Results of the 2012 California Roadside Survey of Nighttime Weekend Drivers’ Alcohol and Drug Use

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Table of Contents

Executive Summary ........................................................................................................................ 1
  Background ................................................................................................................................1
  Methods......................................................................................................................................1
  Results ........................................................................................................................................1
  Conclusions ................................................................................................................................2
Introduction ..................................................................................................................................... 3
Methodology ................................................................................................................................... 3
  Site Recruitment .........................................................................................................................3
  General Survey Procedures ........................................................................................................4
  Basic Survey Sequence ..............................................................................................................4
  Issues ..........................................................................................................................................8
Results ............................................................................................................................................. 8
  Sample/Population .....................................................................................................................8
    Site Participation ......................................................................................................................8
    Driver Participation ....................................................................................................................9
    Demographics ...........................................................................................................................9
  Driver’s Responses to Roadside Questionnaires .....................................................................13
    Marijuana ..................................................................................................................................13
  Laboratory Analysis Results ....................................................................................................17
    Drug Prevalence ......................................................................................................................17
    Drugs and Alcohol ..................................................................................................................19
Discussion ..................................................................................................................................... 19
References ..................................................................................................................................... 21
Project Team .................................................................................................................................. 22
  Credits ......................................................................................................................................22
  Disclaimer ..................................................................................................................................22
  Grant Personnel ..........................................................................................................................22
  Funding, Contact Person, Address, and Phone Number ..........................................................22
Appendix A. Surveys ..................................................................................................................... 23

Tables
Table 1. Minimum Drug Detection Concentrations ................................................................. 7
Table 2. Sites by Region and Participation Numbers ............................................................... 8
Table 3. Number of Drivers ....................................................................................................... 9
Table 4. Gender by Region ....................................................................................................... 10
Table 5. Age by Region .......................................................................................................... 10
Table 6. Ethnicity by Region .................................................................................................. 10
Table 7. Race by Region .......................................................................................................... 11
Table 8. Education by Region ................................................................................................. 12
Table 9. Employment by Region ............................................................................................ 13
Table 10. “Do you currently have a medical marijuana permit which allows you to purchase and use marijuana for pain relief?”

Table 11. “If Yes, have you used your permit to purchase marijuana?”

Table 12. “Have you ever, even once, used marijuana or hashish?”

Table 13. “If Yes, how old were you the first time you used marijuana or hashish?”

Table 14. “How long has it been since you last used marijuana or hashish?”

Table 15. “If daily, on average how many times a day do you use it?”

Table 16. “In the past year, have you used any marijuana within two hours before driving?”

Table 17. “When you used marijuana and drove, did you notice if it (marijuana) had any effect on your driving?”

Table 18. “If Yes (did feel an effect), did marijuana make your driving better or worse?”

Table 19. “Have you taken any medications or drugs TODAY that you think may affect your driving?”

Table 20. “Have you ever NOT driven because you were on a medication/drug?”

Table 21. Total Drivers with Positive Oral Fluid Result

Table 22. Distribution of Drug-Positive Drivers by Number of Drugs Present (Excluding Alcohol)

Table 23. Drug Prevalence by Detailed Category

Table 24. Drug Prevalence by Category Overall

Table 25. Drug Prevalence by Drug Class

Table 26. BAC Distribution

Table 27. Drug Use by BAC
Executive Summary

Background

This report summarizes the results of the first California Statewide Roadside Survey of Nighttime Weekend Drivers’ Alcohol and Drug Use. To our knowledge, it is the first state-level survey of this magnitude. It is modeled on data collection procedures used in the “2007 National Roadside Survey of Alcohol and Drug Use by Drivers,” sponsored by the National Highway Traffic Safety Administration.

Methods

A random sample of nighttime drivers was interviewed on Friday and Saturday nights from 10 p.m. to midnight and 1:00 a.m. to 3:00 a.m. Data were collected on one weekend in eight communities and on two weekends in one community during the summer of 2012. The nine communities where data were collected were Eureka, San Rafael, and Redding in the northern part of the state; Fresno and Modesto in the central part of the state; and Anaheim, Ontario, Chula Vista, and Gardena in southern California.

Anonymous breath tests and oral fluid samples as well as responses to questionnaires were collected from over 1,300 drivers. The breath alcohol samples were analyzed for alcohol and the oral fluid samples were analyzed for nearly 50 drugs, including prescription, illegal, and over-the-counter drugs. Analyses were conducted by screening using enzyme-linked immunosorbent assay (ELISA) microplate technology and positive screens were confirmed using gas chromatography–mass spectrometry (GC/MS) or liquid chromatography–mass spectrometry (LC/MS/MS) technology.

Results

Among eligible drivers approached to participate in the survey, 81% (1,375 drivers) agreed to answer questions, 85.3% (1,449 drivers) provided a breath sample, and 77.3% (1,313 drivers) provided an oral fluid sample.

Among drivers participating in the interview, 3.7% reported having a medical marijuana permit and, of those, 65.8% reported having used the permit to purchase marijuana. Within the total population, 40% admitted to having at some time used marijuana.

In terms of breath and oral fluid test results, 184 (or, 14%) tested positive for at least one drug, and 7.3% tested positive for alcohol. One percent of tested drivers were at .08 blood alcohol content (BAC) or above.

The vast majority (89.6%) of drug positive drivers tested negative for alcohol. Of the drug-positive drivers, 2.7% had a BAC above zero but less than .05; 5.5% from .05 to .08; and 2.2% at or above .08.

Marijuana was the most frequently encountered drug at a prevalence rate of 7.4%, with 5.5% of drivers testing positive for marijuana alone; 1.1% testing positive for marijuana and an illegal drug; 0.5% testing positive for marijuana and a medication; and 0.3% testing positive for marijuana, an illegal drug, and a medication. Illegal drugs were present alone in 2.7% of drivers,
and in combination with medications in 0.5%. Medications alone were present in 3.3% of drivers. Synthetic marijuana was found in 5 (or 0.4%) drivers.

**Conclusions**

This survey provides a baseline California prevalence estimate for alcohol and drug use among nighttime weekend drivers and can be compared with results of future surveys to examine patterns of change in drug and alcohol use in that population. It should be noted that these figures describe the prevalence rates for the presence of these drugs in drivers and do not address whether those drivers were impaired by these substances.
Introduction

The objective of this project was to conduct a roadside survey of a random sample of nighttime weekend California drivers to develop a prevalence estimate of alcohol and drug use within that population, using the same basic methodology followed in the 2007 National Roadside Survey (NRS) (Lacey et al., 2009a). We conducted this study for the California Office of Traffic Safety (OTS) to help them monitor the prevalence of alcohol- and marijuana-involved driving in California and compare that with previous prevalence estimates (Lacey et al., 2009b; Johnson et al., 2012).

Methodology

Data collection was a collaborative effort of the California Office of Traffic Safety (OTS) and the Pacific Institute for Research and Evaluation (PIRE).

Anonymous breath tests and oral fluid samples were obtained from more than 1300 weekend nighttime drivers randomly sampled from nine jurisdictions in California, including Anaheim, Chula Vista, Eureka, Fresno, Gardena, Modesto, Ontario, Redding, and San Rafael. Using procedures that were essentially identical to the 2007 National Roadside Survey (NRS) (Lacey et al., 2009a; Johnson et al., 2012), a random sample of weekend nighttime drivers were interviewed on Friday and Saturday nights from 10 p.m. to midnight and 1 a.m. to 3 a.m. As in the 2007 NRS, participants responded to surveys, including a self-report drug use questionnaire. Breath samples were collected using the Mark V Alcoviser™, and oral fluid samples were collected using the Quantisal™ collection unit. The two-day data collection periods were conducted once in eight of the jurisdictions and on two weekends in one (Modesto). Thus, 10 sessions of weekend data collection occurred.

Site Recruitment

In 2007, the National Highway Traffic Safety Administration (NHTSA) funded the 2007 National Roadside Survey (NRS). Five of the sites who participated in the 2007 NRS were from California (Anaheim, San Jose, Torrance, Concord, and Oxnard). Additionally in 2010, PIRE conducted a roadside survey in six California cities. These cities were Anaheim, Bakersfield, Eureka, Fresno, San Rafael and Torrance. For continuity, we attempted to return to these same sites to conduct the current roadside survey. However, not all the police departments were available to participate. With the assistance from the OTS, specific police departments were identified to possibly assist with the roadside survey. Anaheim, Eureka, Fresno and San Rafael were willing to participate again in 2012 and OTS identified Chula Vista, Gardena, Modesto, Ontario and Redding as additional sites.

Once a geographic location was selected and the police department agreed to assist with traffic control during data collection, the jurisdiction was mapped and divided into a grid of approximately 1-square-mile areas. Squares containing fields, parks, airports, harbors, and the like, which contain few road segments, were eliminated from our sampling frame. Using a simple random sampling procedure of all the eligible “survey squares,” we identified 30 possible square-mile grid areas for potential survey site locations.
The map was sent to our main contact within each police department, and the day before data collection, our Survey Manager and a police officer reviewed the map and identified four suitable survey sites within the identified square-mile grids. Suitable survey sites included areas of the jurisdiction that had sufficient traffic flow and an area (i.e., a parking lot) with enough space to safely set up six to eight bays, and where vehicles could enter and exit safely. At a minimum, it was necessary for these locations to be safe and appropriately lit, have sufficient traffic flow to achieve the required sample size.

The Survey Manager and the officer then drove to the identified areas and looked for sites. Once a specific site was identified, they drove to the next square mile grid-area to search for another specific survey site. In total, four different survey sites were identified for each location (plus two backup sites) and each survey site was assigned to a time slot (i.e., one location from 10:00 p.m. until 12:00 a.m. on Friday night, another location 1:00 a.m. until 3:00 a.m., and still another on Saturday night from 10:00 a.m. until 12:00 a.m. and another location 1:00 a.m. until 3:00 a.m.).

**General Survey Procedures**

Data collectors were trained in all facets of roadside data collection, including safety, interacting with the public, collecting the data, and also a protocol for facilitating a safe ride home for impaired drivers. Data Collectors participated in a two-day training session to learn and understand every aspect of the equipment and the data collection procedures and protocols. The first day of training included classroom instruction using a training manual that detailed all project procedures and protocols. The second night included hands-on instruction, including training in a parking lot to mimic real survey site data collection (simulation survey). After participating in the training sessions, all Data Collectors were proficient in knowing how to interact with the public and successfully recruit participants while also ensuring informed and voluntary consent. All Data Collectors were also trained on how to detect an impaired driver and gained an understanding of the established impaired driving protocol.

At the data collection site, an officer positioned a police vehicle at the side of the road with overhead lights flashing and, thus, visible to approaching traffic. The police vehicle’s headlights were positioned to illuminate the officer. Data Collectors, working in an off-road parking lot, set up the site with bays marked off by orange traffic cones borrowed from the police agency. Data Collectors unpacked their backpacks of supplies in preparation for vehicles, and set up the appropriate survey signs that informed the public of the voluntary nature of the survey. When the data collection team was ready, drivers were randomly waived into the survey site. To ensure unbiased selection of the first vehicle at each interview site, the third vehicle passing the site after initiation of the survey was waved in for the first interview. Commercial vehicles were excluded from the survey, but motorcycles were not. As the vehicle came into the survey area, a Data Collector guided the driver into the open survey bay. In some jurisdictions, the police were present but did not direct traffic. In those instances, a research assistant directed traffic.

**Basic Survey Sequence**

As the motorist came to a safe stop in the bay, the Data Collector recorded basic demographics based on observation (e.g., number of passengers, use of a safety belt by the driver, gender and ethnicity of the driver). These data were recorded so that descriptive information of potential subjects who refused was obtained. The Data Collector then approached
the vehicle and initiated contact with the driver using a basic protocol, including an introduction explaining that participation was anonymous and voluntary, and could be ended at any time.

Once oral consent for an interview was obtained, the subject answered questions covering topics such as his/her annual mileage, vehicle ownership, general alcohol and marijuana use and alcohol and marijuana use and driving, and a series of demographic items. During the interview, the Data Collector also obtained a passive alcohol reading on each subject using a passive alcohol sensor (PAS) device. After the interview was completed, the Data Collector requested a breath test with a preliminary breath test (PBT) device. The breath test results could not be read by the Data Collector but rather were stored in the device and downloaded later for analysis.

After the breath test request, the Data Collector offered a $20 incentive to the subject to provide an oral fluid sample. If the subject agreed, an oral fluid collection device was provided and the subject was instructed to place the device under their tongue. While the device was in the subject’s mouth, the subject completed a drug use questionnaire. The items on the questionnaire included questions about their past use of drugs (illegal, prescriptions, and over-the-counter), drugs that they felt might impair driving, and about the most recent time they used specific drugs. The questionnaire also included additional questions on alcohol use. After the conclusion of the oral fluid collection, subjects were provided with the $20 in cash and given instruction on how to exit the survey site safely.

During the interview, if the PAS device detected alcohol in the air and/or if the Data Collector witnessed signs of impairment (e.g., slurred speech, blood-shot eyes, etc.) the Data Collector signaled the Survey Manager, who administered a breath test with a PBT (Intoxilyzer SD-400™) that displayed the result. Data Collectors were trained to recognize signs of impairment. If the driver had a blood alcohol concentration (BAC) of .05 or higher, the Survey Manager attempted to arrange a safe ride home (e.g., having another occupant of the vehicle drive if that person passed a BAC test, calling a friend or relative to come pick up the driver, arranging a taxi, etc.).

The basic survey sequence included:

- The research team arrived at the location; Data Collectors unpacked and set up study location equipment (e.g., “Voluntary Survey Ahead” signs) and individual Data Collectors’ equipment in bays delineated by orange traffic safety cones.
- When a Data Collector was ready for a subject, the randomly selected driver was directed into the research area.
- A member of the research team directed the driver into a specific research bay; typically several bays were in operation.
- As the driver approached the bay, the Data Collector noted easily observable characteristics of the driver and vehicle and recorded those data (e.g., type of vehicle, number of passengers, seat belt usage, gender of driver, likely age of driver, etc.).
- The Data Collector approached the driver and briefly explained the purpose of the study, and explained that participation was both voluntary and anonymous and that the driver could stop participating at any point. The Data Collector obtained consent for continuing or, if the driver refused to participate, requested a breath sample. The non-participating driver’s vehicle was assisted back into traffic flow and that driver was counted as non-participating.
• For drivers who chose to participate in this study, the Data Collector asked a few questions regarding the subject’s general driving patterns and driving on that particular night.

• The Data Collector then asked a few questions regarding the subject’s drinking behavior.

• During the questioning, the Data Collector obtained a passive alcohol reading of the driver using the PAS-Vr passive sensor and recorded the result on the survey form.

• The Data Collector requested a preliminary breath test from the driver. Note that the PBT recorded, but did not display, the driver’s BAC.

• The Data Collector requested an oral fluid sample from the driver. As it took a few minutes to collect the required amount of oral fluid, the Data Collector at this time had the driver take a questionnaire that asked questions about their alcohol and drug use.

• Finally, the Data Collector thanked the driver and directed the person and their vehicle safely out of the research area and back into traffic.

The key objective of this roadside survey was to estimate the prevalence of drug- and alcohol-involved driving. However, other substances were also measured for future further analyses, including the use of over-the-counter, prescription, and illegal drugs that may impair driving performance. A specific focus was to estimate the prevalence of marijuana-involved driving in California. Table 1, below (from Lacey et al., 2009a), lists the drugs that were tested for in this survey. Oral fluid samples were analyzed for basically the same panel of drugs as in the 2007 National Roadside Survey (NRS) (see Table 1) supplemented by at least 8 versions of synthetic marijuana.
<table>
<thead>
<tr>
<th>Drug Class</th>
<th>Minimum Concentration Oral Fluid (ng/ml)</th>
<th>Common Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cocaine (Cocaine, benzoylecgonine)</td>
<td>20 8</td>
<td>Cocaine (e.g., crack or coke)</td>
</tr>
<tr>
<td>Opiates (6-AM, codeine, morphine, hydrocodone, hydromorphone)</td>
<td>20 10</td>
<td>Heroin Morphine or Codeine (e.g., Tylenol® with codeine)</td>
</tr>
<tr>
<td>Amphetamine/ Methamphetamine (MDMA, MDA, MDEA, Phentermine)</td>
<td>25 25</td>
<td>Amphetamine or Methamphetamine (e.g., speed, crank, crystal meth)</td>
</tr>
<tr>
<td>Cannabinoids (THC, THC-COOH[THCA])</td>
<td>4 2</td>
<td>Marijuana (e.g., pot, hash, weed)</td>
</tr>
<tr>
<td>Synthetic cannabinoids</td>
<td>N/A 0.5</td>
<td>(e.g., Spice, K2)</td>
</tr>
<tr>
<td>Phencyclidine</td>
<td>10 10</td>
<td>PCP (e.g., angel dust)</td>
</tr>
<tr>
<td>Benzodiazepines (oxazepam, nordiazepam, bromazepam, flurazepam, flunitrazepam, lorazepam, chlordiazepoxide, temazepam, diazepam, clonazepam, alprazolam, triazolam, midazolam, nitrazepam)</td>
<td>5 1</td>
<td>Benzodiazepines (e.g., Valium® or tranquilizers)</td>
</tr>
<tr>
<td>Barbiturates (Phenobarbital, pentobarb, secobarbital, butalbital)</td>
<td>50 50</td>
<td>Barbiturates (e.g., phenobarbital)</td>
</tr>
<tr>
<td>Buprenorphine (Suboxone®)</td>
<td>5 5</td>
<td>Opioid addiction treatment</td>
</tr>
<tr>
<td>Naltrexone (ReVia®)</td>
<td>40 10</td>
<td>Addiction treatment</td>
</tr>
<tr>
<td>Methadone</td>
<td>50 20</td>
<td>Methadone</td>
</tr>
<tr>
<td>Ethyl alcohol</td>
<td>.02% .02%</td>
<td>Alcohol</td>
</tr>
<tr>
<td>Fentanyl (Sublimaze®)</td>
<td>1 0.5</td>
<td>Prescription pain killer</td>
</tr>
<tr>
<td>Oxycodone (Percocet®)</td>
<td>20 10</td>
<td>Prescription pain killers (e.g., Percocet®, OxyContin®, oxycodone, Demerol®, Darvon®)</td>
</tr>
<tr>
<td>Propoxyphene (Darvon®)</td>
<td>20 10</td>
<td></td>
</tr>
<tr>
<td>Tramadol (Ultram®)</td>
<td>50 25</td>
<td></td>
</tr>
<tr>
<td>Carisoprodol (Soma®)</td>
<td>50 50</td>
<td></td>
</tr>
<tr>
<td>Meperidine (Demerol®)</td>
<td>50 25</td>
<td></td>
</tr>
<tr>
<td>Sertraline (Zoloft®)</td>
<td>25 10</td>
<td>Anti-depressants (e.g., Prozac®, Zoloft®)</td>
</tr>
<tr>
<td>Fluoxetine (Prozac®)</td>
<td>100 10</td>
<td></td>
</tr>
<tr>
<td>Tricyclic anti-depressants (amitryptiline, nortriptyline)</td>
<td>25 10</td>
<td></td>
</tr>
<tr>
<td>Zolpidem (Ambien®)</td>
<td>10 5</td>
<td>Ambien® or other sleep aids</td>
</tr>
<tr>
<td>Methylphenidate (Ritalin®)</td>
<td>10 10</td>
<td>ADHD medications (e.g., Ritalin®, Adderal®, Concerta®)</td>
</tr>
<tr>
<td>Dextromethorphan</td>
<td>50 20</td>
<td>Cough medicines (e.g., Robitussin®, Vicks 44®, etc.)</td>
</tr>
<tr>
<td>Ketamine</td>
<td>10 10</td>
<td>Ketamine/Special K</td>
</tr>
</tbody>
</table>

Screening utilized ELISA micro-plate and confirmation utilized GC/MS or LC/MS/MS technology.

The same testing methodologies for assaying oral fluid were used for both the 2007 NRS (Lacey et al., 2009a) and the 2010 study on the prevalence of cannabis-involved driving in California (Johnson et al., 2012). The samples were sent to Immunalysis Corporation for processing. All samples were initially screened using enzyme-linked immunosorbent assay
(ELISA) microplate technology. For positive screening results, confirmation was performed using gas chromatography–mass spectrometry (GC/MS) or liquid chromatography–mass spectrometry (LC/MS/MS) technology.

Issues

The principal challenge was obtaining the cooperation and assistance of local police agencies. Some agencies identified concerns about possible entrapment by waiving potential subjects into the survey area, while others did not perceive this type of participation to be an issue. The assistance of police officers in traffic control was essential to this endeavor. It was important to obtain the endorsement of police management at the agency level to insure that the data collection would move forward in each locality. OTS and PIRE worked collaboratively to recruit and retain this cooperation. Site recruitment activity occurred during the first few months of the project and was maintained and refreshed throughout the data collection phase of the project (June, July, and August 2012).

Additionally, we were not been able to collect as many samples as we wished at nine sites, resulting in a lower number of samples than desired to analyze, so we added an extra data collection weekend at one site to expand the number of samples.

Results

Sample/Population

Site Participation

Nine jurisdictions participated in the roadside survey: three from the northern region of California (Eureka, San Rafael, and Redding), two from the central region of the state (Fresno and Modesto which participated on two weekends), and four from the southern region (Anaheim, Ontario, Chula Vista, and Gardena). Table 2 presents the number of eligible drivers who participated in the survey, by site and region.

<table>
<thead>
<tr>
<th>Region</th>
<th>Site</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>North</td>
<td>Eureka</td>
<td>141</td>
<td>8.2%</td>
</tr>
<tr>
<td></td>
<td>San Rafael</td>
<td>79</td>
<td>4.7%</td>
</tr>
<tr>
<td></td>
<td>Redding</td>
<td>165</td>
<td>9.7%</td>
</tr>
<tr>
<td>Central</td>
<td>Fresno</td>
<td>101</td>
<td>5.9%</td>
</tr>
<tr>
<td></td>
<td>Modesto</td>
<td>444</td>
<td>26.1%</td>
</tr>
<tr>
<td>South</td>
<td>Anaheim</td>
<td>161</td>
<td>9.6%</td>
</tr>
<tr>
<td></td>
<td>Ontario</td>
<td>238</td>
<td>14.0%</td>
</tr>
<tr>
<td></td>
<td>Chula Vista</td>
<td>171</td>
<td>10.0%</td>
</tr>
<tr>
<td></td>
<td>Gardena</td>
<td>199</td>
<td>11.9%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>1,699</td>
<td>100.0%</td>
</tr>
</tbody>
</table>
**Driver Participation**

As indicated in Table 3, a total of 1,715 drivers were approached to participate in the roadside survey. Of those approached, 1,699 were eligible to participate in the survey (99.1%). Ineligible drivers included those who had prior knowledge of the survey (drivers could not self-select themselves to participate), spoke a language other than English or Spanish, or were too intoxicated to consent to participate.

<table>
<thead>
<tr>
<th># of Drivers</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Approached</td>
<td>1,715</td>
</tr>
<tr>
<td>Non-eligible</td>
<td>16</td>
</tr>
<tr>
<td>Prior Knowledge</td>
<td>3</td>
</tr>
<tr>
<td>Language</td>
<td>12</td>
</tr>
<tr>
<td>Too intoxicated</td>
<td>1</td>
</tr>
<tr>
<td>Eligible</td>
<td>1,699</td>
</tr>
<tr>
<td>% of Approached</td>
<td>99.1%</td>
</tr>
<tr>
<td>Consented Survey</td>
<td>1,375</td>
</tr>
<tr>
<td>% of Eligible</td>
<td>80.9%</td>
</tr>
<tr>
<td>Consented Breath Sample</td>
<td>1,449</td>
</tr>
<tr>
<td>% of Eligible</td>
<td>85.3%</td>
</tr>
<tr>
<td>Provided Breath Sample</td>
<td>1,432</td>
</tr>
<tr>
<td>% of Eligible</td>
<td>84.3%</td>
</tr>
<tr>
<td>Consented Oral Fluid</td>
<td>1,319</td>
</tr>
<tr>
<td>% of Eligible</td>
<td>77.6%</td>
</tr>
<tr>
<td>Provided Oral Fluid</td>
<td>1,313</td>
</tr>
<tr>
<td>% of Eligible</td>
<td>77.3%</td>
</tr>
</tbody>
</table>

Drivers who refused to participate in the survey were asked if, before leaving, they could at least provide a breath sample. As a result, the participation rate among those who provided a breath sample was higher (85.3%) than that for those who participated in the questionnaire part of the survey (80.9%) and/or provided an oral fluid sample (77.3%). Some drivers who consented to a breath and/or oral sample were not able to complete providing them because of either physiological or technical issues (e.g., failure to exhale a minimum volume of air into the breathalyzer; not providing a large enough sample of saliva).

We compared the demographics of drivers who refused to those who agreed to participate in the survey. There were no differences in the two groups in terms of gender and race, but those who chose to participate were somewhat younger than those who refused. This difference was not statistically significant.

**Demographics**

Table 4 presents the gender of drivers eligible to participate in the roadside survey by region. There were significantly more male (almost 61%) than female (39%) drivers. This is similar to the 2007 National Roadside Survey where 63% of drivers were male and 37% female. No statistically significant difference in gender distribution was found across the three regions. In the tables, the 95% confidence interval for each value is presented below that value.
Table 4. Gender by Region

<table>
<thead>
<tr>
<th>Gender</th>
<th>Central</th>
<th>North</th>
<th>South</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>528</td>
<td>379</td>
<td>746</td>
<td>1,653</td>
</tr>
<tr>
<td>Males</td>
<td>% 58.1</td>
<td>62.8</td>
<td>61.9</td>
<td>60.9</td>
</tr>
<tr>
<td>CI</td>
<td>[47.8, 67.9]</td>
<td>[60.7, 64.8]</td>
<td>[59.8, 64.1]</td>
<td>[57.2, 64.5]</td>
</tr>
<tr>
<td>Females</td>
<td>% 41.9</td>
<td>37.2</td>
<td>38.1</td>
<td>39.1</td>
</tr>
<tr>
<td>CI</td>
<td>[32.1, 52.3]</td>
<td>[35.2, 39.3]</td>
<td>[36.0, 40.2]</td>
<td>[35.4, 42.8]</td>
</tr>
</tbody>
</table>

Note: In all tables, the 95% confidence interval for each value is presented below that value.

By age, there was no statistical difference in the proportion of drivers by region. As illustrated in Table 5, approximately 44% of participants were in the 21-34 year age group, followed by 24% in the 35-49 age group.

Table 5. Age by Region

<table>
<thead>
<tr>
<th>Age</th>
<th>Central</th>
<th>North</th>
<th>South</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;21</td>
<td>N 81</td>
<td>61</td>
<td>87</td>
<td>229</td>
</tr>
<tr>
<td></td>
<td>% 19.8</td>
<td>19.0</td>
<td>13.5</td>
<td>16.7</td>
</tr>
<tr>
<td>CI</td>
<td>[11.7, 31.4]</td>
<td>[10.9, 31.0]</td>
<td>[6.9, 24.9]</td>
<td>[10.1, 23.4]</td>
</tr>
<tr>
<td>21-34</td>
<td>N 191</td>
<td>143</td>
<td>272</td>
<td>606</td>
</tr>
<tr>
<td></td>
<td>% 46.7</td>
<td>44.6</td>
<td>42.3</td>
<td>44.1</td>
</tr>
<tr>
<td>CI</td>
<td>[39.9, 53.6]</td>
<td>[40.6, 48.6]</td>
<td>[40.8, 43.8]</td>
<td>[41.9, 46.4]</td>
</tr>
<tr>
<td>35-49</td>
<td>N 83</td>
<td>63</td>
<td>181</td>
<td>327</td>
</tr>
<tr>
<td></td>
<td>% 20.3</td>
<td>19.6</td>
<td>28.2</td>
<td>23.8</td>
</tr>
<tr>
<td>CI</td>
<td>[15.1, 26.7]</td>
<td>[14.7, 25.8]</td>
<td>[24.2, 32.5]</td>
<td>[20.9, 27.1]</td>
</tr>
<tr>
<td>50+</td>
<td>N 54</td>
<td>54</td>
<td>103</td>
<td>211</td>
</tr>
<tr>
<td></td>
<td>% 13.2</td>
<td>16.8</td>
<td>16.0</td>
<td>15.4</td>
</tr>
<tr>
<td>CI</td>
<td>[9.9, 17.4]</td>
<td>[8.1, 31.8]</td>
<td>[11.7, 21.6]</td>
<td>[12.1, 19.3]</td>
</tr>
<tr>
<td>Total</td>
<td>409</td>
<td>321</td>
<td>643</td>
<td>1,373</td>
</tr>
</tbody>
</table>

Table 6 shows that about 45% of the drivers in the sample were of Hispanic/Latino descent. There were significantly more Hispanic/Latinos in the southern region (57.8%) or in the central region (44.6%) than in the northern region (18.3%), (p < .05).

Table 6. Ethnicity by Region

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Central</th>
<th>North</th>
<th>South</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hispanic/Latino</td>
<td>N 180</td>
<td>58</td>
<td>370</td>
<td>608</td>
</tr>
<tr>
<td></td>
<td>% 44.6</td>
<td>18.3</td>
<td>57.8</td>
<td>44.9</td>
</tr>
<tr>
<td>CI</td>
<td>[37.7, 51.7]</td>
<td>[9.8, 31.6]</td>
<td>[36.3, 76.7]</td>
<td>[30.3, 60.5]</td>
</tr>
<tr>
<td>Not Hispanic/Latino</td>
<td>N 224</td>
<td>259</td>
<td>270</td>
<td>753</td>
</tr>
<tr>
<td></td>
<td>% 55.5</td>
<td>81.7</td>
<td>42.2</td>
<td>55.1</td>
</tr>
<tr>
<td>CI</td>
<td>[48.3, 62.3]</td>
<td>[68.4, 90.2]</td>
<td>[23.3, 63.7]</td>
<td>[39.6, 69.7]</td>
</tr>
<tr>
<td>All</td>
<td>404</td>
<td>317</td>
<td>640</td>
<td>1,361</td>
</tr>
</tbody>
</table>
Approximately 55% of the drivers identified themselves as “white.” As indicated in Table 7, the percentage identifying as African-American were lower in the northern region of the state (2.5%) than in the central (6.5%) or the southern (13.4%) regions. The percentage identifying themselves as Asians was higher in the southern region (13.4%) than in the central (10.4%) or northern (7.6%) regions. However, this difference was not statistically significant.

<table>
<thead>
<tr>
<th>Race</th>
<th>Region</th>
<th>Central</th>
<th>North</th>
<th>South</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>N</td>
<td>251</td>
<td>250</td>
<td>247</td>
<td>748</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>62.3</td>
<td>78.9</td>
<td>38.8</td>
<td>55.2</td>
</tr>
<tr>
<td></td>
<td>CI</td>
<td>[39.8, 80.5]</td>
<td>[69.1, 86.2]</td>
<td>[28.1, 50.7]</td>
<td>[44.4, 65.5]</td>
</tr>
<tr>
<td>African-American</td>
<td>N</td>
<td>26</td>
<td>8</td>
<td>85</td>
<td>119</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>6.5</td>
<td>2.5</td>
<td>13.4</td>
<td>8.8</td>
</tr>
<tr>
<td></td>
<td>CI</td>
<td>[5.1, 8.1]</td>
<td>[1.2, 5.2]</td>
<td>[3.0, 43.9]</td>
<td>[3.0, 22.8]</td>
</tr>
<tr>
<td>Asian/PI</td>
<td>N</td>
<td>42</td>
<td>24</td>
<td>85</td>
<td>151</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>10.4</td>
<td>7.6</td>
<td>13.4</td>
<td>11.1</td>
</tr>
<tr>
<td></td>
<td>CI</td>
<td>[4.3, 23.2]</td>
<td>[4.6, 12.2]</td>
<td>[7.1, 23.8]</td>
<td>[7.1, 17.0]</td>
</tr>
<tr>
<td>American Indian</td>
<td>N</td>
<td>6</td>
<td>3</td>
<td>8</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>1.5</td>
<td>1.0</td>
<td>1.3</td>
<td>1.2</td>
</tr>
<tr>
<td></td>
<td>CI</td>
<td>[0.4, 5.2]</td>
<td>[0.0, 11.0]</td>
<td>[0.8, 2.0]</td>
<td>[0.6, 2.4]</td>
</tr>
<tr>
<td>Other</td>
<td>N</td>
<td>78</td>
<td>32</td>
<td>211</td>
<td>321</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>19.4</td>
<td>10.1</td>
<td>33.2</td>
<td>23.7</td>
</tr>
<tr>
<td></td>
<td>CI</td>
<td>[11.0, 31.8]</td>
<td>[6.6, 15.1]</td>
<td>[19.7, 50.1]</td>
<td>[16.1, 33.4]</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>403</td>
<td>317</td>
<td>636</td>
<td>1,356</td>
</tr>
</tbody>
</table>
Table 8 shows that most drivers in the sample, approximately 38%, reported to have some college experience (but no degree). Overall, drivers’ education level did not differ significantly from region to region.

<table>
<thead>
<tr>
<th>Education</th>
<th>Central</th>
<th>North</th>
<th>South</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>None-8th Grade</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>15</td>
<td>8</td>
<td>28</td>
<td>51</td>
</tr>
<tr>
<td>%</td>
<td>3.7</td>
<td>2.5</td>
<td>4.4</td>
<td>3.7</td>
</tr>
<tr>
<td>CI</td>
<td>[1.5, 8.9]</td>
<td>[0.8, 7.5]</td>
<td>[2.0, 9.0]</td>
<td>[2.1, 6.4]</td>
</tr>
<tr>
<td><strong>9th-11th Grade</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>15</td>
<td>12</td>
<td>29</td>
<td>56</td>
</tr>
<tr>
<td>%</td>
<td>3.7</td>
<td>3.8</td>
<td>4.5</td>
<td>4.1</td>
</tr>
<tr>
<td>CI</td>
<td>[2.0, 6.7]</td>
<td>[2.4, 6.1]</td>
<td>[2.8, 7.4]</td>
<td>[3.0, 5.6]</td>
</tr>
<tr>
<td><strong>High School Grad</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>80</td>
<td>66</td>
<td>129</td>
<td>275</td>
</tr>
<tr>
<td>%</td>
<td>19.6</td>
<td>20.9</td>
<td>20.2</td>
<td>20.2</td>
</tr>
<tr>
<td>CI</td>
<td>[10.6, 33.4]</td>
<td>[18.3, 23.8]</td>
<td>[16.4, 24.6]</td>
<td>[16.6, 24.4]</td>
</tr>
<tr>
<td><strong>Some College - No Degree</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>176</td>
<td>130</td>
<td>208</td>
<td>514</td>
</tr>
<tr>
<td>%</td>
<td>43.1</td>
<td>41.1</td>
<td>32.6</td>
<td>37.7</td>
</tr>
<tr>
<td>CI</td>
<td>[30.2, 57.1]</td>
<td>[27.5, 56.3]</td>
<td>[26.1, 39.7]</td>
<td>[31.6, 44.2]</td>
</tr>
<tr>
<td><strong>Trade School Certificate</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>14</td>
<td>5</td>
<td>24</td>
<td>43</td>
</tr>
<tr>
<td>%</td>
<td>3.4</td>
<td>1.6</td>
<td>3.8</td>
<td>3.1</td>
</tr>
<tr>
<td>CI</td>
<td>[2.0, 5.7]</td>
<td>[0.3, 9.1]</td>
<td>[2.6, 5.3]</td>
<td>[2.3, 4.3]</td>
</tr>
<tr>
<td><strong>Associate</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>43</td>
<td>30</td>
<td>44</td>
<td>117</td>
</tr>
<tr>
<td>%</td>
<td>10.5</td>
<td>9.5</td>
<td>6.9</td>
<td>8.6</td>
</tr>
<tr>
<td>CI</td>
<td>[9.3, 11.9]</td>
<td>[5.7, 15.5]</td>
<td>[4.7, 10.0]</td>
<td>[7.0, 10.5]</td>
</tr>
<tr>
<td><strong>Bachelor</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>39</td>
<td>45</td>
<td>96</td>
<td>180</td>
</tr>
<tr>
<td>%</td>
<td>9.6</td>
<td>14.2</td>
<td>15.0</td>
<td>13.1</td>
</tr>
<tr>
<td>CI</td>
<td>[8.2, 11.2]</td>
<td>[6.3, 29.1]</td>
<td>[12.4, 18.0]</td>
<td>[10.7, 16.2]</td>
</tr>
<tr>
<td><strong>Master/Doctorate/Professional</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>26</td>
<td>20</td>
<td>81</td>
<td>127</td>
</tr>
<tr>
<td>%</td>
<td>6.4</td>
<td>6.3</td>
<td>12.7</td>
<td>9.3</td>
</tr>
<tr>
<td>CI</td>
<td>[1.3, 25.9]</td>
<td>[1.6, 21.5]</td>
<td>[8.7, 18.1]</td>
<td>[5.6, 15.0]</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>408</td>
<td>316</td>
<td>639</td>
<td>1,363</td>
</tr>
</tbody>
</table>
As shown in Table 9, among participating drivers, most (about 77%) reported to be employed (either full-time or part-time). No differences in employment status were found across regions.

Table 9. Employment by Region

<table>
<thead>
<tr>
<th>Employment</th>
<th>Central</th>
<th>North</th>
<th>South</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employed</td>
<td>312</td>
<td>241</td>
<td>509</td>
<td>1,062</td>
</tr>
<tr>
<td>%</td>
<td>76.3</td>
<td>75.3</td>
<td>79.0</td>
<td>77.3</td>
</tr>
<tr>
<td>CI</td>
<td>[71.8, 80.2]</td>
<td>[63.5, 84.3]</td>
<td>[75.2, 82.4]</td>
<td>[73.4, 80.6]</td>
</tr>
<tr>
<td>Unemployed</td>
<td>53</td>
<td>39</td>
<td>86</td>
<td>178</td>
</tr>
<tr>
<td>%</td>
<td>13.0</td>
<td>12.2</td>
<td>13.4</td>
<td>13.0</td>
</tr>
<tr>
<td>CI</td>
<td>[11.5, 14.6]</td>
<td>[8.5, 17.2]</td>
<td>[10.1, 17.5]</td>
<td>[11.1, 15.1]</td>
</tr>
<tr>
<td>Retired</td>
<td>8</td>
<td>14</td>
<td>18</td>
<td>40</td>
</tr>
<tr>
<td>%</td>
<td>2.0</td>
<td>4.4</td>
<td>2.8</td>
<td>2.9</td>
</tr>
<tr>
<td>CI</td>
<td>[0.8, 4.6]</td>
<td>[1.6, 11.5]</td>
<td>[2.1, 3.7]</td>
<td>[2.0, 4.2]</td>
</tr>
<tr>
<td>Disability</td>
<td>8</td>
<td>12</td>
<td>9</td>
<td>29</td>
</tr>
<tr>
<td>%</td>
<td>2.0</td>
<td>3.8</td>
<td>1.4</td>
<td>2.1</td>
</tr>
<tr>
<td>CI</td>
<td>[1.2, 3.2]</td>
<td>[2.0, 7.1]</td>
<td>[0.8, 2.4]</td>
<td>[1.4, 3.3]</td>
</tr>
<tr>
<td>Homemaker</td>
<td>14</td>
<td>2</td>
<td>11</td>
<td>27</td>
</tr>
<tr>
<td>%</td>
<td>3.4</td>
<td>0.6</td>
<td>1.7</td>
<td>2.0</td>
</tr>
<tr>
<td>CI</td>
<td>[1.4, 8.1]</td>
<td>[0.1, 3.8]</td>
<td>[1.2, 2.5]</td>
<td>[1.1, 3.4]</td>
</tr>
<tr>
<td>Student</td>
<td>12</td>
<td>12</td>
<td>10</td>
<td>34</td>
</tr>
<tr>
<td>%</td>
<td>2.9</td>
<td>3.8</td>
<td>1.6</td>
<td>2.5</td>
</tr>
<tr>
<td>CI</td>
<td>[1.2, 7.3]</td>
<td>[0.8, 16.4]</td>
<td>[1.1, 2.2]</td>
<td>[1.2, 5.0]</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>%</td>
<td>0.5</td>
<td>0.2</td>
<td>0.1</td>
<td></td>
</tr>
<tr>
<td>CI</td>
<td>[0, 2.9]</td>
<td>[0, 1.6]</td>
<td>[0, 0.8]</td>
<td></td>
</tr>
<tr>
<td>All</td>
<td>409</td>
<td>320</td>
<td>644</td>
<td>1,373</td>
</tr>
</tbody>
</table>

Driver’s Responses to Roadside Questionnaires

Drivers were asked several questions about their driving, general drug use, and alcohol and drug use and driving. The following section examines the self-reported responses related to marijuana, and risk perceptions related to alcohol use and driving.

Marijuana

Drivers who participated in the questionnaire portion of the roadside survey were asked specific items related to medical marijuana. As indicated by Table 10, almost 4% of the drivers reported to have a medical marijuana permit.

Table 10. “Do you currently have a medical marijuana permit which allows you to purchase and use marijuana for pain relief?”

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>48</td>
<td>3.7%</td>
</tr>
<tr>
<td>No</td>
<td>1,258</td>
<td>96.3%</td>
</tr>
<tr>
<td>Total</td>
<td>1,306</td>
<td>100.0%</td>
</tr>
</tbody>
</table>
Among those drivers who reported having a medical marijuana permit, almost 66% reported to actually having used the permit to purchase marijuana (Table 11).

Table 11. “If Yes, have you used your permit to purchase marijuana?”

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>27</td>
<td>65.8%</td>
</tr>
<tr>
<td>No</td>
<td>14</td>
<td>34.1%</td>
</tr>
<tr>
<td>Total</td>
<td>41</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

All drivers who completed the questionnaire were asked whether they had ever used marijuana. As indicated in Table 12, 40% reported they had used marijuana at least once.

Table 12. “Have you ever, even once, used marijuana or hashish?”

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>519</td>
<td>40.0%</td>
</tr>
<tr>
<td>No</td>
<td>778</td>
<td>60.0%</td>
</tr>
<tr>
<td>Total</td>
<td>1,297</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Among drivers who reported that they had used marijuana at least once (n = 519), only 362 drivers reported the age at which they first used marijuana. Of these, most (53%) reported having initiated use between the ages of 14 and 17 years (Table 13).

Table 13. “If Yes, how old were you the first time you used marijuana or hashish?”

<table>
<thead>
<tr>
<th>Age of First Use</th>
<th>0-21</th>
<th>21-34</th>
<th>35-49</th>
<th>50+</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;13</td>
<td>N</td>
<td>%</td>
<td>CI</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>5.5%</td>
<td>[1.1, 23.4]</td>
<td></td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td></td>
<td>5.5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CI</td>
<td></td>
<td>[2.8, 10.7]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14-17</td>
<td>N</td>
<td>%</td>
<td>CI</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>38</td>
<td>69.1%</td>
<td>[54.0, 81.0]</td>
<td></td>
<td>192</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td></td>
<td>54.1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CI</td>
<td></td>
<td>[47.2, 61.0]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-20</td>
<td>N</td>
<td>%</td>
<td>CI</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>25.5%</td>
<td>[10.1, 49.0]</td>
<td></td>
<td>99</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td></td>
<td>26.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CI</td>
<td></td>
<td>[20.8, 31.9]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21-24</td>
<td>N</td>
<td>%</td>
<td>CI</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>12.2%</td>
<td>[8.1, 17.8]</td>
<td></td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td></td>
<td>7.3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CI</td>
<td></td>
<td>[2.2, 21.2]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25+</td>
<td>N</td>
<td>%</td>
<td>CI</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>2.2%</td>
<td>[0.7, 7.0]</td>
<td></td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td></td>
<td>10.1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CI</td>
<td></td>
<td>[4.8, 20.3]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All</td>
<td>55</td>
<td>181</td>
<td>69</td>
<td>57</td>
<td>362</td>
</tr>
</tbody>
</table>
Among drivers who completed the questionnaire and responded that they had used marijuana at least once (n = 519), 470 drivers responded to the question regarding how long it had been since they last used marijuana. Of these, more than half reported they had not used marijuana in over a year (Table 14). Almost 28% reported they had used marijuana within the past 30 days.

Table 14. “How long has it been since you last used marijuana or hashish?”

<table>
<thead>
<tr>
<th>Timeframe</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within Past 30 Days</td>
<td>130</td>
<td>27.7%</td>
</tr>
<tr>
<td>More than 30 Days/ within a Year</td>
<td>85</td>
<td>18.1%</td>
</tr>
<tr>
<td>More than a Year</td>
<td>255</td>
<td>54.3%</td>
</tr>
<tr>
<td>Total</td>
<td>470</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Among drivers who responded they had used marijuana at least once, almost 63% reported using marijuana once per day, and 12% reported using marijuana more than three times a day (Table 15).

Table 15. “If daily, on average how many times a day do you use it?”

<table>
<thead>
<tr>
<th>Timeframe</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Once per Day</td>
<td>52</td>
<td>62.6%</td>
</tr>
<tr>
<td>2-3 Times per Day</td>
<td>21</td>
<td>25.3%</td>
</tr>
<tr>
<td>More than 3 Times per Day</td>
<td>10</td>
<td>12.0%</td>
</tr>
<tr>
<td>Total</td>
<td>83</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

The roadside questionnaire also included questions about marijuana use and driving. This question was asked of drivers who indicated that they had used marijuana at least once. As indicated in Table 16, among those drivers asked the question, “In the past year have you used marijuana within two hours before driving?” approximately 14% reported that they had used the drug within two hours of driving.

Table 16. “In the past year, have you used any marijuana within two hours before driving?”

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>67</td>
<td>14.3%</td>
</tr>
<tr>
<td>No</td>
<td>402</td>
<td>85.7%</td>
</tr>
<tr>
<td>Total</td>
<td>469</td>
<td>100.0%</td>
</tr>
</tbody>
</table>
Further, among those drivers who reported to have used marijuana at least once, 246 drivers answered the question, “When you used marijuana and drove, did you notice if it (marijuana) had any effect on your driving?” Of those who responded, about 22% reported marijuana has had an effect on their driving (Table 17).

Table 17. “When you used marijuana and drove, did you notice if it (marijuana) had any effect on your driving?”

<table>
<thead>
<tr>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>55</td>
</tr>
<tr>
<td>No</td>
<td>191</td>
</tr>
<tr>
<td>Total</td>
<td>246</td>
</tr>
</tbody>
</table>

Of those drivers who reported that they felt that marijuana had an effect on their driving (n = 55), the majority (almost 52%) reported that they felt the drug made their driving “worse.” However, interestingly, almost 31% reported that the drug made their driving “better” (Table 18). A number of other studies (e.g., Danton et al., 2003; McCarthy et al., 2007; Terry & White, 2004) have reported that cannabis users do not report perceptions that cannabis use impairs driving, even among those who acknowledge the risks associated with alcohol-involved driving.

Table 18. “If Yes (did feel an effect), did marijuana make your driving better or worse?”

<table>
<thead>
<tr>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better</td>
<td>16</td>
</tr>
<tr>
<td>Worse</td>
<td>27</td>
</tr>
<tr>
<td>No Difference</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>52</td>
</tr>
</tbody>
</table>

In addition to asking eligible drivers about marijuana use, the roadside questionnaire also included items on medication use. Specifically, we asked drivers if they had taken any medications or drugs on the day of the survey that might affect their driving. As indicated in Table 19, approximately 2% of the population (n = 28) reported they had taken a medication that might have affected their driving that day.

Table 19. “Have you taken any medications or drugs TODAY that you think may affect your driving?”

<table>
<thead>
<tr>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>28</td>
</tr>
<tr>
<td>No</td>
<td>1,267</td>
</tr>
<tr>
<td>Total</td>
<td>1,295</td>
</tr>
</tbody>
</table>

Participants were also asked if they had ever not driven because they had taken a medication or drug. Interestingly, 35% reported “yes” to this item (Table 20).

Table 20. “Have you ever NOT driven because you were on a medication/drug?”

<table>
<thead>
<tr>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>450</td>
</tr>
<tr>
<td>No</td>
<td>836</td>
</tr>
<tr>
<td>Total</td>
<td>1,286</td>
</tr>
</tbody>
</table>
**Laboratory Analysis Results**

In this section we first present the estimated prevalence for all of the drugs tested for in this study (see Table 1). These are examined either for drugs consumed alone or in conjunction with others (i.e., multi-drug users). Next, we present drug prevalence in conjunction with alcohol (collected from breath samples).

**Drug Prevalence**

As indicated in Table 21, among the drivers who provided an oral fluid sample, a total of 184 were positive for drugs (14% of the total sample of drivers).

<table>
<thead>
<tr>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>184</td>
</tr>
<tr>
<td>Negative</td>
<td>1,130</td>
</tr>
<tr>
<td>Total</td>
<td>1,314</td>
</tr>
</tbody>
</table>

Among those who tested positive, 122 drivers (66.3%) were single-drug users, 37 drivers (20.1%) tested positive for two drugs; 14 drivers (7.6%) tested positive for three drugs; eight drivers (4.3%) tested positive for four drugs, two drivers (1.1%) tested positive for five drugs, and one driver (0.5%) tested positive for six drugs (see Table 22).

<table>
<thead>
<tr>
<th># Drugs</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>122</td>
<td>66.3%</td>
</tr>
<tr>
<td>2</td>
<td>37</td>
<td>20.1%</td>
</tr>
<tr>
<td>3</td>
<td>14</td>
<td>7.6%</td>
</tr>
<tr>
<td>4</td>
<td>8</td>
<td>4.3%</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>1.1%</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>0.5%</td>
</tr>
<tr>
<td>Total</td>
<td>184</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

We divided the drug positive findings into three categories to better enable interpretation of the results. The three categories were marijuana (the most prevalent drug), illegal drugs, and medications (prescription and over-the-counter drugs combined). Since several drivers tested positive for more than one drug, we had to create some combination categories, such as in the case where an individual tested positive for both a medication and an illegal drug, or marijuana and a medication, etc. Table 23 displays these results. The first line presents the summary result that 14.0% of drivers tested positive for one or more drugs. The subsequent lines present the results by category as described as mutually exclusive values. Thus, if one wishes to know the total percentage of drivers testing positive for illegal drugs, whether alone or in combination with other categories, one must sum the values for Illegal (2.7%), Illegal & Medication (0.5%), Marijuana & Illegal (1.1%), and Marijuana, Illegal & Medication (0.3%), for a total of 4.6% of drivers testing positive for illegal drugs, alone or in combination with other drugs. Marijuana is the most frequently encountered category both alone and in combination with other drugs. Among marijuana users, 26.5% (26 of 98) also used another drug.
Table 23. Drug Prevalence by Detailed Category

<table>
<thead>
<tr>
<th>Drug Category</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug Positive</td>
<td>184</td>
<td>14.0%</td>
</tr>
<tr>
<td>Illegal</td>
<td>36</td>
<td>2.7%</td>
</tr>
<tr>
<td>Illegal &amp; Medication</td>
<td>6</td>
<td>0.5%</td>
</tr>
<tr>
<td>Medication</td>
<td>44</td>
<td>3.3%</td>
</tr>
<tr>
<td>Marijuana</td>
<td>72</td>
<td>5.5%</td>
</tr>
<tr>
<td>Marijuana &amp; Illegal</td>
<td>15</td>
<td>1.1%</td>
</tr>
<tr>
<td>Marijuana &amp; Medication</td>
<td>7</td>
<td>0.5%</td>
</tr>
<tr>
<td>Marijuana, Illegal, &amp; Medication</td>
<td>4</td>
<td>0.3%</td>
</tr>
<tr>
<td>Drug Negative</td>
<td>1,130</td>
<td>86.0%</td>
</tr>
<tr>
<td>Total</td>
<td>1,314</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

We also tested for eight compounds of synthetic marijuana, or “Spice” (K2). These were JWH-018, JWH-073, JWH-200, JWH-250, AM2201, HU-210, CP47497, and CP47497 C8. Five oral fluid samples tested positive for AM2201. None of the other compounds were detected. Of the five positives, three appeared alone, one was found in conjunction with THC and methamphetamine, and one other was found in conjunction with alcohol.

Table 24 shows the prevalence rates by category with the sub-categories above collapsed. Thus, an individual may appear in more than one category if they tested positive in more than one category. Again, marijuana is the most prevalent category with 7.4% and with Medication and Illegal both at 4.6%. To reiterate, the cell values in this table are not additive because individuals who are multi-drug users may appear in more than one category.

Table 24. Drug Prevalence by Category Overall

<table>
<thead>
<tr>
<th>Drug Category</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illegal</td>
<td>61</td>
<td>4.6%</td>
</tr>
<tr>
<td>Medication</td>
<td>61</td>
<td>4.6%</td>
</tr>
<tr>
<td>Marijuana</td>
<td>98</td>
<td>7.4%</td>
</tr>
<tr>
<td>Drug Negative</td>
<td>1,130</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1,314</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Table 25 presents the drug prevalence by drug class as described in the labels in the table. Again, marijuana is the highest prevalence class, followed by stimulants and by drivers who tested positive for drugs in more than one class.

Table 25. Drug Prevalence by Drug Class

<table>
<thead>
<tr>
<th>Drug Class</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antidepressants</td>
<td>3</td>
<td>0.2%</td>
</tr>
<tr>
<td>Marijuana</td>
<td>72</td>
<td>5.5%</td>
</tr>
<tr>
<td>Narcotics</td>
<td>14</td>
<td>1.1%</td>
</tr>
<tr>
<td>Sedatives</td>
<td>9</td>
<td>0.7%</td>
</tr>
<tr>
<td>Stimulants</td>
<td>42</td>
<td>3.2%</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>0.3%</td>
</tr>
<tr>
<td>More than one class</td>
<td>40</td>
<td>3.0%</td>
</tr>
<tr>
<td>Negative</td>
<td>1,130</td>
<td>86.0%</td>
</tr>
<tr>
<td>All</td>
<td>1,314</td>
<td>100.0%</td>
</tr>
</tbody>
</table>
Drugs and Alcohol

This section presents alcohol prevalence as well as drug prevalence in conjunction with alcohol (collected from breath samples). To simplify the report, we do not present tables for all individual drugs; rather, we present tables for drivers with any drug positive, separated as marijuana users and consumers of any drugs other than marijuana; and by single- versus multi-drug users.

Table 26 shows the distribution of blood alcohol content (BACs) among the drivers in the sample that provided a breath sample. The vast majority of the drivers (about 93%) were negative for alcohol. About 1% of the drivers were at a BAC = .08 or higher.

Table 26. BAC Distribution

<table>
<thead>
<tr>
<th>BAC</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAC = .00</td>
<td>1,326</td>
<td>92.6%</td>
</tr>
<tr>
<td>.00 &lt; BAC &lt; .05</td>
<td>66</td>
<td>4.6%</td>
</tr>
<tr>
<td>.05 ≤ BAC &lt; .08</td>
<td>25</td>
<td>1.7%</td>
</tr>
<tr>
<td>BAC ≥ .08</td>
<td>15</td>
<td>1.0%</td>
</tr>
<tr>
<td>Total</td>
<td>1,432</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

As shown in Table 27, most of the drivers who participated (86%) were drug negative (1,111 out of 1,294). Further, about 81% of the drivers who provided both breath and oral fluid samples were both alcohol and drug negative (1,048 out of 1,294). Of those testing positive for alcohol, 23% (19 of 82) also tested positive for at least one other drug. Interestingly, the drug-positive drivers are more likely to have a positive BAC (19 of 183, 10%) than drug negative drivers (63 of 1,111, 6%). However, for marijuana users, there was no driver with a BAC ≥ .08 g/dl.

Table 27. Drug Use by BAC

<table>
<thead>
<tr>
<th>Drug Positive</th>
<th>BAC = .00</th>
<th>.00 &lt; BAC &lt; .05</th>
<th>.05 ≤ BAC &lt; .08</th>
<th>BAC ≥ .08</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marijuana</td>
<td>N</td>
<td>%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>85</td>
<td>7.0%</td>
<td></td>
<td></td>
<td>98</td>
</tr>
<tr>
<td>CI</td>
<td>[5.3, 9.2]</td>
<td>[10.8, 43.8]</td>
<td>[7.4, 34.2]</td>
<td>[5.7, 10.0]</td>
<td></td>
</tr>
<tr>
<td>Other Drugs</td>
<td>N</td>
<td>%</td>
<td></td>
<td></td>
<td>85</td>
</tr>
<tr>
<td></td>
<td>79</td>
<td>6.5%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CI</td>
<td>[4.4, 9.6]</td>
<td>[0.1, 32.8]</td>
<td>[0.1, 17.6]</td>
<td>[8.3, 73.4]</td>
<td>[4.5, 9.5]</td>
</tr>
<tr>
<td>Drug Negative</td>
<td>N</td>
<td>%</td>
<td></td>
<td></td>
<td>1,111</td>
</tr>
<tr>
<td></td>
<td>1,048</td>
<td>86.5%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CI</td>
<td>[83.8, 88.8]</td>
<td>[50.3, 85.1]</td>
<td>[63.6, 91.4]</td>
<td>[26.6, 91.7]</td>
<td>[83.5, 87.9]</td>
</tr>
<tr>
<td>All</td>
<td>1,212</td>
<td>17</td>
<td>53</td>
<td>12</td>
<td>1,294</td>
</tr>
</tbody>
</table>

Discussion

This OTS-sponsored first statewide survey on alcohol and drug use of the California nighttime weekend driving indicated an overall drug prevalence rate of 14.0% and an alcohol prevalence rate of 7.3%. Among the drugs tested for, marijuana had the highest prevalence rate at 7.4%. The prevalence rate for illegal drugs was 4.6% as was that of medications (prescription and over-the-counter drugs). Two point seven percent of drivers had breath alcohol levels at or
above > .05, a level generally considered to be impairing and 1.0% at or above .08, the illegal limit in California and the United States. In terms of drug impairment, we tested for drugs that experts believe are potentially impairing. However, the current science does not provide enough information to address what proportion of the drug positive drivers may have had their driving impaired. That knowledge will be building as more studies of specific drugs’ contribution to crash involvement develops. Thus, this prevalence study speaks to the 14.0% prevalence of drug-involved driving in the nighttime weekend driving population. In the future, if other surveys of this magnitude are conducted, more insight can be brought to this topic in terms of prevalence rate changes over time and the effects that any potential policy changes may have.
References


Project Team

Credits

This Grant is a part of the California Traffic Safety Program and was made possible through the support of the California Office of Traffic Safety (OTS), through the National Highway Traffic Safety Administration (NHTSA).

The resulting project was a collaborative effort between the California OTS, the University of California/Berkeley SafeTREC, and the Pacific Institute for Research and Evaluation (PIRE).

Disclaimer

The opinions, findings, and conclusions expressed in this publication are those of the authors and not necessarily those of the State of California Business Transportation and Housing Agency or the National Highway Traffic Safety Administration.

Grant Personnel

John H. Lacey served as the Principal Investigator for this project. As such, he was responsible for overall oversight of the research, including finalizing the research protocol. He was also responsible for guiding the statistical analysis.

Dr. Tara Kelley-Baker served as Co-Principal Investigator on this project, assisting Mr. Lacey with all aspects of project’s direction, including generation of manuscripts.

Dr. Eduardo Romano served as the statistician on this project; he was responsible for the primary data analyses on this project.

Katharine Brainard served as Project Manager. She was responsible for the day-to-day management of project tasks and staff.

Anthony Ramirez and Beth Lauer served as Field Supervisors and were responsible for the overall training of staff and managing the day-to-day data collection operations of staff in the field for data collection events.

Funding, Contact Person, Address, and Phone Number

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Email: cooperj@berkeley.edu
Appendix A. Surveys
The average driver drives about 15,000 miles a year. Would you say you drive...
Now I have a few background questions

7. What is your age? ______ yrs (*00" if refused) / 8. What is your zip code? _______ (*00000" if refused)

9. How far have you gone in school?

<table>
<thead>
<tr>
<th>Grade Level</th>
<th>Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>None - 8th grade</td>
<td>Some college - no degree</td>
</tr>
<tr>
<td>9th - 11th grade</td>
<td>Associate's degree</td>
</tr>
<tr>
<td>High School Grad</td>
<td>Bachelor's degree</td>
</tr>
<tr>
<td></td>
<td>Trade School Certificate</td>
</tr>
<tr>
<td></td>
<td>Master's degree</td>
</tr>
<tr>
<td></td>
<td>Professional degree</td>
</tr>
<tr>
<td></td>
<td>Did not answer</td>
</tr>
<tr>
<td></td>
<td>Doctorate Degree</td>
</tr>
</tbody>
</table>

10. Are you currently...

- Employed
- Full time
- Part time
- Did not answer

- Unemployed
- How long have you been unemployed ______ Months ______ Years
- Did not answer

- Retired
- On disability
- Homemaker
- Other
- Did not answer

11. Are you Hispanic or Latino?  

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

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

- White
- Black or African American
- Asian
- American Indian or Native Alaskan
- Native Hawaiian or Pacific Islander
- Other
- Did not answer

13. Please estimate your household income

- $0 - $25,000
- $25,000 - $50,000
- $50,000 - $75,000
- $75,000 - $100,000
- $100,000 or more
- Did not answer

Breath Sample (PBT)

- Refused / not provided
- Failed to capture
- Manual Sample

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 PBT to driver). This will take just a couple of seconds. Take a deep breath in and blow it out long and steady (like blowing up a balloon) until I tell you to stop.”

PBT Provided: Sample _____ - _____ - _____ Time _____: _____ (show driver PBT - no display)

Oral Fluid Sample and Booklet

- Refused oral fluid test/ not provided
- Failed to capture

“We are now asking you to PARTICIPATE in two anonymous research activities. This may take a few minutes. It involves collecting a sample of your saliva for later analysis in a lab AND filling out a questionnaire about California laws and your use of substances, both prescription and non-prescription. As before, this is voluntary and anonymous and you may stop participating at any time.”

ADMINISTERED ORAL FLUID

X’d out pages 4 & 5 if “Never” to Q3a.

HAND BOOKLET and pen

COC label on Booklet and Swab

Gave Consent Sheet (WHITE)

Read Warning

Gave Incentive

Swab didn’t turn blue

Seatbelt use: Driver  Passenger

- Lap & shoulder belts (helmet if motorcyclist)
- Shoulder belt only
- Lap belt only
- No use / no belt
- Unknown

Not applicable (No Passengers)

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

Passengers under age 15 present:

- Yes
- No
- Unknown

Type of vehicle:  

- Car
- SUV
- Minivan
- Pickup
- Other
- Motorcycle
- Unknown

Place COC Label Here

END TIME: ____ ____: ____ AM / PM
California Driver Survey

The following questions ask about marijuana, driving, and laws regarding marijuana. All answers are anonymous and confidential. This survey is for research purposes only. You may skip any question and stop participating at any time.

1. Do you currently have a medical marijuana permit which allows you to purchase and use marijuana for pain relief?
   - Yes
   - No
   - Refuse to answer
   If Yes, what year did you receive your permit? _________
   - Refuse to answer

2. Have you ever, even once, used marijuana or hashish?
   - Yes
   - No
   - Refuse to answer
   If Yes, how old were you the first time you used marijuana or hashish? _______ Age
   - Refuse to answer

3. How long has it been since you last used marijuana or hashish?
   - Within the past 30 days
   - More than 30 days, but within the past 12 months
   - More than 12 months
   - No use (Skip to Q7)
   - Refuse to answer

4. If daily, on average how many times a day do you use it? (select one)
   - Once per day
   - 2-3 times per day
   - More than 3 times per day
   - No use
   - Refuse to answer

5. In the past year, have you used any marijuana within two hours before driving?
   - Yes
   - No
   - No use
   - Refuse to answer

6. When you used marijuana and drove, did you notice if it (marijuana) had any effect on your driving?
   - Yes
   - No
   - No Use
   - Refuse to answer
   If Yes, did marijuana make your driving: (select one)
   - Better
   - Worse
   - No difference
   - Refuse to answer

7. Have you taken any medications or drugs TODAY that you think may affect your driving?
   - Yes
   - No
   - Refuse to answer

8. Have you ever NOT driven because you were on a medication/drug?
   - Yes
   - No
   - Refuse to answer

9. How likely do you think it is that alcohol impairs a person’s ability to drive safely?
   - Very likely
   - Likely
   - Somewhat likely
   - Not at all likely
   - Refuse to answer

10. How likely do you think it is that a person drinking and driving could be arrested for impaired driving?
    - Very likely
    - Likely
    - Somewhat likely
    - Not at all likely
    - Refuse to answer

11. When you drink, how likely will it be somewhere other than your home?
    - Very likely
    - Likely
    - Somewhat likely
    - Not at all likely
    - Refuse to answer
## Drug Questionnaire

<table>
<thead>
<tr>
<th>ID: ___ / ___ / ___ / ___</th>
</tr>
</thead>
</table>

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

<table>
<thead>
<tr>
<th>Medication/Drug</th>
<th>Past 24 Hours</th>
<th>Past 2 Days</th>
<th>Past Month</th>
<th>Over a Month</th>
<th>Never</th>
<th>Refuse to Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cough medicines (e.g., Robitussin, Vicks 44, etc.)</td>
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<tr>
<td>Other over the counter medicines</td>
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<tr>
<td>Tobacco (e.g., cigarettes, cigars)</td>
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<tr>
<td>Prescription pain killers (e.g., Percocet, Oxycontin, Oxycodone, Demerol, Darvon)</td>
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<tr>
<td>Ambien or other sleep aids</td>
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<td>Muscle relaxants (e.g., Soma, Miltown)</td>
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<td>Prescription dietary supplements (e.g., Phentermine)</td>
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<tr>
<td>ADHD medications (e.g., Ritalin, Aderall, Concerta)</td>
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<td>Antidepressants (e.g., Prozac, Zoloft)</td>
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<tr>
<td>Marijuana (e.g., pot, hash, weed)</td>
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<td>Cocaine (e.g., crack or coke)</td>
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<td>Heroin</td>
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<td>Methadone</td>
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<td>LSD (acid)</td>
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<td>Morphine or Codeine (e.g., Tylenol with Codeine)</td>
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<td>Ecstasy (e.g., “E”, Extc, MDMA, “X”)</td>
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<td>Amphetamine or Methamphetamine (e.g., speed, crank, crystal meth)</td>
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<td>GHB (e.g., Liquid Ecstasy, Liquid G)</td>
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<td>PCP (e.g., Angel dust)</td>
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<td>Rohypnol (Ruffies)</td>
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<tr>
<td>Ketamine (Special K)</td>
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<tr>
<td>Benzodiazepines (e.g., Valium or tranquilizers)</td>
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<tr>
<td>Barbiturates (e.g., Phenobarbital)</td>
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</tbody>
</table>
Here is a list of questions concerning information about your potential involvement with drugs, excluding alcohol and tobacco, during the past 12 months. When the words “drug abuse” are used, they mean the use of prescribed or over-the-counter medications/drugs in excess of the directions and any non-medical use of drugs. The various classes of drugs may include: cannabis (e.g., marijuana or hashish), solvents, tranquilizers (e.g., Valium), barbiturates, cocaine, stimulants (e.g., speed), hallucinogens (e.g., LSD) or narcotics (e.g., heroin). Remember that the questions do not include alcohol or tobacco. If you have difficulty with a statement, then choose the response that is mostly right. You may choose to answer or not answer any of the questions in this section. These questions refer to the past 12 months.

<table>
<thead>
<tr>
<th>In the past 12 months . . .</th>
<th>Yes</th>
<th>No</th>
<th>Refuse to Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the last 12 months, have you used drugs other than those required for medical reasons?</td>
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<tr>
<td>Do you abuse more than one drug at a time?</td>
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<tr>
<td>Are you always able to stop using drugs when you want to?</td>
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<tr>
<td>(If never use drugs, answer “Yes”)</td>
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<tr>
<td>Have you had &quot;blackouts&quot; or &quot;flashbacks&quot; as a result of drug use?</td>
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<tr>
<td>Do you ever feel bad or guilty about your drug use?</td>
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<td></td>
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<tr>
<td>(If never use drugs, choose “No”)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does your spouse (or parents) ever complain about your involvement with drugs?</td>
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<tr>
<td>Have you neglected your family because of your use of drugs?</td>
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<tr>
<td>Have you engaged in illegal activities in order to obtain drugs?</td>
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</tr>
<tr>
<td>Have you ever experienced withdrawal symptoms (felt sick) when you stopped taking drugs?</td>
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<tr>
<td>Have you had medical problems as a result of your drug use (e.g., memory loss, hepatitis, convulsions, bleeding, etc.)?</td>
<td></td>
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</tr>
</tbody>
</table>
The following questions ask about your experiences with alcohol:

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the past year, how many drinks containing alcohol did you have on a typical day when you were drinking?</td>
<td>1-2, 3-4, 5-6, 7-9, 10 or more, Refuse to answer</td>
</tr>
<tr>
<td>In the past year, how often did you have six (five for a woman) or more drinks on one occasion?</td>
<td>Never, Less than monthly, Monthly, Weekly, Daily/almost daily, Refuse to answer</td>
</tr>
<tr>
<td>Did your drinking often interfere with taking care of your home or family or cause you problems at work or school?</td>
<td>Yes, No, Refuse to answer</td>
</tr>
<tr>
<td>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?</td>
<td>Yes, No, Refuse to answer</td>
</tr>
<tr>
<td>Did you get arrested, held at a police station or have legal problems because of your drinking?</td>
<td>Yes, No, Refuse to answer</td>
</tr>
<tr>
<td>Did you continue to drink even though it was causing you trouble with your family or friends?</td>
<td>Yes, No, Refuse to answer</td>
</tr>
<tr>
<td>Have you found that you have to drink more than you once did to get the effect you want?</td>
<td>Yes, No, Refuse to answer</td>
</tr>
<tr>
<td>Did you find that your usual number of drinks had less effect on you than it once did?</td>
<td>Yes, No, Refuse to answer</td>
</tr>
<tr>
<td>Did you more than once want to try to stop or cut down on your drinking, but you couldn’t do it?</td>
<td>Yes, No, Refuse to answer</td>
</tr>
<tr>
<td>Did you end up drinking more or drinking for a longer period than you intended?</td>
<td>Yes, No, Refuse to answer</td>
</tr>
<tr>
<td>Did you give up or cut down on activities that were important to you or gave you pleasure in order to drink?</td>
<td>Yes, No, Refuse to answer</td>
</tr>
<tr>
<td>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?</td>
<td>Yes, No, Refuse to answer</td>
</tr>
<tr>
<td>Did you spend a lot of time drinking or getting over the bad after effects of drinking?</td>
<td>Yes, No, Refuse to answer</td>
</tr>
<tr>
<td>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?</td>
<td>Yes, No, Refuse to answer</td>
</tr>
<tr>
<td>During the past 12 months (one year), how often did you:</td>
<td>A. have any kind of high energy (caffeinated) drink like Red Bull, not containing alcohol?</td>
</tr>
<tr>
<td></td>
<td>Every day, More than once a week, Once a week, Once a month, Less than once a month, Never in the last year, Never in my life, Refuse to answer</td>
</tr>
<tr>
<td></td>
<td>B. have a high energy drink with alcohol? (e.g., Red Bull + Vodka, or a pre-mixed drink)</td>
</tr>
<tr>
<td></td>
<td>Every day, More than once a week, Once a week, Once a month, Less than once a month, Never in the last year, Never in my life, Refuse to answer</td>
</tr>
</tbody>
</table>
The following questions ask about the last time you drank alcohol other than in your home. Think about the last time you drank alcohol. Please DO NOT include tonight.

1. Approximately how many drinks did you have? ____________  □ Refuse to Answer

2. How long did you wait to travel back home after finishing your last alcoholic drink?
   □ less than 2 hours
   □ 2 hours or more
   □ Refuse to Answer

3. Which of following was the main way you traveled back home (check one)?
   □ Drove myself
   □ Caught a ride
   □ Took a taxi
   □ Took a bus or train
   □ Walked or biked
   □ Did not go home (stayed at a friend's or hotel)
   □ Refuse to Answer

4. Which of following options were available to you for your travel back home (check all that apply)?
   □ Driving myself
   □ Catching a ride with someone
   □ Taking a taxi
   □ Taking a bus or train
   □ Walking or biking
   □ Not going home (staying at a friend's or hotel)
   □ Refuse to answer

5. For the last time you drank alcohol, please answer the lettered questions (A-D) for each travel option available (leave blank if not applicable).

<table>
<thead>
<tr>
<th>Travel Option</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>This option was</td>
<td>This option was</td>
<td>This option was</td>
<td>This option was</td>
</tr>
<tr>
<td></td>
<td>convenient</td>
<td>inexpensive</td>
<td>safe</td>
<td>fast</td>
</tr>
<tr>
<td>Driving myself</td>
<td>□ Strongly agree</td>
<td>□ Strongly agree</td>
<td>□ Strongly agree</td>
<td>□ Strongly agree</td>
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<tr>
<td></td>
<td>□ Agree</td>
<td>□ Agree</td>
<td>□ Agree</td>
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<td></td>
<td>□ Disagree</td>
<td>□ Disagree</td>
<td>□ Disagree</td>
<td>□ Disagree</td>
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<td></td>
<td>□ Refuse to answer</td>
<td>□ Refuse to answer</td>
<td>□ Refuse to answer</td>
<td>□ Refuse to answer</td>
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<tr>
<td>Catching a ride with someone</td>
<td>□ Strongly agree</td>
<td>□ Strongly agree</td>
<td>□ Strongly agree</td>
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<td>□ Agree</td>
<td>□ Agree</td>
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<td>□ Disagree</td>
<td>□ Disagree</td>
<td>□ Disagree</td>
<td>□ Disagree</td>
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<td></td>
<td>□ Refuse to answer</td>
<td>□ Refuse to answer</td>
<td>□ Refuse to answer</td>
<td>□ Refuse to answer</td>
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<tr>
<td>Taking a taxi</td>
<td>□ Strongly agree</td>
<td>□ Strongly agree</td>
<td>□ Strongly agree</td>
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<td>□ Agree</td>
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<td>□ Disagree</td>
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<td></td>
<td>□ Refuse to answer</td>
<td>□ Refuse to answer</td>
<td>□ Refuse to answer</td>
<td>□ Refuse to answer</td>
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<tr>
<td>Taking a bus or train</td>
<td>□ Strongly agree</td>
<td>□ Strongly agree</td>
<td>□ Strongly agree</td>
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<td>□ Agree</td>
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<td>□ Disagree</td>
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<td>□ Refuse to answer</td>
<td>□ Refuse to answer</td>
<td>□ Refuse to answer</td>
<td>□ Refuse to answer</td>
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<tr>
<td>Walking or biking</td>
<td>□ Strongly agree</td>
<td>□ Strongly agree</td>
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<td>□ Agree</td>
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<td>□ Disagree</td>
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<td>□ Refuse to answer</td>
<td>□ Refuse to answer</td>
<td>□ Refuse to answer</td>
<td>□ Refuse to answer</td>
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<tr>
<td>Not going home (staying at a friend's or hotel)</td>
<td>□ Strongly agree</td>
<td>□ Strongly agree</td>
<td>□ Strongly agree</td>
<td>□ Strongly agree</td>
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</tbody>
</table>