

# THE EFFECTS OF ALCOHOL AND ILLICIT DRUG USE IN THE WORKPLACE: A REVIEW

MICHAEL T. FRENCH

*University of North Carolina at Chapel Hill*

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A large body of medical literature suggests that alcohol and illicit drug use adversely affect social, cognitive, and psychomotor functioning for many individuals. These adverse conditions are often linked to emotional and physical problems at home, in the classroom, and in the workplace. Recently, economists and other social scientists have begun to explore the labor market effects of substance use through statistical analyses of large national data sets and worksite-specific samples. Contrary to popular belief and earlier econometric studies, most of the current research is finding a positive or insignificant effect of substance use on earnings. However, other studies have found that substance use has a statistically significant effect on labor supply, absenteeism, retention, and various job performance measures. This paper critically reviews the literature on the effects of employee substance use on earnings and workplace behavior and discusses the significance of the findings for employers, policymakers, and public health practitioners.

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Politicians, businesses, and labor leaders are responding to the expected consequences of substance use by taking steps to prevent, diagnose, and treat drug problems. (For ease of exposition, I will sometimes use the terms "substance use" and "drug use" to mean the use of alcohol and/or illicit drugs.) One area that has received increasing attention lately is the workplace. Efforts to address drug use in the workplace include establishing company policies on employees' drug use, expanding the focus of employee assistance programs (EAPs) to include identification and referral of employees with illicit drug or alcohol problems, and urine screening of employees and new job applicants. In spite of these policies, a paucity of

scientific information hinders policymakers in allocating funds and in establishing, administering, and evaluating prevention and treatment programs.

One temptation that should be avoided when conducting research on the workplace consequences of drug use is to immediately assume that the presence of a problem constitutes an epidemic or a mandate for action (Reinarman, Waldorf & Murphy, 1988). Isolated catastrophic incidents like transportation accidents or chemical releases are often used to justify the dangers of drug use by workers and the need to develop corrective policies. However, these isolated incidents have little scientific value in assessing the real magnitude of the effects of alcohol and other drug use on workplace behavior.

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Furthermore, sensationalized reports of train wrecks and oil spills do not form the basis for sound policy changes.

A carefully designed scientific study of the consequences and costs of drug abuse in the workplace and society can provide valuable information on the magnitude of the problem, but it still has limited value for programmatic and policy decisions (Anderson, 1992; Sindelar, 1991). Society can profit more from an economic analysis of the costs and benefits of alternative programs to address drug abuse problems in various venues. Economic analysis seeks to identify and to make explicit one set of criteria "costs and benefits" that may be useful in deciding among different uses for scarce resources. Without a careful and systematic economic analysis of anti-drug abuse programs, clearly identifying the best use of these scarce resources is difficult.

Following an economic framework, I review the nature and prevalence of drug use in the workplace and describe methods for estimating potential adverse consequences and costs. I review several studies of the relationship between drug use, earnings, labor supply, absenteeism, and other labor market variables. Most studies have found a negative (although often insignificant) relationship between drug use and workplace behavior, but some of the recent econometric studies of the drug use/earnings relationship have found some conflicting results. I discuss several possible explanations for these findings and the implications for workplace policy. The paper concludes with a summary of the major unresolved issues in these areas and some suggestions for future research.

#### ALCOHOL AND DRUG USE IN THE WORKPLACE

Data from the 1991 National Household Survey on Drug Abuse show that 14.6 percent of those employed full- or part-

time reported having used illicit drugs at least once in the previous month (NIDA/SAMHSA, 1993). *The Wall Street Journal* (1989) reported that employer benefit payments for mental health problems and substance abuse increased 27 percent in 1988 to an average of \$207 per employee. Furthermore, benefits in 1988 accounted for 9.6 percent of health-plan costs, up from 8.2 percent in 1987.

A survey of chief executive officers from Fortune 1,000 companies shows that 88 percent of the respondents view substance abuse in society as a very significant problem. Twenty-two percent believe that substance abuse in their own workplace is very significant, almost triple the percentage of 5 years ago. To fight the perceived drug and alcohol problems in the workplace, more than 90 percent of these organizations have developed or are currently developing substance abuse programs (Chernoff, 1989).

Private industry efforts to reduce or eliminate drug abuse problems in the workplace usually fall into two categories—identification and assistance. Employers use drug testing programs to identify drug users among both employees and job applicants. Applicants who test positive on a preemployment drug test are usually denied employment, but first-time drug-positive employees are typically given the option of seeking help for their drug use in lieu of termination. Through EAPs, employers try to help workers address their drug addiction, thereby reducing the adverse consequences.

Pre-employment and on-the-job drug testing by employers is gaining increasing support in public and private industry (Latessa, Travis, & Cullen, 1988; Lindquist, 1988; Rosen, 1987). By the late 1980s, over 1 million federal employees were eligible to be selected for drug testing, and in the private sector roughly 40 percent of the Fortune 500 firms had some form of testing program (Latessa,

Travis & Cullen, 1988). Although EAPs were originally designed to help alcoholic workers, they are now equipped to treat a variety of personal problems. Most large worksites have some type of EAP, and small and medium-sized worksites are beginning to develop EAPs as well (Tompkins, 1991).

EAPs are typically organized around one of two frameworks—internal or external—with external models being more common, especially at small and medium worksites. Internal models are most often operated out of the personnel or human resources department of a firm whose staff are directly employed by the company. External EAPs are staffed by an independent organization from which services are contracted on an as-needed basis, with annual payment based on the number of eligible workers (Tompkins, 1991). External EAP services cost employers approximately \$20 to \$30 annually per eligible employee (Masi & Friedland, 1988).

In the summer of 1988, the Bureau of Labor Statistics (BLS) conducted a survey of 7,500 establishments to examine employer anti-drug programs (U.S. Department of Labor, 1989). The survey objective was to estimate the number of private nonagricultural establishments with drug testing programs or EAPs by employment size class, major industry division, and multistate geographic region. Some of the major findings of this survey include the following:

- Forty-three percent of the largest establishments, "those with 1,000 employees or more," had drug testing programs, versus only about 2 percent of the smallest establishments, "those with fewer than 50 workers."
- Seventy-six percent of large establishments had EAPs versus only 9 percent for smaller establishments.
- Overall, only 3 percent of the establishments had drug testing programs, and 7 percent had EAPs.

- About 85 percent of establishments with testing programs targeted job applicants, although 64 percent focused on current employees.
- About 90 percent of EAPs were management sponsored, and the remainder were sponsored by a union or by both union and management.

Several conclusions can be drawn from the BLS survey. First, employer anti-drug programs are not widespread. Establishments with fewer than 50 employees are unlikely to have either a testing or an assistance program. Second, drug testing programs are aimed more toward job applicants than employees. Of the applicants and employees who were tested, only about 1 in 10 tested positive for drug use. Finally, EAPs were largely referral services to outside organizations for counseling and/or treatment.

No other large-scale national probability sample study on drug testing and EAPs has been conducted since the BLS study in 1989. The Research Triangle Institute (RTI) is currently conducting a baseline and 2-year follow-up study of approximately 5,000 worksites to determine the prevalence, cost, and impact of drug testing and EAPs. The RTI study will update all the information found on the BLS survey and will collect more extensive data on the organizational structure, cost, and impact of these programs. Baseline data should be available for dissemination by the end of 1993.

Despite the increased prevalence of EAPs, the number and quality of EAP evaluations are insufficient. Many people view EAPs as effective in dealing with employee problems and ultimately cost-effective for the organization, but these perceptions are based largely on faith and inadequate data. Most EAP evaluations are conducted in-house with a weak methodology. Some of the most common methodological problems are lack of random assignment, difficulty in identifying comparison groups, failure to control

for confounding factors, and short follow-up periods. In addition, separating the EAP effect from the total effect of EAP services and all other personal services is extremely difficult. Most EAP evaluations fail to address this issue and mistakenly attribute employee outcomes solely to the EAP (McDonnell Douglas Corporation and Alexander & Alexander Consulting Group, 1990).

The shortage of good EAP evaluations is especially unfortunate now because the roles and responsibilities of EAPs are changing rapidly. Many EAPs are handling a broader range of employee problems than they did in the past. They are also providing a wider array of services—such as training, diagnosis, assessment, referral, counseling, case management, utilization review, concurrent case reviews, benefits consultation, drug screening, and health risk appraisals (McClellan & Miller, 1988). As employers increase their efforts to contain the costs of employee health benefits, EAPs are assuming more responsibility for controlling treatment costs (Blum & Roman, 1989; Tompkins, 1991). Because of these operational changes in EAPs, parallel efforts in evaluation would be useful. Given the short life of many of these revised programs, it may be too early to assess their relative effectiveness and cost-effectiveness. Nevertheless, it is not too early for government and private industry to begin designing evaluations of their programs so that resources can be used more efficiently.

#### FACTORS DETERMINING WORKERS USE OF ILLICIT DRUGS

Since 1971, the National Institute on Drug Abuse (NIDA) has conducted 12 surveys to measure the prevalence of drug use among individuals in U.S. households. A statistic that might be somewhat surprising to some people is the number of individuals who have used illicit

drugs. The 1991 National Household Survey on Drug Abuse (NIDA/SAMHSA, 1993) reports that 37 percent of the population over the age of 12 (or 75.1 million individuals) have used an illegal substance at some time. Drug use for older individuals (over the age of 35) is significantly lower than it is for the young adult population. Marijuana is clearly the most popular illegal drug, with cocaine being a distant second. In the 18 to 34 age group, the number of individuals who used cocaine at some point in their lives was only about one-third the number of those who used marijuana (NIDA/SAMHSA, 1993).

With traditional consumer goods and services, economists assume that the decision to purchase and use these items is based on the principle of utility maximization. In the case of illicit drugs, however, an individual acquires the psychological rewards of drug use at a potentially dual cost. Less time is available for work, and drug use may affect the wages an individual can earn per unit of work time. Consequently, the full price of drug use has three components: (1) the market price of the drugs (such cost may include search time, quality uncertainty, and legal penalties); (2) the value of time spent using drugs; and (3) the cost of possible degradation in health, productivity, and social and family relations due to drug use.

Gill and Michaels (1991) developed a time allocation model in which the decision to use drugs depends on the individual's base wage, the amount by which drug use reduces the base wage, nonmarket income, and personal and demographic characteristics. Statistically estimating the drug use decision through a Probit technique, they find that personal attributes rather than economic variables, such as wages, are the prime determinants of the decision to use drugs. In particular, they find that more schooling reduces the probability of using

drugs. Whites are more likely than other races to use hard drugs (i.e., cocaine and heroin). Living in any region of the country other than the West lowers the probability of drug use, as does living in a rural area. As expected, married individuals are less likely to use drugs than are single people. Additionally, past illegal activity and the presence of an unsatisfying job both raise the probability of drug use. One should be cautious in interpreting these findings, however, because the most important economic variable—the price of drugs—was unavailable to the authors, a lack of information that may bias the results.

Several other studies have examined the relationship between drug use and economic, demographic, and social factors (e.g. Gupta & Jenkins, 1984; Mensch & Kandel, 1988; Shahandeh, 1985). In general, researchers find that many different factors (e.g., environmental, cultural, and occupational) can influence the decisions to use drugs. Rather than embarking on a comprehensive technical review of this literature, I suggest that the interested reader consult these and other studies for a richer exposition of the topic.

#### CONCEPTUAL RELATIONSHIP BETWEEN DRUG USE AND PRODUCTIVITY

Several intuitive reasons would lead us to believe that drug use among U.S. workers has a negative impact on productivity. Some studies have examined the extent of drug use in the workplace, and others have generated crude estimates of the costs to a company of having a drug-using employee. However, few studies have rigorously estimated the effects of drug use on earnings, labor supply, and job performance.

The optimal economic measure of "productivity cost" is the value of lost output. However, output is measured in different ways for different industries. Number of

automobiles, boxes of cereal, bushels of wheat, tons of steel, and number of houses are all measures of output. The value of lost productivity for an individual worker in a particular industry equals the units of output lost, multiplied by the market price per unit of output. This calculation is not straightforward even for a single drug-using worker because projecting expected productivity in the absence of drug abuse is difficult. Performing these calculations on the national level is nearly impossible.

As an alternative to counting output losses for each worker, one could convert output into an equivalent measure for all workers and industries—for example, productive person-hours lost. Assuming this conversion is possible, the next step would be to estimate the value of a person-hour or the value of labor in production. The value of labor in production or the opportunity cost of labor is reflected in wages when the market for labor is functioning efficiently. Therefore, wages or labor earnings may be an acceptable proxy for productivity if the labor market has a competitive price system (e.g., no price controls or other forms of regulation).

The integrity of this approach depends critically on whether workers are paid according to the value of their contribution to output. In economic terms, lost production could be valued by reduced earnings if workers were paid a wage equal to the value of their marginal product. Marginal productivity refers to the amount of additional output generated by the last unit of labor input. This strict condition does not necessarily have to be met for all workers. Rather, earnings must reflect the value of productivity for a sufficiently large number of employees. In such a case, lost earnings could be a reasonable approximation of the value of lost production.

Suppose employers are able to accurately determine workers' marginal pro-