MICHIGAN DWI/SOBRIETY COURT IGNITION INTERLOCK EVALUATION

2015 REPORT

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INTRODUCTION & BACKGROUND

Purpose of the Report

This report was commissioned by the Michigan Association of Treatment Court Professionals (MATCP) in cooperation with the State Court Administrative Office (SCAO). Its purpose is to provide the legislature, the Secretary of State, and the Michigan Supreme Court documentation related to program participants' compliance with court ordered conditions, their progress through the DWI/Sobriety Court program, and the outcome(s) of being placed on ignition interlock restrictions. This document is the fourth annual report: it provides the reader with an overview of issues pertaining to ignition interlock programs in Michigan for the period 2011-2014. It also summarizes the study design, provides a description of the data, analyzes the operation and effectiveness of the DWI/Sobriety Court ignition interlock program, and discusses data validation, innovative practices, obstacles, and lessons learned from the four year study.

Use and Audience

This report is directed toward legislators, court administrators and other criminal justice practitioners who are interested in the use of ignition interlock devices within DWI/Sobriety Court as a means of controlling and reducing drunk driving recidivism in the state of Michigan. Section 1 provides the reader with supplemental information regarding the use of interlocks to monitor and control offenders beyond the issues discussed in the 2012 - 2014 reports. Following this review, Sections 2 and 3 provide the methods and findings of the 2015 Ignition Interlock Program in Michigan. Finally, Section 4 provides the reader with general conclusions, and a summary of the first four years of the program.

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EXECUTIVE SUMMARY

Overview

This report was commissioned by the Michigan Association of Treatment Court Professionals (MATCP) in cooperation with the State Court Administrative Office (SCAO). Its purpose is to provide the state legislature, the Secretary of State, and the Michigan Supreme Court documentation related to the operation of Michigan's DWI/Sobriety Court Ignition Interlock Program. This section represents a summary overview of the findings from the 2015 report.

The Present Study

The primary goal of the 2015 evaluation is to determine whether ignition interlock devices are an effective means to control drunk driving recidivism among chronic DWI offenders when incorporated into a DWI/Sobriety Court program. The present analysis is focused on several research objectives set forth in the original enabling legislation. They include the following:

a) The percentage of program participants ordered to place interlock devices on their vehicles who complied with the order;
b) The percentage of program participants who removed court-ordered interlocks from their vehicle without court approval;
c) The percentage of program participants who consumed alcohol or controlled substances;
d) The percentage of program participants found to have tampered with court-ordered interlocks;
e) The percentage of program participants convicted of a new offense under section 625(1) or (3) of the Michigan vehicle code, 1949 PA 300, MCL, 257.625 (i.e. convicted of a new driving under the influence offense).

The present analysis compares subjects enrolled in the Ignition Interlock Program (the experimental group, total n=656) to a DWI/Sobriety Court comparison sample drawn prior to the creation of the pilot program, and thus not under interlock restriction (Non-interlock comparison group, total n=508), and to a sample of standard probationers drawn from across the state of Michigan (Standard probationer comparison group, total n=585). The data were obtained through the Michigan Drug Court Case Management Information System (DCCMIS) and the Michigan Judicial Data Warehouse (JDW).

This research is based on data drawn from five purposefully selected partner courts that are representative of the state of Michigan in the context of: 1) region; 2) level of urbanization; and, 3) population. They include the:

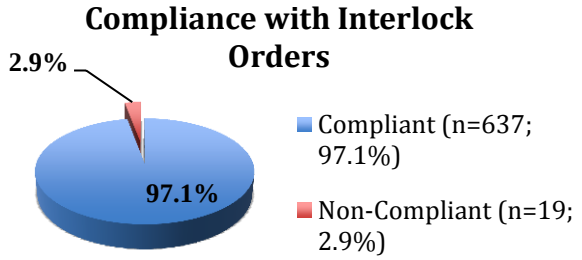
- 8th District Court (Kalamazoo; Kalamazoo County)
- 51st District Court (Waterford; Oakland County)
- 61st District Court (Grand Rapids; Kent County)
- 86th District Court (Traverse City; Grand Traverse County)
- 96th District Court (Marquette; Marquette County)

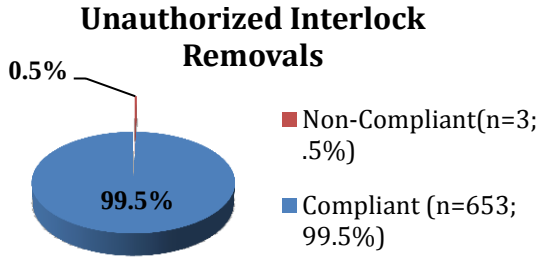
Key Findings

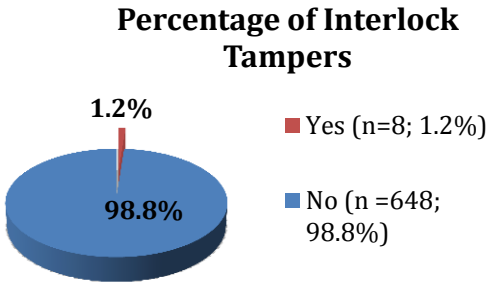
Based on analysis of data from the first four years of this project, the ignition interlock program is exhibiting significant success; it appears that ignition interlocks used in conjunction with DWI/Sobriety Courts are a promising method of reducing DWI recidivism among repeat drunk drivers in the state of Michigan. Specifically for the period 2011-2014:

- An estimated 97.1% of interlock program participants ordered to install interlock devices on their vehicles complied with those orders;
- Approximately 0.5% of pilot program subjects removed the interlock devices without authorization;
- Approximately 1.2% of the Interlock Program Participants tampered with a court ordered interlock.

This information is graphically represented below:



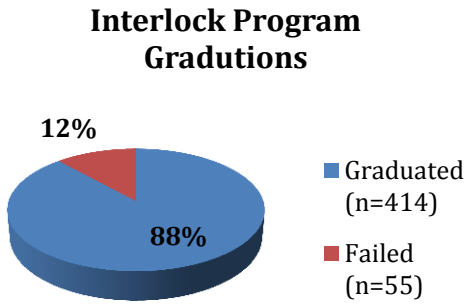


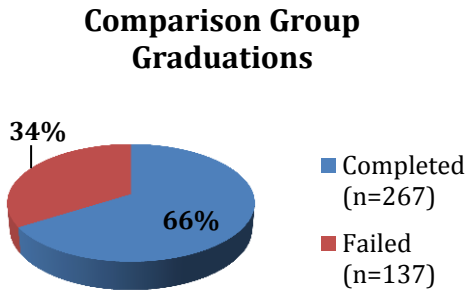


Key additional findings include:

- Alcohol and drug use among Interlock Program Participants is substantially lower in comparison to similar DWI/Sobriety Court offenders not under interlock supervision;
- Ignition interlock clients were more likely to improve their levels of education between the start and the completion of their programs. They also received significantly higher numbers of incentives/rewards from the courts, attended more 12-step meetings, were drug tested more often (but were less likely to test positive), spent less time in jail, had fewer warrants issued against them, had fewer treatment contact hours, and experienced a higher number of overall sobriety days.

- The "typical" Interlock Program Participant is Caucasian, male, single and is approximately 34 years old. The demographic characteristics of the Non-Interlock Group are similar to those of the pilot program subjects.
- In comparison to the Interlock Program group, Non-Interlock comparison subjects are less likely to have full time employment and report lower levels of education. They are also less likely to have received previous treatment for substance abuse issues and have somewhat more "complex" drug abuse histories.
- With respect to overall program success in the Interlock Program group, 414 clients successfully graduated from DWI/Sobriety Court by the end of 2014: 55 failed (a failure rate of 11.7%). By way of contrast, in the DWI/Sobriety Court comparison group (absent of ignition interlocks), 137 out of 404 clients did not successfully complete their programs (a failure rate of 33.9%).



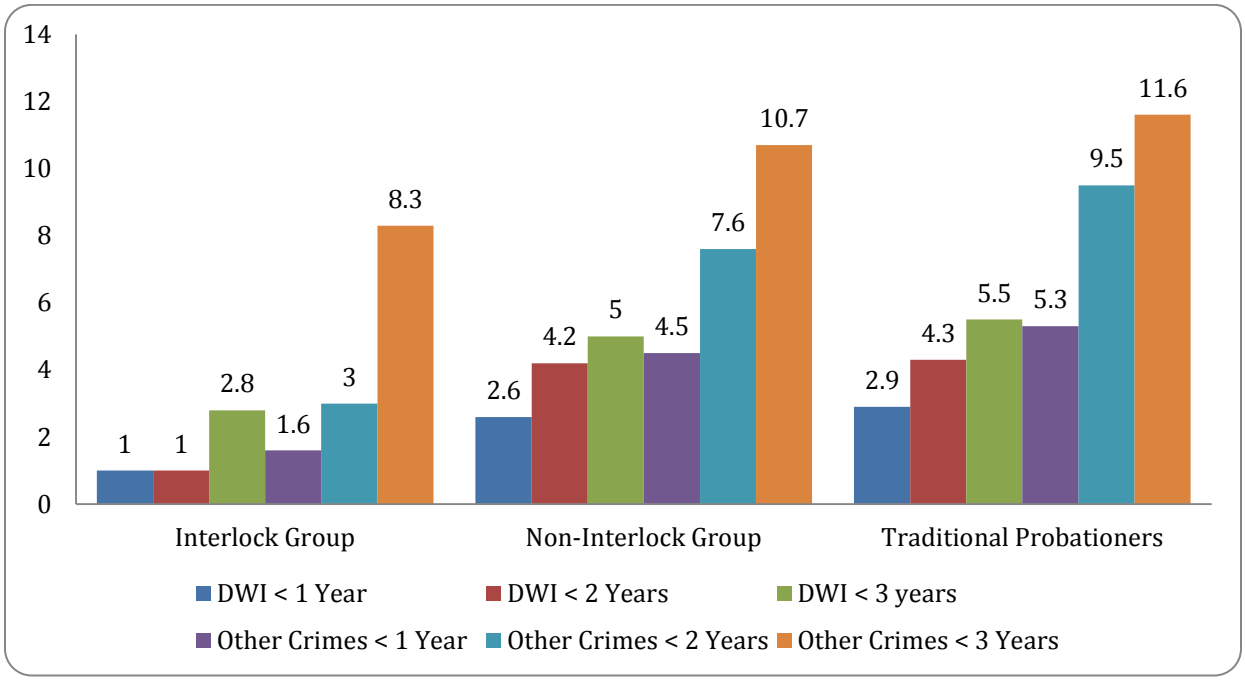


- Multivariate analysis controlling for demographic and background characteristics of offenders validated that offenders not under interlock supervision have over 3x greater odds of "failing out" of DWI/Sobriety Court than offenders who are in the interlock program.

With respect to recidivism, this 2015 study found that:

- Interlock Program Participants have the lowest recidivism rates for operating under the influence of alcohol one, two and three years after the initial conviction for a repeat DWI charge in comparison to the non-interlock offenders in DWI/Sobriety Court and Standard Probationers. The results are statistically significant ($p < .05$) at the two-year mark.
- Interlock Program Participants have the lowest recidivism rates for all criminal offenses within one, two and three years of their initial DWI offense (see figure below). The reductions are statistically significant ($p < .05$) at the one and two-year comparison points.

Drunk Driving and General Criminal Recidivism Rates 2011-2014: Ignition Interlock Program Participants in DWI Court, DWI Court Participants not under Interlock Restrictions & General Probationers*



*Expressed in percentages

In general, the analysis of the recidivism-related data for the period 2011-2014 shows that the presence of an ignition interlock in a DWI Court significantly reduces repeat drunk driving recidivism two years post admission and general criminal offending one and two years post-admission.

Insight into the operation of the Ignition Interlock Program, particularly its data collection and validation procedures during its fourth year of operation was acquired through a series of informal telephone conversations with partner courts in Fall, 2014. Highlights included:

- There have been very few changes in key personnel within the partner courts: generally, the program exhibited remarkable stability over the study period.
- Court staff report positive working relationships with interlock providers.
- Workload responsibilities were reported to be minimal in the context of any extra time constraints that the addition of the interlock supervision imposed on court staff.
- Anecdotal information from court staff also revealed that interlock participants were pleased with the opportunity to operate a motor vehicle under a restricted license; very few issues related to interlock operations and technical issues were reported.
- Relationships with the Michigan Secretary of State were reported as positive. Many of the courts have established specific contacts with SOS staff, which has led to improved communication and administration of the interlock program.

- Demand for admission into the DWI/Sobriety Courts remains strong. Some concerns were raised regarding increased caseloads and the subsequently management and supervision of new interlock participants.
- Data entry staff, and the procedures for entering interlock performance data into the DCCMIS have been relatively consistent among all of the courts from 2011-2014. All courts have internal validation processes to ensure accuracy in data entry. No data entry and subsequent data validity issues were reported, perhaps due in part to the low number of interlock violations reported by the participating courts.

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SECTION 1: INTERLOCKS, THEIR HISTORY & USE IN MICHIGAN

INTRODUCTION

The prevalence of alcohol consumption and abuse in the United States is extensive. Data from the National Epidemiological Survey on Alcohol and Drug-Related Conditions (NESARC) has estimated that 209 million adults in the United States consumed alcohol within a one year period. Approximately 6% of those individuals met the DSM-IV (Diagnostic and Statistical Manual IV of the American Psychiatric Association) criteria for alcohol dependence, making this the primary type of dependency in the United States. In fact, it is estimated that alcohol dependency is 5 times greater than other illicit drugs (Marques, 2011). Based on this information, it is not surprising that many individuals choose to operate a motor vehicle when under the influence of alcohol. Furthermore, according to the Center for Disease Control (2011), an estimated 112 million drunk driving episodes occurred in 2010 (Vital Signs, 2011). As such, the National Highway Transportation Safety Administration reports that in 2012, 31% of all fatal crashes involved a drunk driver (Sober driving, 2013). Other research by the NHTSA has determined that drunk drivers have 4 times greater odds of a crash, compared to sober drivers (NHTSA Releases, 2015). The number of estimated crashes involving alcohol in the US, meanwhile, accounted for 17% of all nonfatal injuries – about 250,000 per year according to NHTSA estimates (NCSA, 2006), while the economic losses of these crashes are estimated at $59 billion annually (Blincoe, et al. 2014). In Michigan alone, in 2014, 2912 individuals were killed in crashes involving a drunk driver (Sobering Facts, 2014), while 8,828 fatal, personal injury, and property damage crashes were attributed to alcohol use in 2013 (Michigan State Police, 2014).

CONTROLLING DRUNK DRIVERS

As pointed out in the 2014 report (Kierkus & Johnson, 2014), controlling the drunk driver is complex, requiring a variety of interrelated alcohol control and therapeutic activities that are often directed toward the behavioral and cultural attributes of alcohol consumption. Of the various types of drunk drivers, perhaps the most difficult to control and rehabilitate is the repeat or chronic drunk driver who is disproportionately responsible for a high number of accidents and fatalities (Hallstone, 2012). And (as explained in the 2014 report), these individuals are different from the "typical drunk driver". They may have co-occurring substance abuse and psychiatric issues including depression, Post Traumatic Stress Disorder, as well as conduct and bipolar disorders, all of which may serve as trajectories to future drunk driving episodes (Lapham, Skipper & Russell, 2012). They are also more likely to be alcohol dependent, or have drug abuse and dependence disorders, other non-substance abuse disorders, antisocial personality disorders, and lifetime drug use and dependence as compared to those without, or one DUI conviction (Lapham, et. al, 2006; Nelson, et. al, 2007; McCutcheon, et. al, 2009; Peller et. al, 2010).

Because of the complex problems and needs of the repeat drunk driver, there is consensus in the academic literature that traditional sanctions are relatively ineffective in preventing recidivism (Albanese & Shaffer, 2003; Lapham, Kapitula, Baca & McMillan, 2006; Freeman, et al., 2006). In fact, Hubicka, et al., (2010) write that "….Because drunk driving is not only a symptom of alcohol problems, but also of other covarying psychosocial problems … socioeconomic and mental health problems and criminality, rehabilitation programs ought to take into account the whole situation" (p. 729). Therefore, what is likely to reduce recidivism among these repeat drunk drivers are traditional sanctions (jail, fines, license suspensions and probation) combined with progressive treatment options, rewards, and incentives for compliance that are administered under the careful and continuous monitoring of the courts and social service providers (Kierkus & Johnson, 2012; see also Lapham & England-Kennedy, 2012; Dowling, MacDonald & Carpenter, 2011).

One progressive and proven means to control and reduce recidivism among repeat drunk driving offenders is the DWI/Sobriety Court. These courts are post-conviction, problem-based interventions that use a team-based and non-adversarial therapeutic jurisprudence approach. In this context, offenders are sanctioned while also receiving comprehensive treatment plans to change their long term behaviors and actions related to alcohol abuse, drinking and driving (Kierkus & Johnson, 2014). According to the National Center for DWI Courts (2015), as of 2011, there were 192 DWI and 404 Hybrid Drug Courts in operation throughout the United States.

IGNITION INTERLOCKS: A REVIEW

Ignition interlocks are used as part of the supervision and behavioral modification approaches employed by DWI/Sobriety Courts. An ignition interlock, or Breath Alcohol Ignition Interlock Device (BAIID), is a simple device that is attached to the ignition system of a vehicle. It measures and records the operator's blood alcohol concentration (BAC), which is the percentage of ethanol (alcohol) in one's blood (see Kelley-Weeder, 2011). Typically, it prevents the vehicle from being driven if the driver's BAC reaches a certain level. As already explained in the previous reports, while there are functional and design differences among interlock manufacturers, a typical system consists of two main components: a handheld unit that is located in the vehicle, mounted in close proximity to the steering column, and a unit located under the vehicle's hood that is attached to the vehicle's starter system.

In order to start the vehicle, an operator follows a series of audible and visual prompts on the handheld device, beginning with the subject blowing into a mouthpiece. The user is also required to provide a continuous and uninterrupted flow of air (breath) for a certain period of time to ensure that a sample of "deep lung air" is measured. The component gasses in the sample are then measured and recorded. Depending upon how the interlock is programmed (set at the discretion of the court), these measurements are taken at the first start-up of the vehicle, and randomly during its operation, where the user is required to submit a breath sample during what is referred to as a "rolling re-test." These retests must be completed within a certain time period after the vehicle has been stopped (and parked in a safe location) (Kierkus & Johnson, 2012-2014).

If the offender is compliant, then the interlock "unlocks" the vehicle ignition system, allowing the vehicle to be operated. If, however, the operator's blood alcohol level exceeds a certain BAC set by the court, two basic options exist: 1) an audible alarm goes off until the vehicle is turned off, and a violation is recorded. Then, the interlock device must be reset by an interlock service technician within a set period of time; or, 2) the interlock "locks out" the ignition, not allowing the operation of the vehicle at all, where again, the violation is reported to the court. In "warn level" cases, where there is a blood alcohol level present, but not high enough to warrant a violation or lockout, the interlock records the alcohol violation, but it may still allow the vehicle to be driven.

The interlock also records a large amount of additional information that can be used by the court as part of the offender's treatment plan. Besides its primary purpose of recording alcohol-related violations, interlocks record: the number of vehicle starts; the number of interlock attempts; warnings, and failures; start and end times of the vehicle's operation; the number of miles travelled; visual images of the driver (and perhaps passenger); and (in some cases), GPS tracking data to ensure that the vehicle is used only for court-mandated activities (which allows the court to track the offender by location and time). Generally, this information is downloaded on a monthly basis by interlock service technicians. Or, if the court is using the most recent wireless interlock devices, the data can be immediately accessed through the interlock provider's secure website.

However, BAIIDs are far more than a surveillance or incapacitation device to prevent a person from driving (Kierkus & Johnson, 2012). The interlock can also serve as a behavioral reinforcement tool, "rewarding" offenders by allowing them to operate a motorized vehicle when no blood alcohol concentration is present, as well as making offenders answer for their actions to the court, if found to be in violation. By restricting a vehicle's use, offenders may also be restrained from associating with other alcohol-dependent persons, subsequently modifying their lifestyles toward alcohol abstinence. The interlock can also be used to ensure sobriety compliance by randomly monitoring alcohol consumption even when offenders are not driving. Some courts, for instance, require offenders to also use the interlock as an in-home breath-alcohol monitor or breathalyzer to prove that they living an alcohol-free lifestyle, even when not operating a motor vehicle.

The Nature & Extent of Ignition Interlock Use:

Currently there are over 430,500 interlocks being used worldwide, with the majority of them being used in North America (Martino, Sitran, & Rosa, 2014). Estimates by the NHTSA also show that there are approximately 280,000 interlocks being used throughout the United States (Mothers Against Drunk Driving, 2013).

The extant literature also shows that interlocks have the support of the public. In one nation-wide phone survey of adults, 84% stated that they supported ignition interlocks for convicted drunk drivers (McCartt, Wells & Teoh, 2010). Findings from the 2010 HealthStyles Survey also found that regardless of the size of the community, region, or individual characteristics, 69% of the public supported ignition interlocks for drunk drivers. Interestingly those who reported drinking and driving within the last 30 days were the least supportive (Shults, 2013).

The Reliability and Validity of Ignition Interlocks

One important question that may arise is: "How valid and reliable are ignition interlocks in measuring BAC levels of repeat offenders under interlock supervision?" This issue is reviewed below.

Reliability

The issue of reliability addresses whether the device can produce consistent and stable results. Reliable results are ensured through a variety of activities that include the following:

- **Technology:** Since their emergence in the commercial marketplace in the 1970s, interlocks have become much more sophisticated in monitoring and measuring the blood alcohol concentrations of drivers. While there are many devices and vendors in the interlock market, all modern interlocks use fuel cell technologies that have been proven to be consistently reliable in measuring BAC levels in a variety of climatic and user-related conditions.

- **Monthly Maintenance:** During mandatory monthly maintenance appointments, interlocks are inspected for accuracy by certified technicians at local, certified interlock facilities (usually certified vehicle repair facilities). Here, they are re-calibrated and checked for any signs of tampering and circumvention. Besides these mandatory scheduled maintenance activities, operators at any time (at their cost) can have the interlock device inspected.

- **Operator Training:** Perhaps the greatest reliability issue is related to the operator. The literature shows that in some cases an offender may not provide an adequate volume of air for the breath sample. Or, the operator may have coordination problems related to the "hum and blow" feature, which is an anti-circumvention measure that requires the user to "hum" while providing a breath sample. In most cases, operator error is reduced through effective training by the interlock provider and assistance from court staff (Bailey, et. al, 2013)

- **Circumventions and Tampers:** Reliability can be impacted through the operator attempting to circumvent and tamper with the device. Circumventions and tampers can be detected by technicians at the monthly scheduled maintenance appointments, or in other cases, such issues can be immediately identified by the device itself. Depending upon the interlock used, other forms of circumventions (e.g. having another person provide a breath sample) can be readily detected by court personnel when they review the digital data that many interlocks now provide.

Validity: Do Interlocks Accurately Measure BAC levels?

Validity deals with the issue of whether the device actually measures the phenomenon it is claiming to measure. In this context, the issue is if interlocks are effective in measuring the BAC levels of offenders – specifically, accurate ethanol levels in the blood stream.

- **False Positives:** One of the primary validity concerns is the existence of a false positive which occurs when a measure or test improperly indicates the presence of some condition. In the case of interlocks, a false positive occurs when the interlock records a BAC when no alcohol concentration exists in the blood stream. While a review of anecdotal evidence provides a litany of "false positive stories," it can be safely concluded that most are simply stories, unsubstantiated by fact, based on the following points:

  By their design, modern interlocks that use fuel cell technologies measure the presence of only one chemical – ethanol. As such, the fuel cell technology is highly discriminatory (and accurate) in identifying ethanol only. While the technology is theoretically extremely accurate, it can nevertheless be argued that because BAIIDs are mechanical devices; therefore, the potential for false positive readings exists due to product design and maintenance issues. However, all of these issues can be identified and corrected during the initial testing and evaluation of new interlock products and during mandatory monthly interlock inspections. Perhaps the best example of the validity of these devices is the lack of research on false positives and interlocks. A review of the medical literature, for example, only identified one scholarly article that addressed a false-positive medical case (see Jones, et. al, 2006). In this particular case study, a 59-year old non-drinking male, who was on a very low calorie diet, tested positive for alcohol on an interlock. The resulting discussion posited that types of diets can lead to ketonemia that leads to higher levels of acetone in the blood. This acetone, in some instances, may be converted to isopropanol alcohol in the body by hepatic alcohol dehydrogenase (ADH). An interlock device may, in turn, detect ethanol in the blood stream in association with this rare condition.

  While a valid concern, when rare false positives do occur, both the courts and interlock vendors have administrative and procedural guidelines to address this issue. In the context of the interlock device itself, if a user receives a "fail" reading, the device requires another mandatory test within a set period of time (usually 5 minutes) to re-validate the original test. Administratively, meanwhile, in some courts, a person may have the option to request another BAC-related test, from another testing medium, such as a blood or urine alcohol test.

- **Industry Self-Regulation**: Validity-related issues are also addressed through industry self-regulation, and governmental guidelines and regulations. Arguably, the competition for market share between interlock manufactures also provides an internal means to ensure that their products and their subsequent use, is both valid and reliable.

- **Governmental Guidelines & Regulations:** Validity (and reliability) is also ensured through governmental guidelines and regulations. For example, the NHTSA has established guidelines for testing the reliability of interlocks. Some states specifically require interlock providers to meet specific guidelines (usually based on the NHTSA standards) before they are allowed to provide

services in their jurisdiction. Other states such as California (Manufacturer Annual, 2015) require interlock companies to annually submit and complete a "Manufacturer Annual Ignition Interlock Device of False Positives," where the state defines a false positive as: when "a blood alcohol concentration is above the alcohol set point and the test results of two or more subsequent breath tests taken immediately within a 15 minute time period thereafter provide a breath alcohol concentration below the alcohol set point" (np).

The History of Interlocks

The concept of an ignition interlock to prevent the use of or modify the behaviors of drivers is over 40 years old. As early as 1972, the US Department of Transportation recommended the use of an ignition interlock as a passive restraint device to enforce seatbelt use that would prevent a vehicle from being started unless the seat and lap belts were secured (Sussman & Abernathy, 1973; Mikva, 1986). While the seat belt ignition interlock was not supported by the public or Congress (it was determined that an audible buzzer system would be sufficient to modify driver behavior - to the point where Congress passed a law in 1974 preventing any requirement of a seatbelt ignition interlock- see Joh, 2007), recent research found that approximately 50% of drivers who use seat belts regularly, and 70% of part-time belt users, found seatbelt belt ignition interlock devices acceptable (Kidd, McCartt & Oesch, 2014).

The concept of an ignition interlock to modify the behaviors of drivers and to reduce drinking and driving is also over 40 years old. As early as 1970, Robert Voas, in his paper entitled "Cars that Drunks Can't Drive," posited that "a car that could sense the capability of its driver and refuse to operate if that driver was not capable of safe performance, provides the most parsimonious approach to the problem of the impaired driver" (Voas, 1988, np). During this same time period, the increased recognition of the serious problem of drunk driving led to new and novel forms of assessing a driver's behavioral abilities and "locking out" a person from driving if he or she was intoxicated. Some early efforts were directed at motor skills and visual acuity, based on the presumption that a drunk driver would lack these requisite skills to effectively start and operate a motor vehicle. One such method, for example, was the serial choice reaction time approach. It relied upon the time it would take a test subject to complete a task and the number of errors recorded; if the time period as too long in typing a sequence of numbers, or there were too many errors, a driver would be locked out from staring the vehicle (McDowell & Smith, 1973). Others ideas, such as Critical Task Timing, required drivers to keep a hinged needle from moving too far to the right or left: if so, the vehicle's lights and an audible alarm would activate. Some early patent filings also proposed devices similar to a combination lock (Drive capability, 1967), and a vehicle operation inhibitor control system that used a keypad-like device to start a vehicle. The NHTSA also explored a variety of performance-measuring devices that were based on critical thinking, analyzing reactions, complex coordination, and divided attention. Voas (1988) argued that all of these represented proxy measures of a potentially drunk driver.

While these devices represented positive early efforts in using technology to control drunk drivers, it was not until 1970 that the Borg-Warner Corporation invented the first true ignition interlock where a vehicle could actually be prevented from being started after measuring the blood alcohol concentration of the operator (Voas & Marques, 2007). Also, in 1970 the NHSTA asked manufacturers to submit ideas for an Alcohol Safety Interlock System – an ASIS, but later abandoned the idea and instead pursued technologies associated with Distracted Driver Warning Systems (DDWSs) (Voas, 1988). During this same time period, other corporations and private individuals soon began inventing alcohol interlock devices that would prevent a vehicle from being started based on BAC measurement. For example, in 1974 the Honda Motor Company filed a US patent that was designed to detect the blood alcohol level of a driver which relied on suctioning the air in the proximity of the driver's compartment of the vehicle. Similarly, in 1973 and 1975 Nissan also filed patents for a "system to prevent drunk driving" which involved a voltage sensor based on alcohol content and an "exhalation inspection apparatus," a device that

included a blow tube to detect blood alcohol. Other patent applications used the newest solid state technologies to detect alcohol levels and "lock out" the person's ability to start a motor vehicle (System to prevent, 1974; Breath alcohol detector, 1977) including the "Drunkometer" (US 4140106 A), which was filed with the US patent office in 1976 by Sachs-Systemtechnik Gmbh, that used a photoelectric process to measure BAC concentrations.

Because of the continued advancements and changes in technology into the 1980s (especially in semiconductor gas sensors that made interlocks more reliable in their measurement of blood alcohol concentrations), and in combination with an increased social awareness of the problem of drunk driving, in 1986 the federal government became involved in the exploration of alcohol interlocks when the NHTSA sponsored research in their effectiveness and reliability (Voas, 1988). The first state to pass interlock legislation for drunk drivers was California in 1986. By 1990, 16 other states followed suit by passing some type of interlock legislation for individuals convicted of drunk driving (Wilson & Stoke, 1990).

Second Generation Technologies

In the 1990's the "second generation" of interlocks emerged. These second generation interlocks were generally more technologically advanced, more accurate, and easier to use. Changes in the sensor technologies shifting from semiconductors to fuel cells (that measure the electromechanical oxidation of alcohol) also made the interlocks much more reliable (NHTSA, 2009). This second generation interlock technology was also guided by the NHTSA which published technical model specifications in 1992 in an effort to create uniform technological and operational standards for interlock manufacturers.

Because of the advancement in technologies in the 2000s, and at the urging of states and manufacturers, the NHTSA began a series of hearings in 2006 to revise the 1992 standards. Based on input from industry representatives and the states, in 2013 the NHTSA further revised its model specifications. After a series of meetings with state and industry officials, the NHSTA published 14 performance standards. These standards were related to: 1) Precision and Accuracy; 2) Breath Sample Volume & Flow Rate; 3) Calibration and Stability; 4) Input Power; 5) Extreme Temperature & Humidity Tests; 6) Warm Up Times at -40 degrees Celsius; 7) Vibration; 8) Re-test Intervals; 9) Tampering and Circumvention; 10) Restarts of Stalled Motor Vehicles; 11) High Altitude Operations; 12) Cigarette Smoke; 13) Acetone; and, 14) Radiofrequency Interference. While not binding on the states, these Model Specifications have arguably led to more consistency and accuracy in the operation and use of BAIIDs well as a net reduction in false positive readings (Model Specifications, 2013).

Interlocks in Europe:

The popularity of the interlock in controlling and monitoring repeat drunk drivers is not limited to the United States. Since initial adoption in Sweden in 1999, all 27 EU countries have developed interlock programs that are used as a rehabilitative tool for repeat drunk drivers (Podda, 2012). Additionally, one of the recommendations of the EU Commission's Road Safety Action Programme (RSAP) 2011-2020 to the EU Parliament (2010) is the compulsory use of interlocks as part of a common road safety enforcement strategy, among all 27 EU nations, as a means of changing drunk driving behaviors and reducing drunk driving fatalities.

Not only have the interlock technologies become more effective, but their use in controlling the behaviors of convicted drunk drivers has increased. Currently, it is estimated that 15-20% of all convicted drunk drivers in the United States are under some type of interlock restriction (Report to the Chairman, 2014). And, currently, all 50 states use the interlock for either first time or repeat drunk driving offenders (Schults & Bergen, 2014). Alcohol ignition interlocks are also supported by the federal government: federal funding, including MAP-21 (Moving Ahead for Progress in the 21st Century or the 2012 Surface Transportation Reauthorization Act) also

shows the support for interlocks at the federal level: 15% of the all drunk driving countermeasures (approximately $21 million) are allocated to states that have and are enforcing mandatory alcohol-ignition interlock laws (Traffic Safety, 2014). To further increase the use of interlock programs and interlock use, other recommendations have included: strengthening legislative actions; educating criminal justice actors to increase their knowledge and awareness of interlock; developing strong administrative rules and regulations to ensure program integrity; establishing processes to approve interlock devices in state programs; creating vendor oversight plans and standards; and, enhancing the collection and analysis of interlock data (U.S. Department of Transportation, 2013).

MICHIGAN'S DWI/SOBREITY COURT IGNITION INTERLOCK PROGRAM

As shown in the prior Michigan DWI/Sobriety Court Ignition Interlock Evaluation Reports (Kierkus & Johnson, 2012; 2013; 2104), the use of ignition interlocks to control the actions of convicted drunk drivers in Michigan is not a new strategy or practice. For years, many courts throughout the state have used ignition interlocks as a supplement to existing conditions of probation for offenders charged with Operating While Intoxicated (OWI) and/or Operating with the Presence of Drugs (OWPD).

What is new, however, is that they are now being used as a specific component of treating and monitoring repeat drunk driving offenders who are admitted to DWI/Sobriety Courts. After first being initiated in 2009 by the 56th District Court in Eaton County, Michigan for high BAC first-time offenders, the success of this program led to the enactment of Michigan Public Act 154 of 2010: the DWI/Sobriety Court Interlock Pilot Project**.** This pilot legislation, which became effective January 1, 2011, set eligibility requirements for offenders. In order for offenders to be eligible for admission into one of these courts, they must have been arrested and convicted of a DWI-related offense after January 1, 2011, and have had a total of 2 or more DWI violations in the last 7 years, or 3 or more DWI violations within the past 10 years. Additionally, this legislation created a three-year pilot research project to determine the effectiveness of ignition interlocks in treating and controlling the repeat drunk driver when incorporated into an accredited DWI/Sobriety Court program.

Because of the reported success in this pilot program in the context of preventing drunk driving, and reducing recidivism (see the earlier 2011-2013 reports), in 2013, HB 5021 eliminated the sunset provision of House Bill 5273 that created the Interlock Project legislation, making the DWI/Sobriety Court interlock program permanent as of 2014. A copy of HB 5021 can be found in Appendix B.

Companion legislation to PA 154 was also needed so that repeat offenders could obtain a restricted driver's license. Public Act 155 (effective January 1, 2011) modified the existing Michigan Motor Vehicle Code, establishing new eligibility and licensing requirements for repeat drunk drivers. Under PA 155, repeat drunk drivers (who were previously barred from obtaining a license) could now obtain a restricted driver's license from the Michigan Secretary of State after a minimum 45-day hard suspension of their driving privileges. With the passage of House Bill 5021 (effective 2014), ignition interlocks are now an integral component of DWI/Sobriety Courts throughout the state of Michigan. They represent a tool to assist in the recovery and monitoring of repeat drunk drivers, and to reduce drunk driving recidivism.

Ignition interlocks can be used in a variety of ways. Voas et al (2013) write that there are several classes of interlock monitoring programs that are being used in the United States. These include the following:

- **Minimal Integrity Monitoring**: Occurs when the court simply ensures that the interlock is installed on the offender's vehicle and that it is functioning properly. In these programs, no effort is made to monitor the offender's performance. The primary goal is to prevent a person from drinking and driving and to protect the public.

- **Abstinence Monitoring:** Is based on abstinence as a condition of probation. Here, the interlock data is used by court staff to ensure that the person is not using alcohol, and any violation could lead to a revocation of probation.
- **Intensified Feedback:** In addition to monitoring program violations, these types of programs use interlock data for sanctions by designing appropriate treatment programs and for monitoring and assessing the offender's progress through an intensive supervision program.
- **Provider Feedback:** Involves programs that rely primarily upon interlock vendors, instead of court staff only, to provide information to treatment providers and clients regarding their performance.
- **Programs Integrated With Treatment:** These are comprehensive treatment programs administered through DWI/Sobriety Courts that use the ignition interlock as a surveillance and behavioral modification tool to address the underlying drinking problems that led to a drunk driving charge. Here, a team of court professionals and treatment providers manage the rehabilitation of the offender.

The DWI/Sobriety Court Interlock Program in Michigan meets the highest level of integration and use, based on Voas's classification system. By its design, DWI/Sobriety Courts in Michigan protect the public from repeat drunk drivers. At a minimum, they also monitor abstinence. Furthermore, they provide intensified feedback to program participants, while interlock providers work with clients and the courts. Of the utmost importance, is that ignition interlocks are part of a larger DWI/Sobriety Court treatment program whose aim is to reduce the incidence of repeat drunk driving through problem-based therapeutic interventions.

THE MICHIGAN DWI/SOBRIETY COURT PROCESS

Figure 1 provides a graphic display of a participant's progression through a DWI/Sobriety Court and the acquisition process for a restricted license and the reinstatement of full driving privileges. A detailed discussion of the major steps in the DWI/Sobriety Court follows.

Admission into the DWI/Sobriety Court

DWI/Sobriety Courts in Michigan are a voluntary, post-adjudication program at the district or circuit court level that participants enter as part of their plea agreement. This specialty court is designed to assist participants in their recovery, reducing or eliminating future drinking and driving-related incidents, while improving the quality of life for themselves and others. While DWI/Sobriety courts may differ in structure throughout the state, their underlying philosophy is the same, following the 10 guiding principles of DWI Courts set forth by the NADCP. These guiding principles can be found in Appendix A.

Some of the specific legal criteria to be eligible for admission to the DWI/Sobriety Court include a current drunk driving conviction, and at least one drunk driving conviction within the past 7 years, or 3 or more convictions within a 10-year period. Besides the legal criteria, participants must also meet the eligibility requirements for the specific DWI/Sobriety Court.

DWI/Sobriety Court Phases

Depending upon the jurisdiction, DWI/Sobriety Courts are 12-24 months in length and are usually composed of 3 to 5 phases that participants move through with the goals of abstinence from alcohol use, drinking and driving, recovery, and successful program completion. Some common elements in these phases include mandatory and random alcohol tests, meetings with the DWI/Sobriety Court team, and attending Alcoholics Anonymous and other court-ordered treatment meetings. DWI/Sobriety Court participants also receive individualized treatment plans to ensure the successful completion of the

program and continued sobriety. As part of these phases, the use of the ignition interlock is an integral component of monitoring the performance of the participants.

The Interlock Monitoring Period

Michigan law (Section 257.304) requires that upon admission to the DWI/Sobriety Court, participants receive a minimum 45-day hard suspension of their drivers' licenses. If the client is making positive progress during this 45-day hard suspension (in some programs, a longer time period is imposed by the court [e.g. completion of the first phase of the program and a minimum of 90 days sober]), the Court forwards to the Michigan Secretary of State certification that the participant is enrolled in a DWI/Sobriety Court, and that an ignition interlock has been installed on the vehicle(s) that are owned or operated by the participant. Once the request for an interlock has been approved by the Michigan Secretary of State, the participant receives a restricted license by mail. The participant is then able to operate a motor vehicle (that is equipped with an interlock) under a restricted license for a period of a least one full year, as long as the participant complies with all license restrictions and other conditions imposed by the DWI/Sobriety Court. If the participant is non-compliant or violates program requirements (tampers with, circumvents or removes an interlock, or is charged with a new alcohol violation), the DWI/Sobriety Court is required by law to immediately notify the Michigan Secretary of State that the participant has been removed from the program. A summary revocation of the participant's restricted license is then conducted by the Secretary of State.

Throughout the interlock monitoring period a participant is monitored for alcohol use on a continual and random basis. By the design of the interlock device, it records all driver-related activities including vehicle starts and stop times, successful "passes" during vehicle starts and rolling retests, power failures, and any tampers, failures, and circumventions. There are two types of interlocks that are used to record this interlock data: 1) cellular modem, and 2) standard or basic interlocks. These are explained below:

- Enhanced Cellular/Modem Interlocks – these interlocks provide "real time" information to the interlock provider and the court. With the cellular data option, all interlock-related data is automatically transmitted to the interlock provider. This information can subsequently be reviewed by DWI/Sobriety Court staff.

- Standard or Basic Interlocks – These devices "store" information in the device's internal memory. Interlock user data is downloaded to the interlock company during the required monthly maintenance appointments. In the case of recorded violations, the operator is warned of a violation and has a maximum time period (usually 72 hours) to take the vehicle to an interlock technician who inspects and recalibrates the interlock device and downloads the user data to the interlock vendor.

Interlock Violations

Types of interlock violations include:

- **Failures:** Missed or failed start-ups and/or rolling retest and/or an actual blood alcohol content reading
- **Circumventions**: Are "an attempt to bypass the correct operation of a BAIID, whether by use of altered breath sample, by starting the vehicle by any means without first providing a breath sample" (Model Specifications, 2013, np).
- **Tampers**: Are "an attempt to physically disable, disconnect, adjust, or otherwise alter the proper operation of a BAIID" (Model Specifications, 2013, np)
- **Power Failures:** Faults in the delivery of power to the interlock device. May be attributed to tampers/circumventions, vehicle maintenance issues, or dead batteries.

In the case of violations or "fails," the interlock provider (and court) is immediately notified of the violation if an enhanced/cellular interlock is used. If these occur, the user is then required to take the vehicle to an interlock provider for verification of the violation/failure within a set time period. In other cases, where a standard or basic interlock is used, a "failure" prompt will require the user to take the interlock equipped vehicle to an interlock service provider within a set time period (usually 72 hours), where interlock data is downloaded and sent to the interlock company and court; the interlock provider then reviews the issue(s) and sends this compiled information to the respective court the next business day. With any violation involving a BAC level of .025 and above (or any other violations) the interlock provider has 5 business days to report the violation to the Michigan Secretary of State.

Participants themselves, as a condition of the program, are also required to contact both the interlock provider, and the court, regarding any purposeful or accidental failures, tampers, or circumventions. In this context, if there is a "false positive" issue, there is a pre-established procedure that the participant must follow. In the case of circumventions and tampers, for example, the participant must take the interlock equipped vehicle to an interlock service provider/installer immediately in order to verify that it was not an actual circumvention or tamper (but instead an issue with the interlock device itself, the result of a repair performed on the vehicle, or some other action that could have resulted in a fault detection). In the case of alcohol–related failures, the participant must provide a breath (or urine) sample at a pre-determined reference lab within a prescribed period of time to substantiate that he or she did not have an actual "fail" or due to the presence of a blood alcohol concentration.

In some cases, a participant's vehicle is switched to "lock out" mode which prevents the vehicle from being started and subsequently driven. These lock-outs occur when there is a least one rolling retest failure, if tampering is detected, or if there are three start-up failures in a one month monitoring period. In these instances, the participant is required to notify the court and the interlock company immediately. Then, the participant is given a one-time access code that allows the vehicle to be started and driven to an interlock service provider who then inspects the vehicle and verifies that the issue, was indeed, not a purposeful violation, tamper or circumvention effort.

Program Non-Compliance

If a participant should violate the conditions of the DWI/Sobriety Court, depending upon the violation, he or she can be "recycled" to an earlier phase of the program and/or have additional sanctions to ensure program compliance and positive progress in the program. If, however, these interventions do not result in program compliance, the court can remove the subject from the DWI/Sobriety Court program, at which point the participant will receive the original sentence as articulated in the initial plea agreement. Participants, meanwhile, can also voluntarily withdraw from the program. Under these circumstances, the Michigan Secretary of State is notified by the court that the individual is no longer in the DWI/Sobriety Court Program. As such, if a restricted license had been issued, it is subsequently revoked, driving privileges are denied, and the original period of license suspension is reinstated.

Graduation

Upon successfully completing the requirements of the DWI/Sobriety Court, the Court notifies (in writing) the Michigan Secretary of State's Driver Assessment and Appeal Division that the defendant has successfully completed the DWI/Sobriety Court program. Graduation from the program, however, does not mean an automatic reinstatement of a driver's license. Instead, the graduate is required to drive under the restricted license (and adhere to conditions attached to that restricted license) until the Administrative Hearings Section of the Michigan Secretary of State reinstates full driving privileges.

Interlock Continuation: Post-DWI/Sobriety Court Monitoring

In some cases, a participant can request the removal of an interlock immediately upon graduation and schedule a hearing with the Michigan Secretary of State to have his or her full driving privileges restored. This can occur if the minimum one-year restricted license period has been fulfilled. In other instances, however, the graduate may have not completed his or her mandatory time period under the interlock restriction. In these instances, monitoring is continued by the interlock provider only; the court no longer has a role in the supervision and monitoring of the person. In this capacity, the role of the interlock provider slightly changes: instead of sending interlock-related information to the court and the Secretary of State, the interlock provider only sends violation-related data to the Michigan Secretary of State.

Request to Remove Interlock

Once the participant has met the criteria of successfully graduating from the DWI/Sobriety Court program and has completed the minimum time period under interlock restriction, he or she may request an "Order/Authorization to Remove Breath Alcohol Ignition Interlock Device" and to have his or her full driving privileges restored. This process begins when the graduate requests an administrative hearing conducted by the Administrative Hearings Section of the Secretary of State. At this stage, the DWI/Sobriety Court has no role in the license reinstatement process; subjects are no longer participants in the DWI/Sobriety Court. Instead, it is the sole responsibility of the applicant to provide the Secretary of State administrative hearing officer with proof that he or she has successfully abstained from alcohol use, and met other interlock-related conditions.

The Secretary of State Hearing

The role of the Secretary of State is limited while the participant in enrolled in the DWI/Sobriety Court. Its role is limited to maintaining the records of all interlock participants. These records include court and interlock-related information. Once the participant has completed the interlock program, and is eligible to have his or her driver's license fully reinstated, then the SOS conducts an administrative hearing. Some of the evidence that the hearing officer uses includes the following:

- A certificate from the DWI/Sobriety Court stating that the person has successfully completed the program. This certificate includes a statement from the court that the individual has abstained from the use of alcohol for a period of not less than six months.
- The Interlock Provider Report. This document is provided by the interlock vendor. It lists all interlock violations and the date (s) of actual and suspected infractions during the ignition interlock monitoring period.
- A completed Substance Use Evaluation form that verifies that the individual's alcohol/substance abuse disorder is under control.
- Evidence of attending a structured support group and at least 3-6 notarized letters of support from individuals attesting to the applicant's sobriety.
- A urinalysis lab report that verifies that the applicant is alcohol-free.

This interlock report, including other documentation that the interlock vendor has provided over the course of the interlock restriction, is reviewed in the context of major and minor violations (see Box 1-1).

If a hearing officer determines that the individual had minor violations, the interlock period will be extended for another three months. For major violations, meanwhile, the individual will have his or her original driver's license revocation reinstated. For example, any reading of a .025 BAC or higher after the 2-month grace period will result in another 1-year suspension. Likewise, any rolling retest failure also results in a reinstatement of the original one-year suspension of the driver's license. In these major violation cases, the person can appeal the SOS decision within 14 days of the initial decision.

Box 1-1: Interlock Violation Classifications

According to the Michigan Secretary of State (2015) interlock violations for habitual offenders are divided into "minor" and "major" categories:

Minor Violations:

- A driver has 2 months after the BAIID is installed to become familiar with the device, and to learn that certain substances, such as mouth wash, may cause the device to record a test failure. After the first 2 months, it is a minor violation if the BAIID records 3 start-up test failures within a monitoring period. A start-up test failure means the BAIID has prevented the vehicle from starting. A monitoring period is the full length of time the BAIID is required to be properly installed.
- If the driver fails to report to the BAIID installer for servicing within 7 days after his or her scheduled monitoring date, it is a minor violation.

Major Violations:

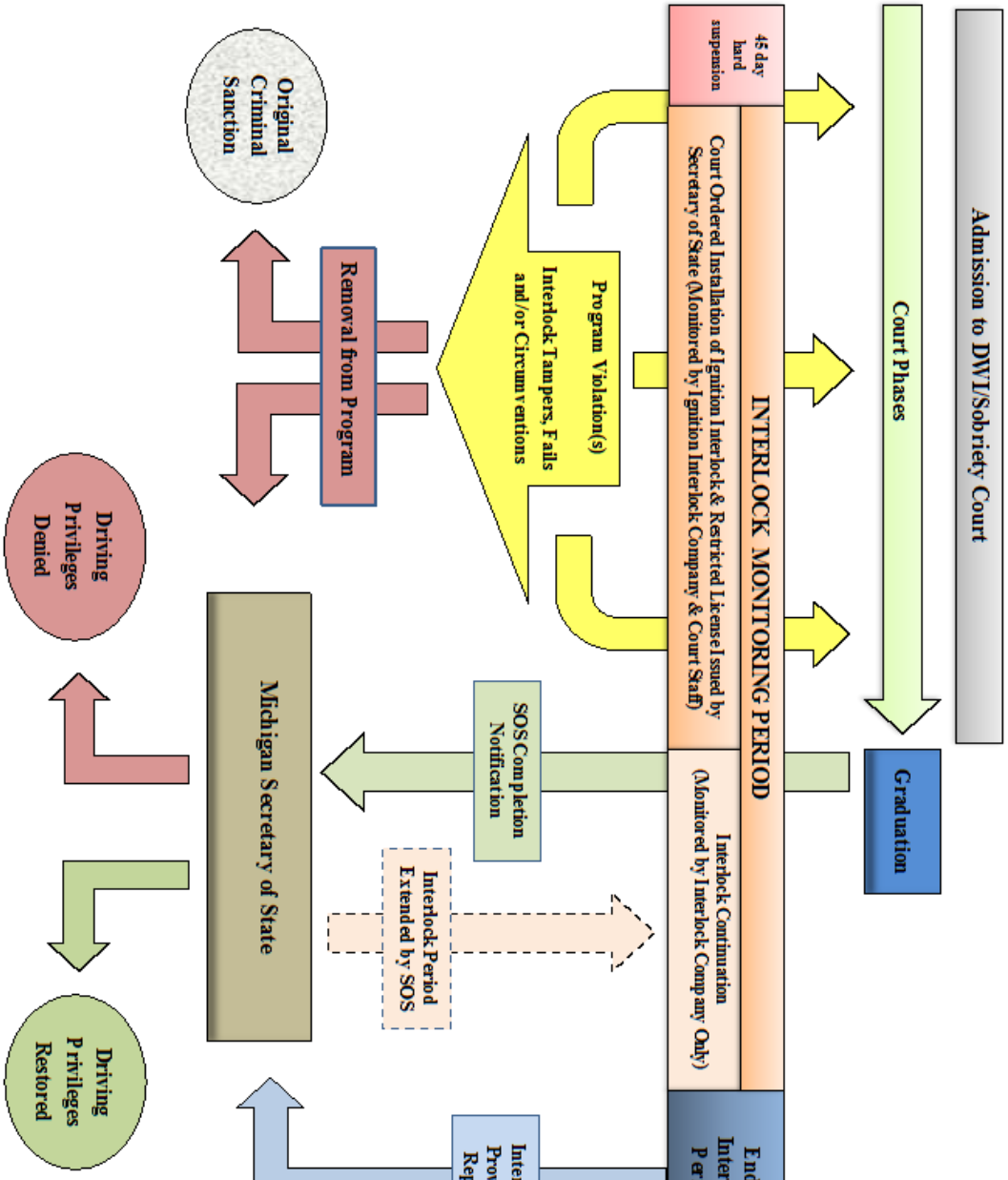
- Rolling retest violation:
  - Failing to take the rolling retest when prompted by the BAIID; or
  - The random retest detects a BAC of .025 or higher, and there is no subsequent sample with a BAC of less than .025 within 5 minutes.
- An arrest or conviction for drunk and/or drugged driving.
- Tampering with the BAIID.
- Circumventing the BAIID.
- Three minor violations within a monitoring period.
- Removing the BAIID without having another device installed within 7 days, unless the Secretary of State has authorized the removal.
- Operating a vehicle without a properly installed BAIID.

Retrieved from: http://www.michigan.gov/sos/0,4670,7-127-1627_8665_9070-21501--,00.html

In those cases where there may be a "false" major or minor violation, it is the responsibility of the participant to provide the Secretary of State with proof that these were truly errors and not violations. As such, all participants are encouraged by the SOS and DWI/Sobriety Court staff to maintain a detailed log, or activity book, of their performance that provides documentation of any major or minor violations that were not the result of the operator, but instead, the result of some type of equipment malfunction or other defect.[1] This information can then be used to substantiate that the participant was program compliant. Pending this hearing, the graduate has one of three outcomes: a reinstatement, an extension of interlock restrictions, or a denial of one's driving privileges. If denied, the individual's original 1-year suspension is reinstated.

[1] While it is the sole responsibility of the individual to provide supportive evidence at these hearings, interviews with court staff revealed that in some cases, court staff will provide supporting documentation that the minor or major violation was not the result of the user, but of some other issue related to the integrity or operation of the interlock device itself.

Figure 1: The DWI/Sobriety Court Process



UPDATED REVIEW OF THE LITERATURE

Previous editions of this report have provided a comprehensive review of the scholarly literature pertaining to BAIID devices and their use within DWI/Sobriety Court. While these existing reports substantiate that ignition interlocks are effective in reducing recidivism, especially while participants are in the DWI/Sobriety Court program, the 2014 publications further support the extant literature:

Government Sponsored Research

- The NHTSA's publication "Model Guideline for State Ignition Interlock Programs" (2013) was released in December, 2013. This handbook provides a comprehensive review of the literature on how interlocks work as well as their effectiveness in reducing recidivism. "Best practices" are also provided to assist in the development of interlock programs.

- In June, 2014 the US government Accounting Office published a report that investigated the effectiveness of interlocks through a review of the existing literature and interviews with NHTSA grant recipients in 10 states. The GAO report provided some favorable comments on interlocks and the existing research: states are now changing or modifying their laws to be eligible for MAP-21 grants in fiscal year 2014. It was also determined that interlocks are "one promising tool" (p. 24) to deal with drunk driving. The GAO report also concluded that the research has consistently shown that interlocks are effective in reducing re-arrests for DWI in comparison to other sanctions (Traffic Safety, 2014).

- Cheesman, Kleiman, Lee and Holt (2014) examined the opinions of judges in the state of Arizona regarding interlock legislation in rural jurisdictions. Through interviews it was found that judges favorably viewed the use of interlocks. Some issues of concern included limited access to interlock vendors in rural areas and the need for more information and training regarding the effectiveness and use of interlocks. Consequently, some of the recommendations by the authors included an increased accessibility of interlock providers and additional educational opportunities for judges.

International Research

- In 2014, the EU's Office of Directorate General for Internal Policies conducted a comprehensive study of the use of interlocks in the 27 EU nations. This report concluded that interlocks should be part of each EU nation's road control policies. The report also determined that programs targeted at the rehabilitation of repeat drunk drivers deterred repeat drunk driving, and the use of interlocks for this population of offenders would have a simplified benefit-cost ratio of 9:1 when considering road deaths, and the costs of injury only. The report also estimated that fatalities would decrease by 7.3% over a 10-year period. While currently the numbers of individuals under interlock supervision are limited in the EU, the report also recommended the expanded use of interlocks in rehabilitation programs for certain types of offenders, including hard-core drunk drivers, and recidivists (Martino, Sitran, & Rosa, 2014).

- Radun, Ohisalo, Rajalin, Radun, Wahde and Lajunen (2014) reviewed crash statistics and survey data from Finland in order to explore the notion that installing interlock devices on all vehicles could be an effective safety measure. Although there is relatively high public support for such a proposition in Finland, and other European countries; and although some already require interlocks on trucks, taxis and similar vehicles, the authors express caution about implementing such a program. They point out that support among criminal justice professionals for expanded use is substantially lower, while significant practical and technological barriers to implementation exist. Moreover, the cost / benefit ratio of universal implementation is not certain. Generally, the authors caution that DWI is a complex sociological problem that is unlikely to have a simple technological "fix."

- Terer and Brown (2014) studied the effectiveness of multiple DWI prevention and intervention strategies in Australia. The study explores the criminological aspects of preventing drunk driving, and specific programs and policies. With respect to ignition interlocks, the report describes different types of programs that are available in Australia. It also affirms the existing research which suggests that the installation of BAIIDs consistently decreases the re-arrest rates of drunk drivers; but this effect tends to fade after the devices are removed. The authors also concluded that the implementation of interlock programs across Australia thus far has been limited in comparison to other countries such as the United States and Canada.

Academic Research

As was the case in the preceding years, some additional research has also been conducted by scholars and criminal justice professionals:

- Beck, Kelley-Baker, and Voas (2015) compared DWI offenders (n=171) in Arizona who were on BAIID restrictions to determine if they changed their primary drinking habits from a bar/restaurant to drinking at home (where driving would not be required). Based on self-reported responses from a web-based survey, offenders were subsequently classified as "adapters" (who transitioned to drinking primarily at home) or "non-adapters" (who continued drinking in their original preferred locations). While the two groups were similar on most demographic and administrative characteristics, adapters were significantly more likely to report changing their drinking habits (generally reducing the amount of alcohol consumed per drinking occasion, and reducing the number of times they drank alone). Adapters were also more likely to state that the interlock served to remind them of the need to abstain / drink responsibly. Adapters also appeared to be more receptive to programs and interventions designed to separate the consumption of alcohol, from the operation of a motor vehicle.

- Chapman, Dauoud, and Masten (2015) assessed the general deterrence effects of requiring the installation of BAIID devices on the automobiles of all DWI offenders in four pilot counties in the State of California. The process evaluation showed that the rate of interlock installation in pilot counties increased from 2.1% in the pre-pilot period (prior to 2010) to 42.4% while the pilot program was in operation. However, ARIMA analysis revealed no general long-term deterrence effects on DWI in the pilot counties. In short, there was no statistical evidence that the program was "working" to reduce DWI recidivism on the whole. The authors speculated that there may be evidence of specific deterrence / incapacitation effects among pilot study participants, and they are currently in the process of empirically evaluating this hypothesis.

- Grohs (2014) provides an overview of interlock programs in several US states, as well as internationally (e.g. Sweden). This article points out that there is substantial variation in how BAIID programs are implemented, and who is eligible. The author points out that the research evidence generally indicates that alcohol interlocks are effective at reducing DWI and associated deaths and injuries. The article then provides an overview of the most current BAIID technologies.

- Voas, Taylor, and Kelley-Baker (2014) explore whether more intensive monitoring of interlock clients is important to optimizing reductions in recidivism. The evidence suggests that more intensive monitoring is associated with improved program performance; however, these improvements must be balanced against increased intrusiveness and program expenses. The authors conclude that the optimization of cost / benefits of different treatment and monitoring strategies still need to be investigated, particularly in view of emerging BAIID technologies (many of which involve real-time monitoring capabilities).

- Marques, Tippetts and Yegles (2014) examined the alcohol biomarker ethyl glucuronide (hEtG) in the hair as a predictor for positive interlock tests, recidivism, and alcohol dependence in a Canadian sample of 534 convicted DWI offenders. Statistical analysis showed that the presence of HEtG in a person's hair was the best predictor for discriminating new recidivism events that occur after interlock installation, alcohol dependence, and high BAC interlock tests. The authors suggest that this biomarker provides a useful alternative to self-reported alcohol consumption history, and other social / psychological measures. They also stated that this marker could be used to predict which clients in a DWI court / interlock program are at highest risk of recidivating, notwithstanding being in treatment, and under interlock supervision.

- Sawyer and Hancock (2014) explored if interlocks could lead to increased levels of distracted driving due to the "dual tasks" of operating a motor vehicle and an interlock. In their analysis of 15 mock interlock users, they found that women appeared to have more difficulty providing adequate breath samples to successfully operate the interlock device requiring them to "interact with the device more in order to provide a successful sample, and are therefore subjected to more interaction with the device than men" (p. 2100). They concluded that additional research is needed to determine the relationship between diminished lung capacity and interlock operations and that interlock functionality may differ on the basis of gender.

- Smith, et al. (2014) surveyed 2,397 adults throughout the United States to examine the degree of public support for various injury prevention initiatives. It was found that ignition interlock programs had the highest support among the general public (74.4%). The authors also concluded that scholars should make better efforts to disseminate their research results since evidence-based policy making increases public support for safety initiatives, while also serving to reduce traffic-related collisions, injuries and deaths.

SECTION 2: THE STUDY

OVERVIEW OF THE STUDY DESIGN

The design of this study has been progressive in nature. That is, as more data has become available, additional research questions have been addressed. As such, this 2015 report focuses on comparing subjects enrolled in the Michigan DWI/Sobriety Court Ignition Interlock program to a DWI/Sobriety Court comparison sample drawn prior to the systematic introduction of ignition interlocks, and to a sample of standard probationers drawn from across the state of Michigan for the period 2011-2014. The primary goal of this report is to determine whether ignition interlock devices reduce and control drunk driving recidivism among chronic DWI offenders when introduced as a component of DWI/Sobriety Courts. More specifically, this study was guided by the following primary research objectives:

a) The percentage of program participants ordered to place interlock devices on their vehicles who actually complied with the order;
b) The percentage of program participants who removed court-ordered interlocks from their vehicle without court approval;
c) The percentage of program participants who consumed alcohol or controlled substances;
d) The percentage of program participants found to have tampered with court-ordered interlocks;
e) Relevant treatment information about program participants; and,
f) The percentage of program participants convicted of a new offense under section 625(1) or (3) of the Michigan vehicle code, 1949 PA 300, MCL, 257.625 (i.e. convicted of a new driving under the influence offense).

THE PARTNER COURTS

At the initiation of the study in 2011, five partner courts were selected who contributed data related to their DWI/Sobriety Court participants. These selected courts needed to be DWI or DWI/Sobriety Court programs that anticipated enrolling at least 50 participants in the interlock ignition program. In the selection of these courts, a purposeful sampling strategy was used to select five courts that would be broadly representative of the state of Michigan in the context of: 1) region, 2) level of urbanization, and 3) population. The final sample of participating courts included:

- 8th District Court (Kalamazoo; Kalamazoo County).
- 51st District Court (Waterford; Oakland County).
- 61st District Court (Grand Rapids; Kent County).
- 86th District Court (Traverse City; Grand Traverse County).
- 96th District Court (Marquette; Marquette County).

A memorandum of understanding was drafted with each court, and the project investigators ensured that the research design met all federal and state human subject protection requirements.

POPULATION & SAMPLE

The samples used in this study are subdivided into three main groups: 1) the Interlock Program Participant Sample; 2) the DWI/Sobriety Court Non-Interlock Comparison Sample; and, 3) the Standard Probationer Comparison Sample.

The Ignition Interlock Program Participants (Experimental Group)

The target population is drunk driving offenders from the state of Michigan who have been convicted of a second or subsequent drunk driving offense, and who received a restricted driver's license from the Secretary of State after having completed at least a 45-day "hard" license suspension. These subjects must also have had an ignition interlock device installed on all vehicles registered to them, and have demonstrated adequate progress within an accredited DWI/Sobriety Court program. As of December 31st 2014, a total of 656 subjects from the five partner courts met these criteria. However, depending upon the research question(s) under consideration, the total number of cases used in different statistical analyses varies. Please see Appendix C for a full explanation of the experimental group samples.

The DWI/Sobriety Court Sample (Non-Interlock Comparison Group)

The first of two comparison groups used in this study consisted of all clients enrolled by the five partner DWI/Sobriety Courts in the year 2010, prior to the implementation of the ignition interlock pilot program. A total of 508 individuals met these criteria. This sample is designed to be as similar as possible to the interlock program subjects, differing only in the fact that comparison group subjects had not been placed under interlock supervision. Sub-samples from this comparison group were also used for various analyses. Because of the need to match the comparison group subjects to participants in the DWI/Sobriety Court and standard probationers, the total number of subjects varies depending upon the specific analyses performed. See Appendix D for a full explanation of the samples.

The Standard Probationer Sample (Standard Probationer Comparison Group)

A second comparison group for this study was constructed by matching as many subjects as possible from the Ignition Interlock Program Participants to offenders from the state of Michigan who shared statistically similar demographic and offending characteristics. Unlike the interlock program group, and the DWI/Sobriety Court comparison group, these individuals had not been placed on ignition interlock restrictions; nor had they obtained a restricted license from the Secretary of State, or participated in a DWI/Sobriety Court. Instead, these subjects were given standard sentences (including periods of probation; and, in some cases, incarceration) typical for chronic DWI offenders in the state of Michigan. The precise matching criteria were developed by and are available from SCAO. Using these criteria, SCAO was able to match 585 of the 656 pilot interlock participants. Slightly reduced samples were used to assess recidivism outcomes because not all cases had sufficient "time at risk" to be utilized for each analysis. See Appendix E for a full explanation of this sample.

DATA

Participating courts submitted data through the Michigan Drug Court Case Management Information System (DCCMIS). To supplement the data available in DCCMIS, SCAO staff downloaded recidivism information from the Michigan Judicial Data Warehouse (JDW) for all of the courts in the state. Based on this information, SCAO provided the researchers with a dataset showing whether or not subjects in the study had been reconvicted of various criminal offenses since entering DWI/Sobriety Court. SCAO staff also used the JDW data to create recidivism measures for the standard probationer comparison group.

In addition to the official data from SCAO, telephone discussions were initiated with each participating court in Fall, 2014. The purpose of these discussions was to verify and validate the data being analyzed in this report: particularly information pertaining to interlock violations (e.g. tampering with the interlock, operating a motor vehicle not equipped with an interlock etc.) The evaluation team is currently in the process of contacting both the interlock providers, and Secretary of State to continue and extend this ongoing validation process.

VARIABLES

Appendix F provides a full description of each variable used for statistical analysis. Variables are classified as independent, control, process or outcome.

DATA ANALYSIS

This 2015 interlock report presents four basic types of data analysis:

1) Descriptive data regarding the primary evaluation objects; based on the 656 subjects of the Ignition Interlock Program Participant sample for the period 2011-2014.
2) Comparative analysis of key demographic, process, and outcome-related variables. Descriptive statistics and basic bivariate inferential statistical analyses (e.g. Chi-square (x^2) and ANOVA) were used to compare the Interlock Program Participants to the DWI / Sobriety court comparison group.
3) Comparative analysis of recidivism data. Comparisons of the Interlock Program Participants, the DWI/Sobriety Court comparison group (the Non-Interlock Group), and the matched group of Standard Probationers were conducted using x^2 tests, and the Kramer's V coefficient and Z tests for equality of proportion (where appropriate).
4) Multivariate logistic regression analysis was used to explore the effect of being on interlock restrictions (successes and failures) in the DWI/Sobriety Court while controlling for relevant demographic characteristics.

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SECTION 3: FINDINGS

The information presented in this section is focused on data from the first four years of the DWI/Sobriety Court Interlock Study. As such, it includes information from the 656 subjects (the "Interlock Program Participants") who were admitted to the interlock program in the five participating partner courts for the calendar years 2011 - 2014. It is divided into the following sections, which follow the research questions set forth in the original enabling legislation:

- Percentage of program participants: compliance levels;
- Percentage of program participants who removed court-ordered interlocks without court approval;
- Percentage of program participants who used alcohol & controlled substances;
- Interlock tampering episodes;
- Relevant treatment information; and,
- New offenses (i.e. recidivism).

This report also provides supplemental information related to the Interlock Program. This information includes the following:

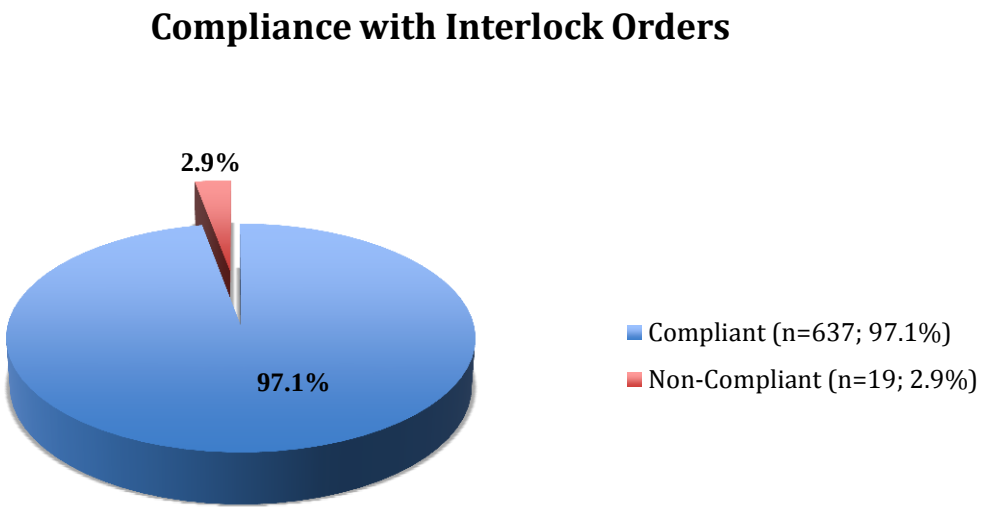
- Background & other demographic information;
- Education, employment outcomes and program failures; and,
- Multivariate analysis of program failure data.

Finally, in order to determine if the performance of the Interlock Program Participants were different from similar offenders, this study also compares these subjects to a comparison group of offenders (the Non-Interlock Group) who were admitted to the five partner groups' DWI/Sobriety Courts in 2010, prior to the implementation of the interlock program. It then compares recidivism data from both of these groups to a group of Standard Probationers drawn from across the state of Michigan.

PERCENTAGE OF PROGRAM PARTICPANTS WHO COMPLIED WITH INTERLOCK ORDER

Figure 2 shows a graphic representation of the compliance levels of program participants (from January 1st, 2011 to December 31st, 2014) who were ordered by the courts to place interlock devices on their vehicles, and who complied with that order. Based on the population of 656 offenders in the five participating courts, 637 individuals (97.1%) complied with court orders to place interlocks on their vehicles; 19 participants (2.9%) did not comply.

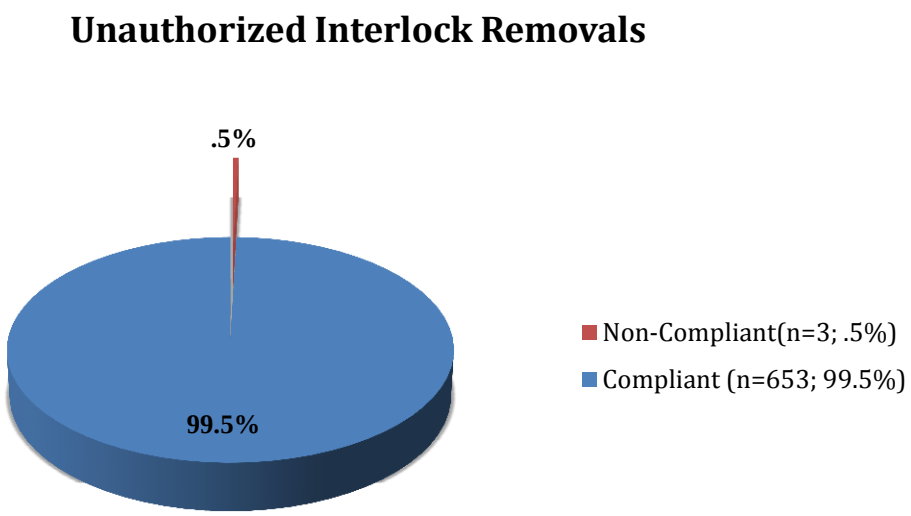
Figure 2: Percentage of Program Participants Who Complied with Interlock Orders



PERCENTAGE OF PROGRAM PARTICIPANTS WHO REMOVED COURT-ORDERED INTERLOCKS WITHOUT COURT APPROVAL

Figure 3 shows the percentage of program participants who removed court-ordered interlocks from their vehicle(s) without court approval for the period January 1st, 2011 to December 31st, 2014. The data show that the majority of program participants (n=653; 99.5%) did not remove their interlocks. Only one half of one percent (n=3; 0.5%) of program participants removed their interlocks without permission[2].

Figure 3: Percentage of Program Participants: Unauthorized Removals

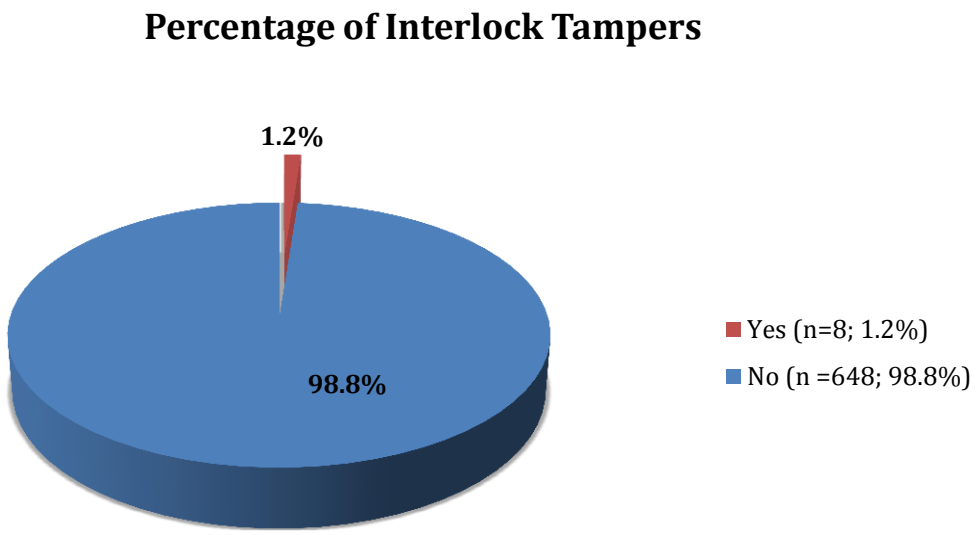


[2]A total of 259 cases in the DCCMIS dataset regarding interlock removals were reported as "missing." However, the research team was able to confirm that the missing data almost certainly reflected the fact that the event in question had not occurred; hence, this missing information was re-coded as a "no" (i.e. the program participant did not remove the interlock without approval).

INTERLOCK TAMPERING EPISODES

Figure 4 shows the number of known interlock tampers by Interlock Program Participants between the start of the program in 2011 and December 31st, 2014. In total, 8 program participants were found to have tampered with an interlock device, comprising a "tamper-rate" of 1.2%. A total of 648 participants (or 98.8%) did not tamper with their interlocks[3].

Figure 4: Interlock Tampers



[3] DCCMIS data shows a total of 260 missing cases related to tampering. However, the research team was able to confirm that the missing data actually recorded that the event in question had not occurred; therefore, the missing information represents "successful" responses (i.e. the participant did not tamper with the interlock).

PERCENTAGE OF PROGRAM PARTICIPANTS: ALCOHOL & CONTROLLED SUBSTANCE USE

Table 1 and Figure 5 shows the percentage and frequency of Interlock Program Participants who had tested positive for alcohol and/controlled substances while in the interlock program or in the DWI / Sobriety court comparison group for the period 2011-2014[4]. The data show statistically significant differences between the two groups: those in the interlock group had fewer positive alcohol/drug incidents than their counterparts in the comparison sample. More specifically, of the 469 pilot participants who have completed the program, 332 (or 70.8%) reported drug and alcohol violations while progressing through their respective DWI/Sobriety Court. The data also shows that only 41 (or 9.1%) of the pilot participants had 10 or more positive drug or alcohol tests. By way of comparison, in the comparison group, 309 (76.5%) had drug and alcohol violations and 80 (19.1%) had 10 or more violations (with a high of 114 positive tests).

In summary, while the data show that both groups had issues with alcohol/drug violations while in DWI/Sobriety Court, those under interlock restrictions appeared to test positive for drugs and/or alcohol less often, and thus seemed able to come to terms with their substance abuse issues somewhat more quickly and successfully[5].

Table 1. Comparisons of Subjects: Interlock Program and Non-Interlock Subjects Who Consumed Alcohol and/or Controlled Substances.

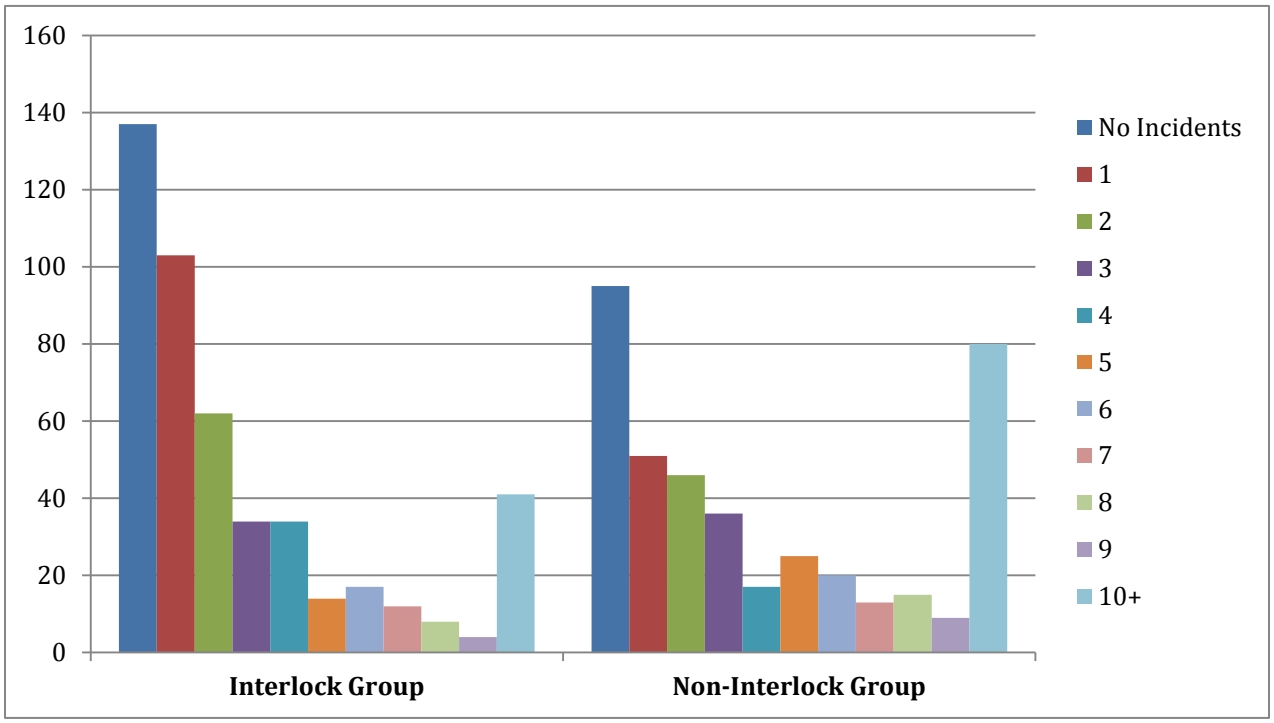
Percentage of Positive Drug/Alcohol Use: Interlock Participants & Non-Interlock Group

	Pilot Program Participants			Non-Interlock Group		
# of Incidents	**n**	**%**	**Cum. %**	**n**	**%**	**Cum %**
None	137	29.2	29.2	95	23.5	23.5
One	103	22.0	51.2	51	12.6	36.1
Two	62	13.2	64.4	46	11.4	47.5
Three	34	7.2	71.6	36	8.9	56.4
Four	34	7.2	78.9	17	4.2	60.6
Five	14	3.0	81.9	25	6.2	66.8
Six	17	3.6	85.5	20	5.0	71.8
Seven	12	2.6	88.1	13	3.2	75.0
Eight	8	2.1	90.2	15	3.7	78.7
Nine	4	0.9	91.0	9	2.2	80.9
Ten or More	41	9.1	100.0	80	19.1	100.0
Total Cases	469	100.0	---	404	100.0	---

[4] Due to limitations with the DCCMIS dataset, the researchers were unable to separate alcohol and drug incidents. Therefore, the information in this table provides aggregate statistics only regarding combined positive drug/alcohol incidents.

[5] The differences between the interlock program participants and the non-interlock comparison group are statistically significant via ANOVA ($p<.05$).

Figure 5. Comparisons of Subjects: Interlock Program and Non-Interlock Subjects Who Consumed Alcohol and/or Controlled Substances(as measured in actual incidents)



RELEVANT TREATMENT INFORMATION

Table 2 shows treatment-related data for the Interlock Program Participant population and the Non-Interlock Group. At the end of calendar year 2014, 469 (or 71.5%) Interlock Program Participants were no longer enrolled in DWI/Sobriety Court.

Among those who have completed the interlock program, the average time spent in DWI / Sobriety court was approximately 433 days. These program participants attended an average of approximately 178 alcohol program meetings, received an average of 2.4 court-ordered sanctions, and earned 12.3 court ordered incentives (rewards for program compliance). They also spent approximately 4.6 days in jail, and had approximately 2 warrants per 100 clients issued. They also completed an average of 50 treatment-oriented contact hours; and, the DWI/Sobriety Courts averaged approximately 295 drug tests per client. The typical completed Interlock Program Participant also spent approximately 261 consecutive days sober. Table 2 also shows that there was substantial variation in each of these parameters (as evidenced by the fact that the standard deviations for these variables generally exceed their respective means).

In comparison to the Interlock Program Participants, 404 of the subjects that were in a DWI/Sobriety Court but not under interlock restrictions (the Non-Interlock Group) completed DWI / Sobriety court prior to the implementation of the interlock program. Some of the parameters for this comparison group were similar ($\bar{x}$ = 414 for Comparison Group subjects vs. $\bar{x}$ = 432.6 for Interlock Program subjects) which is to be expected since the data represents approximately the same time period for both groups. The Interlock Program and Non-Interlock subjects also had a similar number of drug tests ($\bar{x}$ = 218.5 for Non-Interlock

Subjects vs. 295.0 for Interlock Program Participants) and sobriety days ($\bar{x}$ = 224.9 for Non-Interlock subjects vs. $\bar{x}$ = 261.1 for Interlock Program Participants).

On the other parameters, however, the two groups exhibited statistically significant differences. Non-Interlock Group subjects substantially exceeded the Interlock Program Participants in terms of days spent in jail ($\bar{x}$ = 9.2 vs. 4.6), treatment contact hours ($\bar{x}$ = 202.7 vs. 49.8), and the mean number of bench warrants issued against them ($\bar{x}$ = 0.12 vs. 0.03). Additionally, while Non-Interlock subjects were sanctioned almost exactly as often ($\bar{x}$ = 2.4 Interlock Subjects vs. $\bar{x}$ = 2.3 Non-Interlock Subjects), the Non-Interlock Group members received fewer incentives from the courts ($\bar{x}$ = 3.0 vs. 12.3) and attended substantially fewer 12-step program meetings ($\bar{x}$ = 93.0 vs. 178.3)[6].

Table 2 (see page 36) also provides information on the same parameters, expressed as a calculation per month (i.e. 30 days) spent in DWI/Sobriety Court. It also contains a calculation of the percentage of overall positive drug tests (on a per month basis). The conclusions that can be drawn from these analyses are that Interlock Program Participants have significantly fewer positive drug tests (approximately 1.4% vs. 6.4%); they spent less time in jail (0.36 days vs. 1.88 days / month); and, they received a higher proportion of incentives (over 0.9 incentives / month vs. less than 0.2 incentives / month) than the Non-Interlock Group.

[6] ANOVA analysis revealed that the differences between the interlock program subjects and the comparison group subjects were significantly different ($p < .05$) for all parameters except number of days in drug court, and the number of sanctions.

Table 2. Treatment / Intervention Information: Program Participants, 2011-2014

Sobriety Court Phase at end of Calendar Year 2014

	Interlock Program Participants (N=656)		Non-Interlock Group (N=415)	
	n	%	n	%
Sobriety Court Phase				
I	17	2.6	0	0.0
II	64	9.8	0	0.0
III	64	9.8	0	0.0
IV	37	5.6	0	0.0
Closed Case	474	72.3	415	100.0
Missing Data	0	0.0	0	0.0

Treatment/Intervention Data: Completed Interlock Program (n=469) and Non-Interlock Groups (n=415)

	Interlock Program Participants		Non-Interlock Group	
	mean	sd	mean	sd
Number of Days of Court	432.6	142.1	414.0	216.3
Days in Jail	4.6	15.7	9.2	21.6
Number of Bench Warrants	0.03	0.19	0.12	0.36
12-Step Program Meetings	178.3	125.5	93.0	145.4
Court Ordered Sanctions	2.4	2.7	2.3	2.6
Court Ordered Incentives	12.3	7.3	3.0	3.7
Treatment Contact Hours	49.8	75.4	202.7	1306.2
Total Number of Drug Tests	295.0	163.6	218.5	137.5
Sobriety Days	261.1	190.3	224.9	220.3

Treatment/Intervention Data: All Cases, Including Those Still In Progress (n=656 Interlock Subjects, n=415 Non-Interlock Subjects)

	Interlock Program Participants		Non-Interlock Group	
	mean	sd	Mean	sd
Days in Jail / Month	0.36	1.41	1.88	11.33
Bench Warrants / Month	0.0026	0.032	0.046	0.39
12-Step Meetings / Month	10.30	8.71	5.57	8.52
Sanctions / Month	.18	.23	.23	.33
Incentives / Month	.91	.64	.19	.24
Treatment Hours / Month	3.70	5.50	32.13	311.05
Number of Drug Tests / Month	20.87	10.41	16.12	8.55
Sobriety Days / Month	17.47	11.42	18.38	29.88
Percent of Positive Drug Tests	1.36	3.37	6.41	16.00

NEW OFFENSES

Tables 3a to 3e provide an analysis of recidivism rates for Interlock Participants, the Non-Interlock Group, and Standard Probationers for drunk driving and any criminal offenses within the one, two and three year anniversaries of the offender's initial conviction for drunk driving for the period 2011-2014. Data for these analyses were obtained from the Michigan Judicial Data Warehouse (JDW).

The percentage of Interlock Program Participants convicted of a new alcohol-related offense under section 257.625(1) or (3) of the Michigan vehicle code within three years of their initial conviction for DWI are reported in Table 3a. Only 2.8% of the Interlock Program Participants were re-convicted of operating a vehicle while intoxicated within three years of their initial conviction (anyone who has not yet been followed for at least that long was excluded from this analysis). By way of comparison, 5.0% from the Non-Interlock Comparison Group, and 5.5% of the Standard Probationers, were reconvicted of drunk driving offenses over the same time period.[7]

Table 3b reports recidivism rates at two years post- program completion (as above, anyone who has not yet been followed for at least that long is excluded from the analysis). The data show that Interlock Program Participants are reconvicted at a statistically significantly lower rate (1.0%) than either Non-Interlock (DWI/Sobriety Court comparison) subjects (4.2%) or Standard Probationers (4.3%).[8]

Table 3c reports recidivism rates after one-year of follow up. The data show that Interlock Program Participants are reconvicted at a lower rate (1.0%) than either Non-Interlock (DWI/Sobriety Court comparison) subjects (2.6%) or Standard Probationers (2.9%).[9]

Table 3d reports all criminal recidivism (not just drunk driving reconvictions) as the outcome variable. Interlock participants continue to reoffend at lower rates (8.3%) after three years (for those who have accumulated sufficient follow-up time) than the Non-Interlock comparison group (10.7%), or Standard Probationers (11.6%).[10]

Table 3e shows all criminal recidivism when the follow up period is two years in length (among those with sufficient at risk time). Here, the data show that Interlock Program Participants reoffend at statistically significantly lower rates (3.0%) than the Non-Interlock comparison group (7.6%) and Standard Probationers (9.5%).[11]

Finally, Table 3f reports all criminal recidivism rates after one-year of follow up. The data show that Interlock Program Participants are reconvicted at a statistically significantly lower rate (1.6%) than either Non-Interlock (DWI/Sobriety Court comparison) subjects (4.5%) or Standard Probationers (5.3%)[12].

[7] These differences are not sufficiently large to be considered statistically significant at the conventional .05 level of probability.

[8] These differences are statistically significant (Kramer's V = 0.076, $x^2 = 7.2$, d.f. = 2, $p < 0.03$).

[9] These differences are not sufficiently large to be considered statistically significant at the conventional .05 level of probability.

[10] These differences are not sufficiently large to be considered statistically significant at the conventional .05 level of probability.

[11] These differences are statistically significant (Kramer's V = 0.097, $x^2 = 11.8$, d.f. = 2, $p < 0.004$).

[12] These differences are also statistically significant (Kramer's V = 0.084, $x^2 = 10.1$, d.f. = 2, $p < 0.007$).

As a general conclusion, the results are consistent regardless of the time period, or type of re-offending under analysis: the Interlock Program Participant group exhibits lower rates of recidivism than either the Non-Interlock Group or Standard Probationers Or in plain language: the data suggest that the presence of a BAIID device, in conjunction with a DWI / Sobriety court program, reduces drunk driving, as well as general criminal re-offending.

Table 3a: Re-Conviction for Operating Under the Influence Within Three Years of Initial Conviction, among those with at Least Three Years of Follow Up

Re-Conviction for Operating Under the Influence Within Three Years of Initial Conviction

	Interlock Participants		Non-Interlock Group		Standard Probationers	
	n	%	n	%	n	%
Re-Conviction						
Yes	3	2.8	19	5.0	32	5.5
No	105	97.2	361	95.0	546	95.7

Table 3b: Re-Conviction for Operating Under the Influence Within Two Years of Initial Conviction, among those with at Least Two Years of Follow Up

Re-Conviction for Operating Under the Influence Within Two Years of Initial Conviction

	Interlock Participants		Non-Interlock Group		Standard Probationers	
	n	%	n	%	n	%
Re-Conviction						
Yes	3	1.0	16	4.2	25	4.3
No	293	99.0	364	95.8	557	95.7

Table 3c: Re-Conviction for Operating Under the Influence Within One Year of Initial Conviction among those with At Least One Year of Follow Up

Re-Conviction for Operating Under the Influence Within One Year of Initial Conviction

	Interlock Participants		Non-Interlock Group		Standard Probationers	
	n	%	n	%	n	%
Re-Conviction						
Yes	5	1.0	10	2.6	17	2.9
No	481	99.0	370	97.4	567	97.1

Table 3d: Re-Conviction for Any Criminal Offense Within Three Years of Initial DWI Offense among those with At Least Three Years of Follow Up

Re-Conviction for Any Criminal Offense Within Three Years of Initial Conviction

	Interlock Participants		Non-Interlock Group		Standard Probationers	
	n	%	n	%	n	%
Re-Conviction						
Yes	9	8.3	41	10.7	67	11.6
No	99	91.7	339	89.3	511	88.4

Table 3e: Re-Conviction for Any Criminal Offense Within Two Years of Initial DWI Offense among those with At Least Two Years of Follow Up

Re-Conviction for Any Criminal Offense Within Two Years of Initial Conviction

	Interlock Participants		Non-Interlock Group		Standard Probationers	
	n	%	n	%	n	%
Re-Conviction						
Yes	9	3.0	29	7.6	55	9.5
No	287	97.0	351	92.4	527	90.5

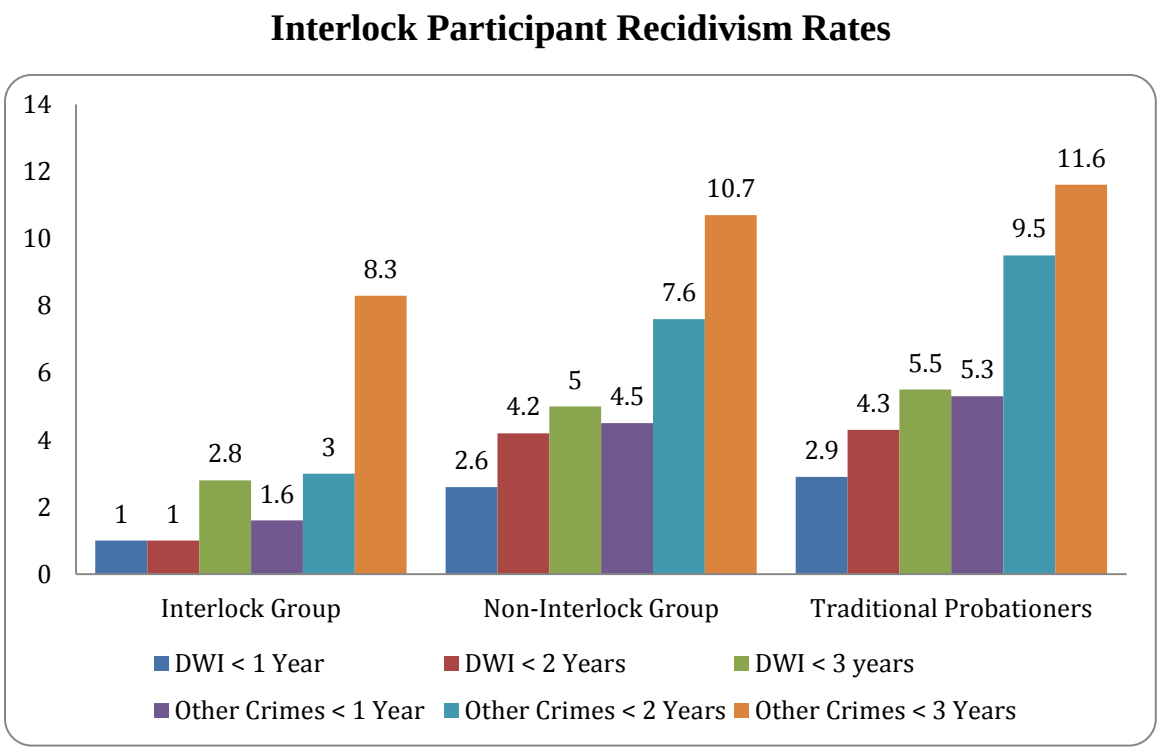
Table 3f: Re-Conviction for Any Criminal Offense Within One Year of Initial DWI Offense among those with At Least One Year of Follow Up

Re-Conviction for Any Criminal Offense Within One Year of Initial Conviction

	Interlock Participants		Non-Interlock Group		Standard Probationers	
	n	%	n	%	n	%
Re-Conviction						
Yes	8	1.6	17	4.5	31	5.3
No	478	98.4	363	95.5	553	94.7

Figure 6 graphically presents the same information found in Tables 3a – f.

Figure 6: Recidivism Rates: DWI & Other Offenses (In Percentages) for the Interlock Program (Experimental Group), Non-Interlock Comparison Group & Traditional Probationers



The visual representation of the data shows that while the number of re-convictions in all three groups is generally low, the Interlock Program Participants are performing better than both comparison groups with respect to several different measures of recidivism.

BACKGROUND AND OTHER DEMOGRAPHIC INFORMATION

Key demographic variables related to the Interlock Program Participants and the Non-Interlock Comparison Group is reported in this section.

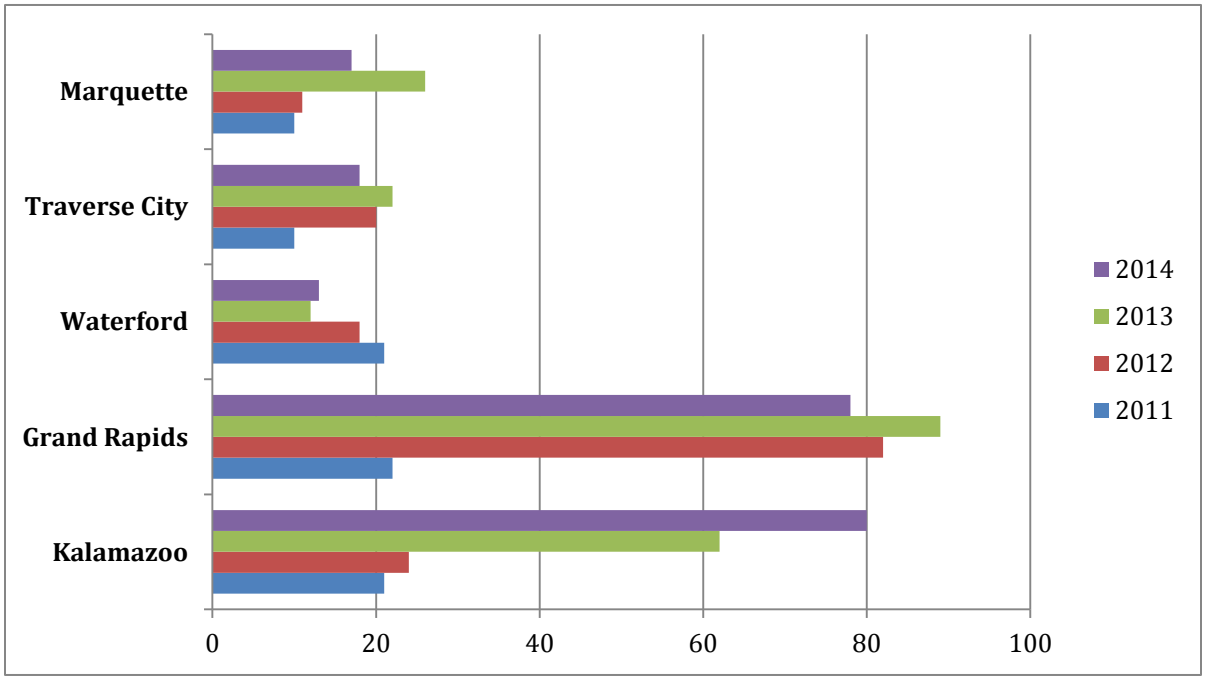
Participating Court Data

Table 4 and Figure 7 report the key demographic information and changes in the number of Interlock Program Participants for the period, 2011 to 2014 from the five partner courts used in this study. A review of the data shows that 656 individuals have been admitted into the Interlock Program since its inception in 2011. When examined in the context of specific courts, two of the five courts reported an increase in the number of participants in their interlock programs from the previous year of the study, while three courts experienced declines.

Table 4. Enrolled Interlock Program Subjects: Controlled by Year &Court

		Participating Courts – Interlock Program Participants					
District Court	**Location**	**Offenders Enrolled (2011)**	**Offenders Enrolled (2012)**	**Offenders Enrolled (2013)**	**Offenders Enrolled (2014)**	**Percent Change 2013-2014**	**Total Number of Program Participants**
8th	Kalamazoo	21	24	62	80	22.5%	187
51st	Waterford	21	18	12	13	8.3%	64
61st	Grand Rapids	22	82	89	78	-12.4%	271
86th	Traverse City	10	20	22	18	-18.2%	70
96th	Marquette	10	11	26	17	-34.6%	64
Total		**84**	**155**	**211**	**206**	**-2.4%**	**656**

Figure 7: Enrolled Interlock Program Subjects: Presented by Year & Court



Offender Demographic Information

Table 5 shows the demographic characteristics of Interlock Program Participants and offenders in the Non-Interlock Group for the period 2011-2014. The "typical" Interlock Program Participant is Caucasian (88.1%), male (74.4%), single (65.7%) and approximately 34 years old. The demographic characteristics of the Non-Interlock Group are statistically similar to that of the pilot program subjects,[13] with the exception of ethnicity; Interlock Program Participants are more diverse than individuals in the Non-Interlock Group.

Table 5. Offender Demographic Characteristics: Interlock Program & Non-Interlock Groups

Offender Profile: Demographic Variables	Interlock Program Participants		Non-Interlock Group	
	n	**%**	**n**	**%**
Ethnicity				
Caucasian	578	88.1	349	84.1
Hispanic/Latino	30	4.6	30	7.2
African American	34	5.2	25	6.0
Native American	3	0.5	4	1.0
Asian/Pacific Islander	3	0.5	2	0.5
Other	8	1.3	5	1.2
Gender				
Male	488	74.4	307	74.0
Female	168	25.6	108	26.0
Marital Status				
Single	431	65.7	272	65.5
Divorced	97	14.8	65	15.7
Married	102	15.5	62	14.9
Widowed	7	1.1	4	1.0
Separated	19	2.9	12	2.9
	mean	**Stand. Dev**	**Mean**	**Stand. Dev**
Age				
Years (at screening)	34.2	11.4	33.3	11.3

[13] ANOVA and x^2 tests for significance indicate that age, gender and marital status did not reach statistical significance at the traditional $p<.05$ level, while the ethnicity of the interlock and non-interlock groups are significantly different ($p < .05$).

Education & Employment Status: Interlock Program Participants & Non-Interlock Group

Table 6 shows the educational levels and employment status of the Interlock Program Participants and Non-Interlock Group at intake for the period 2011-2014. Overall, the Interlock subjects have higher education levels; the data show that just under 59% of the Interlock Program Participants have least some college education. Meanwhile, less than 43% of the Non-Interlock subjects possess a college education.

In the context of employment status, Interlock Program Participants have higher rates of full-time employment. Over 70% of the interlock group reported full time employment at intake, while subjects in the Non-Interlock Group reported working full time just over half the time (56.1%). Conversely, almost one-quarter (24.6%) of the Non-Interlock Group subjects reported being unemployed, while less than 15% of the Interlock Program Participants were unemployed.

Table 6. Offender Profiles: Education & Employment, Interlock Program Participants and Non-Interlock Group

	Interlock Program Participants		Non-Interlock Group	
Educational Levels at Intake	**n**	**%**	**n**	**%**
College				
Post Baccalaureate	17	2.6	3	0.7
4 Year (Bachelors)	99	15.1	26	6.3
2 year (Associates)	40	6.1	22	5.3
Some College (no degree)	230	35.1	126	30.4
Trade School				
Trade School Graduate	33	5.0	18	4.3
Some Trade School	14	2.1	7	1.7
High School Graduate	153	23.3	119	28.7
GED	32	4.9	39	9.4
No High School Degree	32	4.9	55	13.3
Employment Status at Intake				
Full Time Employment	463	70.6	233	56.1
Part Time Employment	84	12.8	65	15.7
Unemployed	96	14.6	102	24.6
Not in Labor Force / Retired	13	2.0	15	3.7

Substance Abuse Histories

Table 7 (next page) shows the substance abuse history of Interlock Program Participants and the Non-Interlock Group at intake for the period 2011-2014. The majority of both groups (almost 93% of the Interlock Group and 93.5% of the Non-Interlock Comparison Group) reported past substance abuse issues at intake. Most of these issues were related to alcohol dependence abuse or intoxication (as opposed to other kinds of drugs). As such, the majority of Interlock Program Participants (almost 96%) were assigned alcohol dependence, abuse or intoxication as their primary DSM-IV (Diagnostic and Statistical Manual of the American Psychiatric Association, Fourth Edition) diagnoses.

Similar issues also existed with the Non-Interlock Group. Although the number of cases that reported alcohol dependence, abuse or intoxication as the Primary DSM-IV diagnoses was slightly lower (92%). The most important difference observed between the Interlock Program Participant group, and the Non-Interlock Group was that the Interlock Group had statistically significantly higher rates of prior substance abuse treatment; approximately three-quarters (74%) of the Interlock Program Participants reported prior treatment, as compared to less than two-thirds (approximately 62%) of the Non-Interlock Group.[14]

[14] This difference is statistically significant via x^2 test ($p < .05$).

Table 7. Offender Substance Abuse and Substance Abuse Treatment Histories

	Interlock Program Participants		Non-Interlock Group	
Substance Abuse History at Intake				
	n	**%**	**n**	**%**
Prior Substance Abuse				
Yes	609	92.8	388	93.5
No	47	7.2	27	6.5
Prior Substance Abuse Treatment				
Yes	484	73.8	257	61.9
No	172	26.2	158	38.1
DSM-IV Diagnosis at Intake				
Primary DSM-IV				
Alcohol Dependence	536	81.7	256	61.7
Alcohol Abuse	87	13.3	106	25.5
Alcohol Intoxication	5	0.8	20	4.8
Cannabis Dependence	7	1.1	15	3.6
Poly. Dependence	10	1.5	5	1.2
Opioid Dependence	3	0.5	4	1.0
Cannabis Abuse	5	0.8		
Other	3	0.6	9	2.2
Secondary DSM-IV				
None	537	81.9	329	79.3
Alcohol Dependence	14	2.1	16	3.9
Cannabis Dependence	15	2.3	16	3.9
Cannabis Abuse	20	3.0	18	4.3
Alcohol Abuse	4	0.6	6	1.4
Depressive Disorder	9	1.4	2	0.5
Other	57	8.7	27	6.5

EDUCATION & EMPLOYMENT OUTCOMES

Table 8 shows the educational and employment improvements among Interlock Program Participants and the Non-Interlock Group for the period 2011-2014. It also reports the failure rates in both groups. The data in Table 8 show that 19.0% of Interlock Program Participants improved their educational levels between the start and the completion of the program, compared to 15.1% in the Non-Interlock Group. When comparing improvements in employment, 34.1% of the Interlock Program Participants reported employment improvements, compared to 37.6% of the Non-Interlock Group.[15]

Table 8. Educational and Employment Improvement: Interlock Program Participants Who Completed the Program

Education and Employment Data

	Interlock Program Participants (n=469)		Non-Interlock Group (n=404)	
	n	**%**	**n**	**%**
Educational Improvement at Completion of Program				
Yes	89	19.0	61	15.1
No	380	81.0	334	82.9
Missing	0	0.0	8	2.0
Employment Improvement at Completion of Program				
Yes	160	34.1	152	37.6
No	309	65.9	244	60.4
Missing	0	0.0	10	2.0

[15] Because Interlock Program Participants began the program with higher educational levels, and had a higher full-time employment rate than the Non-Interlock Group, these findings should be interpreted with caution.

Program Success & Failures

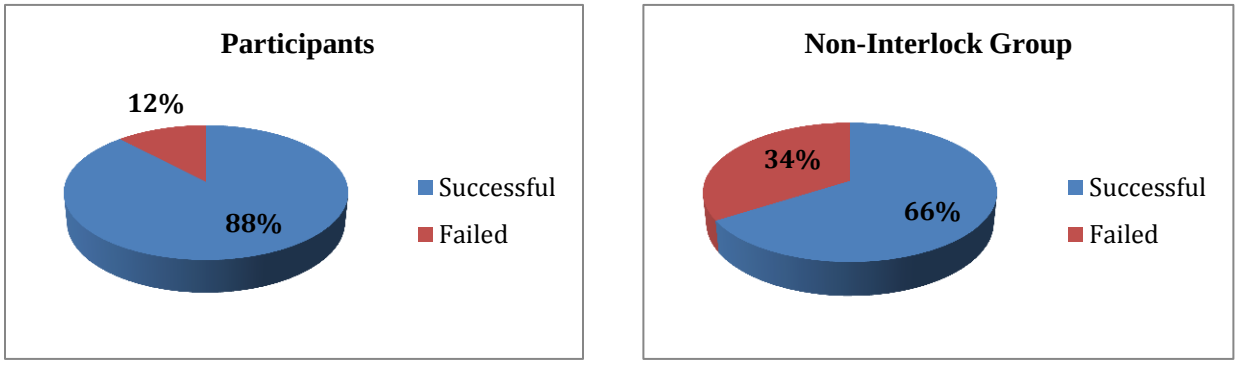
Table 9 and Figure 8 show DWI/Sobriety Court success and failures for the Interlock Program Participants and the Non-Interlock Group for the period 2011-2014. Chi-square analysis shows that the Interlock Program Participants have a significantly better success rate as compared to the Non-Interlock Group.[16] In the Interlock Program Participant group, almost 90% successfully graduated, as compared to approximately 66% of the Non-Interlock Group.

Table 9. Program Failure Data: Interlock Program Participants & Non-Interlock Group

Program Failure Data

	Pilot Program Participants (N=469)		Non-Interlock Group (N=404)	
	n	%	n	%
Program Failures				
Yes (Failed in Program)	55	11.7	137	33.9
No	414	88.3	267	66.1

Figure 8: Program Failures: Interlock Program Participants & the Non-Interlock Group



[16] x^2 tests indicate that the difference between the Pilot Program Participants and Non-Interlock subjects on this variable is statistically significant ($p < .05$).

MULTIVARIATE ANALYSIS

Multivariate analysis was performed to estimate the impact of Interlock Program Participation on success versus failure in the DWI/Sobriety Court program while controlling for key demographic characteristics (age, gender, ethnicity, education level at intake, and employment status at intake). These results are presented in Table 10.

The analysis reveals that, after statistically controlling for age, gender, ethnicity, initial employment status, and educational attainment, subjects in the Non-Interlock Group have over 3 times greater odds of failing the DWI / Sobriety Court than Interlock Program Participants. The data in Table 10 also shows that older subjects, and those with a trade school education, are less likely to fail the Interlock Program. However, participants who are unemployed, or are not in the labor force at all, have over 3 times a greater odds of failing (relative to those who are employed). The other variables in the analysis were not statistically significant.[17]

Table 10. Multivariate Logistic Regression Analysis: The Effect of Interlock Program Participation on DWI/Sobriety Court Failure, Controlling for Selected Demographic Characteristics

Odds Ratios of Failing Out of Drug Court

Variable	Odds Ratio	Statistical Significance
Comparison Group Subject	3.02	<.0001
Age	.966	<.0001
Gender (Female)	1.30	ns
Ethnicity (Black)	1.64	ns
Ethnicity (Hispanic)	1.40	ns
Ethnicity (Other)	1.13	ns
Employment (Unemployed)	3.14	<.0001
Employment (Not in L.Force)	3.50	.02
Education (Trade School)	0.45	<.0001
Education (College)	0.88	ns
Regression x^2 = 134.32 (df = 10)	p < .0001	
n = 873		

Notes: ns = not significant

[17] The lack of significance for gender represents a change from the 2014 report, where females were more likely to fail out of the program, but is consistent with the 2013 analysis, where gender was not statistically significant.

PROCESS-RELATED INFORMATION

A series of telephone, e-mail or in-person conversations were initiated with each of the partner courts during this reporting cycle. During these conversations, additional insight into implementation and operational issues associated with the interlock program were gained. Generally, court personnel report very positive impressions of the program. Some of the major findings are highlighted below:

The Validity of Interlock Data

One question that was raised regarding this study is the validity of the data that was used, particularly whether the data entered in the State of Michigan's DCCMIS is valid and reliable. Based on discussions with court staff and interlock vendors, the research team was able to ascertain that the data is validated at multiple points before entry into the DCCMIS system. Listed below is a brief description of the data collection and validation process:

- Violations originate from two different sources: 1) interlock-related violations are identified and reported to court staff by interlock providers; and, 2) other DWI/Sobriety Court violations are detected by court personnel.
- In the case of interlock-related violations, they are verified by interlock vendor staff, court personnel and interlock service technicians. All of these individuals are properly trained; written policies and procedures also exist at the majority of partner courts and with all interlock vendors.
- In the case of non-interlock violations, court personnel reported that they have internal validation processes (i.e. established practices, policies and procedures) to ensure that a violation actually did occur.
- Regardless of the type of violation, DWI/Sobriety Court staff review all incidents/violations; DWI/Sobriety Court judges also validate all violations.
- DCCMIS data is entered directly by court staff on a monthly or quarterly basis. Usually, there is one dedicated staff member responsible for data entry (although this wasn't always the case; in the past, probation officers in certain courts were responsible for entering their own data). Participating drug courts reported that staff members who are presently responsible for entering data are fully trained in the data entry process. Court staff have also remained consistent during the four years of this study.
- Finally, DCCMIS related data is reviewed by court staff (at a minimum annually) to ensure accuracy.

As such, because of these internal checks and balances, along with standardized practices, the evaluation team is reasonably confident that the DCCMIS data exhibit acceptable levels of both validity and reliability.

Other Points:

- The programs have been stable in the context of personnel for the period 2011-2014; there have been very few changes in key personnel within the partner courts.
- Court staff report positive working relationships with interlock providers. No major issues were reported.
- Additional workload responsibilities were reported to be minimal in the context of any extra time constraints that the interlock program has imposed on court staff. Perhaps the greatest amount of time was attributed to "training" and orienting participants on the use and function of the interlocks.
- Anecdotal information from court staff also revealed that interlock participants were pleased with the opportunity to operate a motor vehicle under a restricted license; very few issues related to interlock operations, or other technical issues, were reported to court staff (except as described in previous versions of this report).

- Relationships with the Michigan Secretary of State were reported as generally positive. Many of the courts have established specific contacts with SOS staff, which has led to improved communication and administration of the interlock program.
- Demand for admission into the DWI/Sobriety Courts remains strong. Some concerns were raised regarding increased caseloads and the subsequently management and supervision of new interlock participants.
- Multiple courts continue to express some level of frustration with the official forms utilized to report violations and unsuccessful program completions. Court staff believe the existing forms (such as the "MC 393 Form" that is submitted to the Michigan Secretary of State) do not allow for sufficient detail in the reporting process, particularly in unique cases.

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SECTION 4: SUMMARY AND CONCLUSION

UNDERSTANDING DRUNK DRIVING AND ITS PREVENTION

The literature shows that drinking and driving is a serious public health and safety concern in the United States. It can safely be concluded from the extant literature that an integrated and targeted approach is one of the most effective ways to control and prevent repeat drunk driving. One very promising intervention is the use of DWI/Sobriety courts that use a problem-solving/therapeutic approach to address the core issues related to drinking and driving among chronic offenders. As part of the treatment and supervision plan, the use of ignition interlocks has been found to be very effective as a monitoring and enforcement tool to ensure program compliance, and public safety, while also serving as a behavioral reinforcement tool to ensure long-term change. The present study suggests that the use of ignition interlock devices enhances the benefit of therapeutic court programs. Used together, DWI/Sobriety courts and BAIID devices reduce chronic DWI, prevent collisions and injuries, and ultimately, save a substantial number of lives.

SUMMARY OF KEY FINDINGS

The 2015 results continue to indicate that the interlock program is running smoothly and is yielding a variety of benefits:

- A total of 414 clients have successfully graduated from the program within the five partner courts: only 55 have failed; this continues to represent a significantly better success rate than what the five partner courts experienced prior to the implementation of the interlock program.
- More than 97% of Interlock Program Participants ordered by the court to install interlock devices on their vehicles have complied with those orders;
- Only 0.5% of Interlock Program Participants pilot removed the interlock devices without court authorization;
- Alcohol and drug use among Interlock Program Participants is lower in comparison to similar offenders not under interlock supervision;
- Just over 1% of the Interlock Program Participants tampered with a court ordered interlock;
- Four years after the initial pilot program was implemented, less than 3% of the enrolled offenders have been reconvicted under section 625(1) or (3) of the Michigan Vehicle Code (i.e. for drunk driving).

In addition, the present analysis found that:

- In comparison to non-interlock offenders in DWI/Sobriety Court, and to standard probationers, Interlock Program Participants have the lowest recidivism rates, one, two and three years after the initial conviction for DWI. This is true for both drunk driving related re-offending and for general criminal re-offending.
- Interlock Program Participants have substantially higher rates of educational improvement in comparison to the Non Interlock Group of DWI offenders who did not participate in the interlock program.
- Multivariate analysis, which controls for standard demographic characteristics, suggests that offenders in the DWI/Sobriety Court, who are <u>not</u> under interlock supervision, have over 3 times the odds of failing out of their therapeutic court program relative to those participants in a DWI/Sobriety Court that is using ignition interlocks.

FUTURE RESEARCH DIRECTIONS

In 2015, it is possible to assert for the first time since this study commenced that participants in the ignition interlock program have significantly lower rates of DWI reoffending than both therapeutic court clients (absent of interlocks) and standard probationers (although statistically significant results are observed only 2 years post program.) Interestingly, the interlock program is also producing significant improvements in non-DWI related recidivism (i.e. with respect to general crime) at both the one and two year follow up points.

These findings are interesting from a criminological perspective. They suggest that the benefits of the BAIID device extend beyond a mere incapacitation effect (i.e. they physically prevent offenders from operating a vehicle while drunk). The results suggest that perhaps the increased supervision and positive reinforcement provided by the BAIID device and the DWI / Sobriety Court working together may play a role in rehabilitating the offenders. While the precise mechanisms of rehabilitation are not well understood, and thus far have not been investigated in this study, the authors would like to suggest that they are worthy of future investigation.

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APPENDIX A

National Center of DWI Courts
10 Guiding Principles

GUIDING PRINCIPLE #1: Determine the Population

Targeting is the process of identifying a subset of the DWI offender population for inclusion in the DWI Court program. This is a complex task given that DWI Courts, in comparison to traditional Drug Court programs, accept only one type of offender: the hardcore impaired driver. The DWI court target population, therefore, must be clearly defined, with eligibility criteria clearly documented.

GUIDING PRINCIPLE #2: Perform a Clinical Assessment

A clinically competent and objective assessment of the impaired-driving offender must address a number of bio-psychosocial domains including alcohol use severity and drug involvement, the level of needed care, medical and mental health status, extent of social support systems, and individual motivation to change. Without clearly identifying a client's needs, strengths, and resources along each of these important bio-psychosocial domains, the clinician will have considerable difficulty in developing a clinically sound treatment plan.

GUIDING PRINCIPLE #3: Develop the Treatment Plan

Substance dependence is a chronic, relapsing condition that can be effectively treated with the right type and length of treatment regimen. In addition to having a substance abuse problem, a significant proportion of the DWI population also suffers from a variety of co-occurring mental health disorders. Therefore, DWI Courts must carefully select and implement treatment strategies demonstrated through research to be effective with the hardcore impaired driver to ensure long-term success.

GUIDING PRINCIPLE #4: Supervise the Offender

Driving while impaired presents a significant danger to the public. Increased supervision and monitoring by the court, probation department, and treatment provider must occur as part of a coordinated strategy to intervene with hardcore DWI offenders and to protect against future impaired driving.

GUIDING PRINCIPLE #5: Forge Agency, Organization, and Community Partnerships

Partnerships are an essential component of the DWI Court model as they enhance credibility, bolster support, and broaden available resources. Because the DWI Court model is built on and dependent upon a strong team approach, both within the court and beyond, the court should solicit the cooperation of other agencies, as well as community organizations to form a partnership in support of the goals of the DWI Court program.

GUIDING PRINCIPLE #6: Take a Judicial Leadership Role

Judges are a vital part of the DWI Court team. As leader of this team, the judge's role is paramount to the success of the DWI Court program. The judge must be committed to the sobriety of program participants, possess exceptional knowledge and skill in behavioral science, own recognizable leadership skills as well as the capability to motivate team members and elicit buy-in from various stakeholders. The selection of the judge to lead the DWI Court team, therefore, is of utmost importance.

GUIDING PRINCIPLE #7: Develop Case Management Strategies

Case management, the series of inter-related functions that provides for a coordinated team strategy and seamless collaboration across the treatment and justice systems, is essential for an integrated and effective DWI Court program.

GUIDING PRINCIPLE #8: Address Transportation Issues

Though nearly every state revokes or suspends a person's driving license upon conviction for an impaired driving offense, the loss of driving privileges poses a significant issue for those individuals involved in a DWI Court program. In many cases, the participant solves the transportation problem created by the loss of their driver's license by driving anyway and taking a chance that he or she will not be caught. With this knowledge, the court must caution the participant against taking such chances in the future and to alter their attitude about driving without a license.

GUIDING PRINCIPLE #9: Evaluate the Program

To convince stakeholders about the power and efficacy of DWI Court, program planners must design a DWI Court evaluation model capable of documenting behavioral change and linking that change to the program's existence. A credible evaluation is the only mechanism for mapping the road to program success or failure. To prove whether a program is efficient and effective requires the assistance of a competent evaluator, an understanding of and control over all relevant variables that can systematically contribute to behavioral change, and a commitment from the DWI Court team to rigorously abide by the rules of the evaluation design.

GUIDING PRINCIPLE #10: Ensure a Sustainable Program

The foundation for sustainability is laid, to a considerable degree, by careful and strategic planning. Such planning includes considerations of structure and scale, organization and participation and, of course, funding. Becoming an integral and proven approach to the DWI problem in the community however is the ultimate key to sustainability.

APPENDIX B

Act No. 227
Public Acts of 2013
Approved by the Governor
December 21, 2013

Filed with the Secretary of State
December 26, 2013

EFFECTIVE DATE: December 26, 2013

STATE OF MICHIGAN
97TH LEGISLATURE
REGULAR SESSION OF 2013

Introduced by Rep. Lauwers

ENROLLED HOUSE BILL No. 5021

AN ACT to amend 1961 PA 236, entitled "An act to revise and consolidate the statutes relating to the organization and jurisdiction of the courts of this state; the powers and duties of the courts, and of the judges and other officers of the courts; the forms and attributes of civil claims and actions; the time within which civil actions and proceedings may be brought in the courts; pleading, evidence, practice, and procedure in civil and criminal actions and proceedings in the courts; to provide for the powers and duties of certain state governmental officers and entities; to provide remedies and penalties for the violation of certain provisions of this act; to repeal all acts and parts of acts inconsistent with or contravening any of the provisions of this act; and to repeal acts and parts of acts," by amending section 1084 (MCL 600.1084), as added by 2010 PA 154.

The People of the State of Michigan enact:

Sec. 1084. (1) A DWI/Sobriety Court interlock pilot project is created utilizing the DWI/Sobriety Courts in this state and in accordance with the provisions of this chapter. The DWI/Sobriety Court interlock pilot project shall begin on January 1, 2011 and shall continue for a period of 4 years after that date. Beginning January 1, 2015, the DWI/Sobriety Court interlock program shall be created and shall continue with the same requirements, eligibility criteria, authority, and limitations as those prescribed in this section for the DWI/Sobriety Court interlock pilot project. An individual who is a participant in a DWI/Sobriety Court interlock pilot project on December 31, 2014 shall become, automatically, a participant in a DWI/Sobriety Court interlock program on January 1, 2015, unless the individual's participation in the pilot project ceased by its own terms before January 1, 2015.

(2) All DWI/Sobriety Courts that participate in the pilot project or program shall comply with the 10 guiding principles of DWI courts as promulgated by the national center for DWI courts.

(3) In order to be considered for placement in the pilot project or program, an individual must have been convicted of either of the following:

(a) Two or more convictions for violating section 625(1) or (3) of the Michigan vehicle code, 1949 PA 300, MCL 257.625, or a local ordinance of this state substantially corresponding to section 625(1) or (3) of the Michigan vehicle code, 1949 PA 300, MCL 257.625.

(b) One conviction for violating section 625(1) or (3) of the Michigan vehicle code, 1949 PA 300, MCL 257.625, or a local ordinance of this state substantially corresponding to section 625(1) or (3) of the Michigan vehicle code, 1949 PA 300, MCL 257.625, preceded by 1 or more convictions for violating a local ordinance or law of another state substantially corresponding to section 625(1), (3), or (6) of the Michigan vehicle code, 1949 PA 300, MCL 257.625, or a law of the United States substantially corresponding to section 625(1), (3), or (6) of the Michigan vehicle code, 1949 PA 300, MCL 257.625.

(4) Each year, all DWI/Sobriety Courts that participate in the pilot project or program, in cooperation with the state court administrative office, shall provide to the legislature, the secretary of state, and the supreme court documentation as to participants' compliance with court ordered conditions. Best practices available shall be used in the research in question, as resources allow, so as to provide statistically reliable data as to the impact of the pilot project or program on public safety and the improvement of life conditions for participants. The topics documented shall include, but not be limited to, all of the following:

(a) The percentage of those participants ordered to place interlock devices on their vehicles who actually comply with the order.

(b) The percentage of participants who remove court-ordered interlocks from their vehicles without court approval.

(c) The percentage of participants who consume alcohol or controlled substances.

(d) The percentage of participants found to have tampered with court-ordered interlocks.

(e) The percentage of participants who operated a motor vehicle not equipped with an interlock.

(f) Relevant treatment information as to participants.

(g) The percentage of participants convicted of a new offense under section 625(1) or (3) of the Michigan vehicle code, 1949 PA 300, MCL 257.625.

(h) Any other information found to be relevant.

(5) Before the secretary of state issues a restricted license to a pilot project or program participant under section 304 of the Michigan vehicle code, 1949 PA 300, MCL 257.304, the DWI/Sobriety Court judge shall certify to the secretary of state that the individual seeking the restricted license has been admitted into the pilot project or program and that an interlock device has been placed on each motor vehicle owned or operated, or both, by the individual.

(6) If any of the following occur, the DWI/Sobriety Court judge shall immediately inform the secretary of state of that occurrence:

(a) The court orders that a pilot project or program participant be removed from the DWI/Sobriety Court pilot project or program before he or she successfully completes it.

(b) The court becomes aware that a participant operates a motor vehicle that is not equipped with an interlock device or that a participant tampers with, circumvents, or removes a court-ordered interlock device without prior court approval.

(c) A participant is charged with a new violation of section 625 of the Michigan vehicle code, 1949 PA 300, MCL 257.625.

(7) The receipt of notification by the secretary of state under subsection (6) shall result in summary revocation or suspension of the restricted license under section 304 of the Michigan vehicle code, 1949 PA 300, MCL 257.304.

(8) As used in this section:

(a) "DWI/Sobriety Courts" means the specialized court docket and programs established within judicial circuits and districts throughout this state that are designed to reduce recidivism among alcohol offenders and that comply with the 10 guiding principles of DWI courts as promulgated by the national center for DWI courts.

(b) "Ignition interlock device" means that term as defined in section 20d of the Michigan vehicle code, 1949 PA 300, MCL 257.20d.

(c) "Pilot project" means the DWI/Sobriety Court interlock pilot project created under subsection (1) on September 2, 2010 and authorized to operate for 4 years beginning January 1, 2011.

(d) "Program" means the DWI/Sobriety Court interlock program created on the effective date of the amendatory act that added this subdivision and authorized to operate beginning January 1, 2015.

Enacting section 1. This amendatory act does not take effect unless House Bill No. 5020 of the 97th Legislature is enacted into law.

This act is ordered to take immediate effect.

Clerk of the House of Representatives
Secretary of the Senate

Approved

APPENDIX C

Ignition Interlock Program (Experimental Group)

Descriptions of Samples

Sample	n	Description
Full Pilot Program Sample	656	All participants who met inclusion criteria and were enrolled by partner courts between January 1st, 2011 and December 31st, 2014.
Matched Cases From Pilot Program Sample (Recidivism Analysis Sample)	585	Participants from the full sample who could be matched to standard probationers from the state of Michigan with similar geographic, demographic and offender characteristics.
Matched Cases from Pilot Program Sample with at least One Year "At Risk"	486	Participants from the full sample who could be matched to standard probationers from the state of Michigan with similar geographic, demographic and offender characteristics and who had been followed for at least one year after the conviction that put them into DWI/Sobriety Court.
Matched Cases from Pilot Program Sample with at least Two Years "At Risk"	296	Participants from the full sample who could be matched to standard probationers from the state of Michigan with similar geographic, demographic and offender characteristics and who had been followed for at least two years after the conviction that put them into DWI/Sobriety Court.
Matched Cases from Pilot Program Sample with at least Three Years "At Risk"	108	Participants from the full sample who could be matched to standard probationers from the state of Michigan with similar geographic, demographic and offender characteristics and who had been followed for at least three years after the conviction that put them into DWI/Sobriety Court.
Completed Cases from Pilot Program Sample	469	Subjects who had either successfully completed DWI/Sobriety Court by December 31st, 2014, had voluntarily withdrawn from the program, or had been discharged from the program "for cause" (i.e. a new criminal offense, failure to abide by DWI/Sobriety Court restrictions, or absconding from court supervision.)

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APPENDIX D

DWI/Sobriety Court Non-Interlock Comparison Group

Descriptions of Samples

Sample	n	Description
Full Non-Interlock Comparison Group	508	All participants enrolled by partner courts between January 1st, 2010 and December 31st, 2010.
Non-Interlock Comparison Subjects Similar to Pilot Program Subjects	415	Participants from the full DWI/Sobriety Court comparison sample with similar current offense and previous criminal history characteristics as pilot program participants.
Matched Cases From Non-Interlock Comparison Group who are Similar to Pilot Program Subjects (Recidivism Analysis Sample)	380	Participants from the full sample who could be matched to standard probationers from the state of Michigan with similar geographic, demographic and offender characteristics and who were initially convicted of drunk driving offenses.
Completed Cases from Comparison Sample	404	Subjects who had either successfully completed DWI/Sobriety Court by December 31st, 2014, had voluntarily withdrawn from the program, or had been discharged from the program "for cause" (i.e. a new criminal offense, failure to abide by DWI/Sobriety Court restrictions, or absconding from court supervision.)

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APPENDIX E

Standard Probationer Comparison Group

Descriptions of Samples

Sample	n	Description
Standard Probationer Cases Matched to Pilot Program Sample	585	Subjects drawn from standard (i.e. non DWI/Sobriety) courts from across the state of Michigan who are similar to the Pilot Program participants in terms of geographic, demographic and offender characteristics.
Standard Probationer Cases: 1 Year Sample	584	Standard probationer comparison subjects with at least 1 year of at risk time.
Standard Probationer Cases: 2 Year Sample	582	Standard probationer comparison subjects with at least 2 years of at risk time.
Standard Probationer Cases: 3 Year Sample	578	Standard probationer comparison subjects with at least 3 years of at risk time.

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APPENDIX F

Independent and Control Variables

Independent Variable

Variable	Source	Description
Interlock Program Member	DCCMIS	A binary variable, 0 if the subject is a member of the DWI/Sobriety Court comparison group, 1 if he or she is a member of the experimental group (i.e. was placed on interlock restriction).

Control Variables

Gender	DCCMIS	A binary variable, 0 if the subject is female,1 if he is male.
Race	DCCMIS	A nominal level variable with 4 possible categories, White, Black, Hispanic and other.
Marital Status	DCCMIS	A nominal level variable with 5 possible categories, married, single, separated, divorced and widowed.
Age	DCCMIS	A continuous measure: chronological age in years at intake to DWI/Sobriety Court.
Educational Level at Intake	DCCMIS	An ordinal level variable with 10 possible categories ranging from post-baccalaureate college to no high school degree (and including a distinction between college education and trade school).
Employment Level at Intake	DCCMIS	An ordinal level variable with 4 possible categories, full time employment, part time employment, unemployed and not in the labor force.
Prior Substance Abuse	DCCMIS	A binary variable, indicating whether the subject had been diagnosed as a substance abuser prior to entering DWI/Sobriety Court: 0 if no, 1 if yes.
Prior Substance Abuse Treatment	DCCMIS	A binary variable, indicating whether the subject had been treated for substance abuse issues prior to entering DWI/Sobriety Court: 0 if no, 1 if yes.
Primary DSM-IV Diagnosis at Intake	DCCMIS	A multi-level nominal variable with various possible diagnoses from the DSM-IV.
Secondary DSM-IV Diagnosis at Intake	DCCMIS	A multi-level nominal variable with various possible diagnoses from the DSM-IV.
Court	DCCMIS	A nominal level variable describing the court the case was drawn from. It can take on the 5 values described earlier.

Process Variables

Variable	Source	Description
Number of Days in Drug Court	DCCMIS	A continuous variable representing the total number of days the subject had spent in DWI/Sobriety Court as of December 31, 2014.
Total Number of Drug / Alcohol Tests*	DCCMIS	A continuous variable representing the total number of drug and alcohol tests while in DWI / Sobriety court.
Failed Drug / Alcohol Tests*	DCCMIS	A continuous variable representing the total number of failed drug and alcohol tests while in DWI / Sobriety court.
Sobriety Court Phase*	DCCMIS	The phase of DWI / Sobriety court the subject was in as of December 31, 2014. A 5 category ordinal variable including the values I – IV and "Closed Case" (i.e. no longer in the program).
Number of Bench Warrants*	DCCMIS	A continuous variable representing the number of bench warrants issued against the subject by the DWI / Sobriety court judge.
12-Step Program Meetings*	DCCMIS	A continuous variable representing the total number of 12-step program meetings the subjected attended while in DWI / Sobriety court.
Court Ordered Sanctions*	DCCMIS	A continuous variable representing the total number of sanctions received by the subject while in DWI / Sobriety Court.
Court Ordered Incentives*	DCCMIS	A continuous variable representing the total number of incentives received by the subject while in DWI/Sobriety Court.
Treatment Contact Hours*	DCCMIS	A continuous variable representing the total treatment contact hours (of any kind) while in DWI/Sobriety Court.
Sobriety Days*	DCCMIS	A continuous variable representing the total number days the subject was sober while under the supervision of the DWI/Sobriety Court.

* The reader should note that each of these process variables were also transformed into rate per month by taking the appropriate statistic, dividing by the total number of days in Drug Court and multiplying by thirty. This yield variables such as "The rate of failed drug / alcohol tests per month spent in DWI/Sobriety Court" etc.

Outcome Variables

Variable	Source	Description
Compliance With Interlock Order	DCCMIS	A binary variable, 1 if the subject failed to install an interlock device as ordered by the court, 0 the subject complied.
Removed Interlock	DCCMIS	A binary variable, 1 if the subject removed the interlock device without permission from the court, 0 if he or she did not.
Interlock Tampering	DCCMIS	A binary variable, 1 if the subject is tampered with the interlock device, 0 if the he or she did not.
Operating Vehicle without Interlock	DCCMIS	A binary variable, 1 if the subject is was caught operating a vehicle not equipped with an interlock device, 0 if he or she was not.
Improvement in Educational Attainment	DCCMIS	A binary variable, 1 if the subject improved his or her educational attainment between the time he/she entered DWI/Sobriety Court and his/her completion of the program (either successfully or not); 0 otherwise.
Improvement in Employment Status	DCCMIS	A binary variable, 1 if the subject improved his or her employment status between the time he/she entered DWI/Sobriety Court and completion of the program (either successfully or not); 0 otherwise.
Failure / Success in DWI/Sobriety Court	DCCMIS	A binary variable, 1 if the subject successfully completed DWI/Sobriety Court, a 0 if he or she "failed out" because of non-compliance, a new conviction, absconding or if he/she voluntarily withdrew from the program.
Reconviction for Operating While Impaired within 1 Year for Subjects with at Least 1 Year "at risk" **	JDW	A binary variable indicating if the subject had been reconvicted of a DWI within 1 year after being admitted to DWI/Sobriety Court (or the date that a court case file was opened for Standard Probationers). For this variable, if a year had not yet passed since these dates, he or she was excluded from the sample.
Reconviction for Operating While Impaired within 2 Years for Subjects with at Least 2 Years "at risk"	JDW	As above, except with a 2 year time frame.
Reconviction for Operating While Impaired w/in 3 Years for Subjects with at Least 3 Years "at risk"	JDW	As above, except with a 3 year time frame.
Reconviction for any Criminal Offense within 1 Year for Subjects with at Least 1 Year "at risk"	JDW	A binary variable indicating if the subject had been reconvicted of any criminal offense within 1 year after being admitted to DWI/Sobriety Court (or the date that a court case file was opened for Standard Probationers). For this variable, if a year had not yet passed since these dates, he or she was excluded from the sample.
Reconviction for any Criminal Offense w/in 2 Years for Subjects with at Least 2 Years "at risk"	JDW	As above, except with a 2 year time frame.
Reconviction for any Criminal Offense w/in 3 Years for Subjects with at Least 3 Years "at risk"	JDW	As above, except with a 3 year time frame.

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APPENDIX G

Percentage of Interlock Participants Detected Operating Motor Vehicle Not Equipped with an Interlock

It should be noted that the original PA154 legislation called for the evaluation project to track the number of known cases where Interlock Program Participants were found to be operating a motor vehicle not equipped with an interlock. For the period under analysis (2011-2014), only 6 known incidents occurred, comprising a known violation rate of less than 1%. The vast majority of program participants (n=650; 99.1%) were not apprehended operating vehicles absent of BAIID devices[18]. However, the evaluation team recognizes that the validity of the DCCMIS data pertaining to this issue is marginal: the six incidents that became known to law enforcement and or the partner DWI/Sobriety Courts only represent a small, non-representative, sample of all such cases. Consequently, no further inferences are drawn in this evaluation on the basis of this measure.

[18]A total of 260 cases in the DCCMIS dataset were reported as "missing." However, the research team was able to confirm that the missing data almost certainly reflected the fact that the event in question had not occurred; hence, this missing data was re-coded as a non-violation (i.e. the participant did not operate a non-interlock equipped vehicle).

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