A National Comparison of Marijuana Use Between Rural and Urban Adolescents

This study uses data from the National Household Survey on Drug Abuse (NHSDA) to determine whether marijuana use by rural and urban adolescents differs. Variables that measure personal and family characteristics, and community factors are included. Results indicate that marijuana use differs between rural and urban adolescents, and that variables from all three categories have different impacts on the probability of use for both groups. These differences have implications for the development of drug prevention programs.

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Introduction

No one any longer denies the existence of drug use by rural adolescents. However, the original debate of whether drug use exists in rural areas has been replaced by the question of how big the disparity of use is between rural and urban adolescents. Despite a preponderance of studies, there is no conclusive evidence that drug use by rural and urban adolescents differs. This study uses national data to compare marijuana use between rural and urban youth. Based on a conceptual model that identifies several categories of variables that affect drug use, including community, family, economic, and individual measures, we estimate a multivariate model to predict the probability of drug use. We then statistically test whether marijuana use differs for rural and urban youth.

Review of the Literature

The vast majority of research on illicit drug use focuses on urban adolescents (Napier, Bachtel, & Carter, 1983). Although Segal and Stewart (1996) report that substance abuse is most prevalent in the largest metropolitan areas, Napier et al. (1983), Peters, Oetting, and Edwards (1992), and Robertson (1994) found that the differences in drug use between rural and urban youth are declining. In contrast to these studies, Gill and Michaels (1991) found that those in a rural area are less likely to use drugs. Some studies have focused specifically on rural drug use. Donnermeyer (1992) concludes that the literature on rural drug use in the past decade is unevenly scattered. Furthermore, conflicts in definitions of "rural" and the small number of communities that is typically included in a study of rural drug use complicate the interpretation of results (Peters et al., 1992). Napier et al. (1983) found that age and an unstable home life were positive and significantly associated with marijuana use. In contrast to Sarvela and McClendon (1988) who found that sex is not a useful predictor of marijuana use among adolescents, Novacek, Raskin, and Hogan (1991) found that males use marijuana more often than females.

Other factors that have been found to be related to illicit drug use include stress, income, perceived risk of drug use, and health. Maton and Zimmerman (1992), Segal and Stewart (1996), and Osborn (1980) all found a relationship between stress, measured in various ways, and drug use. Delinquent behavior, such as drug use, is associated with a higher frequency of moves for urban male youth (Osborn, 1980). Gill and Michaels (1992) and Register and Williams (1992) found that increased wages are associated with marijuana use. Resnick and Burt (1996) report that "youth from poor families are at increased risk for a variety of health and behavioral consequences" (176). Grant and Dawson (1996) found that receipt of transfer income increases the probability of drug use. Finally, Resnick and Burt (1996) suggest that the neighborhood in which a youth resides effects his/her risk level for problem behavior. Bachman et al. (1988) suggests that perceived risks and disapproval of regular marijuana use may negatively impact its use among adolescents. Similar to Sarvela and McClendon (1988), a study conducted by the Partnership for a Drug-Free America indicates that the environment, specifically drug use by family and friends, is a strong factor in the decision of teens to use marijuana (Gold, 1992).

The review of the literature suggests that more research needs to be conducted, using national data and multivariate statistical methods, to determine if a difference between rural and urban adolescent drug use exists. Many of the findings of previous studies are based on local, *unrepresentative samples*, and conduct uni- and bi-variate analyses that examine the relationship of *single variables* with drug use. Research that has used multivariate methods of analysis typically has focused on a *single set of issues* that may be related to drug use. Because a variety

of factors may influence drug use, they should be considered in a multivariate analysis in order to isolate their individual effects on drug use of rural versus urban adolescents. This study uses a nationally representative sample, multivariate statistical modeling, and includes a variety of factors that may affect drug use, in order to predict the probability of marijuana use by rural and urban adolescents.

Data

This study uses the 1991-92 National Household Survey on Drug Abuse (NHSDA) by the National Institute on Drug Abuse of the United States Department of Health and Human Services. The primary purpose of the NHSDA is to measure the use of illicit drugs, alcohol, and tobacco by members of the non-institutionalized U.S. population who are at least 12 years old. Frequency of use in the past year were self-reported for alcohol, marijuana, cocaine, downers, heroin, hallucinogens, stimulants, analgesics, and sedatives. The NHSDA defines an urban area as any standard metropolitan statistical area (SMSA), and thus, a rural area encompasses any area not included in a SMSA. A strength of this study is the use of a national sample, weighted to depict an accurate representation of the national population of adolescents in the U.S. These weights were adjusted through various regression-based methods to account for non-response and sampling error. The weighted data set represents 4,070,358 people in the United States; 392,924 are adolescents between the ages of 12 and 17, and the remaining 3,677,434 are 18 or older. Twenty-six percent of the adolescents live in a rural area.

Methodology

Our empirical model is based on Becker and Murphy's (1992) conceptualization of addiction as rational behavior and the findings of previous research in the area of drug use. The independent variables that appear in our estimation of drug use are grouped into three categories: personal characteristics, family characteristics, and community factors. Variables that measure the personal characteristics of the respondent include: BEHIND, IRAGE, IRSEX, STRESS1, PHYSDUM, SELFHLTH, MOVES, MINORITY, and AWAG1. BEHIND is a dummy variable that indicates if the respondent is behind his/her age cohort in school by more than two grades. IRAGE is a continuous measure of the age of the respondent, and IRSEX is a dummy variable that indicates his/her gender. STRESS1, PHYSDUM, and SELFHLTH are dummy variables; STRESS1 indicates if the respondent is experiencing personal stress; PHYSDUM measures physical problems; SELFHLTH indicates if the respondent reported his/her health to be good to excellent. MOVES is a continuous measure of the number of times that he/she has moved in the past five years, and MINORITY is also a dummy variable that indicates if the respondent is non-white. The interval measure of the total amount of yearly income received from wages is called AWAG1. Hypotheses about the effect of personal characteristics on marijuana drug use include:

HP1: Increasing age increases drug use (McIntosh, et al., 1979; Napier et al., 1983).
HP2: Males are more likely to use marijuana (Novacek et al., 1991; Peters et al., 1992).
HP3: Non-whites use drugs to a lesser extent than whites (McIntosh et al., 1979).
HP4: Adolescents who are behind their age cohort in school are more likely to use drugs.
HP5: Personal stress increases drug use (Segal & Stewart, 1996; Novacek et al., 1991).
HP6: Presence of physical problems increases drug use.

The variables that measure family characteristics include: STRESS2, HOUSHOLD, OTHER, and various household income sources. STRESS2 is a dummy variable that indicates if a former member of the household, for at least the past six months, moved into a hospital, jail, or other institution in the past year. HOUSHOLD is an interval measure of the total number of members in the household. OTHER is a dummy variable that indicates if relatives outside of the immediate family an/or friends, live in the household of the respondent. TRANDUM is also a dummy variable that indicates if the household receives transfer income (food stamps or public assistance), and TOTINC2 continuously measures the sum of the total annual family income and the non-wage income of the respondent, not including transfer payments. Hypotheses related to family factors include:

HF1: Stress at home increases drug use (Maton et al., 1992; Segal & Stewart, 1996; Osborn, 1990).
HF2: Increases in household size decreases the probability of drug use (McCarthy et al., 1990).
HF3: Increases in total annual family income decreases drug use (Resnick & Burt, 1996).
HF4: Increases in the receipt of transfer income increases drug use (Grant & Dawson, 1996).

The two community factors are both dummy variables. RISKMJ indicates if the respondent considers the use of marijuana to be a risky activity. OWNDUM indicates if at least 50% of the housing units in the area in which he/she lives are owned. Hypotheses related to community factors are:

HC1: Risk perception decreases drug use (Bachman et al., 1988; Sarvela et al., 1988).
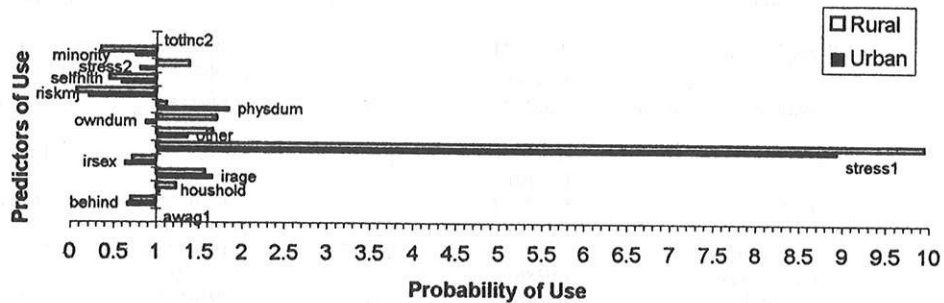
Figure 1
Differences in Marijuana Use.

times as likely to use marijuana as those who do not receive these payments. These findings confirm those of Grant and Dawson (1996). Non-white adolescents in rural areas are only .34 times as likely as whites to use marijuana, while urban non-white youth are .75 times as likely. Other research has found that non-whites use drugs to a lesser extent than whites (McIntosh et al., 1979). Rural adolescents with physical health problems are 1.1 times more likely to use marijuana than those without physical health problems, while urban youth with a physical health problem are 1.8 times more likely to use marijuana. This variable has not been included in other studies of this type. For each additional individual in a household, rural youth are 1.2 times more likely to use marijuana, and urban youth are just as likely to use marijuana in any size household. This result contradicts the findings of Webb and Collette (1975). However, if relatives other than parents or friends reside in the household, rural youth are 1.7 times more likely and urban youth are 1.3 times more likely to use marijuana.

The effect of stress in the household (STRESS2) and residing in a region of higher home ownership (OWNDUM) actually affect marijuana use of rural and urban adolescents in opposite directions. Rural adolescents who experience household stress are 1.4 times more likely and urban adolescents .8 times as likely to use marijuana than adolescents who do not experience household stress. These results for urban youth contrast the findings of others, while the results for rural youth confirm the findings of others (Maton and Zimmerman, 1992; Segal and Stewart, 1996; Osborn, 1980). Rural adolescents who reside in a region in which over half the homes are owned are 1.7 times more likely and urban adolescents are .9 times as likely to use marijuana than adolescents who reside in regions in which over half the homes are rented.

Discussion

Our multivariate analysis using a nationally representative data set suggests that there *is* a difference in the use of marijuana by rural and urban youth, and it quantifies the effect of several variables on the probability of drug use. Rural and urban adolescents represent two populations that vary in their probability of drug use with regard to personal and family characteristics, and community factors. The effects of experiencing personal stress has, by far, the greatest impact on *increasing* the probability of marijuana use. Perceptions of risk, have, by far, the greatest impact on *decreasing* the probability of marijuana use. Transfer payments, household size, age of the adolescent, and presence of physical ailments all increase the probability of marijuana use for both populations. These variables appear to be most useful in order to target youth in a program for both rural and urban youth that aims to deter drug use. On the other hand, the effect of household stress and regions of higher home ownership on marijuana use showed opposite effects for rural and urban youth, and cannot be used as predictor variables across the board as indicators of drug use. Clearly, for consumer education purposes, rural and urban use differs, and is impacted differentially by several categories of predictors. Any campaign that aims to decrease use of drugs must take into account the area in which the youth resides before the education process can begin.

The results of this paper are particularly useful in designing and evaluating national drug education programs that do not differentiate between rural and urban areas. A national program has an increased chance of being effective if it considers these variables that are common predictors of marijuana use among both rural and

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urban youth. This paper is also helpful to less urban communities that may model a drug program after one implemented in a metropolitan area. Such an adaptation may be ineffective due to the differences in factors that affect the probability of marijuana use among rural and urban youth.

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Endnotes
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