JUSTICE QUARTERLY
2021, VOL. 38, NO. 1, 72–100
https://doi.org/10.1080/07418825.2019.1597915

Conviction or Diversion and the Labeling of First-Time DUI Offenders: An Analysis of Sentencing and Recidivism in Pennsylvania

Lauren K. Knoth and R. Barry Ruback

Department of Sociology and Criminology, The Pennsylvania State University, University Park, PA, USA

ABSTRACT

This study examines the sentencing and recidivism of 34,315 first-time DUI offenders in Pennsylvania. Results indicated that individuals processed through accelerated rehabilitative disposition (ARD) rather than a guilty conviction were more likely to be white, female, and older and to have less serious prior records. In terms of recidivism, those receiving ARD were significantly less likely than those found guilty to be rearrested within 4 years. Results also showed the effects of contingent labeling, in that ARD reduced recidivism for females and minorities, possibly because they did not suffer from the cumulative disadvantage of being labeled a criminal. These findings suggest that diversion programs could be used with first-time DUI offenders, even males and whites, without a consequent increase in recidivism. Moreover, the study provides support for diversionary programs for demographic groups (women and minorities) who may be disproportionately affected by a permanent criminal label.

ARTICLE HISTORY
Received 16 September 2017
Accepted 13 March 2019

KEYWORDS
Driving under the influence; sentencing; labeling; diversion

Introduction

Every year about 4 million motorists drive under the influence of alcohol, for a total of around 112 million annual impaired driving incidents (Bergen, Shults, & Rudd, 2011). Moreover, alcohol-impaired-driving crashes killed 10,322 people in the United States in 2012 (NHTSA, 2013), accounting for 31% of all motor vehicle traffic fatalities. Despite these startling statistics and growing national attention, few studies, and especially few criminological studies, have analyzed the imposition and effectiveness of sentencing policies for first-time offenders.

The current study analyzes first-time DUI offenders in Pennsylvania and their assignment to either a guilty conviction or Accelerated Rehabilitative Disposition (ARD), which is a diversionary sentence that does not impose a criminal record on the offender. This study addresses two important questions: (1) given equal eligibility, who is likely to be sentenced after a guilty conviction and who is likely to receive ARD, and (2) how do these options affect recidivism among first-time DUI offenders?

CONTACT Barry Ruback bruback@psu.edu

Deterrence or reintegration

Studies examining DUI offenders and sentencing come from one of two perspectives: deterrence or rehabilitation. The deterrence perspective posits that significant penalties are necessary to deter individuals from making the decision to drive under the influence of drugs or alcohol. This perspective focuses on the large risk posed by DUI offenders to innocent, unsuspecting drivers or pedestrians who could not have anticipated and prevented their victimization.

Deterrence theory rests on the assumption that individuals decide not to engage in crime because they believe the likely punishment outweighs the potential gains from criminal behavior. Three components make up an effective deterrence approach: celerity (swiftness of punishment), certainty (likelihood of apprehension and punishment), and severity (how harsh the punishment is). In the context of DUI, the only truly relevant component is severity of penalty, since certainty is close to zero: the probability of being arrested for DUI is as high as 1 in 82 (.012; Liu et al., 1997) or as low as 1 in 250 (.04; Anda, Remington, & Williamson, 1986). If detected, however, punishment is swift, in that most states have the authority to immediately issue some form of punishment upon detection, either by temporarily holding the offender in custody or immediately suspending the offender's driving privileges through administrative license revocation.

DUI reforms in the United States have historically been rooted largely in the deterrence perspective. In the early 1980s, Mothers Against Drunk Driving began lobbying state legislatures to pass harsher sentencing policies for drunk drivers. This and other organizations mobilized support using the emotional appeal of victim tragedies, and they pushed nationwide for reforms against the "killer drunk driver" (Fell and Voas, 2006, p. 199). Between 1981 and 1986, 729 new state drunk driving laws were created (Lerner, 2011). Many of these reforms came after Ronald Reagan's Presidential Commission on Drunk Driving, which emphasized the need for more severe sanctions for DUI offenders (Volpe, 1983). Despite the organizational pressure to increase the severity of sanctions for DUI offenders, the effectiveness of severe sanctions is largely unfounded. For first time offenders, studies have found little to no effect for jail sentences (Blumenthal & Laurence Ross, 1973). In addition, studies analyzing license revocation laws have found that the effect of sanctions is only temporary (Ross, 1992).

The most common form of punishment for DUI offenders is probation. Even offenders sentenced to mandatory jail sentences are likely to receive a period of probation following their incarceration. In general, studies have found probation to be as effective as, or more effective than, incarceration sentences in reducing future recidivism (Homel, 1981).

In contrast to this punishment perspective, the second perspective focuses on the distinct characteristics of DUI offenders, particularly their rehabilitative potential and the need to identify chronic DUI offenders. These studies posit that DUI offenders have different characteristics than the general offender population and need to be independently analyzed to understand patterns of offender characteristics as they relate to sentence effectiveness and recidivism (DeMichele & Payne, 2013). This second perspective emphasizes the need to reintegrate DUI offenders into prosocial roles.

Following this reintegrative approach, many states have implemented diversion programs for first-time DUI offenders. Early proposals for DUI diversion programs appealed to potential cost savings from reducing court caseloads and subsequent criminal justice costs while increasing access to treatment and rehabilitation (Fields, 1994). Initial diversion programs even garnered the support of local MADD chapters that believed diversion programs may be enough to deter social drinkers from becoming repeat offenders (Fields, 1994).

Consistent with these two perspectives (deterrence versus rehabilitation), Braithwaite (2001) distinguished two approaches to punishing criminals: stigmatizing shaming sanctions and reintegrative shaming sanctions. Stigmatizing shaming focuses on the individual and is associated with the labeling of an individual as a "bad person" (p. 4). Alternatively, reintegrative shaming focuses on the act rather than the person and emphasizes treating offenders with respect and working to reintegrate individuals into the community following their punishment.

Drawing upon traditional labeling literature, Braithwaite (1989) posited that reintegrative shaming promotes self-reform while stigmatizing shaming promotes the development of criminal subcultures. Criminal labels exclude individuals from society, blocking access to legitimate opportunities, and promoting criminal behaviors as an alternative to legitimate opportunities. Braithwaite (2001) emphasized the importance of these labels not only for how offenders identify themselves, but also for how they are defined and treated by members of society.

One study has directly analyzed the effectiveness of reintegrative shaming for DUI offenders. Using a sample from the Reintegrative Shaming Experiments in Australia, Harris (2001) studied 900 DUI offenders randomly sentenced either in a formal court (the standard procedure) or through an alternative conferencing process (1) that included education material such as videos to express the dangers of driving drunk and (2) that gave offenders the opportunity to discuss their behavior and ways to avoid similar behaviors in the future.The study found small but statistically significant effects: stigmatization was higher for court cases, while reintegration was stronger for conference cases.

Contingent labeling effects

The effects of a criminal label may be contingent on offender demographic characteristics. More recent studies on criminal labels and life course attempt to unpack whether the effect of a criminal label varies across different demographic populations. Two general theories dominate perspectives on the interaction of labeling effects and different offender populations: the cumulative disadvantage hypothesis and the more-to-lose hypothesis.

The theory of cumulative disadvantage posits that the effects of a criminal label are larger for individuals who experience other forms of disadvantage, such as those associated with being black. From this perspective, each additional form of disadvantage adds to other existing forms of disadvantage, further marginalizing certain populations. Regarding cumulative disadvantage, Laub and Sampson (2003) found that criminal justice involvement facilitates processes of being cut off from access to prosocial

community bonds (i.e. employment, education, and marriage) and of increasing criminal behaviors.

Theories of cumulative disadvantage and Braithwaite's theory of stigmatization both emphasize the importance of pro-social ties and informal social control. In the face of cumulative disadvantage individuals with greater social status and ties to the community are more likely to have protective factors that can insulate them from the negative effects of criminal labels (Laub and Sampson, 2003; Sampson and Laub, 1997). In Braithwaite's theory of stigmatization, reintegrative shaming is preferable to stigmatizing shaming, as stigmatizing shaming facilitates exclusion from pro-social relationships (Braithwaite, 2001). Taken together, one might expect that stigmatizing shaming is likely to exacerbate pre-existing barriers to prosocial roles that are associated with other forms of disadvantage.

Additional studies have reinforced the support for the cumulative disadvantage perspective. Bernburg and Krohn (2003) analyzed the effects of formal intervention for criminal behaviors in adolescence and found significant negative effects on educational attainment and employment. The structural barriers to obtaining educational or employment opportunities push individuals to continue offending behaviors. Importantly, the authors found that these negative effects are strongest for individuals who experience other forms of social or structural disadvantage, such as minorities and impoverished youth.

An alternative perspective, the more-to-lose hypothesis, has proposed that individuals with higher social status and those viewed as least likely to recidivate are more likely to be affected by negative labels (Chiricos, Barrick, Bales, & Bontrager, 2007). Other research has referred to this perspective as the disadvantage-saturation perspective (Hannon, 2003). This perspective suggests that a criminal label will have little impact on the recidivism of already disadvantaged populations, but will reduce the recidivism of advantaged populations because individuals with higher social status in the community and stronger social bonds are more likely to experience strong negative effects from an outcast label such as "criminal." For these individuals, committing crime is viewed as a greater norm violation. Disadvantaged populations, by contrast, are less likely to experience additional negative consequences from a criminal label because there is probably a ceiling or saturation effect on multiple forms of disadvantage. This perspective argues that the effect of a negative label on the likelihood of recidivism will be greater for advantaged rather than disadvantaged populations, although in absolute terms, advantaged populations may not recidivate more than disadvantaged populations.

General research on the more-to-lose perspective is sparse. Chiricos et al. used this perspective to examine the effects of a permanent felony criminal label on recidivism for a population of offenders in Florida (2007). The authors found that the effect of a felony conviction (compared to having an adjudication withheld) was strongest for whites, women, and older first-time offenders. With regard to race, the authors concluded that these findings support the hypothesis that whites have more to lose than minorities and were more likely to experience meaningful formal and informal exclusions from prosocial roles, facilitating additional offending behaviors.

For gender, the theoretical explanations for the more-to-lose perspective were less well developed, largely due to a general absence of prior research on gender and

labeling. Chiricos et al. (2007) suggested that women have more to lose from a criminal label because they are expected to commit less crime than males. As such, the relationship between gender and labeling effects rests largely in the perceived severity of violating social norms, regardless of other forms of disadvantage associated with being female. Despite the attempt to apply the more-to-lose hypothesis to gendered differences in recidivism, the authors concluded that males may experience fewer negative effects from a criminal label because males have greater access to social power, which allows them to counteract the effects of formal labeling.

Research on contingent labeling effects generally finds support for the cumulative disadvantage hypothesis. Even the studies that do find some support for the more-to-lose hypothesis do not find consistent results across different forms of disadvantage. Neither of these theories have been examined using a population of DUI offenders. We expected that the effects of a DUI criminal label would be consistent with the cumulative disadvantage approach, such that the effects of a permanent criminal label would be more significant for females and minorities than for males and whites.

DUI offender labels

The perceived threat of shame and the perceived threat of legal sanctions have independent and distinct effects. Social shaming may occur in the absence of a formal legal intervention. Similarly, formal legal interventions may occur without subsequent social shaming. For drunk drivers, evidence suggests that the threat of shame has a greater deterrent effect than the threat of legal sanctions (Grasmick & Bursik, 1990). However, if the perceived risk of others finding out about drunk driving is low, then the threat of shame is less likely to deter drunk driving behaviors.

As noted, the probability of being identified and apprehended while driving under the influence is low in absolute terms. Further, it is likely that offenders underestimate the likelihood of being arrested and overestimate their ability to drive under the influence, resulting in the belief that being arrested for a DUI is a mere chance event (Shanahan & Porfeli, 2006). Most law enforcement policies (such as random breathalyzer tests or increased penalties) do little to challenge this self-bias. However, being arrested disconfirms a person's distorted perception of his/her own abilities. Supporting this perspective, a study of male drunk drivers in Sweden from 1976 to 1979 used behavioral econometric models based on official records to analyze changes in objective and subjective probabilities of arrest for first time and repeat DUI offenders (Shapiro & Votey, 1984). These data suggest that most individuals who were arrested experienced an increase in their subjective probability of being arrested again in the future and did not recidivate.

Increases in the perceived likelihood of legal interventions is likely to increase the perceived threat of shame (Grasmick & Bursik, 1990), but this disapproval from others for drinking and driving may occur only if they end up with a criminal record for their behavior. This logic suggests that an initial arrest for driving under the influence will make the fear of disapproval from others more salient, leading to self-reform. Moreover, the fear of a criminal label and the implications of that label on social ties may act as a deterrent to recidivism, regardless of the severity of punishment.

Not all criminal records are the same. A criminal record for a DUI may affect an individual's life chances differently than a criminal record for a non-DUI offense. Most research on the effects of criminal labels tends to focus on predatory crimes and typical offender profiles (i.e. young, minority, male offenders). Specifically, studies have focused largely on incarceration, drug crimes, and felony offenses (e.g. Agan & Starr, 2017; Chiricos et al., 2007; Pager, 2003). It is unclear from the available literature how a permanent criminal record for DUI offense may affect subsequent life chances. Just as literature finds that a felony conviction may have a unique negative effect, even for individuals with criminal records for other types of offenses (Chiricos et al., 2007), a DUI conviction may have a unique effect on life chances, even for individuals who already have a criminal record for non-DUI crimes.

DUI offenders are different from other types of offender in their postconviction experience. Not only are they faced with the standard criminal label, but they may be under additional scrutiny unique to DUI. License suspensions limit employment opportunities due to restricted mobility, DUI convictions place limitations on the type of jobs they are eligible for (i.e. they often cannot apply for jobs that include any driving responsibilities), and insurance companies may raise rates or cancel an existing policy (Fields, 1994).

In the same way that participating in certain rehabilitative programs may signal to potential employers that a former offender is committed to desistence (Bushway & Apel, 2012), having a DUI conviction may signal to employers that the individual has an underlying drinking problem that could interfere with employment responsibilities (even when the individual does not actually have a drug or alcohol dependency). Given that the consumption of alcohol is legal, potential employers may perceive DUI offending as an indicator of a lack of self-control. In addition, potential employers may be less likely to believe that offenders with a DUI history will desist from future offending because of the ubiquitous availability of alcohol.

Gender

Males are generally more likely to drink than females, are more likely than females to engage in heavy episodic drinking, and are less likely than females to be abstainers (World Health Organization, 2014). About 11% of males in the United States have alcohol use disorders while around 4% of females have alcohol use disorders (World Health Organization, 2014). Males are overwhelmingly more likely than females to drive under the influence (MacDonald & Mann, 1996; Yu, 1994). There is some evidence to suggest there has been an upward trend in rates of females being arrested for DUI, although males are still nearly five times more likely than females to drive under the influence (Liu et al., 1997; see also Marowitz, 1998). These patterns suggest that there are gendered norms in drinking, such that the consumption of alcohol is more accepted for males than for females and that males are perceived as being more likely than females to drive after having too many drinks. The consumption of alcohol and other alcohol-related behavior, such as DUI, may be a greater norm violation for females than for males.

In terms of possible contingent labeling effects and cumulative disadvantage, Shore and McCoy (1987) suggested that a DUI conviction may have more significant

negative effects on social status for female than for male offenders, because drinking, and drinking and driving, represent a greater role violation for females than males. Because of these norms, males may experience less shame and social exclusion than females if they do drink and drive. Despite the differences in perceived norm violations, Shore and McCoy (1987) found that women recidivate at a much lower rate than males overall, suggesting that arrest is a greater deterrent for female than male offenders. However, this study did not test for differences in the effect of a criminal label, since all of the women in their sample were arrested and convicted for a DUI. Thus, the Shore and McCoy study is of limited utility for examining the effects of a criminal label. Even if the base rate of recidivism is still higher for males than for females, the relationship between gender and recidivism may be contingent on the characteristics of particular legal sanctions.

Race and ethnicity

Aside from gender, the effects of labeling may also be contingent on race and ethnicity. Studies focusing on the difference between "social drinkers" and "chronic drinkers" generally find that chronic DUI offenders are more likely to be white, male, between 30 and 44 years old, and employed, to have low education, to have previously attended outpatient and mental health treatments, and to be generally unwilling to change their poor attitude about punishment and criminal justice interventions (DeMichele, Lowe, & Payne, 2013). Similarly, a nationwide self-report survey of different racial and ethnic categories (Liu et al., 1997) found that white, non-Hispanic respondents were most likely to report a DUI episode. Black, non-Hispanic respondents were least likely to report a DUI episode, and other minority groups were in between.

In terms of treatment by the criminal justice system, there is some evidence of racial disparity for DUI offenders. Cherpitel and Bond (2003) found that Mexican Americans were significantly more likely than whites to be convicted of a DUI offense but less likely than whites to be referred to a DUI treatment program, a pattern suggesting that Mexican Americans are perceived as having less rehabilitative potential than whites.

When offenders were arrested but not convicted, Cherpitel and Bond (2003) found rates of recidivism were higher for whites than for Mexican Americans. In contrast, when offenders were arrested and convicted, Mexican Americans were more likely to recidivate than whites. The authors suggested that because whites seem to perceive that the courts are more lenient on them, a conviction is necessary to convince them that there are serious consequences for their behavior. These findings suggest that the fear of being labeled a criminal is not enough of a deterrent for white offenders. Additionally, these findings suggest that minority offenders, who are already more likely to experience disadvantage, are more negatively affected by a criminal label, providing support for the cumulative disadvantage hypothesis.

The current study

The current study analyzes the imposition and effects of criminal labeling on first-time DUI offenders in Pennsylvania. While our study is focused largely on the effects of

receiving ARD, we also examine differences in the assignment to ARD for ARD-eligible DUI offenders. We focus on first-time DUI offenders because the issue relates to the general question of whether first-time offenders should receive mitigated sentences, since they had previously complied with drinking and driving laws and they arguably were not aware of the consequences of violating the law. Moreover, because there is specific statutory authority in Pennsylvania for mitigation in the case of first-time DUI offenders, questions regarding labeling and its effects can be addressed.

Pennsylvania, the sixth most populous state in the union, recorded 98,884 million vehicle miles in 2012 (USDOT, 2013). In the same year, Pennsylvania reported the fourth highest number of traffic fatalities resulting from alcohol-impaired-drivers with a BAC of .08 or higher (NHTSA, 2013). In contrast to declining national trends, from 1999–2009 Pennsylvania saw increases in arrests for driving under the influence (PCCD, 2010).

First-time DUI offenders in the state of Pennsylvania may be sentenced following a guilty disposition or may be diverted to an accelerated rehabilitative disposition (ARD). Both dispositions include similar treatment programs. Offenders in both groups may be sentenced to up to one year of probation, 90 days of license suspension, and mandatory drug or alcohol treatment in a community facility. This study tests whether the ability to expunge a criminal record following completion of a sentence (i.e. the ARD program) has a positive or negative effect on future criminal behavior.

Diversion versus conviction

In Pennsylvania, as in many other states (Rauch et al., 2010), prosecutors and judges have the option of sentencing first-time DUI offenders to a guilty conviction or processing the offender through a diversion alternative, ARD. If asked to consider the defendant for the ARD program, the district attorney may decide to present the issue to the judge, who has the option either to accept the motion for the ARD program or to deny access to the ARD program and moving forward with the charges. Thus, the district attorney has the initial discretion to decide whether or not the defendant will be considered for an ARD program, but the final disposition decision is left to the judge.

If offenders receiving ARD do not commit another offense, they will not have a criminal record. However, it is nearly guaranteed that the next DUI offense will be prosecuted through a guilty conviction.[1] Additionally, if offenders fail to complete the terms of their diverted sentence, the ARD may be revoked and the offender is likely to be convicted for the initial DUI offense.

Only one study has looked at DUI offenders and diversion alternatives. Using a sample of offenders in Maryland, Taxman and Piquero (1998) found that the risk of recidivism for first-time DUI offenders was 27 percent higher following a guilty conviction compared to diversion alternatives. They also found that these effects were

[1]Pennsylvania Statutes indicate that offenders are eligible for ARD for their first-offense or if 10 years have passed since their prior DUI. Any offense occurring less than 10 years after an offender receives ARD would be prosecuted through a guilty conviction. For this study, we analyzed only those offenders who had no prior arrest for a DUI, even if the prior arrest occurred more than 10 years before their current offense.

independent of any type of rehabilitative treatment program. Their study is limited, however, in that the researchers did not analyze recidivism for first time offenders by race/ethnicity or by testing the interaction between different sentence outcomes and both gender and race/ethnicity.

Hypotheses

This project focuses on two central questions: (1) who is likely to be sentenced to diversion sentencing programs, and (2) what types of treatment are most effective for DUI offenders. Each of these questions can be analyzed with respect to individual offender characteristics, offense characteristics, and characteristics of the counties within which the offender is sentenced. We expected that white, female, and older offenders would be more likely than minority, male, and young offenders to receive ARD because they are generally perceived as less risky. Prior research analyzing non-DUI offenses has found that white, female, and older offenders often receive less harsh punishments than minority, male, and younger offenders (Steen, Engen, & Gainey, 2005; Steffensmeier, Ulmer, & Kramer, 1998). Consequently, we expected that judicial stereotypes of offenders would also apply to DUI offenders.

In terms of recidivism, we expected that offenders sentenced to ARD would be less likely to recidivate than offenders receiving a guilty conviction, since guilty convictions carry a stigma that can lead to social disapproval and exclusion, increasing the likelihood of recidivism (Laub and Sampson, 2003; Braithwaite, 1989). We also expected that both gender and race would interact with the ARD disposition, such that females sentenced to a guilty conviction would be more likely than females diverted to ARD to recidivate but that males sentenced to a guilty conviction would not be more likely than males diverted to ARD to recidivate. Research suggests that a DUI conviction for a female carries more significant negative effects than for male offenders (Shore & McCoy, 1987). Consistent with the cumulative disadvantage perspective, the higher social status of males is likely to provide a protective effect from criminal labels, while females are more likely to be affected by a stigma from deviant behaviors (Giordano, Cernkovich, & Lowery, 2004; Laub & Sampson, 2003).

In terms of race, we expected that the differences in recidivism for black offenders sentenced to a guilty conviction and black offenders diverted to ARD would be larger than the differences in recidivism for white offenders sentenced to a guilty conviction and white offenders diverted to ARD. Consistent with the cumulative disadvantage hypothesis, the higher social status of white offenders provides an additional protective barrier against the negative effects that are associated with a criminal label (Laub & Sampson, 2003).

Method

We compiled the data for this study from several sources. First, we selected the initial list of DUI cases from a statewide database acquired from the Administrative Office of Pennsylvania Courts. (AOPC). Selected offenders were sentenced during 2006 or 2007 in a Common Pleas Court, the trial court of general jurisdiction responsible for sentencing

offenders charged with misdemeanor and felony criminal offenses throughout the state, with the exception of the County of Philadelphia.[2] We limited the sample to offenders who were sentenced to their first DUI offense and who were eligible for the ARD program.[3] We further limited the sample to offenders who were sentenced to either a conviction or ARD, not both.[4] In order to assess clear racial differences, we removed non-white and non-black offenders.[5] The final sample size was 34,135. The data include slightly more cases from 2007 ($n = 20{,}357$) than 2006 ($n = 13{,}778$).[6]

We obtained records of arrest and prosecution (RAP sheets) from the Pennsylvania State Police for each offender in the dataset. The RAP sheets included information on each arrest for which there was a charged offense, regardless of whether or not the charge resulted in a conviction. From these data, we identified the DUI offense that corresponded to the AOPC data and constructed profiles of an offender's arrests before and after the primary DUI offense.

We used a 4-year observational period beginning on the date of sentence to create equal follow-up periods for each offender, in order to eliminate the need for additional statistical controls for different exposure times (Shadish, Cook, & Campbell, 2002). We removed offenders if there was not a 4-year follow-up period following their sentence for the DUI offense included in AOPC data. The lack of a complete follow-up period may have been due to incarceration sentences that delayed release beyond 2010 ($n = 31$) or due to an offender dying during the 4-year follow-up period ($n = 3$).[7]

Independent variables

The predictor variables included factors about the offender, the offense, and the county where the offender was sentenced.

Offender characteristics

We included three offender characteristics in the study: gender, race, and age. Gender was dummy coded with male equal to 1 and female as the reference group. Male offenders accounted for 76.4% of the total sample and females represented 23.6% of the total.

[2]In Philadelphia, the Municipal Court handles most DUI cases. Because Philadelphia Municipal Court data are not available through AOPC, only some of the Philadelphia cases are included here.

[3]Offenders qualified for an ARD sentence if they were being charged with their first DUI offense, if no accident occurred in connection with the DUI offense that caused serious bodily injury to someone other than the defendant, and if there was no passenger under 14 years of age in the vehicle. We excluded individuals who had any prior DUI offenses and who were charged with causing an accident involving serious bodily injury or driving under the influence with a passenger under 14 years of age.

[4]We removed offenders with both types of disposition in order to isolate two distinct groups of offenders on the treatment variable ($n = 102$). Individuals were also removed if they had neither a diversion nor guilty disposition due to ineligibility on the treatment variable ($n = 1350$).

[5]The data included indicators for Hispanic (.15%), Asian/Pacific Islander (.7%), and Indian (.04%), but these race categories lacked the sample size to be analyzed independently. Rather than collapsing these offenders with white or black offenders, we removed them from the sample.

[6]Reports from the Pennsylvania Commission on Crime and Delinquency showed an increase in DUI arrests by 6 percent between 2006 and 2007, supporting our finding that more cases were disposed of in the latter year of our sample. Upward trends in arrests also occurred as a result of the 2003–2004 changes in Pennsylvania DUI laws, resulting in more cases being disposed in 2007 than 2006 due to delays in case processing.

[7]If the offender died during the 4-year follow-up, but had a rearrest prior to his or her death, we included him or her in the sample and counted the offender as a failure in recidivism analyses.

We dummy coded race, with white equal to 1 and Black equal to 0. The sample was largely white (92.2%), and African Americans accounted for the remainder of the sample (7.8%).

The offender's age was measured at the time of the offense. The mean age for the sample was 33.25 years (SD = 11.89). As previous literature (e.g. Shapiro & Votey, 1984) suggests that there may be two high risk populations for DUI offenses (under 25 and 35–45), we coded age as a categorical variable with eight age categories: under 21, 21–25, 26–30, 31–35, 36–40, 41–45, 46–50, over 50. The majority of offenders in the sample were male, white, and between the ages of 21 and 45.

Criminal history

We coded criminal history variables from the arrest records provided by the Pennsylvania State Police. We included a categorical indicator for the total number of prior arrests, a dichotomous indicator for whether or not the offender had a prior traffic offense that was not a DUI, and a categorical variable for the age of the offender at his or her first arrest. The mean number of prior arrests was 1.30 (SD = 2.31). The mean age at first arrest was 28.5 years (SD = 11.4). Six percent of the sample had a prior non-DUI traffic offense. These prior traffic offenses included summary offenses (such as speeding tickets), but only if they were associated with more serious offenses (misdemeanors or felonies) that involved an arrest and that were processed in a criminal court.

Offense characteristics

Pennsylvania statutes contain several different types of DUI offenses. First, offenders may be under the influence of alcohol, controlled substances, or both alcohol and controlled substances. Second, offenders' level of intoxication is measured by blood alcohol content (BAC); the four categories of intoxication levels include general impairment, .08%–.09%, .10%–.159%, and .16% and greater. The general impairment category includes special cases such as minors (under 21) and commercial vehicle drivers who may not have blood alcohol content greater than .02. It is also used as a catch-all for low BAC levels when not specified above the .08 level. It is unlikely that offenders with a BAC above .08% would be sentenced under the general impairment statute because of differences in sentencing guidelines for higher levels of BAC. Thus, we combined general impairment and low BAC (.08%–.09%) in our analyses. We ultimately constructed five different categories to capture the types of DUI offenses: drug, drug and alcohol, alcohol—low BAC ($<$.10%), alcohol—medium BAC (.10%–.159%), and alcohol—high BAC ($\geq$.16%). Alcohol-involved DUIs with a low BAC served as the reference group in analyses.[8]

[8]Inconsistency in the reporting of blood alcohol content has been a significant problem in DUI research, necessitating a recommendation from the National Traffic Safety Board to 45 states in 2012 addressing the issue of missing BAC levels and inconsistent reporting in state collected data. The data for the present study were created prior to these recommendations. The AOPC data did not include a separate variable for the recording of the specific BAC level for each offense. However, the statutes are constructed in a way that allowed us to code general categories of BAC based on the specific charges. Some offenders were recorded only under the general impairment statute and thus did not have a specific BAC level. Because higher BAC levels are associated with harsher statutory punishments, it is unlikely that an offender with a high BAC would be charged under general impairment. Therefore, the estimates in this study are conservative representations of BAC and its influence on selection into different treatment options.

The DUI category also serves as a proxy for the type of license suspension that a given offender was sentenced to.[9] In Pennsylvania, license suspension is directly tied to the BAC level. Offenders with a BAC below .10 are not sentenced to any license suspension. Offenders in the medium BAC category (.10%–.159%) are sentenced to a 30-day license suspension with ARD and up to 12 months for a guilty conviction. Offenders in the high BAC category (.16% or greater), offenders for which the BAC is unknown, offenders charged with a drug-involved DUI, and offenders who refuse to submit to a breathalyzer test are sentenced to a 60-day license suspension with ARD and up to 12 months for a guilty conviction. Offenders below the age of 21 are sentenced to a 90-day license suspension with ARD and up to 12 months for a guilty conviction.

Offense seriousness

We included the number of charges included in an offender's disposition as a count measure. This measure served as a proxy indicator of the seriousness of an offender's case. Since we limited the sample to offenders for whom the most serious offense was a DUI, the previously discussed BAC variables also address the seriousness of the offense. In the final analyses, we used a binary variable indicating whether or not the offender had multiple charges that were convicted or diverted.

Case processing

We included a continuous variable for the time to punishment, which we constructed by calculating the number of days between an offender's arrest and sentencing date. The average number of days between an offender's DUI offense and punishment was 319.4 (SD = 365.3). The median number of days between a DUI offense and punishment was 217, indicating that the mean was strongly affected by a few outliers in the upper end of the distribution.[10]

Contingency effects

To test labeling theories of contingency effects, we included two interactions in the model predicting recidivism. The indicator of diversion was interacted with gender and with race to determine whether differential effects exist for varying demographic characteristics in our sample.

County level variables

This study includes several measures from the US Census and various Pennsylvania state agencies to test the relationship between structural conditions and the likelihood

[9]Pennsylvania statutes do include some exceptions for license suspension for first-time offenders sentenced for a guilty conviction. For example, individuals may apply to have a restricted license, but applicants must equip any motor vehicle they intend to operate with an ignition interlock system. Additional exemptions exist for convicted offenders whose job requires them to drive a vehicle they do not own. In those instances, offenders must submit proof to the court that their employer is aware of the DUI conviction and offenders are restricted to driving job-related vehicles only for fulfilling job duties.

[10]After further analysis, using publicly available docket sheets, the cases in the extreme high end of the range were determined to be legitimate. Docket sheets indicated that these individuals failed to appear at hearings and had bench warrants issued for their arrest. However, they were not apprehended for years (in some cases decades) and were sentenced following their apprehension.

of receiving a diversion sentence, as well as the influence of social contexts on criminal behavior. We used Social Explorer to obtain data from the 2006–2010 American Community Survey 5-year estimates. This study includes measures of each county's population density, percentage of non-white residents per county, percentage of residents below the poverty line, and percentage of the county's population who were males between the ages of 18 and 24.

We also included measures of different resources available to counties in Pennsylvania for the treatment of alcohol and drug offenders. Specifically, we collected information on the amount of state funding provided to each county for drug and alcohol restrictive intermediate punishment programs from the Pennsylvania Commission on Crime and Delinquency (PCCD) website. We obtained a complete list of the drug and alcohol treatment facilities in each county from the Pennsylvania Department of Health's website. Using these sources, we calculated a count of the number of treatment facilities in each county. In order to control for differences in county population, we created a ratio to depict the number of treatment centers per 10,000 residents in each county.

Dependent variables

This study has two dependent measures. The first outcome measure is a dichotomous variable indicating whether the offender was diverted to an ARD program (59.9% of the sample) or sentenced for a guilty conviction (40.1% of the sample).

The second outcome measure is recidivism. We operationalized recidivism as a rearrest within 4 years of the final disposition. Research generally shows that two-thirds of offenders are rearrested within the first three years following release, and the use of minimal 3-year follow-up periods was recommended for consistency in the field by the U.S. National Advisory Commission on Criminal Justice Standards and Goals after comparing results from different studies that used various follow-up periods (Langan & Levin, 2002; U.S. National Advisory Commission on Criminal Justice Standards and Goals 1973). Although 3-year and shorter follow-up periods allow for more consistent comparisons with existing literature and are able to account for the majority of recidivism on average (Homel, 1981), we use a 4-year follow-up period because the longer period provides a more complete picture of recidivism (Cavaiola, Strohmetz, & Abreo, 2007). Additionally, our data include offenders who may not have completed the terms of their sentence until 2008. We obtained arrest records from the State Police in 2014, censoring the possible follow-up period at a maximum of 6 years. About one-third of the samples were rearrested within four years of their disposition for the first-time DUI offense.

The data lacked an indicator of when an offender was officially released from jail or probation, and rearrest was possible while on probation. Pennsylvania statutes indicate that a first-time DUI offender may be sentenced to up to 72 hours of imprisonment and a minimum of 6 months' probation. Additionally, those sentenced to ARD programs may undergo supervision between 6 months and 1 year. Extending the recidivism analysis to 4 years ensures a full 3-year follow-up period for individuals

successfully completing the terms of their sentence while also capturing recidivism for offenders who failed prior to the completion of their probation sentence.[11]

This study uses two-level, hierarchical generalized linear modeling (HGLM) with a logit link function (see Raudenbush & Bryk, 2002) to nest individual offenders within 60 judicial districts to predict both the selection into ARD and subsequent recidivism.[12] In general, each judicial district in the Courts of Common Pleas processes all cases from a single county. However, seven of the districts are composed of two counties.[13] In order to control for additional dependence that results from offenders being processed through the same judicial district, we combined these counties at the second level. This structure allows a quasi-contextual analysis of county demographics. The county-level variables were used in all of the HGLM models discussed below. However, in general they were not statistically significant in any of the HGLM models and are mentioned only when they were significant.

Results

The results section begins with an analysis of the sentencing of first-time DUI offenders to ARD or to another outcome if they were found guilty. The second part of the results section discusses the effect of the sentencing decision on subsequent recidivism.

Sentencing of offenders

Bivariate analyses

Bivariate analyses revealed significant differences in offender demographics for those who were convicted and those who received ARD (see Table 1). Females, whites, and younger offenders were more likely to be sentenced to ARD than males, non-whites, and older offenders. Individuals sentenced to ARD had fewer prior arrests than individuals sentenced for a guilty conviction.[14]

Offenders with no prior non-DUI traffic arrests were more likely than individuals with a prior arrest for non-DUI offenses to receive ARD. Individuals who were first arrested at a younger age were less likely to receive a diverted sentenced than were those who were first arrested at older ages.[15]

[11]The data do not include information regarding technical violations. Consequently, we are able to capture only those probationers who committed a new crime for which they were rearrested and charged. We do not capture offenders who were resentenced through a probation revocation.

[12]Selection models, such as propensity score matching, are preferable when the characteristics that influence selection into treatment are different from the characteristics that influence subsequent outcomes. For purposes of this study, the variables that predict treatment (ARD) are the same variables that predict subsequent behavior (recidivism). Consequently, we opted to use HGLM rather than a selection model in order to account for dependence arising from the county-level.

[13]Level two measures for judicial districts that cover two counties were created by taking the average of the specific variable across both counties.

[14]We used a four-level categorical variable for total prior arrests due to the large number of offenders with no prior arrests. In addition, a categorical variable allows for a more in-depth investigation into the differences between no prior arrests, one prior arrest, and multiple prior arrests.

[15]In the models, age at first arrest was included as a categorical variable. The non-normal distribution, combined with the previous decision to include age at offense as a categorical variable, indicated that a categorical variable for age at first arrest provided a more effective presentation of the effects of the age-crime trajectory and DUI sentencing.

Table 1. Bivariate statistics by type of disposition.

(Guilty $N = 13{,}675$; ARD $N = 20{,}460$)			
	Guilty	ARD	Sig.[a]
Offender characteristics			
Gender			***
Male	0.43	0.57	
Female	0.31	0.69	
Race			***
White	0.39	0.61	
Black	0.56	0.44	
Age at offense	31.84	32.05	
Prior arrests	1.37	0.38	***
Age at first arrest	27.10	29.67	***
Prior other traffic arrest			***
No	0.39	0.61	
Yes	0.73	0.27	
Case disposition year			***
2006	0.47	0.53	
2007	0.35	0.65	
Days to sentence	310.0	323.2	***
Type of DUI			***
Drug	0.65	0.35	
Alcohol–BAC <.10%	0.42	0.58	
Alcohol–BAC .10%–.159%	0.37	0.63	
Alcohol–BAC ≥ .16%	0.38	0.62	
Total conviction or diversion charges	2.19	2.61	***
County characteristics			
Population density (ln)	6.14	6.14	
Percent White (ln)	4.48	4.48	
Percent male 18–24 (1/*x*^2)	0.05	0.05	
Percent poverty 18–64 (ln)	2.20	2.24	***
Treatment centers			
Per 10,000 residents (ln)	−0.707	−0.690	***
Received D&A RIP funding			
No	0.40	0.60	
Yes	0.40	0.60	
Received CIP funding			***
No	0.30	0.70	
Yes	0.40	0.60	
Percent of CIP funding used for DUI	41.75	36.38	***

[a] χ^2 tests were used for categorical variables and *t*-tests were used for continuous variables. Percentages reported for categorical variables and means reported for continuous variables.
* $p < .05$.
** $p < .01$.
*** $p < .001$.

Offense characteristics and case processing characteristics also varied by type of sentence. The time to punishment was longer for individuals receiving diversion than for individuals sentenced for a guilty conviction, although the mean for these two groups varied by only 2 weeks. ARD was more likely to be given for alcohol offenders than for drug offenders. Surprisingly, among alcohol-impaired offenders, ARD was more likely to be imposed for offenders with medium or high BAC levels than for individuals with a low BAC level.

HGLM analyses

After analyzing both the comparisons of standard errors and significance tests of randomized variance components, we decided the final model should include random

Table 2. Logistic HLM predicting ARD for first-time DUI offenders ($N = 34{,}135$).

Variable	Coef.		SE	Odds ratio
Level-1 offenders				
Intercept	−3.070	***	0.360	0.046
Male	−0.428	***	0.035	0.652
White	0.230	***	0.056	1.258
Age at offense				
<21	−0.724	***	0.142	0.485
21–25	−0.658	***	0.117	0.518
26–30	−0.520	***	0.089	0.595
31–35	−0.377	**	0.100	0.686
36–40	−0.393	***	0.094	0.675
41–45	−0.291	**	0.089	0.747
46–50	−0.245	*	0.097	0.783
No. prior arrests				
0 prior arrest	2.597	***	0.165	13.426
1 prior arrest	1.808	***	0.121	6.097
2 prior arrests	1.134	***	0.104	3.108
Prior other traffic arrest	−0.444	***	0.096	0.641
Age at first arrest				
<16	0.609	***	0.150	1.839
16–20	0.379	***	0.077	1.461
21–24	0.231	**	0.073	1.260
Days to sentencing	0.000	**	0.000	1.000
Type of DUI				
Drug	−0.705	***	0.131	0.494
Alcohol–BAC .10–.16	0.196		0.128	1.217
Alcohol–BAC >.16	0.074		0.125	1.077
Multiple charges convicted or diverted	1.977	***	0.315	7.223
Level-2 judicial district				
Received PCCD CIP funding	−0.438		0.607	0.646
Percent of CIP funds used for DUI	−0.003		0.005	0.997
Ln population density	0.301		0.229	1.351
Ln percent White	3.082		2.473	21.801
Transformed percent male aged 18–24	−10.611		11.009	0.000
Ln percent poverty aged 18–64	0.021		0.633	1.021
Ln treatment centers per 10,000 residents	0.001		0.337	1.001

*$p < .05$.
**$p < .01$.
***$p < .001$.

coefficients for age at offense, number of prior arrests, type of DUI, age at first arrest, and multiple conviction or diversion charges.

The second level of the hierarchical models for this study includes characteristics of the court and community of the judicial district in which offenders are sentenced. The sample of offenders is nested within 60 different judicial districts. Due to problems with collinearity of variables at level-2, the models include only two measures for PCCD funding, four measures from the Census demographic variables, and one indicator of available treatment (Table 2).

White offenders were more likely than non-white offenders to be processed through ARD rather than to be sentenced for a guilty conviction. This finding is consistent with our hypotheses and with prior research in the general sentencing literature (Steen, Engen, & Gainy, 2005; Steffensmeier, Allan, Harer, & Streifel, 1989) and studies of DUI offenders (Cherpitel & Bond, 2003). In addition, these findings are robust, even controlling for prior number of arrests. Previous authors have suggested

that race is confounded with prior record (Frase, 2009), but our findings suggest that race has an independent effect above the effect of prior arrest record.

Consistent with prior research, males were a significantly larger part of the sample for this study (Schwartz, 2008). Also, consistent with expectations, female offenders were more likely than male offenders to receive ARD for their first-time DUI offense, a result that suggests judges view females as more likely to be rehabilitated and a lesser threat to recidivate.

Contrary to what was expected, age appeared to have a linear effect on the odds of receiving ARD. Our original hypothesis posited that the youngest and oldest offenders would be least likely to receive ARD, implying a curvilinear effect between age and the odds of sentence outcomes. In fact, results indicated that increasing age was related to an increase in the odds of receiving ARD. The youngest offenders (those under 21) were about half as likely to receive ARD as the oldest offenders (those older than 50). Additional rotations of the reference category for age at offense revealed that there were no significant differences in the effect of age on the odds of receiving ARD for offenders between the ages of 16 and 30. This finding does not follow patterns found among general relationships between age and sentencing (Demuth & Steffensmeier, 2004), and suggests that the age of a DUI offender influences judges' decisions at sentencing differently than it would for non-DUI offenders.

One of the strongest findings was that more serious prior records resulted in a decrease in the odds of receiving ARD. Although prior DUI convictions are the only offenses that by statute disqualify offenders from being ARD eligible, judges clearly took into consideration all prior arrests when deciding whether a DUI offender should receive ARD. Each increase in the number of prior arrests was related to a decrease in the odds of receiving ARD. Moreover, offenders with a prior non-DUI traffic arrest had 36% lower odds than offenders without a prior non-DUI traffic arrest. These findings suggest that judges consider not only the general trajectory of criminal behavior in an offender's past, but also the specific type of offenses in an offender's criminal history.

No support was found for an effect of BAC level on the likelihood of receiving ARD.

However, the type of intoxication associated with a DUI offense was significant. Offenders charged with a drug-impaired DUI had 51% lower odds of receiving ARD than offenders charged with a general alcohol-impaired DUI offense.

There were no significant predictors at level-2. This finding suggests that the assignment to ARD is based largely on individual offender and case characteristics rather than community-based differences. It is possible that there are other community-level variables that predict assignment to ARD, but our broad measures of population density, demographics, and treatment availability were not significant.

Recidivism

The second portion of analyses addresses postsentencing criminal behaviors of first-time DUI offenders. The models in this section answer the question of what offense, offender, and county characteristics are related to rearrest for a criminal offense within 4 years after sentencing for a first-time DUI offense. The analysis begins with bivariate statistics showing the characteristics of offenders who recidivate and those who do

Table 3. Descriptive statistics by 4-year recidivism.

(Clean $N = 23{,}660$; arrest $N = 10{,}475$)

	Clean	Arrest	Sig.[a]
Offender characteristics			
Case disposition			***
Guilty	0.65	0.35	
ARD	0.72	0.28	
Gender			***
Male	0.68	0.32	
Female	0.72	0.28	
Race			***
White	0.70	0.30	
Non-White	0.62	0.38	
Age at offense	33.10	29.10	***
Prior arrests	0.60	1.10	***
Prior other traffic arrest			***
No	0.70	0.30	
Yes	0.56	0.44	
Age at first arrest	29.90	25.70	***
Case disposition year			**
2006	0.70	0.30	
2007	0.69	0.31	
Days to sentence	324.40	305.60	***
Type of DUI			***
Drug	0.55	0.45	
Alcohol–BAC <.10%	0.67	0.33	
Alcohol–BAC .10%–.159%	0.72	0.28	
Alcohol–BAC ≥ .16%	0.71	0.29	
Total conviction or diversion charges	2.40	2.50	***
County characteristics			
Population density (ln)	6.14	6.14	
Percent White (ln)	4.48	4.48	
Percent male 18–24 (1/*x*^2)	0.05	0.05	***
Percent poverty 18–64 (ln)	2.22	2.24	***
Treatment centers (per 10,000 residents)	−0.70	−0.69	
Received D&A RIP funding			
No	0.69	0.31	
Yes	0.69	0.31	
Received CIP funding			*
No	0.66	0.34	
Yes	0.69	0.31	
Percent of CIP funding used for DUI	0.38	0.40	***

[a] χ^2 tests were used for categorical variables and *t*-tests were used for continuous variables. Percentages reported for categorical variables and means reported for continuous variables.

*$p < .05$.

**$p < .01$.

***$p < .001$.

not recidivate. Descriptive statistics are followed by HGLM logistic models that nest individual offenders within judicial districts.

Bivariate analyses

Table 3 presents bivariate statistics for the relationships between offense characteristics and recidivism. Most importantly for this study, there were statistically significant differences in recidivism by type of disposition. Offenders sentenced for a guilty conviction were more likely than offenders receiving ARD to recidivate.

Demographic profiles of those who recidivated and those who did not were significantly different. Males, non-whites, and young offenders were more likely than

females, whites, and older offenders to recidivate. Offenders with more prior arrests were more likely than offenders with fewer prior arrests to recidivate.

Offenders with a prior traffic arrest were more likely than offenders without a prior traffic arrest record to recidivate. Offenders who began engaging in criminal behavior at an earlier age were more likely to recidivate than those who started offending at an older age.

Offenders arrested for a drug-impaired DUI were more likely than those arrested for alcohol-impaired DUIs to recidivate. Contrary to expectations, offenders with lower levels of BAC were more likely than offenders with higher levels of BAC to recidivate. Overall recidivism rates were relatively stable across both years of data (1.6% difference).

HGLM analyses

We conducted initial models using fixed effects for all level-1 variables to determine the need for random coefficients for different variables in the model. There was significantly less variance in the effects of variables across judicial districts for recidivism than was true for the predictions of sentencing presented earlier. In order to confirm the findings from comparisons of model-based and robust standard errors, we also analyzed a model including random coefficients for all level-1 variables. Significance tests of variance components further supported the decision of which variables should be fixed in the model. It was not surprising to find little variance in the correlates of recidivism over different judicial districts, in that criminal behavior is influenced by the characteristics of individual offenders, and those effects are likely to be similar across geographic space. The final level-1 model included random coefficients only for the diversion and type of DUI (Table 4).

The main effect for diversion was significant. However, significant effects differed for certain gender and racial categories in the sample. There was a significant main effect for race and recidivism. The odds ratio of recidivism for whites sentenced to a guilty conviction compared to blacks sentenced to a guilty conviction was .749 while the odds ratio of recidivism for whites sentenced to ARD compared to blacks sentenced to ARD was 1.215. The findings for race and recidivism indicate that ARD had a significant, negative effect on recidivism for non-white offenders.

Males and females sentenced for a guilty conviction were found to have no significant difference in recidivism. However, males receiving ARD were significantly more likely to recidivate than females receiving ARD (OR = 1.117). In order to better understand the contingent labeling effects of diversion, Figure 1 presents the predicted probabilities of recidivism for the four different racial x gender categories. Differences in recidivism by diversion/guilty conviction for white males were negligible, while non-white males sentenced for a guilty conviction were more likely to recidivate than non-white males processed through ARD. Similarly, female offenders who were sentenced for a guilty conviction were significantly more likely to recidivate than females processed through ARD, regardless of their race. However, the magnitude of the differences in recidivism was the greatest for non-white females, consistent with the cumulative disadvantage hypothesis.

Table 4. Full logistic HLM predicting recidivism ($N = 34{,}135$).

Variable	Coef.		SE	Odds ratio
Level-1 offenders				
Intercept	–0.548	***	0.109	0.578
Accelerated rehabilitative disposition	–0.370	**	0.124	0.691
Male	–0.023		0.049	0.977
White	–0.289	***	0.061	0.749
Age at offense				
<21	1.792	***	0.081	5.999
21–25	1.287	***	0.068	3.621
26–30	0.973	***	0.064	2.645
31–35	0.864	***	0.067	2.372
36–40	0.790	***	0.069	2.203
41–45	0.558	***	0.070	1.748
46–50	0.513	***	0.074	1.670
No. prior arrests				
0 prior arrests	–1.079	***	0.056	0.340
1 prior arrest	–0.926	***	0.052	0.396
2 prior arrests	–0.521	***	0.059	0.594
Prior other traffic arrest	0.084		0.072	1.088
Age at first arrest				
<16	0.078		0.105	1.081
16–20	–0.185	**	0.105	0.831
21–24	–0.131	**	0.051	0.877
Days to sentencing	0.000	***	0.044	1.000
Type of DUI				
Drug	0.354	***	0.064	1.425
Alcohol–BAC .10–.16	0.032		0.050	1.032
Alcohol–BAC >.16	0.104	*	0.043	1.110
Multiple charges convicted or diverted	0.011		0.034	1.011
Diversion* Male	0.163	*	0.061	1.177
Diversion* White	0.195	*	0.092	1.215
Level-2 judicial district				
Received PCCD CIP funding	–0.215		0.145	0.806
Percent of CIP funds used for DUI	0.001		0.001	1.001
Ln population density	0.014		0.057	1.014
Ln percent White	0.350		0.602	1.419
Transformed percent male aged 18–24	–0.753		2.622	0.471
Ln percent poverty aged 18–64	–0.145		0.155	0.865
Ln treatment centers per 10,000 residents	0.057		0.080	1.058

**$p < .01$.
*$p < .01$.
***$p < .001$.

Older offenders were significantly less likely than younger offenders to recidivate. Offenders who committed a DUI before the legal drinking age of 21 were the most likely to recidivate, followed by a nearly linear decrease with each additional 5 years of age.

Offenders with more serious prior records were more likely than offenders with less serious criminal records to recidivate. Offenders with no prior arrests had 66% lower odds of recidivism than offenders with three or more prior arrests.

Blood alcohol content was only slightly predictive of recidivism. However, offenders arrested for driving under the influence of drugs were significantly more likely than offenders arrested for driving under the influence of alcohol to recidivate.

The effect of the speed of case processing indicated that individuals who had their cases processed more quickly were less likely to recidivate; however, the effect (OR = 1.000) was substantively not important. These findings are consistent with prior

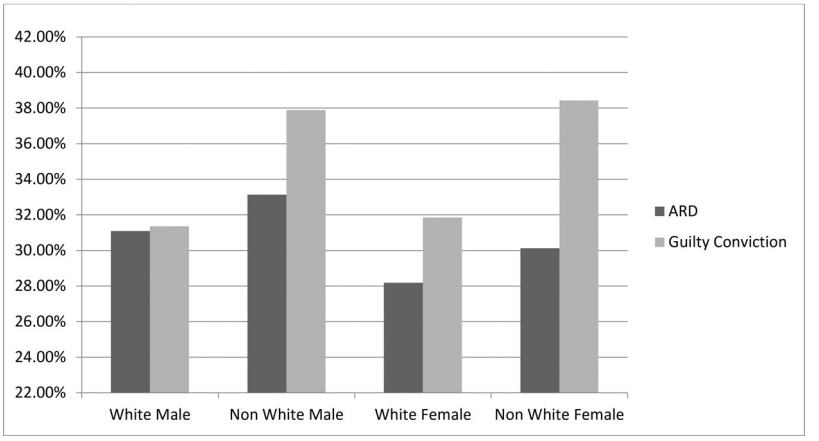

Figure 1. Predicted probabilities of recidivism.

research that has found no independent effect for the time to punishment and recidivism with DUI offenders (Yu, 1994).

Once again, we found level-2 variables to be nonsignificant in predictions of recidivism. This finding is consistent with prior research analyzing the effect of criminal labels on recidivism (Chiricos et al., 2007).

Discussion

To our knowledge, this study is the first comprehensive statewide analysis of the sentencing and recidivism of first-time DUI offenders. Overall, results were generally consistent with prior findings, suggesting that some groups are more likely than others to be diverted from the criminal justice system. Our unique findings relate to the effects on women and minorities of being labeled criminal in terms of their subsequent recidivism.

Sentencing

Consistent with prior criminology research, white offenders and female offenders were more likely than nonwhite offenders and male offenders to receive more lenient sanctions. The results also indicate that with increasing age, an offender's odds of receiving ARD increased. One exception was for offenders between the ages 36 and 40, for whom there was a slight decrease in the odds of receiving ARD compared to offenders who were younger or older. This exception may reflect increases in life stresses during adulthood or the transitioning out of parenting roles as children age. In both instances, individuals may be more likely to increase their consumption of alcohol, consequently increasing the risk of DUI offending.

Offenders with more serious prior records were less likely than offenders with less serious prior records to receive ARD. Prosecutors and judges appeared to strongly consider an offender's past criminal behaviors when deciding whether or not an individual should receive diversion.

BAC level did not appear to be an important factor in prosecutors' and judges' decision making and did not appear to be a proxy for seriousness. However, it appeared that drug-impaired offenders were generally viewed as more serious than alcohol-impaired offenders, and they were sentenced for a guilty conviction at a significantly higher rate.

Consistent with research analyzing the effects of a criminal record on recidivism (Chiricos et al., 2007) and the sentencing of offenders in Pennsylvania to intermediate punishments (Bowles, 2011), there were no significant county-level variables that could predict whether or not an offender received ARD.

Recidivism

States across the country have implemented a series of changes to their DUI laws (Lerner, 2011), but very few studies have analyzed the effectiveness of these changes. This study serves as a starting point for evaluating the effectiveness of programs aimed at DUI offenders. Controlling for selection, the findings of this study indicate that a complex relationship exists between programs like ARD and recidivism, compared to the standard guilty conviction.

As expected, we found that offenders sentenced to ARD were less likely to recidivate than offenders receiving a guilty conviction. In addition, we found significant interactive effects for the impact of criminal labels by gender and race. Regarding gender, the probability of recidivism was significantly lower for females who received ARD compared to males who received ARD, suggesting that the permanent criminal label that follows a conviction had a larger effect on females than males. Regarding race, white offenders were always less likely than minority offenders to recidivate, and there were no differences in recidivism for whites receiving ARD and whites sentenced for a guilty conviction. However, non-whites receiving ARD were significantly less likely than non-whites sentenced for a guilty conviction to recidivate, suggesting, as with gender, that the permanent criminal label had larger effects on one group (minorities) than on the other (whites). In combination, the largest negative effects of a guilty conviction were on minority females.

Older offenders were less likely than younger offenders to recidivate. These findings are consistent with general criminological research on the age-crime curve, which indicates that the propensity for engaging in criminal behavior decreases through the life course.

More serious offenders were more likely than less serious offenders to recidivate. In both cases, individuals with more prior arrests were more likely to recidivate. The deterrent effects of punishment are likely to be less salient for individuals who have previously been processed through the criminal justice system. That is, if previous punishments failed to curb criminal behavior, it is not likely that sanctions for a DUI offense would alter an individual's behavior. However, because we still found significant effects for ARD while controlling for prior arrests, there is reason to believe that a DUI conviction has unique negative effects on future outcomes.

BAC was largely not predictive of recidivism. The only meaningful differences in recidivism for type of DUI offense were between drug-impaired and alcohol-impaired

offenders. Thus, BAC is not likely to be a proxy for either the seriousness of the offense or the criminality of the offender. This finding calls into question the current graduated DUI laws in Pennsylvania (and other states), in which BAC level is a partial determinant of type of sanction.

Comparison of the findings regarding sentencing and recidivism indicate that prosecutors and judges are, in general, considering predictive characteristics in deciding whether or not an offender should receive ARD. Prior record, age, gender, and race all appear to be significant considerations at sentencing, and they are also highly predictive of recidivism. The use of race at sentencing is highly problematic, although decision makers might be using factors highly correlated with race rather than race itself. Similarly, the use of gender at sentencing is problematic, although, as with race, judges might be using factors highly correlated with gender rather than gender itself.

The general consistency between predictors of sentencing and recidivism indicates that, in general, the correct offenders are receiving ARD. However, the findings of this study suggest that although judges are generally effective at identifying the individuals least likely to recidivate, they may overestimate the likelihood of recidivism for other individuals. The result of these perceptions is a near 50-50 split in the processing of offenders through ARD programs and sentencing of offenders for a guilty conviction. This possible overuse of guilty convictions for DUI conflicts with the evidence from this study indicating that ARD programs do not increase recidivism and could be useful alternative sanctions for all DUI offenders.

Theoretical implications

This study sought to analyze DUI offenders through the lenses of deterrence, reintegrative shaming, and contingent labeling. Application of these theories to DUI offenders provides a unique opportunity to analyze the appropriateness of these theories to a new population of offenders.

The fact that the likelihood of recidivism was lower for offenders processed through an ARD program and for those who were sentenced for a guilty conviction suggests that the specific deterrent effect of punishment for DUI is similar for the two options. However, the consistent finding that ARD was more likely than guilty convictions to reduce recidivism provides support for the notion that a mere arrest is sufficient to deter offending (Grasmick & Bursik, 1990; Shapiro & Votey, 1984) while a permanent criminal label may invoke shame and social exclusion that motivates future offending (Braithwaite, 2001; Chiricos et al., 2007).

Reintegrative shaming

The lack of an effect for severity of punishment may be due to the possibility that harsh punishments have a positive effect on recidivism. Reintegrative shaming posits that permanent criminal records may inhibit reintegration into prosocial roles following arrest and punishment for an offense, because of the stigma and exclusion associated with criminal labels. This theory provides some explanation for why offenders may recidivate. Braithwaite (2001) indicates that there may be fundamental differences in the effect of a criminal label depending on the type of crime and its acceptability in society. Prior

research indicates that individuals fear the shame that would result from committing a DUI as much if not more than the potential legal sanctions (Grasmick & Bursik, 1990). The findings from this study provide substantial support for the negative effects of stigmatizing shaming associated with a permanent DUI offender label.

This study provides support for the notion that DUI criminal labels have a unique effect on life chances and recidivism, in that the findings for recidivism in this study were net of general criminal history. Prior research on criminal labels has tended to focus on serious offenses such as felony convictions, convictions resulting in incarceration, or violent offenses (Bushway & Apel, 2012; Chiricos et al., 2007; Pager, 2003). Research outside of the United States finds that DUI offending is associated with post-sentencing debt problems, divorce, and income instability (Oksanen, Aaltonen, & Kivivuori, 2015). Similar collateral effects may accompany a DUI conviction for some offenders in the United States. Future research should examine the relationship between DUI convictions and the life course to better understand the implications of permanent labels for first-time DUI offenders.

Contingent labeling

While ARD, in general, appears to be better at reducing recidivism than a guilty conviction, interactions indicated that the effect varied by demographic groups. Female offenders and minorities were more likely to recidivate if they were sentenced for a guilty conviction than if they had received ARD. These findings are consistent with prior studies analyzing the differential effects of criminal labels by gender and race (Bernburg & Krohn, 2003; Chiricos et al., 2007; Laub & Sampson, 2003) Despite the recent resurgence of studies analyzing labeling theory, there are still few studies analyzing how criminal labels affect outcomes for different demographic groups. Given the unique characteristics of the DUI offending population, additional research should continue to examine these relationships.

Despite increasing social changes in the gender roles for females, it appears that females may still face greater stigma for drinking and drinking and for driving than their male counterparts, providing additional support for the cumulative disadvantage hypothesis. Similarly, it appears that nonwhites with a criminal record face greater stigma than their white counterparts. Taken together, these findings indicate that policies focused on the sentencing and rehabilitation of offenders should take into consideration the characteristics of offenders, and how punishments may have varying effects across groups.

The results indicate that diversion may be an effective alternative for females and minorities. Studies that attempt to determine the overall effectiveness of diversion programs may incorrectly conclude that the policies for all groups are ineffective. Rather than approaching programs with a "what works?" approach, this study suggests that effects are contingent and that the more appropriate question is "what works for whom" (Andrews & Bonta, 2003).

Policy implications

Support for harsh DUI penalties often focuses on the risk that drivers pose to other drivers or pedestrians. Proponents of harsher sentences for DUI offenses tend to focus

on these potential victims and the seemingly grave risk to those involved in DUI accidents, even though the overall fatality rate from DUI offenses is relatively low given the high base rate of miles of impaired driving in the United States (Bergen et al., 2011). Also, a majority of those killed in impaired driving accidents are the drivers themselves, those who willingly enter the vehicle being driven by someone who they know is impaired, or those who are at a higher risk because they themselves are drunk (e.g. intoxicated pedestrians) (Fell & Nash, 1989).

The findings from this study do not suggest that lesser punishments should be afforded to those drivers who cause injury or death.[16] Instead, this study suggests that those offenders who do not cause injury or death should not be punished with the same severity. Correlates of this population of offenders evaluated in this study suggest that DUI offenders, in general, do not require harsh sanctions for effective rehabilitation. In addition, our initial analyses found that selection into ARD was dependent, at least partially, on extra-legal characteristics including gender and race and that, therefore, harsher sentences may be unfair.

Moreover, it appears that the harshest penalties for DUI offenders are not the most effective. At a minimum, this study revealed there were no negative effects from using diversion. Models without interactions found a null effect, that is, no difference in the probability of recidivism for offenders receiving ARD and those who did not receive ARD. However, those findings were likely driven largely by the substantial portion of the sample who were white males. On the other hand, the results indicate that for some offenders, ARD appears to significantly reduce the likelihood of recidivism. This is still an open question, however, because offenders receiving ARD and those sentenced following a guilty verdict may be different on characteristics that we were unable to measure. However, because our models controlled for all of the significant variables related to selection (as identified in the analysis predicting ARD), selection bias based on observable characteristics is likely minimized.

Given the substantial costs of incarceration and community supervision, this study provides support for the use of alternative sanctions such as ARD. While discretion for prosecutors and judges does allow for the application of severe punishments to those perceived as most deserving (e.g. those involved in serious accidents or those who have a long history of criminal behavior), there is little evidence to support the imposition of permanent criminal records for the majority of first-time DUI offenders. Policies that encourage the use of diversion for first-time DUI offenders could increase consistency in sentencing across jurisdictions while avoiding the potentially harmful effect of a DUI criminal label.

Limitations

This study has three limitations. First, the absence of complete data from Philadelphia undermines our ability to make the strongest possible comparison between urban and rural jurisdictions. Despite this limitation, the data do include a large sample of offenders from Allegheny County (Pittsburgh) as well as from several other urban counties.

[16]The sample excluded the serious offenders who were involved in an accident causing serious bodily injury or death.

Second, data regarding criminal prior records contain only offenses in which an arrest was made and the case was processed through a Court of Common Pleas. Thus, the sample does not include information on offenders' prior driving behaviors unless the offense was charged with other, more serious offenses. As a result, this study cannot make firm conclusions about the patterns of risky driving behaviors, and how those patterns of traffic offenses may be related to sentencing and recidivism.

Third, data on the substance use and substance dependency of offenders were not available. While levels of dependency do not statutorily disqualify offenders from the ARD program, prosecutors and judges may be less likely to grant access to alternative sanctions if they believe the offender is less likely to be rehabilitated due to an underlying substance problem, a hypothesis that could not be tested in the present study. Similarly, underlying alcohol use disorders may moderate the effectiveness of ARD. Future research should examine how the effects of different types of punishment (e.g. ARD vs. guilty convictions) may differ between individuals with an alcohol use disorder and individuals who infrequently engage in excessive drinking in terms of both overall recidivism and of DUI-specific recidivism.

Conclusion

Despite these limitations, this study suggests diversion dispositions and guilty convictions equally affected recidivism for white males while diversion dispositions significantly reduced recidivism for non-white males and for white and non-white females. Rather than supporting severe punishments for DUI offenders, the findings of this study suggest that offenders, at worst, have no difference in recidivism based on type of disposition, and, at best, benefit from the ability to expunge their criminal record. Beyond these policy implications, this study provided a unique opportunity to test, through a comparison of ARD and sentencing after conviction, how labeling interacts with gender and race. Our research suggests that these groups suffer from cumulative disadvantage. Future research should test whether cumulative disadvantage continues with repeat offenders, and it should attempt to identify the most effective treatment strategies to reduce the risks caused by DUI recidivism.

Disclosure statement

No potential conflict of interest was reported by the authors.

Notes on contributors

Lauren K. Knoth earned her PhD from the department of criminology at Penn State University. She currently conducts public policy research related to criminal justice in Washington State.

R. Barry Ruback is a professor of criminology and sociology at Penn State University. He is currently studying juvenile victimization and offending as a BJS Visiting Fellow.

References

Agan, A., & Starr, S. (2017). Ban the box, criminal records, and racial discrimination: A field experiment. *The Quarterly Journal of Economics*, *133*(1), 191–235. doi:10.1093/qje/qjx028

Anda, R. F., Remington, P. L., & Williamson, D. F. (1986). A sobering perspective on a lower blood alcohol limit. *The Journal of the American Medical Association*, *256*(23), 3213. doi:10.1001/jama.1986.03380230037007

Andrews, D. A., & Bonta, J. (2003). *The psychology of criminal conduct* (3rd ed.). Cincinnati, OH: Anderson.

Bernburg, J. G., & Krohn, M. D. (2003). Labeling, life chances, and adult crime: The direct and indirect effects of official intervention in adolescence on crime in early adulthood. *Criminology*, *41*(4), 1287–1318. doi:10.1111/j.1745-9125.2003.tb01020.x

Bergen, G., Shults, R. A., & Rudd, R. A. (2011). Vital signs: Alcohol-impaired driving among adults – United States, 2010. *Morbidity and Mortality Weekly Report*, *60*(39), 1351–1356.

Blumenthal, M., & Laurence Ross, H. (1973). *Two experimental studies of traffic law: Vol. 1. The effect of legal sanctions on DWI offenders.* Technical Report DOT-HS-800-825. Washington, DC: National Highway Traffic Safety Administration.

Bowles, S. (2011). *Multilevel predictors of the imposition of intermediate punishments* (Unpublished master's thesis). The Pennsylvania State University.

Braithwaite, J. (1989). *Crime, shame, and reintegration*. Cambridge, UK: Cambridge University Press.

Braithwaite, J. (2001). *Shame management through reintegration*. Cambridge, MA: Cambridge University Press.

Bushway, S. D., & Apel, R. (2012). A signaling perspective on employment-based reentry programming: Training completion as a desistance signal. *Criminology & Public Policy*, *11*(1), 21–50.

Cavaiola, A. A., Strohmetz, D. B., & Abreo, S. D. (2007). Characteristics of DUI recidivists: A 12-year follow-up study of first time DUI offenders. *Addictive Behaviors*, *32*(4), 855–861. doi:10.1016/j.addbeh.2006.06.029

Cherpitel, C. J., & Bond, J. (2003). DUI recidivism: A comparison of Mexican Americans and White in a Northern California County. *Addictive Behaviors*, *28*(5), 963–969. doi:10.1016/S0306-4603(01)00293-3

Chiricos, T. E. D., Barrick, K., Bales, W., & Bontrager, S. (2007). The labeling of convicted felons and its consequences for recidivism. *Criminology*, *45*(3), 547–581. doi:10.1111/j.1745-9125.2007.00089.x

DeMichele, M., Lowe, N. C., & Payne, B. K. (2013). A criminological approach to explain chronic drunk driving. *American Journal of Criminal Justice*, *39*(2), 292–314. doi:10.1007/s12103-013-9216-4

DeMichele, M., & Payne, B. (2013). If I had a hammer, I would not use it to control drunk driving. *Criminology and Public Policy*, *12*(2), 213–225. doi:10.1111/1745-9133.12039

Demuth, S., & Steffensmeier, D. (2004). Ethnicity effects on sentence outcomes in large urban courts: Comparisons among white, black, and Hispanic defendants. *Social Science Quarterly*, *85*(4), 994–1011. doi:10.1111/j.0038-4941.2004.00255.x

Fell, James C., & Carl E. Nash. 1989. The nature of the alcohol problem in U.S. fatal crashes. *Health Education Behavior 16*(3), 335–343.

Fell, J. C., & R. B. Voas. 2006. Mothers Against Drunk Driving (MADD): The First 25 Years. *Traffic Injury Prevention*, *7*, 195–212, doi:10.1080/15389580600727705

Frase, R. (2009). What explains persistent racial disproportionality in Minnesota's prison and jail populations. *Crime and Justice*, *38*(1), 201–280. doi:10.1086/599199

Fields, L. L. (1994). *Pretrial diversion: A solution to California's drunk-driving problem*. Federal Probation, *58*, 20.

Grasmick, H. G., & Bursik Jr, R. J. (1990). Conscience, significant others, and rational choice: Extending the deterrence model. *Law and society review*, 837–861. doi:10.2307/3053861.

Giordano, P. C., Stephan, A. C., & Allen, R. L. (2004). A long-term follow-up of serious adolescent female offenders. In M. Putallaz & K. L. Bierman (Eds.), *Aggression, antisocial behavior, and violence among girls: A developmental perspective* (pp. 186–202). New York: The Guilford Press.

Harris, N. (2001). *Shame management through reintegration*. Cambridge, MA: Cambridge University Press.

Homel, R. (1981). Penalties and the drink-driver: A study of one thousand offenders. *Australia and New Zealand Journal of Criminology*, *14*, 225–241.

Langan, P. A., & Levin, D. J. (2002). *Recidivism of prisoners released in 1994*. NCJ Report NCJ-193427. Washington, D.C.: BJS.

Laub, J. H., & Sampson, R. J. (2003). *Shared beginnings, divergent lives: delinquent boys to age 70*. Cambridge, MA: Harvard University Press.

Lerner, B. H. (2011). *One for the road: Drunk driving since 1900*. Baltimore, MD: Johns Hopkins University Press.

Liu, S., Siegel, P. Z., Brewer, R. D., Mokdad, A. H., Sleet, D. A., & Serdula, M. (1997). Prevalence of alcohol-impaired driving: Results from a National self-reported survey of health behaviors. *The Journal of the American Medical Association*, *277*(2), 122–125. doi:10.1001/jama.277.2.122

MacDonald, S., & Mann, R. E. (1996). Distinguishing causes and correlates of drinking and driving. *Contemporary Drug Problems*, *23*(2), 259–290. doi:10.1177/009145099602300206

Marowitz, L. A. (1998). Predicting DUI recidivism: Blood alcohol concentration and driver record factors. *Accident Analysis and Prevention*, *30*(4), 545–554. doi:10.1016/S0001-4575(97)00078-X

National Highway Traffic Safety Administration (NHTSA). (2013). *Traffic safety facts 2012 data: Alcohol-impaired driving (DOT HS 811 870)*. Washington, DC: NHTSA National Center for Statistics and Analysis.

Oksanen, A., Aaltonen, M., & Kivivuori, J. (2015). Driving under the influence as a turning point? A register-based study on financial and social consequences among first-time male offenders. *Addiction*, *110*(3), 471–478. doi:10.1111/add.12777

Rauch, W. J., Zador, P. L., Ahlin, E. M., Howard, J. M., Frissell, K. C., & Duncan, G. D. (2010). Risk of alcohol-impaired driving recidivism among first offenders and multiple offenders. *American Journal of Public Health*, *100*(5), 919–924. doi:10.2105/AJPH.2008.154575

Raudenbush, S. W., & Bryk, A. S. (2002). Hierarchical linear models: Applications and data analysis methods (Vol. 1). Sage.

Ross, H. L. (1992). Are DWI sanctions effective? *Alcohol Drugs, and Driving*, *8*(1), 61–69.

Sampson, R. J., & Laub, J. H. (1997). A life-course theory of cumulative disadvantage and the stability of delinquency. *Developmental Theories of Crime and Delinquency*, *7*, 133–161.

Shadish, R. W., Cook, T. D., & Campbell, D. T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Wadsworth, OH: Wadsworth Cengage Learning.

Shapiro, P., & Votey, H. L., Jr. (1984). Deterrence and subjective probabilities of arrest: Modeling individual decisions to drink and drive in Sweden. *Law and Society Review*, *18*(4), 583–604. doi:10.2307/3053448

Shore, E. R., & McCoy, M. L. (1987). Recidivism among female DUI offenders in a Midwestern American city. *Journal of Criminal Justice*, *15*(5), 369–374. doi:10.1016/0047-2352(87)90059-6

Shanahan, Michael J., & Erik J. Porfeli. 2006. Chance events in the life course. *Advances in Life Course Research 11*, 97–119. doi:10.1016/S1040-2608(06)11004-7.

Schwartz, J. (2008). Gender differences in drunk driving prevalence rates and trends: A 20-year assessment using multiple sources of evidence. *Addictive Behaviors*, *33*(9), 1217–1222. doi:10.1016/j.addbeh.2008.03.014

Steen, S., Engen, R. L., & Gainey, R. R. (2005). Images of danger and culpability: Racial stereotyping, case processing, and criminal sentencing. *Criminology*, *43*(2), 435–468. doi:10.1111/j.0011-1348.2005.00013.x

Steffensmeier, D. J., Allan, E. A., Harer, M. D., & Streifel, C. (1989). Age and the distribution of crime. *American Journal of Sociology*, *94*(4), 803–831. doi:10.1086/229069

Steffensmeier, D. J., Ulmer, J., & Kramer, J. (1998). The interaction of race, gender, and age in criminal sentencing: The punishment cost of being young, black, and male. *Criminology*, *36*(4), 763–798. doi:10.1111/j.1745-9125.1998.tb01265.x

Taxman, F. S., & Piquero, A. (1998). On preventing drunk driving recidivism: An examination of rehabilitation and punishment approaches. *Journal of Criminal Justice*, *26*(2), 129–143. doi: 10.1016/S0047-2352(97)00075-5

U.S. National Advisory Commission on Criminal Justice Standards and Goals (1973). Courts. Washington, D.C.: Government Printing Office. http://www.ncjrs.gov/App/publications/abstract.aspx?ID=10865

Volpe, J. A. (1983). *Presidential commission on drunk driving, final report*. Washington, DC: US Government Printing Office.

World Health Organization (2014). Global status report on alcohol and health, 2014. World Health Organization. ISBN 978 92 4 069276 3 (PDF).

Wieczorek, W. F., Miller, B. A., & Nochajski, T. H. (1992). The limited utility of BAC for identifying alcohol-related problems among DWI offenders. *Journal of Studies on Alcohol*, *53*(5), 415–419. doi:10.15288/jsa.1992.53.415

Yu, J. (1994). Punishment celerity and severity: Testing a specific deterrence model on drunk driving recidivism. *Journal of Criminal Justice*, *22*(4), 355–366. doi:10.1016/0047-2352(94)90082-5