

• **Mountain Plains Evaluation, LLC** •

## South Dakota 24/7 Sobriety Program Evaluation Findings Report

Prepared for:  
Marty J. Jackley, Attorney General  
South Dakota

Lee Axdahl, Director  
Office of Highway Safety  
South Dakota Department of Public Safety

Data Period  
2005 through January 2010

Prepared by:  
Roland Loudenburg, M.P.H.  
Gregg Drube, M.A.  
Gary Leonardson, Ph.D.

• 201 North Main • P.O. Box 530 • Salem, SD 57058 •  
• Phone: 605.425.3305 • E-mail: [RolandL@mtplains.com](mailto:RolandL@mtplains.com) •

## Acknowledgements

Funding support for this effort is provided through the South Dakota Department of Public Safety Office of Highway Safety, and the National Highway Traffic Safety Administration (NHTSA).

Access to and analysis of the South Dakota 24/7 Sobriety Program data is conducted and governed under a data use agreement with the South Dakota Office of the Attorney General.

Access to and analysis of the South Dakota Unified Judicial System data is conducted and governed under a data use agreement with that agency.

## Introduction

The South Dakota 24/7 Sobriety Program was developed in direct response to the overwhelming need to address repeat impaired driving offenses in South Dakota. The 24/7 Sobriety Program addresses the problem in a nontraditional manner. An external evaluation firm was engaged to evaluate the effectiveness of the program. This report is the first to evaluate the South Dakota 24/7 Sobriety Program's effect on DUI recidivism. This report evaluates the South Dakota 24/7 Sobriety Program's overall effectiveness in reducing DUI recidivism among PBTx2 participants through data review and statistical analysis. The report is prepared in conjunction with the South Dakota Attorney General's Office and the South Dakota Department of Public Safety.

This report utilizes participant data maintained on the Attorney General's Office 24/7 Sobriety Program web based database (24/7 Database) and offender data maintained by the Unified Judicial System (UJS). Initial sections of the report provide a general description of the 24/7 Sobriety Program, participants, and a summary of test results for twice a day PBT testing (PBTx2). Later sections of the report focus on recidivism analysis of DUI offenders participating in PBTx2. In those later sections, DUI recidivism rates for program participants are compared to nonparticipants using three approaches.

Driving under the influence of alcohol and drugs is a serious public health and safety problem in the United States. In 2007, impaired drivers with a BAC (blood alcohol content) of .08 or above were responsible for 32% of all traffic fatalities.<sup>1</sup> National statistics reported by the National Highway Traffic Safety Administration (NHTSA) indicate that approximately one-third of all first-time DUI offenders will have a second DUI offense.<sup>2</sup> In addition, DUI offenders are more likely to be involved in future fatal car crashes than non-DUI offenders.<sup>2</sup>

Felony DUI offenses (a third or subsequent DUI offense within ten years of a DUI conviction), and vehicular homicide and vehicular battery cases account for approximately 35% of all felony convictions in South Dakota.<sup>3</sup> Between 1996 and 2007, felony DUI offenses and felony drug offenses accounted for approximately 60% of the total felony convictions in South Dakota.<sup>3</sup> Analysis of South Dakota Department of Corrections data indicates that 13.6% of the state prison population is incarcerated because of DUI offenses. In 2009, 85% of men and 89% of women sentenced to the South Dakota Penitentiary have an alcohol or illegal drug dependency.

To date, traditional DUI offense intervention efforts that include a combination of education and sanctions report only a modest 7% - 9% reduction in recidivism rates for future impaired driving offenses.<sup>4-7</sup> While alcohol ignition interlock devices are effective while physically installed within an individual's vehicle, recidivism rates are not sustained after removal of the device.<sup>8</sup> More effective strategies to reduce repeat impaired driving offenses are necessary.

South Dakota's effort to address DUI recidivism through the 24/7 Sobriety Program shows very promising results. The PBTx2 test result data examined in this evaluation reveals that individuals are maintaining a very high level of sobriety while on the 24/7 Sobriety Program. With a sample size of almost 820,000 recorded PBTx2 test results, only .06% were recorded as Failures. 54.5% of the 4,009 24/7 Sobriety Program

participants in the sample did not fail a PBTx2 test, and only 8.8% had more than three Failures during a testing period that averaged approximately 120 days.

An analysis of PBTx2 participants with control groups shows a general pattern of lower recidivism rates by participants and suggests that the program has a sustained effect on recidivism rates after program completion. PBTx2 participants generally had lower recidivism rates at one, two, and three years when compared to controls. Notably, 13.7% of DUI 2<sup>nd</sup> offenders not on the program committed another DUI offense within three years, while only 7.4% of the 24/7 Sobriety Program participants committed another DUI in that same three-year time period. The lower recidivism rate for DUI 2<sup>nd</sup> offenders is statistically significant. The analysis also suggests the 24/7 Sobriety Program is statistically significant in lowering recidivism for DUI offenders who remain on the program for 30 or more consecutive days. Small sample sizes are the major limiting factor in the ability to draw additional statistical conclusions. As additional longitudinal data becomes available, supplemental reports will be prepared to examine ongoing effects of the program, including recidivism.

### Background

The South Dakota 24/7 Sobriety Program was initiated as a pilot project in January 2005 under the leadership of former Attorney General Larry Long (currently serving as a Circuit Court Judge in South Dakota's Second Judicial Circuit). In 2007, the South Dakota Legislature authorized the creation of a statewide 24/7 Sobriety Program. The program is now available in the vast majority of South Dakota counties.

The 24/7 Sobriety Program's nontraditional approach in reducing recidivism is its emphasis on offender sobriety through intensive testing and monitoring of drug and alcohol consumption, together with swift and certain punishment for infractions. In counties where the program is available, placement on the 24/7 Sobriety Program is a prerequisite for issuance of work permits to repeat DUI offenders and to first-time offenders with BAC of .17% or greater. Placement on the program may also be required as a condition of bond, sentence, probation, parole, or child custody or visitation orders. The 24/7 Sobriety Program allows offenders to remain in the community free from incarceration if they totally abstain from alcohol and drugs. In most cases, offenders are able to drive, continue employment, and remain with family.

The 24/7 Sobriety Program currently monitors total abstinence from alcohol and drugs through one or more of the following tests:

- Twice a day breath testing (PBTx2),
- Electronic alcohol monitoring through the use of ankle bracelet testing,
- Drug patch testing; and
- Urine testing.

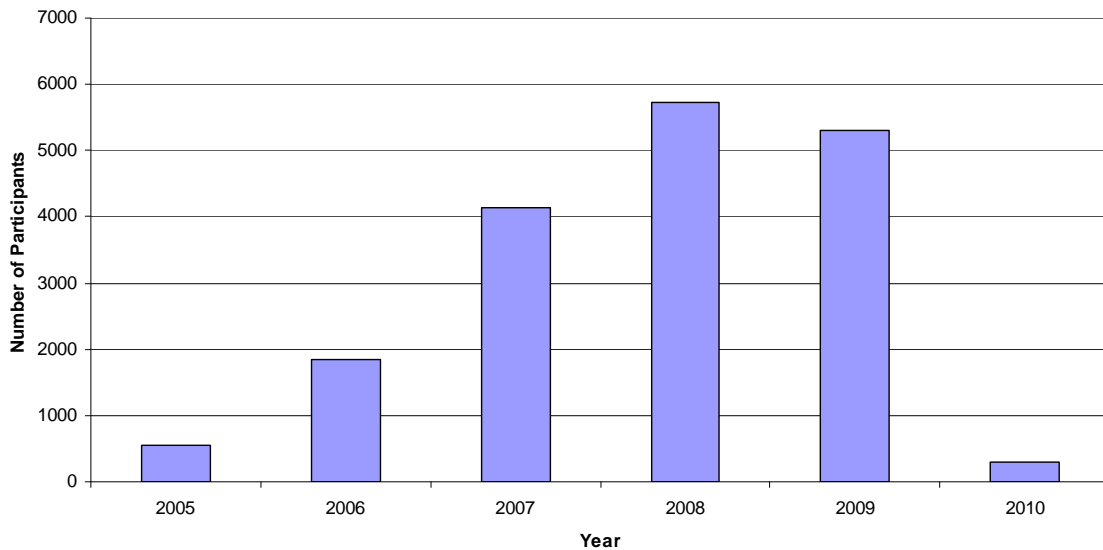
Most program participants are required to demonstrate alcohol sobriety by submitting to PBTx2, a breath test twice daily at a twelve-hour interval in the presence of a law enforcement officer. Generally, between the hours of 7 a.m. to 9 a.m. and 7 p.m. to 9 p.m. a participant submits to a breath test at the local sheriff's office. A participant's bond, parole or probation may be immediately revoked if the participant fails to show up for a scheduled test or if the test demonstrates that the participant consumed any

amount of alcohol. In many cases the infraction will result in immediate incarceration. A smaller proportion of program participants are placed on electronic ankle bracelets. The bracelets provide continuous monitoring for alcohol consumption and provide electronic reporting to law enforcement. Participants may also be required to provide random urine samples or wear drug patches for drug monitoring. Similar sanctions are imposed for participant infractions while placed on these test types.

## Program Participants by Year

24/7 Database data exported for this report consisted of 17,874 participant records (24 additional records exist, but were not analyzed because they included invalid start year dates). The data includes all participant records from the 24/7 Database's inception through the end of January 2010. The following tables and charts are based on those participant records. It is possible for a participant to have multiple participant records included in the 24/7 Database, because an individual may go back on the program after being removed, due to court sanctions, moving between jurisdictions or as a result of future offenses. The recidivism evaluation in this paper is not affected by multiple participant records because the records are linked to unique individuals based upon their UJS records. The following descriptive tables and figures utilize the start date on the participant's record to provide a summary of program participation. A small percentage of individuals may be counted more than once.

**Figure 1: Number of Participant Records by Calendar Year of Start Date**



\* Data for 2010 includes only data for January.

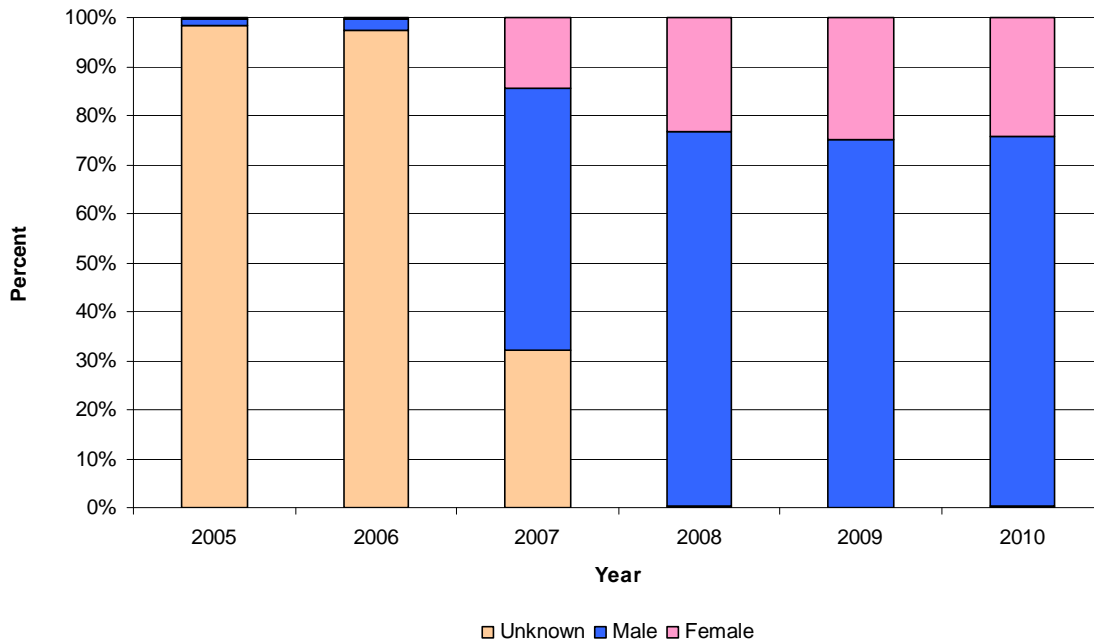
## Program Participants by Gender

During the 24/7 Sobriety Program's initial years, data on gender was not routinely captured on the 24/7 Database. For the time period in which complete gender data is available, approximately 75-77% of program participants are male.

**Table 1: Number of Participant Records by Gender and Calendar Year of Start Date**

Gender	2005	2006	2007	2008	2009	2010
Female	1	7	598	1,326	1,326	71
% Female	0%	0%	14%	23%	25%	25%
Male	8	40	2,214	4,390	3,966	219
% Male	1%	2%	54%	77%	75%	75%
Not Available	553	1,807	1,324	20	3	1
% Not Available	98%	97%	32%	0%	0%	0%
<b>Total</b>	<b>562</b>	<b>1,854</b>	<b>4,136</b>	<b>5,736</b>	<b>5,295</b>	<b>291</b>

**Figure 2: Percent of Participant Records by Gender and Calendar Year of Start Date**



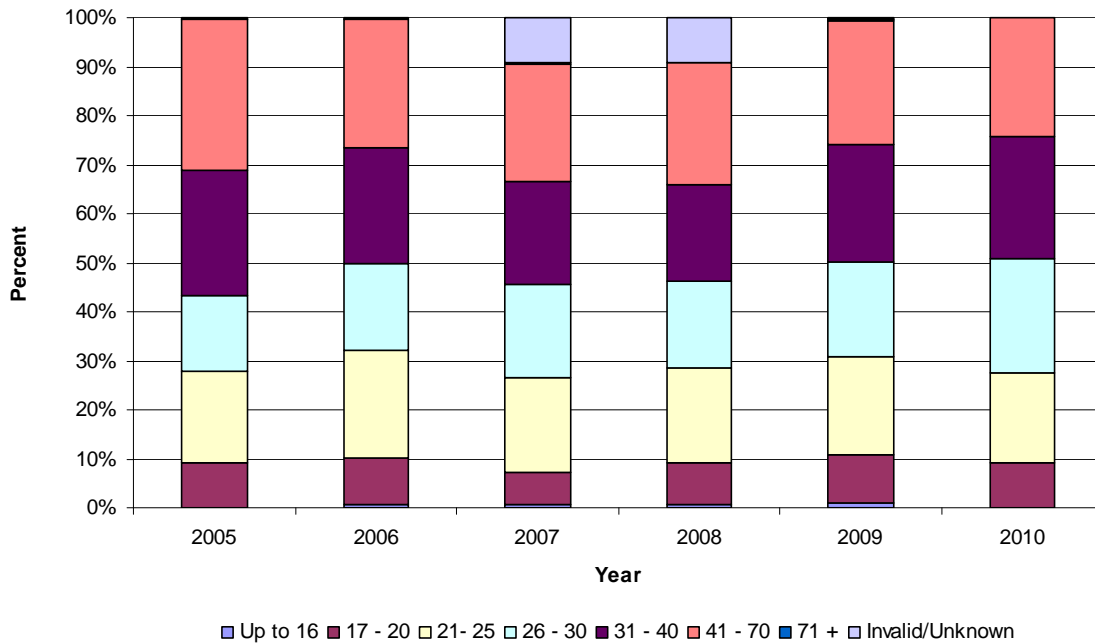
Program Participants by Age

The distribution of program participants by age group has remained remarkably similar since the beginning of the program. Approximately 70% of all 24/7 Sobriety Program participants are between the ages of 25 and 71.

**Table 2: Percent of Participant Records by Age Group and Calendar Year of Start Date**

Age Group	2005	2006	2007	2008	2009	2010
Up to 16	0%	1%	1%	1%	1%	0%
17 – 20	9%	10%	7%	9%	10%	9%
21- 25	19%	22%	21%	21%	20%	18%
26 – 30	16%	17%	21%	20%	19%	23%
31 – 40	26%	24%	23%	22%	24%	25%
41 – 70	31%	26%	26%	27%	25%	24%
71 +	0%	0%	0%	0%	0%	0%
Invalid/Unknown	0%	0%	0%	0%	0%	0%

**Figure 3: Percent of Participant Records by Age Group and Calendar Year of Start Date**

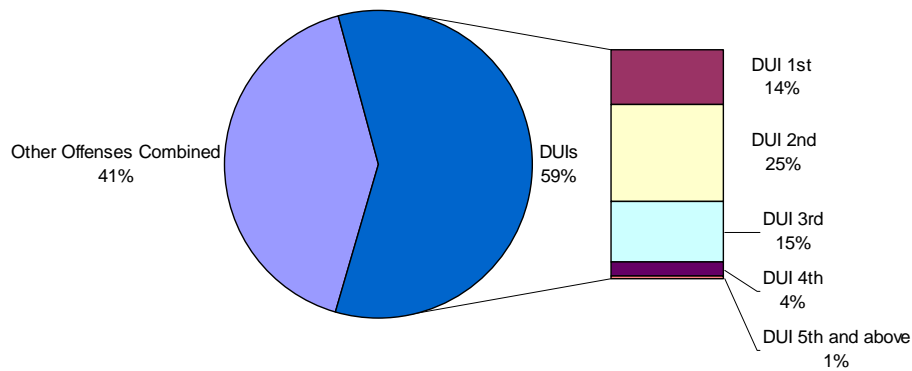




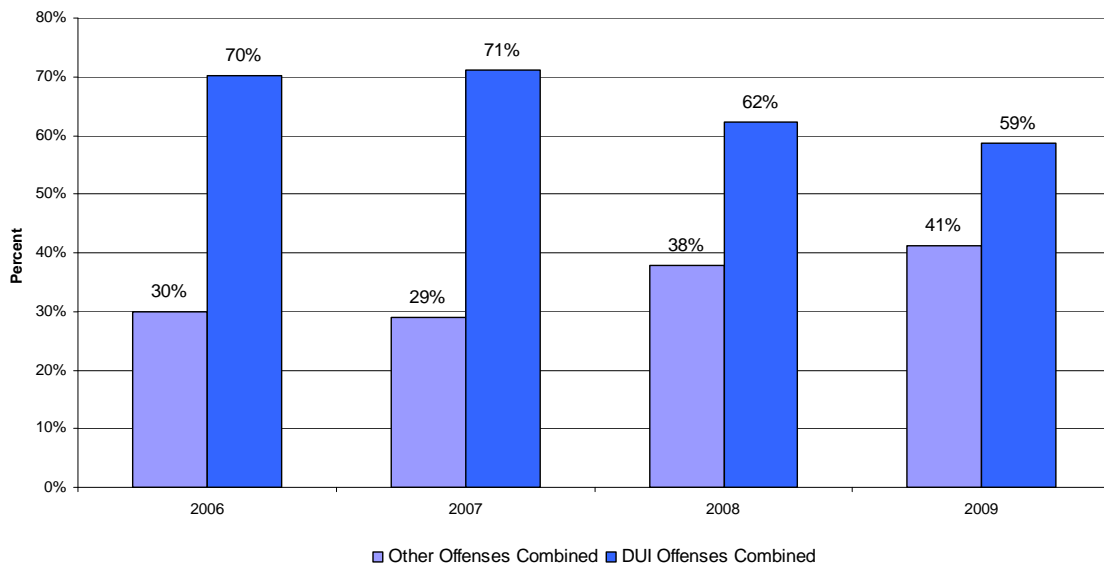
## Participants by Offense

The 24/7 Sobriety Program was originally initiated as an alternative to incarceration for DUI offenders. As the program grew, judicial and corrections personnel began placing offenders on the program for whom alcohol or drugs was a contributing cause to their illegal behavior. During calendar year 2009, DUI offenses comprised 59% of participants that began participation in the 24/7 Sobriety Program. Figure 5 at the bottom of the page shows the trend in program participants and offenses from 2006 through 2009. Tables included in Appendix B provide a summary of all offenses by calendar year of program operation.

**Figure 4: Percent of Participant Records by Offense for 2009 Calendar Year**



**Figure 5: Percent of Participant Records by Offense Group and Calendar Year of Start Date**



## Participants by Test Type

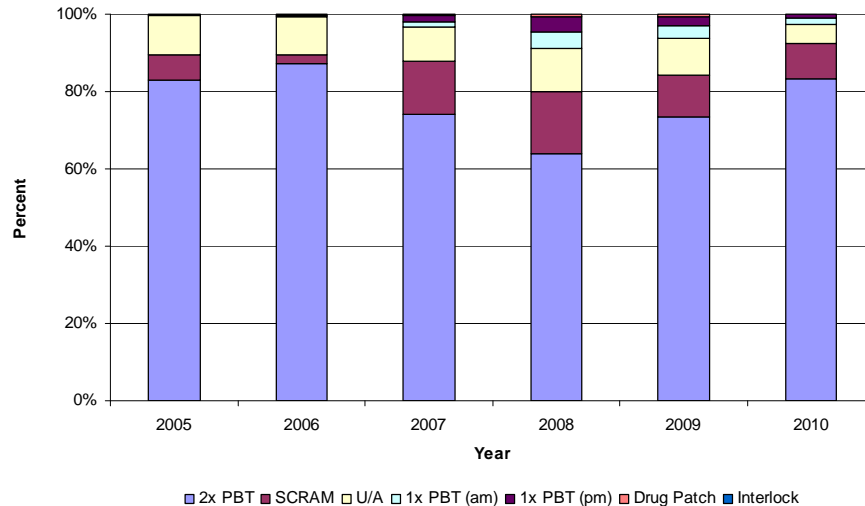
The table and chart below summarize participants by the four types of testing authorized under the 24/7 Sobriety Program. A participant may be placed on one or more test types at the same time. For example, an individual could be required to participate in PBTx2 and be required to submit random urine testing. As documented below, the most common test type is PBTx2.

**Table 3: Number of Test Types Ordered for Participants by Calendar Year of Start Date**

Test Type	2005	2006	2007	2008	2009	2010*
PBTx2	525	1,659	3,565	4,928	4,940	260
% PBTx2	83%	87%	74%	64%	73%	83%
SCRAM	43	43	668	1,234	729	28
% SCRAM	7%	2%	14%	16%	11%	9%
U/A	63	182	422	849	654	16
% U/A	10%	10%	9%	11%	10%	5%
1 x Day PBT (am)	2	11	78	329	208	5
% 1 x Day PBT (am)	0%	1%	2%	4%	3%	2%
1 x Day PBT (pm)	1	4	78	321	161	3
% 1 x Day PBT (pm)	0%	0%	2%	4%	2%	1%
Drug Patch	0	0	8	37	44	0
% Drug Patch	0%	0%	0%	0%	1%	0%
Interlock	0	0	1	1	1	0
% Interlock	0%	0%	0%	0%	0%	0%
<b>Total Test Types Ordered</b>	<b>634</b>	<b>1,899</b>	<b>4,820</b>	<b>7,699</b>	<b>6,737</b>	<b>312</b>

\*Includes the month of January for 2010

**Figure 6: Percent of Test Types Ordered for Participants by Calendar Year of Start Date**



## Evaluation of Findings for DUI Offenders Participating in Twice a Day Breath Testing (PBTx2)

Because maintaining and assuring DUI offender sobriety has been predominately implemented through twice a day PBT testing, the following analyses focus on this core subset of the 24/7 program participants – the DUI Offender participating in PBTx2.

The testing sample to evaluate PBTx2 consists of 4,009 individuals that met the following criteria:

- One test ordered record
- At least one test log record exists in the test log table
- All test log records are PBTx2 tests
- A DUI offense on the 24/7 participant record
- Matched with a corresponding record in the UJS DUI data
- The UJS docket has an arrest date equal to or before the earliest test log record date

Complete documentation and rationale for the selection of the records can be found in the attached Appendix A.

### DUI Level

The table below summarizes the sample of participants by DUI level documented on the 24/7 Database and the corresponding UJS court docket records. Comparisons and analysis used in the remainder of the report utilize the DUI level found on the UJS court docket for consistency. The largest proportion of 24/7 Sobriety Program participants had either a DUI 1<sup>st</sup> (24-31%) or a DUI 2<sup>nd</sup> (40-47%) offense.

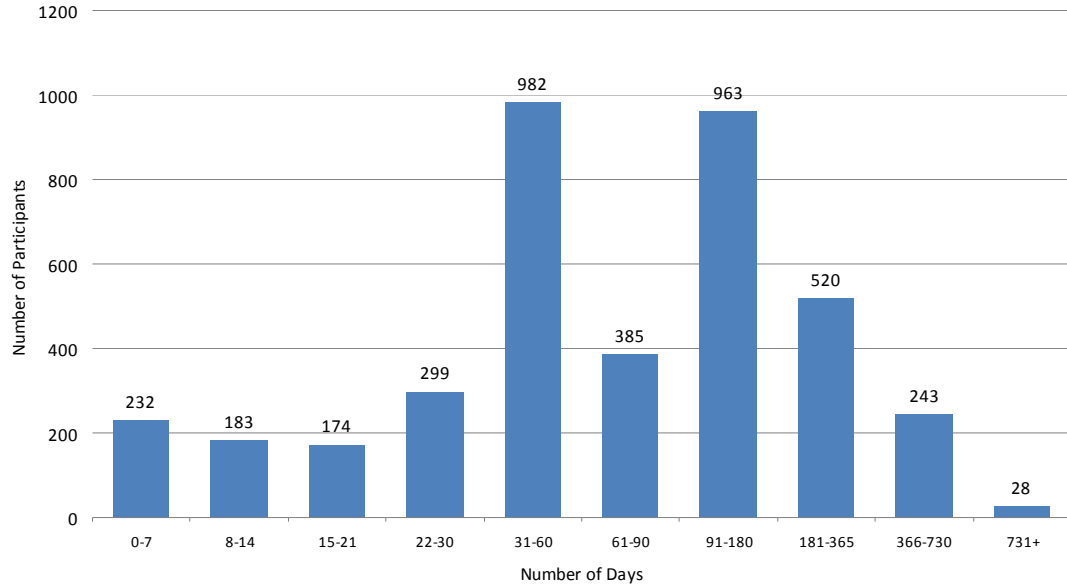
**Table 4: Number of Participants by DUI Level on the 24/7 Sobriety Program Participant Record and the Corresponding UJS Docket**

DUI Level	24/7 Record		UJS Record	
	<u>n</u>	<u>%</u>	<u>n</u>	<u>%</u>
DUI 1	975	24%	1,231	31%
DUI 2	1,897	47%	1,598	40%
DUI 3	854	21%	881	22%
DUI 4	224	6%	231	6%
DUI 5+	59	1%	68	2%
<b>Total</b>	<b>4,009</b>	<b>100%</b>	<b>4,009</b>	<b>100%</b>

## Days of Testing

The following bar graph notes the frequency distribution of the length of time participants in the sample spent on the program calculated from the first test date to the last test date. The largest percentages participated in the program for a period of 31-60 days (n = 982) and 91-180 days (n = 963).

**Figure 7: Number of Days from First Test Date to Last Test Date (n = 4,009)**



**Table 5: Number of Days from First Test Date to last Test Date (n = 4,009)**

First Test Date to Last Test Date	<u>n</u>	<u>%</u>	Cumulative <u>%</u>
0-7 days	232	5.8%	5.8%
8-14 days	183	4.6%	10.4%
15-21 days	174	4.3%	14.7%
22-30 days	299	7.5%	22.2%
31-60 days	982	24.5%	46.6%
61-90 days	385	9.6%	56.2%
91-180 days	963	24.0%	80.3%
181-365 days	520	13.0%	93.2%
366-730 days	243	6.1%	99.3%
731+ days	28	0.7%	100.0%
<b>Total</b>	<b>4,009</b>	<b>100%</b>	

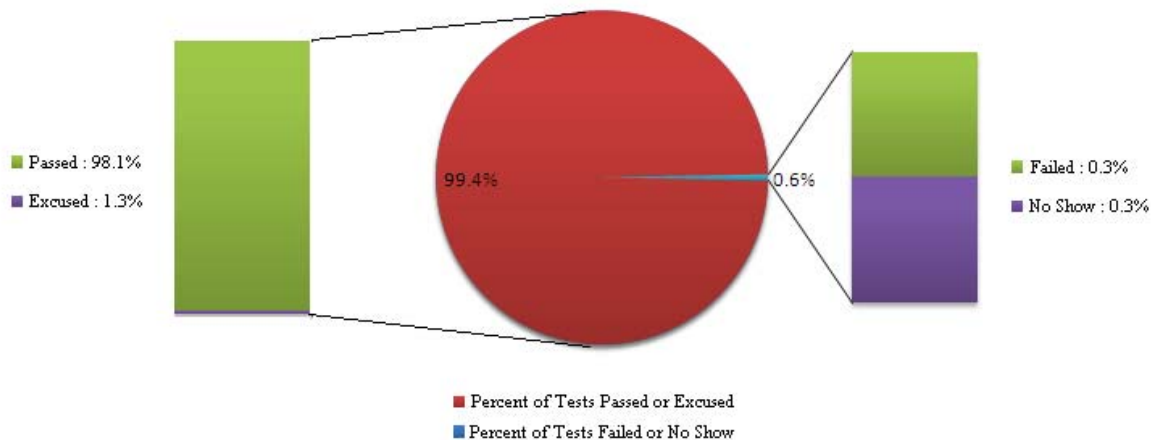
## Test Results

Each PBTx2 test result is recorded in the 24/7 Database as a “passed,” “excused,” “failed” or “no show.” For purpose of this report “Passed” is a test recorded as passed or excused and “Failure” is a test recorded as failed or no show. There are 817,926 test result records for the 4,009 sample program participants for analysis (data cut as of 12/31/2009). 99.4% of the PBTx2 tests were recorded as “Passed.” The table and figure below summarize the results as recorded and the percent in each category.

**Table 6: Summary of 24/7 Database Recording of Test Results (n = 4,009 participants and 817,926 test records)**

Test Result	Possible Reasons and Coding
Passed (99.4% of tests – 812,882 test records)	Showed up and “Passed” test successfully (98.1% of tests – 802,210 test records)
	Participant was “Excused” from showing up and taking test on that occasion (1.3% of tests – 10,672 test records)
Failure (0.6% of tests – 5,044 test records)	Participant Showed up and “Failed” the test (0.3% of test – 2,787 test records)
	Participant did not show up and was noted as a “No Show” (0.3% of tests – 2,257 test records)

**Figure 8: Summary of 24/7 Database Recording of Test Results (n = 4,009 participants and 817,926 test records)**

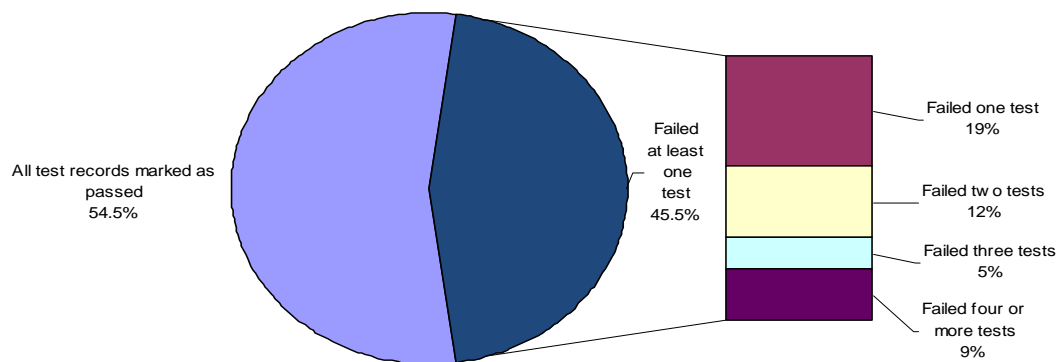


The 802,210 PBTx2 test result records where the participant showed up and passed the test represent approximately 401,000 days in which individuals passed two breath tests a day. Further, of the 4,009 sample, 2,183 participants (54.5%) Passed all of their tests and only 351 participants (8.8%) had more than 3 tests recorded as Failures. These test result records strongly suggest that the 24/7 Sobriety Program is effective in maintaining participant alcohol sobriety while they are on the program. Since there is no data available for the establishment of control groups, comparative or statistical analyses are not possible.

**Table 7: Summary of Number of Participants who have Passed and Failed At Least One Test (n = 4,009 participants)**

Test Result						
Passed (54.5% of the participants have all test records marked as Passed (passed or excused) – 2,183 participants)						
Failure (45.5% of the sample have at least one test record marked as Failure (failed or no show) – 1,826 participants)						
Number of Failures	% of all participants	N	% of 1826	all failed tests	all no show tests	at least one of each
Exactly one failure	19.1%	765	41.9%	505	260	-
Exactly two failures	12.3%	493	27.0%	312	102	79
Exactly three failures	5.4%	217	11.9%	105	30	82
four or more failures	8.8%	351	19.2%	131	84	136

**Figure 9: Summary of Number of Participants who have Passed and Failed At Least One Test (n = 4,009 participants)**



The table 8 below summarizes the number of days a participant was on the program to their first test Failure. Of the participants that failed at least one test (n = 1,826), 30% have their first Failure within the first two weeks of program participation. As shown in Table 9, of the individuals that fail a test, approximately 81% fail 3 or less tests.

**Table 8: Summary of Number of Days to First Failure (n = 1,826 participants)**

<b>Number of Days to First Failure Test</b>	<b><u>N</u></b>	<b><u>%</u></b>	<b>Cumulative <u>%</u></b>
1-7 days	304	16.6%	16.6%
8-14 days	247	13.5%	30.2%
15-21 days	183	10.0%	40.2%
22-30 days	197	10.8%	51.0%
31-60 days	386	21.1%	72.1%
61-90 days	178	9.7%	81.9%
91-120 days	121	6.6%	88.5%
121-180 days	109	6.0%	94.5%
181-365 days	77	4.2%	98.7%
365-700 days	24	1.3%	100.0%
<b>Total</b>	<b>1,826</b>	<b>100%</b>	

**Table 9: Summary of Failures by Participant (n = 1,826 participants)**

<b>Number of Failures</b>	<b><u>n</u></b>	<b><u>%</u></b>	<b>Cumulative <u>%</u></b>
1	765	41.9%	41.90%
2	493	27.0%	68.9%
3	217	11.9%	80.8%
4	134	7.3%	88.1%
5	78	4.3%	92.4%
6	50	2.7%	95.1%
7+	89	4.9%	100.0%
<b>Total</b>	<b>1,826</b>	<b>100%</b>	

## Analysis of DUI Recidivism

While the number of tests taken, passed and failed are important program components to be considered in reviewing the effectiveness of the 24/7 Sobriety Program, an additional measure of success of the program is its effect on DUI recidivism. To measure and assess the 24/7 Sobriety Program's effects on DUI recidivism, the following three quasi-experimental analyses were conducted:

1. Comparison of PBTx2 24/7 Sobriety Program participant recidivism rates to nonprogram participant rates at one, two, and three years and DUI level
2. Survival Analysis of 24/7 Sobriety Program participants to nonprogram participants
3. Survival Analysis of matched comparison of 24/7 Sobriety Program participants to nonprogram participants

In order to accomplish these analyses, the 24/7 Database participant records of the sample are matched with the Unified Judicial System data. This approach provides for comparison of recidivism rates by year and DUI level. In an effort to draw a "true" comparison, a "Case" and "Control" were strictly defined using the following definitions.

A case is defined as follows:

- One test ordered record
- At least one test log record exists in the test log table
- All test log records are 2 x PBT tests
- A DUI offense on the 24/7 participant record
- Matched with a corresponding record in the UJS DUI data
- The UJS docket has an arrest date equal to or before the earliest test log record date

A control is defined as follows:

- \* Did not participate in the 24/7 Sobriety Program – (was not matched to a 24/7 participant record)
- \* South Dakota address

Recidivism is defined as the occurrence of another or future arrest as recorded in the UJS database between 2003 and the data cutoff date of 12/31/2010 (latest UJS data available for analysis).



Findings - Analysis 1: Recidivism rate comparison of 24/7 Sobriety Program Participants who participated in PBTx2 to nonparticipants.

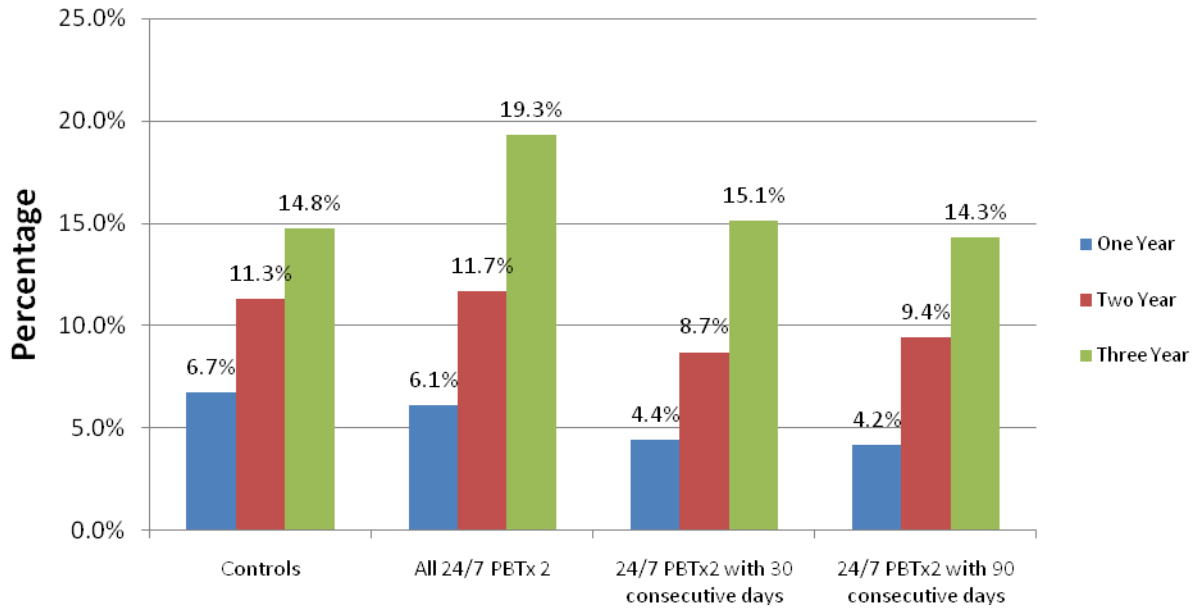
- The comparison analysis is presented on the following three levels
  - Any 24/7 Sobriety Program PBTx2 participation
  - 24/7 Sobriety Program PBTx2 participants with at least 30 days of consecutive testing on the program
  - 24/7 Sobriety Program PBTx2 participants with at least 90 days of consecutive testing on the program
- Recidivism comparisons are made based on arrest to future arrest at 1 year, 2 years, and 3 years
- All control cases fitting the criteria are included.

The 24/7 Database data is drawn from the 4,009 sample described earlier. It should be noted that not all 4,009 participants have had two or three years of time lapse from their qualifying arrest until the 12/31/2010 analysis cut off date.

Figures 10-14 below summarizes the comparison findings by DUI level on the participants qualifying arrest (arrest preceding participation in the 24/7 program). Table 10 provides a complete summary of the data. Substantial reductions in the rate of recidivism between the controls and repeat offender PBTx2 participants are documented when comparing time of arrest to future arrest in 1, 2, and 3 years. Statistically significant lower rates of future offenses were found for DUI 2<sup>nd</sup> and DUI 3<sup>rd</sup> 24/7 Sobriety Program participants when compared to controls at 1, 2 and 3 years (p-value < 0.001). Larger statistically significant differences in recidivism were found for participants with at least 30 consecutive days of testing. For instance, 24/7 Sobriety Program participants with at least 30 consecutive days of testing when compared to controls documented the following differences in future DUI arrest rates after three years of the arrest that resulted in placement in the program:

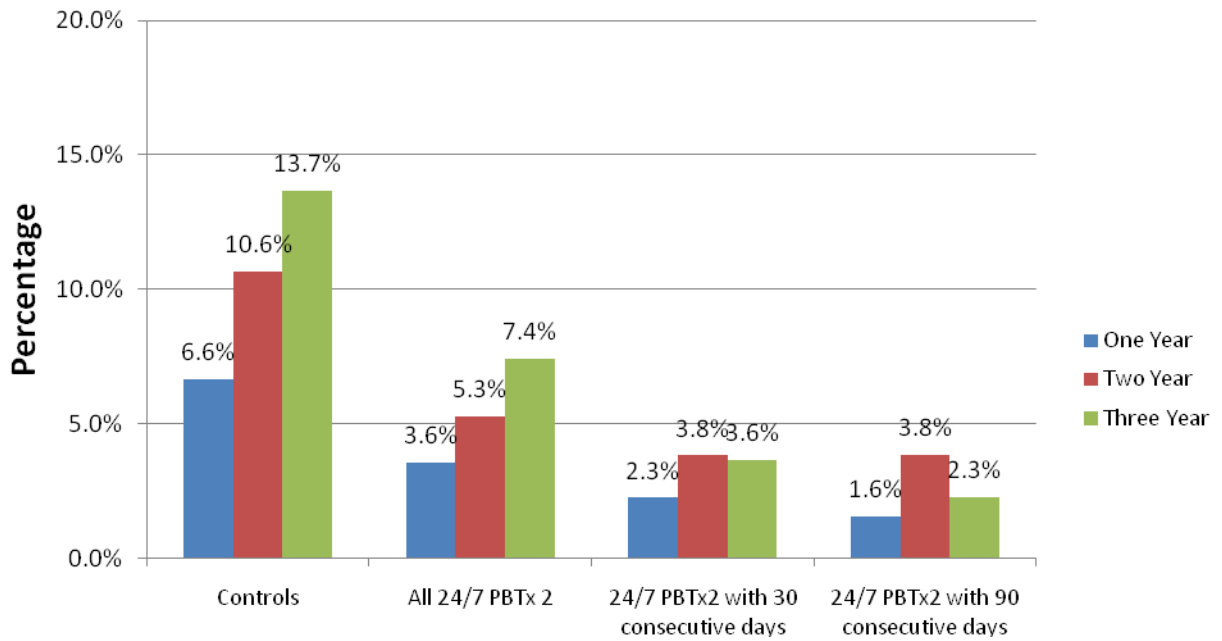
- DUI 2<sup>nd</sup> – 74% reduction in recidivism (13.7% to 3.6%)
- DUI 3<sup>rd</sup>. – 44% reduction in recidivism (15.3% to 8.6%)
- DUI 4th – 31% reduction in recidivism (15.5% to 10.7%)

**Figure 10: 24/7 Program Participants Compared to Controls – DUI 1<sup>st</sup> to next DUI Offense**

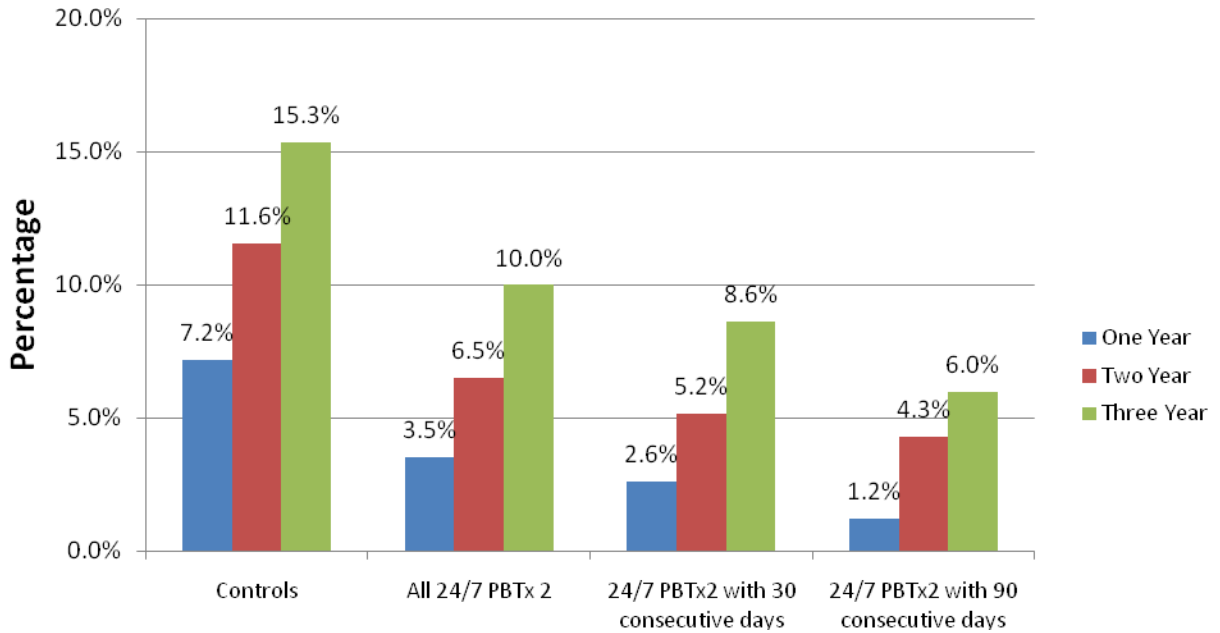


\* Note sample size drops below 50 participants for 90 consecutive days of testing at year 3.

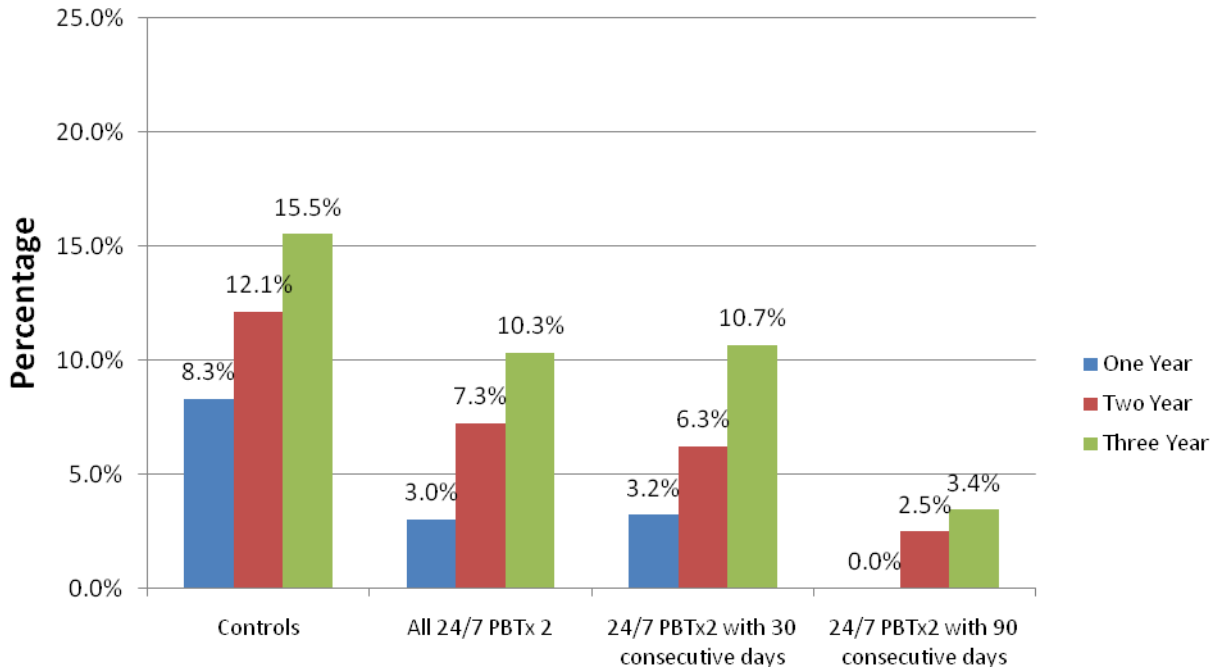
**Figure 11: 24/7 Participants Compared to Controls – DUI 2nd to next DUI Offense**



**Figure 12: 24/7 Participants Compared to Controls – DUI 3rd to next DUI Offense**

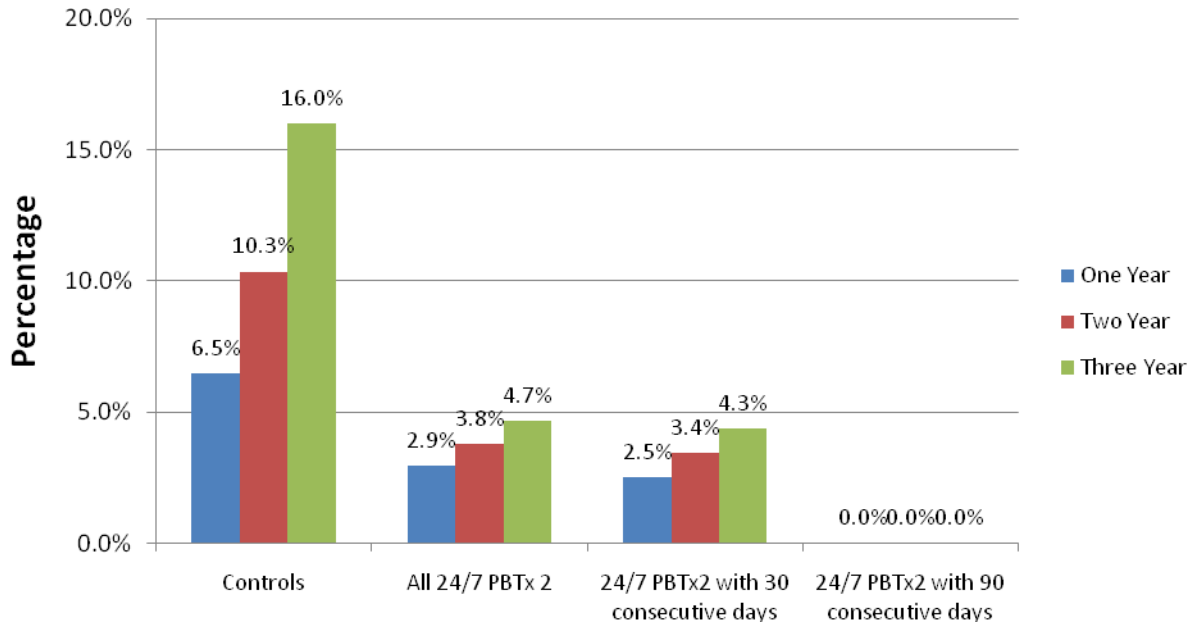


**Figure 13: 24/7 Participants Compared to Controls – DUI 4th to next DUI Offense**



\* Note sample size drops below 50 participants for 90 consecutive days of testing at year 1, 2, and 3.

**Figure 14: 24/7 Participants Compared to Controls – DUI 5th to next DUI Offense**



\* Note sample size drops below or is near 50 for 24/7 participants for all comparisons.

**Table 10: 24/7 Sobriety Program Participants Compared to Controls at One, Two, and Three Years and DUI Level**

One Year	UJS Controls			All PBTx2 Participants				PBTx2 with at least 30 consecutive days of tests				PBTx2 with at least 90 consecutive days of tests			
	DUI Level	n	n recid	% recid	n	n recid	% recid	p-value	n	n recid	% recid	p-value	n	n recid	% recid
1	29,218	1,966	6.7%	1,231	75	6.1%	0.207	704	31	4.4%	0.009	72	3	4.2%	0.264*
2	4,411	293	6.6%	1,598	57	3.6%	0.000	843	19	2.3%	0.000	320	5	1.6%	0.000
3	1,451	104	7.2%	881	31	3.5%	0.000	538	14	2.6%	0.000	243	3	1.2%	0.000
4	469	39	8.3%	231	7	3.0%	0.006	124	4	3.2%	0.040	52	0	0.0%	0.030*
5	31	2	6.5%	68	2	2.9%	0.393*	40	1	2.5%	0.411*	13	0	0.0%	0.443*
<b>Two Years</b>															
DUI Level	n	n recid	% recid	n	n recid	% recid	p-value	n	n recid	% recid	p-value	n	n recid	% recid	p-value
1	25,436	2,875	11.3%	822	96	11.7%	0.610	471	41	8.7%	0.045	53	5	9.4%	0.416
2	4,160	443	10.6%	1,157	61	5.3%	0.000	601	23	3.8%	0.000	235	9	3.8%	0.001
3	1,426	165	11.6%	660	43	6.5%	0.000	407	21	5.2%	0.000	186	8	4.3%	0.002
4	462	56	12.1%	193	14	7.3%	0.045	96	6	6.2%	0.068	40	1	2.5%	0.057*
5	29	3	10.3%	53	2	3.8%	0.240*	29	1	3.4%	0.302*	8	0	0.0%	0.414*
<b>Three Years</b>															
DUI Level	n	n recid	% recid	N	n recid	% recid	p-value	N	n recid	% recid	p-value	n	n recid	% recid	p-value
1	21,564	3,182	14.8%	399	77	19.3%	0.993	205	31	15.1%	0.519	28	4	14.3%	0.500*
2	3,862	528	13.7%	714	53	7.4%	0.000	357	13	3.6%	0.000	131	3	2.3%	0.000
3	1,395	214	15.3%	460	46	10.0%	0.003	267	23	8.6%	0.003	117	7	6.0%	0.004
4	451	70	15.5%	155	16	10.3%	0.071	75	8	10.7%	0.179	29	1	3.4%	0.066*
5	25	4	16.0%	43	2	4.7%	0.126*	23	1	4.3%	0.198*	5	0	0.0%	0.405*

\*chi-squared approximation should be interpreted with caution due to small sample size

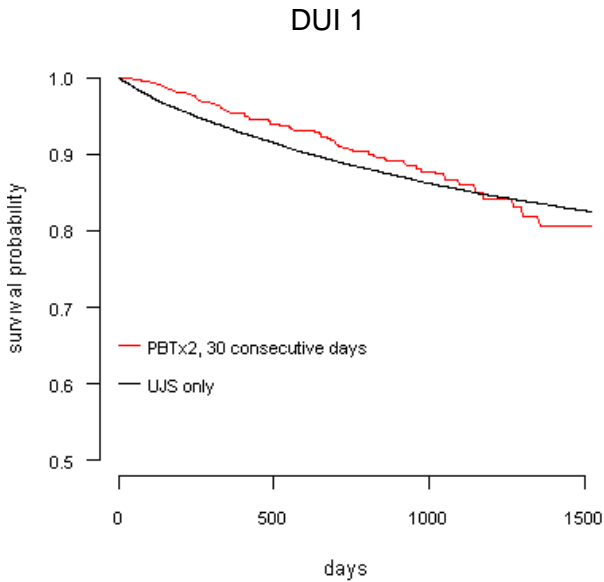
Findings of Analysis 2: Survival Analysis of 24/7 Sobriety Program participants to nonprogram participants by DUI level

The second analysis was undertaken to assess long-term impact of the 24/7 Sobriety Program for individuals who participated in the program. Since "multiple" DUIs or recidivism is a relatively rare event, one approach to examining the recidivism rate is the use of a Survival Function. This analysis compares individuals by the length of time they "survive." Here the survival analysis compares the length of time from the qualifying DUI arrest to future DUI arrests for 24/7 Sobriety Program participants and nonprogram participants by DUI level.

The Kaplan-Meier estimated survival curves in Figure 15 illustrate that 24/7 Sobriety Program participants who participate in the program for at least 30 consecutive days have less future offenses compared to controls. Statistically significant lower rates of future offenses were found for DUI 2<sup>nd</sup> 24/7 Sobriety Program participants with at least 30 consecutive days (p-value < 0.001, df=1) and for DUI 3<sup>rd</sup> 24/7 Sobriety Program participants with at least 30 consecutive days (p-value = 0.020, df=1). Greater reductions were found for participants with at least 90 consecutive days of testing. The survival curves in Figure 15 support the findings discussed previously (see Analysis 1) in which 24/7 Sobriety Program participants have lower rates of recidivism when participating in the program for at least 30 consecutive days.

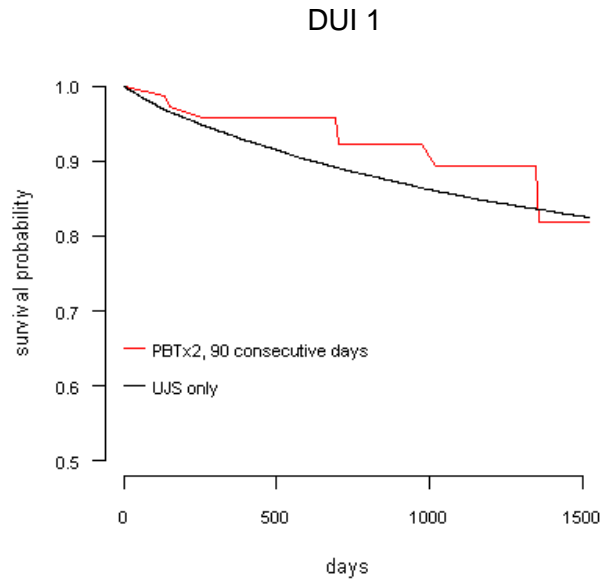
**Figure 15: Survival Function Probability Curves for 24/7 Participants Compared to UJS Controls**

**PBTx2 with at least 30 consecutive days of tests  
Compared to UJS Controls**



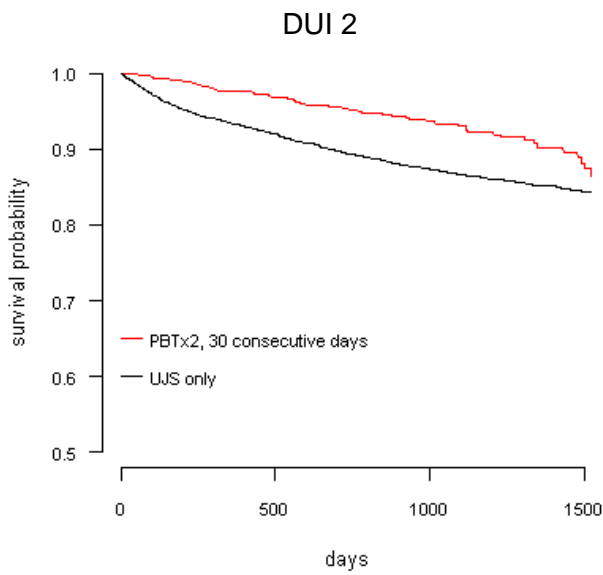
PBTx2, at least 30 consecutive days to UJS controls  
log-rank p-value = 0.299

**PBTx2 with at least 90 consecutive days of tests  
Compared to UJS Controls**



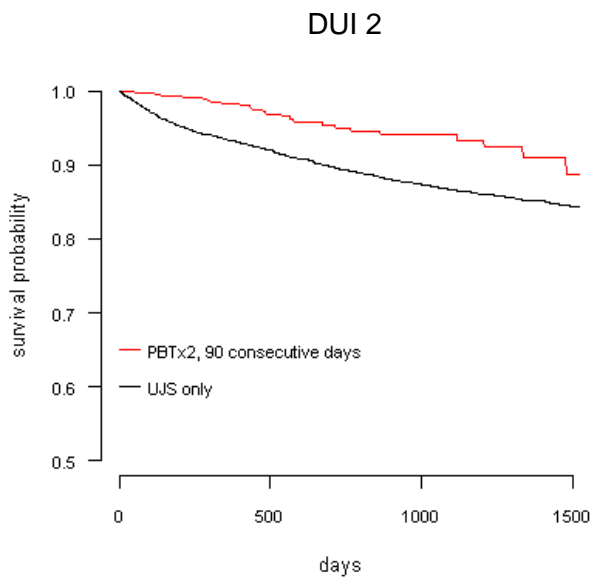
PBTx2, at least 90 consecutive days to UJS controls  
log-rank p-value = 0.493

**PBTx2 with at least 30 consecutive days of tests  
Compared to UJS Controls**



PB PBTx2, at least 30 consecutive days to UJS controls  
log-rank p-value < 0.001

**PBTx2 with at least 90 consecutive days of tests  
Compared to UJS Controls**



PBTx2, at least 90 consecutive days to UJS controls  
log-rank p-value = 0.002

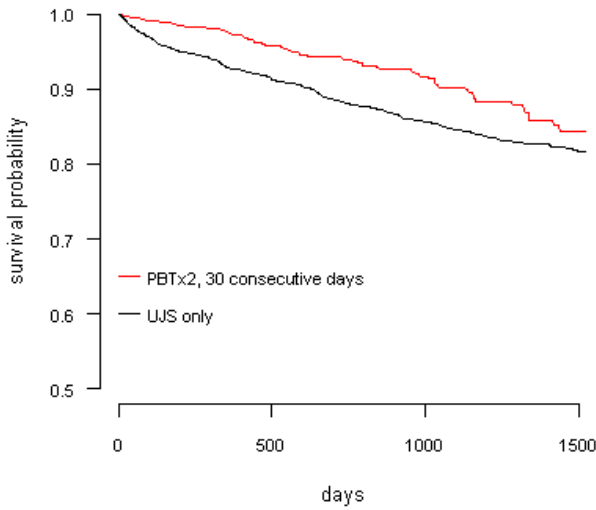
Time is arrest date to future arrest date

\* After 3 years (1,095 days) estimates should be interpreted with caution due to small sample size.

**Figure 15: Survival Function Probability Curves for 24/7 Participants Compared to UJS Controls (continued)**

**PBTx2 with at least 30 consecutive days of tests Compared to UJS Controls**

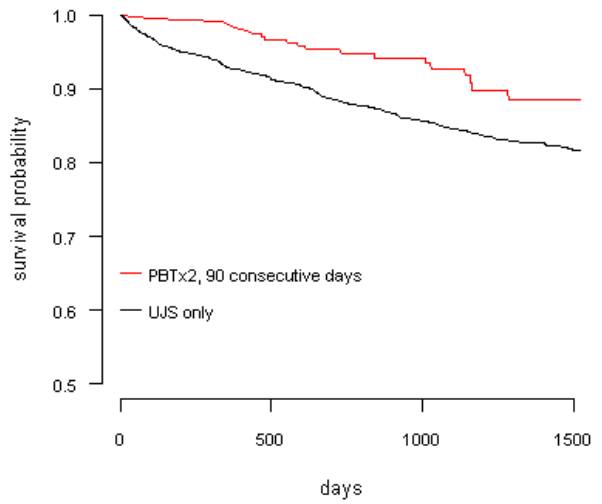
**DUI 3**



PB PBTx2, at least 30 consecutive days to UJS controls  
log-rank p-value = 0.020

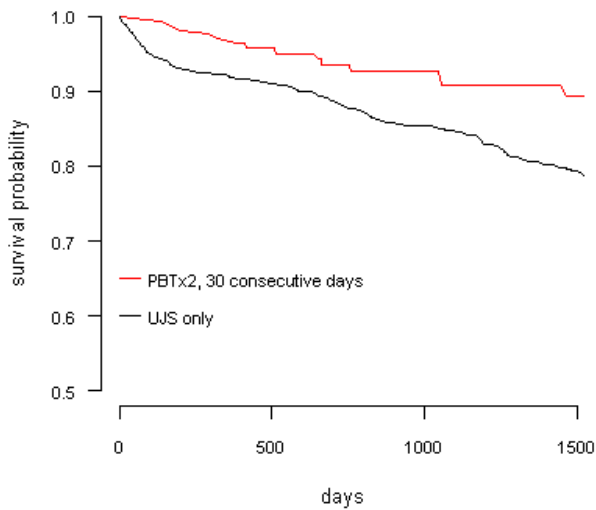
**PBTx2 with at least 90 consecutive days of tests Compared to UJS Controls**

**DUI 3**



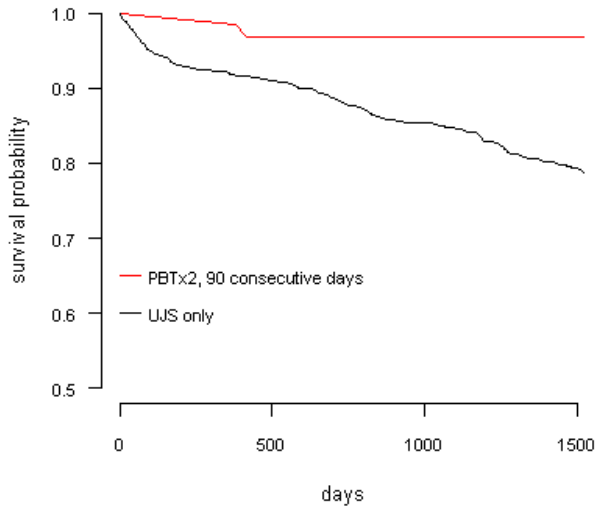
PBTx2, at least 90 consecutive days to UJS controls  
log-rank p-value = 0.004

**DUI 4 & 5**



PBTx2, at least 30 consecutive days to UJS controls  
log-rank p-value = 0.060

**DUI 4 & 5**



PBTx2, at least 90 consecutive days to UJS controls  
log-rank p-value = 0.023

Time is arrest date to future arrest date

\* After 3 years (1,095 days) estimates should be interpreted with caution due to small sample size.



Findings Analysis 3: Survival Analysis of matched comparison of 24/7 Sobriety Program Participants to nonprogram participants

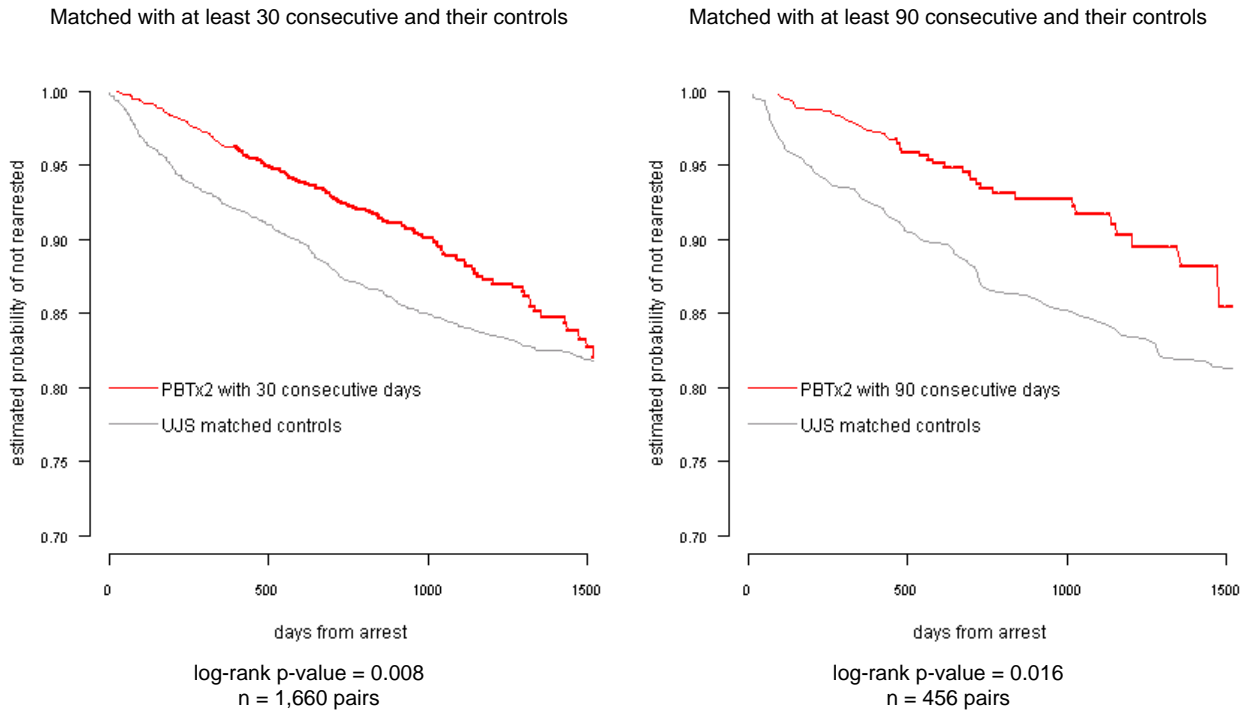
To expand upon and increase the rigor of the analysis, a matched comparison analysis for 24/7 Sobriety Program participants to UJS controls was conducted. 24/7 Sobriety Program participants were randomly matched to controls from the UJS data based on the following criteria:

- 24/7 Sobriety Program Participants records were matched with nonprogram participants who were arrested in 2003, 2004, or 2005 and who did not participate in the 24/7 Sobriety Program for the DUI offense on the docket.
- 24/7 Sobriety Program participants were matched with the controls on:
  - DUI level on UJS arrest record
  - Circuit on UJS arrest record
  - Gender
  - Age group (18-20, 21-29, 30-39, 40-49, 50-59, 60+)
  - Month of Arrest date

Matched controls were identified for 1,660 participants with at least 30 consecutive days tests of the 4,009 24/7 Sobriety Program Participants described previously in this report. Of the 1,660, 456 participants with at least 90 consecutive days of tests were matched with controls.

Figure 16 provides the Kaplan-Meier estimated survival curves for the comparison of the 24/7 Sobriety Program participants compared with matched controls. Figure 16 illustrates that 24/7 Sobriety Program participants with at least 30 consecutive days of tests have statistically significant lower rates of future offenses compared to their matched controls (p-value = 0.008).

**Figure 16: Survival Function Probability Curves for 24/7 Sobriety Program Participants Matched to Controls with at least One year of Exposure**



**Table 11: Percent Survive for 24/7 Sobriety Program Participants Matched to Controls with at least One year of Exposure (n = 2,962) by Year**

	At Least 30 consecutive days of testing	UJS Matched Controls
Time	% Not Recid	% Not Recid
0 days	100.0%	100.0%
365 days	96.3%	92.3%
730 days	92.4%	87.4%
1,095 days	88.5%	84.2%

	At Least 90 consecutive days of testing	UJS Matched Controls
Time	% Not Recid	% Not Recid
0 days	100.0%	100.0%
365 days	97.6%	92.8%
730 days	93.4%	87.1%
1,095 days	91.7%	84.6%

## Conclusion

Long-term effects of the 24/7 Sobriety Program upon DUI offense recidivism will remain under study. Although additional data is needed, the initial findings demonstrate that the program is very successful in addressing DUI offender sobriety while individuals are on the program. Initial findings also demonstrate that 24/7 Sobriety Program PBTx2 participants have lower recidivism rates when compared to individuals who do not participate in the 24/7 Sobriety Program. For repeat offenders, even minimal days of participation in the 24/7 Sobriety Program positively impact recidivism rates and individuals with at least 30 days of program participation demonstrate a greater reduction in recidivism. These reductions in recidivism far exceed the rates reported in the literature for traditional approaches to DUI offenders, including education and sanctions. Initial findings also demonstrate that unlike traditional use of alcohol ignition interlock devices, the 24/7 Sobriety Program has a sustained effect on recidivism rates. This author, along with the South Dakota Attorney General and the South Dakota Department of Public Safety, will continue to monitor the longitudinal recidivism data of the 24/7 Sobriety Program in order to fully understand the nature and magnitude of sustained program effects for program participants.

The 24/7 Sobriety Program provides judges, parole officers and court service personnel with a useful tool to utilize when dealing with individuals whose root cause of criminal behavior is alcohol. PBTx2 allows the participant's alcohol consumption to be monitored on a daily basis, permitting the participant to remain in the community, yet authorizes swift action in response to a failed test or failure to show up for testing. The 24/7 Sobriety Program, like other sanctions and DUI amelioration efforts, does not provide a guarantee that individuals will remain sober and not drink and drive.

Appendix A: Documentation and Participant Record Counts of Selection Methodology for  
2 x Day PBT participants and DUI Offense

17,898 participant ids  
13,783 clusters or unique records based on matching routine with UJS DUI arrest and conviction data

13,600 have at least one tests\_ordered record  
8,662 have exactly one tests\_ordered record  
4,938 have more than one test\_ordered record  
183 have no tests\_ordered records

Of the 8,662 with exactly one tests\_ordered record  
8,005 have at least one test\_log record  
657 have no test\_log records

Of the 8,005 with exactly one tests\_ordered record, and  
at least one test\_log record  
7,493 PBTx2  
242 U/A  
80 SCRAM  
80 PBT AM  
66 PBT PM  
44 Patch  
0 Interlock

Of the 7,493 with exactly one tests\_ordered record, and  
at least one test\_log record, and  
PBTx2  
4,511 have a DUI offense on the 24/7 participant record  
1,066 DUI 1st  
2,162 DUI 2nd  
959 DUI 3rd  
254 DUI 4th  
67 DUI 5<sup>th</sup> or above  
2,982 have other offenses on the 24/7 participant record

Of the 4,511 with exactly one tests\_ordered record, and  
at least one test\_log record, and  
PBTx2, and  
have a DUI offense on the 24/7 participant record  
4,043 have been matched to a UJS ID in the UJS dataset

Of the 4,043 with exactly one tests\_ordered record, and  
at least one test\_log record, and  
PBTx2, and  
have a DUI offense on the 24/7 participant record, and  
have been matched to a UJS ID in the UJS dataset  
4,009 have a docket with arrest date equal to or before the  
earliest test\_log record date

APPENDIX B  
SUPPORTING DATA TABLES

**Table B1: Number of Participant Records by Offense and Calendar Year of Start Date**

<b>Offense</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010*</b>	<b>Total</b>
DUI 2 <sup>nd</sup>	138	632	1,276	1,205	1,321	65	4,637
DUI 3 <sup>rd</sup>	110	455	799	892	800	50	3,106
DUI 1 <sup>st</sup>	43	80	604	1,211	754	41	2,733
Other	144	241	396	372	443	34	1,630
DUI 4 <sup>th</sup>	45	113	228	226	191	10	813
Assault - Simple/Domestic	0	35	78	140	243	16	512
Possession of Controlled Substance	11	41	57	165	147	7	428
Parole	5	4	70	155	179	2	415
Assault - Simple	4	47	98	119	128	11	407
Abuse and Neglect	0	2	19	229	100	3	353
Probation Violation	9	25	68	117	88	6	313
Assault - Aggravated	9	32	48	93	65	5	252
Parole Violation	2	6	56	78	91	7	240
Probation	2	3	22	68	83	4	182
Domestic Violence	4	18	27	60	62	3	174
Work Permit	0	0	14	83	47	1	145
DUI 5th and above	5	20	33	36	43	4	141
Possession	2	4	18	56	43	3	126
Grand Theft	3	5	24	43	35	1	111
Disorderly Conduct	3	3	9	39	46	3	103
Assault	0	4	21	23	40	1	89
Possession of Illegal Substance	1	15	17	29	24	1	87
Burglary 3rd Degree	1	7	15	25	29	2	79
Forgery	6	5	11	23	25	1	71
Burglary 1st Degree	3	6	17	15	25	0	66
Non Support of a Child	0	3	18	27	15	0	63
Assault - Aggravated/Domestic	0	2	6	24	24	1	57
Parole Detainer	4	6	10	8	10	1	39
Burglary 2nd Degree	0	1	0	22	13	1	37
Bond Violation	0	1	7	13	14	0	35
Escape	0	4	9	8	12	0	33
Ingesting	0	0	1	14	16	1	32
Intentional Damage	1	2	5	9	13	0	30
Probation Detainer	3	4	5	10	7	0	29
Resisting Arrest	0	3	5	6	12	2	28
Reckless Driving	0	1	4	11	9	0	25
Vehicular Battery	0	4	3	8	10	0	25
Ingestion	0	3	7	7	7	0	24
Petty Theft	0	3	2	5	10	0	20

Table continued on following page

**Table B1: Number of Participant Records by Offense and Calendar Year of Start Date (Continued)**

<b>Offense</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010*</b>	<b>Total</b>
Vandalism	0	1	2	7	10	0	20
Hit and Run	0	2	2	5	9	0	18
Child Abuse	0	2	6	3	4	0	15
Child Neglect	0	0	2	7	5	1	15
Assault - Sexual	0	1	0	7	6	0	14
Burglary 4th Degree	0	0	4	6	4	0	14
Grand Theft - Auto	0	0	1	6	5	1	13
Assault - Felony	0	1	1	5	5	0	12
Violation of a Protection Order	0	1	2	4	4	0	11
Possession of Stolen Property	0	1	4	0	5	0	10
Driving Suspended	0	0	1	4	3	1	9
Rape 1st Degree	3	4	1	0	1	0	9
Rape 3rd Degree	0	0	2	3	2	0	7
Vehicular Homicide	1	0	1	3	2	0	7
Rape 2nd Degree	0	1	0	2	2	0	5
Rape 4th Degree	0	0	0	0	4	1	5

\*Data for 2010 includes only the month of January 2010.

**Table B2: Number of Participant Records by County, UJS Circuit 1 and Calendar Year of Start Date**

Circuit	County	2005	2006	2007	2008	2009	2010*	Total
Circuit 1	Yankton	2	63	171	244	237	8	725
	Davison	0	0	78	209	218	11	516
	Charles Mix	0	2	73	156	160	12	403
	Clay	0	9	33	39	35	2	118
	Turner	0	0	20	34	38	5	97
	Union	0	1	16	42	35	1	95
	Brule	0	0	0	18	45	1	64
	Bon Homme	0	0	3	8	11	0	22
	Douglas	0	0	0	11	7	0	18
	McCook	0	0	1	4	12	1	18
	Hutchinson	0	0	2	6	5	1	14
	Aurora	0	0	4	2	4	0	10
	Hanson	0	0	0	2	1	2	5
	Buffalo	0	0	0	1	3	0	4
	<b>Circuit 1 Total</b>		<b>2</b>	<b>75</b>	<b>401</b>	<b>776</b>	<b>811</b>	<b>44</b>

**Table B3: Number of Participant Records by County, UJS Circuit 2 and Calendar Year of Start Date**

Circuit	County	2005	2006	2007	2008	2009	2010*	Total
Circuit 2	Minnehaha	242	570	832	974	1,147	76	3,841
	Lincoln	0	4	11	126	191	13	345
<b>Circuit 2 Total</b>		<b>242</b>	<b>574</b>	<b>843</b>	<b>1,100</b>	<b>1,338</b>	<b>89</b>	<b>4,186</b>



**Table B4: Number of Participant Records by County, UJS Circuit 3 and Calendar Year of Start Date**

Circuit	County	2005	2006	2007	2008	2009	2010*	Total
Circuit 3	Codington	0	0	105	194	213	14	526
	Brookings	0	36	140	167	112	13	468
	Beadle	0	0	99	104	85	10	298
	Lake	0	2	34	47	40	5	128
	Moody	0	0	12	35	38	0	85
	Grant	0	0	10	28	13	0	51
	Hand	0	0	0	6	17	0	23
	Kingsbury	0	0	0	6	16	0	22
	Deuel	0	0	2	9	8	0	19
	Miner	0	0	0	7	12	0	19
	Clark	0	0	2	8	7	0	17
	Sanborn	0	0	2	3	6	0	11
	Hamlin	0	0	1	0	7	0	8
	Jerauld	0	0	0	3	0	0	3
<b>Circuit 3 Total</b>		<b>0</b>	<b>38</b>	<b>407</b>	<b>617</b>	<b>574</b>	<b>42</b>	<b>1,678</b>

**Table B5: Number of Participant Records by County, UJS Circuit 4 and Calendar Year of Start Date**

Circuit	County	2005	2006	2007	2008	2009	2010*	Total
Circuit 4	Meade	2	6	35	47	51	8	149
	Butte	0	0	6	34	29	3	72
	Lawrence	1	1	1	7	9	0	19
	Corson	1	2	3	2	2	0	10
	Dewey	2	0	4	2	1	0	9
	Ziebach	0	0	0	3	2	0	5
	Perkins	0	0	1	2	1	0	4
	Harding	0	0	0	0	0	0	0
<b>Circuit 4 Total</b>		<b>6</b>	<b>9</b>	<b>50</b>	<b>97</b>	<b>95</b>	<b>11</b>	<b>268</b>

**Table B6: Number of Participant Records by County, UJS Circuit 5 and Calendar Year of Start Date**

Circuit	County	2005	2006	2007	2008	2009	2010*	Total
Circuit 5	Brown	116	231	413	398	335	22	1,515
	Roberts	0	2	76	120	115	2	315
	Walworth	0	20	62	52	54	3	191
	Spink	1	18	25	30	37	2	113
	Day	0	0	1	12	21	1	35
	Edmunds	0	0	2	2	15	1	20
	Marshall	0	0	1	2	13	0	16
	Faulk	0	0	1	3	5	0	9
	Campbell	0	0	0	2	1	0	3
	McPherson	0	0	1	2	0	0	3
<b>Circuit 5 Total</b>		<b>117</b>	<b>271</b>	<b>582</b>	<b>623</b>	<b>596</b>	<b>31</b>	<b>2,220</b>

**Table B7: Number of Participant Records by County, UJS Circuit 6 and Calendar Year of Start Date**

Circuit	County	2005	2006	2007	2008	2009	2010*	Total
Circuit 6	Hughes	1	127	132	180	245	10	695
	Tripp	44	45	104	70	59	1	323
	Bennett	7	63	40	74	99	3	286
	Mellette	1	82	30	20	2	0	135
	Stanley	0	22	31	38	28	1	120
	Gregory	0	0	2	5	48	3	58
	Lyman	0	0	1	5	12	1	19
	Jackson	0	0	1	4	8	0	13
	Hyde	0	0	2	5	4	0	11
	Todd	2	0	1	3	0	0	6
	Haakon	0	0	0	2	2	0	4
	Potter	0	0	0	2	1	0	3
	Sully	0	0	0	1	1	0	2
	Jones	0	0	0	0	0	0	0
<b>Circuit 6 Total</b>		<b>55</b>	<b>339</b>	<b>344</b>	<b>409</b>	<b>509</b>	<b>19</b>	<b>1,675</b>

**Table B8: Number of Participant Records by County, UJS Circuit 7 and Calendar Year of Start Date**

Circuit	County	2005	2006	2007	2008	2009	2010*	Total
Circuit 7	Pennington	139	535	1,080	1,419	1,115	45	4,333
	Fall River	0	1	10	77	91	7	186
	Custer	0	2	25	36	26	1	90
	Shannon	1	1	1	1	4	0	8
<b>Circuit 7 Total</b>		140	539	1,116	1,533	1,236	53	4,617

**Table B9: Number of Participant Records by County, UJS Circuit Unknown and Calendar Year of Start Date**

Circuit	County	2005	2006	2007	2008	2009	2010*	Total
Unknown	Unknown	0	9	393	581	136	2	1,121

\*Data for 2010 includes only the month of January 2010.

## References

1. National Highway Traffic Safety Administration. (Internet). 2010 August 31. Traffic Safety Annual Assessment-Alcohol Impaired Driving Fatalities. 2008, Retrieved from: <http://www-nrd.nhtsa.dot.gov/Pubs/811016.PDF>.
2. National Highway Traffic Safety Administration. (Internet). 2006 April 19. Traffic safety facts – Repeat intoxicated drivers laws. (Fact sheet). 2004. Retrieved from [www.nhtsa.dot.gov/people/injury/new-fact-sheet03/RepeatIntoxicated.pdf](http://www.nhtsa.dot.gov/people/injury/new-fact-sheet03/RepeatIntoxicated.pdf)
3. South Dakota Unified Judicial System. (Internet). 2010 Annual Report. Criminal Caseload FY2009. Retrieved from <http://www.sdjudicial.com/courtinfo/annualreport.aspx#2009> .
4. Wells-Parker E, Bangert-Drowns R, McMillen R, Williams M. Final results from a meta-analysis of remedial interventions with drink/drive offenders. *Addiction*; 1995. P. 907-926.
5. DeYoung DJ. An evaluation of the effectiveness of alcohol treatment, driver license actions and jail terms in reducing drunk driving recidivism in California. *Addiction*; 1997. P. 989-997.
6. Cavaiola AA, Strohmets DB, Abreo S. Characteristics of DUI recidivists: A 12-year follow-up study of first time DUI offenders. *Addictive Behaviors*; 2004. P. 855-861.
7. Dill PL, Wells-Parker E. Court-Mandated Treatment for Convicted Drinking Drivers. *Alcohol Research & Health*; 2006. P. 41-48.
8. Coben JH, Larkin GH. Effectiveness of ignition interlock devices in reducing drunk driving recidivism. *American Journal of Preventive Medicine*; 1999. P. 81-87.

## Statistical Procedure References

Lee ET. *Statistical Methods for Survival Data Analysis*. New York, NY. John Wiley & Sons; 1992.

R Development Core Team. *A language and environment for statistical computing*. Foundation for Statistical Computing, Vienna Austria, ISBN 3-900051-07-0, Retrieved from <http://www.R-project.org>; 2009

Gerds TA. *Prodlim: Product Limit Estimation*. R package version 1.1.3. Retrieved from <http://222.CRAN.R-project.org/package=prodlim>; 2010.

Therneau T, Lumley T. *Survival analysis, including penalized Likelihood*, Version 2.35-8. Retrieved from <http://www.CRAN.R-project.org/package=survival>; 2009