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A Descriptive Analysis of Drugged Driving Among Rural DUI Offenders

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Abstract

Objective: Although driving under the influence (DUI) arrests occur at higher rates in rural areas and previous studies have shown more extensive drug use histories, little is known about how this relates to the prevalence and frequency of drugged driving. The present study examined drug use and drugged driving patterns among a sample of rural DUI offenders.

Methods: Convicted, rural DUI offenders (N=118) completed a one-time, confidential research interview focused on drug use and drugged driving. A descriptive analysis was performed to examine the lifetime and past year prevalence and frequency of drugged driving while under the influence of different drugs.

Results: Approximately three-fourths of the sample (77%) reported driving after illicit drug use in their lifetime and more than half of the sample (60%) reported doing so in the past year. Similar percentages of lifetime (86%) and past year (81%) illicit drug users reported driving under the influence of at least one illicit drug. Illicit drug users reported a median of 240 lifetime and 16 past year drugged driving episodes. Among those who reported ever driving after illicit drug use, marijuana (65%), prescription opioids (49%), and sedatives/tranquilizers/barbiturates (45%) were the most prevalent drugs involved in participants' drugged driving episodes.

Conclusions: Findings suggest that rural DUI offenders have extensive illicit drug use histories and frequently engage in drugged driving, posing a significant threat to public safety. Additional research on the characteristics of rural drugged drivers and their drug use and driving patterns is needed to inform the development of targeted interventions.

Keywords

drug abuse; drugged driving; rural; DUI offenders

INTRODUCTION

Driving under the influence (DUI) remains a significant public health problem. Although only 14% of the US population lives in rural areas (United States Department of Agriculture 2016), almost half of US alcohol-impaired driving fatalities occur in rural America (National Center for Statistics and Analysis 2017). Furthermore, rural areas have higher DUI arrests

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rates than do urban areas (Federal Bureau of Investigation 2016). Despite the disproportionate prevalence of rural DUI arrests and fatalities, few studies have focused on rural DUI offenders, and none have focused specifically on the emerging problem of rural drugged driving.

Rural DUI Offenders

The small extant literature on rural DUI offenders shows that they may have a different set of characteristics than those convicted of DUI in more populated areas. Three studies have directly compared substance use between rural and urban DUI offenders, each performing secondary data analysis on large, state-level datasets. Two of the three studies found that drug use severity and rates of substance use disorders were higher among rural DUI offenders compared to urban DUI offenders (Webster et al. 2009b; Webster et al. 2010). The third study, however, found that rural DUI offenders scored higher than urban DUI offenders on an alcohol risk assessment but not on a drug risk assessment (Malek-Ahmadi and Degiorgio 2015). Although not comparing rural and urban DUI offenders, a study of rural probationers also found a higher prevalence of drug and alcohol use among those with DUI histories (Webster et al. 2009a).

Another study on rural DUI offenders examined differences between first-time DUI offenders and DUI recidivists (Dickson et al. 2013). The pattern of results differed from urban-based studies comparing first-time and repeat DUI offenders. For example, although rural DUI recidivists had more extensive substance use and criminal histories than first-time offenders, a finding similar to previous studies (Nochajski and Stasiewicz 2006), the overall rates of illicit drug use and mental health problems of rural DUI offenders were considerably higher than found with urban samples (Freeman et al. 2011; Lapham et al. 2002; 2006). Although these few studies have provided important information on rural DUI offenders and how they are similar to and different from urban DUI offenders, several important gaps in knowledge about rural DUI offenders remain.

Rural Drugged Driving

One key area lacking research is rural drugged driving. Growing national attention is being given to drugged driving with an estimated 10.1 million Americans driving under the influence of drugs each year (Lipari et al. 2016). Furthermore, the percentage of fatally injured drivers who test positive for drugs now surpasses the percentage testing positive for alcohol (Hedlund 2017). Despite pervasive drugged driving and increasing traffic fatalities associated with drug use, detailed information on drugged driving is limited, particularly for rural drugged driving. This void is noteworthy given rural DUI offenders' extensive drug use histories (Webster et al. 2010) and higher overall rates of traffic fatalities in rural areas (National Center for Statistics and Analysis 2017).

Several factors contribute to the paucity of rural drugged driving data and drugged driving information in general. One key contributor is that drugged driving frequently goes undetected. Often, suspected impaired drivers are not tested for drugs if a preliminary roadside alcohol breathalyzer provides enough evidence for an alcohol-impaired driving arrest (DuPont et al. 2011). Another factor is that many police officers lack training in

detecting drug-impairment (Hedlund 2017). Even when a decision to drug test does occur, drugged driving data can be lost due to improper testing and challenges in obtaining drugged driving convictions (DuPont et al. 2011). As a result, basic information about the prevalence and frequency of rural drugged driving is unknown.

Present Study

In our review of the literature, we were unable to identify any studies focused on rural drugged driving. Consequently, the present study uses a descriptive analysis to examine the prevalence and frequency of drugged driving among a sample of rural DUI offenders. Specifically, the following research questions are addressed: 1) What percentage of rural DUI offenders have driven under the influence of drugs?; 2) How often do rural DUI offenders drive drug-impaired?; and 3) What drugs are involved in rural DUI offenders' drugged driving episodes?

METHOD

Participants

A purposive sample of 118 convicted DUI offenders was recruited from three rural Kentucky counties. Study eligibility was based only on three criteria: participants must have (a) been 18 years of age or older; (b) been convicted of a DUI within the past 12 months in one of the three targeted counties; and (c) resided in the same county in which they were convicted. Participants were eligible regardless of whether their DUI conviction was alcohol- and/or drug-related; each is convicted under the same law.

Measures

Demographics: Demographic information was collected from participants during the interview and included age, gender, race/ethnicity, level of education, marital status, and driver's license status at the time of their DUI arrest.

Drug use history: Drug use history was collected based on the drug use section of the Addiction Severity Index (McLellan et al. 1992), which is a widely used semi-structured assessment tool used by clinicians and researchers to collect information from drug and alcohol users on different problem areas. Although the drug use section includes an optional severity score indicating the interviewer's subjective assessment of the need for drug and alcohol treatment, research staff were not trained clinicians, and thus these scores were not recorded. For the present study, participants were asked to report if they had ever used several specific drugs in the past year and in their lifetime. Specifically, participants were asked about their use of alcohol, marijuana, powder and crack cocaine, methamphetamine, amphetamines, heroin, prescription opioids, and sedatives/tranquilizers/barbiturates. Only illicit, nonmedical use was recorded for prescription medications. Kentucky does not have a recreational or medical marijuana law, and no participants indicated that their marijuana use was for medical purposes. As a result, all marijuana use was recorded as illicit use.

Drugged driving history: Drugged driving history was collected in a similar manner to drug use history with both past year and lifetime (i.e. total years of driving experience)

questions. Specifically, participants were asked if they had ever driven while under the influence of each of the drugs listed in the drug use history, including under the influence of alcohol, in the past year and in their lifetime. In addition, participants estimated the number of times they had driven under the influence of each of these substances. Finally, participants reported whether their DUI arrest was drug-involved.

Procedure

As part of a larger study examining attitudes and behaviors related to substance use, services use, and criminal history among rural DUI offenders, participants were recruited either from district courthouses (90%) or through flyers placed in various locations around the community (10%). Research staff identified potential participants from the court dockets and attended court proceedings. If convicted, research staff approached the potential participant outside the courtroom, extending an invitation to participate in a one-time research interview. If the individual agreed to participate and met the eligibility criteria, an interview was scheduled. Approximately 27% of approached, eligible offenders declined to participate. Primary reasons for refusal included not having time or being accompanied by family/friends. For participants recruited via flyer, DUI conviction information was verified through court records and interviews were scheduled with eligible participants at their earliest convenience.

After participants provided their informed consent for this IRB-approved study, they completed a one-time confidential research interview with a trained interviewer at a time and location convenient for the participant. Participants' responses were protected by a federal Certificate of Confidentiality. The interview lasted approximately 90 minutes, and participants received a payment of \$25 for their time.

Analytic Plan

Preliminary analyses were conducted to determine the extent to which any unexpected, systematic differences existed between participants based on the method by which they recruited (i.e. recruited in person or via flyer). Specifically, the two groups were compared on drug use and drugged driving variables using a series of chi-square tests. With the exception of those recruited via flyer being more likely to have ever used methamphetamine (42% vs. 14%; $\chi^2(1, N = 117) = 5.71, p = .017$), recruitment method was unrelated to variables used in the subsequent, main analysis. The preliminary analysis did reveal, however, that one participant had missing data on the majority of drug use and drugged driving variables and, thus, was excluded from the analysis. In order to address the three research questions, a descriptive data analysis ($N=117$), including percentages, means, medians, and ranges, was conducted using SPSS 24 (IBM Corp. 2016).

RESULTS

Demographics

The sample was 71% male with an average age of 35 ($SD=10$) years. Most participants were White (97%) and single (66%). They had an average of 12 years ($SD=2$) of education, and 73% had a valid driver's license at the time of their arrest. Although a broad range of

incomes were reported (\$0 to \$95,000), the average past year income of participants was low (M=\$18,337; SD=\$21,017).

Illicit Drug Use

Participants reported a high prevalence of lifetime and past year illicit drug use (see Table 1). The vast majority reported lifetime illicit drug use (90%), and more than half of participants reported lifetime use of marijuana (82%), sedatives/tranquilizers/barbiturates (60%), prescription opioids (58%), and powder cocaine (50%). Past year drug use was less prevalent with only sedatives/tranquilizers/barbiturates (50%), marijuana (44%), and prescription opioids (43%) exceeding a prevalence of 10%; however, 73% of the sample reported using at least one illicit drug in the past year.

Drugged Driving

As shown in Table 1, 77% reported driving under the influence of an illicit drug in their lifetime and 60% reported doing so in the past year. When examining individual illicit drugs, participants most frequently reported driving under the influence of marijuana (65% lifetime and 33% past year) followed by prescription opioids (49% lifetime and 33% past year), sedatives/tranquilizers/barbiturates (45% lifetime and 37% past year), and powder cocaine (28% lifetime and 6% past year). Lifetime and past year prevalence of driving under influence of crack cocaine, amphetamine, methamphetamine and heroin were each less than 20%. In addition, the majority of participants (59%) reported that their DUI arrest was drug-involved. Thirty-eight participants (32%) indicated that they illicitly used more than one drug prior to their DUI arrest, approximately two-thirds of which reported a combination of sedatives and prescription opioids.

When looking at the percentages of drugged drivers among users of each specific drug rather than the entire sample, more than half of users reported lifetime and past year drugged driving for prescription opioids (84% and 76%), marijuana (79% and 71%), sedatives/tranquilizers/barbiturates (73% and 70%), amphetamine (70% and 56%), and powder cocaine (56% and 55%). Lifetime prevalence of drugged driving under the influence of crack cocaine, heroin, and methamphetamine was approximately 40% among users of those drugs (see Table 1). Similar percentages of lifetime (86%) and past year (81%) illicit drug users reported driving under the influence of at least one illicit drug.

Table 2 presents means, medians, and ranges of drugged driving frequency estimates for the subset of participants who used each drug. Upon examination of participants' estimates of past year and lifetime frequency of alcohol and drugged driving, some values seemed implausibly high; therefore, any value of 1000 or above for past year estimates and 10,000 or more for lifetime estimates was removed. This resulted in the removal of 1 past year drugged driving estimate and 3 lifetime drugged driving estimates (1 each for marijuana, prescription opioids, and sedatives/tranquilizers/barbiturates impaired driving). Because means are sensitive to outliers, particularly in smaller samples, medians are discussed in this section. Prescription opioid-impaired driving had the highest median number of drugged driving episodes (45) followed by driving under the influence of marijuana (30) and sedatives/tranquilizers/barbiturates (20). The upper limit of the range for the majority of drug types

reached into the thousands. Past year drugged driving frequency was substantially lower. Prescription opioid-impaired driving in the past year has a median of 9 with no other drug exceeding a median of 5.

DISCUSSION

This study examined the prevalence and frequency of drugged driving among rural DUI offenders. Although prior research indicates that rural DUI offenders may have more extensive drug problems than urban DUI offenders, no published studies have examined the scope of drugged driving among rural DUI offenders. The present study is consistent with previous research in finding high levels of illicit drug use among rural DUI offenders and also provides new information on the extent to which rural DUI offenders engage in drugged driving.

Illicit drug use among this sample of rural DUI offenders was extensive and generally consistent with other research focusing on rural offenders, including the limited research on rural DUI offenders. Ninety percent of participants in the current study reported lifetime use of an illicit drug and nearly three-fourths (73%) reported past year illicit drug use, which is similar to the 94% lifetime and 71% past month drug use reported by a sample of rural probationers with history of a DUI arrest (Webster et al. 2009a). The illicit drug use rates reported in this sample of rural DUI offenders were higher than those reported in non-rural DUI populations. For example, in one study DUI offenders from 6 metropolitan areas, 75% of individuals with a single DUI arrest reported lifetime illicit drug use while approximately 85% of multiple DUI offenders reported illicit drug use (McCutcheon et al. 2009). Another study based in metropolitan Albuquerque found that only 53% of DUI offenders reported ever using illegal drugs (Lapham et al. 2002). Interestingly, while marijuana has traditionally been the most frequently used drug in national and other rural offender samples (Bronson et al. 2017; Havens et al. 2007), prescription medications (opioids and sedatives/tranquilizers/barbiturates) had similar past year use rates as marijuana in the current study. The high rates of marijuana, sedative, and prescription opioid use found in this study have also been found in other rural offender samples (Staton-Tindall et al. 2015). Although the current study did not measure drug use severity, previous research on rural DUI offenders has found higher scores on drug use severity screening measures when compared to urban DUI offenders (Webster et al. 2010). The extensive drug use among the study sample underscores the importance of thorough screening and assessment of drug use disorders for DUI offenders when they enter court mandated substance abuse education or treatment in connection with their DUI conviction. This may be particularly important for rural DUI offenders where treatment opportunities are limited (Sexton et al. 2008).

The high rate of illicit prescription drug use in this sample of rural DUI offenders may be explained by the widespread diversion and misuse of prescription drugs documented in earlier studies (Inciardi et al. 2007; Wunsch et al. 2009). Previous research has suggested rural prescription drug diversion and misuse stem from myriad factors, including but not limited to greater availability and sociocultural issues. Certain prescription drugs, such as prescription opioids, are more available to divert and misuse than other drugs in rural areas because they are prescribed with greater frequency in these communities (Keyes et al.

2014). Other illicit drugs, such as cocaine, may be less likely to be trafficked to remote rural areas of the country (Inciardi et al. 2007). Prior studies have stressed the importance of educating physicians on how to identify patients who may be diverting prescription drugs and to carefully consider a patient's risk for abuse prior to prescribing drugs with high abuse liability (Inciardi et al. 2009). Sociocultural issues like rural inhabitants' larger kinship and social networks, may increase the chances of knowing someone from whom to obtain prescription drugs to either sell or abuse (Keyes et al. 2014). Furthermore, the economic deprivation found in many rural areas has been identified as factor that increases susceptibility to illicit drug use (Dew et al. 2007; Keyes et al. 2014).

Study findings for illicit drug use of rural DUI offenders are also reflected in their self-reported drug-impaired driving. After alcohol use, marijuana has been shown to be the most prevalent drug involved in DUIs in both national and statewide samples (Compton 2017; Pilkinton et al. 2013). For example, Pilkinton et al. (2013) found that marijuana (19%) was the most reported drug used on the day of DUI arrest in a statewide sample of DUI offenders. The present study found a high lifetime prevalence of driving after illicit marijuana use; however, the percentage of participants who reported past year prescription drug-impaired driving was comparable (33% for prescription opioids) or even slightly higher (37% for sedatives/tranquilizers/barbiturates) than the percentage reporting marijuana-impaired driving (33%). Findings also indicate that lifetime alcohol use and alcohol-impaired driving prevalence among rural DUI offenders is comparable to illicit drug use and drugged-driving, while past year rates indicate drugged driving as more prevalent. These results are consistent with data from the National Roadside Survey, which found 23% of sampled drivers testing positive for prescription and illegal drugs compared to only 8% testing positive for alcohol (Berning et al. 2015). Similarly, a higher percentage of fatally injured drivers test positive for drugs than do for alcohol (Hedlund 2017).

The major contribution of the present research is the new prevalence and frequency information on rural drugged driving. Both lifetime and past year prevalence of drugged driving exceeded those of alcohol-impaired driving. This finding highlights the changing landscape of impaired driving with drug-impaired driving accounting for increasing numbers of DUI arrests and more fatally injured drivers testing positive for drugs than for alcohol (Hedlund 2017). Although awareness of the drugged driving problem is increasing, challenges remain in detecting drugged drivers, proving their impairment, and effectively intervening with them. To help reduce the number of drugged drivers, existing drunk driving prevention messages could be modified to include both the dangers of alcohol- and drug-impaired driving, particularly given research showing lower perceived risk of driving under the influence of, at least certain, drugs (Kelly et al. 2004).

Not only did rural DUI offenders report past drugged driving, many participants reported doing so frequently. In many cases, participants estimated they had driven drug-impaired hundreds, or even thousands, of times. This is consistent with the disparity found between 2012 national estimates of alcohol-impaired driving episodes (121 million; Jewett et al. 2015) in contrast to DUI arrests (1.3 million; Federal Bureau of Investigation 2012). The high frequency of drugged driving reported in this study also represents a substantial threat to

public safety in rural areas, where infrastructure limitations already contribute to higher rates of traffic fatalities (National Center for Statistics and Analysis 2017; Robertson et al. 2016).

Limitations

This study has limitations which should be considered when interpreting results. First, data were collected from a purposive sample in one rural area of the United States; therefore, participants may not be representative of all rural DUI offenders, potentially limiting generalizability. Study findings also may not generalize to impaired drivers who have never been arrested for DUI. Future research, therefore, should examine DUI offenders and other impaired drivers from different rural areas across the US to determine the extent to which the present findings extend to other rural impaired driver populations. Second, study data are based on self-reports. Although participation was voluntary and data were protected by a Certificate of Confidentiality, the accuracy and truthfulness of the self-reported behaviors are unknown. Prior research, however, suggests that self-reported data can be reliable and valid (Johnson et al. 2000; Solbergstodt et al. 2004). Third, no data were collected on how the illicitly used drugs were obtained; therefore, possible associations between drug cost and drugged driving could not be explored. Finally, no information on drug dose or level of drug-impairment was obtained, making assessments of actual traffic safety risk difficult. Participants, however, were specifically asked to report driving episodes when they were under the influence of drugs.

Future Directions

In addition to addressing present study limitations, several other avenues for future research exist. First, it is clear that more descriptive epidemiology of rural drugged driving is needed. Although this study provides initial data on rural drugged drivers, many questions remain about the characteristics of rural drugged drivers, their drug use and drugged driving patterns, other comorbidities, and what factors contribute to engaging in this dangerous behavior. Future research should also examine differences between subgroups of rural drugged drivers. For example, comparing individuals who drive under the influence of a single drug versus multiple drugs could prove useful in identifying sociodemographic determinants that could inform targeted interventions. Study findings also point to the need for a better understanding of rural drugged drivers' perceptions of their driving impairment and the risk they pose to themselves and others, particularly in the context of illicit marijuana and prescription drug use, which has the highest prevalence in the current study. Such information would be critical for designing effective drugged driving education messages for rural populations.

Conclusions

The present study provides new and important information on drugged driving among a group of understudied, rural DUI offenders. Findings indicate that drug use and subsequent drugged driving are widespread among rural DUI offenders involving a variety of drugs, representing a significant opportunity for targeted interventions. However, more rural drugged driving research is needed to understand the scope of the problem, the characteristics of this population, and their drug use and driving patterns. Future research

should continue to examine rural drugged drivers with the ultimate goal of developing strategies to prevent this dangerous behavior.

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Table 1

Past Year and Lifetime Drug Use and Drugged Driving Prevalence Among Rural Kentucky DUI Offenders (N=117)

	Past Year			Lifetime		
	Users Who			Users Who		
	Used (%) ^a	Drove (%) ^b	Drove (%) ^c	Used (%) ^a	Drove (%) ^b	Drove (%) ^c
Alcohol	79 (72, 86)	46 (37, 55)	59 (50, 68)	98 (95, 100)	72 (64, 80) ^d	73 (65, 81)
Marijuana	44 (35, 53)	33 (24, 42)	71 (63, 79)	82 (75, 89)	65 (56, 74) ^d	79 (72, 86)
Powder Cocaine	9 (4, 14)	6 (2, 10) ^e	55 (46, 64)	50 (41, 59)	28 (20, 36) ^d	56 (47, 65)
Crack Cocaine	6 (2, 10)	1 (0, 3)	14 (8, 20)	31 (23, 39)	14 (8, 20) ^e	44 (35, 53)
Amphetamine	8 (3, 13)	4 (0, 8)	56 (47, 65)	23 (15, 31)	16 (9, 23)	70 (62, 78)
Methamphetamine	3 (0, 6)	1 (0, 3)	25 (17, 33)	17 (10, 24)	7 (2, 12)	40 (31, 49)
Heroin	1 (0, 3)	1 (0, 3)	100 (-)	6 (2, 10)	3 (0, 6)	43 (34, 52)
Prescription Opioids	43 (34, 52)	33 (24, 42)	76 (68, 84)	58 (49, 67)	49 (40, 58)	84 (77, 91)
Sedatives, Tranquilizers, & Barbiturates	50 (41, 59)	37 (28, 46) ^e	70 (62, 78)	60 (51, 69)	45 (36, 54) ^e	73 (65, 81)
Any Illicit Drug	73 (65, 81)	60 (51, 69)	81 (74, 88)	90 (85, 95)	77 (69, 85)	86 (80, 92)

Table 2.

.Estimates of Past Year and Lifetime Drugged Driving Frequency Among Illicit Drug-using, Rural Kentucky DUI Offenders

	n₁	Mean (SD)	CI(95%)	Median	Range
Alcohol					
Past Year	92	8 (25)	3, 13	1	0-180
Lifetime	113	259 (954)	81, 437	46	0-6,500
Marijuana					
Past Year	51	53 (102)	24, 82	3	0-365
Lifetime	93	635(1592)	308, 963	30	0-9,125
Powder Cocaine					
Past Year	11	4 (9)	-2, 10	2	0-30
Lifetime	57	78 (400)	-29, 184	2	0-3,000
Crack Cocaine					
Past Year	7	0 (1)	0, 0	0	0-1
Lifetime	35	19 (63)	-3, 40	0	0-365
Amphetamine					
Past Year	9	40 (78)	-20, 99	2	0-200
Lifetime	27	190 (475)	2, 378	9	0-2,190
Methamphetamine					
Past Year	4	1 (3)	-3, 5	0	0-5
Lifetime	20	204 (586)	-71, 477	0	0-2,000
Heroin					
Past Year	1	1 (-)	-	1	0-1
Lifetime	7	1 (2)	0, 2	0	0-4
Prescription Opioids					
Past Year	50	84 (145)	42, 125	9	0-565
Lifetime	67	553 (1,100) 285, 821	45	0-5,110	
Sedatives, Tranquilizers, & Barbiturates					
Past Year	58	57 (108)	XX	5	0-365
Lifetime	68	273 (610)	125, 421	20	0-3,240

Note. All drug use, with the exception of alcohol use, represents illicit drug use. Similarly, drugged driving represents driving after illicit drug use. Illicit drug use includes the use of an illegal drug or the nonmedical use of prescription medication. Percentages are rounded to the nearest 1%. Confidence intervals (95%) appear in parentheses.

^a Column represents the percentage of the full sample reporting illicit use (except alcohol) of the specific drug.

^b Column represents the percentage of the full sample reporting driving after illicit use (except alcohol) of the specific drug.

^c Column represents the percentage reporting driving after illicit use of the specific drug among only those who reported illicit use (except alcohol) of the specific drug.

^d N=115

^e N=116

Note. Drugged driving represents driving after illicit drug use, which includes the use of an illegal drug or the nonmedical use of prescription medication.

¹Only participants who reported using the specific drug during the time frame (past year or lifetime) are included.

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