

## **The Demand for Substance Abuse Treatment Among Adults in Low Income Households in Montana and Colorado**

Factors affecting the willingness of adults in a rural population to seek treatment for substance abuse dependencies are studied. Logistic regression analysis results indicate that as household income increases in low-income households, substance users are less likely to seek treatment. In the low-income populations, if the individual is employed the probability of seeking treatment is lower, although external pressure from employers about substance use increases the probability of seeking treatment.

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### **Introduction**

In the United States, more than 13 percent of the adult population is estimated to abuse alcohol and over 2 percent to suffer from acute alcoholism. In addition, more than 2 percent of the adult population is estimated to abuse drugs. The economic and social costs of alcohol and drug abuse are commensurately large, exceeding an estimated \$200 billion dollars annually (National Institute on Alcohol Abuse and Alcoholism, 1998). Adverse effects on families, crime rates, and other social indicators are also substantial. The potential benefits from reducing alcohol and drug abuse and dependency are therefore large. One important public policy mechanism for achieving this goal is through prevention programs. Another is through treatment of current substance abusers. The demand for substance abuse treatment among low-income populations, for whom U.S. government agencies have fiscal responsibilities under Medicaid programs, is a particular concern.

This study investigates the willingness of low-income adults between the ages of 18 and 65 with alcohol and drug dependencies, located in a highly rural state, to seek treatment. The analysis examines treatment demand among high and low-income households utilizing data obtained from 1996 telephone surveys of alcohol and drug use in Montana and Colorado, excluding the Denver metro region. The sample represents the non-institutionalized Montana and Colorado adult population. Within the sample, 1087 adults were identified as suffering from alcohol and/or drug abuse or dependencies. Within this group, 411 individuals (36 percent of individuals with substance abuse or dependency problems) were members of low-income households.

### **Literature Review**

From a clinical perspective, individuals diagnosed with substance abuse and dependency problems using the DSMIII-R criteria are in need of medical treatment to mitigate or end their substance abuse and/or dependence. However, the vast majority of substance abusers with medical treatment needs do not receive any treatment for their problems (CSAT, 1998). One reason is that many individuals with dependencies apparently do not want treatment. Increasing the number of individuals with alcohol and drug dependencies seeking treatment is an important first step towards reducing the costs of alcohol and drug abuse. Thus understanding the factors that affect the willingness of adults to seek treatment is important.

Previous studies have investigated factors that affect the willingness to seek treatment for a variety of population sub-groups including those with dependencies on alcohol (Kaskatus et al., 1997; Hasin, 1994; Weisner, 1990; Beckman & Amaro, 1986), cocaine (Varney, et al., 1995; Carroll & Rounsaville, 1992), opiates and other injected drugs (Zule et al., 1997 Kraft (1993), and both alcohol and drug abuse (Yih-Ing et al., 1997). In addition, willingness to seek treatment for alcohol and/or drug abuse has been examined for pregnant women (Messer et al., 1996) and male partners in marital relationships (Steinberg et al., 1997). Several factors affecting willingness to seek treatment or participation in treatment programs have previously been examined. They include age,

employment, job characteristics, gender, marital status, race, travel barriers, history of prior treatment, severity of substance abuse problems, and experience with adverse social consequences. Effects of scoring indexes of external and internal sources of pressure for treatment have also been examined (Davis, 1997; Steinberg et al., 1997; Hasin, 1994; Carroll & Rounsaville, 1992).

### **The Decision to Seek Treatment: Theoretical Considerations**

Different disciplines apply different paradigms to understanding human behavior. Economists typically view choices by individuals in terms their benefits and costs. Individuals are assumed to be rational, in the limited sense that, on average, they choose courses of action that provide them with what they perceive to be the greatest available expected net benefits. The expected net benefits from a course of action equal the difference between the benefits individuals anticipate they will enjoy minus the costs they anticipate they will incur. Within the limits of the available resources, rational people then choose actions whose benefits outweigh their costs. Utilizing this general framework, for example, Grossman (1972) has examined the determinants of health-related choices and Becker, Grossman and Murphy (1991) have attempted to explain addiction decisions.

The decision to seek treatment for substance abuse and dependency can be viewed as a choice over time or a dynamic decision. An individual will seek treatment when the present value of the treatment's expected future stream of benefits is greater than the present value of its expected future stream of costs. Thus, events that increase the benefits or reduce the costs of treatment increase the probability that an individual will seek treatment and vice versa. In addition, events that change the individual's rate of time preference may also affect the treatment decision. Such changes may come about because of life changing events such as the birth of a child or the death of a fellow substance abuser. Often treatment benefits are perceived by the substance abuser to accrue over the longer term while treatment costs – in terms of monetary costs, time, and the physical and psychological costs of the withdrawal process – have to be endured in the near term. Thus, a decrease in the rate of time preference will increase the likelihood of seeking treatment by increasing the present value of future longer-term treatment benefits relative to more near term treatment costs.

### **Indicators of Benefits and Costs**

Many variables affect the perceived benefits and costs of treatment for alcohol and drug abuse. Some, such as the individual's enjoyment of the addictive substance, are very difficult to measure. Others can be more easily represented by proxy variables. These include demographic and socio-economic attributes such as age, employment status, gender, marital status, race, location relative to treatment services, household income, education, and role as a caregiver to children. Other variables may include the individual's personal history of adverse social outcomes from substance dependencies and previous treatment episodes. Still others include indicators of pressure for treatment from external sources such as family, friends, employers, and physicians. In this study, information is available on the demographic and socio-economic characteristics including age, employment status, gender, marital status, race, household income, education, and role as caregiver. In addition, data were collected on the extent of external pressures for treatment from employers, family, friends, and physicians.

Age may be positively or negatively associated with willingness to seek treatment (Kaskutas, 1997; Zule, 1997; Fortney et al., 1995). On the one hand, older individuals are more likely to have experienced adverse social consequences from substance abuse, which may increase the perceived benefit of seeking treatment. However, older individuals with substance abuse problems may also have had unsuccessful experiences with previous treatment.

Employment status may also have ambiguous effects on the willingness to seek treatment (Zule, 1997; Carroll & Rounsaville, 1992; Kleyn & Lake, 1990). Individuals with substance abuse problems who risk losing their jobs may have substantial incentives to seek treatment to protect their future incomes. However, some employed individuals may risk losing their jobs or opportunities for advancement if they seek treatment because of potential adverse employer reactions to the discovery that they have substance abuse problems. They may also face loss of income because of time off from work to receive treatment.

Previous research also does not provide any conclusive insights about the effect of gender on the decision to seek treatment (Kaskutas et al., 1997; Zule, 1997). It has been argued that women are less likely to seek treatment because, in the short term, partners pressure them to provide in-the-home services both for the partner and for children rather than seek treatment (Beckman & Amaro, 1986). This suggests that time spent by women in treatment may have a relatively high opportunity cost. However, if treatment improves the amount and quality of service

provided by the woman in the home, these types of costs may be more than offset by benefits to partners from treatment. Thus it is not clear whether gender is associated with an increase or decrease in willingness to seek treatment because of the role of women as caregivers.

Marital status may also be important (Steinberg et al., 1997; Fortney et al., 1995; Carroll & Rounsaville, 1992). Married individuals (or individuals with similar living arrangements) often receive pressure from spouses to mitigate substance abuse behavior. If children or other dependents are involved, the spouse may also provide care for those dependents while the individual receives treatment, thereby reducing costs associated with treatment.

The link between race and willingness to seek treatment is also unclear (Kaskutas, 1997; Riley et al., 1997; Messer et al., 1996; Fortney, 1995). Race may be an indicator of education, employment, and income, and if these variables affect willingness to seek treatment, race may also appear to have an effect. In some circumstances, as on Native American reservations, race may also be an indicator of availability of treatment information and ease of access to treatment services (Riley et al., 1997). However, it is not clear whether race per se will have any impact on willingness to seek treatment.

Similar ambiguities exist with respect to household income. Individuals with higher incomes are likely to face larger losses from continued substance abuse. However, higher incomes may imply higher opportunity costs of receiving treatment services. For similar reasons, the effects of education on willingness to seek treatment are also unclear. In general, individuals with more education have higher income earning potential but also higher opportunity costs of time.

The effect of previous treatment episodes on willingness to seek treatment is also ambiguous (Zule et al., 1997; Messer et al., 1996; Carroll & Rounsaville, 1992; Richman & Smart, 1981). Individuals who have had previous treatment may perceive treatment costs to be lower. However, previous recipients of unsuccessful treatment may also perceive the potential benefits of treatment to be lower.

Finally, pressures from external sources may also be important in determining willingness to seek treatment (Steinberg et al., 1997; Hasin, 1994; Carroll & Rounsaville, 1992; Weisner, 1990). At least four sources of external pressure may matter: family, friends, employers, and physicians. Although there is some evidence that external pressure may be counterproductive (Davis, 1997; Beckman & Amaro, 1986), increased pressure from family for treatment seeking (through threats of divorce, promises of help and support, etc.), friends, employers (through threat of job loss, etc.), and physicians can increase the perceived benefits of treatment.

## Data

Between August, 1996 and June 1997, data on alcohol and drug use and abuse were obtained from 13,804 non-institutionalized adults between the ages of 18 and 65 living in Montana and the rural communities of Colorado. Over-sampling of the Native American population in selected tracts on Native American reservations ensured adequate representation for this group. Over-sampling in Billings, Montana's largest urban area, was also implemented to capture information on the use of drugs such as opiates for which prevalence rates are very low. The survey used a computer aided telephone survey system. The average response rate for the Montana and Colorado sample, computed using the Council of American Survey Research Organization's (CASRO) method, was 80 percent.

Within the general adult population ( $n = 13,804$ ), using the DSM III-R criteria, 1141 adults were identified as suffering from current alcohol and/or drug abuse or dependencies. Of these, 1087 observations provided sufficient information to be included in the analysis. Within this group, 411 individuals (36 percent of individuals in the sample) were members of low-income households with per capita annual incomes of less than \$20,000. Within the low-income sample ( $n = 411$ ), 112 individuals (27.3 percent of the sample) sought treatment. In the high-income sample, those reporting incomes greater than \$20,000 ( $n = 676$ ), 107 individuals (15.8 percent) sought treatment. The proportion of individuals with treatment needs seeking treatment was larger among the low-income population than among the high-income population. This was largely because Native Americans, who are more likely to seek treatment (Riley et al., 1997), constituted a larger proportion of individuals in low-income households.

In the high-income sample, 71.7 percent of respondents were male, 54.4 percent married, 37.1 percent primary care givers for dependents, 11.4 percent Native American, and the average age was 34.2 years. In the low-income sample, 53.5 percent of respondents were male, 30.7 percent married, 33.6 percent primary care givers for dependents, 16.8 percent Native American, and the average age was 30.1 years. In the high income sample 94.4 percent were employed, the average household income was \$35,710, 29.1 percent were high school graduates, 28 percent had some college training, 9.6 percent had associate college degrees and 28.4 percent were college

graduates. In the low-income sample, 84.7 percent were employed, the average household income was \$10,693, 29.4 percent were high school graduate, 32.8 percent had some college training, 8.8 percent had associate college degrees and 15.8 percent were college graduates.

External sources of pressure may be important. In the high-income sample, 39.8 percent of those with treatment needs reported receiving pressure from family, 15.8 percent from friends, 6.4 percent from employers, and 11.2 percent from physicians. In the low-income sample, 48.4 percent reported receiving pressure from family, 23.6 percent from friends, 13.6 percent from employers, and 17.8 percent from physicians.

### Estimation Methods

Willingness to seek treatment is a discrete choice variable. Multivariate logistic (logit) regression models provide a natural framework for empirically assessing the effects of multiple factors when the categorical choice variable can be attributed a zero (no treatment sought) or one (treatment is sought). The model is non-linear and therefore estimated iteratively using maximum likelihood methods. Here, model parameters are estimated using LIMDEP by applying Newton's method of scoring (Greene, 1999).

### Results

The model is estimated both for the high and low-income samples. The variables consist of twelve socio-demographic explanatory variables and four external pressure variables (Table 1).

Table 1.  
Regression Results

Variables	High Income Sample (n = 676)	Std. Dev.	Low Income Sample (n = 411)	Std. Dev.
Age	.23	.22	.22	.23
Age Squared	-.0032	.003	-.0023	.0032
Gender (1 if male)	-.41	.57	.03	.68
Race (1 if Native American)	.62	1.08	1.84**	.85
Married (1 if married)	-.01	0.61	1.57**	.65
Employed (1 if employed)	-.52	1.20	-2.23**	.67
Income (a midline value of income, in \$10K increments beginning at \$5000)	0.000009	.00003	-1.51**	.65
Caregiver (number of children under 18 cared for)	.56	.56	.31	.70
High School (1 if High School graduate)	-.86	.79	2.77**	1.29
Some College (1 if attended college or trade school but did not graduate)	-2.15**	.87	2.23*	1.27
AA Graduate (1 if graduated with a two-year degree or Technical Certificate)	-2.99**	1.52	1.58	1.57
Graduate (1 if graduated with a Bachelors degree or higher)	-2.48**	.95	3.25**	1.48
Family (1 if receiving pressure from family member(s) about substance use)	.044	.53	.75	.77
Friends (1 if receiving pressure from friends about substance use)	1.28**	.59	.68	.76
Employer (1 if receiving pressure from an employer about substance use)	.80	.76	1.60**	.81
Doctor (1 if receiving pressure from a physician about substance use)	.42	.70	.19	.70
Log Likelihood Function	-72.39		-49.45	

Notes: \*\* Significant at the 5% level  
\* Significant at the 10% level

The coefficient associated with the variable race is positive in the low-income sample, indicating that Native Americans are more likely to seek treatment for substance abuse and dependency than non-Native Americans. As Riley et al. (1997) have noted, this could be because, particularly in reservation settings, Native Americans may have access to more extensive information about treatment programs and, because of access to more counseling services, face lower transactions costs in obtaining treatment.

Being married (or in a more permanent marriage like relationship) has a significant positive effect on the probability of seeking treatment within the low-income sample. In the high-income sample the coefficient on married is negative but not significant. In both the high and low-income sample, whether or not an individual is a primary provider of care for dependents has no apparent effect on the probability that the individual will seek treatment for substance abuse or dependency. This suggests that, as discussed above, while the benefits from treatment for care providers may be quite large, their opportunity costs of receiving treatment may also be quite substantial.

The effect of education is also ambiguous. In the high-income sample, the coefficients associated with all of the education variables except high school graduate are negative and significant at the five percent level. In the low-income sample, the coefficients associated with the variables High School, Some College, and Graduate are positive and generally significant at the five percent level. These results indicate that low-income individuals with high school diplomas and some college education have a higher probability of seeking treatment than individuals who did not graduate from high school. However, the size of the coefficient associated with Some College is smaller than the size of the coefficient associated with High School. Thus low-income households individuals with some college education are less likely to seek treatment than individuals with only a high school diploma. However, the coefficient associated with the variable Graduate is larger than those associated with High School or Some College, indicating that individuals with baccalaureate or more advanced degrees are more likely to seek treatment than are others.

The effects of income differ between the high and low-income samples. In the high-income sample, the income coefficient is insignificant while in the low-income sample the income coefficient is negative and significant. These findings suggest that, in the low-income sample, the opportunity cost of receiving treatment increases with income at a rate sufficient to reduce incentives for seeking treatment. In the low-income sample the coefficient for the variable Employed is also negative and significant. This finding is consistent with the hypothesis that, when compared to the potential benefits from seeking treatment, the opportunity costs of seeking treatment are perceived to be higher by individuals who are employed.

External sources of pressure may have important effects on the likelihood that an individual will seek treatment. The results indicate that in the low-income sample, pressure from an employer has a positive and significant effect on the likelihood of seeking treatment. The coefficient associated with the variable Friends is positive and significant for the high-income sample but not for the low-income sample. However, pressures from family and physicians do not have a significant effect (although the coefficients for the related variables are positive).

These results indicate that pressure from external sources is a statistically significant determinant of willingness to seek treatment. However, the nature of the external source is important. Neither pressure from the family in general nor the influences of physicians appear to be important. However, pressure from friends and employers does appear to have a positive effect. These results are consistent with the findings of Hasin (1994), and Carroll and Rounsaville (1992), that external pressures increase willingness to seek treatment, but are also not inconsistent with the findings of Beckman and Amaro (1986) who concluded that sometimes external pressures could deter treatment seeking behavior.

### **Conclusion**

This study has investigated important factors that influence the demand for treatment among adult substance abusers, comparing treatment-seeking behavior by substance abusers in low-income households with treatment-seeking behavior by substance abusers in high-income households in the general population of a highly rural state. The results suggest that there are both important differences and similarities between the two populations. In low-income households, as household income increases substance abusers become less likely to seek treatment. In the high-income households, income has no apparent effect on the individual's treatment decision. In the low-income households, however, if the individual is employed, the probability of seeking treatment is lower. It is also worth noting that external pressure from employers to seek treatment increases the probability that the low-income individual will seek treatment.

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## Endnotes

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