	
Cold packs	10	
Sharps containers	20	
Gloves	10 boxes (mixed)	
Eye wash	10 bottles	
CPR kits	10	
Polar Paks	50	
Absorbent Pads	10	
Emergency Medical Kits	10	
Trash bags	1 box	
Head lamps	10	

2013-2014 National Roadside Study of Alcohol and Drug Use by Drivers

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Appendix O: 2013-2014 NRS Quality Control (QC) Form for Interviewers

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

NHTSA

2013 NRS Quality Control Rating for Interviewers

QC Rater Name: _____
Interviewer Name: _____

Start Time:__ __:__ __ **AM/PM**
Date:__ __/__ __/__ __

DIN #__ __ __ /__ __ /__ /__ __
Inter.ID PSU # Ses Case #

Interviewer approaches car

1st Passive ☐Yes ☐No ☐DK
- Broke window ☐Yes ☐No ☐DK
- Within 5-7" ☐Yes ☐No ☐DK
- Aim ☐Yes ☐No ☐DK
- Talking ☐Yes ☐No ☐DK

Immediate Greeting ☐Yes ☐No

Effective Hook ☐Yes ☐No

Read NRS Consent ☐Yes ☐No

"Where are you coming from?"

2nd Passive ☐Y ☐N ☐DK ☐NA
- Broke window ☐Yes ☐No ☐DK
- Within 5-7" ☐Yes ☐No ☐DK
- Aim ☐Yes ☐No ☐DK
- Talking ☐Yes ☐No ☐DK

Did NRS Survey ☐Yes ☐No

Conversion ☐Yes ☐No ☐NA ☐**SM**

BAC Requested ☐Yes ☐No

BAC Taken ☐Yes ☐No

Effective PBT ☐1x ☐2x ☐3+/man ☐NA

Tablet Surveys ☐Y ☐N
- Read consent ☐Y ☐N ☐NA
- Gave instruction ☐Y ☐N ☐NA

Saliva Sample ☐Y ☐N
- Gave instruction ☐Y ☐N ☐NA
- Sufficient time ☐Y ☐N ☐NA
- Hygiene ☐Y ☐N ☐NA
- Packaging ☐Y ☐N ☐NA

Passenger Survey ☐Y ☐N ☐NA

Blood ☐Yes ☐No
- Gave instruction ☐Y ☐N ☐NA

Participant Interaction:
- Positive ☐Yes ☐No
- Efficient ☐Yes ☐No
- Clear ☐Yes ☐No
- Thanked Driver ☐Yes ☐No
- Gave Incentive ☐Y ☐N ☐NA
- Gave HS Card ☐Yes ☐No

DIC complete/accurate ☐Yes ☐No

Protected Equipment ☐Yes ☐No

Efficient Recovery ☐Yes ☐No

End Time__ __:__ __ **AM/PM**
Recovery Time: _____ minutes

QC Notes

Manager Intervention? _____

_____

QC Intervention? _____

Other? _____

_____

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2013-2014 National Roadside Study of Alcohol and Drug Use by Drivers

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Appendix P: 2013-2014 NRS Quality Control (QC) Form for Survey Managers

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

NHTSA

2013 NRS Quality Control for Survey Managers:
Site Session Report

Date: __ __/__ __/__ __ **QC Rater:_____**
PSU:_____ **State/County:_____**
Session:_____ **Survey Manager:_____**
Start Time:_____ **End Time:_____**

	Yes	No	Notes
Team assembled prior to starting?	☐	☐	
SM review PDA login info?	☐	☐	
Team had a wrap up?	☐	☐	
SM review/address issues?	☐	☐	
If so, please indicate:_____			
SM interact positively with Police?	☐	☐	
Police directing cars appropriately?	☐	☐	
If not, did SM resolve the issue?	☐	☐	
SM Interacted positively/appropriately/ effectively with public	☐	☐	
Reasons for stopping/starting late/early			

General Notes:

2013 NRS Quality Control for Survey Managers:
Site Session Report

Date: __ __/__ __/__ __ **QC Rater:_____**
PSU:_____ **State/County:_____**
Session:_____ **Survey Manager:_____**
Start Time:_____ **End Time:_____**

_____

_____

2013-2014 National Roadside Study of Alcohol and Drug Use by Drivers

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Appendix Q: 2013-2014 NRS Travel Logistics Sheet

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

NHTSA

PSU	State	Location	Dates	Law Enforcement Agencies	Law Enforcement Contact Info

Travel Arrangements

Name	Role	Date	Schedule	Confirm. #	Airline	Flight #	Departing	Arriving
Survey Manager	SM							
Phlebotomist	Blood							
Interviewer 1	DC							
Interviewer 2	DC							
Interviewer 3	DC							
Interviewer 4	DC							
Interviewer 5	DC							
Interviewer 6	DC							

Rental Car Information

Driver	Company	Location	Confirmation #	Pickup	Return

Lodging Information

Hotel Information	Staff	Check-in	Check-out	Confirmation #

Area Resources

Pharmacy Drug Store Grocery	
Taxi	
Urgent Care	
FedEx	

PHLEB CALL FEDEX FOR BIOLOGICAL PICKUP

2013-2014 National Roadside Study of Alcohol and Drug Use by Drivers

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Appendix R: 2013-2014 NRS Participant Information Sheet

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

NHTSA

We are from the Pacific Institute for Research and Evaluation, and we are conducting a **voluntary and anonymous** survey funded by the Department of Transportation's National Highway Traffic Safety Administration (NHTSA). We are not associated with any law enforcement agency. You have not committed any violation, and you were selected completely by chance and are free to leave at any time. An off-duty police officer is near our site to assist with the safe flow of traffic.

You are being asked to VOLUNTARILY PARTICIPATE in a research study designed to better understand impaired driving patterns on our nation's roadways.

In keeping with our mission of protecting our nation's drivers, we collect observational data on all drivers that we talk to and an estimate of recent alcohol use from the air surrounding drivers using passive alcohol sensor readings. These approximate readings are used to help determine if respondents may be impaired and need assistance getting home safely.

Aside from the passive sensor reading which only provides an estimate of alcohol use, we request the opportunity to collect a sample of your breath for later analysis for breath alcohol. This sample is taken by having you blow into the breath test unit. We will also request the opportunity to collect a sample of your saliva to analyze for drug use, using a cotton swab like device that is placed under the tongue. We will not know the results of the analyses for the breath or saliva samples until much later and the RESULT CAN IN NO WAY BE ASSOCIATED WITH YOU. This saliva sample can ONLY be analyzed for drug use and we cannot analyze the saliva sample for any other purpose. We CANNOT and DO NOT test for DNA and we adhere to strict Institutional Review Board and Human Subjects Protection protocols. The same is true of any surveys you complete and the blood sample, if you decide to provide one. These samples, along with many other samples we will collect tonight, will provide valuable statistical information about the frequency of impaired driving in this area. The entire process will take approximately 15 minutes.

It is possible that you may be embarrassed by some of the questions, but are free to skip any question. Further, you are free to leave at any time. You will not benefit directly from participation in this study, other than the $10 cash incentive for providing an oral fluid sample and the $50 money order incentive for providing a blood sample. You will also be making an important contribution to society by providing information to aid in the development of future impaired driving prevention programs in our nation.

Our breath test instrument cannot provide information at this time about your drinking. However, we wish to inform you that if you have been drinking and/or taken drugs, there is risk of accidental injury and death to you and others if you drive. You should not conclude from our brief interview that it is safe for you to drive if you have been drinking and/or taken drugs. We encourage you to let us assist you if you have been drinking and/or taken drugs and do not feel comfortable driving.

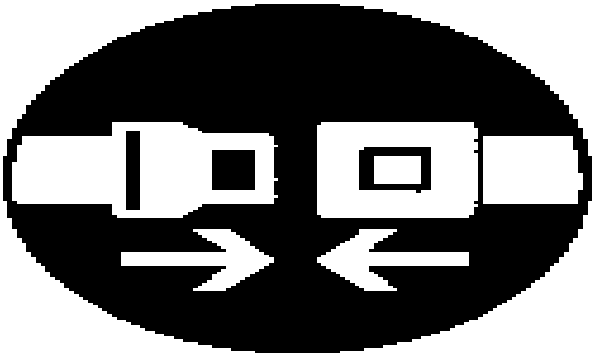
Participation in this survey is completely voluntary and anonymous. If you choose to participate, you may withdraw your consent and discontinue participation at any time. If you have any additional questions related to this study, you may contact the Principal Investigator, _____, at _____. If you have any questions or concerns about your rights as a participant in this research study, you may contact the PIRE Manager of Research Integrity Compliance, _____, at _____. Again, thank you for your time and be safe.

Warning about Drinking, Drugged and Fatigued Driving

If you have been drinking and/or have taken drugs, you should not conclude from our brief interview that it is safe for you to drive.

Any Amount of Alcohol or Drugs May Increase Your Chance of being in a Traffic Crash. So does driving in a state of extreme exhaustion.

If you are unable to drive home safely, we will provide you with FREE transportation home. Do not hesitate to ask me or any other staff person in a safety vest to arrange this for you.



Please remember to buckle-up!

2013-2014 National Roadside Study of Alcohol and Drug Use by Drivers

METHODOLOGY

Appendix S: 2013-2014 NRS Non-Participant Information Sheet

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

NHTSA

Thank you for speaking with us tonight.

We are from the Pacific Institute for Research and Evaluation, and we are conducting a **voluntary and anonymous** survey funded by the Department of Transportation's National Highway Traffic Safety Administration (NHTSA). We are not associated with any law enforcement agency. You have not committed any violation, and you were selected completely by chance and are free to leave at any time. An off-duty police officer is near our site to assist with the safe flow of traffic.

The roadside survey you were randomly selected to participate in is being conducted across the United States and has proven to be a valuable tool for figuring out ways that we can improve traffic safety**.** We do not collect any identifying information but we do collect anonymous observational data (age, race, ethnicity, and gender) on all drivers for statistical purposes.

If you have concerns about making it to your next location safely, please inform the person who spoke to you before leaving the site. As part of our effort, we are prepared to provide assistance to any drivers to make it to their next location safely.

IF you opted just to provide an anonymous breath sample by blowing into the preliminary breath test device, we will not know the results of the analysis until much later and the RESULT CAN IN NO WAY BE ASSOCIATED WITH YOU. These samples, along with many other samples we will collect tonight, will provide valuable statistical information about the frequency of impaired driving in this area. If you have been drinking and/or taken drugs, there is a risk of accidental injury and death to you and others if you drive. We encourage you to let us provide a safe ride home if you have been drinking and/or taken drugs.

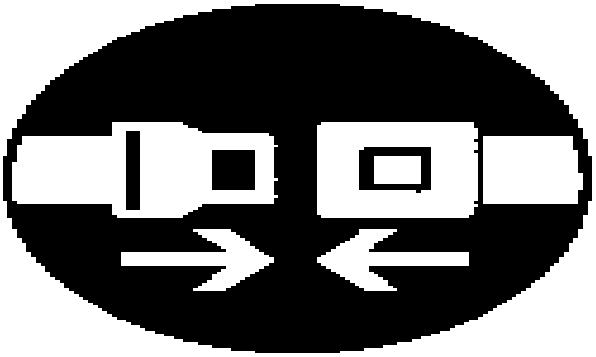
If you have any additional questions related to this study, you may contact the Principal Investigator, _____at _____. If you have any questions or concerns about your rights as a participant in this research study, you may contact the PIRE Manager of Research Integrity Compliance, _____, at _____. Again, thank you for your time and be safe.

Warning about Drinking, Drugged and Fatigued Driving

If you have been drinking and/or have taken drugs, you should not conclude from our brief interview that it is safe for you to drive.

Any Amount of Alcohol or Drugs May Increase Your Chance of being in a Traffic Crash. So does driving in a state of extreme exhaustion.

If you are unable to drive home safely, we will provide you with FREE transportation home. Do not hesitate to ask me or any other staff person in a safety vest to arrange this for you.



Please remember to buckle-up!

2013–2014 National Roadside Study of Alcohol and Drug Use by Drivers

METHODOLOGY

Appendix T: 2013-2014 NRS Consent for Blood Draw Form

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

NHTSA

Consent for Blood Draw

Purpose: We are now asking you to voluntarily and anonymously provide a blood sample for later analysis. The sample will be assessed for blood components that measure recent alcohol and/or drug use. To participate in the blood draw, you must (1) be at least 18 years old, (2) not be taking any blood thinners (like Coumadin), or receiving injections such as Calciparine or Liquaemin, and (3) not have a blood disorder such as hemophilia. If any of these conditions apply, you MUST decline to participate.

Procedures: A trained specialist known as a phlebotomist will insert a needle in a vein and withdraw 10 ml of blood, which is equal to about 2 teaspoons.

Possible Risks or Discomforts: Although the phlebotomist will be using standard medical practices to draw blood safely, venipuncture is not entirely without risk. Such risks consist of but are not limited to the following:

- Dizziness
- Nausea
- Fainting
- Passing out and falling with injury
- Soreness or bruise at or around site
- Nerve injury at or near the phlebotomy site
- Under rare circumstances a phlebotomy procedure can lead to a need for medical treatment

Safeguards: A person specially trained to take blood samples will draw your blood using procedures that are recognized as safe.

Confidentiality: The blood sample will be assigned a bar code number without any identifying information such as your name. The blood sample can ONLY be analyzed for drug use and we cannot analyze the blood sample for any other purpose. We CANNOT and DO NOT test for DNA and we adhere to strict Institutional Review Board and Human Subjects Protection protocols.

Payment: You will receive a $50 money order for being a volunteer participant. Other than the payment, you will not benefit personally from participating in this part of the study.

Voluntary Participation: Your participation in the blood draw is completely voluntary and you may withdraw at any time. If you withdraw before the blood collection, however, you will not receive the $50.

Contact Information: If you have any questions about the study, you may call PIRE's Principal Investigator, _____at _____ or toll free at _____. If you have any questions about your rights as a study participant, you may call PIRE's headquarters toll-free and ask for _____, Manager of Research Integrity Compliance, at _____ or toll free: _____.

Participant Statement

I certify that I am at least 18 years old. I am not taking any blood thinners and have not been diagnosed with any blood conditions such as hemophilia.

I acknowledge that the procedure has been explained to me and that I have had the opportunity to discuss the blood draw procedure with the Certified Phlebotomist. I understand that all blood results are confidential. I further understand that my participation is completely voluntary and that I may withdraw from this part of the study at any time.

I have read the foregoing consent and agree to the terms set out for being a volunteer participant, and I give my consent to have the Certified Phlebotomist draw my blood today

Participant Initials_____

You are not required to sign your full name, please sign only your initials.

Witness _____

Month: _____ **Year**: _____

DOT HS 812 294
July 2016

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

NHTSA

12121-070616-v2