

The goal of the Federal Motor Carrier Safety Administration (FMCSA) is to reduce the number and severity of large truck-involved crashes through more commercial motor vehicle and operator inspections and compliance reviews, stronger enforcement measures against violators, expedited completion of rulemaking proceedings, scientifically sound research, and effective CDL testing, recordkeeping, and sanctions.

The Office of Data Analysis and Information Systems develops and maintains systems for collecting and analyzing motor carrier data, and disseminates information on the motor carrier industry.

This Analysis Brief was produced by the Analysis Division in FMCSA's Office of Data Analysis and Information Systems. The division analyzes motor carrier data pertaining to crashes, inspections, compliance reviews, and drug and alcohol testing, and supports research on the effectiveness of FMCSA inspections and compliance review programs.



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## Drug and Alcohol Testing Survey— 1999 Results

*In 1999 it is estimated that 1.3 percent of drivers with commercial driver's licenses (CDL) used controlled substances and 0.2 percent used alcohol. On the basis of these findings, the Federal Motor Carrier Safety Administration's (FMCSA) required testing rate for CDL drivers remained at 50 percent for controlled substances and 10 percent for alcohol for calendar year 2000.*

### Background

The FMCSA requires all motor carriers operating vehicles that must be driven by someone holding a CDL to have drug and alcohol testing programs. Such vehicles include trucks with gross combination ratings of more than 26,000 pounds, trucks carrying specific hazardous materials that require the vehicle to be placarded in accordance with FMCSA regulations, and buses designed to carry 16 or more passengers, including the driver. Carriers must randomly test a fixed percentage of their CDL drivers for both alcohol (for which 10 percent of all drivers must be tested annually) and for a specified set of controlled substances (for which 50 percent of all drivers must be tested annually).

In the case of alcohol, a driver is in violation of FMCSA regulations when the alcohol breath content is 0.02 grams per 210 liters of breath—equivalent to a blood alcohol content (BAC) of 0.02 grams per deciliter. Drivers testing at this level are not permitted to perform safety sensitive functions for at least 24 hours. In addition, drivers who test at the 0.04 g/dl level or higher must be evaluated by a substance abuse professional and undergo additional testing before being allowed to return to duty. For controlled substances, drivers are tested for marijuana, cocaine, opiates, amphetamines, and PCP. The cutoff levels for identifying the use of these drugs are based on guidelines set by the Department of Health and Human Services. (See **Table 1**.)

In addition to random testing, the FMCSA's drug and alcohol testing regulations require motor carriers to perform the following types of nonrandom testing: pre-employment testing (for controlled substances only, and only if the driver has not recently been in a drug and alcohol testing program); post-accident testing (if the crash involved a fatality, or if the truck driver received a citation in a crash involving a towaway or hospital-related injury); and testing of any driver who is suspected by a supervisor of using drugs or alcohol while at work. **Table 2** presents the testing requirements for CDL drivers.

Motor carriers must make their annual drug and alcohol summary data available to the FMCSA upon request. This summary information includes the number of drivers tested and the number who tested positive for each category. Each year the FMCSA estimates drug and alcohol usage rates for CDL drivers, based upon a statistical sample of such summary information collected from motor carriers (in the case of alcohol FMCSA defines the positive usage rate in terms of testing at or above the 0.04 BAC level).

Estimates from the annual survey are used to evaluate the Agency's random testing requirements for both alcohol and controlled substances. Currently, the FMCSA requires motor carriers to test 50 percent of their CDL drivers annually for controlled substances and 10 percent of their CDL drivers annually for alcohol. In accordance with Federal regulations (49 CFR part 382), these requirements are subject to change, based on the results of the annual survey.

## Regulatory History

The FMCSA drug testing requirements for motor carriers began in 1989, when interstate motor carriers domiciled in the United States with 50 or more CDL drivers were required to implement controlled substance testing programs (49 CFR part 391 subpart H). Interstate carriers with fewer than 50 CDL drivers became subject to these requirements one year later. Beginning in 1995, a new set of requirements (49 CFR part 382) took effect in response to the passage of the Omnibus Transportation Employee Testing Act of 1991. Part 382 expanded the scope of motor carriers covered by federal drug testing regulations to include large intrastate carriers (50 or more CDL drivers) by 1995 and all interstate and intrastate carriers with CDL drivers by 1996. In addition to controlled substance testing, part 382 required the implementation of alcohol testing programs. Beginning in 1996, all motor carriers operating in the United States (both domiciled and foreign-based) became subject to these new regulations.

**Table 1.**  
**Cutoff Levels for Identifying Drug Use Among CDL Drivers**

| SUBSTANCE                   | CUTOFF LEVELS             |
|-----------------------------|---------------------------|
| Alcohol                     | 0.02 g/210 liters breath* |
| Marijuana                   | 15 ng/ml**                |
| Cocaine                     | 150 ng/ml                 |
| Opiates (morphine, codeine) | 2000 ng/ml                |
| 6-Acetylmorphine            | 10 ng/ml***               |
| Amphetamines                |                           |
| Amphetamine                 | 500 ng/ml                 |
| Methamphetamine             | 500 ng/ml****             |
| Phencyclidine (PCP)         | 25 ng/ml                  |

\*FMCSA's estimated violation rate is based on a cutoff of 0.04 g/210 liters.

\*\*Nanograms per milliliter (One nanogram equals one billionth of a gram.)

\*\*\*Test for 6-AM when morphine concentration exceeds 2,000 ng/ml

\*\*\*\*Specimen must also contain amphetamine at 200 ng/ml or higher

**Table 2.**  
**Motor Carrier Testing Requirements for CDL Drivers**

| TYPE OF TEST                        | DRIVERS TO BE TESTED  |
|-------------------------------------|---|
| Random controlled substance testing | 50% of all company CDL drivers per year*  |
| Random alcohol testing              | 10% of all company CDL drivers per year*  |
| Post accident testing               |   |
| Fatal crashes                       | All CDL drivers involved  |
| Nonfatal crashes                    | CDL drivers receiving citations, if crash involves towaway or hospital-related injury       |
| Reasonable suspicion testing        | Any CDL driver suspected by supervisor of using alcohol or controlled substances on the job |

\*If random testing is conducted through a consortium, the number of drivers to be tested may be based on the total number of drivers covered by the consortium, rather than the total number of drivers in the company.

## Methodology—Data Collection

Each year eligible motor carriers are selected into the survey by means of a stratified random sample. In this approach, all eligible motor carriers are classified before sample selection into size-class groupings (or strata), based on their number of CDL drivers. A random sample of carriers is then selected in each size-class stratum. Stratification helps to ensure that the sample is representative and also increases the precision of the estimates. Both random and nonrandom summary data are collected from the motor carrier.

For this survey, six size-class strata are used:

- 1–19 CDL drivers,
- 20–49 CDL drivers,
- 50–99 CDL drivers,
- 100–999 CDL drivers,
- 1,000 or more CDL drivers, and
- size unknown.

To maximize the precision of the survey estimates, all eligible motor carriers from the largest size-class stratum (1,000 or more CDL drivers) are selected into the sample with certainty.

In the case of random testing, the sample can be viewed as a two-stage design in which the motor carrier is selected in the first stage and a subsample of its CDL drivers is selected in the second. In the case of nonrandom testing, the sample represents a single-stage design in which each sampled motor carrier reports the results for all drivers subject to pre-employment, post-accident, and reasonable suspicion testing.

## Results

### Random Testing

For the 1999 survey 4,027 motor carriers were solicited. Of these carriers 1,366 provided summary data for controlled substance random testing and 1,172 provided data for random alcohol testing. Survey estimates based on random testing are shown in **Table 3**, including estimates for previous years.

As indicated in the table, the positive rate for controlled substance use in 1999 is estimated to be 1.3 percent with a standard error estimate of 0.2

percent. Based on these results, a 95 percent confidence interval on this estimate ranges from 1.0 to 1.6 percent ( $0.013 \pm 1.96 \times 0.0017$ ). Thus, if the survey were replicated, one would expect the estimate to fall within this range in 95 out of 100 replications. The positive rate for alcohol use in 1999 is estimated to be 0.2 percent with a standard error estimate of approximately 0.1 percent. These results suggest that a 95 percent confidence interval for the positive rate for alcohol ranges roughly from 0.02 percent to 0.3 percent.

The survey results suggest that the positive rates for controlled substance use and alcohol use have been approximately the same since 1997. (The differences in the year-to-year estimates are not statistically significant and cannot be shown to be a product of real differences in the population over time, rather than a product of statistical sampling error.) Furthermore, the 1999 survey estimates do not suggest that the required random testing rate for controlled substances or alcohol should be changed. For the controlled substance random testing rate to be lowered (now at 50 percent of CDL drivers), the controlled substance usage rate estimated from the survey must be less than 1 percent for 2 consecutive years, in accordance with FMCSA regulations. For random alcohol testing, the testing rate is currently at the minimum allowable by FMCSA (10 percent). In order for this rate to be raised, the alcohol usage rate from the survey must be estimated to be more than 0.5 percent in a given survey year.

### Nonrandom Testing

The number of tested drivers evaluated by the survey each year has been too small to produce reliable estimates of a usage rate for many of the nonrandom testing categories, particularly for alcohol testing.

**Table 3.**  
**Estimated Positive Rates for Random Drug and Alcohol Testing**  
**1996–1999**

| AREAS OF TESTING                                   | POSITIVE RATE   |                |                |                |
|--|-----------------|----------------|----------------|----------------|
|  | 1996            | 1997           | 1998           | 1999           |
| Controlled Substances<br>(standard error estimate) | 2.2%<br>(0.4%)  | 1.3%<br>(0.2%) | 1.5%<br>(0.2%) | 1.3%<br>(0.2%) |
| Alcohol (BAC ≥ 0.04)<br>(standard error estimate)  | 0.2%<br>(0.03%) | 0.2%<br>(0.1%) | 0.2%<br>(0.1%) | 0.2%<br>(0.1%) |

### **Researcher**

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### **Distribution**

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### **Availability**

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### **Key Words**

alcohol, CDL, controlled substance, driver, motor carrier, nonrandom testing, positive rate, random testing, sample survey, testing rate

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U.S. Department of Transportation  
Federal Motor Carrier Safety Administration

August 2001

Publication No. FMCSA-MCRT-01-008

In 1999 the largest number of nonrandom tests captured by the survey was in pre-employment controlled substance testing, for which 330,686 cases were reported. On the basis of those cases, it is estimated that in 1999, 2.3 percent of CDL drivers undergoing pre-employment testing tested positive for controlled substances. In 1998 and 1997 the results were similar.

### **References**

*Drug and Alcohol Testing Survey (Analysis Brief)*, FMCSA, FMCSA No. FMCSA-MCRT-00-013, Washington, D.C., Aug. 2000.

*Drug and Alcohol Testing Survey (Analysis Brief)*, Federal Highway Administration, Office of Motor Carrier Research and Standards, FHWA No. FHWA-MCRT-98-003, Washington, D.C., Sept. 1998.