

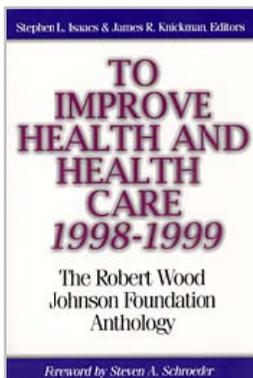
Alcohol and Work: Results from a Corporate Drinking Study

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Editor's Introduction

Addressing problems associated with alcohol use is the focus of three current Foundation-funded national programs:

- A Matter of Degree, which supports efforts on college communities and surrounding communities to reduce binge drinking
- Reducing Underage Drinking Through Coalitions, which supports state-based citizens' coalitions to develop strategies to address underage drinking
- Screening and Brief Interventions for Alcohol Abuse in Managed Care, which supports new approaches during medical office visits to address alcohol abuse problems.

Inappropriate alcohol use is also the focus of a range of other Foundation-funded national initiatives that address problems associated with alcohol, illegal drugs and tobacco. In addition, the Foundation is currently funding 103 single-site programs that are addressing alcohol abuse.

Despite this substantial Foundation investment, only a handful of efforts have focused on the workplace as a setting to address the problems of alcohol. This chapter presents the findings from a Foundation-funded survey to explore alcohol use and performance problems in the workplace. The authors were part of a team that conducted research for the Worksite Prevention of Alcohol Problems study at the Harvard and Boston University Schools of Public Health, and at the John Snow Inc., or JSI, in Boston, Mass. Thomas Mangione is a senior research scientist at, and Marianne Lee is a consultant with, the JSI Research and Training Institute; Jonathan Howland is a professor at the Boston University School of Public Health.

The effectiveness of corporate efforts to deal with alcohol problems among employees may be limited by misperceptions about who is causing most of the alcohol-related problems and about how alcohol affects work performance. Occasional heavy drinking by otherwise light and moderate drinkers may contribute as much or more to work-performance problems as do the alcohol-dependent drinkers.

Changes concerning society's perspectives on alcohol use have occurred in areas outside the workplace. For instance, a better understanding of the relationship between drunk driving fatalities and alcohol use—that it is not just the alcohol-dependent drinkers who are at risk for traffic crashes, but anyone driving after drinking—has contributed to the change in public policy in recent years. The harm that binge drinking by college students causes other students as well as the drinkers themselves has stimulated debates about alcohol use on campuses across the nation. It may now be time to revisit workplace alcohol policies and practices.

The authors were part of a team that conducted a large study of alcohol use and the workplace.¹ As part of this research we interviewed senior corporate executives and plant managers face to face, conducted over a hundred focus groups with employees, and surveyed nearly 14,000 managers, supervisors and hourly workers in seven Fortune 500 companies.

Those seven corporations included two conglomerates as well as a paper manufacturing company, an insurance company, a building materials company, a petroleum products company and a regional utility company. We gathered information about alcohol issues from them through several procedures—we talked extensively with over 150 senior management personnel at each corporate headquarters site and at some selected other worksites; we conducted a survey of 7,255 managers and supervisors in 114 different worksites across the seven corporations; we conducted a survey of 6,540 employees at sixteen selected worksites that represented a range of industries and of management attitudes toward drinking; and we visited to observe the work setting in these selected worksites.

The managerial survey was conducted by mailing questionnaires to the homes of a sample of managers and supervisors in 114 worksites. We obtained a response rate of 79 percent for a total of 7,255 surveys returned. The employee survey was also conducted by mailing questionnaires to the homes of all employees (supervisors, managers and hourly workers) in sixteen worksites (at five very large sites we took a sample of employees). We obtained a response rate of 71 percent for a total of 6,540 surveys returned.

For the most part, corporate executives and senior managers were quite willing to talk with us. They were proud of the progress that American industry, and their companies in particular, have made in dealing with alcohol-dependent employees. They have seen the perception of alcohol abuse and dependency shift from being a moral failing to a disease requiring treatment, witnessed the decline of the three-martini lunch in the wake of federal tax reform, and observed the advent of company-supported employee assistance programs, or EAPs, that deal with a range of employee problems but focus primarily on psychological and substance abuse issues. In response to emerging community norms about drunk driving, they have seen attitudes change about the appropriateness of heavy drinking at company-sponsored functions and at lunch. Even with these changes, alcohol consumption is estimated to cost American industry (and hence consumers) about \$27 billion annually in lost productivity.²

Executives of the seven corporations that participated in the study recognized alcohol as a continuing concern for their industries. The senior managers were confident that they understood the scope of the alcohol problem in their companies and felt that they had put in place reasonable systems to address employee alcohol-dependency problems. They were concerned about the high cost of these substance abuse treatment programs and were interested in other ways that alcohol problems among their employees could be reduced. The findings of the study, however, cast doubt on some fundamental perceptions about workplace drinking, and suggest the true economic costs of alcohol abuse and dependency to business might be greatly underestimated.

The study provides evidence to support two important observations that have not been fully recognized. First, most alcohol-related work-performance problems are caused by employees who would not be considered alcohol dependent; second, drinking patterns away from the worksite can affect work performance and hence both worker safety and the company's bottom line. Furthermore, the study identifies the potential for changing employee drinking practices through new worksite intervention strategies.

In the study, we encountered six beliefs widely held by corporate executives and senior managers concerning alcohol issues in their companies that were challenged by the managerial and employee surveys. The findings suggest new directions that American industry might take to better respond to and prevent employee alcohol-related problems.

MYTH ONE

Alcohol-Related Work-Performance Problems are Mostly Caused by a Few Alcohol-Dependent Employees

From our interviews of senior executives of the seven companies, it is clear that they have come to understand that alcohol-dependent employees are at risk for coming to work inebriated or drinking on the job. They also believe that working under the influence of alcohol could compromise work performance and present a safety risk to the drinking employee and other workers.

Accordingly, supervisors try to identify workers exhibiting work-performance problems and refer them for treatment if these problems are alcohol related. One corporate executive responsible for developing and implementing alcohol policies in his company said, "Every company I know has a few bad apples. Our job is to identify these individuals, get them help if they will take it, and let them go if they won't. This is the way we solve our alcohol problems. Our company is probably pretty average. Less than 10 percent of our workers have problems with alcohol. When a job performance problem surfaces, we get treatment services for that worker." The results of the survey of employees at sixteen worksites reveal a different picture. The majority of alcohol-related work-performance problems are manifested by workers who are not alcohol dependent. This is a result of two factors: first, the number of alcohol-dependent employees at the workplace is much smaller than the number of non-dependent drinkers (23% dependent versus 77% nondependent); and second, even though the rate of work-related problems is less among nondependent drinkers than alcohol-dependent employees, *there are so many more nondependent drinkers that their alcohol-related work problems in aggregate exceed those of the dependent employees.*

We sorted workers into three categories by their drinking behaviors, including whether they currently drank and their responses to the CAGE measure, an alcohol-dependency screening instrument.³ CAGE is a four-item screening scale for alcohol dependency that includes the following questions: Have you ever felt the need to Cut down on your drinking? Have people ever Annoyed you by criticizing your drinking? Have you ever felt badly or Guilty about your drinking? Have you ever had a drink first thing in the morning (an Eye opener)?

One category was "alcohol dependent." Employees who scored two or more on CAGE were categorized as alcohol dependent even if they were not currently drinking. A second category was nondependent drinkers, which included all drinkers who scored less than two on the CAGE scale. The third was abstainers: lifetime abstainers and those who reported they were no longer drinking and also scored less than two on the CAGE. In our sample, 19 percent were classified as alcohol dependent, 61 percent as

nondependent drinkers, and 20 percent as abstainers. These proportions are similar to those reported by other investigators.⁴

We measured work-performance problems by asking employees how many times they experienced five types of performance issues in the past year—absenteeism, arriving to work late or leaving early, doing poor quality work, doing less work, and having arguments with coworkers.⁵ These types of questions have been used by other researchers^{6,7} as indicators of poor work functioning.⁸

Obviously, there are many reasons someone might be absent or late to work that have nothing to do with drinking, such as traffic problems or sick children. In order to estimate the proportion of work-performance problems reported to us that could be attributed to alcohol use, we first calculated the average number of problems reported by abstainers (4.2 per year); see Figure 4.1.

We then assumed that abstainer-level problems represented the average number of work-performance problems that had nothing to do with drinking. We considered any number of problems over the abstainers' level to be alcohol related for both the nondependent and the alcohol-dependent employees.

Alcohol-dependent employees in the study averaged a total of 6.9 incidents; by subtracting the abstainer levels, we calculated that 2.7 of these incidents (6.9 minus 4.2) could be considered alcohol related. Nondependent drinkers averaged a total of 5.4 incidents; of these, 1.2 could be considered alcohol related—again by comparison with the abstainer level.

As one would expect, alcohol-dependent employees reported more alcohol-related poor work-performance incidents than nondependent drinkers (2.7 versus 1.2 incidents). However, as nondependent drinkers were three times as numerous as alcohol-dependent employees, their contribution as a group to the total number of alcohol-related problems reported turns out to be greater (59% versus 41%), as illustrated in Figure 4.2.

If corporate managers direct their intervention efforts primarily toward alcohol-dependent employees, they are missing the source of a substantial number of alcohol-related problems. In addition to assisting alcohol-dependent employees, corporations would benefit by trying to affect the drinking behaviors that create work-performance problems among nondependent drinkers.

MYTH TWO

Employees Who Don't Drink on the Job Will Not Have Their Work Performance Affected by Alcohol

Corporate drinking policies have both a humanitarian and a practical justification: to provide assistance to the troubled worker and to prevent work-performance problems due to intoxicated personnel.⁹ Most alcohol-related performance problems probably do not result from being intoxicated but rather from light drinking at lunch or from the residual effects of heavy drinking the night before. Low blood alcohol concentrations (BACs) can increase the likelihood of impaired performance even when an employee is not, nor appears to be, intoxicated. This is because impairment increases gradually; it does not necessarily start at some threshold level of exposure. Also, alcohol's residual effects (hangovers) are such that even at zero BAC and without causing obvious physical symptoms, work performance can be impaired the day after a night of heavy drinking.

All the companies we studied had policies prohibiting employees from working under the influence of alcohol. None, however, had explicit standards defining "under the influence," except for federally regulated occupations. Discussions with senior managers indicated an underlying assumption that worker performance became impaired only at relatively high levels of blood alcohol and never when BACs were at or near zero. This is like assuming alcohol-impaired driving only occurs at or above the legal limit for BAC. Experimental evidence summarized by the National Highway Traffic Safety Administration, however, shows that "there is no threshold for alcohol impairment, i.e., there is no lower level at which impairment starts, or below which no impairment is found."¹⁰

In contrast to corporate drinking policies, public and private regulations on alcohol use among certain safety-sensitive occupations do acknowledge the performance effects of low-level drinking and hangovers. The Department of Transportation (DOT), for example, prohibits commercial truckers, railroad workers, merchant seamen and aircraft pilots from operating their vehicles at BACs less than half the level that marks drivers as legally intoxicated under state laws. Moreover, most are prohibited from operating their vehicles within four hours of consuming *any* alcohol, a period extended by the DOT for aircraft pilots to eight hours, by the military for their pilots to twelve hours and by commercial airlines for their pilots to twenty-four hours.

The survey of employees at sixteen worksites sheds light on the ways in which alcohol affects occupational performance. The data suggest that work-performance problems are associated with both low-level alcohol exposure and hangovers. We examined the independent contribution of three measures

of alcohol use to the frequency of self-reported work-performance problems. The measures were any drinking during the work day, alcohol dependency as measured by the CAGE, and frequency of episodes of heavy drinking.¹¹ Each of the three were significantly associated with frequency of work-performance problems, even when demographics, job characteristics, job satisfaction and other drug use were accounted for in the analysis.¹²

The relationship between episodes of heavy drinking and work-performance problems indicates the residual effects of drinking the previous night on next-day work performance (the hangover effect). Figure 4.3 shows that the more frequently a nondependent drinker reports episodes of heavy drinking, the more performance problems were reported.

Our interpretation of this calls for some caveats. The relationship between the effects of heavy drinking and work-performance problems could be influenced by some third factor (such as depression) that might cause both heavy drinking and work problems. The study controlled for some, but not all, of these factors. Moreover, the data cannot establish whether heavy drinking causes performance problems at work by way of hangovers, as we believe, or whether such problems lead to heavy drinking. Therefore we relied on the work of other investigators to support our interpretation.¹³ If our findings are combined with those of other investigators, they support the position that episodes of heavy drinking leading to hangovers can cause day-after work-performance problems. Although the mechanism by which these residual effects impair performance is uncertain, there is evidence that heavy drinking disturbs rapid-eye-movement sleep and that even without the classic physiological symptoms of hangover (such as headache, nausea and irritability) hangovers may leave workers exhausted on the job.¹⁴

Although it is conventional wisdom that hangovers affect work performance the next day, the findings from this study and those of other investigators document this relationship. They demonstrate the limitations of corporate drinking policies that only prohibit on-the-job drinking and working under the influence.

Corporate drinking policies will be more effective in reducing alcohol-related performance problems if they address both low-level exposure, such as drinking at lunch, and the residual effects of heavy drinking on next-day performance. As already discussed, many performance problems due to low-level exposure and hangovers occur among workers who may not have alcohol-dependency problems.

MYTH THREE

Hourly Workers are More Likely to Drink During Work Hours than Managers or Supervisors

Our survey of 6,540 employees at sixteen worksites showed that, with one exception, this perception is incorrect. As Figure 4.4 indicates, upper-level managers were three times as likely to report drinking during working hours within the last thirty days than either first-line supervisors or hourly workers (23%, 11% and 8%, respectively).

Also, about 80 percent of the workday drinking incidents reported occurred during lunchtime or at company-sponsored functions. Only a small fraction of the incidents involved drinking just before coming to work, on a break, or while working. Managers clearly have more opportunities to drink during lunch, because they have more license to leave the worksite and can take more time for lunch. They also are more likely to attend company-sponsored functions where alcohol might be served. This accounts for the higher rates of workday drinking among managers.

However, even though the rates of drinking during the workday are lower among hourly workers than among managers and supervisors, the majority of workday drinking incidents are experienced by hourly workers because there are proportionately more of them. Taken from this perspective, senior executives were correct in their assumption that most workday drinking incidents come from hourly workers.

In our discussions with corporate executives, we found that most drinking policies prohibit alcohol use on the worksite unless a function is specifically granted a waiver. However, these policies leave a loophole concerning drinking at lunch. Essentially, corporate policy-makers have taken the position that lunch is personal (or unpaid) time and therefore exempt from policy restrictions, as long as the drinking takes place off the worksite. They feel that the potential consequences of drinking too much at lunch are covered by their policies prohibiting working "under the influence." In other words, employees may drink at lunch but are admonished not to get drunk.

Our findings show that even small amounts of drinking during working hours can affect work performance, regardless of where it occurs or by whom. Employees who acknowledge drinking during working hours, mostly at lunch or at company-sponsored events, usually report having only one or two drinks. However, as Figure 4.5 shows, on average, employees who drink during the workday are more likely to report poor work-performance incidents than those who do not drink during the workday, whether they be nondependent drinkers or alcohol-dependent drinkers. This finding was independent of

a variety of factors: dependency, drinking heavily away from work, job dissatisfaction, other drug use (marijuana or "anxiety medications"), having children and working shifts other than days.¹⁵

MYTH FOUR

Current Policies and Strategies to Deal with Alcohol-Dependent Drinkers are Effective
According to the corporate executives interviewed, companies have made great progress over recent decades in facilitating access to treatment services for alcohol-dependent employees—either by covering such services through their health insurance or providing counseling and referrals through EAPs. This trend is a consequence of general acceptance that alcohol dependency is a disease and hence requires treatment by trained health professionals.

In general, corporate executives felt their companies had accomplished a lot by developing policies on alcohol use and providing treatment services to employees. They felt, for the most part, that these services were working effectively.

Our survey of 7,255 managers and supervisors from 114 worksites, however, showed that those responsible for implementing drinking policies and making referrals to EAPs were less sanguine about the effectiveness of the policies and services. For instance, only 16 percent of supervisors thought their efforts were "very effective" in identifying and referring employees with serious alcohol problems. A comparably small percentage believed their efforts were "very effective" in preventing heavy drinking by employees who were not yet dependent on alcohol.

The managers identified a range of barriers to successful intervention with alcohol-dependent employees.¹⁶ They mentioned organizational barriers such as senior managers who thought that tough stands on alcohol were not important; interpersonal barriers such as confrontations with union officials protecting problem drinkers; and personal barriers such as managers feeling that they needed more training in how to intervene with poor-performing employees. These findings, summarized in Figure 4.6, indicate that the effectiveness of corporate drinking policies and programs is often compromised in their implementations.

MYTH FIVE

Companies Have Little Influence on Drinking Behaviors of Employees Away from Work
In the interviews, corporate executives said they had little influence over employees' drinking practices away from the worksite. In fact, many felt it was not the company's business to intrude into employees'

private lives. They believed intervention was only required when work performance suffers or policies are violated.

The study showed large variations in levels of overall alcohol consumption by supervisor and managers across the 114 worksites. In some sites nearly two-thirds of the supervisors and managers reported drinking heavily—away from work—during the past month, whereas at other sites hardly anybody reported such behaviors. A variety of factors influence drinking behaviors of supervisors and managers at different worksites. Worksites vary in the proportion of men and women, in types of religious backgrounds, in the ages and marital status of supervisors and managers, in education levels, and in the region of the country in which they are located.¹⁷ All of these factors can affect the rates of heavy drinking. But, after statistically "removing" these effects, substantial variation in heavy drinking still remained across worksites. The implication is that worksites develop their own microcultures—that is, norms about drinking—that influence individual drinking practices at work as well as away from work.

The exact mechanism by which worksite cultures produce their effects on drinking behaviors is not clear. The fact that employees interact and communicate their values may play a role. Also, employees may observe each others' drinking behaviors directly. In the study, nearly a third of the supervisors and managers reported drinking with their coworkers during the last month alone.

The study also showed that coworkers' attitudes about drinking strongly influenced an employee's own attitudes about drinking. In turn, these attitudes (both an employee's own attitudes and that of his or her coworkers) were very strongly correlated with an employee's own drinking behavior. These worksite influences are predictable when the behavior in question concerns drinking during working hours or at lunch. It was more surprising, however, to see the influence coworker attitudes had on an employee's own attitudes about drinking away from the worksite.

The fact that such variations in drinking behaviors across worksites is seen (even after adjusting for other influences) belies the belief that companies don't influence employee off-site drinking. It suggests that companies could utilize the power of workplace norms to moderate employee drinking behavior during the workday and heavy drinking away from work. Harnessing the power of small group norms to affect behavior is an underutilized strategy for influencing employee drinking practices.

MYTH SIX

Workers Perceive Additional Company Interventions About Alcohol Behaviors as Intrusive

In the interviews with corporate executives, some were found who would be eager to try additional ways to reduce the negative consequences of employee alcohol use. However, most executives were of the opinion that employees would resist more vigorous company attempts to change their drinking behavior. As an example, they cited disputes with unions when they attempted to intervene with alcohol-dependent or alcohol-abusing employees.

The sixteen-site survey, however, indicates that employees are more open to alcohol interventions than corporate executives imagine, particularly where employees feel endangered by the actions of their coworkers. Employees were asked whether they would be in favor of testing for alcohol use under three different circumstances—preemployment testing, after an accident and random testing. Surprisingly, there was little difference in the level of support for these measures among managers, supervisors and hourly workers. A second surprise was the high percentage of employees who supported alcohol-testing strategies. Over 80 percent supported testing after an accident, two-thirds supported preemployment testing, and half supported random testing for alcohol during the workday. Support for random testing climbed to nearly two-thirds of the employees when only those working in dangerous jobs were considered. Nearly three-quarters of the employees who worked in manufacturing or transportation jobs supported random testing.¹⁸

There was strong support among all employees for company assistance to employees who have drinking problems, particularly when work performance was affected; almost universal support for company insurance covering treatment services; and large majorities of employees who supported the idea that both supervisors and their coworkers should try to help employees with drinking problems. These findings indicate that employees are not as resistant to expanded alcohol interventions as senior executives perceive.

SUMMARY OF KEY FINDINGS

The key findings from the study can be summarized as follows:

- The majority of alcohol-related work-performance problems are associated with nondependent drinkers who may occasionally drink too much—not exclusively by alcohol-dependent employees.
- Two specific kinds of drinking behavior significantly contribute to the level of work-performance problems: drinking right before or during working hours (including drinking at lunch and at

company functions), and heavy drinking the night before that causes hangovers during work the next day.

- Upper-level managers are more likely to drink during the workday than either first-line supervisors or hourly workers.
- Managers and supervisors report a variety of organizational, interpersonal and individual barriers to implementing corporate alcohol policies and procedures.
- Workplace culture and norms have the potential to influence drinking behaviors at work and beyond the workplace.
- There is broad support among managers, supervisors and hourly workers for assisting employees whose drinking behavior causes problems for themselves, their coworkers or the company.

IMPLICATIONS

The study suggests a shift is needed in perspectives on corporate alcohol policies and practices. First, the findings suggest that policy-makers could expand their focus beyond alcohol-dependent employees to look at employees who drink heavily from time to time. Employees who are not alcohol dependent account for 60 percent of the alcohol-related work-performance problems reported in the study. This paradox occurs because the size of the lower-risk group (nondependent drinkers) is substantially larger than that of the high-risk group (alcohol-dependent employees). Therefore, any corporate strategy aimed only at reducing the consequences of alcohol-dependent employees, even if it is totally effective, will miss the opportunity of reducing problems caused by the alcohol consumption of nondependent drinkers.

Second, the findings suggest policy-makers could expand the corporation's definition of the types of drinking behaviors that cause problems in the workplace and set policies regarding these behaviors. They show that any drinking during or immediately before working hours has consequences for work performance. Corporate decision-makers could consider adopting policies that more explicitly address the consequences of drinking before work, at lunch, at company functions and before driving company vehicles.

The findings also indicate that heavy drinking the night before work has consequences for work performance the next day. This poses the greatest challenge to current corporate perspectives about alcohol, because it implies that employers have reason to be concerned about the personal lifestyle of their employees. It raises issues of personal privacy and the potential difficulty employers might have in encouraging workers to curtail occasional heavy drinking practices when they must work the next day. However, by illustrating the connection between hangovers and subsequent workplace performance, we

have provided corporations with a rationale for expanding their focus to this area and for undertaking efforts to increase employee awareness of the negative consequences of hangovers on work performance. Companies currently use such education strategies for other health-related lifestyle issues such as fitness, cholesterol and smoking.

Third, the study indicates that the methods for estimating alcohol's impact on the workplace could be expanded. Research that calculates the economic costs of alcohol to corporations uses estimates based on the proportion of alcohol-dependent workers in the workplace. It attributes to alcohol only those accidents or production errors associated with acute alcohol exposure. Our data suggest that a significant share of work-performance problems are attributable to employees who drink heavily *the night before*. Employees who are impaired by hangovers will not necessarily test positive for alcohol in their bloodstream following an accident. Furthermore, cost estimates miss secondhand effects. For instance, 14 percent of our survey employees said they had to redo work within the last year because of a coworker's drinking.

Fourth, the study suggests that the corporate culture itself can contribute to employee drinking behaviors. Corporate policy-makers can play a role in shaping worksite norms about alcohol use. By acknowledging responsibility for worksite drinking cultures, companies may effectively develop norm-based intervention strategies for reducing the impact of alcohol on work-performance problems.

We feel optimistic about the potential success of such new strategies because they target employees who are not necessarily dependent on alcohol, but who may abuse alcohol on a fairly regular basis or drink from time to time in ways that impair work performance. These employees may be more responsive to educational and normative messages about changing the pattern of their drinking behaviors than alcohol-dependent employees.

Notes

¹ This study, the Worksite Prevention of Alcohol Problems, was jointly funded by the Robert Wood Johnson Foundation and the National Institute of Alcoholism and Alcohol Abuse. In addition, the Robert Wood Johnson Foundation provided funding to support continuing analyses and dissemination of findings. Research activities were conducted at the Harvard and Boston University Schools of Public Health and the John Snow Research and Training Institute in Boston, Massachusetts.

² Eighth Annual Report to Congress, NIAAA, 1995, p. 257.

³ Although the CAGE instrument is short and easily administered, it has been shown to have robust reliability and validity in screening individuals with alcohol dependencies. Various studies in different populations have shown it to have very high sensitivity and specificity scores; that is, an accurate designation of who has and does not have a dependency (for example, 86 percent sensitivity and 93 percent specificity in B. Liskow and others, "Validity of the Cage Questionnaire in Screening for Alcohol Dependence in a Walk-In (Triage) Clinic," *Journal of Studies of Alcohol* 56(3), 1995, 277–281; 85 percent sensitivity and 89 percent specificity in B. Bush and others, "Screening for Alcohol Abuse Using the Cage Questionnaire," *American Journal of Medicine* 82(2), 1987, 231–235; and 84 percent sensitivity and 90 percent specificity in C. A. Soderstrom and others, "The Accuracy of the Cage, the Brief Michigan Alcoholism Screening Test, and the Alcohol Use Disorders Identification Test in Screening Trauma Center Patients for Alcoholism," *Trauma* 43(6), 1997, 962–969).

The fact that we included anyone who scored two or more on the CAGE as "dependent" whether or not they reported they were currently drinking is consistent with the treatment perspective that people don't lose their dependency even if they have been sober for a while. Therefore, since some of our "dependent" workers were currently abstaining, the demonstrated relationship (shown in Figure 4.1) between different types of drinkers and work-performance problems may understate the impact of current alcohol consumption per se.

⁴ For comparative results, see R. R. Crowe and others, "The Utility of the 'Brief Mast' and the 'Cage' in Identifying Alcohol Problems," *Archives of Family Medicine* 1997, 6, 477–483.

⁵ The exact wording of the work-performance question and items was as follows: "In the past 12 months, how often did the following happen to you?" (Response categories: never, 1–2 times, 3–5 times, 6 or more times.) a. You missed work; b. You did poor quality work; c. You arrived late or left early; d. You did less amounts of work; and e. You had arguments with a coworker.

⁶ T. Blum, P. Roman and J. Martin, "Alcohol Consumption and Work Performance," *Journal of Studies on Alcohol* 54, 1993, 61–70.

⁷ G. M. Ames, J. W. Grube and R. S. Moore, "The Relationship of Drinking and Hangovers to Workplace Problems: an Empirical Study," *Journal of Studies on Alcohol* 58, 1997, 37–47.

⁸ In creating a total poor work-performance problems score, we recoded the ranged response categories to the midpoint amount and then added answers equally weighted from each item to get a total number of incidents per employee.

⁹ An exception to this standard are the employees engaged in the safety-sensitive occupations that are federally regulated and prohibit blood alcohol counts lower than those required to be intoxicated.

¹⁰ National Highway Traffic Safety Administration, *Alcohol and Highway Safety, 1984: A Review of the State of Knowledge*. Technical Report DOT-HS-806-569 (Washington, D.C.: United States Department of Transportation, 1985).

¹¹ We used two different measures of heavy drinking and the results were the same for both. One measure was based on the quantity consumed and asked whether in the past month there was at least one day when five or more drinks were consumed (four or more for females). The other measure asked how many times in the past month the worker got high or drunk from consuming alcohol.

¹² T. W. Mangione, J. Howland, B. Amick, J. Cote, M. Lee, N. Bell and S. Levine, "Employee Drinking Practices and Work Performance," *Journal of Studies on Alcohol*, forthcoming.

¹³ Genevieve Ames and colleagues at the Prevention Research Center in Berkeley, Calif., for example, recently published a study of drinking practices and work performance at a large manufacturing site. These investigators asked workers specifically about their experience of hangovers and found a significant association between frequency of hangovers and the frequency of work-performance problems, controlling for drinking on the job (see G. M. Ames and others in note 6). Perhaps more compelling is experimental evidence of decrements in occupational performance the day after intoxication. These effects have been demonstrated in randomized trials involving simulated aircraft piloting performance and simulated industrial tasks (R. C. Wolkenberg, C. Gold and E. Tichauer, "Delayed Effects of Acute Alcohol Intoxication on Performance with Reference to Work Safety," *Journal of Safety Research* 7(3), 1975, 104–118). See also J. Yesavage and V. Leirer, "Hangover Effects on Aircraft Pilots 14 Hours after Alcohol Ingestion: a Preliminary Report," *American Journal of Psychiatry* 143(12), 1986, 1546–1550.

¹⁴ T. Roehrs, J. Yoon and T. Roth, "Nocturnal and Next-Day Effects of Ethanol and Basal Level of Sleepiness," *Human Psychopharmacology* 6, 1991, 307–311.

¹⁵ See note 12.

¹⁶ N. Bell, T. W. Mangione, J. Howland, S. Levine and B. Amick, "Worksite Barriers to the Effective Management of Alcohol Problems," *Journal of Occupational and Environmental Medicine* 38(12), Dec. 1996, 1212–1219.

¹⁷ J. Howland, T. W. Mangione, M. Lee, N. Bell and S. Levine, "Worksite Variation in Managerial Drinking," *Addiction* 91(7), 1996, 1007–1017.

¹⁸ J. Howland, T. W. Mangione, M. Lee, N. Bell and S. Levine, "Employee Attitudes Toward Worksite Alcohol Testing," *Journal of Occupational and Environmental Medicine* 38(10), Oct. 1996, 1041–1046.

FIGURES

4.1 Average Yearly Work-Performance Problems for Different Drinking-Status Employees

4.2 Relative Proportion of Employees and Proportion of Work-Performance Problems Attributable to Alcohol- and Nonalcohol-Dependent Employees

4.3 Number of Work-Performance Problems by Number of Days in Past Month Employee was Drunk or High on Alcohol (Alcohol- and Nonalcohol-Dependent Employees)

4.4 Proportion of Employees Who Drank During Workday in Past 30 Days

4.5 Average Number of Poor Work-Performance Incidents by Whether Employee Drank During Workday in Past 30 Days : Alcohol-Dependent and Nondependent Employees

4.6 Managerial and Supervisory Perceptions of Barriers to Implementation of Alcohol Policies