Predicting Repeat DWI: Chronic Offending, Risk Assessment, and Community Supervision

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Between 1981 and 2008, nearly 550,000 individuals were killed in alcohol-related traffic accidents. To put this in perspective, the state of Wyoming has approximately 540,000 residents. Several major U.S. cities, such as Tuscon, Az., Atlanta, Ga; Kansas City, Mo., and Long Beach, Calif., are home to fewer residents. While such a high number of alcohol-related traffic fatalities is staggering, there is reason to believe the policy changes emphasizing different practices to control drunk driving have, in fact, reduced the number of drunk driving deaths. Consider that between 1982 and 1988, 171,681 alcohol-related traffic fatalities occurred. In comparison, between 2002 and 2008, 113,403 alcohol-related traffic fatalities occurred – a reduction of 33.9 percent. In comparing year by year reductions, the number of drunk driving fatalities decreased by nearly 50 percent when comparing the number of fatalities in 1982 (26,173) to the number of fatalities in 2008 (13,846).

The reduction in the number of alcohol-related traffic deaths can be attributed to a number of different factors, most of which center around changes in policies and practices related to the legislative control of drunk driving. In particular, increases in the minimum drinking age, lowered illegal thresholds for blood alcohol concentrations (BAC), increased use of monetary sanctions such as fines, increased use of incarceration for drunk drivers, more focused use of substance abuse treatment, expanded use of electronic monitoring, and stricter community-based supervision practices carried out by probation and parole officers have played a role in reducing the number of drunk driving deaths.

Despite the reduction in the number of drunk driving deaths, additional changes in policies and practices are needed in order to further reduce the extent of drunk driving. Using principles of evidence-based practices, in this project the American Probation and Parole Association conducted a risk assessment study to develop a pilot risk assessment instrument that can be used to identify convicted offenders who are at an increased risk for future drunk driving. This process entailed reviewing prior research on drunk driving, addressing the way that criminological theory explains drunk driving, developing a methodology to study drunk driving, conducting a study on a sample of 3,884 convicted drunk drivers, statistically analyzing factors that seemed to predict levels of repeat drunk driving, and developing a pilot instrument from these findings.

Six assumptions have guided this process:

- Risk for drunk driving can be predicted.
- Efforts to predict risk should be guided by research and evidence-based practices.
- Policies and practices developed from risk assessment research will further reduce the extent of future drunk driving.
- Predicting risk will not eliminate drunk driving completely, but it will help to reduce it.
- Community-based corrections professionals are in a prime position to reduce drunk driving.
- Policy makers will continue to play an important role in controlling drunk driving.

The next stage of this project will entail the application of the risk assessment instrument to a sample of drunk-driving offenders convicted in various states. By identifying which offenders are most at risk for future drunk driving, policy makers and criminal justice officials will be in a position to develop control strategies that target those offenders most at risk for re-offending. This will make our highways safer and reduce the number of alcohol-related accidents.

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Executive Summary

Between 1981 and 2008, nearly 550,000 individuals were killed in alcohol-related traffic accidents. To put this in perspective, the state of Wyoming has approximately 540,000 residents. Several major U.S. cities, such as Tuscon, Az., Atlanta, Ga; Kansas City, Mo., and Long Beach, Calif., are home to fewer residents. While such a high number of alcohol-related traffic fatalities is staggering, there is reason to believe the policy changes emphasizing different practices to control drunk driving have, in fact, reduced the number of drunk driving deaths. Consider that between 1982 and 1988, 171,681 alcohol-related traffic fatalities occurred. In comparison, between 2002 and 2008, 113,403 alcohol-related traffic fatalities occurred – a reduction of 33.9 percent. In comparing year by year reductions, the number of drunk driving fatalities decreased by nearly 50 percent when comparing the number of fatalities in 1982 (26,173) to the number of fatalities in 2008 (13,846).

The reduction in the number of alcohol-related traffic deaths can be attributed to a number of different factors, most of which center around changes in policies and practices related to the legislative control of drunk driving. In particular, increases in the minimum drinking age, lowered illegal thresholds for blood alcohol concentrations (BAC), increased use of monetary sanctions such as fines, increased use of incarceration for drunk drivers, more focused use of substance abuse treatment, expanded use of electronic monitoring, and stricter community-based supervision practices carried out by probation and parole officers have played a role in reducing the number of drunk driving deaths.

Despite the reduction in the number of drunk driving deaths, additional changes in policies and practices are needed in order to further reduce the extent of drunk driving. Using principles of evidence-based practices, in this project the American Probation and Parole Association conducted a risk assessment study to develop a pilot risk assessment instrument that can be used to identify convicted offenders who are at an increased risk for future drunk driving.

The risk assessment process included several stages. First, the problem of drunk driving was described within a criminological framework. Prior research on drunk driving was reviewed, with an aim towards identifying those factors that seem to predict habitual drunk driving. A thorough review of what is meant by the concepts of "risk" and "assessment" was also conducted.

Second, prior risk assessment instruments used to assess behaviors related to substance abuse were reviewed, assessed, and critiqued. Very few of these instruments were developed to predict habitual drunk driving, but it is argued that they serve as a foundation from which such an instrument could potentially be developed.

Third, the way that criminological theories can be used to explain drunk driving was considered. This included an application of the way that the following theories can be applied to drunk driving: differential association theory, neutralization theory, control theory, self-control theory, and social learning theory. The authors make the case that these criminological theories should

play a pivotal role in efforts to develop instruments designed to predict habitual drunk driving among convicted offenders.

Fourth, researchers acquired data from a Midwestern state correctional department of a sample of about 4,000 individuals on probation or parole for DWI. These data came in four separate datasets: termination summary, demographic characteristics, alcohol screener items, and LSI-R items. The four datasets were merged using a one to one merging method to eliminate duplicate cases. A unique department of correction identification number was used to match individuals. Once the data was merged and cleaned the sample included 3,884 offenders.

Fifth, we used an assortment of statistical techniques to identify the most parsimonious set of indicators from the LSI-R and the ASUS on a sample of 3,884 convicted DWI offenders in a Mid-Western state. Bivariate and multivariate analyses were conducted to determine which factors seemed to consistently predict habitual drunk driving. Findings showed that several variables were related to habitual drunk driving. These variables included number of prior contacts with the criminal justice system, histories of institutional misconduct, level of education, problems in school, poor attitudes towards the sanction, and a number of other variables.

Sixth, based on these findings, a pilot risk assessment tool was developed. This tool includes items modified from prior scales and items found to be significant in this project. The tool consists of seven separate domains:

- The *mental health domain* includes 8 items to determine the nature of the relationship between mental health disorders and chronic offending. It could be that the act of attending mental health treatment is somehow specifically related to DWI behaviors, but it could also be that this is measuring an embedded individual trait of general mental instability.
- The *socio-personal responsibility* domain is intended to uncover the level of personal and social responsibility that an individual has. This is a broad category meant to measure one's general attachment to society as well as an internal locus of control.
- The *risky substance abuse domain* measures features related to one's level of risky drug and alcohol use that may be related to chronic DWIs.
- The *criminal histories domain* measures the offender's past involvement with the criminal justice system.
- The *desire for change domain* includes four questions related to an individual's desire to change their drinking patterns.
- The *connection between internalized locus of responsibility and DWI domain* includes several items measuring how offenders assign responsibility in their decision making process.
- The *risky driving domain* measures specific characteristics related to driving in general to test general risky driver theories.

These domains offer a foundation from which increased understanding about habitual drunk driving will evolve.
It is important to note that six assumptions have guided this process:

- Risk for drunk driving can be predicted.
- Efforts to predict risk should be guided by research and evidence-based practices.
- Policies and practices developed from risk assessment research will further reduce the extent of future drunk driving.
- Predicting risk will not eliminate drunk driving completely, but it will help to reduce it.
- Community-based corrections professionals are in a prime position to reduce drunk driving.
- Policy makers will continue to play an important role in controlling drunk driving.

The research team plans to pilot test this draft risk assessment tool in up to three locations with convicted DWI offenders on community supervision. At this time, the research team has received agreements from two agencies interested in participating. The first is the same southwestern state from which this data was drawn. This will allow us to test the instrument on a statewide sample of probation and parolees by distributing the instruments to a sample of agencies within this state. The other agency is a northern Midwestern state local probation agency. These agencies possess very different contextual, administrative, and organizational differences that will be considered when measuring the predictive effects of the risk instrument. While some will point to the potential for confounding contextual factors with this approach, we argue that this diversity will allow for the most stringent of tests of the predictors.

After this risk assessment tool is tested in the three sites, it will be modified in an effort to develop the most reliable tool possible. The assessment tool will also be developed into a use friendly instrument that will be easy to administer by virtually any community corrections professionals. The tool will become an important part of probation and parole officers' tool kits used to control chronic drunk driving. It is expected that this tool will be a cost effective strategy for efficiently controlling habitual drunk drivers.

The final assessment tool will have value for the community as well. Most obviously, the tool will help to make highways safer and thereby reduce the number of drunk driving accidents. In addition, by reducing the number of traffic accidents, the tool will reduce the economic toll that drunk driving has on society. As well, the risk assessment tool will provide a model that can be modified and potentially used to control other forms of harmful driving.

It is also anticipated that just as legislative remedies were expanded to mandate that certain types of offenders – like sex offenders and domestic violence offenders – have their risk of re-offending assessed prior to being placed on community supervision, that the presence of a reliable drunk driving assessment risk assessment tool will provide the foundation needed for policy makers to call for widespread risk assessments of convicted drunk drivers. Policy makers have had a strong role in reducing drunk driving over the years. Developing a risk assessment tool to predict drunk driving will provide policy makers the guidance they need to even further expand efforts to control habitual drunk driving.

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Introduction

Drunk driving is a serious social problem. Alcohol-related fatal driving crashes cause approximately 17,000 deaths each year in the US (NTHSA, 2005). Although this is a reduction from previous years, the National Highway Traffic Safety Administration and others are working to reduce this number even further. Since the late 1970s and 1980s, jurisdictions have raised the minimum drinking age, lowered illegal thresholds for blood alcohol concentrations (BAC), implemented fines, incarceration, substance abuse treatment, electronic monitoring, and other tactics, and yet drunk driving incidents go undetected, and arrests, injuries and fatalities continue (LaBrie et al., 2007; Wagenaar et al., 2007).

In an ideal world, criminal justice officials would easily identify the difference between DWI offenders that will be convicted for subsequent DWIs and those that will not (see Chang, Gregory, & Lapham, 2002; Lapham et al., 1995). If only recidivists and dangerous offenders could be identified by sight; criminal justice officials must use other ways to predict the future behavior of the nearly 1.5 million arrests for DWI each year. Community corrections officers need assistance assessing and classifying this population for repeated DWI. Community corrections is the fastest growing and largest branch of the correctional system, supervising more than five million adults (Glaze & Bonczar, 2009). The community corrections field has incorporated more effective methods to differentiate, classify, and supervise offenders in the community through what are referred to as evidence-based and data-driven strategies.

These strategies rely upon risk assessment instruments with high levels of predictive accuracy to classify offenders based upon their likelihood to reoffend (Andrews et al., 1990). The risk assessment literature is filled with general offender instruments such as the LSI-R, the Wisconsin, and many others (Andrews, Bonta, & Wormith, 2006; Bonta, 2002; Lowenkamp & Latessa, 2004; Taxman & Tanner, 2006), as well as several screening tools to measure one's level of alcohol abuse or addiction (e.g., ASUS, Michigan Alcohol Screening Tool). DWI recidivism, however, is not caused by alcoholism or addiction per se, but rather by the decisions made by high risk drivers (i.e., those lacking needed levels of restraint or self-control to resist drinking driving impulses) (Brinkman, Beike, Kohler, Heineke, & Bajanowski, 2002). Instead, drunken driving, other forms of criminality, and even moderate forms of deviance are rooted in complex processes of social learning and psychological factors that promote antisocial attitudes, desires, motives, and rationalizations that are accepting of law violation (e.g., Akers, 1997, 1998; Andrews & Bonta, 2003; Brauer, 2009; Burgess & Akers, 1966). This perspective suggests that there are similar pathways to chronic criminal lifestyles (including drunken driving) that are rooted in social-psychological characteristics (Gottfredson & Hirschi, 1990; Jessor, Donovan, & Costa, 1991), and these characteristics supersede the specific technical aspects of any criminal activity (e.g., substance abuse disorders).

What does it mean to say someone is antisocial? This refers to the attitudes, beliefs, and value systems that allow certain individuals to perceive drunken-driving, for instance, as an "okay," legitimate, or acceptable behavior. Or, to paraphrase Edwin Sutherland (1974), individuals have accepted an excess of definitions favorable to law violation (i.e., it's okay to drive drunk), they regularly associate with criminal or delinquent peers (i.e., they spend significant time with others that think it is okay to drive drunk), and they have a history of criminal or deviant behavior (i.e., drunk driving is usually not the only criminal activity they engage in).

How should jurisdictions respond to drunken driving? Estimates suggest that the majority of all drunken driving episodes are committed by a small group of chronic offenders

(see Anderson, Snow, & Wells-Parker, 2000; Cavaiola, Strohmetz, & Abreo, 2007; Cavaiola, Strohmetz, Wolf, & Lavender, 2003; Chang, Lapham, & Wanberg, 2001; Chang, Lapham, Baca, & Davis, 2001; Jewell, Hupp, & Segrist, 2008; McMillen, Adams, Wells-Parker, Pang, & Anderson, 1992). The Traffic Injury Research Foundation (TIRF), for one, brought attention to the fact that a distinct group of individuals account for the bulk of drunken driving episodes, arrests, and fatalities (see Simpson & Mayhew, 1991; Simpson et al., 1996). TIRF went so far as to claim that there are two general types of DWI offenders—the social and the hardcore—that has been supported by others.[1] What are the differences between a social or hard core drinker? Is it important for drunken driving prevention strategies to consider the differences between these types? Shouldn't the criminal justice system concentrate on identifying, apprehending, and convicting all drunken drivers? Of course, all drivers found operating a vehicle above legal BACs should receive criminal justice sanctions. However, experts estimate the number of drunken driving episodes each year at around 100 million trips[2] in which a driver had a BAC of at least .08% (Royal, 2003). Further scrutinizing these numbers reveals that about 3% to 5% of drivers account for about 80% of the drunken driving episodes (Beirness, Simpson, & Desmond, 2002, 2003), and the remaining 20% of DWI episodes are accounted for by the remaining 185 million drivers in the US.

Identifying this small cadre of persistent drunken drivers is imperative to developing effective intervention strategies. This report is the first of a two-part series to develop a DWI risk assessment instrument and training curriculum for community corrections professionals. The purpose of this report is to provide theoretical background and empirical support for a pilot assessment instrument to be tested in multiple jurisdictions. The second part of this series will report on the findings from the pilot sites' use of the instrument. The current report, first, discusses risk assessment development in the community corrections field. Next, DWI and alcohol screener research is discussed. Third, theoretical discussion is provided to contextualize the risk assessment development. Fourth, the methods used to develop the risk assessment draft are presented. Fifth, findings are presented from statistical analysis of nearly 4,000 DWI offenders from one Southwestern state's Department of Corrections. This analysis relies on descriptive, correlational, and logistic regression analyses to identify differences according the number of prior DWIs relative to individuals without prior DWIs on a series of demographic characteristics, the Level of Service Inventory-Revised (LSI-R), and the Alcohol Severity Use Survey (ASUS). Sixth, future steps and policy and practice direction are provided with the description of the DWI risk assessment tool.

The findings start to paint a picture of the chronic DWI offender as a white, male, between the ages of 30 and 44 years old, employed, but low education, attendance at both outpatient and mental health treatment, with an early age of criminal onset as well as general offending, and an overall unwillingness to change and poor attitude about punishment. The findings suggest that one's willingness to repeatedly drive drunk is associated less with an overall alcohol or drug use disorder, and more tied to one's willingness to address a problem or willingness to change, seek help, and acknowledge there is a behavioral problem. Several features related to mental wellbeing emerge as potentially significant factors to classify chronic

[1] A useful resource regarding hardcore drunk drivers can be found at the Century Council http://www.centurycouncil.org/get-involved/materials/filter/591/all

[2] The 100 million figure is a conservative lower end estimate as Hedlund and McCartt (2002) claim that there are about 950 million drunk driving episodes each year.

DWI offenders such as seeing or hearing things not present, mental confusion, and nervousness or anxiety.

Risk Assessment Issues: What is Risk and Risk Assessment Development

What is a risk assessment? Why use risk assessments? How do risk assessments work? These are some of the common questions asked when considering making or adopting a risk assessment tool in a community corrections setting. Risk assessment is not new to the community corrections field. In fact, Burgess (1928) developed a risk assessment for the Illinois Parole Board in the late 1920s to separate offenders according to their expected probability to reoffend into three categories: low, medium, and high risk parolees (Baird, 2009). Burgess (1928) used an unweighted summary of dichotomous risk factor scores (in which 1 indicates presence of a risk factor), with higher scores indicative of greater likelihood of recidivism (see Silver, Smith, & Banks, 2000).

Risk assessments are predictive instruments used to classify offenders according to the likelihood of recidivism. Predictions are central to the community corrections professional's job. Everyday officers make predictions regarding the likelihood of an offender committing a new crime, failing treatment, or being revoked for technical violations. One of the most important predictions is made by officers during the initial intake of an offender at which time offenders are placed into one of (usually) three risk categories: low, medium, and high. Risk assessments use group based data to estimate the potential for a particular community supervision outcome (Maxwell, 2005). Within the community corrections field, however, the outcome of interest is usually some sort of negative event such as rearrest, revocation, or reincarceration.

A risk factor is any offender characteristic related to the occurrence of one of several outcomes. Assessing risk is not a new phenomenon, but rather is a managerial technique used in several fields. In fact, the insurance field relies on risk factors to make decisions about premium costs based upon aggregated data in which, for instance, it is found that cigarette smokers present a greater likelihood to contract illnesses and need more medical services compared to non-smokers. No doubt, insurance prediction models rely on several characteristics related to outcomes associated with health care costs, and research has found that characteristics such as smoking, age, race, gender, bodyweight and fitness level can be used to determine the potential costs based on various combinations of these risk factors. Or, in the case of automobile insurance, young male drivers are charged higher premiums due to their greater likelihood to wreck, receive speeding tickets, and other risky driving behaviors associated with this age and gender group. The community corrections field has adopted similar techniques to get a grasp on the vast amount of individual offender characteristics that are associated with certain types of supervision failures. Risk assessment is a lynchpin to an evidence-based practices model that requires "the proper application of classification and prediction methods…to better supervise offenders in the community and to provide effective treatment" (Gottfredson & Moriarty, 2006, p. 178-179).

Two general types of risk factors are used to predict future criminal behavior: static and dynamic. Static risk factors are those individual traits that do not change or change only in a single direction and include criminal history, gender, race, age, and other historical characteristics. Dynamic risk factors—referred to as criminogenic needs—are offender traits that do change and include an individual's associates, attitudes, and values toward criminality (Andrews & Bonta, 2003; Gendreau, 1996). While it is true that community corrections and treatment professionals concentrate their efforts on facilitating pro-social behavior change within criminal justice populations, it should be pointed out that the pilot risk assessment tool presented

in this report recognizes that "the best predictor of future behavior is past behavior…[and] if a variable can be measured reliably and if it is predictive, then of course it should be used—absent legal or ethical challenge" (Gottfredson & Moriarty, 2006, 193; Barid, 2009). This, however, is not to say that one type of risk factor "…is superior to the other when it comes to predicting recidivism" (Bonta, 2002, p. 367). Instead, this gets to a debate in the risk assessment literature in which assessment instruments are used to predict not recidivism, but rather treatment success or failure "which is a misapplication of the tool and that properly constructed needs assessment devices, assessed against a proper criterion variable (e.g., treatment outcome), would prove to have greater validity for that purpose and hence greater value to those concerned with offender treatment" instead of public safety (Gottfredson & Moriarty 2006, 192).

Risk: What is it?

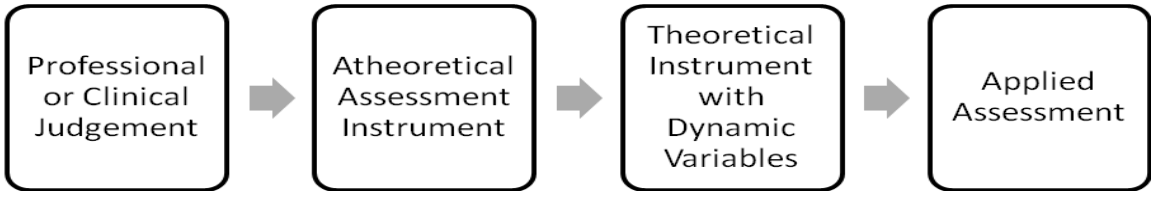
For the purposes of this report, risk refers to the probability of an individual convicted of one DWI being convicted for a subsequent DWI.[3] Why predict whether individuals will be rearrested for another DWI or not? Why not just provide the maximum level of supervision to every offender? Anyone working in or around the corrections system knows that providing maximum supervision to all offenders is an inefficient way to use funds that results in too much supervision for some and too little supervision for other offenders. Community supervision--although a cost savings relative to incarceration--is not inexpensive. Accurately classifying offenders according to their relative likelihood of being convicted (or arrested) for a subsequent DWI has several implications for organizational resources. Higher risk offenders need more officer attention than lower risk offenders (when holding crime type constant). Research suggests that treatment programs incorporating both high and low risk offenders together can have a negative effect on lower risk offenders and less of an impact on the high risk offender (Andrews et al., 1990; Lowenkamp & Latessa, 2002). Also, intervening at a level appropriate for high risk offenders with low risk offenders may disrupt protective factors, which potentially increases the likelihood of recidivism. An important part of effective supervision is to fit conditions of supervision to the individual risk and needs (i.e., responsivity).

Risk assessments have gone through four stages of development (Bonta, 1996). Figure 1 shows these stages. In the first generation, professional or clinical judgment was used to make predictions of outcomes in which an officer, social worker, or other professional would make decisions based upon an interview and file review of an offender. This assessment process lacked any standardized approach to making placement decisions, but was entirely based upon an individual's perceptions of the offender or client. Realizing the low predictive validity of this approach, researchers developed a second generation of actuarial assessment instruments that were atheoretical and composed of mostly static items. Researchers and practitioners recognized the need for more accurate predictive mechanisms in the field, and theoretically driven research focused on the impact of dynamic and static factors' relationship to criminal justice outcomes. Third generation risk assessment instruments (such as the LSI) incorporated static and dynamic risk factors supported by theories arguing for effective correctional interventions to promote behavioral changes in offenders by addressing the antisocial elements within an offender's life,

[3] The data used in this report includes a measure of previous DWI convictions that is used as the dependent variable. The pilot risk assessment evaluation will consider a different dependent variable to measure DWI rearrest. Admittedly, DWI rearrest is a more robust measure of DWI behavior as it is not dependent upon a host of administrative processes that are tangled up in convictions. However, the nature of the data accessible for this report does not include a DWI arrest measure, which could have some effect on producing Type II errors (i.e., failing to find statistical significance when it exists).

namely values, beliefs, and companions/family (Andrews et al., 1990; Andrews & Bonta, 2003). The central idea behind the third generation instruments is to incorporate static and dynamic factors to identify treatment targets and monitor offender risk (Vose, Cullen, & Smith, 2008). The fourth, and final, generation of risk assessment does more than identify risk probabilities and criminogenic needs. These instruments use risk information to steer management and treatment decisions for offenders. Andrews, Bonta, and Wormith (2006, p. 8) summarize the goal of the fourth generation risk assessments to "…strengthen adherence with the principles of effective treatment and to facilitate clinical supervision devoted to enhance public protection from recidivistic crime" (Andrews, Bonta, & Wormith, 2006, 8). These latter types of assessment instruments have been criticized for including factors that are not statistically related to recidivism, which "actually reduce, rather than improve, a model's ability to accurately classify cases" because including non-validated factors "in a risk scoring system, introduces substantial noise and dilutes the relationship between legitimate risk factors and recidivism" (Baird, 2009, p. 3; Austin, Coleman, Peyton, & Johnson, 2003). Despite this debate, the analyses reported here measures the predictive accuracy of both static and dynamic risk factors to develop the most parsimonious set of factors, without diminishing the predictive power of the instrument.

Figure 2. Stages of Risk Assessment Development



Risk Assessment: Translating Process into Practice

When applied effectively, risk assessment development is an integrative process that brings together the process of developing risk assessment tools and the practice of carrying out risk assessments. Figure 2 shows how this integrated process is carried out. The first stage of process is to identify the problem that is part of the risk assessment process. Prior risk assessment efforts have focused on social and crime problems such as sex offending, violent offending, and drug abuse. In those cases, when carrying out the risk assessment process, researchers began by identifying these issues as problems that could be addressed through risk assessment procedures. In a similar way, the problem of chronic drunk driving can be, and has been, identified as a problem that can be addressed through the risk assessment process.

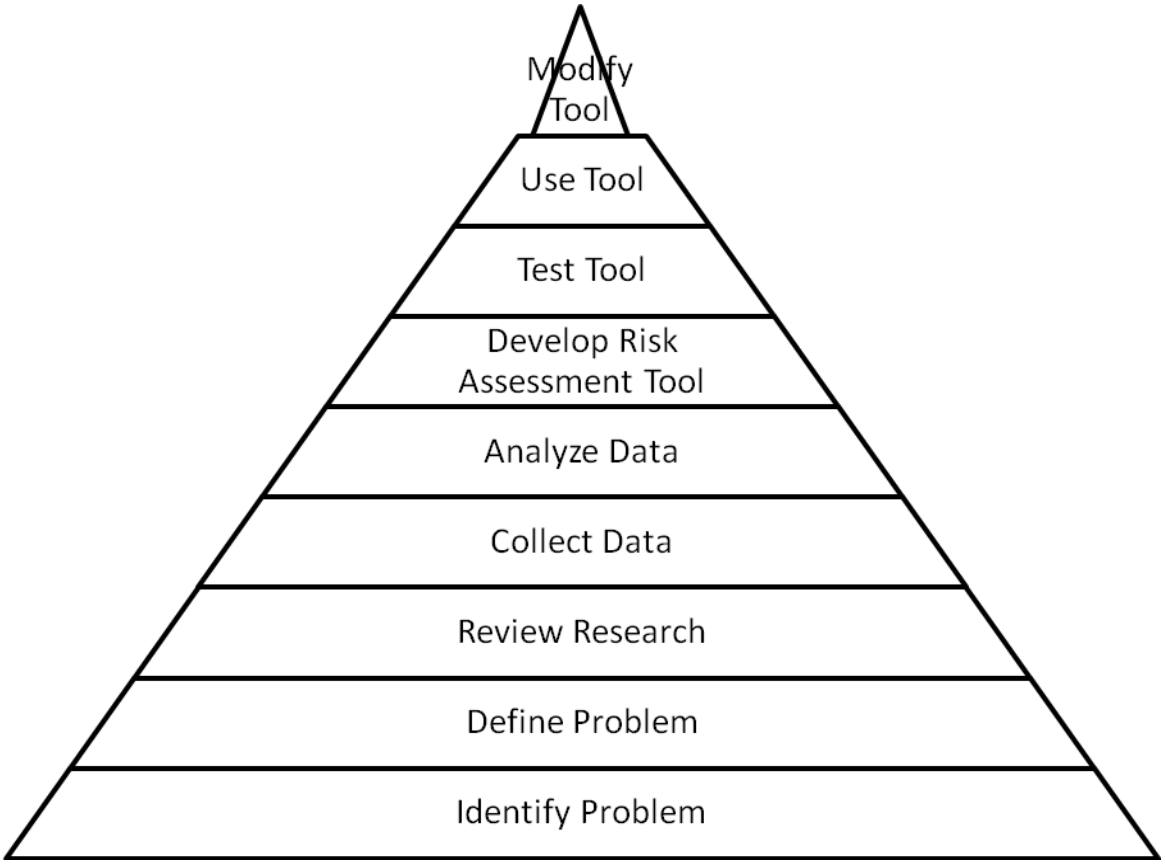
The second stage of the risk assessment process is to define the problem. In the current project, the problem of chronic drunk driving was conceptualized in the above paragraphs. Without a doubt, such behavior creates significant problems across the world. Defining the

problem broadly helps to demonstrate the need to use broad response strategies to address and develop efforts to respond to drunk driving.

The third stage of the risk assessment process entails a review of prior research related to (1) the conceptual problem (in this case drunk driving) and (2) previous efforts to develop risk assessment instruments related to the conceptual problem. In the paragraphs below, much more attention is given to drunk driving, with a specific focus given to specific risk assessment instruments designed to assess various types of alcohol-related behaviors.

The fourth and fifth stages of the risk assessment process involves gathering and analyzing data to address the conceptual problem and test variables identified in the prior risk assessments are relevant and significant. As will be shown below, in this project, data on 3,884 convicted drunk drivers was analyzed to identify predictors of chronic drunk driving. Using empirical data to guide the development of future risk assessment instruments is a central feature of evidence-based practices.

Figure 2. Risk Assessment Process



The sixth stage of the risk assessment process entails the development of a risk assessment tool that is responsive to the findings from the analytical efforts. Such a tool will be suggested later in this report.

The seventh stage of the risk assessment process entails testing the tool in various settings to see how well it actually predicts future behavior. In future phases of this project, the pilot tool will be tested in at least three different sites.

The eighth stage of the risk assessment process involves that part of process where the tool is actually put into practice. In particular, the risk assessment tools become a part of the actually practice of controlling behavior that is assessed by the risk assessment tools. It is expected that the chronic drunk driving risk assessment tool developed in this project will one day be a part of the tool kit used by community correctional professionals, judges, and other criminal justice officials in their efforts to control drunk driving.

The ninth stage of the risk assessment process involves modifications of risk assessment tools as needed. In effect, this stage of the process may signify the time at which the entire process starts over.

For the current project, six assumptions are guiding the risk assessment process. These assumptions include the following:

- Risk for drunk driving can be predicted.
- Efforts to predict risk should be guided by research and evidence-based practices.
- Policies and practices developed from risk assessment research will further reduce the extent of future drunk driving.
- Predicting risk will not eliminate drunk driving completely, but it will help to reduce it.
- Community-based corrections professionals are in a prime position to reduce drunk driving.
- Policy makers will continue to play an important role in controlling drunk driving.

DWI Instruments and Alcohol Screening Instruments: The Predictive and the Un-predictive

There are screening instruments that measure the likelihood of substance abuse disorders and drinking problems (see Table 1). Some of these instruments attempt to predict subsequent DWI behavior. The Mortimer Filkins (MF) was designed to measure drinking behaviors among a set of DWI offenders (Mortimer, Filkins, & Lowery, 1971). This instrument measured whether someone is a social drinker, presumptive problem drinker, or a problem drinker, and focused on correlates of drinking driving behavior, but it is not oriented toward community supervision concerns (see Wendling & Kolody, 1982). The Moritmer Filkins test was used to predict future DWI arrests, but was found to have limited predictive accuracy for future DWI arrest (Chang et al., 2002; Kolody, 1982; Lapham et al., 1995).

Community corrections officers need guidance when making case management decisions for individuals. How can an officer tell the difference between a one-time DWI offender and a chronic DWI offender? An interesting methodological point here is that DWI assessment and alcohol screening tools are inherently flawed due to the nature of the dependent or outcome variable. DWI instruments should focus on officially recorded incidences due to flaws in self-report data. This makes predicting DWI reoffense difficult because one cannot determine the "true" occurrence of the drinking and driving behavior for an individual. This, however, is not

Table 1. Alcohol Screening Instruments

Tool	Authors who Created it	Why it was designed	Empirical Tests	Empirical Support	Limitations
Mortimer Filkins	Mortimer, Filkins, and Lowery (1971)	Measure drinking across DWI offenders	Yes	Limited	Not orientated towards community supervision
Substance Abuse Subtle Screening Instrument	N/A	Uses indirect or subtle items to measure substance abuse disorders so to avoid respondent denial or dishonesty	Yes	No	No evidence it actually detects substance use disorders through the indirect scales
Form 90	Miller and Del Boca (1994)	To look at past substance abuse over the lifetime. Later modified to include DWI questions.	Yes	Yes	Because it uses timelines and it measures non driving events it neglects underlying theoretical and practical realities of DWI behavior
Alcohol Use Inventory	Wanberg, Horn, and Foster (1977)	Measure level of alcohol dependence through 4 domains: benefits, styles, consequences, and concerns related to alcohol use	Yes	Limited	Applicable in clinical setting but not community corrections context
CAGE	Mayfield, McLeod, and Hall (1974)	Easy to administer and score; used to screen for alcohol use disorders	No	N/A	Little use as a DWI recidivism screener or measure of alcohol use disorder
Driver's Risk Inventory	Behavior Data Systems	Simple and brief screening instrument	Yes	Yes	Little research demonstrating its reliability and validity as a predictive instrument
MacAndrew Alcoholism Scale	N/A	Subscale of MMPI-2 used to predict DWI recidivism	Yes	Yes	Found to predict DWI recidivism but more research to verify reliability and validity in community corrections field
Michigan Alcoholism Screening Test	N/A	Used in criminal justice settings to classify individuals in one of three levels of alcohol abuse	Yes	Inconsistent	More accurately measures late stage alcohol dependency than DWI

an unusual situation for criminological research that often relies upon official indicators of crime. Criminal justice research is hampered by the unknown rate of crime reporting for all crimes.[4]

Some alcohol screening instruments rely on self-reported data of alcohol and drug behaviors, in which case direct or overt questions pertaining to substance use or misuse are often underreported. This fostered a move toward indirect questions that have found that sensation seeking, hostility, depression, and psychopathic deviance are correlated with recurrent DWI (see Cavaiola et al., 2007, p. 856; McMillen, Adams, Wells-Parker, & Anderson, 1992; McMillen, Pang, Wells-Parker, & Anderson, 1992). The Substance Abuse Subtle Screening Inventory (SASSI) is an example of an instrument that uses indirect or subtle items to measure substance abuse disorders as a way to circumvent respondent denial or dishonesty. Feldstein and Miller (2007, p. 41) reviewed 36 peer-reviewed reports measuring the SASSI's internal consistency, reliability, structure, and validity, and concluded that "no empirical evidence was found for the SASSI's claimed unique advantage in detecting substance use disorders through its indirect (subtle) scales."

McLellan, Lubarsky, Woody, and Obrien (1980) created the Addiction Severity Index (ASI) as a general substance abuse screening instrument to shape treatment planning and program evaluations by measuring the extent to which respondents have life problems related to substance abuse. This instrument includes measures to determine the extent to which an individual has a substance abuse problem due to legal, familial, employment, medical, and psychological problems. This instrument is not suitable as a predictive instrument for DWI recidivism. The ASI is more of a treatment oriented instrument used to determine the negative effects of alcohol use, not so much whether an individual will drink and drive.

The Form-90 (Miller & Del Boca, 1994) is a structured interview that utilizes a time line follow-back method to measure DWI behavior (Usdan, Schumacher, McNamara, & Bellis, 2002). The Form-90 initially was not invented to measure DWI behavior as much as substance abuse behaviors, but was later modified to include direct questions asking respondents to recall past incidences of DWI, seatbelt, and riding with intoxicated drivers (RWID) using a calendar approach for the previous 90 days. Hettema, Miller, Tonigan, and Delaney (2008) conducted a reliability test of the Form 90-DWI instrument's ability to assess DWI behavior. They utilized the adapted version to measure directly DWI behavior among a sample of 60 undergraduate students that had consumed alcohol in the past 90 days. The form-90 was completed on two separate occasions by each of the participants about 7-30 days apart to measure the test-retest reliability of the instrument. The authors concluded that "overall, the Form 90-DWI demonstrated high levels of reliability for many general drinking and DWI behaviors" (Hettema et al., 2008, p. 117). However, the timeline follow-back format[5] and the fact that this instrument

[4] The point here is that there is virtually no way to get at a "true" or perfect account of DWI behavior, just as there is no way to know how many times someone convicted of drug trafficking has sold drugs, how many victims a convicted sex offender may have, or how many times a convicted domestic abuser has been abusive. Criminological research, like much of the social sciences, is at best able to make theoretical predictions that can only be measured by approximations. When considering a more macro example, the unemployment rate reported in the US does not measure every unemployed person, but rather produces estimates according to the best available data at hand.

[5] This method, to put it simply, asks to respondents to indicate their involvement in a host of drinking related behaviors for the previous 90 days. This instrument can be found at http://www.jennyhettema.com/Form90.doc

measures several non-driving events with a non-offending group of college students neglects to consider many of the underlying theoretical and practical realities of DWI behavior.[6]

The Alcohol Use Inventory (AUI) measures the level of alcohol dependence through four domains: benefits, styles, consequences, and concerns related to alcohol use. The AUI was developed by Wanberg, Horn, and Foster (1977) using a sample of hospitalized individuals for alcohol abuse and those in other treatment settings. Chang, Lapham, and Wanberg (2001) tested the AUI's reliability and profile construction from a sample of DWI offenders. This instrument uses 228 items to form 17 primary scales, six secondary scales, and a third scale regarding four domains (see Miller, Westerberg, & Waldron, 1995; Wanberg & Horn, 1987). Schell, Chan, and Morral (2005, p. 33) pointed out that "individuals who believe that they are affected positively by alcohol intoxication are not responding to the standard penalties for DUI and persist in driving after drinking." Interrupting these points of psychological reward for individuals is important for treatment and prevention, but may do little to improve risk assessment and offender classification. This alcohol screener has 218 items, needs a trained evaluator to interpret the responses, and is most applicable in a clinical setting (Chang et al., 2002), not a community corrections context.

In 1974, Mayfield, McLeod, and Hall developed the Cut down, Annoyed, and Eye-opener (CAGE) as a screening tool for alcohol-use disorder. This instrument is easy to administer and score. This screener has four questions related to the effects of alcohol-use and attempts to stop drinking: (1) Have you ever felt the need to cut down on your drinking? (2) Have people annoyed you by criticizing your drinking? (3) Have you ever felt bad or guilty about your drinking? And (4) Have you ever had a drink first thing in the morning (eye-opener)? This instrument is deemed to have little use as a DWI recidivism screener or measure of alcohol use disorder (see Lacey, Jones, & Wiliszowski, 1999; Mischke & Venneri, 1987).

The Driver Risk Inventory (DRI) was developed by Behavior Data Systems (BDS) specifically for DWI offenders (http://www.bdsltd.com/TestsA_dri-ii.ASP). According to BDS, the DRI is a simple and brief screening instrument containing six scales measuring truthfulness, driver risk, stress coping abilities, alcohol abuse severity, and drug abuse severity. Birkel and Wegner (2000) studied 130 DWI offenders placed in an intensive DWI supervision program and found that adult imprisonment, number of moving violations in the last five years, moving violations in one's lifetime, number of at-fault accidents in the last five years, number of parole revocations, and DRI-II truthfulness and alcohol scale scores are predictive of subsequent DWI (Birkel & Wegner, 2000, p. 2). This screening instrument includes 140 items, which could be difficult to utilize in the field on a regular basis. Although this instrument was developed for a DWI population, there is little research demonstrating its reliability and validity as a predictive instrument (Chang et al., 2002).

The MacAndrew Alcoholism Scale (MAC) is a subscale of the MMPI-2 that has been used to predict DWI recidivism. Interesting about this scale is that it is a subtle report of alcohol use in which alcohol is never specifically mentioned. This is a measure of one's alcoholism potentiality or the likelihood of being an alcoholic at some point in the future and experiencing alcohol-related problems. The MAC was found to predict both DWI recidivism and alcohol-use disorder. Although this instrument has yet to be validated in several jurisdictions, there is an

[6] Theoretically speaking, suggesting that college students are an acceptable proxy to identify repeat DWI offenders neglects to consider much criminological and psychological knowledge regarding antisociality, and underlying theoretical constructs found to associate with chronic offending patterns (i.e., merely being a college student suggests strong social attachments or at least minimal antisociality).

evaluation reporting this instrument accurately detected 67% of recidivists and identified nearly half of those with alcohol use disorders, but more research is needed to verify the reliability and validity of this instrument in the community corrections field (Chang et al., 2002).

The Michigan Alcoholism Screening Test (MAST) is used in several criminal justice settings. The original MAST included 25 items, which were reduced to 22 items to classify individuals in one of three levels of alcohol abuse. Evaluation studies of the MAST are inconsistent regarding the ability to predict DWI recidivism. This instrument more accurately measures late stage alcohol dependency than DWI, it uses obvious indicators that may have a greater likelihood for generating deception, and found to have a high rate of false positives (Chang et al., 2002; Nochajski et al., no date). The draft instrument proposed in this report uses the above mentioned findings from previous research to contribute to the development of a risk instrument designed specifically for a community correction population.

Previous DWI Evaluation Results

Nochajski, Wieczorek, and Miller (1996) found that in a one year follow up period after a first DWI those that re-offended had high levels of risky attitudes and deviant behavior in general. Researchers are still looking to understand what separates a onetime DWI offender from repeat DWI offenders—the purpose of this report. There appears to be some differences, but they are easily missed. For instance, multiple DWI offenders are known to have dangerous driving habits in general, they may have several speeding tickets, reckless driving offenses, or other moving violations (McMillen, Adam et al., 1992; McMillen, Pang et al., 1992).

It might seem that classifying multiple DWI offenders would be predicated heavily on one's level of drinking problem. However, Cavaiola et al. (2003) compared individuals convicted for a first time DWI and multiple DWI offenders, with a group of non-offenders according to scores on two common alcohol instruments, the MMPI-2 (that included the MAC) and the Michigan Alcohol Screening Test (MAST) (Selzer, 1971). This information was included with several static variables such as legal and family history as well as BAC at time of current arrest. They found that both groups of DWI offenders were similar, but there were differences between the offending and the non-offending groups in the expected direction. First-time DWI and multiple DWI offenders did not differ on BAC at time of arrest for the most recent arrest (Cavaiola et al., 2003). Both DWI groups significantly varied from the nonoffender, but there were no significant differences between the DWI groups. However, the central purpose of this research is to uncover the variation among individual characteristics and items from the LSI-R and the ASUS among different offenders with a single DWI and those with multiple DWIs.

Cavaiola et al. (2003) also considered differences on psychological scales measuring depression, mania, and psychopathic traits between the three groups. Once again, their results suggested significant differences between the nonoffender and both offender groups, but no differences among the two offender groups. Specifically, the offenders scored higher on the MMPI-2's measure of "rebelliousness towards authority figures, a disregard for rules, egocentricity, impulsiveness, stormy marital/family relationships, and insensitivity to the needs of others" (Cavaiola et al., 2003, p. 976; Graham, 1990). Cavaiola et al. (2003) study was unable to point the way toward understanding the differences between first and multiple DWI offenders based on personality and psychological factors.[7] Instead, they showed that DWI offenders differ from nonoffenders.

[7] This brings up a difficult situation in which the common characteristics for offender risk assessments are found not to provide predictive validity when differentiating among limited and chronic DWI offenders. This is not to say

Another follow-up study sought to isolate the characteristics of repeat DWI offenders followed over a 12 year period (Cavaiola, Strohmetz, & Abreo, 2007). They analyzed 77 first time DWI offenders in which 38% were convicted of a subsequent DWI. It seems that there are only slight differences between first and repeat DWI offenders. There were no significant differences in arrest BAC, no differences in self-reported alcohol use disorders (MAST) or alcoholism potential (MAC-R). Interestingly, the only differences among these groups were found in their level of honesty or deception on instruments. The MMPI-2 is a comprehensive psychological assessment that includes validity items to ensure accurate responses. Repeat DWI offenders were found to have significantly higher L scale (or Lie scale) scores to present oneself as "fake good" and higher (but not statistically significant) defensiveness scores (K scale). Repeat DWI offenders were found to have significantly more driving infractions other than one-time DWI offenders. Chronic DWI offenders were more likely to have their license revoked prior to and following their DWI arrest for other traffic offenses such as reckless and careless driving. It appears that among this sample (n = 77) driving history was a significant difference between first and multiple offenders. The authors, however, did not go far enough analytically to determine the relationship between these measures and repeat DWI. Their analysis only compared mean scores (t-tests), but they did not estimate regression models or use other classification strategies to determine the impact of driving history on predicting repeat DWI (Cavaiola et al., 2007). The authors, unfortunately, explained away the lack of differences in psychological and personality factors between first and multiple offenders by quoting Perrine (1990) and "noting that most first offenders are problem drinkers who have simply not yet been caught for their second DUI offense" (Cavaiola et al., 2007, p. 859).

C'de Baca, Miller, and Lapham (2001) identified five risk factors for a high risk recidivism group: 1. Age (less than 29 years old), 2. Education (less than 12 years of education), 3. BAC at time of arrest (.2 or greater), 4. Alcohol Use Inventory (7 or higher), and 5. MacAndrews Alcoholism Scale (MAC). These authors go so far as to suggest that the screening or assessment process has the potential to be "an effective intervention in deterring future drunk-driving behavior" (Chang et al., 2002, p. 10). Their analysis moved from simple demographic differences between groups (i.e., repeat DWI offenders and one time DWI offenders), which revealed that repeat offenders were younger (<29 year old), more likely to be male, single, have less education (< 12 years of school), and more likely to be Hispanic (C'de Baca et al., 2001). Their multiple risk factor approach used logistic regression equations to determine that age, education, arrest, BAC, the receptive-awareness scale (AUI) and the MAC (MMPI-2) provided the best prediction for repeat DWI (C'de Baca, 2001).

Chang, Lapham et al. (2001) found that when compared to a normative population of residential clients for alcohol-use disorder that DWI offenders have lower scores of internal consistency between items and lower scale score variances. The authors attributed this reduced reliability to a higher level of defensiveness on the part of DWI offenders trying not to reveal information which might be used against them. Obviously, DWI offenders may underreport their use and consequences of alcohol.[8]

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that these items should necessarily be excluded, but rather further research is needed on larger samples to determine the association between such characteristics and DWI recidivism.

[8] It seems counterintuitive to think that DWI offenders are any different from other offenders in their attempts to minimize and neutralize the negative consequences associated with their criminality. Moreover, it is unrealistic to think that offenders are not aware of the potential legal issues related to their answers on such instruments (i.e., they want to appear as low risk as possible).

Donovan and Marlatt (1982), for example, proposed five subtypes using hierarchical cluster analysis using hostility scores, personality measures, and driving attitudes. Arstein-Kerslake and Peck (1985) developed two typologies using personality and attitudinal scales, and driving and criminal history records, which revealed significant differences in accidents and conviction risks. Chang, Lapham et al. (2001) used the AUI to identify DWI typologies; they also assessed the predictive validity of the AUI, and matched DWI typologies with alcohol use. They identified six typologies of DWI offenders: low-profile, enhanced-disrupt, alcohol-preoccupation, anxious-disrupt, enhanced, and high profile. They found that the best "predictors for recidivism were gender, age, education, BAC at arrest, and AUI cluster type" (Chang & Lapham, 2001, p. 126). This means that for their sample younger offenders (16-25 years old vs. 26-40 years old, and 40+), less educated (12 years education vs. > 12 years education), higher BAC at arrest (> 200 mg/dl), and AUI cluster 3, 4, and 5 (vs. cluster 1) were more likely to be convicted for a subsequent DWI.

This discussion is not meant as an exhaustive discussion of DWI research. Rather, the intentions here are to describe the central concerns related to DWI risk assessment development and use. Chang et al. (2002, p. 26) conducted a thorough literature review of DWI risk assessments and alcohol use disorder screening instruments and concluded that "the screening methods developed to date cannot accurately predict who will recidivate and who will not. Even the best assessments accurately detected only approximately 70% of recidivists and identified approximately 50% of offenders as problem drinkers." Their cumulative review of screening instruments resulted in the authors identifying five essential testing domains: substance abuse, defensiveness, driving attitudes and risk, coping skills, and personality and psychological factors (Chang et al., 2002, p. 26). They suggest, in accordance with the National DWI Compendium, that assessment instruments suffer from "tunnel vision" in that too many of them focus disproportionately on an individual's alcohol use, but rather more measures specifically related to alcohol-related problems are needed. It is not alcohol but rather the problems that individuals experience related to alcohol that is more predictive of DWI recidivism. In the end, Chang et al. (2002, p.37) found that the MAC and the AUI were the only instruments that reached adequate levels of predictive accuracy for DWI recidivism (with the MAC also predicting alcohol-use disorder). Although Chang et al. (2002) identified these five test domains, it seems that the approaches to DWI recidivism classification have nearly ignored criminological research that has grappled with uncovering the difference between career or chronic criminals relative to those with limited criminal involvement (e.g., Blumstein, Cohen, Roth, & Visher, 1986; Wolfgang, Figlio, & Sellin, 1972). Before turning to the methods and analysis, a brief review of criminological research is provided to provide some clarity regarding the differences between repeat DWI offenders and those with limited DWI involvement.

Criminological Theory: Brief Introduction

The purpose of this report is to provide community corrections officers a tool to classify individuals convicted of a DWI into risk categories predictive of subsequent DWIs. This is an exercise in predicting human decision making and behavior by using an assortment of individual characteristics. Obviously, any predictive instrument will not predict perfectly. Social science predictive methods inherently assume an amount of predictive error.

Table 2: Two-by-two example of prediction model

	Rearrested for DWI	Not arrested
Assessed to High Risk	A= High risk and arrested	B= High risk and not arrested
Assessed to Low Risk	C= Low risk and arrested	D= Low risk and not arrested

Table 2 is an aid to understand the potential for error when classifying individuals into two possible categories. Cells A (i.e., true positive rate or sensitivity) and D (true negative rate or specificity) are correctly placed into risk categories, and cells B (false positive) and C (false negative) are incorrectly specified. False positives (group B) lead to inefficient use of resources and false negatives (group C) fail to protect the public.

In order to make accurate predictions about future behaviors, researchers rely on theories. Theories can be powerful guides pointing the way toward explanations of social phenomenon. Theories provide insights into why certain things happen as they do and why people make the choices they do despite the known potential consequences. Theories, for the purposes here, are not ideas detached from reality, but rather provide a much needed roadmap to make sense of why some people are convicted for a single DWI and others are chronic DWI offenders. Criminological theories provide frameworks or schemas to make causal statements about "how developmental processes are linked to the onset, continuation, and cessation of criminal and antisocial behavior" (Sampson & Laub, 2005, p. 39). To date, much of the DWI risk assessment literature is devoid of criminological research—whether it is sociological or psychologically focused—but instead prefers to dissect the substance abuse differences among singe and chronic DWI offenders. This sort of research, no doubt, provides important insights, but it has yet to offer the community corrections field an adequate risk assessment instrument that actually differentiates among these distinct offending groups.

This section briefly sketches some of the central theoretical schemas used to explain criminal involvement. This discussion focuses on theories used to explain individual crime causation and human behavior (i.e., micro theories). Scholars have pondered why it is that certain people engage in limited amounts of criminality before desisting, and others are persistent offenders through the life-course. The bulk of criminology is dedicated to locating a mix of social and psychological influences on crime causation, and more recently the interplay between these factors.

One forerunner to much criminological research is Sigmund Freud's assertion that biological and social factors coalesce in various patterns to explain human behavior. While he was not so much interested in explaining criminality per se, his insights into personality development have contributed to criminological theoretical development. Freud's theories are incorporated into more current social-psychological explanations of human behavior (Andrews & Bonta, 2003). To understand why some people repeatedly put themselves in situations in which they may be arrested and convicted for multiple DWIs requires considering both psychological and sociological perspectives of human decision making. Andrews and Bonta (2003, p. 114) say that the Freudian model of human behavior suggests that "human beings seek pleasure and avoid pain, and that pursuit of pleasure is governed by the demands, constraints,

and opportunities of the immediate situation and by the internal controls that are developed through socialization experiences."

How is it that individuals form ideas that make it acceptable for them to continue to drive drunk? This is an especially important question regarding the recidivist because each DWI arrest and conviction is the result of an assortment of decisions and subsequent behaviors. No doubt, any arrest and conviction are the result of more than simply the individual offender's behavior as such outcomes are shaped by a host of criminal justice factors (e.g., police presence, police discretion, defense attorneys, prosecutors, judges). However, the purpose of this report is to lay out a theory identifying which individuals are most likely to be chronic DWI offenders. Therefore, for a person to be convicted of a DWI requires that an individual made several decisions that start with drinking and culminate with them driving. These decisions are made in the face of alternative choices and, for recidivists, the potential consequences which they have already experienced. Do DWI recidivists have different definitions of drunken driving situations than non-recidivists? Table 3 provides an overview of how various criminological theories would explain drunk driving.

Table 3. Criminological Theory and DWI

Theory:	Proponent:	How it explains DWI
Differential Association	Sutherland	People learn that it is okay to drive drunk and these attitudes or perspectives are shaped by their friends, family, and others the individual associates with regularly and considers important.
Techniques of Neutralization	Sykes and Matza	Criminals may deny that they are responsible for any wrongdoing or that anyone was injured, which allows for denying the existence of a victim and condemning authority figures. DWI offender may argue that drunken driving laws are wrong as long as no one gets injured, or that it is not their fault because they had to get to work the next morning.
Control Theory	Hirschi	A person's level of attachment or bonding to social institutions such as family, school, work, and church shapes pro-social behavior. Individuals who drink and drive have internalized conventional norms depending on their level of attachment to these conventional institutions.
Self Control Theory	Gottfredson and Hirschi	Drunk drivers are individuals with low self control. They are also more impulsive, spontaneous, risk seekers, egotistic, and need instant gratification.
Social Learning Theory	Various authors	Chronic drunk drivers have been exposed to experience that suggest to them a certain amount of legitimacy to drunken driving. There cognitive process is different from someone who will not drink and drive. It may be the social situation (peers encouraging a person to drink and drive or not to drive) or how the cognitive frames process potential actions for individuals.

Drunken driving requires that individuals have certain motives, desires, and ideas that suggest it is acceptable to drive drunk. Edwin Sutherland (1939) posited that these internal drives manifest through differential association to explain why some people engage in crime and others do not. Differential association suggests that people learn criminal behavior through interaction with intimate people or groups. These learning processes provide individuals with the motives, drives, rationalizations, and attitudes necessary to support the commission of crime. In this case, people learn that it is okay to drive drunk and these attitudes or perspectives are shaped by their friends, family, and others the individual associates with regularly and considers important. There is little doubt that recidivists believe that it is acceptable for them to drive drunk. This still does not reveal why this is the case, nor does it point toward strategies to adjust attitudes and behaviors. The point here is that differential association theory offers criminology powerful insights regarding human decision making.

Other theories turn the research question on its head by asking why people conform. What is it that keeps certain people from receiving multiple DWIs? That is, many people drink, but some of these people choose alternatives to driving drunk. Indeed, non-recidivists use taxi services, walk, stay where they are, use a designated driver, but the chronic DWI offender chooses to drive despite the consequences. Control theories suggest that most people, given the correct situation and level of self-control, will commit crimes along a descending trajectory over the life-course (i.e., less criminality as one ages). Conformity is the opposite of criminality. Sykes and Matza (1957) argued that juvenile delinquents may learn the desires, motives, and attitudes favorable to law violation, but what they recognized was that delinquents also learn neutralization techniques to diminish guilt or shame associated with deviant acts. They identified five techniques of neutralization that are useful for understanding persistent DWI behavior: 1. denial of responsibility, 2. denial of injury, 3. denial of victim, 4. condemnation of the condemners, and 5. appeal to higher loyalties.

To briefly summarize these points, criminals may deny that they are responsible for any wrongdoing or that anyone was injured, which allows for denying the existence of a victim and condemning authority figures. A chronic DWI offender may, for instance, argue that drunken driving laws are wrong as long as no one gets injured, or that it is not their fault because they had to go to work the next morning.[9] This research was later incorporated into Matza's (1964) drift theory in which he argued that as individuals move through the life course they will drift in and out of periods of more or less deviant and criminal behavior. Sykes and Matza, essentially, argued that neutralization and drift suggest that an underlying deviant value system does not exist. Rather, people have the ability to move in and out of deviancy and normalcy such that people may drink and drive at various times (e.g., special events, birthdays, sporting events), for different reasons (e.g., want to go home, do not want to leave their vehicle), and as one gets older this behavior will diminish. This is in opposition to general deviance explanations that suggest that people are generally deviant.

Travis Hirschi (1969) argued that one's level of attachment or bonding to social institutions such as the family, school, labor force, and church shapes pro-social behavior. He argued that people internalize conventional norms depending on their level of attachment to these conventional institutions. Legitimate institutions require time, commitment, and mold social networks composed of pro-social individuals, which limit the desires and opportunities for

[9] Many people are arrested for DWI in the early in the morning after an evening of heavy drinking in which they remain intoxicated.

criminal activity. This perspective was refined by Gottfredson and Hirschi (1990) in their *General Theory of Crime* in which they posited that low self-control was responsible for crime.

Individuals with low self-control are typically seen as impulsive, spontaneous, risk seekers, egotistic, and need instant gratification. A major implication of Gottfredson and Hirschi's research is that offenders do not specialize, but rather generalize in criminal and deviant behaviors, and that all criminal and deviant acts have similar underlying causal properties rooted in weak social attachments resulting in low self-control and high levels of impulsivity and disregard for laws and norms.

The *General Theory of Crime* suggested that all crimes are generated from low self-control and the need for excitement and lack of delayed gratification, which is similar to Jessor and Jessor's (1977) problem-behavior theory. Cavaiola, Strohmetz, and Abreo (2007) supported the Jessor's problem-behavior theory, and suggested that there are certain protective and destructive aspects of a personality that make them more or less likely to engage in selfish and risky behavior. High energy, impulsiveness, low self-control, and sensation seeking are what Andrews and Bonta (2003, p. 187) recognize as the essential features of antisocial personality characteristics.

Social learning theory "suggests that individuals will choose behaviors for which they have learned, through prior exposure to direct or vicarious reinforcement, to expect the most favorable outcome" (Bauer, 2009, p. 936). Social learning posits that people learn both criminal and non-criminal roles that are socially reinforced, and result in individuals learning norm-definitions of situations. Social learning in a more dynamic fashion suggests that people have differential reinforcement patterns throughout the life-course. Simply, as people grow older their definitions of rewards and punishments change. As people age they tend to become more entrenched in legitimate social institutions as they gain a greater 'stake in conformity' by getting married, having children, acquiring mortgages, and other life changes that potentially shift expectations of the distribution of rewards and punishments for certain behaviors. Perceiving different interactions as positive or negative reactions toward individual behaviors shapes definitions of contextually appropriate ways of acting.[10] These definitions of situations "act as cognitive discriminative stimuli that cue certain behaviors as rewarding or punishing" (Akers, 1998, p. 77-87; found in Bauer, 2009, p. 931).

No doubt, individuals convicted of a single DWI have certain levels of antisociality—or they would not have driven drunk in the first place—which suggests that antisocial personalities exist along a continuum potentially shaped through age-graded processes (e.g., Moffitt, 1993). Previous experiences provide individuals with cognitive scripts that are translated into behaviors that are applied in specific ways within specific contexts. For the chronic DWI offender, they have been exposed to experiences that suggest to them a certain amount of legitimacy to drunken driving.[11] It is important to remember that individual offenders act in specific situations and have the opportunity to choose from a set of alternative behaviors.[12] In the case of intoxicated

[10] There is also the potential that given low arrest per offense rates for DWI that chronic offenders are positively rewarded each time they "get away" with driving drunk, and they may receive some vicarious reinforcement when becoming aware of a friend or someone they know that successfully drives drunk.

[11] This is not to suggest that chronic DWI offenders are unaware of the fact that what they are doing is illegal or wrong. Rather, the level of wrongness does not outweigh their preconceived definitions of the legitimacy of drunken driving.

[12] A certain version of such social learning and cognitive processes are at the heart of many cognitive behavioral treatment techniques.

individuals, there is the choice to drive or not to drive, and, for some hypothetical intoxicated people, driving is not a possible action, whereas for others, not driving is not a consideration. That is, some drunken people will always find alternative forms of transportation; whereas, others plan to get intoxicated and drive. What is it that differentiates these people? This, to be sure, involves the social situation in which people are involved (e.g., peers encouraging one to drive or not to drive, desires not to be without a vehicle), but it also attends to what and how cognitive frames process potential actions for individuals.

Finding a Needle in a Haystack: Limited vs. Chronic Offenders

Criminologists have routinely found that the bulk of criminal acts are committed by a small cadre of persistent, chronic, or career criminals. These individuals tend to be resistant to behavior changing efforts and demonstrate disregard for formal or informal social control interventions, and instead of aging out of criminal and antisocial behaviors they become entrenched in their criminality throughout much of their life course. Andrews and Bonta (2003, p. 2) make the case that "there exists a general personality and social psychology of criminal conduct (PCC) that has conceptual, empirical, and practical value within and across social arrangements, clinical categories, and various personal and justice arrangements." Interesting about Andrews and Bonta (2003) is that they do not attend to underlying personality and behavioral changes related to one's age.

In the well-known criminological research, Wolfgang et al. (1972) found in their Philadelphia Birth Cohort study (n = 10,000) that about 6% of the subjects were responsible for slightly over half of all crimes committed by this cohort. This study also revealed that chronic offenders were typically nonwhite, poor, residentially unstable, had lower IQs, completed less formal education, had disciplinary problems in school, and had younger age of first arrest. Following Wolfgang et al. (1972), other criminologists began to study this seemingly persistent and general group of career criminals (Blumstein et al., 1986). Central to this typological research is Terrie Moffitt's (1993, 1994) classification of offenders as life course persistent and adolescence-limited. Her research focused on childhood experiences and risk factors—e.g., hostile temperament, low IQ, and poor self-control—that contributed to later extended patterns of criminality and deviance or the lack thereof. Moffitt (1993, p. 676) defined these offender typologies as:

> A small group of persons is shown engaging in antisocial behavior of one sort or another at every stage of life. I have labeled these persons life-course persistent to reflect the continuous course of their antisocial behavior. A larger group of persons fills out the age-crime curve with crime careers of shorter duration. I have labeled these persons adolescence-limited to reflect their more temporary involvement in antisocial behavior. This, timing and duration of the course of antisocial involvement are the defining features in the natural histories of the two proposed types of offenders.

Moffitt's typology fits with Robbins' (1978) dictum that suggests that nearly all adult criminal offenders were involved in juvenile criminality and deviance (e.g., early age of first arrest), but most juvenile delinquents do not continue this line of offending throughout their life. Rather, criminality and deviance are stable for a small (5 -10%) group of the offending population, and is short lived or limited for most people. This is significant because in the more recent risk assessment literature there is little overt discussion of this phenomenon. Instead, there is an emphasis placed on the stability of offending, with change only considered as criminogenic needs to be addressed by treatment, but it seems that even static features of individuals' lives provide temporary predictors of future behavior that must be considered within

larger statistical models that control for age and the related life course trajectories and transitions (Sampson & Laub, 1990). Most significant for the purposes of this research, is that criminological and psychological research routinely finds that there is a small group of persistent offenders, which usually amount to about 5 or 6% of samples (e.g., Blumstein et al., 1986; Farrington, Ohlin, & Wilson, 1986; Loeber, 1982; Henry, Moffitt, Robbins, Earls, & Silva, 1993; McGee, Partridge, Williams, & Silva, 1991; Wolfgang et al., 1972).

In one of the most extensive criminological studies, Sampson and Laub (1990, 1993, 2003, 2005) report longitudinal analysis of the offending patterns of delinquent males from ages 7 to 70. Sheldon and Eleanor Glueck (1950) collected substantial data on 500 delinquent boys living in the Boston, Massachusetts area and matched them to 500 non-delinquent boys to determine the causal forces connecting juvenile delinquency and adult criminality to inform correctional policy development. Before describing Sampson and Laub's extension of the Glueck's work, it is important to describe the experimental and comparison groups. Each group was composed of white males between the ages of 10 and 17 from working class ethnic neighborhoods, with the delinquent sample having official records with a juvenile correctional facility in Massachusetts. The non-delinquent sample has no official record of delinquency, as well as interviews with teachers, parents, social workers, police, and others to verify that these boys were representative of non-delinquent youths. The groups were matched according to "residence in urban slum areas, age differences, ethnicity, and IQ" to eliminate these as confounding explanations for differences among these samples (Glueck & Glueck, 1950; Sampson & Laub, 1993). Sampson and Laub (1993, 29) describe some of the data collection by the Glueck's thusly:

> …the research team that included interviews with the subjects themselves and their families, employers, school teachers, neighbors, and criminal justice/social welfare officials. These data were supplemented by extensive record checks across a variety of social agencies…most of the social variables (family income, parental discipline, and so forth) were collected from a variety of sources, such as home interviews…along with independent visits from social welfare agencies. This level of detail and the range of information sources found in the Glueck study will likely never be repeated, given contemporary research standards on the protection of human subjects. The Glueck's research team conducted extensive follow-up interviews with these 1,000 individuals at different points in time (namely around the time of their 25th and 32nd birthday).

In the 1980s, Sampson and Laub were granted permission to these data when he Harvard Law School acquired them and permitted restoration and analysis. It is not necessary to fully detail the data and analysis for the purposes here, but what is important to understand is that Sampson and Laub conducted extensive follow-ups with delinquent males up to 70 years of age.[13] They plot age-crime curves for the delinquents male group (n = 480)[14] for all offenses, property crimes, violent crimes, and alcohol and drug crimes. Interestingly, the total offenses category demonstrated that offending peaked sometime around 15-17 years of age, declined in the early 20s, took a precipitous fall around age 37, and continued to decline for the rest of the life course. This pattern, for the most part, held true for the property crimes, but there was more sporadic involvement in violent crimes that eventually curtailed during the early 40s. More specific for the purpose of this report, is that involvement in alcohol and drug offenses peaked

[13] For a full treatment of their methodological design, see Sampson and Laub (2003).

[14] Sampson and Laub (2003, p. 311, note #8) report that twenty of the cases were lost during the "archiving process" but these lost cases were not believed to be unusual.

around 19 years of age, remained high until offenders were in their late-40s, at which point involved dropped drastically (Sampson & Laub, 2003, p. 313). The point to this research is that Sampson and Laub (1993, 2003) found that alcohol and drug offenses appear a bit later in life, offenders struggle with these behaviors for longer periods of their life, but eventually aging out does occur, and these patterns hold after controlling for individual, familial, and community risk factors. They also found that a high rate chronic group of alcohol-drug offenders accounted for about 2% of the sample that had a peak offending age extending into their 50s.

This criminological discussion was presented to counter some in the DWI and risk assessment literature that virtually ignore more sociological critiques and explanations of offending patterns. It seems that many in the DWI research field seem surprised that there is a small group of individuals that seem impervious to formal interventions, and research demonstrates that there are limited differences among people that receive a single vs. multiple DWIs. As a way to confront this difficulty, longer, more nuanced substance abuse disorder screening instruments are used, despite that what separates single from chronic DWI offenders is not variable substance abuse rates. Furthermore, even if many chronic offenders have substance abuse disorders, is it justifiable to claim that substance abuse disorders cause recidivist DWI? Isn't this similar to arguing that domestic violence is caused by alcoholism, or sex offending is caused by pornography? It is erroneous for researchers to ignore the multitude of criminological data that exists on social-psychological processes involved in offending—all offending. Recidivist DWI offending is no different. This is a crime that is rooted in antisocial attitudes, values, and beliefs that are learned throughout the life course, and that, no doubt, are affected by the age-crime curve displayed by Sampson and Laub (and others). That a small group of recidivist DWI offenders exists should not surprise the criminological community because this is a general and well-known phenomenon with all crimes. Wolfgang et al. (1972) demonstrated this fact more than three decades ago. This report uses data from nearly 4,000 DWI offenders from a Southwestern state's department of corrections as well as the previous research discussed above to contribute to developing a pilot DWI risk assessment instrument to be used in the community corrections field.

Methods

At first glance, it may appear that risk assessment construction is a simple process. However, developing measures with high predictive validity for outcomes of interest necessitates theoretical consideration and discernment of the practical utility of such measures. Bonta (2002) offered several guidelines for developing and using risk assessment instruments in which he asserted that risk assessments should be based on quantifiable measures that demonstrate predictive validity of criminal behavior. Theories of human behavior, change processes, and correctional interventions should guide the construction of assessment instruments. Risk assessments, according to Bonta (2002), should use personality and cognitive measures to ensure that treatment programming matches the offender's learning needs (i.e., responsivity), and that although static and dynamic factors should be used risk and needs assessment should not be considered synonymous (Baird, 2009; Gottfredson & Moriarty, 2006, p. 195).

The approach here follows Kroner, Mills, and Reddon (2005) in which they tested the predictive accuracy of four well-known risk assessment instruments (the Psychopathy Checklist-Revised (PCL-R), Level of Service Inventory-Revised (LSI-R), Violence Risk Appraisal Guide (VRPG), and the General Statistical Information on Recidivism (GSIR)). Their approach was unique in that they not only evaluated these formal risk assessment instruments, but they used

these four instruments to randomly create four additional risk instruments. That is, the items from the four risk assessment instruments were written on a 1 x 1 inch card and put into an empty coffee can. This produced 101 items that were mixed together by shaking the coffee can before selecting 13 items without replacement. These items were recorded and placed back in the coffee can before repeating this procedure to create four "Coffee Can Scales" (Kroner et al., 2005, p. 364). In addition to the 13 randomly drawn items to create each of these predictive scales, Kroner et al. (2005) included a single static measure of prior incarcerations.

They found that "none of the four original instruments better predicted post-release failure than the four randomly generated instruments" (Kroner et al., 2005: 360). They further argue that this predictive failure implies that the original risk instruments are focusing on criminal risk only, and that none of the instruments account for theory to result in better prediction than randomly derived instruments measuring criminal risk. Kroner et al. (2005) suggested that the criminal justice field must develop a risk-based construct that offers behavioral explanations.

The intention with any risk assessment instrument is to make classification predictions that "disaggregate heterogeneous correctional populations into subgroups that maximize between group differences and minimize within group differences" (Flores, Lowenkamp, Smith, & Latessa, 2006, p. 2). These subgroups are derived by identifying offender characteristics found to correlate with reoffending—for this report, analyses will focus on those items that are statistically associated with DWI recidivism, not general recidivism. Classifying offenders according to combinations of factors related to offending allows for "establish[ing] base expectancy rates for offenders who have different profiles" (Baird, 2009, p. 3). For any risk assessment tool to be effective in a community corrections setting, many of the items should be verifiable by external investigation (e.g., contacting collateral contacts, reviewing official documents), have mechanisms to detect deception, and contain as few items as possible while maximizing predictive validity. In fact, Baird (2009) reviews the development of community corrections risk assessments and recognizes the recent trend of including dozens of items on assessment instruments when in the past few items were used. This in and of itself is not problematic, but Baird (2009) goes further to point out that items are used that have no relationship with criminal behavior (see Austin, Coleman, Peyton, & Johnson, 2003; Flores, Travis, & Latessa, 2004). Baird (2009, p. 3) correctly recognizes that when risk assessment instruments include "factors without significant statistical relationships to recidivism actually reduce, rather than improve, a model's ability to accurately classify cases."

While we do not draw our items from a coffee can, we do use an assortment of statistical techniques to identify the most parsimonious set of indicators from the LSI-R and the ASUS on a sample of 3,884 convicted DWI offenders in a Mid-Western state. These instruments were used for several reasons. The LSI-R is one of the most popular general risk assessment instruments used in the community corrections field today, and the ASUS is a robust measurement of substance use patterns and consequences. The LSI-R has been tested in nearly 50 studies thus far (Vose, Cullen, & Smith, 2008).

This instrument was originally developed in Canada by Donald Andrews and James Bonta during the 1980s. The LSI-R is one of the most used instruments in the corrections field to measure recidivism and develop case plans (Hubbard, Travis, & Latessa, 2001; Lowenkamp, Lovins, & Latessa, 2009).

Analytic Approach

The central research question guiding this project is: what are the unique characteristics of someone with multiple DWIs? The analytical strategy employed here provides descriptive, correlational, and logistic regression models. Researchers acquired data from a Midwestern state correctional department of a sample of about 4,000 individuals on probation or parole for DWI. These data came in four separate datasets: termination summary, demographic characteristics, alcohol screener items, and LSI-R items. The four datasets were merged using a one to one merging method to eliminate duplicate cases. A unique department of correction identification number was used to match individuals. Once the data was merged and cleaned the sample included 3,884 offenders. The dependent variable is composed to identify those with prior DWIs and those in which this was their first DWI. The dependent variable is composed of three categories: no prior DWI (= 0), one prior DWI (=1), and 2+ prior DWIs (=2). Given the nature of the dependent variable a series logistic regression models were calculated to identify significant relationships between the DWI categories and domain items from the ASUS (alcohol screener) and LSI-R while controlling for race, age, gender, and marital status.

Analytic Technique

Statistical approaches often rely on ordinary least squares (OLS) regressions. Ordinary least squares (OLS) regression is a common choice for many social scientists. Although OLS is relatively easy to perform using most statistical packages, it comes with an assortment of assumptions that are difficult to satisfy in real world settings including nonlinearity, normality, and heteroskedasticity, and when these assumptions are not met inaccurate estimates are produced. OLS regression with a categorical dependent variable raises the potential for statistical violations (e.g., normality, linearity and homoskedasticity). When these assumptions are not met, alternative procedures are necessary. In this report, an assortment of individual characteristics and data from the LSI-R (54 items) and the ASUS (94 items) are used to assess the differences between individuals convicted of a single DWI with recidivist DWI offenders.

Logistic regression is suitable for this project because we are most interested with predicting which individuals will fit into discrete groups. The offenders are placed into groups according to their number of prior DWIs or lack thereof. Logistic regression reports relationships according to the odds of an event occurring (vs. the event not occurring).[15] Logistic regression is also appropriate to identify the differences between individuals with a single DWI from recidivist DWI offenders using a categorical dependent variable. In order to do this an assortment of variables are used to determine the odds of an offender with certain characteristics being a recidivist relative to not being a DWI recidivist.

One shortfall of this approach is the cumbersome nature of interpreting the coefficients. OLS produces a summed slope coefficient to understand the influence of X on Y, controlling for other X's (i.e., for every one unit change in X, Y changes a certain amount in a fixed pattern across units). Whether an offender has more than 1 DWI qualifies as a discrete event in which offenders fitting into the different categories of the dependent variable are measured relative to a reference group. In all of the analyses, no prior DWI is the reference group such that the regressions produce two odds ratios for each variable. This analysis, essentially, allows for running models that compare: One prior DWI vs. no prior DWI and 2+ prior DWIs vs. no prior

[15] To find the odds that Y = 1 a ratio of the probability that Y = 1 to the probability that Y ≠ 1 produces the equation for the odds that Y = 1: P (Y=1)/[1-P(Y=1)]. In order to use the natural logarithm of the odds of experiencing a subsequent DWI conviction: ln {P (Y=1)/[1-P(Y=1)]}. This means that our dependent variable becomes the logit of Y or logit (Y) and the regression equation is: logit (Y) = $\alpha + \beta_1 X_1 \ldots + \beta_k X_k + \varepsilon$

DWIs, but given our interest on the differences separating chronic DWI offenders from one time offenders, only the results from the latter binary will be reported (additional analyses are available from the authors by request).

Findings

Before proceeding to the regression models, Table 4 provides descriptive characteristics for the entire sample. Nearly 70% are married, almost 60% indicated being employed (which includes part-time), nearly 90% are males, and about half of the sample are between 30 and 44 years old. The bulk of the offenders are white (63.7%), 15.1% are Native American,[16]12.2% are Black, and almost 9% are Hispanic. While there is much missing information pertaining to income ranges, it is interesting that 41.6% claimed to earn $1,000 per week, nearly another quarter earn between $600 and $999 per week. A large percent of the sample lacks much formal education, with 40.2% having less than a high school education, another 38.2% have a GED or high school education, and only 14.8% have attended college. The data included three treatment indicators which revealed that slightly more than half of the sample have not participated in inpatient treatment, nearly 40% have participated in outpatient treatment between one and two times, and 20.4% have experienced mental health treatment one or two times. Nearly 70% of the sample has a pervious arrest for alcohol or drugs, and almost half have never participated in alcohol or drug education. For 47.1% this is their first DWI conviction, 27.7% have one prior DWI, and slightly more than 25% have 2+ prior DWIs. About half of the sample have been on probation one or more times, and about one-fifth have been incarcerated once and slightly less than 10% have been incarcerated two or more times. Descriptive statistics are reported in Appendix A and B for the entire sample for both the LSI-R and the ASUS.

[16] The state from which this sample was drawn has a large Native American population.

Table 4: Descriptive characteristics of DWI offenders

	N(%)
Marital Status	
Yes	1,232(68.1)
No	2,625(31.9)
Employment	
Yes	2,302(59.9)
No	1,544(40.1)
Gender	
Male	3,457(89.0)
Female	427(11.0)
Race	
White	2,448(63.7)
Black	467(12.2)
Hispanic	335(8.7)
Native Am.	582(15.1)
Other	10(0.3)
Income Ranges	
None	401(10.4)
1-199	45(1.2)
200-399	125(3.2)
400-599	254(6.6)
600-799	407(10.6)
800-999	463(12.0)
1000+	1,601(41.6)
Unknown	554(14.4)
Education	
Less HS	1,548(40.2)
GED	308(8.0)
HS	1,163(30.2)
Some college	453(11.8)
College	117(3.0)
Some grad. college	5(0.1)
Graduate degree	21(0.5)
None	14(0.4)
Unknown	217(5.6)
Prior Incarceration	
None	2,674(69.7)
One	834(21.7)
2+	330(8.6)
Prior Probation	
None	1,762(46.1)
One	1,279(33.4)
2+	785(20.5)

Table 4 (continued): Descriptive characteristics of DWI offenders

	N(%)
Prior Inpatient Treatment	
None	1,964(55.1)
Once	1,280(35.9)
Twice	323(9.1)
Prior Outpatient Treatment	
None	2,182(61.6)
Once	1,121(31.6)
Twice	241(6.8)
Prior Mental Health Treatment	
None	2,749(79.6)
Once	530(15.3)
Twice	175(5.1)
Prior Alcohol or Drug Education	
None	1,702(47.8)
Once	1,311(36.8)
Twice	551(15.5)
Prior Alcohol or Drug Arrests	
None	240(6.5)
Once	878(23.7)
Twice	2,590(69.8)
Age	
18-29	845(22.2)
30-44	1,933(50.9)
45-59	941(24.8)
60+	79(2.1)
Mean	38.3
Range	18-81
DWI	
No prior	1,831(47.1)
1 prior	1,076(27.7)
2-3 priors	790(20.3)
4+	187(4.8)

Crosstabs: Categorical DWI and Individual Characteristics

Table 5 reports the crosstab figures for that use a four category DWI variable and several offender characteristics to further describe the offenders in this sample. There are no significant differences among the DWI groups based on employment, with each group having between 55 to 61% indicating they are employed. Interestingly, slightly less than one-third of each of the DWI offenders is married. The chronic DWI group had nearly twice as many offenders that have two or more prior incarcerations, similarly they also have significantly more single incarcerations than each of the lower DWI categories. And, accordingly, each of the lower DWI offender groups have larger proportions of offenders that do not have any prior incarcerations. The higher DWI groups have significantly more terms of probation, with nearly three-fourths of the 4+ DWI group having a prior term of probation. The treatment differences does not suggest a statistical difference among the groups' prior inpatient treatment, but the chronic DWI offender group having more experience of prior outpatient treatment. The chronic DWI group has nearly 30% with prior mental health treatment compared with about 20% for each of the other three DWI groups. There are no observed relationship differences between the groups according to attendance at an alcohol or drug education program, and nearly identical distribution of offenders with prior alcohol or drug arrests with almost 94% of each group having at least one prior alcohol or drug arrest.

Table 5: Crosstabs of DWI Categories and Individual Characteristics

	N(%)	
	Not Employed	Employed
No Prior	711 (39.2)	1,102(60.8)
One Prior	420(39.3)	649(60.7)
2-3 Priors	330(42.3)	451(57.7)
4+ Priors	83(45.4)	100(54.6)
X^2	4.888	
p=.213		

	Not Married	Married
No Prior	1,224(67.4)	592(32.6)
One Prior	733(68.3)	340(31.7)
2-3 Priors	540(68.9)	244(31.1)
4+ Priors	128(69.6)	56(30.4)
X^2	.827	
p=.843		

Prior Incarceration	None	Once	2+
No Prior	1,322(73.2)	356(19.7)	129(7.1)
One Prior	761(71.3)	221(20.7)	85(8.0)
2-3 Priors	509(65.3)	190(24.4)	81(10.4)
4+ Priors	81(44.3)	67(36.6)	35(19.1)
X^2	79.326		
p=.000			

Prior Probation	None	Once	2+
No Prior	910(50.5)	576(32.0)	316(17.5)
One Prior	496(46.7)	350(32.9)	217(20.4)
2-3 Priors	308(39.6)	281(36.1)	189(24.3)
4+ Priors	48(26.2)	72(39.3)	63(34.4)
X^2	65.803		
p=.000			

Age Categories	18-29	30-44	45-59	60-81
No Prior	423(23.6)	871(48.7)	446(24.9)	50(2.8)
One Prior	226(21.5)	540(51.3)	272(25.9)	14(1.3)
2-3 Priors	152(19.5)	430(55.3)	182(23.4)	14(1.8)
4+ Priors	44(24.7)	92(51.7)	41(23.0)	1(0.6)
X^2	20.431			
p=.015				

Table 5 (continued): Crosstabs of DWI Categories and Individual Characteristics

	N(%)		
Prior Inpatient TX	None	1	2
No Prior	943(55.9)	586(34.7)	158(9.4)
One Prior	529(53.5)	371(37.5)	89(9.0)
2-3 Priors	392(54.2)	265(36.7)	66(9.1)
4+ Priors	100(59.5)	58(34.5)	10(6.0)
X^2	4.889		
p=.558			
Prior Outpatient TX	None	1	2
No Prior	1,055(62.8)	497(29.6)	127(7.6)
One Prior	602(61.4)	326(33.3)	52(5.3)
2-3 Priors	417(58.3)	250(35.0)	48(6.7)
4+ Priors	108(63.5)	48(28.2)	14(8.2)
X^2	13.099		
p=.041			
Prior MH TX	None	1	2
No Prior	1,308(80.0)	251(15.4)	76(4.6)
One Prior	768(80.6)	133(14.0)	52(5.5)
2-3 Priors	557(79.6)	107(15.3)	36(5.1)
4+ Priors	116(69.9)	39(23.5)	11(6.6)
X^2	12.160		
p=.058			
Prior A/D Edu.	None	1	2
No Prior	797(47.0)	620(36.6)	277(16.4)
One Prior	480(48.3)	368(37.0)	146(14.7)
2-3 Priors	337(47.7)	264(37.4)	105(14.9)
4+ Priors	88(51.8)	59(34.7)	23(13.5)
X^2	2.933		
p=.817			
Prior A/D Arres.	None	1	2
No Prior	118(6.7)	413(23.5)	1,227(69.8)
One Prior	58(5.7)	236(23.0)	732(71.3)
2-3 Priors	52(7.0)	180(24.1)	514(68.9)
4+ Priors	12(6.7)	49(27.5)	117(65.7)
X^2	3.786		
p=.706			

Crosstabs: Categorical DWI and Selected LSI-R Items

Table 6 reports the crosstabs for the four DWI groups and with selected LSI-R items. As expected, nearly all of the offenders in the sample have multiple prior convictions. These crosstabs reveal several significant relationships, but they do not demonstrate specific differences between the DWI offender groups. Nevertheless, it is interesting to know that nearly all of the offenders have at least two prior convictions. About 16% of the no prior DWI group was arrested before age 16, whereas the other groups had between 21% and 24% that were arrested at such a young age. The most chronic DWI group has more than double the proportion of offenders that have a history of escaping from a correctional institution, and this chronic group has more than one-third with a history of institutional misconduct, whereas the other groups have about a quarter with such experience. The relationship between the DWI groups and past suspension of supervision demonstrates that more of the most chronic DWI offenders had their supervision suspended (at some point) than the other groups, but between 55% and 65% of each DWI group has been suspended. It appears that the most chronic offenders are more likely to have demonstrated patterns of difficulty following rules, and once they are punished they are more likely to continue with their law violation. Education is an important factor with nearly 60% of the most chronic DWI group not finishing the 12^{th} grade compared to nearly 50% of the no prior DWI group. This difference is interesting because not finishing high school is potentially related to several other important indicators attached to criminal offending. That is, not finishing high school not only prevents individuals from learning basic technical skills and knowledge needed to perform in the labor market, but it also suggests a lack of delayed gratification, work ethic, and dependability. Further, suggesting a general lack of care for basic social institutions is that nearly half of the chronic DWI group compared to slightly more than one-third of the no prior DWI group was suspended or expelled from school in the past. About one-fifth of the chronic DWI offenders compared to 12% of the no prior DWI group live in a high crime neighborhood, and nearly 35% of the chronic group compared to 21% of the no prior DWI group is reliant on social assistance. The LSI-R composite score categories demonstrates that each of the most chronic DWI group had more offenders scored at higher risk ($\approx$18%), relative to the other DWI groups ($\approx$14%).

Table 6: Crosstabs of DWI Categories and Selected LSI-R Items

	N(%)	
Two+ Prior Convictions	No	Yes
No Prior	90(4.9)	1,741(95.1)
One Prior	76(7.1)	999(92.9)
2-3 Priors	43(5.4)	747(94.6)
4+ Priors	4(2.1)	183(97.9)
X^2	10.394	
p=.015		
Three+ Prior Convictions	No	Yes
No Prior	276(15.1)	1,555(84.9)
One Prior	204(19.0)	871(81.0)
2-3 Priors	135(17.1)	655(82.9)
4+ Priors	21(11.2)	166(88.8)
X^2	11.485	
p=.009		
Arrested Prior to Age 16	No	Yes
No Prior	1,527(83.5)	301(16.5)
One Prior	847(78.9)	227(21.1)
2-3 Priors	608(77.5)	177(22.5)
4+ Priors	142(75.9)	45(24.1)
X^2	19.736	
p=.000		
Escape History	No	Yes
No Prior	1,730(94.5)	101(5.5)
One Prior	995(92.5)	81(7.5)
2-3 Priors	732(92.7)	58(7.3)
4+ Priors	165(88.7)	21(11.3)
X^2	12.036	
p=.007		

Table 6 (continued): Crosstabs of DWI Categories and Selected LSI-R Items

	N(%)	
Institutional Misconduct	No	Yes
No Prior	1,382(75.6)	446(24.4)
One Prior	812(75.6)	262(24.4)
2-3 Priors	589(74.7)	200(25.3)
4+ Priors	120(64.2)	67(35.8)
X^2	12.221	
p=.007		
Suspended Supervision	No	Yes
No Prior	767(41.9)	1,064(58.1)
One Prior	488(45.4)	588(54.6)
2-3 Priors	332(42.1)	457(57.9)
4+ Priors	66(35.3)	121(64.7)
X^2	7.883	
p=.048		
Record of Violence	No	Yes
No Prior	1,024(56.0)	803(44.0)
One Prior	638(59.3)	438(40.7)
2-3 Priors	427(54.2)	361(45.8)
4+ Priors	88(47.1)	99(52.9)
X^2	11.835	
p=.008		
Less than Grade 12	No	Yes
No Prior	930(50.9)	898(49.1)
One Prior	561(52.2)	513(47.8)
2-3 Priors	373(47.4)	414(52.6)
4+ Priors	76(40.6)	111(59.4)
X^2	11.388	
p=.010		
Suspended/Expelled School	No	Yes
No Prior	1,195(65.5)	630(34.5)
One Prior	688(64.2)	384(35.8)
2-3 Priors	498(63.9)	281(36.1)
4+ Priors	94(50.3)	93(49.7)
X^2	17.063	
p=.001		

Table 6 (continued): Crosstabs of DWI Categories and Selected LSI-R Items

	N(%)	
Reliance on Social Assistance	No	Yes
No Prior	1,431(78.7)	386(21.2)
One Prior	842(78.4)	232(21.6)
2-3 Priors	598(76.1)	188(23.9)
4+ Priors	122(65.2)	65(34.8)
X^2	20.267	
p=.002		
High Crime Neighborhood	No	Yes
No Prior	1,593(87.4)	229(12.6)
One Prior	929(86.7)	143(13.3)
2-3 Priors	669(84.9)	119(15.1)
4+ Priors	151(80.7)	36(19.3)
X^2	8.294	
p=.040		
School-Work Problems	No	Yes
No Prior	1,161(63.6)	665(36.4)
One Prior	742(69.1)	332(30.9)
2-3 Priors	508(64.7)	277(35.3)
4+ Priors	123(65.8)	64(34.2)
X^2	9.300	
p=.026		
LSI- Risk Categories	Low	Moderate	High
No Prior	822(44.9)	761(41.6)	248(13.5)
One Prior	512(47.6)	423(39.3)	141(13.1)
2-3 Priors	365(45.1)	323(40.9)	111(14.1)
4+ Priors	74(39.8)	78(41.9)	34(18.3)
X^2	6.656		
p=.354			

Logistic Regressions: LSI-R

Logistic regression is based on transforming the dependent variable to a logit,[17] and the regression coefficients estimate changes in the logged odds of being in the chronic DWI group, relative to the odds of being in the no prior DWI group. The disadvantage with this is that interpreting the effects is not all that straight forward, but rather is done by reporting changes to the logged odds of being in the chronic DWI group. These analyses report estimated effects of the LSI-R items entered as separate domains defined by the instrument along with the four controls (race, age categories, race, and marriage).

It is not possible to report all of the analyses; instead significant relationships will be discussed. Table 7 reports the significant LSI-R items and directions for the control variables, with the full tables reported in the Appendix C. The analyses revealed that individuals between the ages of 30 and 44 have statistically significant higher logged odds of being in the chronic DWI group relative those in the single DWI group. There are significant differences related to criminal history, with those offenders without three present offenses ($p = .079$) and those not being arrested before age 16 being less likely to be in the chronic DWI group. Table C2 reports consistent relationships between the control variables and DWIs, but none of the education or employment variables from the LSI-R have significant relationships with DWIs. It was found that offenders between the ages of 30-44 years old are about 94% higher odds of being a chronic DWI offender, relative to the oldest age category (see table C2). Although not reaching significance, those that were employed, did not have frequent times of unemployment, and who were not fired recently have lower odds of being a chronic DWI offender. Offenders that were reliant on social assistance had about a 25% higher odds to be in the chronic DWI group ($p = .005$).

The LSI-R includes an accommodation domain to measure antisocial living characteristics. Table C5 reports consistent relationships with the control variables and one significant item from the accommodations domain. Not living in a high crime neighborhood is associated with a nearly 30% lower odds of being a chronic DWI offender. Interestingly, there is only a 1% reduction in the odds of being a chronic DWI offender if one has moved more three times in the past two years. Interestingly, people that have not begun using their time in a more pro-social manner have an 18.5% greater odds of being a chronic DWI offender, but regular participation with a voluntary association or organization does not seem to have any effect. Surprisingly, those without criminal acquaintances or friends were more likely to be in the chronic DWI group, and the criminal friend factor is close to significance at the lower level ($p = .108$). Table C8 reports the relationships between the items of the LSI-R measuring use and consequences of alcohol and other drugs, but none of these items have a significant relationship with the chronic DWI group. People who have never had an alcohol problem are more likely to be a chronic DWI offender, whereas people who have never had drug problem are less likely to be chronic DWI offender, people with improved alcohol or drug issues have about an 18% lower odds of being in the chronic DWI group, but none of these relationships are significant. It may be that one's willingness to repeatedly drive drunk is associated less with an overall alcohol or

[17] Logistic regression transforms a binary dependent variable into a logit (L_i). This transforms probabilities into logits by calculating the ratio of the probability of being in the chronic DWI (P_i) group to one minus the probability of being in the chronic DWI group ($1-P_i$). The second step is to take the natural logarithm (ln) of this odds to produce a logit (i.e., $L_i = \ln [P_i/(1-P_i)]$. This transformation linearizes relationships that due to the binary nature of the dependent variable violate linear regression assumptions.

drug use disorder, and more tied to one's willingness to address a problem or willingness to change, seek help, and acknowledge there is a behavioral problem. There are two interesting findings reported in table 5 (see Appendix C9 and C10). First, those without mental health treatment in the past have a 23.1% lower odd of being in the chronic DWI group relative to those that have had mental health treatment in the past. The second significant finding is that those without a poor attitude toward their sentence are nearly 30% less likely to be in the chronic DWI group. These findings start to paint a picture of the chronic DWI offender as a white, male, between the 30 and 44 years old, employed, but low education, attendance at both outpatient and mental health treatment, with an early age of criminal onset as well as general offending, and an overall unwillingness to change and poor attitude about punishment.

Table 7 Multinomial Logistic Regressions: LSI-R significant items regressed on four category prior DWI 2+ Prior DWIs vs. No Prior DWIs

	B	Std. error	Sig	Exp(B)
10. Controls				
Race				
White (ref.) vs. Non-white	Non-whites less likely chronic DWI offender group			
Age				
1 = 18 -29 years old				
2 = 30 – 44 years old	Age group most likely to be a chronic DWI offender group			
3 = 45 – 59 years old				
4 = 60 - 81 years old (ref.)				
Gender				
Male (ref.) vs. Female	Females less likely to be in chronic DWI offender group			
Relationship				
Married/common law (ref)	Unmarried more likely to be in chronic DWI offender group			
Three+ present offenses	-.168	.096	.079*	.845
Arrested <16	-.343	.105	.001***	.710
Social assistance	-.280	.100	.005**	.756
Neighborhood	-.348	.118	.003**	.706
Time	.170	.094	.072*	1.185
MH treatment-past	-.262	.106	.013**	.769
Poor—toward sentence	-.340	.120	.005**	.712

$p < .001$ =***, $p < .05$ = **, $p < .10$ = *

Logistic Regressions: ASUS

The ASUS is a screening instrument to discern a person's level of alcohol and other drug use disorders, and to measure the degree of disruption from alcohol and drugs in a person's life. The same procedure is followed for the ASUS as the LSI-R by estimating models according to the pre-defined domains. Table 8 provides a summary of the statistically significant relationships between the ASUS items and chronic DWI, and complete tables are provided in Appendix D. Table 8 demonstrates a similar pattern among the control variables with offenders in the 30 to 44 year old category more likely to be in the chronic DWI group. This first section of the ASUS asks respondents about the number of times they have been intoxicated by several substances, with 51+ times intoxicated being the reference category. The number of lifetime intoxications from alcohol, marijuana, cocaine, heroin, inhalants, opiates, and barbiturates do not have a statistical relationship with the DWI groups.[18] The number of times intoxicated with amphetamines and tranquilizers were significantly related in the expected direction--greater use is associated with higher logged odds of being in the chronic DWI group. Cigarette smoking had some relationship with the chronic DWI group with individuals that smoke a pack per day being significantly more likely to be in the chronic DWI group. This is a difficult relationship to explain because one would expect those smoking more than a pack per day would have the highest odds of being a chronic DWI offender. Instead, this analysis suggests there is some difference among offenders that smoke one pack of more a day and chronic DWI offending. Table 8 reports ASUS items that asked respondents to indicate the number of times they experienced a series of consequences related to their drug or alcohol use, with 11 or more being the reference category. Again, the control variables stay in the same direction, and some of the items reveal interesting relationships (see Appendix D table D2). Surprisingly, those indicating lower frequency of violent behavior relative to those indicating violent behavior on 11 or more occasions had significantly higher logged odds of being in the chronic DWI group. This relationship is consistent across the four groups of the independent variable in which those with fewer incidents of violent behavior are between 40% and 62% higher odds of being a chronic DWI offender. While finding that more violent episodes is inversely related to chronic DWI offending is surprising, it was further supported by those with fewer incidences of fights or brawls have higher odds of being a chronic offender. This relationship is consistent across the three levels of response categories and reached statistical significance in two categories. It was thought that individuals fitting in the chronic DWI group would exhibit a general disregard for the law and would have higher incidences of violence, but this is not observed here. This suggests that there are different underlying constructs driving the participation in DWIs and violence or physical aggression.

Three items revealing significant relationships between the chronic DWI group and mental state. The first item asked respondents about the number of times they have passed out due to alcohol or drugs in their lifetime, which found that respondents reporting passing out 7-10 were about 29% less likely to be in the chronic DWI group compared to those admitting to passing out more than 10 times. This is a questionable relationship because significant differences are not found across all four group, and the direction of the relationship is not consistent. Responses to the item how many times have you seen or heard things that were not there revealed that offenders indicating experiencing this 7-10 times were nearly 65% less likely

[18] The ASUS also asks respondents to indicate the number of times intoxicated by these substances in the past six months. Those analyses did not identify a different pattern than lifetime use, but those analyses are not reported here.

than those seeing or hearing things not there 11+ times of being in the chronic DWI group. This relationship was not significant across the four response categories, but three of the four logistic coefficients are in the same direction. Respondents indicating fewer episodes of mental confusion were significantly less likely to be in the chronic DWI offender group. This relationship was consistent in direction, with the two higher response categories reaching statistically significant differences with the reference category, with a 33% and 53% reduction in the odds of being in the chronic DWI group, respectively. Those indicating greater frequency of feeling anxious or nervous 7-10 times had a significantly lower odds of being a chronic DWI offender ($p = .025$), when compared to those in the 11+ times category. This relationship is not significant among all the response categories, but the relationship is in a consistent direction suggesting that greater frequencies of anxiety and nervousness are related to chronic DWI offending.

Table 8 reports that those with fewer expulsions or suspensions from school have 35% lower odds of being a chronic DWI offender. Interesting about this relationship is that it is consistent in direction across the four categories, and that the logit coefficients get stronger as the categories increase in frequency of suspensions of expulsions. That is, the logit coefficient becomes more than four times larger from the first slope to the third slope in relation to the reference category, and the percent change in the odds moves from nearly 10% to almost 35% moves, which means that offenders that were suspended or expelled 3-4 times have a 35% lower odds of being in the chronic DWI group compared to those that were expelled 5+ times.

Table 8 reports a significant relationship among those that indicated that it is "usually true" that it is alright to break the law if it does not hurt anyone. This response category had a nearly 75% lower odds of being in the chronic DWI group relative to this that stating that it is "always true." This may suggest that people with entrenched neutralization (of responsibility) techniques are significantly more likely to be a chronic DWI offender. It was also found that offenders' willingness to lie or not tell the truth about something are more likely to be chronic DWI offenders. In fact, offenders that "hardly" lie have about a 40% reduced odds and those that lie a "few times" have a 47.4% reduction in the odds of being in the chronic DWI offender group relative to those that responded "yes, all the time."

The general mental wellbeing of offenders is an important item to consider when only significant relationship is between those that answered "yes, sometimes" their moods are up and down from very happy to very depressed are about 80% greater odds of being in the chronic DWI offender group. It is difficult to know exactly what is going on here because this finding is relative to those that answered this item as "yes, always true."

Table 8 provides further evidence that the characteristics separating chronic DWI offenders from first time DWI offenders has little to do with alcohol consumption or willingness to change drinking or drug use levels. However, it was found that offenders answering "not at all" to item "have you felt the need for help with problems having to do with your use of alcohol" were significantly less likely to be a chronic DWI offender. The ASUS provides use with several additional insights into the make-up of chronic DWI offenders as possessing several signs of emotional instability. That is, chronic DWI offenders are more likely to see and hear things not present, be mentally confused, nervous or anxious, and have drastic mood swings from happy to depression. There also seems to be a general lack of attachment to law and some use of neutralization techniques that include more likely to agree that it is okay to break the law if no one gets hurt and it is okay to lie or not tell the truth.

Table 8: Multinomial Logistic Regressions: ASUS items regressed on three category prior DWI Two+ DWIs vs. No Prior DWI

	B	Std. error	Sig	Exp(B)
1. Controls				
Race				
White (ref.) vs. Non-white	Non-whites less likely chronic DWI offender group			
Age				
1 = 18 -29 years old				
2 = 30 – 44 years old	Age group most likely to be a chronic DWI offender group			
3 = 45 – 59 years old				
4 = 60 - 81 years old (ref.)				
Gender				
Male (ref.) vs. Female	Females less likely to be in chronic DWI offender group			
Relationship				
Married/common law (ref)	Unmarried more likely to be in chronic DWI offender group			
ASUS Items				
Amphetamines				
0 Times	-.499	.177	.005**	.607
1-10 Times	-.307	.178	.084**	.736
11-25 Times	-.396	.211	.061*	.673
26-50 Times	-.389	.224	.082*	.678
51+ Times (ref.)				
Tranquilizers				
0 Times	-.455	.243	.062*	.635
1-10 Times	-.445	.265	.093*	.641
11-25 Times	-.782	.316	.013**	.458
26-50 Times	-.382	.347	.272	.683
51+ Times (ref.)				
Cigarettes				
Never	-.138	.171	.422	.871
Do not	.003	.158	.984	1.003
Half pack/day	.159	.151	.292	1.172
Pack/day	.271	.139	.052*	1.311
More than pack (ref)				
Violent				
0 Times	.341	.206	.099*	1.406
1-3 Times	.350	.203	.084*	1.420
4-6 Times	.373	.227	.100*	1.452
7-10 Times	.480	.268	.073*	1.617
11+ Times (ref.)				

$p < .001$ =***, $p < .05$ = **, $p < .10$ = *

Table 8(continued) : Multinomial Logistic Regressions: ASUS items regressed on three category prior DWI, Two+ DWIs vs. No Prior DWI

	B	Std. error	Sig	Exp(B)
Passed out				
0 Times	.035	.163	.832	1.035
1-3 Times	-.077	.166	.641	.925
4-6 Times	.096	.180	.593	1.101
7-10 Times	-.341	.204	.095*	.711
11+ Times (ref.)				
Saw/heard things				
0 Times	-.242	.252	.338	.785
1-3 Times	-.293	.271	.281	.746
4-6 Times	.304	.316	.337	1.355
7-10 Times	-1.035	.391	.008**	.355
11+ Times (ref.)				
Mentally confused				
0 Times	-.240	.175	.170	.786
1-3 Times	-.130	.188	.490	.878
4-6 Times	-.396	.222	.074*	.673
7-10 Times	-.750	.281	.007**	.472
11+ Times (ref.)				
Anxious/nervous				
0 Times	-.288	.181	.111	.750
1-3 Times	-.127	.187	.498	.881
4-6 Times	-.207	.202	.304	.813
7-10 Times	-.512	.228	.025**	.599
11+ Times (ref.)				
Suspended/expelled				
0 Times	-.104	.218	.632	.901
1-2 Times	-.174	.217	.424	.841
3-4 Times	-.424	.258	.100*	.654
5+ Times (ref.)				
Fights/brawls				
0 Times	.367	.145	.011**	1.443
1-2 Times	.250	.136	.067*	1.284
3-4 Times	.093	.154	.546	1.097
5+ Times (ref.)				
Break law				
Not true	.029	.570	.959	1.030
Somewhat true	-.022	.582	.970	.978
Usually true	-1.535	.932	.100*	.215
Always true (ref)				

$p < .001$ =***, $p < .05$ = **, $p < .10$ = *

Table 8 (continued) : Multinomial Logistic Regressions: ASUS items regressed on three category prior DWI Two+ DWIs vs. No Prior DWI

	B	Std. error	Sig	Exp(B)
Mood fluctuation				
Hardly at all	.491	.342	.151	1.635
Yes, sometimes	.588	.334	.078*	1.800
Yes, a lot	.464	.332	.162	1.591
Ys, all the time (ref)				
Lied				
No, Never	-.478	.327	.144	.620
Hardly at all	-.505	.299	.092*	.604
Few times	-.642	.292	.028**	.526
Yes, all the time (ref)				
Need help with alcohol				
Not at all	-.264	.143	.065*	.768
Yes, maybe	-.024	.142	.863	.976
Yes, most likely	-.101	.143	.480	.904
Yes, for sure (ref)				

p < .001 =***, p < .05 = **, p < .10 = *

Discussion: Future Steps

What does this analysis tell us about designing a risk assessment instrument to detect repeat DWI behavior? First, it should be clear that the level of alcohol or drug use disorder is not the underlying characteristic shaping DWI recidivism patterns. No doubt, substance abuse disorders may be a contributing factor but they are not the central factor explaining chronic DWI offending. Second, it should be pointed out that neither of the LSI-R or the ASUS was specifically designed to measure DWI recidivism, and this is in no way meant as a comment on the validity of these instruments. Rather, our intentions here were to follow Kroner et al. (2005) in which they found that randomly designed risk tools were no less successful at detecting recidivism than four highly used assessment instruments in their experiment. The point to their research was that each of those risk assessment instruments detected the same underlying characteristic related to general recidivism. Third, DWI recidivism is a separate phenomenon from general recidivism. That is, specific decisions are made by individuals related to drunken driving which may be related to general forms of deviance, risky driving behaviors, and/or lack of respect for the law. Fourth, several statistical associations were found between the LSI-R and ASUS items that provide some help in developing a DWI risk assessment instrument.

Criminal history is an important domain for the DWI risk assessment instrument. Offenders that were not arrested before 16 years of age were nearly 30% less likely to be a chronic DWI offender, and those without three or more present offenses were 15.5% less likely to be a chronic DWI offender relative to those with three or more present offenses. This provides an interesting glimpse into offenses patterns for chronic DWI offenders, and this may fit with Moffitt's (1993, 1994) previous research in which she argued that offenders with arrest records in their teens have a greater propensity to offender throughout the life course. Another interesting relationship is that individuals receiving social assistance are more likely to be a chronic DWI offender. Theoretically speaking, it is plausible that offenders on social assistance lack the necessary technical skills and knowledge to participate in the labor market and that these individuals may actually lack basic non-technical social or cognitive skills needed to be reliable (see Western, 2007). Criminological research has long tried to uncover the relationship between neighborhood conditions and individual patterns of crime. This sort of research dates back at least to Shaw and MacKay's (193x) research into the socially disorganized neighborhoods found in Chicago during the 1920s-1940s. Supporting this long line of research, individuals not living in high crime neighborhoods are significantly less likely to be a chronic DWI offender, and this combined with the relationship with social assistance suggests that there is some connection between material wellbeing and DWI recidivism.

Research suggests that individuals with mental health disorders often times mask their symptoms by self-medicating their problem. In fact, behaviors by drug and alcohol abusers and the symptoms associated with withdraw often mimic those of individuals with mental health problems. The correction system is filled with individuals that have mental health disorders, and the findings here suggest that prior mental health treatment, seeing or hearing things not there, mental confusion, feelings of anxiety or nervousness, and extreme mood fluctuations were all associated with significantly greater odds of being a chronic DWI offender. This has huge implications for the community corrections field. That is, criminological research tells us that only a small number of offenders commit a large portion of criminal offenses, and many individuals with mental health disorders self-medicate and are likely to be sent to the criminal justice system (instead of receive mental health services) that specific interventions need to target individuals that potential fit into a mental health supervision caseload. Simply, individuals

presenting mental health disorders should be identified early on and consider for an alternative supervision plan.

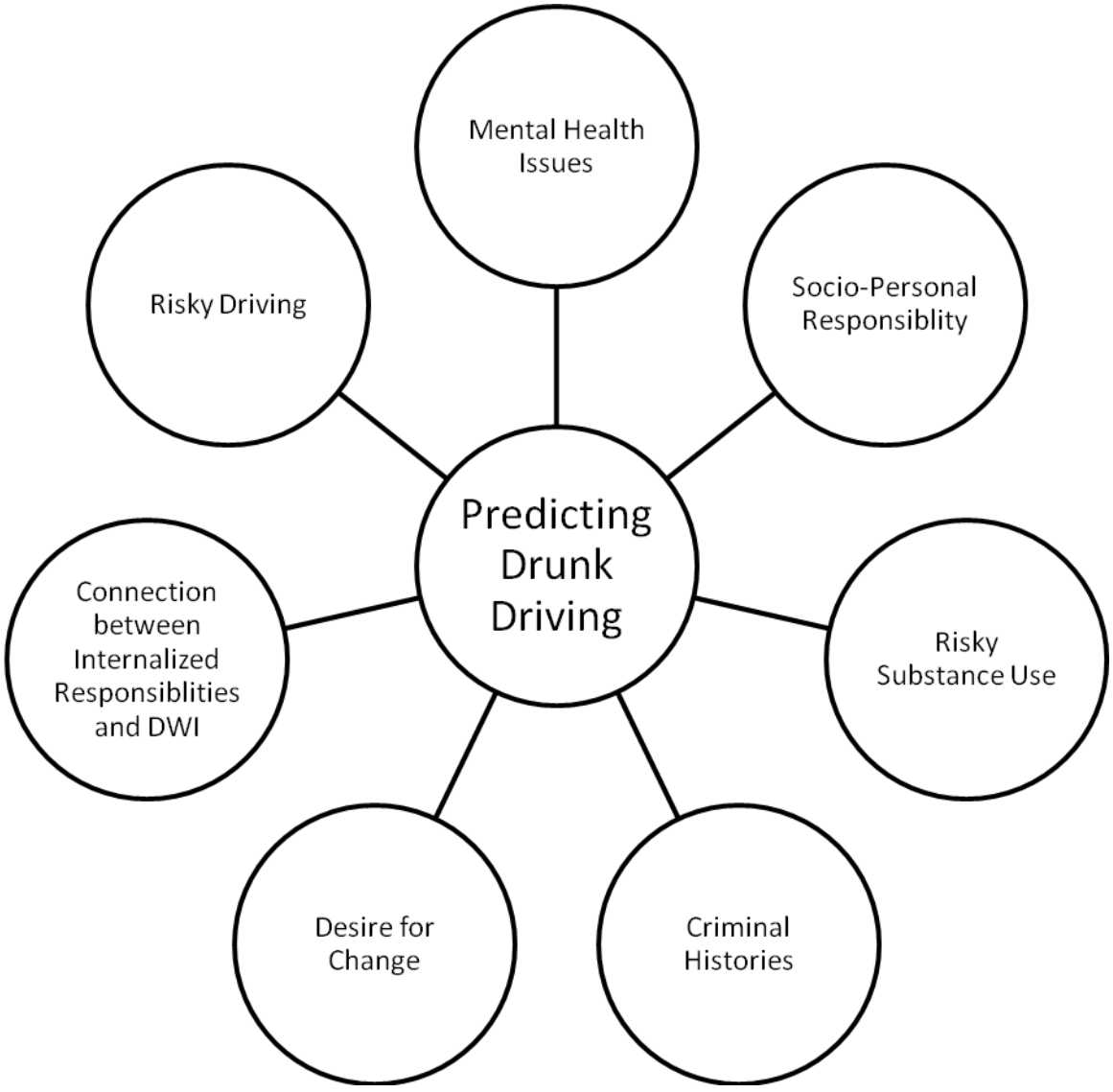
Attitudes, values, and belief systems are often claimed to be at the center of all deviant and criminal behavior. However, the only significant relationship was between an offender's attitude to their sentence in which those having a negative attitude toward accepting responsibility for their sentence were significantly less likely to be a chronic DWI offender. These attitudinal measures provide little in the way of understanding the differences among these DWI offenders, which is not to suggest that they do not have utility for predicting or classifying general recidivism. This should not be interpreted to argue that these instruments are not useful tools for agencies to use when predicting general risk of recidivism or for understanding better an offender's issues related to drug and alcohol use disorder. Rather, we are trying to stress that there are different underlying constructs that shape a chronic DWI offender's decision making as it is related to drunken driving.

Risk Assessment Instrument

Appendix C includes a copy of the draft assessment tool. The chronic DWI risk assessment instrument is divided into seven domains (see Figure 3). First, both the LSI-R and the ASUS included items that were significantly related to chronic DWI. The mental health domain includes 8 items, five of which are adjusted significant items from the analysis, with three additional items to attempt to drill down further in the pilot test to determine the nature of the relationship between mental health disorders and chronic offending. It could be that the act of attending mental health treatment is somehow specifically related to DWI behaviors, but it could also be that this is measuring an embedded individual trait of general mental instability. That is, given that several factors from the LSI-R and ASUS related to mental wellbeing were significantly related to chronic DWI offenders suggests that this small cadre of recidivist may have significant mental health issues that need to be addressed before moving to confront other criminogenic needs. Without first addressing mental health problems, offenders may never be equipped to become self-sufficient, and these additional items will allow for gaining a better perspective on the relationship between mental health problems and chronic DWIs.

The second domain is the socio-personal responsibility domain that is intended to uncover the level of personal and social responsibility that an individual has. This is a broad category meant to measure one's general attachment to society as well as an internal locus of control. That is, does the individual place faith in laws? Or, is someone willing to break laws, lie to people, and get suspended from school? While it could be that some individuals are suspended from school as a teenager as an example of "adolescent-limited" offending that Moffitt talked about, but it could also be that this is merely one of a long line of forms of deviance that this individual in involved in. Six of the first seven items are drawn from the two risk assessment instruments, with the other item used as another measure of employment. Four additional items are included to target issues related to one's position in the labor market. This measures the level of security one has with their job, general satisfaction, their ability to find another job, and their ability to keep the current job. This will allow future research to uncover the employment-DWI connection with a bit more specificity. And, of course, these characteristics in real life cannot be analyzed singularly, but rather must be considered in a holistic fashion to recognize multivariate causality. Simply, a white, male between 30 and 44 years of age that has a history of mental health treatment and suspended from school in the past has a higher likely to become a chronic DWI offender.

Figure 3. DWI Risk Assessment Domains



The third domain is intended to measure features related to one's level of risky drug and alcohol use that may be related to chronic DWIs. There were surprisingly few relationships between drug and alcohol use and chronic DWI offending, with high frequency of use of amphetamines and tranquilizers in one's lifetime being the only statistically significant relationships with illegal drugs. It was found that individuals smoking at a least a pack a day had elevated odds of being a chronic DWI offender. The results reported here leave something of an unknown when it comes to the relationship between proclivities toward violence and chronic DWI—as two such measures had significant relationships with decreasing the odds of chronic offending. This is surprising, but interesting, and deserves further scrutiny. It could be that chronic DWI offenders are likely to violate the law in many ways, but they could be less likely to engage in violence.

The fourth domain is intended to measure one's past involvement with the criminal justice system. This domain includes items to determine one's involvement with crime in the past, especially as a teenager, but also how the individual has dealt with their punishment. That is, escapes and institutional misconduct are a reflection of an individual's inability or unwillingness to follow rules and accept punishment for their crimes (e.g., external locus). It would seem that breaking the law is not what is necessarily predictive of chronic DWI, but rather the inability to accept responsibility for crimes.

The fifth domain includes four questions related to an individual's desire to change their drinking patterns. No doubt, deception is going to be an issue with all of the items, and such highly subjective items may have elevated deception that goes undetected. However, the analyses thus far suggest that an individual's willingness to report a wanting to change or a willingness to change is a significant factor in reducing chronic offending.

The last two domains are intended to measure things specific DWIs and driving behavior. The sixth domain is trying to going to further to understand the connection between internalized locus of responsibility and DWI specifically. The first four items are intended to gain a bit of insight into why the individual drove on this specific occasion, and to determine how highly they rate the significance of driving drunk. The next six items are intended to measure what is about getting a DWI that is the most negatively rated. That is, what is it that a chronic DWI offender does not like about these sanctions? The seventh domain is intended to measure specific characteristics related to driving in general to test general risky driver theories (i.e., that chronic DWI offenders are risky drivers in general).

Future Steps

The research team plans to pilot test this draft risk assessment tool in up to three locations with convicted DWI offenders on community supervision. At this time, the research team has received agreements from two agencies interested in participating. The first is the same southwestern state from which this data was drawn. This will allow us to test the instrument on a statewide sample of probation and parolees by distributing the instruments to a sample of agencies within this state. The other agency is a northern Midwestern state local probation agency. These agencies possess very different contextual, administrative, and organizational differences that will be considered when measuring the predictive effects of the risk instrument. While some will point to the potential for confounding contextual factors with this approach, we argue that this diversity will allow for the most stringent of tests of the predictors.

After this risk assessment tool is tested in the three sites, it will be modified in an effort to develop the most reliable tool possible. The assessment tool will also be developed into a use

friendly instrument that will be easy to administer by virtually any community corrections professionals. The tool will become an important part of probation and parole officers' tool kits used to control chronic drunk driving. It is expected that this tool will be a cost effective strategy for efficiently controlling habitual drunk drivers.

The final assessment tool will have value for the community as well. Most obviously, the tool will help to make highways safer and thereby reduce the number of drunk driving accidents. In addition, by reducing the number of traffic accidents, the tool will reduce the economic toll that drunk driving has on society. As well, the risk assessment tool will provide a model that can be modified and potentially used to control other forms of harmful driving.

It is also anticipated that just as legislative remedies were expanded to mandate that certain types of offenders – like sex offenders and domestic violence offenders – have their risk of re-offending assessed prior to being placed on community supervision, that the presence of a reliable drunk driving assessment risk assessment tool will provide the foundation needed for policy makers to call for widespread risk assessments of convicted drunk drivers. Policy makers have had a strong role in reducing drunk driving over the years. Developing a risk assessment tool to predict drunk driving will provide policy makers the guidance they need to even further expand efforts to control habitual drunk driving.

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Appendix A: Descriptive characteristics from LSI-R

	N(%)
1. Any prior convictions	
Yes	3,846(99)
No	37(1.0)
2. Two or more prior convictions	
Yes	3,670(94.5)
No	213(5.5)
3. Three or more prior convictions	
Yes	3,247(83.6)
No	636(16.4)
4. Three or more present offenses	
Yes	916(23.6)
No	2,966(76.4)
5. Arrested under age 16	
Yes	750(19.3)
No	3,124(80.4)
6. Ever incarcerated upon conviction	
Yes	3,147(81.0)
No	730(18.8)
7. Escape history from correctional facility	
Yes	261(6.7)
No	3,622(93.3)
8. Ever punished for institutional misconduct	
Yes	975(25.1)
No	2,903(74.7)
9. Charged made during previous community supervision	
Yes	2,230(57.4)
No	1,653(42.6)
10. Official record of assault/violence	
Yes	1,701(43.8)
No	2,177(56.1)
11. Currently employed	
Yes	1,458(37.5)
No	2,378(61.2)
12. Frequently employed	
Yes	1,039(26.8)
No	2,781(71.6)
13. Never employed for a full year	
Yes	433(11.1)
No	3,434(88.4)
14. Ever fired from job	
Yes	1,608(41.4)
No	2,262(58.2)
15. Less than 10^{th} grade education	
Yes	764(19.7)
No	3,109(80.0)
16. Less than 12^{th} grade education	
Yes	1,936(49.8)
No	1,940(49.9)

Appendix A (continued): Descriptive characteristics from LSI-R

	N(%)
17. Suspended or expelled from school	
Yes	1,388(35.7)
No	2,475(63.7)
18. Participation/performance in work/school	
Yes	1,546(41.3)
No	2,194(58.7)
19. Peer interactions	
Yes	1,432(41.3)
No	2,033(58.7)
20. Authority interactions	
Yes	1,443(41.6)
No	2,022(58.4)
21. Financial Problems	
Yes	2,106(54.3)
No	1,770(45.7)
22. Reliance on social assistance	
Yes	871(22.4)
No	2,993(77.1)
23. Dissatisfaction with marital or equivalent situation	
Yes	853(22.2)
No	2,989(77.8)
24. Non-rewarding parent	
Yes	1,135(29.5)
No	2,712(70.5)
25. Non-rewarding other relative	
Yes	755(19.5)
No	3,126(80.5)
26. Criminal family member/spouse	
Yes	1,603(41.3)
No	2,261(58.2)
27. Unsatisfactory living accommodations	
Yes	529(13.6)
No	3,346(86.3)
28. Three or more address change in last year	
Yes	387(10.0)
No	3,484(89.7)
29. Live in high crime neighborhood	
Yes	527(13.6)
No	3,342(86.0)
30. Absence of participation in organization	
Yes	2,082(53.6)
No	1,779(45.8)
31. Could make better use of time	
Yes	1,851(47.9)
No	2,017(52.1)
32. Social isolate	
Yes	196(5.0)

	No	3,681(94.8)

Appendix A(continued): Descriptive characteristics from LSI-R

	N(%)
33. Some criminal acquaintances	
Yes	2,766(71.2)
No	1,110(28.6)
34. Some criminal friends	
Yes	1,997(51.4)
No	1,885(48.5)
35. Few anti-criminal acquaintances	
Yes	813(20.9)
No	3,069(79.0)
36. Few anti-criminal friends	
Yes	1,084(27.9)
No	2,798(72.0)
37. Any alcohol problems-ever	
Yes	3,765(96.9)
No	116(3.0)
38. Any drug problems-ever	
Yes	2,054(52.9)
No	1,814(46.7)
39. Any alcohol problems-currently	
Yes	2,507(64.7)
No	1,368(35.3)
40. Any drug problems-currently	
Yes	922(23.8)
No	2,948(76.2)
41. Law violations related to substance abuse	
Yes	2,549(65.6)
No	1,332(34.3)
42. Marital problems related to substance abuse	
Yes	1,822(46.9)
No	2,056(52.9)
43. School or work problems related to substance abuse	
Yes	1,338(34.4)
No	2,534(65.2)
44. Medical problems related to substance abuse	
Yes	430(11.1)
No	3,441(88.6)
45. Other problems related to substance abuse	
Yes	915(23.6)
No	2,887(74.3)
46. Moderate emotional interference	
Yes	1,706(43.9)
No	2,177(56.1)
47. Severe interference--psychosis	
Yes	143(3.7)
No	3,734(96.1)
48. Mental health treatment--past	
Yes	1,484(38.2)

	No	2,398(61.7)

Appendix A(continued): Descriptive characteristics from LSI-R (%)

	N(%)
49. Mental health treatment--present	
Yes	677(17.4)
No	3,195(82.3)
50. Psychological assessment indicated	
Yes	483(12.4)
No	3,383(87.1)
51. Attitudes supportive of crime	
Yes	806(20.8)
No	3,070(79.2)
52. Attitudes unfavorable toward convention	
Yes	898(23.2)
No	2,979(76.8)
53. Attitudes poor toward sentence	
Yes	604(15.6)
No	3,185(82.9)
54. Attitudes poor toward supervision	
Yes	458(11.8)
No	3,405(87.7)
LSI-R risk category	
Low	1,764(45.4)
Moderate	1,585(40.8)
High	534(13.8)
Mean	19.79
Range	1-44

Appendix B: Descriptive characteristics from ASUS (%)

1. Time intoxicated or drunk on alcohol

Lifetime		**Six months**	
None	39(1.0)	None	2,020(52.3)
1-10 times	382(9.8)	1-10 times	1,066(27.6)
11-25 times	436(11.2)	11-25 times	343(8.9)
26-50 times	530(13.6)	26-50 times	197(5.1)
50+ times	2,494(64.2)	50+ times	237(6.1)

2. Times used marijuana

Lifetime		**Six months**	
None	975(25.1)	None	3,195(82.5)
1-10 times	1,028(26.5)	1-10 times	455(11.7)
11-25 times	384(9.9)	11-25 times	102(2.6)
26-50 times	306(7.9)	26-50 times	46(1.2)
50+ times	1,188(30.6)	50+ times	76(2.0)

3. Times used cocaine

Lifetime		**Six months**	
None	2,227(57.3)	None	3,670(94.7)
1-10 times	895(23.0)	1-10 times	155(4.0)
11-25 times	251(6.5)	11-25 times	20(0.5)
26-50 times	196(5.0)	26-50 times	9(0.2)
50+ times	312(8.0)	50+ times	22(0.6)

4. Times used amphetamines

Lifetime		**Six months**	
None	2,235(57.5)	None	3,602(93.0)
1-10 times	706(18.2)	1-10 times	169(4.4)
11-25 times	269(6.9)	11-25 times	48(1.2)
26-50 times	196(5.0)	26-50 times	21(0.5)
50+ times	475(12.2)	50+ times	35(0.9)

5. Times used hallucinogens

Lifetime		**Six months**	
None	2,868(73.8)	None	3,823(98.6)
1-10 times	678(17.5)	1-10 times	44(1.1)
11-25 times	154(4.0)	11-25 times	8(0.2)
26-50 times	73(1.9)	26-50 times	2(0.1)
50+ times	108(2.8)	50+ times	2(0.1)

6. Times used inhalants

Lifetime		**Six months**	
None	3,525(90.8)	None	3,863(99.6)
1-10 times	271(7.0)	1-10 times	13(0.3)
11-25 times	43(1.1)	11-25 times	3(0.1)
26-50 times	18(0.6)	26-50 times	0

50+ times	24(0.6)	50+ times	1(0.01)

Appendix B (continued): Descriptive characteristics from ASUS (%)

7. Times used heroin

Lifetime		**Six months**	
None	3,617(93.1)	None	3,867(99.6)
1-10 times	165(4.2)	1-10 times	8(0.2)
11-25 times	29(0.7)	11-25 times	4(0.1)
26-50 times	15(0.4)	26-50 times	1(0.001)
50+ times	55(1.4)	50+ times	1(0.001)

8. Times used other opiates

Lifetime		**Six months**	
None	3,108(80.0)	None	3,720(95.9)
1-10 times	361(9.3)	1-10 times	105(2.7)
11-25 times	133(3.4)	11-25 times	28(0.7)
26-50 times	88(2.3)	26-50 times	17(0.4)
50+ times	191(4.9)	50+ times	11(0.3)

9. Times used barbiturates

Lifetime		**Six months**	
None	3,256(83.8)	None	3,801(98.0)
1-10 times	329(8.5)	1-10 times	57(1.5)
11-25 times	106(2.7)	11-25 times	6(0.2)
26-50 times	70(1.8)	26-50 times	6(0.2)
50+ times	120(3.1)	50+ times	9(0.2)

10. Times used tranquilizers

Lifetime		**Six months**	
None	3,052(78.6)	None	3,690(95.2)
1-10 times	351(9.0)	1-10 times	120(3.1)
11-25 times	163(4.2)	11-25 times	27(0.7)
26-50 times	86(2.2)	26-50 times	16(0.4)
50+ times	229(5.9)	50+ times	24(0.6)

11. Used cigarettes (tobacco)

Never smoked	524(13.5)
Do not smoke now	673(17.3)
Half pack/day	894(23.0)
Pack/day	1,258(32.4)
Pack/day+	485(12.5)

12. Had a blackout

Lifetime		**Six months**	
Never	1,547(39.8)	Never	3,400(87.8)
1-3	993(25.6)	1-3	330(8.5)
4-6	452(11.6)	4-6	72(1.9)
7-10	243(6.3)	7-10	27(0.7)
10+	646(16.6)	10+	44(1.1)

Appendix B (continued): Descriptive characteristics from ASUS (%)

13. Became physically violent

Lifetime		**Six months**	
Never	2,004(51.6)	Never	3,620(93.5)
1-3	1,112(28.6)	1-3	189(4.9)
4-6	342(8.8)	4-6	39(1.0)
7-10	159(4.1)	7-10	9(0.2)
10+	264(6.8)	10+	13(0.3)

14. Staggered and stumbled around

Lifetime		**Six months**	
Never	693(17.8)	Never	3,032(78.4)
1-3	846(21.8)	1-3	549(14.2)
4-6	546(14.1)	4-6	139(3.6)
7-10	406(10.5)	7-10	54(1.4)
10+	1,390(35.8)	10+	93(2.4)

15. Passed out or became unconscious

Lifetime		**Six months**	
Never	1,603(41.3)	Never	3,425(88.5)
1-3	765(19.7)	1-3	265(6.8)
4-6	382(9.8)	4-6	86(2.2)
7-10	287(7.4)	7-10	28(0.7)
10+	844(21.7)	10+	67(1.7)

16. Tried to take own life

Lifetime		**Six months**	
Never	3,460(89.1)	Never	3,823(98.6)
1-3	346(8.9)	1-3	54(1.4)
4-6	43(1.1)	4-6	1(0.001)
7-10	15(0.4)	7-10	1(0.001)
10+	17(0.4)	10+	0

17. Saw or heard things that were not there

Lifetime		**Six months**	
Never	3,061(78.8)	Never	3,736(96.4)
1-3	401(10.3)	1-3	90(2.3)
4-6	141(3.6)	4-6	22(0.6)
7-10	91(2.3)	7-10	5(0.1)
10+	187(4.8)	10+	24(0.6)

18. Became mentally confused

Lifetime		**Six months**	
Never	2,409(62.0)	Never	3,511(90.6)
1-3	629(16.2)	1-3	224(5.8)
4-6	258(6.6)	4-6	52(1.3)
7-10	145(3.7)	7-10	21(0.5)

10+	440(11.3)	10+	68(1.8)

Appendix B (continued): Descriptive characteristics from ASUS (%)

19. Thought people were out to get you or wanted to harm you

Lifetime		**Six months**	
Never	3,010(77.5)	Never	3,686(95.1)
1-3	403(10.4)	1-3	128(3.3)
4-6	146(3.8)	4-6	21(0.5)
7-10	94(2.4)	7-10	13(0.3)
10+	228(5.9)	10+	29(0.7)

20. Had physical shakes or tremors

Lifetime		**Six months**	
Never	2,511(64.6)	Never	3,541(91.4)
1-3	559(14.4)	1-3	194(5.0)
4-6	233(6.0)	4-6	54(1.4)
7-10	169(4.4)	7-10	28(0.7)
10+	409(10.5)	10+	56(1.4)

21. Became physically sick or nauseated

Lifetime		**Six months**	
Never	1,510(38.9)	Never	3,418(88.3)
1-3	868(22.3)	1-3	296(7.6)
4-6	433(11.1)	4-6	79(2.0)
7-10	300(7.7)	7-10	30(0.8)
10+	770(19.8)	10+	47(1.2)

22. Had a seizure or convulsion

Lifetime		**Six months**	
Never	3,584(92.3)	Never	3,837(98.9)
1-3	197(5.1)	1-3	31(0.8)
4-6	41(1.1)	4-6	7(0.2)
7-10	18(0.5)	7-10	1(0.001)
10+	41(1.1)	10+	4(0.1)

23. Had a rapid or fast heart beat

Lifetime		**Six months**	
Never	2,310(59.5)	Never	3,509(90.6)
1-3	585(15.1)	1-3	189(4.9)
4-6	242(6.2)	4-6	61(1.6)
7-10	178(4.6)	7-10	35(0.9)
10+	566(14.6)	10+	77(2.0)

24. Became anxious, nervous, and tense

Lifetime		**Six months**	
Never	1,912(49.2)	Never	3,273(84.6)
1-3	666(17.1)	1-3	315(8.1)
4-6	325(8.4)	4-6	109(2.8)
7-10	229(5.9)	7-10	43(1.1)

10+	749(19.3)	10+	131(3.4)

Appendix B (continued): Descriptive characteristics from ASUS (%)

25. Were feverish, hot, sweaty

Lifetime		**Six months**	
Never	2,326(59.9)	Never	3,496(90.3)
1-3	563(14.5)	1-3	205(5.3)
4-6	314(8.1)	4-6	71(1.8)
7-10	187(4.8)	7-10	33(0.9)
10+	491(12.6)	10+	68(1.8)

26. Did not eat or sleep

Lifetime		**Six months**	
Never	1,984(51.1)	Never	3,387(87.5)
1-3	587(15.1)	1-3	248(6.4)
4-6	294(7.6)	4-6	80(2.1)
7-10	225(5.8)	7-10	47(1.2)
10+	791(20.4)	10+	108(2.8)

27. Were weak, tired and fatigued

Lifetime		**Six months**	
Never	1,656(42.6)	Never	3,252(84.0)
1-3	709(18.3)	1-3	343(8.9)
4-6	386(9.9)	4-6	110(2.8)
7-10	243(6.3)	7-10	50(1.3)
10+	887(22.8)	10+	115(3.0)

28. Unable to go to work or school

Lifetime		**Six months**	
Never	2.071(53.3)	Never	3,553(91.5)
1-3	705(18.2)	1-3	198(5.1)
4-6	329(8.5)	4-6	49(1.3)
7-10	247(6.4)	7-10	27(0.7)
10+	529(13.6)	10+	47(1.2)

29. Neglected your family

Lifetime		**Six months**	
Never	2,168(55.8)	Never	3,515(90.8)
1-3	604(15.6)	1-3	208(5.4)
4-6	300(7.7)	4-6	60(1.5)
7-10	180(4.6)	7-10	27(0.7)
10+	629(16.2)	10+	62(1.6)

30. Broke the law or committed a crime

Lifetime		**Six months**	
Never	473(12.2)	Never	2,853(73.8)
1-3	1,357(34.9)	1-3	851(22.0)
4-6	904(23.3)	4-6	73(1.9)
7-10	384(9.9)	7-10	26(0.7)

10+	763(19.6)	10+	61(1.6)

Appendix B (continued): Descriptive characteristics from ASUS (%)

31. Could not pay your bills

Lifetime		**Six months**	
Never	2,048(52.7)	Never	3,429(88.6)
1-3	827(21.30	1-3	276(7.1)
4-6	344(8.9)	4-6	72(1.9)
7-10	197(5.1)	7-10	27(0.7)
10+	465(12.0)	10+	65(1.7)

32. In my teen year, I got into trouble with the law.

Never	1,905(49.0)
1-2	1,280(33.0)
3-4	397(10.2)
5+	299(7.7)

33. I was suspended or expelled from school when I was a child/teenager.

Never	2,354(60.6)
1-2	1,110(28.6)
3-4	240(6.2)
5+	177(4.6)

34. I have been in fights or brawls.

Never	1,362(35.1)
1-2	1,264(32.6)
3-4	582(15.0)
5+	672(17.3)

35. I have been charged with driving under the influence of alcohol or other drugs.

Never	316(8.1)
1-2	1,378(35.5)
3-4	1,460(37.6)
5+	727(18.7)

36. As an adult, I have been in trouble with the law for other reasons than driving a motor vehicle.

Never	1,265(32.6)
1-2	1,532(39.4)
3-4	619(15.9)
5+	465(12.0)

37. I have had trouble because I don't follow rules.

Not true	1,056(27.2)
Somewhat true	1,943(50.0)
Usually true	569(14.6)
Always true	313(8.1)

38. I don't like police officers.

Not true	2,619(67.4)
Somewhat true	892(23.0)
Usually true	237(6.1)

Always true	133(3.4)

Appendix B (continued): Descriptive characteristics from ASUS (%)

39. There are too many laws in society?

Not true	2,249(57.9)
Somewhat true	1,235(31.8)
Usually true	239(6.2)
Always true	158(4.1)

40. It is all right to break the law if it doesn't hurt anyone?

Not true	3,477(89.5)
Somewhat true	346(8.9)
Usually true	38(1.0)
Always true	20(0.5)

41. Usually, no one tells me what to do?

Not true	2,109(54.3)
Somewhat true	1,165(30.0)
Usually true	500(12.9)
Always true	107(2.8)

42. Have you felt down and depressed?

Hardly at all	1,203(31.0)
Sometimes	1,918(49.4)
A lot	607(15.6)
All the time	153(3.9)

43. Have you been nervous and tense?

Hardly at all	1,387(35.7)
Sometimes	1,818(46.8)
A lot	538(13.9)
All the time	138(3.6)

44. Have you been irritated and angry?

Hardly at all	1,346(34.7)
Sometimes	2,091(53.8)
A lot	387(10.0)
All the time	57(1.5)

45. Have your moods been up and down (happy to depressed)?

Hardly at all	2,007(51.7)
Sometimes	1,340(34.5)
A lot	402(10.4)
All the time	132(3.4)

46. Do you tend to worry about things?

Hardly at all	757(19.5)
Sometimes	1,921(49.5)
A lot	811(20.9)

All the time	392(10.1)

Appendix B (continued): Descriptive characteristics from ASUS (%)

47. Have you felt like not wanting to live or taking your own life?

Hardly at all	3,375(86.9)
Sometimes	416(10.7)
A lot	60(1.5)
All the time	30(0.8)

48. Have you had problems sleeping?

Hardly at all	1,774(45.7)
Sometimes	1,395(35.9)
A lot	452(11.6)
All the time	260(6.7)

49. Have you had disturbing thoughts?

Hardly at all	2,678(68.9)
Sometimes	939(24.2)
A lot	197(5.1)
All the time	67(1.7)

50. Are you discouraged about your future?

Hardly at all	1,941(50.0)
Sometimes	1,390(35.8)
A lot	372(9.6)
All the time	178(4.6)

51. Have you gotten angry at someone?

Never	254(6.5)
Hardly at all	1,144(29.5)
A few times	2,334(59.8)
All the time	159(4.1)

52. Have you lied about something or not told the truth?

Never	431(11.1)
Hardly at all	1,384(35.6)
A few times	1,973(50.8)
All the time	93(2.4)

53. Do you ever find yourself unhappy?

Never	483(12.4)
Hardly at all	1,309(33.7)
A few times	1,821(46.9)
All the time	268(6.9)

54. Have you felt frustrated about a job?

Never	712(18.3)
Hardly at all	1,183(30.5)
A few times	1,763(45.4)

All the time	223(5.7)

Appendix B (continued): Descriptive characteristics from ASUS (%)

55. Do you hold things in and not tell others what you think or feel?

Never	620(16.0)
Hardly at all	1,048(27.0)
A few times	1,493(38.4)
All the time	720(18.5)

56. Have you been unkind or rude to someone?

Never	714(18.4)
Hardly at all	1,672(43.0)
A few times	1,427(36.7)
All the time	68(1.8)

57. Have you ever cried about someone or something?

Never	303(7.8)
Hardly at all	806(20.8)
A few times	2,441(62.8)
All the time	331(8.5)

58. Have you felt you needed to make changes around the use of alcohol/drugs?

Not at all	362(9.3)
Maybe	519(13.4)
Most likely	585(15.1)
All the time	2,415(62.2)

59. Do you want to stop using alcohol?

Not at all	233(6.0)
Maybe	384(9.9)
Most likely	453(11.7)
All the time	2,811(72.4)

60. Do you want to stop using drugs?

Not at all	381(9.8)
Maybe	138(3.6)
Most likely	220(5.7)
All the time	3,142(80.9)

61. Have you felt the need for help with problems having to do with your use of alcohol?

Not at all	998(25.7)
Maybe	687(17.7)
Most likely	525(13.5)
All the time	1,671(43.0)

62. Have you felt the need for help with problems as a result of using other drugs?

Not at all	2,201(56.7)
Maybe	429(11.0)
Most likely	294(7.6)

All the time	957(24.6)

Appendix B (continued): Descriptive characteristics from ASUS (%)

63. Is it important for you to make changes around the use of alcohol or drugs?

Not at all	473(12.2)
Maybe	356(9.2)
Most likely	399(10.3)
All the time	2,653(68.3)

64. Would you be willing to go to a program for help with alcohol or drugs?

Not at all	582(15.0)
Maybe	685(17.6)
Most likely	507(13.1)
All the time	2,107(54.2)

Appendix C: Logistic regression with LSI-R and DWI categories

Table C1: Multinomial Logistic Regressions: LSI-R items regressed on four category prior DWI 3+ DWIs vs. No Prior DWIs

	B	Std. error	Sig	Exp(B)
1. Controls				
Race				
White (ref.) vs. Non-white	-.036	.086	.674	.965
Age				
1 = 18 -29 years old	.332	.310	.284	1.394
2 = 30 – 44 years old	.608	.303	.045**	1.837
3 = 45 – 59 years old	.409	.309	.186	1.505
4 = 60 - 81 years old (ref.)	--	--	--	--
Gender				
Male (ref.) vs. Female	-.208	.135	.125	.813
Relationship				
Married/common law (ref.)	.099	.088	.263	1.104
Criminal History				
Prior convictions	-.710	.548	.196	.492
Two+ convictions	.046	.239	.849	1.047
Three+ convictions	.173	.138	.209	1.189
Three+ present offenses	-.168	.096	.079*	.845
Arrested <16	-.343	.105	.001***	.710
Ever incarcerated	-.160	.118	.175	.852
Escape	-.229	.173	.186	.795
Ins. Misconduct	-.071	.102	.491	.932
P/P suspended	.035	.089	.695	1.036
Assault/violence	-.058	.086	.502	.944

p < .001 =***, p < .05 = **, p < .10 = *

Table C2: Multinomial Logistic Regressions: LSI-R items regressed on four category prior DWI

3+ DWIs vs. No Prior DWIs

	B	Std. error	Sig	Exp(B)
2. Controls				
Race				
White (ref.) vs. Non-white	-.055	.090	.540	.946
Age				
1 = 18 -29 years old	.431	.331	.193	1.539
2 = 30 – 44 years old	.661	.323	.041**	1.938
3 = 45 – 59 years old	.521	.329	.114	1.684
4 = 60 - 81 years old (ref.)	--	--	--	--
Gender				
Male (ref.) vs. Female	-.186	.141	.188	.830
Relationship				
Married/common law (ref.)	.118	.094	.209	1.125
Education-Employment				
Employed	-.056	.237	.812	.945
Frequent unemployment	-.027	.118	.816	.973
Never employed 1 year	-.107	.147	.468	.899
Fired	.013	.090	.888	1.013
<Grade 10	.037	.126	.767	1.038
<Grade 12	-.133	.101	.184	.875
Suspended/expelled	-.139	.093	.133	.870
Participation/performance	.171	.328	.601	1.187
Peers	.214	.353	.545	1.239
Authority interactions	-.299	.347	.389	.742

$p < .001$ =***, $p < .05$ = **, $p < .10$ = *

Table C3: Multinomial Logistic Regressions: LSI-R items regressed on four category prior DWI

3+ DWIs vs. No Prior DWIs

	B	Std. error	Sig	Exp(B)
Race				
White (ref.) vs. Non-white	-.060	.085	.484	.942
Age				
1 = 18 -29 years old	.358	.310	.249	1.431
2 = 30 – 44 years old	.614	.303	.043	1.848
3 = 45 – 59 years old	.437	.309	.158	1.548
4 = 60 - 81 years old	--	--	--	--
Gender				
Male (ref.) vs. Female	-.217	.134	.105	.805
Relationship				
Married/common law (ref)	.106	.088	.225	1.112
Financial				
Problems	.116	.086	.174	1.123
Social assistance	-.280	.100	.005**	.756

p < .001 =***, p < .05 = **, p < .10 = *

Table C4: Multinomial Logistic Regressions: LSI-R items regressed on four category prior DWI 3+ DWIs vs. No Prior DWIs

	B	Std. error	Sig	Exp(B)
4. Controls				
Race				
White (ref.) vs. Non-white	-.055	.086	.518	.946
Age				
1 = 18 -29 years old	.351	.311	.258	1.421
2 = 30 – 44 years old	.600	.303	.048**	1.822
3 = 45 – 59 years old	.413	.309	.181	1.512
4 = 60 - 81 years old	--	--	--	--
Gender				
Male (ref.) vs. Female	-.209	.134	.119	.811
Relationship				
Married/common law (ref)	.084	.088	.340	1.088
Family-Marital				
Dissatisfied	-.055	.099	.579	.946
Non-reward parent	.000	.095	.999	1.000
Non-reward other relative	-.053	.110	.633	.949
Criminal family	.073	.084	.384	1.076

$p < .001$ =***, $p < .05$ = **, $p < .10$ = *

Table C5: Multinomial Logistic Regressions: LSI-R items regressed on four category prior DWI 3+ DWIs vs. No Prior DWIs

	B	Std. error	Sig	Exp(B)
5. Controls				
Race				
White (ref.) vs. Non-white	-.056	.085	.507	.945
Age				
1 = 18 -29 years old	.380	.309	.219	1.463
2 = 30 – 44 years old	.645	.302	.033**	1.907
3 = 45 – 59 years old	.451	.308	.143	1.570
4 = 60 - 81 years old	--	--	--	--
Gender				
Male (ref.) vs. Female	-.241	.134	.073	.786
Relationship				
Married/common law (ref)	.101	.088	.251	1.106
Accommodations				
Unsatisfactory	.174	.126	.167	1.190
3+ Moves	-.011	.136	.933	.989
Neighborhood	-.348	.118	.003**	.706

$p < .001$ =***, $p < .05$ = **, $p < .10$ = *

Table C6: Multinomial Logistic Regressions: LSI-R items regressed on four category prior DWI 3+ DWIs vs. No Prior DWIs

	B	Std. error	Sig	Exp(B)
6. Controls				
Race				
White (ref.) vs. Non-white	-.060	.085	.477	.941
Age				
1 = 18 -29 years old	.379	.310	.222	1.460
2 = 30 – 44 years old	.643	.302	.034**	1.901
3 = 45 – 59 years old	.445	.309	.149	1.561
4 = 60 - 81 years old	--	--	--	--
Gender				
Male (ref.) vs. Female	-.249	.134	.064	.780
Relationship				
Married/common law (ref)	.114	.088	.192	1.121
Leisure-Recreation				
Org. Activity	-.121	.094	.200	.886
Time	.170	.094	.072*	1.185

p < .001 =***, p < .05 = **, p < .10 = *

Table C7: Multinomial Logistic Regressions: LSI-R items regressed on four category prior DWI 3+ DWIs vs. No Prior DWIs

	B	Std. error	Sig	Exp(B)
7. Controls				
Race				
White (ref.) vs. Non-white	-.054	.085	.523	947
Age				
1 = 18 -29 years old	.403	.309	.193	1.496
2 = 30 – 44 years old	.652	.302	.031**	1.920
3 = 45 – 59 years old	.454	.308	.141	1.574
4 = 60 - 81 years old	--	--	--	--
Gender				
Male (ref.) vs. Female	-.228	.134	.090*	.796
Relationship				
Married/common law (ref)	.119	.088	.176	1.126
Companions				
Soc. Isolate	-.138	.203	.497	.871
Criminal Acq.	.027	.116	.818	1.027
Criminal friends	.175	.109	.108	1.191
Few anti-crime acq.	.099	.179	.581	1.104
Few anti-crime friend	.083	.167	.618	1.087

$p < .001$ =***, $p < .05$ = **, $p < .10$ = *

Table C8: Multinomial Logistic Regressions: LSI-R items regressed on four category prior DWI 3+ DWIs vs. No Prior DWIs

	B	Std. error	Sig	Exp(B)
8. Controls				
Race				
White (ref.) vs. Non-white	-.058	.087	.504	.965
Age				
1 = 18 -29 years old	.448	.317	.157	1.566
2 = 30 – 44 years old	.692	.310	.025**	1.998
3 = 45 – 59 years old	.511	.316	.105	1.668
4 = 60 - 81 years old	--	--	--	--
Gender				
Male (ref.) vs. Female	-.243	.136	.074*	.784
Relationship				
Married/common law (ref)	.105	.089	.239	1.111
Alcohol-Drug Problem				
Alcohol—ever	.200	.253	.430	1.221
Drug—ever	-.092	.098	.348	.912
Alcohol-current	-.147	.160	.359	.863
Drug—current	-.076	.122	.531	.926
Law violations	.077	.159	.628	1.080
Martial-family problems	.069	.119	.562	1.072
School-work problems	.084	.112	.455	1.087
Medical problems	.036	.138	.794	1.037
Other problems	-.047	.106	.657	.954

p < .001 =***, p < .05 = **, p < .10 = *

Table C9: Multinomial Logistic Regressions: LSI-R items regressed on four category prior DWI 3+ DWIs vs. No Prior DWIs

	B	Std. error	Sig	Exp(B)
9. Controls				
Race				
White (ref.) vs. Non-white	-.067	.085	.432	.935
Age				
1 = 18 -29 years old	.434	.310	.161	1.544
2 = 30 – 44 years old	.678	.302	.025**	1.969
3 = 45 – 59 years old	.482	.308	.118	1.619
4 = 60 - 81 years old	--	--	--	--
Gender				
Male (ref.) vs. Female	-.235	.135	.082*	.791
Relationship				
Married/common law (ref)	.091	.088	.302	1.095
Emotional-Personal				
Moderate interference	.155	.095	.104	1.167
Severe interference	.088	.250	.725	1.092
MH treatment-past	-.262	.106	.013**	.769
MH treatment-present	.176	.135	.193	1.193
Psch. Assessment	-.089	.151	.559	.915

$p < .001$ =***, $p < .05$ = **, $p < .10$ = *

Table C10: Multinomial Logistic Regressions: LSI-R items regressed on four category prior DWI 3+ DWIs vs. No Prior DWIs

	B	Std. error	Sig	Exp(B)
10. Controls				
Race				
White (ref.) vs. Non-white	-.034	.086	.692	.967
Age				
1 = 18 -29 years old	.351	.311	.258	1.421
2 = 30 – 44 years old	.582	.304	.055*	1.789
3 = 45 – 59 years old	.408	.310	.189	1.503
4 = 60 - 81 years old	--	--	--	--
Gender				
Male (ref.) vs. Female	-.232	.136	.089*	.793
Relationship				
Married/common law (ref)	.101	.089	.253	1.107
Attitudes-Orientation				
Support crime	.161	.118	.174	1.175
Against convention	.031	.111	.779	1.032
Poor—toward sentence	-.340	.120	.005**	.712
Poor—toward to supervision	.064	.143	.655	1.066

$p < .001$ =***, $p < .05$ = **, $p < .10$ = *

Appendix D: Logistic regression with ASUS and DWI categories

Table D1 : Multinomial Logistic Regressions: ASUS items regressed on three category prior DWI

Two DWIs vs. One DWI	B	Std. error	Sig	Exp(B)
1. Controls				
Race				
White (ref.) vs. Non-white	-.060	.087	.491	.942
Age				
1 = 18 -29 years old	.405	.320	.206	1.499
2 = 30 – 44 years old	.657	.310	.034**	1.930
3 = 45 – 59 years old	.522	.314	.096*	1.685
4 = 60 - 81 years old	--	--	--	--
Gender				
Male (ref.) vs. Female	-.221	.136	.105	.802
Relationship				
Married/common law (ref)	.104	.089	.245	1.109
Type of Drug Used				
Intoxicated—Alcohol				
0 Times	.356	.420	.397	1.428
1-10 Times	.245	.144	.088	1.278
11-25 Times	.286	.138	.038	1.331
26-50 Times	.092	.127	.470	1.096
Marijuana				
0 Times	.204	.147	.166	1.226
1-10 Times	.137	.131	.297	1.147
11-25 Times	-.039	.162	.808	.961
26-50 Times	-.254	.178	.155	.776
Cocaine				
0 Times	.109	.202	.589	1.116
1-10 Times	.139	.200	.485	1.150
11-25 Times	.264	.234	.260	1.302
26-50 Times	.379	.249	.128	1.461
Amphetamines				
0 Times	-.499	.177	.005**	.607
1-10 Times	-.307	.178	.084**	.736
11-25 Times	-.396	.211	.061*	.673
26-50 Times	-.389	.224	.082*	.678
Hallucinogens				
0 Times	-.072	.307	.816	.931
1-10 Times	-.098	.303	.747	.907
11-25 Times	-.042	.344	.902	.959
26-50 Times	-.329	.410	.422	.719
Inhalants				
0 Times	.613	.598	.305	1.846
1-10 Times	.769	.609	.207	2.157
11-25 Times	.830	.721	.250	2.294
26-50 Times	1.042	.841	.216	2.834

$p < .001$ =***, $p < .05$ = **, $p < .10$ = *

Table D1 (continued) : Multinomial Logistic Regressions: ASUS items regressed on three category prior DWI: Two DWIs vs. One DWI

	B	Std. error	Sig	Exp(B)
Heroin				
0 Times	.599	.427	.160	1.820
1-10 Times	.272	.457	.552	1.313
11-25 Times	.157	.644	.807	1.170
26-50 Times	-.995	1.154	.389	.370
Opiates				
0 Times	.002	.267	.993	1.002
1-10 Times	-.062	.285	.828	.940
11-25 Times	-.019	.337	.956	.982
26-50 Times	-.167	.362	.643	.846
Barbiturates				
0 Times	.634	.332	.056	1.884
1-10 Times	.576	.348	.098	1.779
11-25 Times	.314	.408	.442	1.369
26-50 Times	.659	.436	.130	1.934
Tranquilizers				
0 Times	-.455	.243	.062*	.635
1-10 Times	-.445	.265	.093*	.641
11-25 Times	-.782	.316	.013**	.458
26-50 Times	-.382	.347	.272	.683
Cigarettes				
Never	-.138	.171	.422	.871
Do not	.003	.158	.984	1.003
Half pack/day	.159	.151	.292	1.172
Pack/day	.271	.139	.052*	1.311
More than pack (ref)				

p < .001 =***, p < .05 = **, p < .10 = *; 51+ times = reference category

Table D2 : Multinomial Logistic Regressions: ASUS items regressed on three category prior DWI

Two DWIs vs. One DWI

	B	Std. error	Sig	Exp(B)
1. Controls				
Race				
White (ref.) vs. Non-white	-.395	.087	.649	1.068
Age				
1 = 18 -29 years old	.383	.315	.224	1.466
2 = 30 – 44 years old	.672	.307	.029*	1.959
3 = 45 – 59 years old	.450	.313	.150	1.569
4 = 60 - 81 years old	--	--	--	--
Gender				
Male (ref.) vs. Female	-.274	.136	.044**	.760
Relationship				
Married/common law (ref)	.127	.089	.156	1.135
Consequences of Use				
Blackout				
0 Times	-.166	.170	.329	.847
1-3 Times	-.275	.163	.092*	.760
4-6 Times	-.251	.170	.163	.778
7-10 Times	-.167	.205	.414	.846
Violent				
0 Times	.341	.206	.099*	1.406
1-3 Times	.350	.203	.084*	1.420
4-6 Times	.373	.227	.100*	1.452
7-10 Times	.480	.268	.073*	1.617
Staggered around				
0 Times	-.119	.164	.469	.888
1-3 Times	-.218	.148	.141	.804
4-6 Times	-.019	.150	.898	.981
7-10 Times	.054	.164	.741	1.056
Passed out				
0 Times	.035	.163	.832	1.035
1-3 Times	-.077	.166	.641	.925
4-6 Times	.096	.180	.593	1.101
7-10 Times	-.341	.204	.095*	.711
Tried suicide				
0 Times	-.316	.559	.571	.729
1-3 Times	-.344	.571	.547	.709
4-6 Times	-.132	.669	.844	.876
7-10 Times	.932	.969	.337	2.538
Saw/heard things				
0 Times	-.242	.252	.338	.785
1-3 Times	-.293	.271	.281	.746
4-6 Times	.304	.316	.337	1.355
7-10 Times	-1.035	.391	.008**	.355

$p < .001$ =***, $p < .05$ = **, $p < .10$ = *

Table D2 (continued) : Multinomial Logistic Regressions: ASUS items regressed on three category prior DWI: Two DWIs vs. One DWI

	B	Std. error	Sig	Exp(B)
Mentally confused				
0 Times	-.240	.175	.170	.786
1-3 Times	-.130	.188	.490	.878
4-6 Times	-.396	.222	.074*	.673
7-10 Times	-.750	.281	.007**	.472
Paranoid				
0 Times	.350	.246	.154	1.419
1-3 Times	.270	.260	.300	1.310
4-6 Times	-.071	.317	.823	.931
7-10 Times	.627	.343	.067*	1.872
Shakes/tremors				
0 Times	.225	.184	.219	1.253
1-3 Times	.463	.196	.018**	1.589
4-6 Times	.357	.230	.121	1.429
7-10 Times	.217	.262	.406	1.243
Sick/nauseated				
0 Times	-.071	.161	.660	.932
1-3 Times	-.091	.166	.582	.913
4-6 Times	-.293	.181	.105	.746
7-10 Times	-.199	.196	.310	.820
Seizure/convulsion				
0 Times	-.290	.375	.439	.748
1-3 Times	-.180	.408	.659	.835
4-6 Times	-.246	.563	.662	.782
7-10 Times	-.623	.800	.436	.536
Rapid heart				
0 Times	.009	.184	.963	1.009
1-3 Times	.140	.198	.478	1.151
4-6 Times	.047	.228	.838	1.048
7-10 Times	.371	.240	.122	1.449
Anxious/nervous				
0 Times	-.288	.181	.111	.750
1-3 Times	-.127	.187	.498	.881
4-6 Times	-.207	.202	.304	.813
7-10 Times	-.512	.228	.025**	.599
Feverish				
0 Times	-.028	.193	.884	.972
1-3 Times	-.011	.205	.957	.989
4-6 Times	-.191	.228	.403	.826
7-10 Times	-.136	.251	.588	.873
Not eat/sleep				
0 Times	.113	.182	.536	1.119
1-3 Times	-.079	.196	.687	.924
4-6 Times	-.050	.216	.817	.951
7-10 Times	-.075	.224	.737	1.078

$p < .001$ =***, $p < .05$ = **, $p < .10$ = *

Table D2 (continued) : Multinomial Logistic Regressions: ASUS items regressed on three category prior DWI: Two DWIs vs. One DWI

	B	Std. error	Sig	Exp(B)
Weak/tired				
0 Times	.268	.174	124	1.308
1-3 Times	.138	.185	.456	1.148
4-6 Times	.054	.198	.783	1.056
7-10 Times	-.006	.216	.979	.994
Neglected family				
0 Times	-.151	.178	.396	.860
1-3 Times	-.163	.187	.382	.850
4-6 Times	-.133	.205	.515	.875
7-10 Times	-.012	.245	.960	.988
Broke law/crime				
0 Times	.160	.188	.393	1.174
1-3 Times	.222	.150	.141	1.248
4-6 Times	.239	.149	.107	1.270
7-10 Times	.099	.177	.574	1.105
Not pay bills				
0 Times	.245	.179	.171	1.278
1-3 Times	.390	.181	.031	1.477
4-6 Times	-.006	.210	.977	.994
7-10 Times	.186	.243	.443	1.205

$p < .001$ =***, $p < .05$ = **, $p < .10$ = *; 10 or more times = reference category

Table D3 : Multinomial Logistic Regressions: ASUS items regressed on three category prior DWI

Two DWIs vs. One DWI

	B	Std. error	Sig	Exp(B)
1. Controls				
Race				
White (ref.) vs. Non-white	-.066	.085	.439	.936
Age				
1 = 18 -29 years old	.518	.314	.099*	1.678
2 = 30 – 44 years old	.747	.304	.014**	2.110
3 = 45 – 59 years old	.524	.310	.090*	1.689
4 = 60 - 81 years old	--	--	--	--
Gender				
Male (ref.) vs. Female	-.226	.135	.094	.798
Relationship				
Married/common law (ref)	.107	.088	.226	1.112
General Problem Behaviors				
Trouble as Teen				
0 Times	-.019	.185	.918	.981
1-2 Times	-.197	.181	.277	.821
3-4 Times	-.174	.204	.393	.840
Suspended/expelled				
0 Times	-.104	.218	.632	.901
1-2 Times	-.174	.217	.424	.841
3-4 Times	-.424	.258	.100*	.654
Fights/brawls				
0 Times	.367	.145	.011**	1.443
1-2 Times	.250	.136	.067*	1.284
3-4 Times	.093	.154	.546	1.097
Non-driving Trouble				
0 Times	-.087	.155	.572	.916
1-2 Times	-.051	.147	.729	.951
3-4 Times	.156	.161	.332	1.169

$p < .001$ =***, $p < .05$ = **, $p < .10$ = *; 5 or more times = reference category

Table D4: Multinomial Logistic Regressions: ASUS items regressed on three category prior DWI

Two DWIs vs. One DWI

	B	Std. error	Sig	Exp(B)
1. Controls				
Race				
White (ref.) vs. Non-white	-.040	.085	.640	1.070
Age				
1 = 18 -29 years old	.433	.311	.164	1.542
2 = 30 – 44 years old	.687	.303	.023**	1.987
3 = 45 – 59 years old	.498	.309	.108	1.645
4 = 60 - 81 years old	--	--	--	--
Gender				
Male (ref.) vs. Female	-.220	.134	.102	.803
Relationship				
Married/common law (ref)	.102	.088	.244	1.108
General Problem Behaviors				
Trouble—not follow rules				
Not true	.232	.177	.189	1.261
Somewhat true	.165	.168	.326	1.179
Usually true	.101	.192	.600	1.106
Don't like police				
Not true	.031	.246	.900	1.032
Somewhat true	.108	.249	.665	1.114
Usually true	-.341	.293	.244	.711
Too many laws				
Not true	.194	.233	.407	1.214
Somewhat true	-.109	.233	.640	.897
Usually true	.032	.268	.906	1.032
Break law				
Not true	.029	.570	.959	1.030
Somewhat true	-.022	.582	.970	.978
Usually true	-1.535	.932	.100*	.215
Don't tell me what to do				
Not true	-.118	.265	.655	.888
Somewhat true	-.098	.269	.715	.906
Usually true	.091	.281	.746	1.095

p < .001 =***, p < .05 = **, p < .10 = * Always true = reference category

Table D5: Multinomial Logistic Regressions: ASUS items regressed on three category prior DWI

Two DWIs vs. One DWI

	B	Std. error	Sig	Exp(B)
1. Controls				
Race				
White (ref.) vs. Non-white	-.055	.082	.534	1.052
Age				
1 = 18 -29 years old	.408	.310	.188	1.504
2 = 30 – 44 years old	.649	.303	.032**	1.914
3 = 45 – 59 years old	.468	.309	.130	1.596
4 = 60 - 81 years old	--	--	--	--
Gender				
Male (ref.) vs. Female	-.231	.135	.086*	.794
Relationship				
Married/common law (ref)	.108	.088	.221	1.114
Emotional Problems				
Depressed				
Hardly at all	-.067	.339	.842	.935
Yes, sometimes	.061	.323	.851	1.063
Yes, a lot	.212	.307	.491	1.236
Nervous/tense				
Hardly at all	-.116	.330	.726	.891
Yes, sometimes	-.086	.316	.786	.918
Yes, a lot	-.143	.311	.646	.867
Irritated/angry				
Hardly at all	.061	.476	.897	1.063
Yes, sometimes	.004	.469	.993	1.004
Yes, a lot	.011	.470	.981	1.011
Mood fluctuation				
Hardly at all	.491	.342	.151	1.635
Yes, sometimes	.588	.334	.078*	1.800
Yes, a lot	.464	.332	.162	1.591
Worry				
Hardly at all	.010	.210	.962	1.010
Yes, sometimes	-.059	.187	.752	.943
Yes, a lot	-.071	.181	.696	.932

$p < .001$ =***, $p < .05$ = **, $p < .10$ = *; Yes, all the time = reference category

Table D5 (continued): Multinomial Logistic Regressions: ASUS items regressed on three category prior DWI Two DWIs vs. One DWI

	B	Std. error	Sig	Exp(B)
Not wanting to live				
Hardly at all	-.677	.523	.196	.508
Yes, sometimes	-.460	.528	.383	.631
Yes, a lot	-.397	.593	.503	.672
Problems sleeping				
Hardly at all	.033	.217	.880	1.033
Yes, sometimes	.046	.208	.824	1.047
Yes, a lot	-.003	.219	.990	.997
Disturbing thoughts				
Hardly at all	.279	.401	.487	1.321
Yes, sometimes	.011	.396	.977	1.011
Yes, a lot	-.051	.416	.902	.950
Discouraged future				
Hardly at all	.273	.249	.274	1.314
Yes, sometimes	.255	.244	.297	1.290
Yes, a lot	.300	.260	.249	1.349

$p < .001$ =***, $p < .05$ = **, $p < .10$ = *; Yes, all the time = reference category

Table D6: Multinomial Logistic Regressions: ASUS items regressed on three category prior DWI

Two DWIs vs. One DWI

	B	Std. error	Sig	Exp(B)
1. Controls				
Race				
White (ref.) vs. Non-white	-.046	.085	.591	1.072
Age				
1 = 18 -29 years old	.363	.311	.244	1.437
2 = 30 – 44 years old	.618	.304	.042**	1.856
3 = 45 – 59 years old	.426	.310	.159	1.547
4 = 60 - 81 years old	--	--	--	--
Gender				
Male (ref.) vs. Female	-.218	.134	.105	.804
Relationship				
Married/common law (ref)	.103	.088	.242	1.108
Emotional Problems				
Angry at someone				
No, Never	-.224	.313	.474	.799
Hardly at all	-.015	.256	.955	.986
Few times	.032	.240	.894	1.032
Lied				
No, Never	-.478	.327	.144	.620
Hardly at all	-.505	.299	.092*	.604
Few times	-.642	.292	.028**	.526
Unhappy				
No, Never	-.211	.244	.386	.810
Hardly at all	-.030	.207	.886	.971
Few times	-.020	.190	.915	.980
Frustrated-job				
No, Never	.118	.224	.597	1.126
Hardly at all	.113	.207	.586	1.120
Few times	.025	.197	.901	1.025
Hold things in				
No, Never	.158	.164	.336	1.171
Hardly at all	.042	.138	.760	1.043
Few times	.042	.124	.732	1.043
Unkind/rude				
No, Never	.514	.394	.192	1.671
Hardly at all	.519	.380	.172	1.681
Few times	.490	.376	.192	1.632
Cried				
No, Never	-.251	.230	.274	.778
Hardly at all	-.321	.183	.078	.725
Few times	-.053	.160	.740	.948

$p < .001$ =***, $p < .05$ = **, $p < .10$ = * ; Yes, all the time = reference category

Table D7: Multinomial Logistic Regressions: ASUS items regressed on three category prior DWI

Two DWIs vs. One DWI

	B	Std. error	Sig	Exp(B)
1. Controls				
Race				
White (ref.) vs. Non-white	-.046	.085	.589	1.087
Age				
1 = 18 -29 years old	.363	.313	.246	1.437
2 = 30 – 44 years old	.588	.304	.054*	1.800
3 = 45 – 59 years old	.391	.310	.208	1.478
4 = 60 - 81 years old	--	--	--	--
Gender				
Male (ref.) vs. Female	-.227	.135	.092	.797
Relationship				
Married/common law (ref)	.110	.088	.212	1.116
Behavior Changes				
Change alcohol/drug use				
Not at all	-.019	.201	.924	.981
Yes, maybe	.179	.158	.259	1.195
Yes, most likely	.136	.132	.303	1.146
Stop using alcohol				
Not at all	-.270	.200	.221	.764
Yes, maybe	.242	.174	.164	1.274
Yes, most likely	-.005	.151	.972	.995
Stop using drugs				
Not at all	-.097	.155	.533	.908
Yes, maybe	-.178	.255	.485	.837
Yes, most likely	.257	.187	.170	1.293
Need help with alcohol				
Not at all	-.264	.143	.065*	.768
Yes, maybe	-.024	.142	.863	.976
Yes, most likely	-.101	.143	.480	.904
Need help with drugs				
Not at all	-.033	.112	.766	.967
Yes, maybe	-.130	.162	.418	.878
Yes, most likely	-.150	.185	.418	.861
Important to change alcohol/drug use				
Not at all	.171	.180	.344	1.186
Yes, maybe	-.216	.189	.253	.806
Yes, most likely	-.212	.160	.187	.809
Program for alcohol/drugs				
Not at all	.030	.156	.846	1.031
Yes, maybe	-.132	.137	.336	.876
Yes, most likely	-.097	.138	.482	.909

$p < .001$ =***, $p < .05$ = **, $p < .10$ = *; Yes, all the time = reference category

Appendix C

DWI – Assessment Scale

DOC Identifier:

_____

Gender:
____Male
____Female

Marital Status:
____Married
____Common law marriage
____Cohabitation
____Widow
____Separated
____Divorced
____Single

Race:
____White Non-Hispanic
____African American
____Hispanic
____Asian
____Native American
____Other

Employment (at DWI arrest):
____Fully employed (36+ hours/week)
____Employed Part-time (20-35 hours/week)
____Partially employed (less than 20 hours/week)
____Seasonally employed
____Unemployed (less than 3 months)
____Unemployed (3 to 6 months)
____Unemployed (more than 6 months)

Total number of children_____ Number of children under 18 years of age_____

Recorded BAC for current DUI: _____ (or check if refused____)
Total number of DUIs: _____

1. Mental Health Domain

1. Have you ever received mental health treatment?
____Yes ____No

2. Have you ever been court mandated to receive mental health treatment?
____Yes ____No

3. Have you ever been prescribed medication(s) for mental health issues?
____Yes ____No

4. Have you ever seen or heard things that were not there?
____Yes ____No

5. Do you ever feel as though people are watching you when you're alone?
____Yes ____No

6. Have you ever felt mentally confused?
____Yes ____No

7. Do you often feel nervous or anxious?
____Yes ____No

8. Do you have frequent drastic mood swings ranging from very happy to very sad?
____Yes ____No

2. Socio-Personal Responsibility Domain

9. Do you maintain regular employment (employed in the same job for 1 year or more)?
____Yes ____No

10. Do you depend on public assistance to support yourself and/or family?
____Yes ____No

11. Were you ever suspended or expelled from school?
____Yes ____No

12. Is it okay to break the law as long as no person gets hurt?
____Yes ____No

13. Sometimes it is necessary to lie or not tell the truth?
____Yes ____No

14. Typically, judges give a fair sentence to people?
____Yes ____No

15. How would you rate your job?
____Yes ____No

16. How well do you get along with co-workers?
____Yes ____No

17. How hard is it for you to get another job?
____Yes ____No

18. How likely is it that you will have the same job for another 6 months?
____Yes ____No

3. Risky Domain
19. How many times have you been arrested for drug or alcohol related offenses (do not include the present DWI offense)? _____times arrested for drug or alcohol related offense.

20. Are you likely to become physically violent when you drink?
____Yes ____No

21. Have you ever lost a job because of your drinking behavior?
____Yes ____No

22. Do you smoke at least a pack of cigarettes each day?
____Yes ____No

23. Do you smoke marijuana at least 4 times a week?
____Yes ____No

24. Do you use amphetamines at least 1 time per week?
____Yes ____No

25. Do you use tranquilizers at least 1 time per week?
____Yes ____No

26. Do you get into fist fights?
____Yes ____No

27. Are you likely to get into verbal disagreements when you're drinking?
____Yes ____No

4. History Domain
28. How many times were you arrested as a juvenile?
_____times arrested before 18 years old

29. How many times have you been arrested as an adult (**include current arrest**)?
_____times arrested 18+ years old

30. Has your driver's license ever been revoked?
____Yes ____No

31. If you had to guess, about how many times in a month do you drive after drinking?
_____times drove after drinking past month.

32. Have you ever been incarcerated?
____Yes ____No

33. Have you ever had your probation or parole revoked?
____Yes ____No

34. Did you ever get formally written-up for trouble while incarcerated?
____Yes ____No

5. Willingness to Change Domain
35. Would you like help to drink less alcohol?
____Yes ____No

36. Do you have a family member or friend that could assist you to get help with drinking?
____Yes ____No

37. Do you think you drink too much alcohol?
____Yes ____No

38. Drinking is not a problem for you?
____Yes ____No

6. Responsibility
39. I only got a DWI because I cannot leave my car at night
____Yes ____No

40. I only got a DWI because I had to do something else in the morning
____Yes ____No

41. Driving drunk does not hurt anybody
____Yes ____No

42. It really isn't that big of a deal to get a DWI.
____Yes ____No

43. The worst part of getting a DWI is the fine.
____Yes ____No

44. The worst part of getting a DWI is the alcohol classes.
____Yes ____No

45. The worst part of getting a DWI is missing work.
____Yes ____No

46. The worst part of getting a DWI is the embarrassment.
____Yes ____No

47. The worst part of getting a DWI is the family disapproval.
____Yes ____No

48. The worst part of getting a DWI is going to jail.
____Yes ____No

7. Driving Domain

49. Do you try to get to places as fast as possible regardless of the speed limit?
____Yes ____No

50. Do you think stop signs are irritating?
____Yes ____No

51. Do you think tailgating is needed to encourage slow drivers to more out of the way?
____Yes ____No

52. Do you enjoy wearing a seatbelt?
____Yes ____No

53. Are you likely to drive within one hour of drinking alcohol?
____Yes ____No

54. Are you likely to drive at least 20 miles over the legal speed limit?
____Yes ____No

55. How many traffic tickets have you received in the past 1 year?
_____number of tickets