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Substance Use among Rural and Urban Youth and Young Adults

Jennifer Lenardson, MHS • Nathan Paluso, MPH • Erika Ziller, PhD

BACKGROUND

Research suggests that rates of youth and young adult alcohol and other substance use have declined over the past two decades. Results from the 2019 Monitoring the Future annual survey show a continued long-term decrease in youth substance use across tobacco, alcohol, misuse of prescription opioids, and illicit drug use.¹ Heavy drinking, impaired driving, and alcohol-related fatalities decreased between 1998 and 2014 for young adults ages 18-24.² Although studies have explored these aggregate changes over time, we have limited knowledge of whether and how current rural and urban substance use patterns may differ.

Earlier studies found that rural youth report higher rates of substance use than their urban peers across a range of substances as well as higher rates of dangerous misuse and activities while under the influence. In 2008-09, rural youth were more likely than their urban peers to engage in binge drinking, driving under the influence,³ and extreme binge drinking (15 or more drinks on one occasion).⁴ In 2002-04, rural youth had higher rates of past year use of alcohol, cocaine, methamphetamine, and inhalants than urban youth. Young adults (defined as 18-25 in this study) in remote rural areas used methamphetamine at nearly twice the rate of their urban peers.⁵ Comparing rural residents who use drugs to those who use drugs in a metropolitan county in Kentucky, those living in a rural county had significantly earlier ages of first use for oxycodone, hydrocodone, benzodiazepine, cocaine, and crack.⁶

These previously documented rural-urban differences in substance use may lead to poorer rural health and social outcomes. Substance use has been associated with limited educational and occupational attainment,⁷ poorer health status, having a major depressive episode,⁸ committing a crime or having an arrest record among rural youth,⁹ and increased odds of suicidal behavior among youth.¹⁰ Alcohol and other substance use has been associated with future physical dating violence, controlling for baseline dating violence and exposure to parental violence.¹¹ The percent change increase in age-specific drug overdose deaths between 1999 and 2015 was higher in non-metropolitan areas than metropolitan areas for those over age 12 and the largest increase was seen among young adults (again, ages 18-25) who experienced a 411 percent increase in drug overdose deaths.¹²

Limited current research has examined substance use among rural youth and young adults, who have historically had higher use rates of alcohol and other substances than their urban counterparts. As national substance use rates decline, it is important to re-assess differences in use among rural versus urban youth and young adults. This study uses national data to examine rural-urban differences in the rates of substance use among youth and young adults. Any rural-urban differences in youth and young adult substance use can help inform rural-specific prevention strategies and research targeting rural communities.

Key Findings

- With few exceptions, rural youth and young adults use substances at the same or lower rates as youth and young adults in urban areas.
- Rural young adults were more likely to have misused an opioid pain reliever prescription than urban young adults.
- Nearly forty percent of rural and urban young adults reported binge drinking in the past month.

For more information about this study, contact Erika Ziller, PhD
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METHODS

This project compares rural and urban youth and young adult substance use across a range of substances to provide more recent information on rural-urban differences than is currently available. Specifically, we address the research question of whether rural-urban differences exist in the prevalence of youth and young adults' substance use.

Data

This study uses the National Survey of Drug Use and Health (NSDUH), which is sponsored by the Substance Abuse and Mental Health Services Administration (SAMHSA) and provides annual measures of prevalence and correlates of drug use among residents of the U.S. civilian, noninstitutionalized population aged 12 and older. The NSDUH provides nationally representative data for all U.S. states, with geo-coding at the level of metropolitan and non-metropolitan statistical area. The study population includes community-dwelling U.S. youth ages 12-17 and young adults ages 18-25 in 2015-16 (although prior studies have varied in their definition of young adult, 18-25 is common range in the literature). The NSDUH survey includes approximately 14,000 youth and 14,000 young adults each year, with 20 percent living in a non-metropolitan county. For the study years, we have a total sample of 56,070 with 11,175 rural youth and young adults.

Variables

The dependent variables in this study include a range of substance use indicators including lifetime, past year, or past month use of alcohol, marijuana, heroin, non-medical use of opioid pain reliever prescriptions, and other substances. Misuse of prescription pain relievers is defined as use in any way not directed by a doctor, including use without a prescription; use in greater amounts, more often, or longer than specified; or use in any other way not directed by a doctor. According to the NSDUH, 94 percent of misused pain relievers are an opioid, but approximately 6 percent are a non-opioid pain reliever. Other substances include cocaine, crack, hallucinogens, and inhalants. Our independent variable is rural or urban residence based on the U.S. Office of Management and Budget (OMB)'s designation. We classify metropolitan counties as urban county and non-metropolitan counties as rural.

Analysis

We conducted cross-tabulations on rural-urban prevalence of substance use for rural youth (age 12-17) and young adults (age 18-25). Frequency

differences were evaluated with chi-square tests; reported differences are statistically significant at the 0.05 level or less. Because the NSDUH data were collected using a nationally representative, complex sampling design, we used the person-level weights to adjust for known sampling bias and develop national estimates. To ensure appropriate adjustment for clustering and reduce bias in our standard errors, all statistical tests were completed in SUDAAN version 11 (Research Triangle Institute, Research Triangle Park, NC).

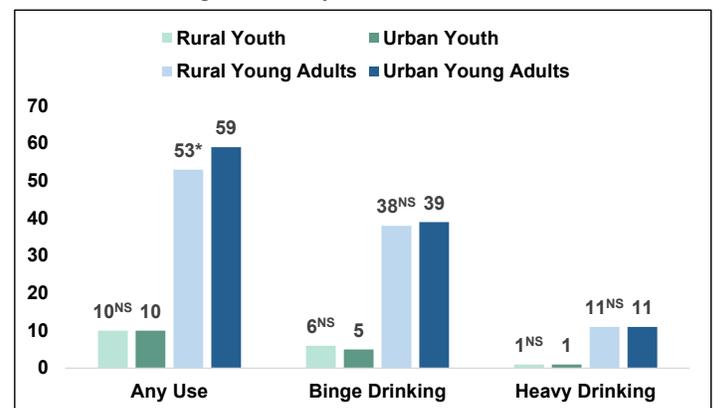
FINDINGS

Prevalence of Substance Use

Alcohol Use. We found no statistical difference between rural and urban youth in lifetime use of alcohol, in binge drinking, or in heavy drinking (data not shown). Similarly, as demonstrated in Figure 1, youth drinking in the past month did not differ based on residence. However, past month use of alcohol was slightly higher among urban compared with rural young adults (Figure 1, 59 percent versus 53 percent). Of those who reported having consumed alcohol, about 6 percent of rural youth and 38 percent of rural young adults reported binge drinking in the past month—defined as 5 or more alcoholic drinks for males or 4 or more alcoholic drinks for females on the same occasion—and these rates did not differ by residence. Similarly, we found no significant rural-urban difference in the rate of heavy drinking—defined as binge drinking five or more days in the past month—for youth or young adults.

Marijuana Use. About 15 percent of youth and 50 percent of young adults had used marijuana at least once in their lifetime (data not shown). Rural and urban youth did not differ in their use of

Figure 1. Rates of Alcohol Use in the Past Month among Youth and Young Adults, by Residence



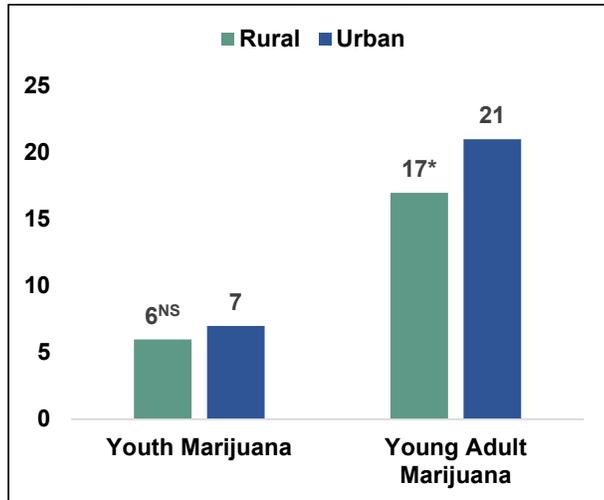
*Rural-urban differences significant at $p < .05$

NS = no significant difference

marijuana during their lifetime or past year (data not shown), or past month use (6 versus 7 percent, not significant). By contrast, rural young adults were less likely to use marijuana ever or in the past year (data not shown), or in the past month (17 percent compared with 21 percent of urban, Figure 2).

Misuse of Prescription Pain Relievers. About 6 percent of youth had ever misused a pain reliever prescription—nearly all of which were opioids—and there was no difference by rural or urban residence

Figure 2. Rates of Marijuana Use in the Past Month among Youth and Young Adults, by Residence



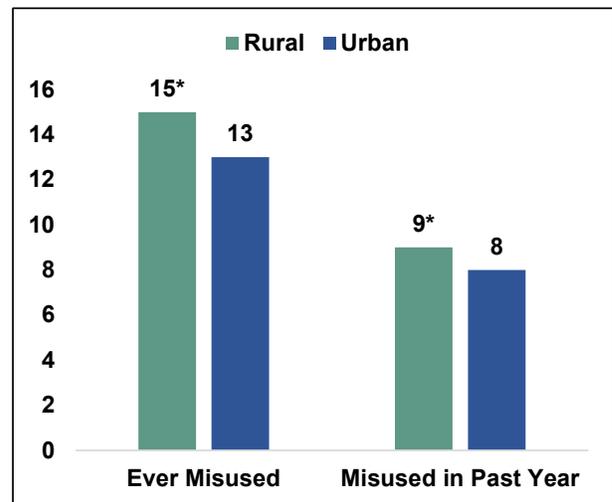
*Rural-urban differences significant at p. <.05
NS = no significant difference

for lifetime, past year, and past month misuse (data not shown). However, rural young adults were somewhat more likely to have misused pain relievers ever and in the past year than their urban counterparts. For example, 15 percent of rural young adults had ever misused pain relievers compared with 13 percent of urban young adults (Figure 3). The percentage of young adults who had misused prescription pain relievers in past year was slightly higher in rural than urban areas (9 percent versus 8 percent).

Other Illicit Drugs. There were no rural-urban differences in use rates, mean age at first use, or mean number of days using other illicit drugs for youth. However, rural young adults were less likely to report lifetime use (10 versus 12 percent), past year use (6 versus 4 percent), or past month use (2 versus 1 percent) of other illicit drugs than urban young adults.

Heroin. Overall use rates were low for heroin, with less than 2 percent of young adults ever using heroin. No differences were apparent by residence for either youth or young adults.

Figure 3. Rates of Prescription Pain Reliever Misuse among Rural and Urban Young Adults, by Residence



*Rural-urban differences significant at p. <.05

LIMITATIONS

The NSDUH includes only a single level of rurality in its public use file, which means that we could not examine differences between different rural communities. Similarly, the NSDUH does not include an indicator of respondent’s region of residence and we know from previous research that prescription drugs, in particular, are more likely to be misused in the West and South compared to the Midwest and Northeast.¹³ The NSDUH also relies on self-reported data, which is subject to gaps in respondent recall or reluctance, although there is no reason to suspect that this differs by rural or urban respondents. During sensitive segments of the interview, respondents use headphones, listen to pre-recorded questions, and directly keyed their answers into a computer without interviewers knowing how they were answering, a technique that may encourage accurate responses. For variables related to pain reliever misuse, we know that 94 percent of the pain relievers identified were opioids with the remaining 6 percent classified as other, leaving us unable to determine if they are also opioid pain relievers.

DISCUSSION

In general, rural youth and young adults use substances at the same or lower rates as their urban counterparts. We found little to no rural-urban differences in youth alcohol or marijuana use, and rates for young adults were lower in rural compared with urban. Similarly, we found no differences between rural and urban youth or young adults in rates of heroin use with only two percent or less having ever used. While this study did not directly examine changing rural-urban differences in substance use over time, it is encouraging that we no

longer observe rural-urban gaps for some measures, particularly binge and heavy drinking.

Rural young adults were more likely to have misused an opioid pain reliever prescription than urban young adults, confirming findings of previous studies.^{5,8,14} This is an important difference between rural and urban communities because fewer resources are available in rural areas for the treatment of opioid abuse^{15,16} and because the misuse of opioid pain relievers is often a precursor to heroin use, a cheaper and more accessible alternative to prescription opioids.^{17,18} As a result, it is also associated with the risk of injection drug use,¹⁹ which poses serious health risks included HIV, hepatitis and other infections. While current heroin use was not different for rural and urban young adults, this is an area that warrants continued monitoring and potential intervention.

While we found limited rural-urban differences in substance use, we identified areas of concern for both rural and urban health. For example, nearly two out of five rural and urban young adults with a history of alcohol consumption indicated that they had engaged in binge drinking during the past thirty days. Similarly, 11 percent of young adults reported a history of heavy drinking (binge drinking on five or more days in the past month). While these rates are somewhat lower than comparable estimates from 2002-2004 (particularly for heavy drinking, which averaged above 15 percent of young adults)⁵, they warrant continued concern. Given the health and social consequences of excessive alcohol use, rural substance use prevention efforts should target reducing potentially harmful drinking habits among rural and urban young adults.

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