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EXECUTIVE SUMMARY

This report considers research on the problem of crime resulting from alcohol and other drug abuse in American Indian and Alaska Native (AI/AN) communities. It provides a review of published research from a variety of disciplines and it includes re-analyses of a number of secondary data sources. Overall, our understanding of alcohol and other drug related crime in AI/AN communities is mixed: the degree to which AI/AN substance use – especially alcohol abuse – accompanies violent crime is fairly well established, while our knowledge about the criminal justice response and legal remedies to the problem is sorely deficient.

This report begins with an analysis of the epidemiology of AI/AN substance abuse. This provides a better understanding of the nature of alcohol and other drug use that co-occurs with AI/AN crime. A number of key points emerged:

- On a national level, substance abuse appears to be a greater problem among AI/ANs than in the general population. Although they are less likely to report drinking, AI/ANs are more likely than non-AI/ANs to report alcohol abuse in the form of binge drinking (i.e., five or more drinks in one sitting in the past month) and heavy drinking (i.e., binge drinking five or more times in the past month). When disaggregated by age, this “low frequency/high quantity” pattern is most apparent among adults, while patterns of AI/AN underage drinking are similar to those found among non-AI/AN youth.
- AI/AN respondents to national surveys report rates of illicit drug use that are higher than those of non-AI/ANs. These elevated rates are reported by adult and adolescent AI/ANs.
- National surveys indicate AI/ANs are more likely than the general public to report being symptomatic of alcohol and drug use disorders as defined in the American Psychiatric Association’s *Diagnostic and Statistical Manual of Mental Disorders*.
- Tribal and multi-tribal surveys largely confirm the findings of national surveys regarding AI/AN alcohol use, showing that relative to the general population, AI/ANs are less likely to consume alcohol but more likely to consume hazardous quantities per drinking occasion. In terms of illicit drug use, the few surveys of this type indicate that although AI/AN adults are more likely than non-AI/ANs to be current drug users, there is no evidence to indicate they have a higher lifetime prevalence of drug use or are more likely to suffer from drug use disorders.
- Alcohol and drug use among AI/AN youth has been the subject of a considerable amount of research, most of which indicates a higher lifetime prevalence relative

- Although it is more of a problem than in the general population, most AI/ANs are not alcohol and drug abusers while those that have used at some point in their lives live drug-free today. Likewise, even heavy AI/AN drinkers on average only consume alcohol slightly more than once a week.

In examining existing research on substance abuse and crime in AI/AN communities, this paper differentiated studies using measures of co-occurrence (which tell us the proportion of offenses that were determined to have involved drinking or drug use) and studies using measures of association (which gauge the extent to which variations in substance use are accompanied by variations in victimization or criminal behavior). Although these studies do not provide proof that alcohol use is a cause of crime in AI/AN communities, they do indicate that there are higher levels of alcohol involvement in AI/AN crime and that AI/ANs who use alcohol are more likely to be a crime victim or perpetrator:

- Police statistics from Indian Country and Alaska Native villages point to high levels of alcohol involvement in the commission of criminal acts. One study of crimes reported to tribal police serving Indian reservations in five Northwestern states found that about half of all violent crimes and about an eighth of property crimes involved alcohol while a much smaller proportion (3.3% and 1.8% of violent and property crimes, respectively) involved illicit drugs. Research from rural Alaska indicates that Alaska Natives were much more likely than non-Natives to have been drinking prior to committing sexual assaults or acts of family violence.
- National surveys (i.e., the National Crime Victimization Survey) and tribal surveys conducted in Alaska and Colorado indicate that AI/AN victims were more likely than non-AI/AN victims to have been victimized by perpetrators that were under the influence of alcohol.

- Research on the association between alcohol use and violent crime among AI/ANs is unequivocal. Both bivariate and multivariate analyses have clearly established a strong correlation between alcohol use and AI/AN criminal victimization and perpetration. These studies indicate that AI/ANs who use alcohol are more likely to be involved with violence either as a victim or as a perpetrator.
- Studies that examine the association between substance use and crime in AI/AN communities have been limited by their cross-sectional designs (which makes it difficult to ascertain the direction of the association between substance use and crime) and their over reliance on self-report surveys (which are sensitive to social desirability bias). Case-control and longitudinal designs for studying the relationship between substance use and crime in AI/AN communities are considered as potential remedies to those shortcomings.

This report also examined research on policy responses to the problem of drug- and alcohol-involved crime among AI/ANs. With the exception of one policy – local alcohol prohibition – very little is known about the effects of criminal justice policy and specific initiatives aimed at reducing alcohol and drug related crime in AI/AN communities:

- The effectiveness of local alcohol prohibition has been mixed and is mostly a function of geographic isolation. A number of studies from Alaska have shown that Alaska Native villages that are removed from the state’s highway system can reduce the incidence of alcohol-related violence by outlawing the importation and/or possession of alcohol. However, in the lower-48 states, where off-reservation alcohol merchants are accessible from Indian reservations, local alcohol prohibition has been found to be largely futile.
- Earlier research indicates that local prohibition on lower-48 reservations has been ineffective because it leads to hazardous binge drinking that increases the likelihood of harm while doing little to reduce the availability of alcohol. However, over the past 20 years a number of changes have occurred – including an increase in the number of tribes that allow alcohol sales and changes in American Indian drinking practices – that call into question the continued validity of past conclusions about the effects of tribal alcohol bans.
- Although “dry” Alaska Native villages have less violence relative to “wet” villages, those villages that prohibit alcohol still have much higher rates of violence and other alcohol-related harms than what is found in less isolated locales. These elevated rates of violence in “dry” Alaska Native villages raise the possibility that the success of formal legal sanctions as a prevention policy is

limited and that aggressive enforcement of liquor laws can accomplish only so much. Despite the best efforts of police and village leaders, bootlegging is common and residents of dry villages abuse other substances including marijuana, inhalants, homebrew, and non-beverage alcohol when the illicit alcohol supply is limited. Local prohibition may also simply displace alcohol-related violence when village alcoholics are banished and when village residents are victimized while binge drinking during trips to urban centers.

- Aside from local alcohol prohibition, little is known about the effect of legal and criminal justice policies on alcohol- and drug-related crime. The effects of initiatives aimed at reducing the problem in AI/AN communities are rarely the subject of robust evaluation and the studies that have been conducted generally are more formative than summative in nature. Likewise, the effects of criminal justice policies such as Public Law 280 or the cross-deputization of tribal police on alcohol- and drug-related crime are largely unknown.
- In addition to the general difficulties involved with research in the criminal justice system, evaluators of initiatives aimed at reducing alcohol- and drug-related crime in AI/AN communities are hindered by difficulties measuring outcomes (including low base rates in small populations and poor recordkeeping), by political reluctance for evaluation, by *ex post facto* research execution, by unclear time demarcation of program implementation (which hampers the use of quasi experimental designs), and by a history of malfeasance in research experienced by AI/AN communities.

This report presents a number of research approaches that have the potential to improve our understanding of legal and criminal justice responses to alcohol and drug related crime in AI/AN communities:

- Based upon community-researcher partnerships, community trials allow for the rigorous examination of the effects of environmental interventions upon the harms associated with substance abuse. The community trials approach to research has much to offer relative to the *ex post facto* evaluations of initiatives normally conducted in this area. Multiple interventions are employed in community trials to disrupt the complex, interconnected systems that influence substance use and bring about changes that are not possible from single intervention models. To test the effects of interventions, community trials employ quasi-experimental research designs with matched comparison groups which enhance the internal validity of the results and use multiple outcome measures to account for the effects of the multiple interventions.

- Funding program managers and researchers should be sensitive to the idea that community readiness for change has a substantial effect upon the impact of interventions employed in AI/AN communities to reduce the incidence of alcohol- and drug-related crime. According to the Community Readiness Model, the success of interventions is partly a function the extent to which communities are equipped for implementation. This model highlights that while the communities that are most in need of interventions are often the same communities that are least able to enact the necessary changes, even those communities that seem beyond hope can eventually build the requisite capacity to prevent alcohol and drug related crime.
- Researchers should consider the larger geographic and cultural context when studying alcohol and drug use in AI/AN communities because alcohol and drug use behaviors are often a reflection of what is found in the general population of a given locale. In a number of places both the AI/AN and non-AI/AN populations are much more likely than average to have substance abuse problems. This is important because it may be an indication that AI/AN substance abuse is the result of factors unrelated to their cultural heritage and because it implies that prevention efforts focusing only on AI/AN communities without addressing the larger drug and alcohol environment have much less chance of success.
- Specific underutilized methodological techniques have the potential to enhance research on the causes of, and the responses to, alcohol- and drug-related crime in AI/AN communities. Where appropriate, it may be useful (1) to oversample AI/ANs in general population surveys to be able to make reliable comparisons, (2) to measure outcomes using public health records in order to avoid the bias that afflicts measures derived from criminal justice records, and (3) use individual level surveys to examine the effects of community-level policies such as local alcohol prohibition or Public Law 280.
- Finally, it is recommended that initiatives be given an adequate amount of time to develop before being subject to formal summative evaluation. The AI/AN communities that have been successful in battling alcohol- and drug-related crime have taken much longer than the typical project funding cycle to turn things around. There is a risk that positive program effects might be missed when initiatives are evaluated too quickly.

CHAPTER 1: INTRODUCTION

For many in American Indian and Alaska Native (AI/AN) communities, crime – especially violent crime – is synonymous with the use and abuse of alcohol and other drugs. And while substance abuse touches all Americans in one way or another, its effects are especially acute in Indian Country and Alaska Native villages (Centers for Disease Control and Prevention, 2008; May, 1996). This report provides a detailed review of the existing literature on crime resulting from alcohol and other drug abuse in AI/AN communities. In doing so, this report considers (1) the epidemiology of AI/AN substance abuse, (2) the connection between alcohol and other drug abuse and crime in AI/AN communities, (3) the effects of policies and programs in AI/AN communities intended to diminish the incidence of alcohol- and drug-related crime, and (4) the research approaches that have the potential to refine our understanding of what American Indians and Alaska Natives (AI/ANs) can do to alleviate the problem.

This report is divided into six chapters. Chapter 1 introduces the report and provides a description of the methods used in the literature review. In Chapter 2, the empirical research on the prevalence of alcohol and other drug use among AI/ANs in the US is considered. This review of the epidemiology of AI/AN substance use serves as background for later chapters by providing an understanding of the nature of the drug and alcohol abuse underlying a substantial portion of the crime occurring in Indian Country and Alaska Native villages. Based upon the reviewed literature, it appears that substance abuse is a greater problem among AI/ANs than it is in the general population.

The connection between substance use and crime in AI/AN communities is the focus of Chapter 3 that considers both the co-occurrence and the association of substance use and crime. Co-occurrence is examined in terms of the extent to which offenses involve drinking or drug use. Official statistics and victimization survey results reviewed in this chapter indicate that alcohol is more likely to be involved in crimes with AI/AN victims or perpetrators than in crimes with non-AI/AN victims or perpetrators. However, as is the case with most other phenomena, there is a great deal of variation in the co-occurrence of AI/AN crime and substance use that depends upon tribal affiliation and location. To examine the association between crime and substance abuse among AI/ANs, the literature review specifically considered correlational studies that allow for an understanding of the extent to which differences in levels of drug and/alcohol abuse correspond with differences in the prevalence of criminal behavior. Although the published

research generally indicates that there is indeed a statistical association between alcohol use and AI/AN offending and victimization, none of the studies were able to establish a causal relationship between drinking and crime.

Criminal justice and legal policy aimed at dealing with substance abuse and crime in AI/AN communities is the focus of Chapter 4. The effects of policies such as local alcohol prohibition and the outcomes of community initiatives are examined. As this report focuses on research dealing with drug and alcohol use *and crime*, the literature review is primarily limited to legal and criminal justice system responses to substance abuse related crime in AI/AN communities. A substantial literature on the wider issue of AI/AN drug and alcohol abuse already exists and is beyond the scope of this report. Interested readers are directed to Beauvais and Trimble (2006) who provide an extensive review of drug and alcohol prevention among AI/AN youth , May (1992) who undertakes a classic examination of alcohol policy for reservations and bordertowns , and Jiwa, Kelly, and Pierre-Hansen (2008) for a concise review of indigenous community-based treatment.

Chapter 5 examines a number of promising approaches for conducting research on substance abuse and crime in Indian Country and Alaska Native villages. These approaches include the community trials method and the community readiness model as well as a host of specific techniques that have been shown to enhance the validity of research on the subject. As will become apparent throughout this report, these suggested research methodologies are appropriate for studying the effects of policies and initiatives against substance abuse and related criminal behavior. It is in the area of evaluation of efforts to deal with that problem that our knowledge is most deficient. Finally, Chapter 6 serves as a conclusion.

LITERATURE REVIEW METHODS

This report is based upon a review of the available literature on alcohol and drug use in relation to criminal perpetration and victimization among AI/ANs. Although it was intended that the literature search be as inclusive as possible, a number of factors complicated the task and made a comprehensive and systematic review difficult.

First, this review is actually a combination of three separate literature reviews. As such, specific systematic review protocols would have needed to be developed to identify the literature on the epidemiology of AI/AN substance use, on the relationship between substance use and crime among AI/ANs, and on the responses to substance use-related crime in AI/AN

communities. Second, these topics are the purview of multiple disciplines (e.g., public health, psychology, criminology, sociology), which would have necessitated strategies for searching for research on all three topics across all disciplinary-specific bibliographical databases. Third, the behaviors under consideration – substance use and crime – are multifaceted in their own right and subsume numerous acts that would have required an additional degree of specificity during database searches. For instance, to find articles about crime would have required searches on terms such as “assault,” “rape,” “intimate partner violence,” “domestic violence,” “conduct disorder,” or “delinquency” while searches for substance use would have had to include alcohol as well as individual drugs (e.g. cocaine or methamphetamine). Fourth, a truly systematic protocol for identifying relevant literature would need to account for the multitude of specifications for the AI/AN population. Searches limited to “American Indian” or “Alaska Native” might miss research focusing only on a specific tribe or language group or fail to deal with all forms of the ever-changing vernacular (e.g., “American Indian” vs. “Native American,” “Navajo” vs. “Diné,” or “Eskimo” vs. “Yupik” and/or “Iñupiat. Taken together, the possibilities would have been endless if all four factors – topic, discipline, behavior, and population/culture/tribe – had been taken into account in a systematic literature search.

This review therefore combined varied approaches for locating relevant literature. First, a number of search engines and bibliographic databases, including Criminal Justice Abstracts, Google Scholar, the National Criminal Justice Reference Service, PubMed, and the National Institute on Alcohol Abuse and Alcoholism’s ETOH database, were consulted to locate the relevant publications. The bibliographies of the research located by database searches were then examined in a “snowball” fashion to find additional relevant studies. Furthermore, specific searches were conducted to insure studies by prolific researchers (e.g., Fred Beauvais, Phil May, Les Whitbeck) were located. Each of these techniques was augmented by a re-examination of publications by the author while studying the subject at hand over the past decade-and-a-half.

Given the non-systematic methods used to find the research examined below, this review should not be considered exhaustive or definitive. There is, undoubtedly, research that should have been considered in this review, but that was not covered. The value of what is written here should be judged accordingly.

CHAPTER 2: PATTERNS OF ALCOHOL AND DRUG USE AND ABUSE

It is necessary to first consider the patterns of substance use in AI/AN communities before examining research on the relationship between alcohol and other drug use and crime and the criminal justice system response to the problem. Doing so provides an understanding of the nature of the substance use underlying the offenses that are committed under the influence of drugs and alcohol. Furthermore, such a consideration makes it possible to dispel many of the stereotypes surrounding AI/AN drug and, especially, alcohol use. This chapter considers the published results of national, regional, tribal, and local surveys on AI/AN drug and alcohol use and includes an examination of urban and adolescent patterns of substance use.

Across all of the research considered, a few generalizations about AI/AN substance use emerge. On balance, the research indicates that relative to the general population, AI/ANs are more likely to use drugs and to consume alcohol in ways that are considered problematic even though their rates of alcohol use are actually lower than average. These patterns hold true for both AI/AN adults and youth. However, although there are considerable substance use problems among AI/ANs, those problems afflict only a minority of the AI/AN population. Most AI/ANs are not currently drug users and those who have used at some point in their lives live drug-free today. Likewise, even though the prevalence of binge and heavy drinking is greater among AI/ANs than in the general population, the majority of AI/ANs who consume alcohol do so in moderation.

NATIONAL ESTIMATES OF AI/AN ALCOHOL AND DRUG USE

A number of different studies provide national-level estimates of substance use by AI/ANs. These include the National Survey on Drug Use and Health, the Behavioral Risk Factor Surveillance Survey, the National Epidemiologic Survey on Alcohol and Related Conditions, and the National Longitudinal Alcohol Epidemiologic Survey. Large, nationally representative samples were used in each of these, which makes comparisons of relatively small sub-populations like AI/ANs possible. However, when considering estimates of AI/AN substance use based on these nationwide surveys, a couple of points should be kept in mind because of their possible effects upon comparability with more local AI/AN populations. First, even though these studies used nationally representative samples, the extent to which the sub-sample of AI/ANs represents the AI/AN population as a whole is unknown, and is thought to

be “predominantly nonreservation” (O’Connell, Novins, Beals, & Spicer, 2005, p. 108). Additionally, the extent to which respondents in nationwide surveys are tribally affiliated is unclear because AI/AN heritage was self-identified. As will be seen later in this chapter, there are some differences between the results of nationwide surveys and those of surveys that have considered reservation populations.

The National Survey on Drug Use and Health (NSDUH)¹ is the first study considered here that examines the differences between AI/AN and non-AI/AN alcohol and drug use on a nationwide basis. Conducted on a regular basis since 1971 by the Substance Abuse and Mental Health Services Administration (SAMHSA), the NSDUH uses a particularly large sample (67,802 respondents in 2006, including 874 respondents who self-identified as AI/AN) which allows for comparisons between sub-populations (SAMSHA, 2007b). It is administered in-person to ensure completeness and to achieve a relative high response rate (75% in 2006) using computer-assisted, self-interview administration protocols to reduce social-desirability bias (SAMSHA, 2007b). A number of reports based on analyses of NSDUH data from various years provide comparisons of the prevalence of drug and alcohol use by AI/ANs with that of the general population. Overall, where differences between AI/ANs and non-AI/ANs were evident in the NSDUH, AI/ANs generally reported higher rates of drug use substance use and abuse.

An early report using NSDUH data from 1999 to 2001 found few differences between AI/ANs and non-AI/ANs. For all respondents age 12 and over, AI/ANs were more likely than respondents of other racial/ethnic groups to report the use of any illicit drug in the past month. AI/ANs were also more likely to report rates of binge and heavy drinking² that were higher than those reported by blacks and Asians but similar to what was reported by whites and Hispanics (Office of Applied Studies, 2003). Compared to all other races combined, AI/ANs age 12 and over were more likely to report an alcohol or illicit drug use disorder³ in the past year. There were also a few age-based differences between AI/ANs and non-AI/ANs in the 1999 to 2001 NSDUH. Among 12 to 17 year olds, AI/ANs reported higher rates of past month illicit drug use and binge drinking (but not heavy drinking) than did youth of other races (Office of Applied

¹The NSDUH was known as the ‘National Household Survey on Drug Abuse’ until 2001.

²In the NSDUH, “binge drinking” is defined as five or more drinks in one setting in the past month and “heavy drinking” is binge drinking on five or more days in the past month (Office of Applied Studies, 2003).

³In the NSDUH, respondents are classified as having “alcohol use disorders” or “illicit drug disorders” if they reported symptoms of abuse of or dependence on alcohol or illicit drugs as defined by criteria specified in the American Psychiatric Association’s *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.)(Office of Applied Studies, 2003).

Studies, 2003). For young adults age 18 to 25 there were no statistically significant differences in rates of reported illicit drug use, binge drinking, or heavy drinking. The only difference for respondents age 26 and over was in the rate of reported past month illicit drug use, while rates of reported binge drinking and heavy drinking were similar to those of other races (Office of Applied Studies, 2003).

A more recent report using data from the 2002 to 2005 NSDUH provides the basis for further comparisons. For alcohol use, AI/AN respondents were less likely than non-AI/ANs to report past year drinking but more likely to report symptoms characteristic of an alcohol use disorder (Office of Applied Studies, 2007a). With one exception – there was no difference in past year drinking among 12 to 17 year olds – this pattern held true for respondents of both genders and all age categories. Past year rates of reported illicit drug use or of symptoms of illicit drug use disorders were also higher for AI/ANs across both genders and all three age categories (Office of Applied Studies, 2007a). Considering specific illicit drugs, AI/ANs were more likely than non-AI/ANs to report past year marijuana, cocaine, hallucinogen,⁴ and inhalant use and to report symptoms of drug use disorders associated with marijuana, cocaine, and hallucinogen use (Office of Applied Studies, 2007a).

A pair of NSDUH reports regarding youth substance use allow further comparisons. Analyses of five years of NSDUH data (2002-2006) to examine patterns of underage drinking among respondents age 12 to 20 provided largely equivocal results: compared with the sample as a whole, AI/ANs reported similar rates of lifetime, past year, and past month alcohol use and past month binge drinking (Pemberton, Colliver, T. Robbins, & Gfroerer, 2008). The only differences between the two groups is that underage AI/ANs were more likely to report past year alcohol use disorders and *less* likely to report past month heavy drinking (Pemberton et al., 2008). One other NSDUH report dealing with youth substance use specifically considered marijuana use in 2005. According to this analysis, AI/AN youth are much more likely than youth of any other race/ethnicity to report marijuana use. Further, AI/AN youth aged 12 to 17 years reported past month marijuana use at least twice as often as whites, blacks, Asians, or Hispanics in the same age group (Office of Applied Studies, 2007b).

⁴The NSDUH does not distinguish between hallucinogen use for recreational purposes versus hallucinogen use for ceremonial purposes.

Surveys conducted for the Behavioral Risk Factor Surveillance System (BFRSS) are another source for reliable national estimates of AI/AN substance use. Two reports have been published that allow for national comparisons of binge drinking. One such study by Denny, Holtzman, and Cobb (2003) used BRFSS data from 1997 and 1999 to compare rates of self-reported binge drinking for AI/AN versus non-AI/AN respondents. Overall, although AI/AN respondents were slightly more likely to report binge drinking, that difference was not statistically significant (16.7% [95% c.i. 14.2-19.2] for AI/ANs, 14.6% [95% c.i. 14.4-14.9] for non-AI/ANs). A similar analysis of BRFSS data for 2000 to 2006 found no statistically significant differences between AI/ANs and non-Hispanic whites in rates of binge drinking or heavy drinking (Steele, Cardinez, Richardson, Tom-Orme, & Shaw, 2008).

Estimates of alcohol use and abuse from the 2001–2002 National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) also allow for detailed national comparisons of AI/AN drinking with that of the general population (Chen et al., 2006). A number of measures of adult alcohol use and abuse estimated from responses to the NESARC are presented in Table 1 to compare AI/AN drinking patterns with those of the general population. Reported standard errors were used to calculate 95 percent confidence intervals for each estimated rate and the overlap between confidence intervals was then examined to judge the statistical significance of differences in rates (Schenker & Gentleman, 2001) for each comparison.

Overall, the NESARC data indicates that AI/ANs are less likely to report alcohol use, although those that do drink are more likely to report alcohol consumption patterns that are considered problematic. For instance, although relatively fewer AI/ANs reported having at least one drink in they year prior to responding to the NESARC, those that were “current drinkers” were more likely to report “heavy drinking” (defined as averaging 2 drinks per day for men or 1 drink per day for women) (Chen et al., 2006). Rates of binge drinking (defined as 5 or more drinks in a day for men or 4 or more drinks in a day for women) were also generally higher for AI/AN drinkers than the rest of the population. A larger proportion of AI/AN drinkers reported binge drinking in the past year as well as averaging at least one binge drinking episode a month (i.e., 12 or more times in the past year). AI/AN drinkers were also more likely to report drinking enough to feel drunk and to report symptoms indicative of a DSM-IV alcohol disorder (Chen et al., 2006).

Table 1: Past Year Alcohol Use and Abuse, American Indians/Alaska Natives vs. U.S. Total, 2001-2002.

Pattern of Alcohol Use or Abuse	AI/AN			Total, U.S.		
	%	SE	95% C.I.	%	SE	95% C.I.
<i>Proportion of Entire Population</i>						
Current Drinker ¹	58.2	2.6	(53.1-63.4)	65.4	0.6	(64.3-66.6)
<i>Proportion of Current Drinkers</i>						
Heavy Drinker ²	21.9	2.6	(16.9-26.9)	15.7	0.3	(15.0-16.3)
Exceed Low-Risk Drinking Limits ³	51.8	2.9	(46.1-57.4)	43.7	0.5	(42.6-44.7)
Binge Drank ⁴ at Least Once	44.9	3.0	(39.1-50.7)	36.7	0.6	(35.6-37.8)
Binge Drank 1 to 11 Times	15.9	1.8	(12.4-19.4)	14.7	0.3	(14.1-15.3)
Binge Drank 12 or More Times	27.8	2.7	(22.6-33.0)	21.4	0.4	(20.6-22.2)
Drank Enough to Feel Drunk	44.4	2.9	(38.8-50.1)	37.1	0.6	(36.0-38.2)
DSM-IV Alcohol Disorder ⁵	20.8	2.5	(16.0-25.6)	12.9	0.4	(12.2-13.6)

Source: Adapted from Chen et al. (2006)

- Notes: ¹Consumed 1 or more drinks in past year.
²Consumed, on average, more than 2 drinks/day for men and 1 drink/day for women.
³Consumed, on average, more than 3 drinks/occasion or 7 drinks/week for women or 4 drinks/occasion or 14 drinks/week for men (NIAAA, 2004).
⁴Consumed 5 or more drinks for men or 4 or more drinks for women in a single day.
⁵Met the APA's (1994) criteria for alcohol abuse or alcohol dependence.

Table 2: Individual and Relatives' Alcoholism and Problem Drinking among Current Drinkers¹, American Indians/Alaska Natives vs. U.S. Total, 2001-2002.

Current Drinkers Reporting	AI/AN			Total, U.S.		
	%	SE	95% C.I.	%	SE	95% C.I.
Family History of Alcoholism	73.1	2.5	(78.0-68.2)	55.4	0.8	(56.9-53.8)
Alcoholic Parents	36.4	2.9	(30.7-42.1)	23.1	0.4	(22.2-23.9)
Alcoholic Spouse/Partner	16.3	1.7	(12.9-19.7)	10.5	0.3	(9.8-11.1)
Ever Receiving Alcoholism Treatment	10.0	2.0	(6.1-13.8)	4.3	0.2	(4.0-4.7)

Source: Adapted from Chen et al. (2006)

- Note: ¹Consumed 1 or more drinks in past year.

One unique aspect of the NESARC is that it also asked questions about the problem drinking of the respondents' relatives (Chen et al., 2006). As is shown in Table 2, AI/AN drinkers were more likely than the typical American drinker to report having relatives with

alcohol problems⁵ including a family history of alcoholism, alcoholic parents, or an alcoholic spouse/domestic partner. AI/AN drinkers were also more likely to report that they had ever received treatment for their problems with alcohol (Chen et al., 2006).

The 1992 National Longitudinal Alcohol Epidemiologic Survey (NLAES), the forerunner of the 2001-2002 NESARC, also provides estimates of AI/AN alcohol use and abuse that can be compared with national estimates. As in the NESARC, the results of the NLAES indicate that AI/ANs are more likely to have alcohol problems. In Table 3 we see that AI/AN respondents to the NLAES reported rates of past year alcohol use and heavy drinking that were similar to what was found for the general population. On the other hand, AI/AN rates of binge drinking (at least once in the past year and between 1 to 11 times in the past year), rates of drinking to drunkenness, and rates of DSM-IV alcohol disorder symptoms were greater than what was found nationally (Stinson et al., 1998). Results from the NLAES also indicate that AI/AN drinkers were more likely than typical American drinkers to report having relatives with alcohol problems. As shown in Table 4, AI/AN drinkers were more likely than drinkers in the general population to report having a family history of alcoholism, having alcoholic parents, or having an alcoholic spouse/domestic partner; they were also more likely to report being treated for problems with alcohol at some point in their lives (Stinson et al., 1998).

Besides the NSDUH, the BRFSS, the NESARC, and the NLAES, there are few other national estimates of AI/AN substance use. One other national study that bears mention is the Monitoring the Future survey of middle- and high school students that has been conducted since the 1970s. Unfortunately, very few AI/AN respondents are included in its sample, which lessens the reliability of any estimates of substance use and the comparisons that can be made from this data. Even when multiple years of Monitoring the Future data are considered as a single cross-section, confidence intervals on estimates of AI/AN students' substance use have been substantial. In separate analyses, one that combined data from 1985 to 1989 (Bachman et al., 1991) and the other that considered the years 1996 to 2000 (Wallace Jr. et al., 2002), 95 percent confidence intervals for some estimates of AI/AN students' reported substance use were as high

⁵An alcoholic or problem drinker was defined in the NESARC “for each respondent as a person who has: physical or emotional problems because of drinking; problems with a spouse, family, or friends because of drinking; problems at work or school because of drinking; problems with the police because of drinking—like drunk driving; or a person who seems to spend a lot of time drinking or being hung-over” (Chen et al., 2006, p. 9).

as plus-or-minus 6.3 percent and plus-or-minus 5.6 percent, respectively. As a result, estimated differences would have to be rather sizeable before they would approach statistical significance.

Table 3: Past Year Alcohol Use and Abuse, American Indians/Alaska Natives vs. U.S. Total, 1992.

Pattern of Alcohol Use or Abuse	AI/AN			Total, U.S.		
	%	SE	95% C.I.	%	SE	95% C.I.
<i>Proportion of Entire Population</i>						
Current Drinker ¹	41.9	4.5	(33.1-50.7)	44.4	0.4	(43.6-45.2)
<i>Proportion of Current Drinkers</i>						
Heavy Drinker ²	12.3	2.9	(6.6-18.0)	16.9	0.3	(16.2-17.6)
Binge Drank ³ at Least Once	80.8	4.5	(72.0-89.6)	55.9	0.6	(54.7-57.1)
Binge Drank 1 to 11 Times	42.9	6.0	(31.1-54.7)	29.6	0.4	(28.8-30.4)
Binge Drank 12 or More Times	38.0	7.0	(24.3-51.7)	25.6	0.5	(24.6-26.6)
Drank Enough to Feel Drunk	69.4	5.0	(59.6-79.2)	45.8	0.5	(44.8-46.8)
DSM-IV Alcohol Disorder ⁴	40.2	6.0	(28.4-52.0)	16.7	0.4	(15.9-17.5)

Source: Adapted from Stinson et al. (1998)

Notes: ¹Consumed 1 or more drinks in past year.

²Consumed, on average, more than 2 drinks/day for men and 1 drink/day for women.

³Consumed 5 or more drinks in a single day.

⁴Met the APA's (1994) criteria for alcohol abuse or alcohol dependence.

Table 4: Individual and Relatives' Alcoholism among Current Drinkers¹, American Indians/Alaska Natives vs. U.S. Total, 1992.

Current Drinkers Reporting	AI/AN			Total, U.S.		
	%	SE	95% C.I.	%	SE	95% C.I.
Family History of Alcoholism	76.1	6.1	(64.1-88.1)	55.9	0.5	(54.9-56.9)
Alcoholic Parents	54.7	6.9	(41.2-68.2)	24.6	0.4	(23.7-25.5)
Alcoholic Spouse/Partner	24.2	5.0	(14.4-34.0)	11.3	0.3	(10.7-11.9)
Ever Receiving Alcoholism Treatment	29.4	5.6	(18.4-40.4)	6.5	0.2	(6.1-6.9)

Source: Adapted from Stinson et al. (1998)

Note: ¹Consumed 1 or more drinks in past year.

The results of these nationwide surveys point to important differences in the substance use of AI/ANs compared to that of the general population. The results are consistently indicate that AI/ANs are more likely to use illicit drugs, to report symptoms of drug and alcohol use disorders, to have received alcohol treatment, and to indicate that relatives have drinking problems. And while there were inconsistencies between studies, the results of the nationwide

surveys generally indicate that AI/ANs are less likely to use alcohol but more likely to binge drink or to drink to intoxication.

LOCALIZED ESTIMATES OF AI/AN ALCOHOL AND DRUG USE

By aggregating results on a national basis, the surveys considered above mask important features of the epidemiology of AI/AN substance use. Fortunately, there is a body of literature about AI/AN drug and alcohol use based on tribal, city-specific, or regional samples that allows for further examination of the intricacies of the subject. These epidemiological studies are considered below, including an examination of research on adult AI/AN substance use, a consideration of the literature on youth AI/AN alcohol and drug use, and a discussion of studies about urban AI/AN substance use.

ADULT ALCOHOL AND DRUG USE

A few general conclusions can be drawn from the literature on adult AI/AN drug and alcohol use. First, we should be careful when making generalizations about AI/AN substance use, since the cultural diversity of AI/AN nations is reflected in their patterns of substance use. Conclusions that can be drawn pertain mainly to the patterns of alcohol consumption that have been influenced by the unique legal restrictions placed upon AI/AN drinking. As with some of the results of nationwide surveys, a number of localized studies indicate that, relative to the general population, AI/ANs are less likely to use alcohol in general, but more likely to consume larger quantities during the typical drinking occasion. Finally, in regard to the use of drugs other than alcohol, the few studies that have been conducted indicate that the rate of current drug use is greater among adult AI/ANs than non-AI/ANs, while lifetime prevalence and incidence of drug abuse disorders are similar to those among other races.

With the diversity of culture, history, and geography that makes each tribe unique, it is difficult to generalize about AI/AN substance use based upon tribal-specific studies. Just as it would be foolish to use research on Irish, French, and Russian drinking to make generalizations about European alcohol consumption, it is important to recognize that what is found for one tribe does not necessarily apply to others. Much of the research published on adult AI/AN alcohol consumption supports this point.

One sign of the diversity of AI/AN drinking patterns is the variation across tribes in terms the prevalence of alcohol use. For some tribes, the proportion of American Indians that are

drinkers is similar to that for the general population. For instance, May and Gossage (2001) found that the proportion of respondents in their survey of four Northern Plains tribes that reported drinking in the last 12 months (70.7% of males and 60.4% of females) was similar to what was found for the American population as a whole (68.3% of males and 60.0% of females). On the other hand, members of other tribes are less likely to drink. May and Smith (1988) found that 65% of Navajo men and 40% of Navajo women reported that they were current drinkers. In a review of earlier research on the epidemiology of American Indian alcohol use, May (1996) reported that the variation of reported rates of current drinking across tribes varied from a low of 30 percent to a high of 84 percent.

The BRFSS research mentioned above also allows for comparisons across regions, and provides further evidence of the diversity of AI/AN substance use patterns. In the analyses by Denny, Holtzman, and Cobb (2003) using 1997 and 1999 BFRSS data, regional analyses indicate that only AI/ANs of both sexes from Alaska had past month binge drinking rates that were higher than those of non-AI/ANs of both sexes nationally. For men alone, AI/ANs from the Southwest and from Alaska (but not from the Pacific Coast, the Northern Plains, or the East) had higher binge drinking rates than what was reported nationally for non-AI/AN men (Denny et al., 2003). Similar comparisons using BRFSS data from the years 2000 through 2006 found that only AI/ANs from the Northern Plains and from Alaska reported rates of past month binge drinking that were higher than the rate for non-Hispanic whites (Steele et al., 2008).

Although there is variation among tribes in terms of alcohol use, AI/ANs share a common history regarding their access to alcohol that is thought to have shaped some aspects of their modern day drinking patterns. Specifically, alcohol is a previously unknown, foreign substance⁶ brought to North America by Europeans that was illegal for AI/ANs to consume for all but the last half of the past century (Fuller, 1975). This lack of cultural precepts for alcohol use combined with the presence of laws that required covert consumption has created a style of drinking that is characterized as low frequency/high quantity (May, 1975). Research in support of this conclusion has shown that AI/ANs drink less often than the general population but on the

⁶The exception to this is, of course, the Tohono O'odham whose consumption of wine made from the fruit of the saguaro cactus predates European incursions into the Sonoran Desert (MacAndrew & Edgerton, 1969)

occasions when they do drink they consume above average quantities.⁷ For example, measures of alcohol consumption from the Strong Heart Study, a survey of 4,549 middle age and elderly American Indians from 13 tribes in Arizona, Oklahoma, and the Dakotas, found that the prevalence of alcohol among study participants was lower than in the general population but more likely to involve binge drinking (Welty et al., 1995).

The results of a survey of members of four Northern Plains tribes by May and Gossage (2001) also illustrate the low frequency/high quantity drinking pattern exhibited by many American Indians. In terms of low frequency, May and Gossage (2001) showed that on most days respondents did not drink; males drank on an average of 5 days per month while females drank on 2 days per month. Viewed another way, this indicates that the men and women surveyed for this study did not drink for 25 and 28 days per month respectively. However, on the occasions when drinking did occur, the respondents engaged in binge drinking: on the day in the past month when they drank the most, male respondents reported having an average of 7.5 drinks in a day while female respondents averaged 3.7 drinks per day. Taken together, these findings led the authors to conclude that “even though respondents are not drinking on *most* days, on days when they do drink, consumption is substantial” (2001, p. 14; emphasis in original).

The low frequency/high quantity pattern was also found among the two tribes surveyed in the comprehensive American Indian Service Utilization, Psychiatric Epidemiology, Risk and Protective Factors Project (AI-SUPERPFP) (Beals et al., 2003). Compared with the nationally representative sample of the NLAES, men from both a Southwestern and a Northern Plains tribe surveyed in the AI-SUPERPFP drank on fewer days per month but consumed a greater number of drinks on the days that they did drink. This pattern was particularly pronounced among the male members of the Northern Plains tribe who drank on half as many days in the past month than did members of the general population, but drank twice as many drinks when they did consume alcohol (Beals et al., 2003). Regardless of tribal affiliation, both men and women surveyed in the AI-SUPERPFP were less likely to report drinking at least once a month or to have drunk on more than eight days per month than were members of the NLAES population generally (O'Connell et al., 2005).

⁷ In this regard, the AI/AN pattern of drinking is more in line with what is found among the ‘dry’ cultures of northern Europe where a large proportion of the population is abstinent and drinking occasions are infrequent but marked by very heavy consumption (Ramstedt, 2001; Room & Makela, 2000).

Compared with research on alcohol, studies focusing on adult AI/AN drug use at the tribal level are relatively uncommon. The research that has been published indicates similar lifetime prevalence of drug use for AI/ANs as in the general population. Kunitz's (2008) survey of 1,086 Navajo adults found that the lifetime prevalence of drugs other than alcohol for male Navajo was similar to estimates for the US as a whole produced by the National Comorbidity Study (61.0% vs 55.8 %). The rate for Navajo females was somewhat lower than the national sample (36.7% vs 46.4%). Comparisons of the results of the AI-SUPERPFP against the NCS also found no differences between the general population and the Northern Plains and Southwestern tribes in lifetime prevalence in drug use (Whitesell et al., 2007).

There is an important difference in drug use among AI/ANs when compared with non-AI/ANs: AI/ANs are somewhat more likely to be current users than are non-AI/ANs. In their survey of four Northern Plains tribes, May and Gossage (2001) found that in the past year 20 percent had used marijuana, 6 percent had used methamphetamine, and 8 percent had used non-prescription painkillers. Each of these rates were considerably higher than what has been found in national studies such as the NSDUH. Differences in current drug use rates between the general population and American Indians surveyed in the AI-SUPERPFP were also found: among lifetime drug users, 35.6 percent of Southwest tribe males and 58.4 percent of Northern Plains tribe males reported drug use in the past year compared with 16.6 percent of US males as a whole (Whitesell et al., 2007).

Although the limited literature shows that American Indians are more likely to be current drug users, there is no evidence from the locally-based studies that their illicit drug use should be considered any more problematic than that of the general population. According to the results of the AI-SUPERPFP, the proportion of Northern Plains or Southwestern tribe members diagnosed with any DSM-IV drug use disorder (i.e., lifetime drug abuse or lifetime drug dependence) is similar to that of other Americans (Mitchell, Beals, Novins, Spicer, & AI-SUPERPFP Team, 2003). There is, in fact, some indication that the drug use of those surveyed in the AI-SUPERPFP is less problematic than for other groups because the proportion of American Indians that were diagnosed as having a *multiple* drug use disorder was less than half that of the general population (Whitesell et al., 2007). While it is important to keep in mind that the AI-SUPERPFP is but one study (albeit an extremely robust one) that considered only a tiny fraction of tribes (3 out of more than 550 recognized tribes), their results do point to the possibility that

AI/AN drug use is not too different from that of other Americans. On the other hand, it should be kept in mind that these results contradict the results of the NSDUH which indicate that AI/AN adults are more likely than other American adults to report symptoms of drug use disorders (Office of Applied Studies, 2007a).

Surveys conducted in Alaska provide us with a picture of alcohol and drug use by Alaska Natives. The BRFSS is particularly important because in Alaska it is administered in such a way as to (1) allow for consideration across the diverse geographic regions of the state with a disproportionate stratified sample and (2) to make possible comparisons of Alaska Natives with non-Natives through an oversample of the former. One such comparison was made by Wells (2004) who examined the results of the 2001 to 2003 BRFSS surveys to contrast the drinking patterns of Alaska Natives with those of non-Native Alaskans. Across the state, Alaska Natives were less likely to be current drinkers (49% vs. 64% for non-Natives), regardless of gender or age group. While less likely to drink, Alaska Natives were more likely to report binge drinking (five or more drinks in one sitting) in the past month (23% vs. 17% for non-Natives). The differences in binge drinking were statistically significant for the group as a whole and for women, but not for men (Wells, 2004). Using 1991-1993 BRFSS data Landen (1996) found that past month binge drinking was less prevalent among Alaska Natives relative to non-Natives (21% vs. 26%) generally, and more prevalent among Alaska Native women compared to non-Native women (20% vs. 12%).

A few surveys have considered both alcohol and drug use among Alaska Natives that inhabit the more isolated portions of the state. These studies indicate that the prevalence of alcohol consumption is less than what is found in other areas while the prevalence of marijuana use is considerably greater than estimates reported in more general surveys. The first study, a survey of 342 Iñupiat parents of preschool students from two Bering Sea villages conducted in the early 1990, found a rate of past month marijuana use three times greater than that of a national comparison group. The rate of past month alcohol use that was 65 percent less than that of U.S. as a whole (Stillner, Kraus, Leukefeld, & Hardenbergh, 1999). More recently, Segal and Saylor (2007) surveyed 296 Iñupiat and Aleut in western Alaska, and found that lifetime alcohol use (reported by 55% of women and 65% of men) was just slightly more prevalent than lifetime use of marijuana (reported by 48% of women and 62% of men).

Recent arrestees are an additional population of AI/AN adults whose alcohol and drug use is of interest. Two studies have been conducted with AI/AN arrestees. The first is a survey by May (2003) of 165 individuals arrested by either of two unnamed Northern Plains tribal police agencies. Preliminary results show that most arrestees (84%) reported binge drinking (5 or more drinks at one sitting) at least once in the month prior to arrest and that the typical arrestee reported binge drinking more than once a week on average (5.4 occasions in prior month) (May, 2003).

A most useful data source for understanding drug use among those who come into contact with the criminal justice system is the Arrestee Drug Abuse Monitoring (ADAM) program. Fully operational until 2003, the ADAM program allowed for the estimates of the extent of drug use in the population of individuals accused of criminal behavior and held in jails in cities across the U.S. (Hunt & Rhodes, 2001). What made ADAM unique are the voluntary and confidential urine tests that were completed within 48 hours of booking that measured suspects' marijuana, cocaine, heroin, methamphetamine, and other substance use prior to arrest. For the most part, data from ADAM has not been the subject of analyses of AI/AN arrestees' drug use patterns. An exception is the analysis conducted by Myrston (2003) of ADAM data from Anchorage, Alaska for the years 1999 through 2001, which indicated that Alaska Native arrestees were less likely than white arrestees to have used marijuana, cocaine, opiates, or methamphetamine prior to being arrested. Otherwise, no other researchers have considered this potentially useful data source for insights into AI/AN arrestees' patterns of drug use.

ALCOHOL AND DRUG USE BY AI/AN YOUTH

The substance use of AI/AN youth has been the subject of a considerable body of research. This includes studies that incorporate AI/AN youth as part of a nationally representative sample, studies that focus on American Indian youth from a broad, culturally diverse range of reservations, and studies limited to samples of youth from specific tribes or geographic areas. With some exceptions, these studies have indicated that the prevalence of drug and alcohol use among AI/AN youth is greater than what is found for American youth in general and for youth from all other races.

One of the more informative lines of research in the study of American Indian youth substance use has been conducted over the past 30 years by Fred Beauvais and his colleagues from the Tri-Ethnic Center at Colorado State University. Since 1975 they have carried out a

school-based replication of the Monitoring the Future project (Bachman et al., 1991) to survey American Indian adolescents that reside on or near reservations (Beauvais, Jumper-Thurman, & Burnside, 2008). Their research features a repeated cross-sectional design with an annual sample of between 8 and 12 schools selected from strata of culturally diverse tribes (i.e., California, Northwest Coast, Southwest, Plateau, Basin, Plains, East) to ensure geographic representativeness (Beauvais, Jumper-Thurman, Helm, Plested, & Burnside, 2004). This research has allowed us to track substance use by reservation youth and to compare those trends with what has been found for American youngsters in general.

A number of conclusions can be drawn from the research of Beauvais et al. (2008). First, American Indian youth are more likely than non-Indian youth to report using drugs or alcohol. For example, since 1980 there has been a statistically significant difference between the proportion of respondents who reported ever using marijuana: American Indian youth report rates of between 10 to 20 percent higher than non-Indian youth (Beauvais et al., 2008). Beauvais et al. (2008) report that the difference in prevalence has also held true for drugs other than marijuana. The second main conclusion of Beauvais et al.'s (2008) research is that fluctuations in the prevalence of American Indian youth drug use have corresponded with changes in non-Indian youth drug use. These authors have shown, for example, that peaks in the rates of American Indian youth marijuana use occurred when non-Indian youth marijuana use was also at its highest.

Perhaps the most interesting conclusion of Beauvais et al.'s (2008) research pertains to the trends underlying the observed fluctuations in American Indian youth substance use. Using a measure that categorizes respondents according to their overall involvement with drugs and alcohol (i.e., “high risk” users, “moderate risk” users, and “non/low risk” users), these authors have shown that overall increases and decreases in American Indian youth drug use over time correspond with changes in the proportion of youth classified as moderate risk users. Furthermore, they’ve found that about 20 percent of American Indian youth can be considered to be “high risk” users and that proportion has remained constant over the past 25 years (Beauvais et al., 2004). Essentially, this indicates that the substance use trends for the large majority of American Indian youth (roughly 80%) are similar to those of non-Indian youth while, at the same time, about a fifth of American Indian youth have continued to be heavily involved with drugs and alcohol (Beauvais, 1996).

While other multi-tribal research (e.g., Plunkett & Mitchell, 2000) has also shown that drug and alcohol use is more prevalent among AI/AN youth, a few multi-tribal studies call this conclusion into question. For instance, a 1989 health survey by Blum, Harmon, Harris, Bergeisen, and Resnick (1992) middle- and high school students from reservations across the eight Indian Health Services areas found relatively low levels of alcohol use and little difference in AI/AN and non-AI/AN youth drinking. Most of the youth surveyed said that they had never drank alcohol (59.8%) or only drank occasionally (20.7%) and only a small proportion of the respondents (10%) were considered ‘problem drinkers’ (Blum et al., 1992). To put their results into context, Blum et al. (1992) compared their sample to a sample of rural white youth and found that the white students were more likely to have drank in the past week (17.1% for white males vs. 14.1% for AI/AN males and 15.8% for white females vs. 10.2% for AI/AN females).

It is possible that the incongruence between the findings of Beauvais et al. (2008) and those of Blum et al. (1992) could be a function of the groups of tribes selected for their studies (as well as the demographics of their samples and the specific measures they used). Because prevalence varies greatly across studies of individual tribes or specific geographic areas, it is possible that Blum et al.'s (1992) sample was comprised of tribes with uncharacteristically low rates of youth substance use. In some areas youth substance use is very common, in some areas the prevalence is similar to that found for non-Indians, and in a few areas AI/AN youth are less likely to drink or take drugs.

The youth from some tribes have tremendously high rates of substance use. An extreme example is the sample of Hualapai youth surveyed by Gould (1999, cited in Gould, 2006) that reported almost universal alcohol consumption (88.9 % of boys and 92.6 % of girls Cockerham (1975) similarly found in his survey of youth on the Wind River Reservation that 92 percent of youth had consumed alcohol a some point in their lives and 80 percent considered themselves current drinkers.

A few state-based studies point to levels of drug and alcohol use by AI/AN youth that are higher than rates found for non-AI/ANs. For example, a survey of 835 adolescents from Washington state by Mosher, Rotolo, Phillips, Krupski, and Stark (2004) found that AI/AN youth were more likely than non-AI/AN youth to report using inhalants, marijuana, or alcohol. A similar 1994 survey of over 19,000 7th to 12th graders in New York state found that American Indian students began drinking at an earlier age, used illicit drugs more often during the past

month, binge drank (5+ drinks in one setting) more during the past year, and had the highest average volume of alcohol consumption compared to students of other races (Barnes, Welte, & Hoffman, 2002).

In one of the few studies focused on American Indian youth from the southeastern U.S., the prevalence of substance use was generally greater among a sub-sample American Indian adolescents relative to a sub-sample of white adolescents living in rural southern Appalachia (Federman, Costello, Angold, Farmer, & Erkanli, 1997). For instance, although rates of alcohol use in the past three months by 15-year-olds were similar (12.5% for American Indians vs. 12.9% for whites), American Indian 15-year-olds were more likely to have drunk at some point in their lives (38.9% vs. 33.3% for whites) (Federman et al., 1997). The differences in marijuana use between the two groups were much more pronounced. Nearly a third (30.3%) of American Indian 15-year-olds had used marijuana in their lives compared with less than a fifth (18.7%) of white 15-year-olds (Federman et al., 1997).

Another unique piece of research is the longitudinal study in which Walker et al. (1996) followed a cohort of 277 American Indian youth in Seattle from fifth to ninth grade and found substantial increases in lifetime prevalence of substance use. Their base line survey found 3.4 percent of the fifth graders admitted to drinking to intoxication, 21 percent admitted to using tobacco, and 5.5 percent admitted to smoking marijuana at some point in their lives. By ninth grade, the lifetime prevalence of drinking to intoxication was 41.5 percent, the lifetime prevalence of tobacco use was 59.2 percent, and the lifetime prevalence of marijuana smoking was 46.6 percent (Walker et al., 1996). Unfortunately, these rates were presented without a comparison group, which makes it difficult to determine if the cohort's drug and alcohol use is much different than non-Indians or American Indians from non-urban areas.

Studies of Alaska Native youth generally indicate that they have rates of substance use that are less than or similar to what is found nationally. For example, a survey conducted by Angstman et al. (2007) in the Yukon-Kuskokwim Delta of Alaska found somewhat lower rates of drug and alcohol use among a convenience sample of 665 Yupik youth (ages 6 to 18) who were participants in a childhood health assessment. The prevalence of "ever trying" a substance varied: one in six respondents (15.9%) had tried alcohol, one in ten (10.0%) had tried other drugs, and one in thirteen (7.5%) reported use of inhalants (Angstman et al., 2007). Among high school youth (aged 15 to 18), 48 percent had used alcohol, 31 percent reported trying other

drugs, and 14 percent had used inhalants. Compared with what has been found in national surveys, the rates of alcohol use by Yupik high school students were considerably lower. This finding is attributed in part to the fact that the majority of the villages in the study area prohibit the importation and/or possession of alcohol (Angstman et al., 2007). A 1983 survey of 600 mostly Iñupiat high school students from Barrow, Kotzebue, and Nome, Alaska found rates of lifetime or past year alcohol use (68% and 43%, respectively) that were similar to what was found in that year's national Monitoring the Future study (in which 66% and 47% of students reported drinking in their lifetimes and in the prior year, respectively) (Bowman, Mala, Segal, & McKelvy, 1985).

In addition to the general drug and alcohol surveys, two studies have considered inhalant use by Alaska Native youth and have provided somewhat mixed results. The first, which examined data from a sample of 376 Iñupiat youth attending school in the Bering Straits region in 1991, estimated that nearly half of the students (48%) used inhalants at least once at some point in their adolescence but that only 6 percent had used inhalants in the month prior to the survey (Zebrowski & Gregory, 1996). A more recent survey of middle-school students' use of "harmful legal products" in northwestern and southeastern Alaska that included specific questions about inhalant use found that (1) there were no statistically significant differences between Alaska Native and non-Native students' lifetime or past-month use and (2) that usage rates among Alaska Natives were similar to those found nationally (Saylor et al., 2007). The discrepancy between these two studies' findings could be a result of the sample differences or could be a function of true changes over time in the use of inhalants similar to what has been found for American Indian youth in the lower-48 (Beauvais et al., 2008; Miller, Beauvais, Burnside, & Jumper-Thurman, 2008).

An important consideration when making comparisons between AI/AN and national youth substance use rates is the specific ages of the youth being considered. Generally speaking, AI/AN youth (Barnes et al., 2002; Miller et al., 2008; Okwumabua & Duryea, 1987) have an earlier age of substance use onset. As a result, there is a negative association between the magnitude of differences in substance use prevalence of AI/AN youth relative to youth of other races and the typical age of the youth being studied. In other words, because of their earlier start, drug and alcohol use will appear to be more problematic among younger AI/AN adolescents than among those nearing adulthood.

Another reason to consider the age of onset of substance abuse - particularly alcohol - is that it has been found to be an important risk marker for a whole host of other problems. Surveys of adolescents in the general population have found that early onset of drinking is associated with academic problems, drug use and dependence, nicotine dependence, delinquent behavior, and psychopathologies such as conduct disorder and antisocial personality disorder (Ellickson, Tucker, & Klein, 2003; McGue, Iacono, Legrand, Malone, & Elkins, 2001). General population studies among adults have found inverse associations between age of onset of drinking and the likelihood of other problem behaviors during adulthood including alcohol dependence, frequent heavy drinking, crashing a motor vehicle while intoxicated, unintentional injury, and intentional injury of oneself and others (Hingson, Heeren, Jamanka, & Howland, 2000; Hingson, Heeren, & Zakocs, 2001; Hingson & Zha, 2009). Similar research on American Indian populations has found associations between age of onset of drinking and alcohol problems in adulthood (Robin, Long, Rasmussen, Albaugh, & Goldman, 1998). For instance, a study of southern California Mission Indians found an inverse association between age of first alcohol intoxication and the prevalence of adult alcohol dependence: nearly all (92%) of the respondents who reported getting drunk before age 12 met the criteria for alcohol dependence, compared with very few of those who first got drunk at or after age 21 (12%) (Ehlers, Slutske, Gilder, Lau, & Wilhelmsen, 2006).

Research looking at the age of onset of drug and alcohol use has generally shown that AI/AN youth start drug and alcohol use earlier than their non-AI/AN counterparts. For example, a survey of western North Carolinian youth found that American Indian children (the large majority of whom were Cherokee) were more likely than white children of the same age group to report having ever drunk alcohol or used drugs (Federman et al., 1997). Among 12-year-olds, the reported lifetime prevalence of alcohol use among American Indians was 14.8 percent compared with 7.1 percent for whites. Similarly, 13-year-old American Indians were more likely to have reported smoked marijuana compared with similarly aged whites (7.7% versus 3.1%) (Federman et al., 1997). Likewise, a survey of New York state middle and high school students found that American Indian youth reported a lower age of onset of drinking (i.e., the age at which they first had more than just a sip of an alcoholic beverage) compared to students of other races. On average, American Indian youth said that they started drinking a year earlier (at 13.2 years of age) than white or black youth (both on average at 14.3 years of age) (Barnes et al., 2002).

There is some research that suggests early onset is more likely for American Indian youth who reside on reservations. Yu and Stiffman's (2007) comparison of 205 American Indian reservation youth with 196 American Indian urban youth found that the former started drinking (defined as having at least one standard drink a month for six months in a row) about 11 months earlier than the latter. The earlier onset of substance use by American Indian youth is also apparent in surveys of pre-teens. In their reanalysis of 10 years of survey data of fourth, fifth, and sixth graders, Miller et al. (2008) showed that American Indian pre-teens were consistently more likely than non-Indian pre-teens to have gotten drunk, to have used marijuana, or to have used other drugs. Additional evidence of earlier onset of alcohol use among AI/ANs comes from the adults surveyed in the NESARC; among respondents who reported drinking in the year prior to the survey, AI/ANs were more than twice as likely as the general population (16.4% vs. 7.2%) to report beginning drinking before turning 15-years-old (Chen et al., 2006).

Not all research has found that AI/AN youth start alcohol and drug use earlier than children of other races or that the association is consistent across substance type. For example, Beauvais (1991) compared the results for Anglo youth responding to the American Drug and Alcohol Survey with a replicated survey of reservation youth and found no differences in the age at which respondents reported getting drunk for the first time. He did, however, present results that indicate American Indian youth who reside on reservations first try marijuana about a year earlier than Anglo youth (Beauvais, 1991).

The decreasing differences noted above in drug use prevalence for AI/AN youth relative to other youth appears to hold true for those who reside on reservations as well as for American Indian youth in general. For example, a consideration of past month substance use among American Indian reservation youth by Beauvais et al. (2004) found that eighth graders were 212 percent more likely to have been drunk and 411 percent more likely to have smoked marijuana when compared to students surveyed in the Monitoring the Future project. The differences between the two groups for tenth- and twelfth graders were much less dramatic: American Indian tenth-graders were 25% more likely to have been drunk and 138% more likely to have smoked marijuana) and among twelfth graders, American Indian youth were 31% and 131% more likely to have been drunk or to have smoked marijuana respectively (Beauvais et al., 2004). A similar pattern is found when looking at national estimates of American Indian youth drug and alcohol use. According to an analysis combining data from the 1996 through 2000 Monitoring

the Future surveys, the difference between the prevalence of American Indian youth substance use and the national prevalence was much larger for eighth graders than it was for twelfth graders (Wallace et al., 2003). For instance, American Indian boys in eighth grade had a prevalence of marijuana use in the past 30 days that was 98 percent greater than what was found nationally while by twelfth grade that difference decreased to only 5 percent. Likewise, American Indian eighth graders were 36 percent more likely than average to have drunk alcohol in the past month while for twelfth graders there was no difference between the two groups (Wallace et al., 2003). It is worth mentioning, though, that the comparison groups against which AI/AN rates are contrasted are not necessarily representative of reasonable levels of substance use. With no set standard for an “acceptable prevalence” of youth drug or alcohol use and an ideal rate of zero, judging the degree to which AI/AN substance use is problematic is only possible by considering their rates relative to national rates or to the rates of other racial groups. It is therefore necessary to try to put these comparison groups into some context for a better appreciation of how much concern should be raised over a specific level of AI/AN substance use.

It is possible to contextualize distinctions between AI/AN and national rates of substance use by comparing rates of substance use for the U.S. with those of other nations. For youth, the most informative research has considered substance use rates across Europe and North America. These international studies indicate that American youth are much less likely than their European counterparts to drink alcohol but are much more likely to use marijuana (Currie et al., 2008; Grube, 2005). Given this research, it would appear that a convergence of AI/AN and national youth alcohol use rates would be a positive sign whereas comparable rates of marijuana use would still be considered problematic.

However, it is important also to keep inter-racial variations in drug and alcohol use in mind when comparing the prevalence of AI/AN substance use with that of other races. Relative to African-American and Asian-American youth, AI/AN youth *and* white youth generally have higher rates of use of most substances (Barnes et al., 2002; Mosher et al., 2004; Office of Applied Studies, 2003; Wallace et al., 2003). As such, it is ill advised to consider AI/AN substance use rates that are similar to white rates to be an indication of healthy AI/AN youth. For instance, the findings from the 1985-1989 Monitoring the Future surveys that show that American Indian and white male binge drinking rates were identical would seem encouraging until one considers that both groups were twice as likely as African-American males and 2.5

times more likely than Asian-American males to have consumed 5 or more drinks in one setting in the 2 weeks prior to the survey (Bachman et al., 1991). In other words, it isn't necessarily a good thing that American Indian adolescents' drug and alcohol use patterns approach those of white adolescents because those white adolescents also have substance use "issues" when considered in light of the experiences of minorities other than AI/ANs.

ALCOHOL AND DRUG USE BY URBAN AMERICAN INDIANS AND ALASKA NATIVES

Given that the majority of the AI/AN population lives in urban areas, it is necessary to consider research on substance use by urban AI/ANs. According to the 2000 US Census, three-fifths (60.5%) of the population who self-identified as only AI/AN and two-thirds (67.4%) of those who self-identified as wholly or partly-AI/AN lived in urban areas. Published research has focused mostly on alcohol and is somewhat equivocal in terms of the differences between urban AI/AN and rural AI/AN substance use. Studies that have found differences generally indicate that the frequency of urban AI/AN drinking is greater than that of rural AI/ANs but that the quantities consumed per drinking occasion are similar.

Some surveys have found little difference between urban and reservation/rural alcohol and drug use for AI/ANs. For instance, among the sub-sample of Washington state American Indians surveyed by Akins, Mosher, Rotolo, and Griffin (2003), reservation or rural residence was unassociated with the likelihood of illicit substance use or being diagnosed with alcohol or drug use disorders. Similarly, Wells' (2004) examination of BRFSS responses found that drinking was more prevalent among Alaska Natives residing the state's urbanized areas, but that binge drinking was not associated with level of urbanization. Yu and Stiffman (2007) considered the differences in drinking patterns among a stratified sample of 205 reservation and 196 urban American Indian youths from the southwestern U.S. Their bivariate results indicated higher levels of alcohol abuse and dependence among reservation youth in terms of number of symptoms and likelihood of diagnosis but the associations were rendered non-significant once considered using logistic regression models controlling for socioeconomic status, family members' substance problems, peer misbehavior, participation in cultural activities, and having a sense of cultural pride (Yu & Stiffman, 2007).

Two studies, the newest of which was conducted nearly 20 years ago, point to higher levels of alcohol consumption among urban American Indians relative to reservation American Indians of the same cultures. Beltrame & McQueen (1979), in their examination of Lumbee

drinking patterns, found that a fifth of reservation residents and a third of city dwellers were classified as heavy drinkers. A comparison of self-reported drinking patterns in matched samples of rural and urban Navajo, Sioux, Cherokee, and California *rancheria* Indians by Weibel-Orlando (1990) indicated that the frequency of drinking was higher for the urban sample and that the two groups consumed similar average quantities per occasion. She found that the rural sample drank, on average, once or twice a month while those living in urban areas typically drank one or two times per week. Although the mean consumption for both groups was similar, the author noted that there was considerably more dispersion in the urban sample, which meant that their average consumption was skewed by a small number of extremely heavy “skid row” drinkers that overshadowed the majority of urban drinkers who generally had no more than two drinks per occasion.

The results of a number of surveys of AI/AN residents of specific cities have been published without reference to a comparison group to put the findings into context. However, even without a criterion, the results appear to indicate rather high levels of urban AI/AN substance use. For example, a survey of 754 AI/AN primary care patients in Seattle found that more than half (56%) had abused alcohol at some point in their lives and a quarter (27%) were abusing alcohol at the time the survey was conducted (Shore, Manson, & Buchwald, 2002). Nearly a third (31%) of respondents to a survey of 235 American Indians residing in Navajo Nation border town of Flagstaff, Arizona reported problems with drugs or alcohol (Chester, Mahalish, & Davis, 1999). In 1992, a convenience sample of 374 American Indians residing in Denver, Colorado surveyed to develop an understanding of that population's mental health needs found that roughly three-fifths (61.3%) of respondents reported having a substance abuse problem sometime in their lifetime (King, 1999). A general population survey of American Indians residing in and around Butte, Montana conducted in 1992 found that as adults, 82 percent of men and 67 percent of women met the criteria for alcohol abuse or dependence while 48 percent of men and 47 percent of women met the criteria for drug abuse or dependence (Barron, Oge, & Markovich, 1999).

In addition to surveys, urban AI/AN drinking has also been examined using public health records. The results of these studies generally point to higher levels of problematic alcohol consumption among urban AI/AN residents relative to other urban residents with mixed results when compared to rural AI/AN residents. One of the first studies of this kind by Grossman,

Krieger, Sugarman, and Forquera (1994) considered AI/AN mortality in the 1980s for one urban county and seven rural counties with reservations in Washington state. Within the urban county, the rates of alcohol-related mortality for AI/AN residents were substantially higher than those found for whites or African-Americans. They also found that the urban AI/AN alcohol-related mortality rate was higher than same rate for rural AI/ANs (Grossman et al., 1994). A recent study by Castor et al. (2006) of health disparities faced by AI/ANs residing in 34 counties served by federally funded urban Indian health organizations compared their mortality rates associated with substance use to similar rates for the counties' general population and for AI/ANs nationally (which includes reservation residents). They found that the rates of death attributed to liver disease and other alcohol-related causes were much higher for the urban AI/AN population than for the urban general population but essentially the same as for the national AI/AN population. For drug related deaths, the reverse was true in that the rates for the urban AI/AN population and the urban general population were equal and both were greater than the rate for the national AI/AN population (Castor et al., 2006).

SUMMARY – PATTERNS OF AI/AN ALCOHOL AND DRUG USE

For the most part, the research reviewed in this chapter provides a bleak picture of AI/AN patterns of substance use. A couple of findings are fairly consistent regardless of whether the sample is youth or adult, comes from reservations or urban areas, or is part of a study that is nationally representative or is more localized in scope. First, surveys of youth, as well as a relatively smaller number of surveys of adults, indicate that illicit drug use appears to be more frequent among AI/ANs than it is in the general population. Even with fluctuations over time that have paralleled national trends, the prevalence of illicit drug use by AI/AN youth has consistently surpassed rates among the general population. The other consistent finding across much of the research is that the AI/AN style of drinking is best characterized as “low frequency/high quantity.” Although the research is not entirely unanimous on this finding, most studies that have examined AI/AN drinking have shown that they are less likely to use alcohol but are more likely to consume larger volumes during a typical drinking occasion. Drinking patterns among urban AI/ANs are something of an exception to this characterization because they drink as often as non-AI/ANs while consuming volumes that are similar to those consumed by rural AI/ANs.

To be fair, this seemingly dismal portrayal of AI/AN substance use must be qualified by a recognition of important inter-tribal/cultural differences, intra-tribal differences, and intra-personal differences in drinking and drug use. First, the research indicates that there is substantial inter-cultural diversity across the AI/AN population that is reflected in patterns of substance use. The studies reviewed in this chapter clearly reveal the considerable variation between tribes in the prevalence of alcohol and illicit drug use and abuse with some tribes exhibiting rates similar to or below that of the nation as a whole. There is also a great deal of variability within tribes with most research indicating that the majority of AI/ANs are not current drug users or problem drinkers. Finally, the large majority of those who report substance use are more likely than not to be sober on any given day while also decreasing or eventually desisting their drinking and illicit drug use as they reach middle age.

CHAPTER 3: THE CONNECTION BETWEEN ALCOHOL AND DRUG USE AND CRIME

Although substance use is harmful in-and-of-itself due to the acute and chronic health effects experienced by drinkers and drug users, it is also problematic because of its apparent effects on criminal behavior. As it is the case for non-AI/ANs, many AI/ANs who come to the attention of criminal justice authorities do so for crimes committed while under the influence of drugs and, especially, alcohol. There is general agreement that substance use often accompanies interpersonal violence. However, beyond that point, there is little agreement that substance use can (or cannot) be thought of as a cause of violent crime. For some, the fact that drinking and drug use is a cause of violence is self-evident. Others are much more wary of describing the relationship between substance use and violence as causal. This disagreement is largely a function of different conceptions of causality.

On the one side, there is the lay conception of causation which looks to a more immediate connection between substance use and violent crime. As Loseke, Gelles, and Cavanaugh noted, “the causal connection between alcohol and violence is often simply assumed” such that “many members of the public accept [it] as common knowledge” (2005, p. 160). This is common in Alaska, where “alcohol is seen as the basic cause of Native problems” (Yamashiro, 1988, p. 442), and has been considered either “*a* root cause” or “*the* root cause” of violence amongst Alaska Natives by many including the police (Alaska Department of Public Safety, 1980; Mystrol, 2006), the Attorney General (Morones, 2005), therapeutic court treatment providers (Partners for Progress, 2007), and tribal leaders (Klouda, 2005). This understanding of the relationship between alcohol and violence is beset by what Hamilton and Collins termed the “malevolence assumption” which they define as the “tendency to see alcohol as blameworthy whenever it accompanies problematic behavior” (1981, p. 254).

The immediate connection between substance abuse and violent crime is also seen as causal by criminologists who are proponents of the situational crime prevention approach. Their emphasis on “proximal” causes that are amenable to crime prevention (Cornish, 1993; Ekblom, 1994) treats substance use as but one potential circumstance used to differentiate between types of crime events which can then be the focus of situational solutions. In this sense, alcohol-related violence becomes a specific type of crime against which focused prevention policies and practices may be employed (Deehan, 2004).

Most other scholars of substance use and crime have a more stringent view of what it takes for the former to be considered a cause of the latter. Given that it is well established that substance use is neither a necessary cause of crime (because crime occurs in the absence of substance use) nor a sufficient cause of crime (because drugs and alcohol are widely used without ensuing criminal behavior) (Leonard, 2005), their research is instead guided by the consideration of probabilistic causation in which the issue is whether substance use increases the probability of crime, *ceteris paribus* (i.e., all things held equal). From this standpoint, research must establish time-order (i.e., that substance use proceeds crime), non-spuriousness (i.e., that it is substance use and not some other influence that actually causes crime), and association (i.e., that increases or decreases in substance use are accompanied by increases or decreases in crime) to show that there is a causal relationship between substance use and crime (Ronet Bachman & Schutt, 2007).

To further define the criteria researchers use for establishing causality, it is also necessary to consider the types of measures that can and cannot be used to determine if there is an association between two variables. Specifically, it is important to distinguish between measures of co-occurrence and measures of association because only the latter are of use when considering if there is a probabilistic causal relationship between substance use and crime. To establish association, it is necessary to show that there is a correlation between criminal behavior and alcohol or drug use. In this regard, association would be measured in terms of the extent to which differences in criminal behavior are accompanied by corresponding differences in substance use. Statistically, the strength of an association is a function of the reduction of the number of errors made when predicting the dependent variable based on knowledge of the independent variable in proportion to the number of errors that would be made when predicting the dependent variable without knowledge of the independent variable (Walker, 1999). To calculate a measure of the strength of an association therefore requires full knowledge of all possible values of both independent and dependent variables.

Co-occurrence statistics come from what epidemiologists refer to as “event-based studies” in which the cases considered are limited to some sort of event such as a violent crime (Roizen, 1997). The co-occurrence rate for alcohol or drug-involved crime tells us what proportion of offenses were determined to have involved drinking or drug use. Their use when considering a causal relationship between substance use and crime is problematic because they

are not measures of correlation that allow us to characterize the direction and strength of statistical associations. In their review of the methodological issues involved in the epidemiology of alcohol-related violence, Lipsey, Wilson, Cohen, and Derzon argue that:

“[s]tatistics about the co-occurrence of alcohol use and violent behavior, however, do not constitute a correlation between alcohol and violence, since there is no variation on the violence variable – everyone in the sample is violent. Put another way, there is no base rate information in these statistics about the level of alcohol use among those comparable persons who were not violent. Thus, if alcohol is involved in 50% of violent offenses, we do not know if it is involved in 10, 50, or 90% of nonviolent offenses by otherwise comparable persons. Without the ‘other half’ of the data required for correlation, no strength of association information can be garnered from co-occurrence statistics” (1997, p. 262)

Essentially, the lack of a basis for comparison makes it impossible to be certain that the rate of alcohol or drug involvement of crime victims or offenders at a certain point in time is any higher (or lower) than that of individuals who are not crime during that same time period (Goodman et al., 1986; Lipsey et al., 1997; McCord, 1993; Offord & Kraemer, 2000; Roizen, 1997).

Although preferred over measures of co-occurrence, measures of association only provide partial evidence of a causal relationship between substance use and criminal behavior. Statistical measures of association (i.e., correlations) cannot be used by themselves to demonstrate causation. Instead, as noted above, before we can accept the notion that substance use is a probabilistic cause of crime it is also necessary (1) to show that substance use precedes criminal behavior and (2) to show that an apparent association between substance use and criminal behavior is not the result of some other causal influence. To demonstrate causation we have to provide evidence of more than just association. Correlation, as the old adage reminds us, is not causation.

This chapter deals with the connection between substance use and crime in AI/AN communities. In doing so, it provides a review of the findings of two different types of studies. The latter portion of this chapter examines studies on the association of substance use and crime among AI/ANs, and we will see that although there is substantial evidence of an association between substance use (especially alcohol use) and violence in AI/AN communities, research has yet to establish substance use as a cause of violence among AI/ANs. Research on the co-occurrence of alcohol and/or drug use and crime in AI/AN populations is considered first.

CO-OCCURRENCE OF ALCOHOL AND OTHER DRUG USE AND CRIME

The lay conception of the connection between drinking and/or drug use and crime – namely that substance use is an assumed cause of criminal behavior – is most often supported by research on the relative frequency of alcohol and/or drug involvement in criminal acts. From this perspective, the higher the co-occurrence rate (i.e., the greater the proportion of cases categorized as involving alcohol or drugs), the stronger the link between substance abuse and crime. However, measures of co-occurrence cannot be used to establish causation. At best, they can inform us how often criminal acts are preceded by substance use.

Considering research that used either official statistics (primarily police records) or the results of surveys, a couple of conclusions can be drawn about the co-occurrence of substance use and violent crime in AI/AN communities. First, many violent offenses committed by AI/ANs are drug or, especially, alcohol-related. More than half of the violent offenses were classified as alcohol-involved in some jurisdictions examined. Second, it is not clear that AI/AN co-occurrence rates are any higher or lower than what is found in the general population. Although a few studies do allow for comparisons of substance use involvement for offenses committed by AI/ANs relative to those committed by non-AI/ANs, most research only considers co-occurrence within AI/AN jurisdictions or among AI/AN survey respondents. The research that does allow for AI/AN co-occurrence rates to be put into context indicates that violent offenses committed by or against AI/ANs are more likely to involve alcohol than those committed by or against non-AI/ANs. Unfortunately, the external validity of these comparative studies is limited because the research is mostly from one atypical state (Alaska), from a single southwestern tribe (the Southern Ute), and from a national survey in which AI/ANs that are rural reservation residents are underrepresented (the National Crime Victimization Survey [NCVS]).

ALCOHOL AND DRUG INVOLVEMENT ACCORDING TO CRIMINAL JUSTICE SYSTEM RECORDS

From early on, the study of crime and the study of alcohol consumption amongst AI/ANs have been nearly synonymous (Hayner, 1942; von Hentig, 1945; Peak, 1989). For instance, the report *Law and Order on Indian Reservations of the Northwest* that was presented to the US Senate as a larger set of hearings on American Indian social conditions in the 1930s pointed to alcohol use one of the main sources of criminal behavior in Indian Country (Brookings Institute, 1932 [Cited in Staley, 2008]). Whittaker (1962) noted in his early study of alcohol use among the Standing Rock Sioux that the tribal police reported that all serious crimes in the prior 10 years

had been committed by suspects under the influence of alcohol. Around that same time Stewart (1964) noted that offenders were under the influence of alcohol in anywhere from 59 percent to 95 percent of all types of offenses committed, depending on the reservation.

Research from Alaska examining reported cases of sexual assault and domestic violence committed by Alaska Natives provides some indication of the extent to which the police suspected alcohol and/or drug involvement. The first of these studies involved an analysis of all 4,288 incidents of domestic violence reported to the police in Anchorage between 1989 and 2002. Results showed that Alaska Natives had the highest rates of arrest for domestic violence and that the cases with Alaska Native suspects were much more likely to be classified by the police as involving alcohol, based upon their suspicions (Municipality of Anchorage, 2006). Although Alaska Natives only made up about 7 percent of the city's population, they were the suspect in 26 percent of arrests for domestic violence. Four-out-of-five cases (80%) with an Alaska Native suspect was classified (again, based upon the suspicion of the police), as being alcohol-involved, a proportion that was substantially higher than that of suspects that were white (54%), Hispanic (51%), Asian (42%), or African American (38%) (Municipality of Anchorage, 2006).

The co-occurrence of alcohol or other drugs and violent crime in rural Alaska was considered in studies examining the processing of cases of sexual assault (Postle, Rosay, Wood, & TePas, 2007) and of family violence (Rivera, Rosay, Wood, Postle, & TePas, 2008) reported to the Alaska State Troopers (AST). Analyses conducted for this report using the data from those two studies indicate that Alaska Native suspects were more likely than non-Native suspects to have been suspected by AST to have been drinking alcohol prior to committing a sexual assault or an act of family violence (see Table 5). Compared with non-Native suspects, Alaska Native suspects were 44 percent and 59 percent more likely to be reported to have used alcohol before committing sexual assaults or family violence, respectively. Alcohol use by victims was more frequent when family violence was committed against Alaska Natives relative to non-Natives and roughly the same in cases involving sexual assault. In cases of family violence, Alaska Native victims were 79 percent more likely than non-Native victims to be reported to have been drinking prior to being assaulted. Suspects' or victims' use of drugs other than alcohol, as recorded in the case files examined by Postle et al. (2007) and Rivera et al. (2008), was much less frequent than what was found for alcohol use. The only difference in

co-occurrence rates of drugs use and violence was for suspects of sexual assault and in those cases non-Native suspects were actually more likely than non-Native suspects to have been reported to have used drugs prior to the commission of their crime.

Table 5: Proportion of Sexual Assault and Family Violence Cases Reported to the Alaska State Troopers Involving Alcohol and/or Drug Use, Alaska Native Victims and Offenders vs. All Other Victims and Offenders, 2003 and 2004.

Offense and Substance(s) Used	% Used by Suspect		% Used by Victim	
	Alaska Native	non-Native	Alaska Native	non-Native
<i>Sexual Assault</i>				
Drank Alcohol	40.7	28.3***	28.2	24.0
Used Drugs	4.5	7.7*	4.4	4.9
Drank Alcohol and/or Used Drugs	39.9	27.6***	28.0	24.5
<i>Family Violence</i>				
Drank Alcohol	72.7	45.7***	42.5	23.7***
Used Drugs	1.7	3.3	1.1	1.3
Drank Alcohol and/or Used Drugs	73.9	48.6***	41.4	23.9***

Sources: Reanalysis of data from Postle et al., 2007; Rivera et al., 2008

Note: * p < .05, *** p < .001

Similar research from North Dakota provides further indication of higher levels of co-occurrence of alcohol and violence among AI/ANs. An analysis of police records from the North Dakota Crime Reporting Program for 2001 found that domestic violence cases with American Indian offenders were more likely to involved alcohol and/or drugs than similar cases with non-American Indian offenders. Roughly three out of five domestic violence cases with American Indian offenders (59%) versus two out of five domestic violence cases with non-American Indian offenders (39%) were classified by the police as involving alcohol and/or drug use (Heidt, 2002).

Other indicators from the criminal justice system also show that alcohol is implicated in many AI/AN offenses. Mills (1989), for instance, found that of Wind River Reservation Shoshone and Arapaho convicted for non-violent and violent felonies, 38 percent and 82 percent respectively were intoxicated at the time they committed their offense. Of those offenders, 77 percent had three or more previous alcohol-related arrests (Mills, 1989). Marenin (1992), in his examination of Alaska Village Public Safety Officer records, found that alcohol was implicated in anywhere from 56 percent to 83 percent of offenses against the person in five Alaska Native

villages. Interviews conducted with American Indian prison inmates in Nebraska indicate that they were either drunk or drunk and high on drugs while committing 91 percent of the offenses for which they were incarcerated (Grobsmith, 1989). Similarly, only 1 of 30 American Indians serving time for homicide interviewed by Bachman (1991) was not under the influence of alcohol and/or drugs when committing the murder that resulted in their imprisonment.

Most recently, a report by Leonardson (2008) using records provided by the Bureau of Indian Affairs (BIA) Office of Law Enforcement and Security to examine crime rates on reservations in the Pacific Northwest gives us a good look at the co-occurrence of alcohol and drug use and crime in Indian Country. Table 6 provides a state-by-state comparison of the total number of, and range across reservations, in alcohol and drug involvement in all offenses known to tribal police in the Northwest.⁸ The most distinct conclusion to be drawn is that reservation crime in the Northwest is much more likely to involve alcohol (at 33.1% of all offenses) than it is to involve drugs (at 2.6% of all offenses). There was substantial variation within and among states in terms of the degree to which offenses were deemed to be related to substance abuse. The proportion of crimes involving alcohol reported to the police on Wyoming's one reservation was double that of reservations in Oregon and Montana which were, in turn, more than double the proportions on reservations in Idaho and Washington. Crimes were much more likely to be deemed drug-involved on reservations in Oregon and Washington than in states located inland.

The statistics reported by Leonardson (2008) also allow for an examination of the co-occurrence of alcohol/drug use with violent crime and with property crime. As is shown in Table 7, substance use was more likely to be associated with UCR violent index offenses relative to UCR property index offenses: in all five Northwestern states, about half of all violent offenses (48.6%) and an eighth of all property offenses (12.7%) involved alcohol. Drug involvement in UCR index offenses was much less commonplace. Only 3.3 percent of violent crimes and 1.8 percent of property crimes were classified as being drug-involved across the five states analyzed. Interestingly, the state with the highest co-occurrence of drugs and violent crime had the lowest co-occurrence of alcohol and violent crime (Washington) while the state where violent crimes

⁸ Leonardson (2008) does not specify the method by which offenses were determined to have involved alcohol or drug use. When analyses are based on police records, it is typical that alcohol or drug involvement is based upon the judgment of investigating officers (Greenberg, 1981). Furthermore, although Leonardson does not specifically state that it is the perpetrators' alcohol or drug use that is at issue when classifying cases as alcohol or drug involved, it might be implied that is the case because he draws comparisons with national figures on the proportion of cases that were "committed under the influence of alcohol" (2008, p.14).

were most likely to be classified as alcohol involved was the state where violent crimes were least likely to be classified as drug involved (Wyoming) (Leonardson, 2008).

Table 6: Proportion of All Offenses Involving Alcohol or Drugs Occurring on Indian Reservations in 5 Northwestern States, 2004 to 2007.

State	% of All Crimes that were Alcohol Involved		% of All Crimes that were Drug Involved	
	Total of all Reservations in State	Range of Individual Reservations in State	Total of all Reservations in State	Range of Individual Reservations in State
Idaho	15.2	12.2 to 32.5	2.7	0.8 to 17.1
Montana	38.9	9.2 to 72.8	1.2	0.2 to 19.2
Oregon	37.0	6.3 to 58.0	9.9	2.3 to 12.1
Washington	15.0	1.5 to 34.2	5.9	0.2 to 18.1
Wyoming	75.5	based on 1 reservation	2.4	based on 1 reservation
Total, 5 States	33.1	1.5 to 75.5	2.6	0.2 to 18.1

Source: (Leonardson, 2008).

Notes: Excludes 3 reservations with 0 drug or alcohol involved offenses and 3 multi-reservation agencies. Some offenses that were alcohol involved were also drug involved, and *vice versa*.

Table 7: Proportion of UCR Part I Index Offenses Involving Alcohol or Drugs Occurring on Indian Reservations in 5 Northwestern States, 2004 to 2007.

State	Violent Index Crimes			Property Index Crimes		
	N	% Alcohol Involved	% Drug Involved	N	% Alcohol Involved	% Drug Involved
Idaho	370	56.2	7.3	885	8.7	1.9
Montana	2874	51.4	1.6	4219	27.3	0.8
Oregon	285	41.8	4.9	965	3.1	2.4
Washington	807	24.5	7.8	5433	2.6	2.5
Wyoming	238	92.0	0.8	152	55.9	0.0
Total, 5 States	4574	48.6	3.3	11654	12.7	1.8

Source: (Leonardson, 2008).

While Leonardson (2008) provides us with a compelling first glimpse into the patterns of crime reported to police serving on-reservation populations, his findings (and other research using similar statistics) must be interpreted with a number of caveats in mind. Obviously, the first of these is that the above estimates are based on police crime statistics, which are notoriously unreliable due to differential rates of victim reporting. Related to this fact is the

problem that the police agencies examined by Leonardson (2008) were much less likely than off-reservation agencies to report crime statistics to the federal government. About a third of the agencies (30.2%) submitted reports to the BIA every year over the four year period considered by Leonardson (2008) while a quarter of the agencies (27.9%) submitted reports to the BIA in only one or two of those years. These rates of submission are much lower than national levels: in 2004 the Federal Bureau of Investigation (FBI) received crime statistics from 80 percent of police agencies (FBI, 2005; Reaves, 2007). Inconsistencies in submission of crime statistics to the BIA by reservation police are problematic because we don't know how different the statistics that were submitted are compared to those that were not. Finally, the other point that should be kept in mind regarding the statistics provided by Leonardson (2008) is that the crimes that occurred on those reservations include an unknown proportion that were committed by non-Indians and therefore are not an accurate reflection of the co-occurrence of alcohol/drugs and crime committed only by American Indians.

On a more general level, it is important to point out that the co-occurrence measures found in studies such as Leonardson's (2008) are problematic because of a lack of standards for what it means for criminal offenses to be defined as alcohol or drug involved. Although jurisdictions that report crimes to the National Incident Based Reporting System (NIBRS) record cases as alcohol or drug involved if perpetrators are suspected by the police of drinking or drug use shortly before or during a specific incident (Federal Bureau of Investigation, 1988), NIBRS participation is nowhere near universal. Usually, it is left to an arresting officer when compiling her/his report to decide if drug or alcohol use is somehow connected to a specific offense. Without specific rules for classifying cases, there is variation in the classification of alcohol or drug involvement among officers and across jurisdictions (Greenberg, 1981) which renders comparisons unreliable.

A second issue with the reliability of police records on the involvement of substance use in criminal acts is the "slippage" between the number of cases that actually involved drugs or alcohol and the number of cases where that involvement is eventually recorded. This slippage occurs for two reasons. First of all, the police often have difficulties correctly identifying which suspects actually have been drinking alcohol. Numerous studies have shown that police fail to detect many intoxicated drivers following accidents or at sobriety checkpoints (Brick & Carpenter, 2001; Ferguson, Wells, & Lund, 1995; Moskowitz, Burns, & Ferguson, 1999;

Sjogren, Bjornstig, & Eriksson, 1997). The second source of slippage occurs when cases are known to be alcohol related by the police but are not classified as such due to sloppy record keeping. Sometimes, drinking is mentioned in the narrative of police reports but not in the data fields used to flag cases as alcohol-involved (Davidson, 2001; Saylor, Kehoe, Smith, & Starratt, 2000). This occurs even when cases, by definition, should be labeled as alcohol involved. Leonardson (2008) presented data showing that 28 percent of driving while impaired cases and 15 percent of drunkenness cases known to tribal police in the Pacific Northwest between 2004 and 2007 were not classified as being committed under the influence of alcohol. All too often, as Greenberg (1981) reminds us, noting the role of alcohol in a specific offense is much less of a concern than the information necessary for charges to be laid and for a case to be successfully prosecuted.

Related to the general unreliability of records of alcohol-involvement in criminal acts is the possibility that police in some jurisdictions are more likely than those from other areas to attribute AI/AN criminal behavior to drinking. As the largest non-Anglo racial group in the Great Plains, American Indians in this region have come to be treated as what Thatcher (1986) termed a “minority of disrepute.” Their deviance is seen as especially problematic by non-Indians who are quick to equate American Indian criminal behavior with alcohol use (Holmes & Antell, 2001). This, conceivably, might lead police from places such as Montana or the Dakotas – places where American Indians are the largest minority and their populations are consolidated on reservations – to be more likely to ascribe their crime as alcohol involved when compared to places with less concentrated AI/AN populations.

A final point to keep in mind when using police records to measure the co-occurrence of substance use and crime is that those records indicate the number of alcohol or drug related crimes the police know about rather than the number of different individuals who have been suspected of committing alcohol- or drug-related offenses. In many circumstances, a sizeable proportion of arrests are made up of a small number repeat offenders. For example, May (2003), in a report of preliminary results of a study of 2000 arrest records kept by two unnamed Northern Plains tribal police departments, found that a sixth of all arrestees (17%) were responsible for nearly half of all arrests (47%).

CO-OCCURRENCE OF CRIME AND ALCOHOL OR DRUGS IN VICTIMIZATION SURVEYS

The other primary source of data used to study the co-occurrence of alcohol and drug use and crime is victimization surveys. One basic benefit of using survey data to study the issue is that surveys capture information on all offenses that the respondent is willing to disclose regardless of criminal justice system involvement. This makes it possible to study the circumstances of offenses that are never brought to the attention of the police. Even though AI/ANs are just as likely – if not more likely – than others to report violent offenses,⁹ many crimes committed against AI/AN victims remain unknown to the police. The other benefits of using surveys are that they allow for a focus upon specific populations of interest and that they make it possible to obtain information not generally available in police records.

The National Crime Victimization Survey (NCVS) is a primary data source for comparisons of perceived substance use by perpetrators of violent and non-violent offenses against AI/ANs. In their analysis of responses to the 1992 through 2005 NCVS, Bachman, Zaykowski, Kallmyer, Poteyeva, and Lanier (2008) compared the circumstances surrounding incidents of violent victimization against AI/AN women with cases of violent victimization against women of other races. For both assault and especially for sexual assault, Bachman et al. (2008) report that perceived alcohol and/or drug use by the perpetrator was more likely to be reported by AI/AN victims than by victims of other races. More than a third (38%) of assault victims who self-identified as AI/AN reported that they believed the perpetrator who attacked them had been drinking and/or using drugs prior to the assault compared to 29 percent of victims who self-identified as white, 27 percent of victims who self-identified as African American, and 19 percent of victims who self-identified as Asian American (Bachman et al., 2008). For sexual assault, racial differences in the perceived alcohol and drug use of the perpetrator were even more considerable. Victims who self-identified as AI/AN were roughly twice as likely (at 68%) as victims of other races (34% for self-identified white victims, 35% for self-identified African American victims, and 27% for self-identified Asian American victims) to report that they

⁹According to the NCVS, between 1992 and 2005, 47.6 percent of assaults with an AI/AN victim were reported to the police versus 43.2 percent of assaults with a non-AI/AN victim while 45.0 percent of sexual assaults with an AI/AN victim were reported to the police versus 33.5 percent of sexual assaults with a non-AI/AN victim (Original analysis of BJS, 2008 conducted for this report). In their survey of Athabaskan women in Alaska, Magen & Wood (2006) found that more than half (51.7%) of the latest incidents of IPV were reported to the police which was almost double the reporting rate (26.7%) found for the nationally representative sample studied in the National Violence Against Women Survey (Tjaden & Thoennes, 2000). Abril (2003), in the Southern Ute Indian Tribe Community Safety Study, found that 43 percent of assaults against Southern Ute victims were reported to the police as opposed to only 35 percent of assaults against non-Indian women that were reported to the police.

believed the perpetrator had used alcohol and/or drugs prior to the attack (Bachman et al., 2008). While these results point to higher rates of drinking and/or drug use by perpetrators who committed violent crimes against AI/AN victims, it is important to note a couple of limitations of the NCVS that render tenuous the inferences that might be drawn from Bachman et al's. (2008) analyses. Their results are based upon a relatively small number of cases of self-identified AI/AN victims ($n_{\text{un-weighted}} = 528$ assault victims; $n_{\text{un-weighted}} = 33$ sexual assault victims) (Bureau of Justice Statistics, 2008) and the AI/ANs included in the NCVS sample are much less likely than AI/ANs in general to call an Indian reservation home (Long, Braunstein, Manning, & Anderson, 2008, p. 46).

Because of the problems with the generalizability of the NCVS to the AI/AN population, a number of local victimization surveys have been conducted in AI/AN communities over the past decade. In 2001, the Bureau of Justice Statistics (BJS) awarded grants for studies of the characteristics of violent victimization in and around three Indian reservations in the western US. These studies include adult victimization surveys conducted on the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) in Oregon, the Zuni Pueblo Indian Reservation in New Mexico, and the Southern Ute Indian Tribe (SUIT) in Colorado (Perry, 2004). A year earlier, work began on a National Institute of Justice (NIJ) funded victimization survey of Athabaskan women from interior Alaska (Magen & Wood, 2006). Each of these studies found that there is a high degree of co-occurrence between alcohol use and violence.

Two of these studies – the surveys of the CTUIR and of the Zuni Pueblo – focused exclusively on American Indian populations. The CTUIR survey was administered as an insert to a widely-read tribal newspaper while the Zuni Pueblo survey used both paper-and-pencil and face-to-face administration methods (Perry, 2004). Each study eventually surveyed a non-probabilistic sample of roughly 10 percent of the American Indian population residing on and around the reservation. As shown in Table 8, the Zuni Pueblo respondents (25%) were much less likely than the CTUIR respondents (65%) to report being the victim of a violent crime in the 12 months preceding their survey. A majority of the residents of the Zuni Pueblo and CTUIR that were the victims of a violent offense reported perpetrator intoxication (69% and 60%, respectively). Likewise, a majority (60% in both Zuni and CTUIR) of domestic violence victimizations involved a perpetrator that was perceived by the victim to be intoxicated (Perry, 2004).

Table 8: Violent Victimization and Perpetrator Intoxication in Two Reservation Populations, Circa 2001 to 2002.

Value	Location	
	Umatilla (CTUIR)	Zuni Pueblo
Sample Size	103	691
Number of Victims	67	173
Percent Victimized	65	25
Number of Victimitizations	88	518
Percent Intoxicated Perpetrator		
All Victimitizations	60	69
Domestic Victimitizations	61	60
Non-Domestic Victimitizations	60	not reported

Source: Adapted from Perry, 2004.

The Southern Ute Indian Tribe (SUIT) Community Safety Study, the third BJS-sponsored study, surveyed both tribal members and non-Indians from the surrounding area which made it possible to put the Southern Ute victimization rates into a comparative context. Questions in the SUIT survey regarding violent victimization asked respondents if specific types of violent acts had occurred. These acts included being threatened with a weapon, being slapped or hit, being beat, being kicked or bit, being pushed, grabbed or shoved, and being raped. Survey respondents who reported being victimized were then asked if the crime was committed by an offender who was under the influence of alcohol or drugs (Abril, 2003). Overall, violent acts against American Indian victims were much more likely than violent acts against non-Indian victims to involve perpetrator intoxication. According to an aggregate analysis conducted for this report using data from the SUIT survey final report (Abril, 2003), more than two-thirds of the violent acts against American Indian victims (68.0%) versus two-fifths of violent acts against non-Indian victims (40.4%) involved an attacker reported by the victim as intoxicated. This difference was statistically significant ($\chi^2 = 19.742$, 1 d.f., $p < .001$). The rate of alcohol and/or drug involved violent acts for American Indians was substantially higher than that of non-Indians. Based upon an analysis conducted for this report using data from the SUIT survey final report (Abril, 2003), there were 158 separate violent acts committed in the past year against the 312 American Indian respondents to the SUIT survey. In that same period, there were 34 separate violent acts committed against the 355 non-Indian respondents. On a standardized basis, this works out to 50.6 alcohol/drug involved violent acts per 100 American Indians versus only 9.6 alcohol/drug

involved violent acts per 100 non-Indians surveyed; this difference was also statistically significant ($\chi^2 = 97.273$, 1 d.f., $p < .001$).

Another victimization survey designed to put the results from an AI/AN population into a comparative context used an instrument that mirrored the National Violence Against Women Survey (NVAWS) to measure intimate partner violence (IPV) against a sample of 91 Athabaskan women residing in the interior of Alaska (Magen & Wood, 2006). Alcohol was involved in a large majority of the assaults against the two-thirds of the sample (63.7%) victimized by IPV: 78 percent of the perpetrators and 60 percent of the victims drank alcohol before their latest incident of IPV. The Athabaskan women's cases were more likely to involve alcohol compared to what was found nationally in the NVAWS where 52.3 percent of perpetrators and 8.6 percent of victims drank alcohol prior to their latest incident of IPV (analysis conducted for this report of data from Tjaden & Thoennes [1998]).

Although the above victimization surveys do provide some indication of the co-occurrence of substance use and violent crime, it is important to note a few limitations of the research. In addition to the general problems inherent in victimization surveys (Mosher, Miethe, & Phillips, 2002), there are a couple of issues specific to their use in terms of the co-occurrence of substance use and crime among AI/ANs. First, the measure of perpetrator substance use is of questionable validity because it is based on the victims' judgment that the perpetrator had or had not been drinking or using drugs before the violent act took place. Second, most of these surveys do not allow for analyses about the race of the perpetrator, which is problematic when looking at the co-occurrence of substance use and crime. Given the variation across studies regarding the proportion of cases that are inter- or intra-racial,¹⁰ the degree of co-occurrence of substance use and violence among AI/AN perpetrators is an open empirical question.

With the above caveats in mind, some conclusions about the co-occurrence of substance use and victimization of AI/ANs can be drawn. From the nationwide NCVS to the surveys of more localized populations, each has shown that a sizeable proportion of AI/AN victims were attacked by a perpetrator reported to have been drinking alcohol or using drugs. Furthermore, all of the studies that allowed for comparisons with non-AI/AN victims have shown that AI/AN victims were more likely to have been attacked by a perpetrator that was reported to have been

¹⁰Compare the NCVS which shows that at least 63 percent of all assaults against female AI/AN victims between 1992 and 2005 were inter-racial (Bachman, et al., 2008) with Magen and Wood's (2006) survey of Athabaskan women in rural Alaska which found that 79 percent of IPV assaults were intra-racial.

under the influence of alcohol or illicit substances. Although these studies are limited by a lack of information about the perpetrators' racial identity, they do provide some indication that violence against AI/AN victims is more likely to involve substance use relative to that committed against other races.

THE ASSOCIATION BETWEEN DRUG AND/OR ALCOHOL USE AND CRIME

A number of studies from various fields have examined the association between drug and alcohol use and crime among AI/ANs. For the most part, this research has relied upon self-report surveys and has used cross-sectional research designs. Although this correlational approach makes it possible to establish a statistical association between substance use and crime, it does not allow for assertions to be made about drinking and drug use as a *cause* of AI/AN criminal behavior or victimization. One problem is that none of the studies considered are able to account for the time order of the association, which makes it uncertain if survey respondents' substance use occurred before or after they offended or were victimized. As a result, the only conclusion that can be drawn from this body of research is that AI/AN substance use is positively associated with AI/AN criminal victimization and perpetration but that the time order of that association remains unspecified. The research on simple bivariate associations between AI/AN substance use and assault victimization is considered first. This is followed by a review of studies that examined the association using a multivariate approach to begin to account for potential confounding influences.

At a bivariate level, a pair of studies considered the association between substance use and assault victimization among samples of AI/ANs. The first of these studies, a review by Buchwald et al. (2000) of the records of 555 older AI/AN patients of the Seattle Indian Health Board, examined the association between elder abuse victimization and alcohol and/or drug use. The study's results showed that elders who were abused were slightly more likely than those who were not abused to be current drinkers (31% versus 26%) but no more likely to be users of illicit drugs.

The other study considering substance use and violence at the bivariate level, a survey by Magen & Wood (2006) focusing upon intimate partner violence (IPV) against Athabaskan women of the Alaskan interior, analyzed the extent to which a number of measures of alcohol use were associated with victimization. They found that different patterns of alcohol consumption, specifically drinking in the past year and binge drinking, were associated with the

WORKS CITED

- Abril, J. C. (2003). *Results from the Southern Ute Indian Community Safety Survey*. Irvine, CA: School of Social Ecology, University of California Irvine. Retrieved from <http://www.ncjrs.gov/pdffiles1/bjs/grants/212237.pdf>.
- Akins, S., Mosher, C., Rotolo, T., & Griffin, R. (2003). Patterns and correlates of substance use among American Indians in Washington State. *Journal of Drug Issues*, 33(1), 45-71.
- Alaska Department of Public Safety. (1980). *The Village Public Safety Officer Program: A conceptual design to improve law enforcement and public safety in the rural areas of Alaska*. Juneau, AK: Alaska Department of Public Safety.
- American Indian Development Associates. (2002). *Indian County law enforcement and the challenges of enforcing underage drinking laws*. Washington, DC: Office of Juvenile Justice and Delinquency Prevention.
- American Psychiatric Association (APA). (1994). *Diagnostic and statistical manual of mental disorders, fourth edition*. Washington, DC: American Psychiatric Association.
- Anderson, R. J. (2009). Tribal casino impacts on American Indian household well-being. Presented at the Population Association of America, Detroit, MI.
- Angle, M. R., & Eade, N. R. (1975). *Gasoline sniffing and tetraethyl lead poisoning in a Northern Native community*. Ottawa, Ontario: Canadian Department of National Health and Welfare.
- Angstman, S., Patten, C. A., Renner, C. C., Simon, A., Thomas, J. L., Hurt, R. D., et al. (2007). Tobacco and other substance use among Alaska Native youth in western Alaska. *American Journal of Health Behavior*, 31(3), 249-60.
- Associated Press. (2007, August 11). Raid yields 40,000 pot plants on reservation. *Seattle Times*.
- Bachman, J. G., Wallace, J. M., O'Malley, P. M., Johnston, L. D., Kurth, C. L., & Neighbors, H. W. (1991). Racial/Ethnic differences in smoking, drinking, and illicit drug use among American high school seniors, 1976-89. *American Journal of Public Health*, 81(3), 372-377.
- Bachman, R. (1991). The social causes of American Indian homicide as revealed by the life experiences of thirty offenders. *American Indian Quarterly*, 15(4), 469-492.
- Bachman, R. (1992). *Death and violence on the reservation: Homicide, family violence, and suicide in American Indian populations*. New York, NY: Auburn House.

- Justice Center. (1996). Village Alaska: Community characteristics and public safety. *Alaska Justice Forum*, 12(4), 1,6-8.
- Kaufman, C. E., & Ramarao, S. (2005). Community confidentiality, consent, and the individual research process: Implications for demographic research. *Population Research and Policy Review*, 24(2), 149-173.
- Kershaw, S. (2006, February 20). Dizzying rise and abrupt fall for a reservation drug dealer. *New York Times*, A1.
- Kibel, B. M., & Holder, H. D. (2003). Community-focused drug abuse prevention. In Z. Sloboda & W. J. Bukoski (Eds.), *Handbook of drug abuse prevention: Theory, science, and practice* (pp. 145-156). New York, NY: Kluwer Academic/Plenum Publishers.
- Kim, W. (2006). *The economic impacts of American Indian casinos*. Doctoral Dissertation, University of Maryland, College Park.
- King, J. (1999). Denver American Indian mental health needs survey. *American Indian and Alaska Native Mental Health Research*, 8(3), 1-12.
- Klausner, S. Z., & Foulks, E. F. (1982). *Eskimo capitalists: Oil, politics, and alcohol*. Totawa, NJ: Allanheld, Osmun and Co.
- Klouda, N. (2005, February 17). Where does all the booze come from? *Tundra Drums [Bethel, AK]*, 1,10-11.
- Koss, M. P., Yuan, N. P., Dightman, D., Prince, R. J., Polacca, M., Sanderson, B., et al. (2003). Adverse childhood exposures and alcohol dependence among seven Native American tribes. *American Journal of Preventive Medicine*, 25(3), 238-244.
- Kovas, A. E., McFarland, B. H., Landen, M. G., Lopez, A. L., & May, P. A. (2008). Survey of American Indian alcohol statutes, 1975-2006: evolving needs and future opportunities for tribal health. *Journal of Studies on Alcohol and Drugs*, 69(2), 183-91.
- Kunitz, S. J., Gabriel, K. R., Levy, J. E., Henderson, E., Lampert, K., McCloskey, J., et al. (1999). Alcohol dependence and conduct disorder among Navajo Indians. *Journal of Studies on Alcohol*, 60(2), 159-67.
- Kunitz, S. J. (2008). Risk factors for polydrug use in a Native American population. *Substance Use & Misuse*, 43(3/4), 331-339.
- Kunitz, S. J. (2006). Life-Course Observations of Alcohol Use among Navajo Indians: Natural History or Careers? *Medical Anthropology Quarterly*, 20(3), 279-296.

- Kunitz, S. J., & Levy, J. E. (1974). Changing ideas of alcohol use among Navajo Indians. *Quarterly Journal of Studies on Alcohol*, 35(1), 243-259.
- Kunitz, S. J., & Levy, J. E. (1994). *Drinking careers: A twenty-five year study of three Navajo populations*. New Haven, CT: Yale University Press.
- Kunitz, S. J., Levy, J. E., McCloskey, J., & Gabriel, K. R. (1998). Alcohol dependence and domestic violence as sequelae of abuse and conduct disorder in childhood. *Child Abuse & Neglect*, 22(11), 1079-1091.
- Landen, M. C. (1996). *Alcohol related mortality in Alaska: 1992-94*. State of Alaska Epidemiology Bulletin (Number 6). Juneau, AK: Alaska Division of Public Health. http://www.epi.alaska.gov/bulletins/docs/b1996_06.htm.
- Landen, M. C. (1997). Alcohol-related mortality and tribal alcohol legislation. *The Journal of Rural Health*, 13(1), 38-44.
- Landen, M. C., Beller, M., Funk, E., Propst, M., Middaugh, J., & Moolenaar, R. L. (1997). Alcohol-related injury death and alcohol availability in remote Alaska. *JAMA*, 278(21), 1755-1758.
- Leonard, K. E. (2005). Alcohol and intimate partner violence: when can we say that heavy drinking is a contributing cause of violence? *Addiction*, 100(4), 422-425.
- Leonardson, G. R. (2008). *Native American Crime in the Northwest: 2004-2007*. Dillon, MT: Mountain Plains Research.
- de Léséleuc, S., & Brzozowski, J. (2006). *Victimization and offending in Canada's territories, 2004 and 2005*. Ottawa, Ontario: Canadian Centre for Justice Statistics.
- Leung, P. K., Kinzie, J. D., Boehnlein, J. K., & Shore, J. H. (1993). A prospective study of the natural course of alcoholism in a Native American village. *Journal of Studies on Alcohol*, 54(6), 733-8.
- Levy, J. E., & Kunitz, S. J. (1974). *Indian drinking*. New York, NY: John Wiley & Sons Inc.
- Linthicum, L. (2002, December 15). With liquor sales banned in Gallup, toxic brew 'Ocean' a growing choice for alcoholics. *Albuquerque Journal*, A1.
- Lipsey, M. W., Wilson, D. B., Cohen, M. A., & Derzon, J. H. (1997). Is there a causal relationship between alcohol use and violence? A synthesis of evidence. In M. Galanter (Ed.), *Recent developments in alcoholism, volume 13: Alcoholism and violence* (pp. 245-282). New York, NY: Plenum Press.

