

Prevalence of drug testing in the workplace

Drug testing continues to develop as a popular strategy to control substance abuse in the workplace; the incidence of testing is partially based on the type of worksite, characteristics of employees, and policies of the company

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Substance abuse has compelled many U.S. firms to create strategies that would help keep it out of the workplace. Some firms have sponsored elaborate and extensive programs to control alcohol and drug misuse.¹ However, these programs have tended to rely on a supervisor's, a coworker's, or an employee's judgment about the presence of substance abuse in another individual or themselves. In the 1980s, some firms began to adopt drug and alcohol testing as an objective strategy to detect and control substance abuse. Advocates of this approach assert that an employee's positive test results can be linked to impairments in job performance, safety risks, and absenteeism.²

While drug testing programs span many segments of society (including suspected criminal offenders and automobile operators), this article focuses on the prevalence and characteristics of drug testing programs in private-sector workplaces within the United States. First, we describe the proliferation of drug tests as evidenced in earlier studies. We then present our findings from a national telephone survey conducted in 1993, which estimated the prevalence and characteristics of testing programs, and descriptors of worksites most likely to implement them. We discuss the implementation of various types of programs (that is, preemployment, random, regular), the types of worksites that conduct such tests, and the employees who are eligible to be tested in those worksites. Research findings are discussed within the context of social policy and the findings of earlier research studies. Lastly, we offer some comments regarding the future of testing and its

integration with other workplace substance abuse control strategies.

Drug testing trends

Surveys of worksite respondents indicate a growing trend in the implementation of drug testing programs from the mid-1980s to the present. For example, one study finds that 18 percent of Fortune 500 companies tested their employees in 1985, but by 1991, the proportion had more than doubled to 40 percent.³ A survey conducted by the American Management Association in 1988 indicated increases in the testing of both applicants and current employees for drugs. Thirty-eight percent of all the organizations in the survey tested job applicants, compared with 28 percent of those in 1987; 36 percent tested current employees, compared with 28 percent in 1986.⁴ By 1991, 48 percent of Fortune 1000 firms engaged in some type of drug testing.⁵ Another study found that up to 63 percent of surveyed employers performed some type of testing in 1992.⁶ And, in a survey of 342 large firms (that is, firms that have more than 200 workers) in the State of Georgia, Terry Blum, and others report that 77 percent of the companies engaged in some type of drug testing between 1991 and 1992.⁷ In addition to these relatively small surveys, representative national surveys conducted by the Bureau of Labor Statistics indicate that 31.9 percent of worksites with more than 250 employees had drug testing programs in 1988, and by 1990, that proportion had increased to 45.9 percent.⁸ Even

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with the methodological differences among these studies, it seems reasonable to conclude that the drug testing of job applicants and current employees has become much more common in recent years.

Worksites linked to testing

Previous research indicates that drug testing programs are implemented differently, according to company size and industry type. For example, a study conducted by the American Management Association in 1987 reported that while 43 percent of large corporate respondents (sales over \$500 million) indicated that they test job applicants, only 16 percent of smaller corporate respondents (less than \$50 million in sales) reported any type of drug testing.⁹ In the BLS Survey of Employer Anti-Drug Programs, conducted in the summer of 1988, 43 percent of the largest worksites (with 1,000 employees or more) had drug testing programs, compared with 2 percent of the smallest worksites (fewer than 50 employees).¹⁰ Furthermore, the BLS follow-up survey, conducted in 1990, showed an increase in the percentage of larger companies, but no significant increase in the percentage of small firms with drug testing programs.¹¹

Firms implementing drug testing programs also can be distinguished by type of industry. The 1989 Conference Board survey showed that three-fourths of the companies with drug testing programs were manufacturers or gas and electric utilities, while nearly half of the companies that reported not having a drug testing program were in banking, insurance, and other financial service industries.¹² The 1988 BLS survey also showed that worksites in mining, communications, public utilities, and transportation were most likely to have testing programs, reaffirming the findings reported by the Conference Board.¹³ Worksites least likely to have testing programs were those in the retail trade and services industries. Worksites in the latter industries tended to be small, however, confounding the relationship between the existence of testing programs and specific industry type.

Differences in programs

Three primary distinctions among drug testing programs relate to the persons or groups subject to testing, the scheduling of tests, and the substances for which they are tested. The groups that are subject to testing are usually job applicants or current employees. Testing of new applicants appears to be a more common policy than any form of testing of current employees. For example, the Conference Board survey reports that almost half of all organizations screened job applicants by using a drug test.¹⁴ In addition, the study by Blum, and her colleagues found that job applicants were not often subjected to drug testing among the large firms in Georgia.¹⁵ The firms

that did test current employees, but not applicants were rare, and were probably located in communities with limited labor markets.

The scheduling of tests among current employees is usually classified as random, comprehensive, or for reasonable cause (including followup testing). Random testing is completed with all or a specific segment of employees at a particular worksite, on an unannounced, variable schedule. Random testing seems to be the approach most commonly implemented by firms affected by Department of Transportation regulations.¹⁶ The proportion of larger firms engaged in random testing of employees has increased rapidly. In fact, one study found an increase from 2 percent in 1987 to 30 percent in 1991.¹⁷ Blum and colleagues found that 18 percent of the firms in the American Management survey conducted random tests in 1988.¹⁸

On a regular basis, companies are likely to conduct testing as a part of a routinely scheduled annual physical examination. Alternatively, they may otherwise announce testing dates, or periods in which tests will be conducted, to employees. This pattern of testing is likely to be conducted with all workers, and unlike random testing, does not seem to have a detrimental effect on employee morale (the administrators are tested along with subordinates). Regular testing is usually more acceptable to workers and organized labor, and it can enhance the firm's image in the community. It is less effective than random testing in detecting substance misuse, however, because employees are usually notified when the test will be scheduled.¹⁹

Among companies that test current employees, testing for reasonable cause has been the most common practice, and is based on suspicion of substance misuse (resulting from unsafe or nonproductive practices, observation of erratic behavior, possession, or other indications of intoxication or policy violation).²⁰ If detected, substance abusers are given the opportunity to seek treatment by the firm and retain their jobs. They could be subjected to return-to-work and followup testing as a condition of employment, for a period of time.

Employers have the option of selecting substances for which employees are tested, threshold levels of various chemicals in the body that would constitute a positive drug test, and the option of retesting in the case of a positive result. Of particular interest is the inclusion of alcohol testing in a comprehensive drug testing program.²¹ While practically all companies that conduct alcohol tests also test for drugs, only a small proportion of all drug testing programs screen for alcohol misuse.²²

Other corporate responses. According to the 1989 Conference Board survey, drug testing programs were typically part of an integrated substance abuse strategy, which included a written substance abuse policy, an employee assistance pro-

gram, and a drug education and awareness program.²³ Coordinated efforts to deal with alcohol and drug misuse in the workplace were far less common in corporations without drug testing programs. Similarly, one study found that 60 percent of companies with a drug testing program also had a comprehensive treatment and education program.²⁴ Another study reported that more than one-half of companies with drug testing programs also had Employee Assistance Programs.²⁵ Other research has indicated that organizations with drug testing programs are significantly more likely to also have Employee Assistance Programs than those without drug testing programs.²⁶

Results

Table 1 presents national estimates of drug and alcohol testing for worksites and employees by worksite size, type of industry, and region. (See appendix for a description of the

methodology used in this study.) Approximately 48 percent of all private worksites in the United States with 50 or more full-time employees conduct drug tests, and approximately 23 percent test employees for alcohol misuse. The prevalence of worksite drug testing increased approximately 32 percent (that is, from 16 percent to 48 percent) from the 1988 BLS survey to the period of our survey, 1992–93.²⁷

Worksite size. Table 1 also shows a positive relationship between worksite size and the prevalence of a drug or an alcohol testing program. Approximately 71 percent of worksites with more than 1,000 employees conduct drug tests and 42 percent test for alcohol misuse. In contrast, 40.2 percent of worksites with 50 to 99 employees conduct drug tests and 16.5 percent test for alcohol misuse.

Because of the relatively greater prevalence of drug and alcohol testing programs in larger worksites, most employees in the United States are in worksites with these programs. As

Table 1. National estimates of the prevalence of drug and alcohol testing among worksites and employees, by selected characteristics of the worksite, 1992–93

[In percent]

Characteristic	Worksites ¹			Employees		
	Total (in thousands)	Test for drug use	Test for alcohol use	Total (in thousands)	In worksites that test for drug use	In worksites that test for alcohol use
All worksites	162.8 (-)	48.4 (1.2)	23.0 (1.0)	41,127 (1,271)	62.3 (1.6)	32.7(2.1)
Worksite size						
50–99 employees	61.6 (1.7)	40.2 (2.1)	16.5 (1.6)	4,319 (124)	40.7 (2.2)	16.7 (1.6)
100–249 employees	66.0 (1.8)	48.2 (1.9)	22.9 (1.7)	9,612 (265)	48.9 (1.9)	23.2 (1.7)
250–999 employees	29.0 (.9)	61.4 (2.1)	32.7 (2.1)	12,520 (404)	62.8 (2.1)	33.5 (2.2)
1,000 employees or more	6.2 (.3)	70.9 (3.4)	42.1 (3.5)	14,675 (1,282)	77.1 (3.4)	43.0 (5.0)
Type of industry						
Manufacturing	54.0 (1.0)	60.2 (2.2)	28.3 (2.0)	14,058 (554)	73.5 (2.2)	37.5 (2.8)
Wholesale and retail	32.2 (1.1)	53.7 (3.3)	22.1 (2.7)	4,901 (236)	57.3 (3.0)	27.7 (3.2)
Communications, utilities, and transportation	13.5 (.8)	72.4 (3.3)	34.9 (3.0)	4,202 (435)	85.8 (2.6)	43.9 (5.3)
Finance, insurance, and real estate,	14.2 (0.5)	22.6 (2.1)	7.8 (1.3)	4,369 (563)	50.2 (6.7)	12.2 (3.1)
Mining and construction	5.6 (.4)	69.6 (4.1)	28.6 (3.5)	801 (49)	77.7 (3.2)	32.2 (3.1)
Services	43.3 (1.2)	27.9 (2.0)	17.4 (1.7)	12,796 (998)	47.5 (4.5)	32.7 (5.2)
Region						
Northeast	33.0 (1.5)	33.3 (2.4)	12.9 (1.7)	9,356 (617)	49.1 (3.6)	19.3 (2.6)
Midwest	40.7 (1.8)	50.3 (2.5)	24.0 (2.1)	10,190 (616)	62.4 (3.1)	34.4 (3.2)
South	59.1 (1.9)	56.3 (2.0)	26.3 (1.8)	14,986 (1,168)	71.8 (2.6)	36.9 (4.4)
West	30.0 (1.6)	46.8 (2.9)	26.0 (2.5)	6,594 (460)	59.4 (3.3)	39.7 (3.9)

¹ Worksites of private nonagricultural firms with more than 50 full-time employees at the time of survey.

NOTE: Standard errors appear in parentheses.

shown in table 1, about 62 percent of all employees in private-sector worksites (with 50 or more workers) are employed by firms which conduct drug tests and approximately 33 percent are employed by firms which test for alcohol misuse. Compared with the BLS survey, this coverage rate is greater in all worksite size categories.²⁸

Type of industry. The prevalence of drug and alcohol testing varies across industry groups. As table 1 shows, the manufacturing (60.2 percent); wholesale and retail trade (53.7 percent); communications, utilities, and transportation (72.4 percent); and mining and construction (69.6 percent) industries have the highest prevalence of drug testing, compared with the finance, real estate, and insurance (22.6 percent) and services (27.9 percent) industries, which have the lowest. A similar pattern is demonstrated for alcohol testing programs with the communications, utilities, and transportation (34.9 percent) industries having the highest prevalence rates and the finance, real estate, and insurance industries (7.8 percent) having the lowest rates. Approximately, the same ranking orders apply when percentage of worksite data are compared with percentage of employees (table 1).

Regional areas. The highest prevalence for drug and alcohol testing in worksites, by regional area (as defined by the Bureau of the Census) is in the South (56.3 percent for drugs and 26.3 percent for alcohol), while the lowest is in the Northeast (33.3 percent for drugs and 12.9 percent for alcohol). The Midwestern and Western regions have similar prevalence rates (approximately 48 percent for drugs and 25 percent for alcohol). (The remainder of this article pertains to drug testing programs only.)

Worksites and employees

Table 2 examines the relationship between the prevalence of drug testing and various employee and worksite characteristics.²⁹ For example, of all employees in worksites with 50 or more full-time employees, 12.7 percent are represented by a union. However, worksites with a larger percentage of union employees are more likely to have a drug testing program than not to have one (16.3 percent, versus 9.2 percent). A similar relationship exists with the percentage of full-time employees. Worksites with a larger percentage of full-time employees are more likely to have drug testing. A reverse relationship exists with the percentage of employees who have a college degree and are under age 30. Worksites with larger percentages of these employees are less likely to have drug testing programs. Neither the percentage of minority employees at a worksite nor those with a high school diploma is related to having a drug testing program.

The worksite characteristics presented in table 2 indicate

Table 2. Employee and worksite characteristics by drug testing status, 1992-93

Characteristic	Worksite has drug testing			Statistically significant ²
	All worksites ¹	Yes	No	
Employee				
Full-time	90.2	92.4	88.1	Yes
Under 30 years of age	36.1	34.3	37.7	Yes
High school diploma	85.7	85.1	86.3	No
College degree ..	27.4	23.4	31.0	Yes
Union representation ..	12.7	16.3	9.2	Yes
Minority employees ³	28.4	28.4	28.4	No
Worksite				
Written alcohol and drug use policy	87.1	96.0	78.5	Yes
Population less than 50,000 persons ⁴	38.9	41.4	36.6	No (p=.06)
Employee Assistance Program	32.9	45.9	20.6	Yes

¹ Worksites of private nonagricultural firms with more than 50 full-time employees at the time of the survey.

² Significant difference in mean percentages for worksites with and without drug testing at the .05 percent level.

³ Includes black, Hispanic origin, Asian, and Native American.

⁴ Worksite is in a community with a population of less than 50,000.

NOTE: Percentages for employee characteristics are means of percentages of employees at worksites with that characteristic; the statistical test was the t-test. Percentages under worksite characteristics are percentages of worksites with that characteristic; the statistical test was the chi-square test.

the following: when a worksite conducts drug testing, it is more likely to have a written alcohol and drug use policy (96.0 percent) and it is more likely to have an Employee Assistance Program (45.9 percent).

Who gets tested? In addition to the overall prevalence of drug testing programs in worksites, we also examined which employees were subject to testing. As table 3 shows, 48.4 percent of worksites with more than 50 full-time employees have some type of drug testing program. Of this group, 23.6 percent subject all employees to testing, 14.0 percent test *only* applicants, and 3.6 percent test *only* employees regulated by the Department of Transportation. Not shown in table 3, but interesting to note, is that 0.8 percent of the worksites test only safety or security employees and 6.4 percent test other combinations of groups (for example, job applicants and employees regulated by the Department of Transportation only).

Thus, most programs are designed to test all employees or

applicants only. In general, the percentage of worksites that test all employees and applicants only increases by worksite size. The mining and construction industries have the largest percentage of worksites where all employees are subject to testing (49.0 percent), and the manufacturing industry has the largest percentage that test new employees only (21.4 percent). As expected, the communications, utility, and transportation industries have the largest percentage of worksites that test only employees who are regulated by the Department of Transportation (13.4 percent). Of the four regions, the South has the largest percentage of worksites that test all employees (32.7 percent).

Frequency. Table 4 presents the percentage of drug testing worksites that test on a regular or random basis. Generally, less than 15 percent of these worksites actually conduct such tests on a regular basis. In contrast, approximately 47 percent of these worksites test on a random basis. The percentage of random testing decreases with worksite size and is the highest in the communication, utilities, and transportation industries (76.1 percent). Regular testing does not appear to be related to worksite size and is highest in the mining and construction industries (20.7 percent). The South has the highest percentage of random testing (53.8 percent), while regular testing is highest in the Midwest (16.2 percent). The West has

the lowest percentages for both random (32.7 percent) and regular testing (11.0 percent).

Who conducts the tests? Table 5 examines which organization or department is responsible for conducting drug tests at a worksite. Overall, outside contractors are responsible for testing at approximately 79 percent of worksites, while a medical department within a company conducts tests for approximately 11 percent and a personnel or human resources department tests for 6.4 percent. As worksite employment size increases, outside contractors are used less frequently (for example, 86.9 percent for worksites with 50–99 employees, versus 46.3 percent for worksites with 1,000 or more employees), while the use of a medical department increases dramatically (for example, 5.0 percent for worksites with 50–99 employees, versus 40.4 percent for worksites with 1,000 or more employees). Thus, compared with smaller worksites, the larger worksites are more likely to conduct tests internally. The wholesale/retail trade industry reported the largest percentage of tests done by an outside contractor (91.2 percent), while the services industry reported the lowest percentage (69.0 percent). The Northeast had the largest percentage of drug tests done by a medical department (16.8 percent), while there was no noticeable pattern across regions for the percentage of testing by an outside contractor.

Table 3. Percentage of worksites where employee groups are subject to testing, by selected characteristics of the worksite, 1992–93

Characteristic	Worksites that conduct drug tests	Worksites where all employees are tested ¹	Only applicants are tested	Only transportation-regulated employees are tested ²
All worksites ³	48.4 (1.2)	23.6 (1.0)	14.0 (0.8)	3.6 (0.5)
Worksite size				
50–99 employees	40.2 (2.1)	19.9 (1.8)	10.4 (1.3)	5.3 (1.0)
100–249 employees	48.2 (1.9)	24.6 (1.7)	14.5 (1.4)	2.4 (.6)
250–999 employees	61.4 (2.1)	28.3 (2.0)	19.2 (1.8)	2.8 (.7)
1,000 employees or more	70.9 (3.4)	27.2 (3.0)	19.1 (2.5)	3.2 (1.0)
Type of industry				
Manufacturing	60.2 (2.2)	28.3 (2.0)	21.4 (1.8)	2.5 (.7)
Wholesale and retail	53.7 (3.3)	26.6 (3.0)	14.7 (2.2)	5.7 (1.7)
Communications, utilities, and transportation	72.4 (3.3)	27.4 (2.6)	13.0 (2.1)	13.4 (2.2)
Finance, insurance, and real estate	22.6 (2.1)	7.0 (1.2)	12.3 (1.6)	(⁴)
Mining and construction	69.6 (4.1)	49.0 (4.2)	6.9 (1.7)	4.0 (1.5)
Services	27.9 (2.0)	16.5 (1.7)	6.0 (1.0)	1.2 (.4)
Region				
Northeast	33.3 (2.4)	11.4 (1.7)	12.4 (1.7)	3.5 (1.0)
Midwest	50.3 (2.5)	20.0 (1.9)	16.1 (1.8)	4.8 (1.1)
South	56.3 (2.0)	32.7 (1.9)	13.4 (1.3)	3.6 (.8)
West	46.8 (2.9)	23.8 (2.4)	14.1 (2.0)	2.0 (.8)

¹ Many of these worksites also test applicants.

² Employees are regulated U.S. Department of Transportation.

³ Worksites of private nonagricultural firms with more than 50 full-time

employees at the time of survey.

⁴ Insufficient sample size.

NOTE: Standard errors appear in parentheses.

Table 4. Frequency of drug testing for worksites that test current employees, by characteristics of the worksite, 1992-93

Characteristic	Percent that test ¹ -	
	On regular basis	On random basis
All worksites with drug testing program ²	13.7 (1.4)	46.7 (2.0)
Worksite size		
50-99 employees	15.3 (2.6)	54.3 (4.1)
100-249 employees	12.8 (2.3)	46.4 (3.3)
250-999 employees	12.5 (2.3)	38.2 (3.3)
1,000 employees or more	14.6 (3.6)	38.0 (4.6)
Type of industry		
Manufacturing	11.6 (2.2)	35.9 (3.3)
Wholesale and retail	12.8 (3.5)	51.3 (5.4)
Communications, utilities, and transportation	15.9 (2.5)	76.1 (3.5)
Finance, insurance, and real estate	5.8 (4.2)	32.4 (7.2)
Mining and construction	20.7 (4.5)	55.1 (5.2)
Services	16.2 (3.6)	38.8 (4.5)
Region		
Northeast	14.7 (3.5)	45.4 (5.5)
Midwest	16.2 (2.8)	44.4 (4.0)
South	13.0 (2.1)	53.8 (3.1)
West	11.0 (3.1)	32.7 (4.4)

¹ Worksites that test only job applicants are not included in this table.
² Worksites of private nonagricultural firms with more than 50 full-time employees at the time of survey.

NOTE: Standard errors appear in parentheses.

Table 5. Department responsible for conducting drug tests, by worksite characteristics, 1992-93

[In percent]

Characteristic	Medical department	Personnel or human resources	Outside contractor	Other ¹
All worksites ²	10.6 (0.9)	6.4 (0.7)	78.9 (1.2)	3.7 (0.6)
Worksite size				
50-99 employees	5.0 (1.5)	3.0 (1.2)	86.9 (2.3)	4.7 (1.3)
100-249 employees	5.8 (1.2)	6.0 (1.2)	84.3 (1.9)	3.4 (1.0)
250-999 employees	19.7 (2.3)	10.8 (1.7)	66.6 (2.7)	2.6 (0.9)
1,000 employees or more	40.4 (3.8)	9.3 (2.1)	46.3 (4.0)	3.7 (1.8)
Type of industry				
Manufacturing	13.7 (1.6)	7.1 (1.4)	76.8 (2.1)	2.3 (0.8)
Wholesale and retail	3.6 (1.7)	3.0 (1.0)	91.2 (2.4)	2.1 (1.4)
Communications, utilities, and transportation	9.6 (1.7)	8.2 (1.6)	74.2 (2.7)	7.7 (1.6)
Finance, insurance, and real estate	7.5 (2.3)	5.0 (2.1)	85.0 (3.3)	(³)
Mining and construction	3.8 (1.5)	6.1 (1.8)	81.4 (3.1)	6.3 (1.8)
Services	15.9 (2.5)	7.8 (2.3)	69.0 (3.7)	6.2 (2.2)
Region				
Northeast	16.8 (3.2)	3.2 (1.1)	77.9 (3.5)	1.6 (.9)
Midwest	8.4 (1.5)	6.9 (1.5)	80.7 (2.3)	3.8 (1.0)
South	11.1 (1.4)	6.8 (1.1)	77.1 (2.0)	4.2 (1.1)
West	8.1 (1.8)	6.8 (2.1)	81.2 (3.0)	3.7 (1.4)

¹ Includes Employee Assistance Program, Safety Department, and Department Supervisor.

² Worksites of private nonagricultural firms with more than 50 full-time employees at the time of survey.

³ Insufficient sample size.

NOTE: Standard errors appear in parentheses.

Conclusion

Drug testing is widely implemented in worksites throughout the United States, and is partially based on the characteristics of the worksite, the characteristics of its employees, and the implementation of other strategies and policies to control substance misuse. Drug testing programs are continually added to worksite policies, as well as the proportion of the labor force subject to testing. Programs that test for illicit drug use are more than twice as prevalent as those that test for alcohol use. This is ironic, in that alcohol misuse is by far the more common personal problem related to impaired job performance.³⁰ However, testing for alcohol use is a more complex social and legal issue because *alcohol use* per se does not constitute a violation of law or company personnel policies.³¹

However, the results of this study confirm that drug testing continues to develop as a preferred strategy to control substance abuse in the workplace. Programs are most prevalent in larger worksites, those industries affected by drug test-

ing legislation, and those employing high risk or unionized labor forces. Random drug testing has emerged as the most common form of testing, and most often, all employees and applicants are now included in testing programs. Drug testing is commonly conducted by external firms, but larger worksites are significantly more likely than their smaller counterparts to conduct testing within their worksites. Proliferation of the number and scope of programs, coupled with the movement towards random testing suggests continued strengthening of the employers' dedication to systematically identify and intervene in cases of drug and, to a lesser degree, alcohol abuse at their worksites. Drug testing has joined with other programs and policies (such as Employee Assistance Programs, health promotion programs, and written drug and alcohol use policies) to form more comprehensive responses to workplace substance abuse. Additional research is recommended to further define the integration of strategies to control worksite substance abuse and to examine the outcomes and effectiveness of these efforts.

Footnotes

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¹¹ Hayghe, "Anti-drug programs."

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²⁰ See Blum and others, "Workplace drug testing programs;" Murphy and Thornton, "Characteristics of employee drug testing policies;" and D. Masi, "Company responses to drug abuse from AMA's nationwide survey," vol. 64, *Personnel*, 1987, p. 40.

²¹ Trice and Steele, "Impairment testing."

²² P. Greenfield, R. Karren, and J. Giacobbe, "Drug testing in the workplace: an overview of legal and philosophical issues," vol. 2, *Employee Responsibilities and Rights Journal*, 1989, pp. 1–10.

²³ The Conference Board, "Surveys reach different conclusions."

²⁴ E. Greenberg, "Workplace testing: results of a new AMA survey."

²⁵ Terry Blum, "The presence and integration of drug abuse intervention in human resources management," in Steven Gust and J. Michael Walsh, eds., *Drugs in the Workplace: Research and Evaluation Data*, NIDA Research Monograph 91 (Rockville, MD, National Institute on Drug Abuse, 1989), pp. 245–70.

²⁶ Blum and others, "Workplace drug testing programs."

²⁷ *Survey of Employer Anti-drug Programs*, Report 760.

²⁸ *Ibid.*

²⁹ For the employee characteristics, our questionnaire asked for the percentage of the employee population with the given characteristic and our analysis involved comparing means of these percentages. For the worksite characteristics, our questionnaire asked "Do you have this characteristic?, yes/no." Our analysis involved analyzing 2x2 contingency tables.

³⁰ Terry Blum and Paul Roman, "A description of clients using employee assistance programs," vol. 16, *Alcohol Health and Research World*, 1992, pp. 120–28; and Lee Robins and D. Regier, *Psychiatric Disorders in America: The Epidemiologic Area Study* (New York, The Free Press, 1991).

³¹ Trice and Steele, "Impairment testing."

APPENDIX: Methodology

Sample design

Despite the voluminous literature on drug testing, some of which is cited in this article, the most recent national probability surveys of drug testing prevalence in worksites were conducted by the Bureau of Labor Statistics; one in 1988, and a follow-up of the same worksites in 1990.¹ To ensure that our results would be comparable to these earlier national probability worksite surveys, we designed our study with a similar target population and stratification. The two notable distinctions between the 1988 BLS survey and our survey are that we excluded worksites with fewer than 50 employees (because of data collection costs) and we excluded nonprivate worksites (because of the lack of a comprehensive list).

A worksite represents any business location with a unique, separate, and distinct operation, including headquarter units within an enterprise.² Our target population consisted of all worksites with 50 or more employees of private business enterprises in the United States (excluding agricultural enterprises). The sampling frame was constructed using the Dun's Market Identifiers database from Dun's Marketing Services.³

The sampling strata were defined on the primary industry at the worksite (manufacturing; wholesale and retail trade; communications, utilities, and transportation; finance, real estate, and insurance; services; and mining and construction) and the number of employees at the worksite (50–99, 100–249, 250–999, and 1,000 or more). The sampling frame included approximately 421,000

worksites. Geographic location (four census regions) was used as a secondary stratification factor within the sample selection procedure. The sample was selected to obtain a proportional allocation within each sampling stratum across four geographic location strata and with equal probability within each stratum. Only worksites that reported 50 or more full-time employees at the time of the survey were eligible for analysis and reporting.

During data collection, the response and eligibility rates were monitored and the sample size in each stratum was supplemented to accommodate differences between projected and actual response and eligibility rates. The final national probability sample ensured adequate sample sizes for estimates defined by the primary industry and the number of employees at the worksite. The final stratified sample contained 6,488 worksites, of which 3,204 were eligible responding worksites. Ineligible worksites included nonprivate worksites, worksites with fewer than 50 full-time employees, and closed worksites. The response rate ranged from 80 percent to 96 percent across the 24 sampling strata, with an overall response rate of 90 percent.⁴

Sampling weights were equal within each sampling stratum, but differed across the strata. The sampling weights were computed from the selection probability of the worksite within the sampling stratum, and, to reduce nonresponse bias caused by the differential response rates, the weights were adjusted to compensate for nonresponse and were poststratified to external counts of worksites.⁵

Response rates

The excellent response rates for the survey indicated a strong willingness of worksite staff to contribute information related to drug and alcohol testing. The overall refusal rate was only 10 percent. Worksites with fewer than 100 employees and worksites in the services and mining and construction industries refused less frequently than other industries.⁶

Data collection

Prior to administering the telephone survey, we mailed a lead letter and an outline of the survey instrument to the director of human

resources or the personnel department at each selected worksite. The materials introduced the study, informed personnel of the types of questions we would be asking, and prepared them for the telephone interview. The actual interviewing started approximately 2 weeks after the survey materials were delivered and was conducted using computer assisted telephone interviewing (CATI).⁷ The introductory section of the survey instrument confirmed that we contacted the correct worksite, that the worksite was eligible to participate in the survey (that is, a private worksite with 50 or more full-time employees), and that we were speaking with the person most knowledgeable about employee benefits (for example, department heads of human resources, personnel, or an Employee Assistance Program).

After collecting this preliminary information, we then determined whether the worksite had an Employee Assistance Program. If so, we administered 130 additional questions on worksite demographics; characteristics of a worksite's Employee Assistance Program, services provided, and costs; drug and alcohol testing; and employee benefits. For worksites without an Employee Assistance Program, we still collected information on worksite demographics, drug and alcohol testing, and employee benefits. Thus, we collected data on drug and alcohol tests from our entire worksite sample. The average contact time (that is, time to reach and interview a respondent) was 58 minutes for worksites with an Employee Assistance Program and 28 minutes for worksites without one.

Each question on the instrument was displayed for the interviewers in program-controlled sequences on computer terminals, and responses were entered directly into the computer to save time and minimize coding mistakes.

Sampling weights

The stratification and the differential sampling weights across the strata required that the data analysis take into account the complex survey design and the sampling weights. Thus, we computed unbiased national estimates using sampling weights based on selection probabilities and adjusted to compensate for nonresponse. Weighted totals, means, and frequencies and their standard errors were computed using the Survey Data Analysis computer software package (SUDAAN).⁸

Footnotes to the appendix

¹ *Survey of Employer Anti-drug Programs*, Report 760 (Bureau of Labor Statistics, 1989); and Howard Hayghe, "Anti-drug programs in the workplace—are they here to stay?" *Monthly Labor Review*, April 1991, pp. 26–29.

² Kerrie Boyle, Frank Potter, Melodie Rush, and Ellen Stutts, "Survey methodology and performance characteristics for the 1993 National Survey of Worksites and Employee Assistance Programs (NSWEAP)," *Proceedings of the American Statistical Association*, 1995, section on Survey Research Methods, pp. 485–90.

³ *Ibid.*

⁴ *Ibid.*

⁵ *Ibid.*

⁶ *Ibid.*

⁷ A final version of the full survey instrument is available from the authors. Send request to: Tyler D. Hartwell, Research Triangle Institute, P.O. Box 12194, Research Triangle Park, NC, 27709–2194 or fax to: (919) 541–5966.

⁸ Bububhai Shah, Beth Barnwell, Paul Hung, and Lisa LaVange, *SUDAAN User's Manual*, Release 5.50 (Research Triangle Park, NC, Research Triangle Institute, 1991).

Table 1. National estimates of the prevalence of drug and alcohol testing among worksites and employees, by selected characteristics of the worksite, 1992-93

[In percent]

Characteristic	Worksites ¹			Employees		
	Total (in thousands)	Test for drug use	Test for alcohol use	Total (in thousands)	In worksites that test for drug use	In worksites that test for alcohol use
All worksites	162.8 (-)	48.4 (1.2)	23.0 (1.0)	41,127 (1,271)	62.3 (1.6)	32.7(2.1)
Worksites size						
50-99 employees	61.6 (1.7)	40.2 (2.1)	16.5 (1.6)	4,319 (124)	40.7 (2.2)	16.7 (1.6)
100-249 employees	66.0 (1.8)	48.2 (1.9)	22.9 (1.7)	9,612 (265)	48.9 (1.9)	23.2 (1.7)
250-999 employees	29.0 (.9)	61.4 (2.1)	32.7 (2.1)	12,520 (404)	62.8 (2.1)	33.5 (2.2)
1,000 employees or more	6.2 (.3)	70.9 (3.4)	42.1 (3.5)	14,675 (1,282)	77.1 (3.4)	43.0 (5.0)
Type of industry						
Manufacturing	54.0 (1.0)	60.2 (2.2)	28.3 (2.0)	14,058 (554)	73.5 (2.2)	37.5 (2.8)
Wholesale and retail	32.2 (1.1)	53.7 (3.3)	22.1 (2.7)	4,901 (236)	57.3 (3.0)	27.7 (3.2)
Communications, utilities, and transportation	13.5 (.8)	72.4 (3.3)	34.9 (3.0)	4,202 (435)	85.8 (2.6)	43.9 (5.3)
Finance, insurance, and real estate,	14.2 (0.5)	22.6 (2.1)	7.8 (1.3)	4,369 (563)	50.2 (6.7)	12.2 (3.1)
Mining and Construction	5.6 (.4)	69.6 (4.1)	28.6 (3.5)	801 (49)	77.7 (3.2)	32.2 (3.1)
Services	43.3 (1.2)	27.9 (2.0)	17.4 (1.7)	12,796 (998)	47.5 (4.5)	32.7 (5.2)
Region						
Northeast	33.0 (1.5)	33.3 (2.4)	12.9 (1.7)	9,356 (617)	49.1 (3.6)	19.3 (2.6)
Midwest	40.7 (1.8)	50.3 (2.5)	24.0 (2.1)	10,190 (616)	62.4 (3.1)	34.4 (3.2)
South	59.1 (1.9)	56.3 (2.0)	26.3 (1.8)	14,986 (1,168)	71.8 (2.6)	36.9 (4.4)
West	30.0 (1.6)	46.8 (2.9)	26.0 (2.5)	6,594 (460)	59.4 (3.3)	39.7 (3.9)

¹ Worksites of private nonagricultural firms with more than 50 full-time employees at the time of survey.

NOTE: Standard errors appear in parentheses.

Table 2. Employee and worksite characteristics by drug testing status, 1992-93

Characteristic	All worksites ¹	Worksite has drug testing		Statistically significant ²
		Yes	No	
Employee				
Full-time	90.2	92.4	88.1	Yes
Less 30 years of age	36.1	34.3	37.7	Yes
High school diploma	85.7	85.7	85.1	No
College degree	27.4	23.4	31.0	Yes
Union representation	12.7	16.3	9.2	Yes
Minority employees ³	28.4	28.4	28.4	No
Worksite				
Written alcohol and drug use policy	87.1	96.0	78.5	Yes
Population less than 50,000 persons ⁴	38.9	41.4	36.6	No (p=.06)
Employee Assistance Program	32.9	45.9	20.6	Yes

¹ Worksites of private nonagricultural firms with more than 50 full-time employees at the time of the survey.

² Significant difference in mean percentages for worksites with and without drug testing at the .05 percent level.

³ Includes black, Hispanic origin, Asian, and Native American.

⁴ Worksite is in a community with a population of less than 50,000.

NOTE: Percentages for employee characteristics are means of percentages of employees at worksites with that characteristic; the statistical test was the t-test. Percentages under worksite characteristics are percentages of worksites with that characteristic; the statistical test was the chi-square test.

Table 3. Percentage of worksites where employee groups are subject to testing, by selected characteristics of the worksite, 1992-93

Characteristic	Worksites that conduct drug tests	All employees are tested	Only applicants are tested	Only transportation- regulated employees are tested ¹
All worksites ²	48.4 (1.2)	23.6 (1.0)	14.0 (0.8)	3.6 (0.5)
Worksite size				
50-99 employees	40.2 (2.1)	19.9 (1.8)	10.4 (1.3)	5.3 (1.0)
100-249 employees	48.2 (1.9)	24.6 (1.7)	14.5 (1.4)	2.4 (.6)
250-999 employees	61.4 (2.1)	28.3 (2.0)	19.2 (1.8)	2.8 (.7)
1,000 employees or more	70.9 (3.4)	27.2 (3.0)	19.1 (2.5)	3.2 (1.0)
Type of industry				
Manufacturing	60.2 (2.2)	28.3 (2.0)	21.4 (1.8)	2.5 (.7)
Wholesale and retail	53.7 (3.3)	26.6 (3.0)	14.7 (2.2)	5.7 (1.7)
Communications, utilities, and transportation ..	72.4 (3.3)	27.4 (2.6)	13.0 (2.1)	13.4 (2.2)
Finance, insurance, and real estate	22.6 (2.1)	7.0 (1.2)	12.3 (1.6)	(3)
Mining and construction	69.6 (4.1)	49.0 (4.2)	6.9 (1.7)	4.0 (1.5)
Services	27.9 (2.0)	16.5 (1.7)	6.0 (1.0)	1.2 (.4)
Region				
Northeast	33.3 (2.4)	11.4 (1.7)	12.4 (1.7)	3.5 (1.0)
Midwest	50.3 (2.5)	20.0 (1.9)	16.1 (1.8)	4.8 (1.1)
South	56.3 (2.0)	32.7 (1.9)	13.4 (1.3)	3.6 (.8)
West	46.8 (2.9)	3.8 (2.4)	14.1 (2.0)	2.0 (.8)

¹ Employees are regulated U.S. Department of Transportation.

² Worksites with more than 50 full-time employees at the time of survey.

³ Insufficient sample size.

NOTE: Standard errors appear in parentheses.

Table 4. Frequency of drug testing for worksites that test current employees, by characteristics of the worksite, 1992-93

Characteristic	Percent that test ¹ -	
	On regular basis	On random basis
All worksites with drug testing program ²	13.7 (1.4)	46.7 (2.0)
Worksite size		
50-99 employees	15.3 (2.6)	54.3 (4.1)
100-249 employees	12.8 (2.3)	46.4 (3.3)
250-999 employees	12.5 (2.3)	38.2 (3.3)
1,000 employees or more	14.6 (3.6)	38.0 (4.6)
Type of industry		
Manufacturing	11.6 (2.2)	35.9 (3.3)
Wholesale and retail	12.8 (3.5)	51.3 (5.4)
Communications, utilities, and transportation	15.9 (2.5)	76.1 (3.5)
Finance, insurance, and real estate	5.8 (4.2)	32.4 (7.2)
Mining and construction Services	20.7 (4.5)	55.1 (5.2)
	16.2 (3.6)	38.8 (4.5)
Region		
Northeast	14.7 (3.5)	45.4 (5.5)
Midwest	16.2 (2.8)	44.4 (4.0)
South	13.0 (2.1)	53.8 (3.1)
West	11.0 (3.1)	32.7 (4.4)

¹ Worksites that test only job applicants are not included in this table.

² Worksites of private nonagricultural firms with more than 50 full-time employees at the time of survey.

NOTE: Standard errors appear in parentheses.

Table 5. Department responsible for conducting drug tests, by worksite characteristics, 1992-93

[In percent]

Characteristic

	Medical department	Personnel or human	Outside resources	Other ¹ contractor
All worksites ² ...	10.6 (0.9)	6.4 (0.7)	78.9 (1.2)	3.7 (0.6)
Worksite size				
50-99 employees ..	5.0 (1.5)	3.0 (1.2)	86.9 (2.3)	4.7 (1.3)
100-249 employees	5.8 (1.2)	6.0 (1.2)	84.3 (1.9)	3.4 (1.0)
250-999 employees	19.7 (2.3)	10.8 (1.7)	66.6 (2.7)	2.6 (0.9)
1,000 employees or more	40.4 (3.8)	9.3 (2.1)	46.3 (4.0)	3.7 (1.8)
Type of industry				
Manufacturing	13.7 (1.6)	7.1 (1.4)	76.8 (2.1)	2.3 (0.8)
Wholesale and retail	3.6 (1.7)	3.0 (1.0)	91.2 (2.4)	2.1 (1.4)
Communications, utilities, and transportation	9.6 (1.7)	8.2 (1.6)	74.2 (2.7)	7.7 (1.6)
Finance, insurance, and real estate	7.5 (2.3)	5.0 (2.1)	85.0 (3.3)	(3)
Mining and construction	3.8 (1.5)	6.1 (1.8)	81.4 (3.1)	6.3 (1.8)
Services	15.9 (2.5)	7.8 (2.3)	69.0 (3.7)	6.2 (2.2)
Region				
Northeast	16.8 (3.2)	3.2 (1.1)	77.9 (3.5)	1.6 (.9)
Midwest	8.4 (1.5)	6.9 (1.5)	80.7 (2.3)	3.8 (1.0)
South	11.1 (1.4)	6.8 (1.1)	77.1 (2.0)	4.2 (1.1)
West	8.1 (1.8)	6.8 (2.1)	81.2 (3.0)	3.7 (1.4)

¹ Includes Employee Assistance Program, Safety Department, and Department Supervisor.

² Worksites with more than 50 full-time employees at the time of survey.

³ Insufficient sample size.

NOTE: Standard errors appear in parentheses.

