

AD-A150 313

ALCOHOL & DRUG USE
MARINE CORPS

1. PRELIMINARY INFORMATION
2. SUMMARY OF THE PROBLEM
3. STATEMENT OF THE PROBLEM
4. ANALYSIS OF THE PROBLEM
5. CONCLUSIONS AND RECOMMENDATIONS

ALCOHOL ANALYSIS

UNITED STATES
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20

The analysis showed that, while the proportion of drinkers has remained constant, the proportion of heavy drinkers declined by a factor of two from 1980 to 1983. Drug use showed an even sharper drop: from 37 percent of all Marines in 1980 to 17 percent in 1983. These trends are attributed to the Marine Corps education and urinalysis programs.



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b. To determine the physical, social, and job-related consequences of alcohol and drug abuse.

c. To determine the relationship between alcohol and drug abuse and certain demographic characteristics of the population.

d. To identify perceptions and attitudes related to alcohol and drug use.

e. To determine the effectiveness of the Marine Corps Drug and Alcohol Program.

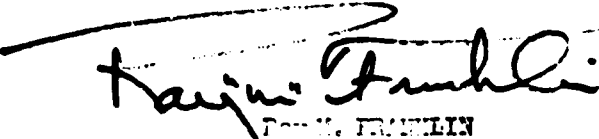
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ALCOHOL & DRUG USE IN THE MARINE CORPS IN 1983

Main Text

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ABSTRACT

This study assesses the prevalence of alcohol and drug use in the Marine Corps and the effectiveness of programs to combat it. The analysis is based on the answers to an anonymous survey administered to 18,000 randomly chosen enlisted and officer personnel. The survey results were compared to those of similar surveys in 1980 and 1982 to discern trends.

The analysis showed that, while the proportion of drinkers has remained constant, the proportion of heavy drinkers declined by a factor of two from 1980 to 1983. Drug use showed an even sharper drop: from 37 percent of all Marines in 1980 to 17 percent in 1983. These trends are attributed to the Marine Corps education and urinalysis programs.

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CHAPTER 1

EXECUTIVE SUMMARY

BACKGROUND

This study on the nonmedical use of alcohol and drugs among military personnel is the third in the past 4 years. The Marine Corps took part in and used the two earlier studies [1, 2], which involved all the services, but it wanted a more comprehensive examination of the alcohol and drug behavior of its own people. It therefore asked the Center for Naval Analyses to conduct such a study with the following objectives:

- Determine the prevalence of alcohol and drug use for specified subpopulations within the Marine Corps
- Determine the physical, social, and job-related consequences of alcohol and drug abuse
- Determine the relationship between alcohol and drug abuse and certain demographic characteristics of the population
- Identify perceptions and attitudes related to alcohol and drug use
- Determine the effectiveness of the Marine Corps Drug and Alcohol program.

METHODOLOGY

To meet these objectives, the study team designed a survey questionnaire, which was administered in June 1983 to about 18,000 Marines at major commands in four geographic areas. Unlike past surveys, this study obtained data on performance and conduct of individuals at the unit level.

Our study involved four basic steps. First, we measured nonmedical usage, or prevalence, of alcohol and drugs. Then we examined the characteristics of alcohol and drug users and their behavior patterns. Third, we looked at how Marines perceive the consequences of drinking and drug use in terms of physical well-being, social relations, and job

Note: The authors would like to acknowledge the technical assistance of Major Larry Jurica, of the office of the Deputy Chief of Staff for Manpower, HQMC. Major Jurica was instrumental in planning the sampling design and developing procedures for selecting survey participants. Also, the authors acknowledge the contribution of the Research Triangle Institute staff, which helped administer the survey.

performance. Finally, we assessed the effectiveness of Marine Corps alcohol and drug programs.

FINDINGS

Prevalence

For alcohol:

- Drinking has declined.
- In 1983, on average, Marines drank the equivalent of about 2.4 beers per day, whereas in 1982 and 1980 they drank 2.7 and 3.3, respectively.
- The proportion of heavy drinkers in 1983 was less than half of what it was in 1980.
- About 10 percent drank more than the equivalent of six beers per day.
- Some Marines (5 percent) drank at the job site at least once a month.
- About 24 percent were motivated to drink alcohol as a substitute for using drugs.
- The heaviest drinking occurred in Hawaii among Marines in Division units. (Table 1-1 shows the levels of heavy drinking by command and type of unit.)
- For E1-E5s, 11 percent were heavy drinkers; for E6-06s, 3 percent were heavy drinkers.
- Heavy drinking was related to education (nonhigh-school graduates, 20 percent; high-school graduates, 10 percent are heavy drinkers), age (17- to 25-year-olds, 11 percent are heavy drinkers), marital status (married, 5 percent; single, 13 percent are heavy drinkers), and sex (female, 5 percent; male, 10 percent are heavy drinkers).
- Heavy drinking was also related to using drugs and having dependents with drinking problems.

TABLE 1-1
HEAVY DRINKERS BY COMMAND^a
(Percent)

<u>Unit type</u>	<u>Location</u>				<u>Combined</u>
	<u>West</u>	<u>East</u>	<u>Hawaii</u>	<u>Okinawa</u>	
FSSG	9	6	15	11	9
Division	11	11	19	16	12
Air	7	8	12	10	8
Base	5	3	9	7	5
Combined	9	8	16	13	10

^aHeavy drinking is six or more 12-ounce beers per day.

For drugs:

- Nonmedical drug use has declined.
- In 1983, on average, 17 percent of Marines used drugs, whereas in 1982 and 1980, 21 and 36 percent, respectively, used drugs.
- Fewer Marines used drugs after joining than before joining the service.
- Most drug use was marijuana use.
- Fewer Marines used marijuana than their civilian age contemporaries (20 versus 35 percent).
- Some Marines used drugs on the job (8 percent of E1-E5s reported using marijuana at least once a month before reporting for duty or while on duty).
- Most drug use occurred in Division units. (Table 1-2 shows the percentages of drug users by command and type of unit.)
- For E1-E5s, 20 percent used drugs; for E6-06s, 2 percent used drugs.
- Drug use during past 30 days was related to marital status (married, 9 percent; single, 22 percent) and level

of education (at least high-school graduates, 16 percent; nonhigh-school graduates, 31 percent).

- Drug use was also related to using drugs before joining the Marine Corps.

TABLE 1-2

DRUG USERS BY COMMAND
(Percent)

Unit type	Location				
	West	East	Hawaii	Okinawa	Combined
FSSG	18	15	18	11	15
Division	23	22	19	15	21
Air	12	13	17	12	13
Base	9	7	10	4	8
Combined	18	17	18	13	17

Perception of Consequences

Based on data from the survey, the consequences of heavy drinking and drug use that the respondents perceived included:

- Hitting family members.
- Getting into fights.
- Being involved in Uniform Code of Military Justice (UCMJ) actions and arrests.
- Spending time in the brig.
- Performing poorly on the job.
- Failing to get promoted.

Levels of perceived consequences of alcohol and drug use have been rising, while the proportion of heavy drinkers, who tend to experience a larger share of the consequences, has been declining. Therefore, something in addition to drinking levels is probably driving the perception of consequences. Although the study could not identify the reasons for

these changes, they may include:

- An increasing level of awareness, through education, of problems that can result from alcohol and drug use.
- Changes in Marine Corps policies for dealing with abusers.
- Slight differences in design of the questionnaires.

The consequences of drug use also include low ratings on conduct and job proficiency. Those units with a large proportion of E1-E5s who use drugs had significantly lower proficiency and conduct (PRO-CON) scores than units with smaller proportions of users.

Drug and Alcohol Program

Our examination of the program focused on awareness, participation, and perceived effectiveness. We also looked at quality control of urinalysis.

Regarding awareness:

- The majority of Marines were aware of the various on-base programs for alcohol and drugs. However, the level of awareness on Okinawa was lower than elsewhere.
- Most Marines were aware of urinalysis, drug users more so than nonusers. Users and nonusers learned about the program from different sources. More users learned from their buddies and through personal experience.

Regarding participation:

- On average, 43 percent participated in some aspect of Marine Corps drug education. Drug users participated at a higher rate than nonusers (50 and 40 percent, respectively). Most participants were influenced to reduce their use of drugs or not to use them at all. Nonusers were influenced to a greater degree than users.

Regarding perceptions of program effectiveness:

- Among those using drugs, urinalysis was perceived as the greatest deterrent against drug use. The threat of disciplinary action was also a widely perceived deterrent among drug users.

- The Marine Corps has identified (mostly through urinalysis) 13 percent of Marines as drug users. About half of those identified as drug users claimed not to have been using any drugs at the time. About seven out of ten users have not been identified.
- The most prevalent reason for not detecting users was that they were not tested when they were using drugs. Many did not know why they were not detected. A few (14 percent) did something to foul up the test results.
- Most of the Marines surveyed (60 percent) did not trust urinalysis test results, particularly drug users and E1-E5s.
- Twice the number of Marines perceived that drug education at their installation was ineffective, compared to those who felt it was effective.
- Marine Corps alcohol and drug rehabilitation efforts have been highly successful.
 - About 64 percent of those enrolled in alcohol rehabilitation programs stopped drinking or drank less following treatment. Participants in in-patient programs had the highest success rates (81 to 84 percent); those in outpatient Alcoholics Anonymous programs did almost as well (75 percent).
 - Older, married Marines with dependents from non-Division units had a high probability of success in alcohol rehabilitation programs.
 - About 53 percent of those receiving help for a drug problem reported that they no longer used drugs. Those who received help and stopped using drugs gave several reasons: self-motivation to seek help, the result of counseling, fear of detection by urinalysis, and having been "busted" at one time. They were more likely to have been helped through a civilian rather than military-sponsored program. Those who continued to use drugs did so if the drugs were readily available and strongly believed that marijuana should be legalized.

Regarding quality control of urinalysis:

- Laboratory testing produces accurate results. Error rates of about 2 percent were typical of quality-control samples

tested. In all cases of errors, the laboratory classified samples as drug free when, in fact, they were not.

- Field testing is not as precise as laboratory testing. About 35 percent of "positive" samples were subsequently found by the laboratories to have an insufficient concentration of drugs to be declared positive. Awareness of the difference between results from laboratory and field tests may be undermining the trust in urinalysis.

RECOMMENDATIONS

Should the Marine Corps revise its policies on alcohol and drug use and change its program? Based on data obtained from the 1983 Survey, we believe the program effectively deters drug use and rehabilitates abusers. Still, the following measures should be considered:

- Reduce discrepancies between field and laboratory urinalysis results. Ensure uniformity of test standards between field and laboratory tests.
- Evaluate the drug education effort to see if it can be made more effective.
- Increase participation in drug education. More Marines should be required to take part.
- Investigate the adequacy of recreational facilities that can serve as substitutes for drinking and drug use.
- Continue to support alcohol and drug rehabilitation.
- Emphasize the detection and disciplinary aspects of the drug program due to their effectiveness as deterrents.

Based on our experience with this survey, we offer these recommendations for future surveys:

- Use more aggregate groupings of subpopulations. This will reduce the number of Marines to be surveyed.
- Shorten the questionnaire, but maintain continuity of the items needed to establish trends of alcohol and drug use.

ORGANIZATION OF THIS REPORT

The remaining chapters of this volume describe the analysis and its findings in more detail. Chapter 2 discusses the prevalence of alcohol and drug use in the Marine Corps; chapter 3 deals with the characteristics of Marines who use alcohol and drugs; chapter 4 examines how

Marines perceive the consequences of alcohol and drug use; chapter 5 reviews and assesses the education, detection, and rehabilitation aspects of the Marine Corps Drug and Alcohol Program; and chapter 6 elaborates on the implications of the analysis.

Supporting details, data, and analyses are presented in eight appendixes, which are published separately as volume II of this report. The questionnaire used in the survey is reproduced in appendix A; appendix B describes the survey methodology; appendix C contains tables giving the sizes of the populations and samples surveyed; appendix D addresses the accuracy of the results obtained from the survey; appendix E describes the composite measure, or index, developed for estimating the monthly consumption of alcoholic beverages; appendix F looks at the patterns of responses to the questionnaire and how consistent they were; and appendix G contains tables showing the prevalence of alcohol and drug use by unit type, location, and pay grade.

CHAPTER 2

PREVALENCE OF ALCOHOL AND DRUG USE

One of the study's main objectives was to determine the prevalence of alcohol and drug use for specified subpopulations within the Marine Corps.

For alcohol, the basic measures of prevalence were derived from frequency and quantity of use of specific types of beverages. Questions required respondents to indicate how often and how many beer, wine, or hard liquor drinks they had within a fixed time period (30 days). These measures were combined to create an index of alcohol consumption. The index is a measure of ounces of ethanol consumed per day, which can be expressed as an equivalent number of beers per day. Appendix E of volume II describes the derivation of the index and shows the relationships between frequency and quantity of beer, wine, and liquor consumption and overall drinking level, as measured by the index. Frequency and quantity of beer drinking are the greatest contributors to overall drinking level.

Unfortunately, it was not feasible to measure consumption of drugs as precisely as we did for alcohol. Respondents were asked to indicate their use of three categories of drugs--marijuana or hashish, other drugs (LSD, heroin, cocaine), and pills (amphetamines, barbiturates)--within the past 30 days and the past 12 months. There is no common measure of quantity or potency of drugs, and so prevalence rates could only be reported by frequency of use. As a summary measure, we report the percent using a particular drug, as well as the percent using any drug for nonmedical purposes.

In looking at drug usage in the past 12 months, it is important to remember that Marines may have reported for duty within that time. Therefore, some reported usage may have occurred before the respondent entered the service. While 12-month and 30-day usage rates are reported for all three drug types, for discussion purposes we focus on any drugs. Keep in mind that most drug use is marijuana use.

This chapter presents results on prevalence of alcohol and drug use for various subpopulations within the Marine Corps. First we present overall prevalence rates for different subpopulations defined by major commands. To provide a basis of comparison for 1983 usage levels, we compare prevalence over time using data from past surveys of alcohol and drug use among personnel. The next section looks at alcohol and drug use before personnel joined the Marine Corps. The final section looks at use on the job and in various other circumstances. Prevalence of use in these circumstances is reported as use at least once a month during the past year to reflect recurring patterns of use. Relationships among

the various measures of prevalence and estimates of their reliability are discussed in appendix F.

While many Marines drink alcohol, most do not use drugs. Only about one-fifth of the E1-E5s surveyed had used drugs, while typically about 2 percent of the E6-06s had used them during the 30-day period prior to the survey.

CURRENT USE AND PERSPECTIVE OVER TIME

In this section we examine current alcohol and drug use by Marines at the major commands. To gain a perspective on current prevalence, we then present data from past surveys of alcohol and drug use in the military and among civilians. To further enhance this perspective, we look at patterns of use before personnel entered the service.

Aggregation of Unit Types and Pay Grades

We collected data from nine unit types and six pay grades to learn whether reporting usage levels at such a level of detail would be significantly more informative than reporting at a greater level of aggregation. We found, however, that we could collapse the nine unit types into four and the six pay grades into two.

Support for aggregating unit types and pay grades can be seen in table 2-1. Drug use is shown for 30-day and 12-month periods. While any drug use is shown, remember that it is mostly marijuana use.

Marines in infantry, artillery, and support battalions of Divisions on average have about the same number of drinks on a daily basis and are distributed homogeneously within alcohol index levels and within time period of drug usage. Similar conclusions can be drawn for people serving in Air units.

There were some differences in drug and alcohol use for those in different kinds of Air units. Air control personnel are slightly heavier drinkers and greater drug users than flying and nonflying support personnel. Nevertheless, we combined all Air units into one group.

We used the same rationale for collapsing the six pay grades into two. Enlisted personnel in pay grades E1-E5 behaved similarly to one another and quite differently from those in the other pay grades. Again, there are a few differences among the data for level of alcohol consumption. While the higher ranks seem homogeneous, the most senior officers have a slightly higher average number of drinks per day than other officers, although still less than the two most junior ranks. Because the two lowest-ranking groups clearly drink more on a daily basis and use more drugs than the other four groups, we condensed the six levels of pay grade into two--E1-E5 and E6-06.

TABLE 2-1

BREAKDOWN OF PERCENT OF ALCOHOL AND DRUG USERS BY UNIT TYPE AND PAY GRADE

Subpopulation	Average number of drinks per day	Equivalent number of drinks per day					Drugs (by time period)			Percent in subpopulation
		0	<1	2	4	6	>6	12 months	30 days	
Unit type										
FSSG	1.94	16	34	23	12	6	9	30	15	19
Division										
Infantry	2.60	14	27	26	13	9	12	34	20	29
Artillery	2.53	15	29	25	11	8	13	35	22	8
Support	2.52	13	30	23	12	10	12	39	23	9
Air										
Flying nontransport	1.88	16	30	28	14	6	7	23	13	6
Flying transport	2.02	14	29	29	13	6	9	23	11	8
Nonflying control	2.12	16	31	26	11	8	9	32	16	4
Nonflying support	1.87	18	32	24	12	6	8	24	13	11
Base	1.45	20	38	22	10	5	5	15	8	7
Pay grade										
E1-E3	2.72	13	26	25	13	9	13	41	25	48
E4-E5	1.96	17	32	24	12	7	8	27	13	34
E6-E9	1.21	23	38	24	8	3	4	5	2	11
Warrant officer	1.16	18	34	31	11	1	5	2	1	1
O1-O3	1.05	10	45	30	11	4	1	2	1	5
O4-O6	1.70	11	36	31	12	6	4	2	1	1

Note: Within errors due to rounding, row percentages for the index sum to 100.

Drinking and Drug Use at Major Commands

Drinking and drug use levels for the combined subpopulations of pay grade and unit type are shown in tables 2-2 through 2-5. Also shown are usage rates at the four major locations used in the stratification. Table 2-2 summarizes drinking for each level of the index, and table 2-3 summarizes drug use for each drug type and time period. Tables 2-4 and 2-5 show average number of drinks and any drug use in the past 30 days at the level of pay grade by unit type by location.

The pattern that emerges is that Marines at CONUS locations drink less than those overseas. Marines in Hawaii tend to drink the most, almost three drinks per day.

Drug use rates during the past 30 days were uniform for all locations except Okinawa. Marines on Okinawa generally used less drugs, particularly marijuana. However, those on Okinawa tended to use "pills" at the same rate as those elsewhere. This pattern is consistent with the limited availability of marijuana in contrast to the ready supply of barbiturates and amphetamines available in the local economy of Okinawa.

By unit type, Divisions have the heaviest drug use. Comparing any drug use within pay grade group, E1-E5s in Divisions on the West Coast had a higher usage rate (26 percent) than other E1-E5s, who average 20 percent. Only 2 percent of E6-06s used any drugs. But 8 percent of E6-06s in FSSG units in Hawaii reported using drugs. Drug usage rates for the past 12 months were higher than during the past 30 days (refer to table 2-3). E6-06s reported an average 4 percent usage; E1-E5s, 34 percent. Higher 12-month rates (relative to the past 30 days) reflect both a downward trend and increased usage due to Marines with less than one year of active duty whose use while still civilians is incorporated in the estimate. Detailed breakdowns for drinking and drug use are given in appendix G.

Combined Use of Alcohol and Drugs

A correlation was observed between alcohol and drug use. Heavy drinkers were more likely to use drugs while drinking than were light drinkers. Table 2-6 shows the percentage of Marines who drank a given amount of alcohol and also used different kinds of drugs at least some of the time during the past year. Twenty-three percent used drugs along with alcohol. The typical frequency of combined drug and alcohol use was "sometime" for all but the heaviest drinkers. Although not shown in the table, about 9 percent of light drinkers (two or fewer beers per day) tended to use marijuana some of the time, when they drank. Also, 21 percent of those drinking more than the equivalent of six beers daily indicated that they "always" used marijuana with alcohol.

TABLE 2-2

ALCOHOL USE ACCORDING TO ALCOHOL INDEX
(Percent of category)

<u>Subpopulation</u>	<u>Equivalent number of drinks per day</u>						<u>Average</u>
	<u>0</u>	<u><1</u>	<u>2</u>	<u>4</u>	<u>6</u>	<u>>6</u>	
Pay grade							
E1-E5	15	28	25	13	8	11	2.4
E6-06	19	39	26	9	3	3	1.2
Location							
West	15	32	25	12	7	9	2.0
East	16	31	26	12	8	8	2.0
Hawaii	16	25	22	12	8	16	2.9
Okinawa	15	28	23	13	8	13	2.6
Unit type							
FSSG	16	34	23	12	7	9	1.9
Division	14	28	25	12	9	12	2.6
Air	16	31	27	13	6	8	1.9
Base	20	38	22	10	5	5	1.5
Total	15	30	25	12	7	10	2.2

TABLE 2-3

PERCENT USING DRUGS FOR TWO TIME PERIODS

Subpopulation	Time period							
	Past 30 days				Past 12 months			
	<u>Any</u>	<u>Marijuana</u>	<u>Other drugs</u>	<u>Pills</u>	<u>Any</u>	<u>Marijuana</u>	<u>Other drugs</u>	<u>Pills</u>
Pay grade								
E1-E5	20	18	8	6	35	34	17	15
E6-06	2	2	1	1	4	4	2	2
Location								
West	18	16	8	5	29	27	15	11
East	17	16	5	6	29	28	11	12
Hawaii	18	16	8	6	31	30	17	14
Okinawa	13	9	5	6	33	31	16	16
Unit type								
FSSG	15	12	6	5	30	29	13	14
Division	21	19	8	7	35	34	18	15
Air	13	11	5	4	25	23	11	10
Base	8	7	2	2	15	14	6	5
Total	17	15	6	5	30	28	14	13

TABLE 2-4
AVERAGE NUMBER OF DRINKS PER DAY

	<u>Location</u>				<u>Total</u>
	<u>West</u>	<u>East</u>	<u>Hawaii</u>	<u>Okinawa</u>	
E1-E5					
FSSG	2.0	1.8	3.2	2.6	2.1
Division	2.5	2.6	3.5	3.2	2.8
Air	2.1	2.2	2.9	2.4	2.2
Base	<u>1.7</u>	<u>1.3</u>	<u>2.4</u>	<u>2.3</u>	<u>1.6</u>
Total	2.3	2.2	3.2	2.8	2.4
E6-06					
FSSG	1.2	0.9	1.8	0.9	1.0
Division	1.3	1.2	1.5	1.8	1.3
Air	1.0	1.2	1.5	1.6	1.2
Base	<u>1.0</u>	<u>1.1</u>	<u>1.5</u>	<u>1.2</u>	<u>1.1</u>
Total	1.1	1.1	1.5	1.4	1.2
E1-06					
FSSG	1.8	1.6	2.9	2.3	1.9
Division	2.4	2.4	3.2	3.0	2.6
Air	1.8	1.9	2.5	2.3	1.9
Base	<u>1.5</u>	<u>1.2</u>	<u>2.1</u>	<u>1.8</u>	<u>1.5</u>
Total	2.0	2.0	2.9	2.6	2.2

Note: Standard deviations range from 2 to 4 for each mean value shown.

TABLE 2-5

PERCENT USING ANY DRUGS IN PAST 30 DAYS

	<u>Location</u>				<u>Total</u>
	<u>West</u>	<u>East</u>	<u>Hawaii</u>	<u>Okinawa</u>	
E1-E5					
FSSG	21	17	20	13	18
Division	26	25	21	17	24
Air	15	17	22	14	16
Base	<u>13</u>	<u>10</u>	<u>14</u>	<u>6</u>	<u>11</u>
Total	21	20	21	15	20
E6-06					
FSSG	<1	<1	8	<1	1
Division	3	2	3	3	3
Air	2	2	3	3	2
Base	<u>2</u>	<u><1</u>	<u>4</u>	<u>2</u>	<u>2</u>
Total	2	2	4	2	2
E1-06					
FSSG	18	15	18	11	15
Division	23	22	19	15	21
Air	12	13	17	12	13
Base	<u>9</u>	<u>7</u>	<u>10</u>	<u>4</u>	<u>8</u>
Total	18	17	18	13	17

TABLE 2-6

COMBINED ALCOHOL AND DRUG USE
(Percent combined use at any time during past 12 months)

Drug	Number of drinks per day						Percent ever using drug
	0	<1	2	4	6	>6	
Marijuana	4	10	26	37	52	61	24
Other drugs	2	4	8	16	28	40	11
Pills	1	3	6	13	25	36	10
Percent in alcohol consumption category	15	30	25	12	7	10	

Is this 1983 picture of alcohol and drug use in the Marine Corps much different from the past? In the next section, we examine trends in alcohol and drug use by comparing our results with those from past surveys.

TRENDS IN USAGE FROM 1980 THROUGH 1983

A few words of caution are in order before comparing survey results. Differences cannot always be attributed to trends in usage levels. The surveys used different sampling procedures, questionnaires, and prevalence measures. For example, only the 1982 Survey included Marines in recruit training. This would tend to decrease estimated usage levels in 1982 because the rigors of recruit training presumably preclude the use of drugs and large amounts of alcohol.

As mentioned earlier, we opted for a shorter, more simply worded questionnaire, usually focusing on 30-day usage patterns. Consequently, we could not include episodic drinking behavior in our analysis of composite consumption (number of drinks per day). This would tend to produce smaller estimates of total consumption. The 1983 questionnaire did ask Marines to estimate typical drinking levels, which may or may not have included episodic drinking, but we do not know.

Results from the 1982 Survey showed that for all services, drug use and associated consequences were down and alcohol use was up, compared to 1980. Within the Marine Corps, it was concluded that "the trend was for an increase in the proportion of moderate drinkers and a decrease in the proportion of heaviest drinkers." As we shall see, this finding does not fully describe changes in alcohol consumption patterns within the Marine Corps. Table 2-7 compares the Marine Corps results of four

TABLE 2-7
COMPARISON OF DATA FROM PRIOR SURVEYS
(Percent)

Measure		Population		
		Marine Corps		Civilian ^a
		1983 ^b	1982	1980
Alcohol				
Beer		80	80	79
Wine		29	33	
Liquor		53	50	
Any		85	86	76
Daily Consumption				
Ounces of ethanol	Drinks per day			
0	0	15.3	13.4	10
>0-0.4	<1	31.4	31.9	31
0.5-1.9	1-3.9	34.1	30.9	28
2.0-3.4	4-6.9	10.6	11.8	12
3.5-4.9	7-9.9	4.5	6.2	7
5.0 or >	10 or more	4.1	5.8	12
(Average number of drinks per day)		2.42	2.71	3.38
Drugs:	Past 30 days			
	Any	17	21	37
	Marijuana	15	17	36
	(18- to 25-year-olds)	20		35
	Other drugs	6		
	Pills	5	12 ^c	
	Past 12 months			
	Any	30	30	47
	Marijuana	28	26	47
	Other drugs	14		
	Pills	13	17 ^c	

^aFor 18- to 25-year-old males.

^bAdjusted to include estimates of twice monthly episodic drinking of ten drinks per episode.

^cUse of pills or drugs.

surveys of drug and alcohol use. In addition to the 1980 and 1982 worldwide surveys, some results of a 1982 survey of 18- to 25-year-old male civilians conducted for the National Institute of Drug Abuse [4] are shown.

Alcohol Use

Results from the 1980 and 1982 Surveys show average daily alcohol consumption based on a synthesis of typical and heavy episodic patterns of drinking. The 1983 Survey used typical drinking during "the past 30 days" as the frame of reference. Therefore, the prevalence estimates of average daily alcohol consumption may not be comparable.

The effect of including episodic drinking* in the estimate of average alcohol consumption can be illustrated with the following example. Suppose a Marine drinks beer every day. On a "typical" drinking day, he drinks two beers. Once a month he gets together with his buddies and has ten beers. The methodology used in the 1980 and 1982 Surveys would combine the beers consumed during the month as 29 days at two beers per day plus the ten beers associated with the heavy drinking episode, for a total of 68 beers. This produces an average of 2.27 beers per day or 1.09 ounces of ethanol per day. Our methodology would not take into account the additional ten beers per month if they were not "factored" into the Marine's estimate of his typical drinking. Thus, we could underestimate this Marine's drinking level.

For purposes of comparing average daily ethanol consumption, episodic drinking was estimated for the 1983 data. Responses to the current survey suggested that 53 percent of Marines drank more than eight drinks on their heaviest drinking day. However, only 6 percent did so on a regular basis.

Data reported in [2] show that in 1982, 65 percent of Marines drank more than eight beers per day. Twelve percent did so on a regular basis. Thus, 53 percent did heavy episodic drinking. This episodic drinking occurred, on average, about two times each month. This information was used to adjust the 1983 estimates of typical alcohol consumption to include episodic drinking. We did so by adding the ethanol contained in the equivalent of 20 beers per month to the ethanol consumed on typical drinking days. This method is consistent with those used in 1980 and 1982 if a Marine reported having more than eight drinks on "the heaviest day." Our method of calculation tended to increase the estimate of the average number of drinks by about 0.2 beer per day. The data shown in table 2-7 reflect the adjustment for episodic drinking.

The general trend suggests that the proportion of drinkers in the Marine Corps has not changed much over the past 3 years. However, the

* Defined as eight or more drinks on an "atypical" drinking day.

Marine Corps does have a higher proportion of drinkers than the civilian population. While the proportion of wine drinkers was down, this decrease was offset by the 3 percent increase in the proportion of Marines drinking any hard liquor.

In terms of the composite alcohol consumption measure, the number of drinks per day has declined steadily since 1980. Earlier, we suggested that characterizing the general Marine Corps drinking trend between 1982 and 1980 in terms of changes in the proportion of moderate and heaviest drinkers was misleading. Looking at the entire distribution of daily ethanol consumption gives us a picture of drastically reduced levels of drinking over time. In 1980, the proportion of Marines drinking 10 or more drinks per day was greater than the proportion of nondrinkers. In 1982, there were about twice the number of nondrinkers and, in 1983, three times the number of nondrinkers than those in the heaviest drinking categories. In addition, the number of Marines in the heaviest drinking category has been steadily declining since 1980.

The difference in average daily alcohol consumption between 1982 and 1983 averaged about one-third drink per day. Considering the methodological differences in the way these values were computed, it is not clear whether or not this represents a real change.

In an attempt to circumvent methodological differences in 1982 and 1983 estimates of drinking levels, we compared parallel items. Although the two surveys used parallel questions, the response choices for number of drinks per day and number of days of drinking per month differed. Again, an exact comparison could not be made.

Figure 2-1 shows the proportion of Marines in 1982 and 1983 with different numbers of drinks of beer and hard liquor on a "typical drinking day during the past 30 days." The general pattern emerging from these data suggests that a greater proportion drank large quantities of beer (nine or more per day) in 1983. However, this proportion was "balanced" by a smaller proportion in the midrange of the continuum. The total effect was that about the same number of beers were consumed in 1982 as in 1983. The data for hard liquor consumption suggests that Marines drank less of it in 1983 than in 1982.

Figure 2-2 shows the frequency with which Marines did any drinking in 1982 and 1983. The trend is a slight increase in the number of days people drank in 1983. There were more people who were infrequent drinkers (less than twice each week) in 1982. However, the proportion of frequent drinkers (five or more times each week) was less in 1983.

Drug Use

The general trend in all kinds of drug use was downward from 1980 to 1983, as shown by the "past 30 days" measure in table 2-7. We see

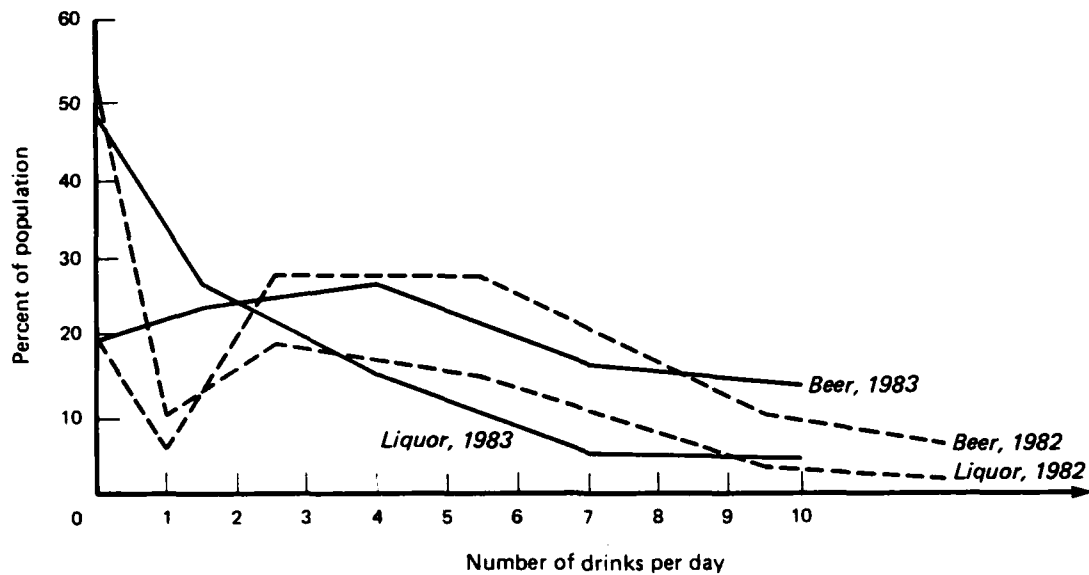


FIG. 2-1: COMPARISON OF NUMBER OF DAILY BEER AND HARD LIQUOR DRINKS IN 1982 AND 1983

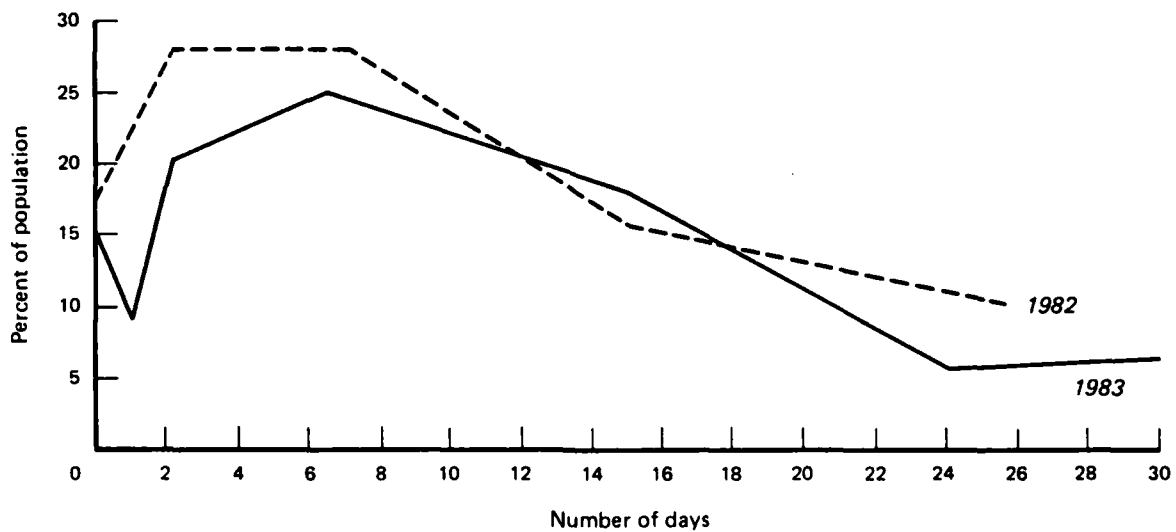


FIG. 2-2: COMPARISON OF NUMBER OF DAYS PER MONTH MARINES DRANK IN 1982 AND 1983

that between 1980 and 1983 marijuana use was down by a factor of more than two. Also note that for 18- to 25-year-olds the proportion of Marines using marijuana was slightly more than half of that reported for civilian males in 1982. This downward trend holds when we look at frequency of marijuana use (table 2-8).

TABLE 2-8

FREQUENCY OF MARIJUANA USE IN PAST 30 DAYS
(Percent)

<u>Days per month</u>	<u>1982</u>	<u>1983</u>
None	79	83
1-3	9	7
4-10	4	3
11-19	3	2
20-30	5	4

CHANGES IN USE

Until now, this report has focused on drug and alcohol use in the Marine Corps. Another issue suggested earlier is whether Marines start drinking and taking drugs before or after they join the service.

Alcohol

We asked Marines to indicate if they were drinking more, less, or about the same since they joined the Marine Corps. Of those who ever drank, 34 percent said they drink more, 29 percent said they drink less, and 37 percent said they drink about the same (table 2-9). Basically, 63 percent changed their drinking behavior. The net effect was a small increase in drinking. This pattern holds for all subpopulations except E6-06s and Base personnel, who drank less.

Drugs

Given the suspected trend toward decreasing drug use among Marines, it is interesting to see how many stopped using drugs of any kind since they joined the service. Table 2-10 shows the data by pay grade and drug type. Looking at any drug use for all pay grades, we see that 37 percent had used drugs before joining and 23 percent have used after joining. However, of the 37 percent who used before joining, 62 percent (23/37) stopped all drug use while in the Marine Corps.

TABLE 2-9

CHANGES IN DRINKING BEHAVIOR
SINCE ENTERING THE MARINE CORPS

<u>Population</u>	<u>Change</u>		
	<u>Same^a</u>	<u>Less</u>	<u>More</u>
Pay grade			
E1-E5	36	27	37
E6-06	40	39	21
Location			
West	39	30	31
East	36	30	34
Hawaii	37	25	38
Okinawa	36	27	37
Unit type			
FSSG	37	30	33
Division	36	27	37
Air	39	29	32
Base	38	37	25
Total	37	29	34

^aThis percent includes those who reported they do not drink, as well as those who reported they drank about the same.

How likely are Marines to start using drugs after joining? Of the 23 percent who used after joining, 61 percent (14/23) used before and 39 percent (9/23) began using for the first time while in the Marine Corps (table 2-10). Overall, however, joining the Marine Corps results in a drastic reduction of drug use.

Effect of Training on Drug Use

Does the tendency for decreased drug use after joining the Marine Corps follow a consistent trend over time? Here we look at drug use before and after initial training.

About 35 percent reported using marijuana before joining the Marine Corps. During training this figure dropped drastically to about 4 percent. While there was little usage during training, it did pick up after training, to about 19 percent (table 2-11).

TABLE 2-10

CHANGE IN DRUG USE SINCE ENTERING THE MARINE CORPS

Drug type	Used in Marine Corps	Pay grade					
		E1-E5			E6-06		
		Prior use			Prior use		
		Yes	No	Total	Yes	No	Total
Marijuana	Yes	11	11	22	1	7	8
	No	29	49	78	9	83	92
	Total	40	60		10	90	
Other drugs	Yes	3	12	15	0	3	3
	No	15	70	85	8	89	97
	Total	18	82		8	92	
Pills	Yes	3	11	14	0	3	3
	No	16	70	86	8	89	97
	Total	19	81		8	92	
Any	Yes	16	10	26	1	9	10
	No	26	48	74	7	83	90
	Total	42	58		8	92	
		E1-06			Prior use		
		Yes	No	Total	Yes	No	Total
		10	10	20	10	10	20
		25	55	80	25	55	80
		35	65		35	65	
		3	11	14	3	11	14
		13	73	86	13	73	86
		16	84		16	84	
		2	11	13	2	11	13
		14	73	87	14	73	87
		16	84		16	84	
		14	9	23	14	9	23
		23	54	77	23	54	77
		37	63		37	63	

TABLE 2-11

PERCENT USING DRUGS BEFORE AND AFTER ENTERING SERVICE

	Before joining			During training			After training		
	Marijuana	Other	Pills	Marijuana	Other	Pills	Marijuana	Other	Pills
Pay grade									
E1-E5	40	18	19	5	2	2	21	14	13
E6-06	8	3	3	1	<1	<1	9	7	7
Location									
West	35	16	16	4	2	2	20	13	11
East	34	14	15	4	1	2	18	11	12
Hawaii	33	17	17	6	3	3	20	16	14
Okinawa	37	18	19	4	2	2	20	14	14
Unit type									
FSSC	37	16	18	3	1	1	21	14	13
Division	38	17	18	6	2	3	20	13	12
Air	31	14	15	3	1	2	18	12	12
Base	23	9	9	2	<1	<1	14	10	9
Total	35	16	16	4	2	2	19	13	12

THE DRINKING ENVIRONMENT

We found that Marines who drank frequently did so in a variety of places and usually in social circumstances. The following subsections examine use of alcohol and drugs on the job and in other places. We focus on recurring patterns, defined as use at least once a month during the year.

Work-Related Usage

Some Marines reported that they drank right before reporting for duty or while at the job site. On average, 15 percent drank 2 hours or less before going to work or during a meal break while at work (table 2-12). About 5 percent drank on a recurring basis during regular hours on the job, and about 9 percent did so on an infrequent basis (once a year). Hawaii and Division people dominated the picture of most alcohol use related to work--before going to work or at meals at work, and while working during duty hours.

TABLE 2-12

DRINKING RELATED TO WORK
(Percent drinking at least once a month)

	<u>Before work or at meal at work</u>	<u>At the job site during working hours</u>
Pay grade		
E1-E5	17	6
E6-06	6	1
Location		
West	14	6
East	15	4
Hawaii	21	7
Okinawa	14	5
Unit type		
FSSG	15	3
Division	18	8
Air	10	3
Base	8	3
Total	15	5

When we look at drug use before reporting for duty or during duty hours, 8 percent indicated that they used at least once a month (table 2-13). Most on-the-job use was marijuana. About 4 percent reported work-related marijuana use once a year. Those in the senior pay grades reported virtually no drug use on the job. Major differences were with respect to unit types. Among Division personnel, 11 percent reported on-the-job use of marijuana, in contrast to the 2-percent rate among Base personnel.

TABLE 2-13

ANY DRUG USE RELATED TO WORK

	Percent using at least once a month before reporting to work or during the work day		
	<u>Marijuana</u>	<u>Other drugs</u>	<u>Pills</u>
Pay grade			
E1-E5	9	3	3
E6-06	<1	<1	<1
Location			
West	8	3	2
East	7	2	3
Hawaii	10	3	4
Okinawa	8	3	4
Unit type			
FSSG	7	1	2
Division	11	3	2
Air	5	1	2
Base	2	1	1
Total	8	3	2

Social Context

When asked where they drink, most Marines (62 to 59 percent) indicated that they drank off base (table 2-14). Fewer drank on base. More drinking on base was done in public places (45 percent), in contrast to private places (34 percent).

When asked about frequency of drinking with types of people, virtually all Marines who drink indicated they did so with friends or family. Those E1-E5s who drink typically did so with friends, family, or co-workers once or twice a week. Senior personnel (E6-06) tended to

TABLE 2-14

WHERE AND WITH WHOM PEOPLE DRINK^a
(Percent)

	Place				People			
	Private		Public		Mate	Friends, family	Co-workers	Acquaintances Alone
	On base	Off base	On base	Off base				
	On base	Off base	On base	Off base				
Pay grade								
E1-E5	33	64	46	63	54	57	49	14
E6-O6	39	54	41	47	52	56	51	9
Location								
West	32	67	41	56	59	62	62	19
East	32	62	38	59	57	61	62	17
Hawaii	33	60	59	66	59	61	56	26
Okinawa	37	55	62	55	42	63	71	24
Unit type								
FSSG	35	61	44	56	55	62	61	19
Division	34	63	51	65	57	65	71	23
Air	36	63	39	57	58	62	61	18
Base	30	55	34	47	55	55	46	12
Total	34	62	45	59	57	63	64	19
								30

^aAt least once a month.

drank socially, but did so only once or twice a month. Those in the Divisions tended to drink as often with their spouses or mates as they did with family or friends and with co-workers.

The circumstances of drug use were similar to those for drinking. By and large, people used drugs off base with friends and family (table 2-15). Fewer Marines used drugs alone than with acquaintances. On a more detailed level, this "social use" seldom occurred more than once or twice a month. About one-fourth of E1-E5s used drugs in private places off base.

SUMMARY OF RESULTS FOR PREVALENCE

In summary, during June 1983, about 85 percent of Marines drank alcohol of any kind, whereas only about 17 percent used drugs of any kind.

In general, prevalence rates of drugs and alcohol follow a pattern. Indeed, most Marines do not use drugs, while most drink. This is true for current use, was true for Marines who were in the service in 1980, and was true for personnel before they entered the Marine Corps.

TABLE 2-15

WHERE AND WITH WHOM PEOPLE USE DRUGS^a
(Percent)

	Place				People			
	Private		Public		Friends, family	Co-workers	Acquaintances	Alone
	On base	Off base	On base	Off base				
Pay grade								
E1-E5	10	18	5	11	13	17	6	12
E6-O6	1	2	1	1	2	1	1	2
Location								
West	9	16	5	10	11	14	5	10
East	7	14	3	8	11	13	4	9
Hawaii	13	15	8	12	11	16	6	12
Okinawa	9	15	5	10	12	15	5	12
Unit type								
FSSG	9	13	4	8	10	13	5	10
Division	11	18	6	14	14	20	6	12
Air	5	11	3	6	7	10	2	7
Base	3	6	2	4	5	4	2	4
Total	9	15	5	9	10	15	5	10

^aAt least once a month.

CHAPTER 3

CHARACTERISTICS OF ALCOHOL AND DRUG USERS

Here we focus on the characteristics of the individual user. First we look at socio-demographic characteristics that seem to distinguish light from heavy drinkers and drug users from nonusers. We then look at the reasons Marines gave for starting to drink and use drugs. To round out our description, we examine attitudes and opinions, contrasting those of light drinkers with heavy drinkers and drug users with nondrug users. A more detailed analysis of the relationships of individual drinking and drug use behavior to personal and organizational characteristics is shown in appendix F of volume II. The results parallel those shown here.

DEMOGRAPHIC CHARACTERISTICS

In addition to the similarities in drinking levels and drug usage across locations, unit types, and pay grades given in chapter 2, there are also similarities across general demographic characteristics. We observed that drug users and heavy drinkers tend to have similar demographic characteristics. Demographic characteristics examined include sex, race/ethnicity, education level, marital status, and age. Heavy drinkers and drug users tend to be young, single, white males, who did not graduate from high school (table 3-1). Percentages for alcohol consumption are distributed across categories of the alcohol consumption index, for which totals sum to 100. Highlighted next are those demographic characteristics that discriminate levels of use.

Demographic characteristics of alcohol and drug users are presented here, summarized according to two basic categories--general socio-demographic characteristics and specific work and living arrangements related to service in the Marine Corps.

Age

Marines who are 20 years and younger tend to drink and use drugs more.

Marital Status

While single Marines tend to use alcohol and drugs the most, those with broken marriages also stand out. A greater percentage of divorced people are heavy drinkers and a greater percentage of separated people use drugs. While the difference between separated and divorced people according to drinking level is small, the difference in their drug usage rates is large (9 percent during past 12 months; 5 percent in past 30 days).

TABLE 3-1

DEMOGRAPHIC CHARACTERISTICS OF ALCOHOL AND DRUG USERS

	Alcohol (by index)						Drug use (by time period)		Percent with characteristic
	0	<1	2	4	6	>6	12 months	30 days	
Sex									
Male	15	30	25	13	8	10	30	17	95
Female	26	42	19	5	3	5	23	10	5
Race/ethnicity									
White	13	29	26	13	8	11	31	17	68
Black	21	34	22	9	7	8	27	15	19
Hispanic	14	37	24	12	4	8	29	14	8
Other	20	31	22	11	6	10	32	20	6
Education									
Nonhigh-school graduate	12	24	23	11	10	20	48	31	8
High-school graduate	15	29	25	13	8	10	32	18	59
Some college	17	33	24	11	7	8	27	14	26
College degree	14	41	28	11	3	2	6	3	8
Marital status									
Single	12	25	26	14	10	13	39	22	54
Married	20	38	23	10	4	5	19	9	41
Separated	9	25	31	13	7	15	33	20	2
Divorced	13	24	24	12	9	17	24	15	3
Age									
17-18	14	26	26	11	11	12	36	22	5
19-20	13	27	25	14	9	12	40	23	28
21-25	15	30	24	12	8	11	33	18	44
26-30	17	37	26	12	4	5	12	6	13
31-35	22	39	26	7	3	3	5	3	6
36-40	23	40	23	8	3	3	2	1	3
41 plus	23	32	22	11	6	5	4	3	2

Note: Within errors due to rounding, row percentages for the index sum to 100.

Comparison With 1982 Results

When demographic characteristics are compared for 1982 and 1983 drug usage rates we see again that, for the most part, drug usage decreased in 1983. To facilitate the comparison, we regrouped age, marital status, pay grade, and level of education intervals as shown in table 3-2. For example, 17- to 18-year-olds and 19- to 20-year-olds were grouped into a single category (table 3-2). The picture of drug users drawn from the 1982 Survey is similar to the one drawn from our data, except that in 1982 a higher proportion of women than men used drugs. This relationship was reversed in 1983. The only other noticeable difference is for nonhigh-school graduates. In 1983, usage in this group dropped by 8 percent. In general, both heavy drinking and drug use continue to be associated with youth and being unmarried.

WORK AND LIVING ARRANGEMENTS

Another characteristic we looked at was the tendency to use alcohol and drugs given certain levels of responsibility, both in the service and in the family. These results follow.

Young, single Marines tend to be the heavy drinkers and drug users and to have similar job-related and situational characteristics such as living accommodations. We would therefore expect to see differences in usage rates related to differences in these characteristics. In fact, our survey showed less variation in use between those with different work-related characteristics (table 3-3) than demographic characteristics. Nonetheless, some differences should be noted. The heaviest drinkers and users of drugs of any kind were those who recently reported to their present duty installation (within the past month), had no supervisory responsibilities, were unaccompanied, lived in military barracks, and had no dependents. While married people generally drink less and tend not to use drugs, those who were married but unaccompanied used considerably more than those who were accompanied.

There seems to be a direct relationship between drug and alcohol use and age-related factors such as level of responsibility and pay grade. Usage levels of alcohol and drugs decrease as responsibilities (number of people supervised, number of dependents, mate present at current duty station) increase. In general, family responsibilities increase as one gets older, and in-service responsibilities increase as one gets promoted.

ALCOHOL AND DRUG USE PROBLEMS OF DEPENDENTS

What is the relationship between drinking and drug use by Marines and their dependents? In the survey we asked respondents to indicate if their dependents had a drinking or drug problem. Table 3-4 shows that,

TABLE 3-2

COMPARISON OF DRUG USE PATTERNS AMONG DEMOGRAPHIC GROUPS
IN 1982 AND 1983

(Percent using in past 12 months)

<u>Demographic characteristic</u>	<u>1983</u>	<u>1982</u>
Sex		
Male	30	30
Female	23	39
Race/ethnicity		
White	31	30
Black	27	28
Hispanic	29	31
Education		
Nonhigh-school graduate	48	56
At least high-school graduate	29	29
Marital status		
Not married	39	37
Married	19	21
Age		
17-20	39	39
21-30	28	30
31 and above	3	3
Pay grade		
E1-E5	35	37
E6-E9	5	5
O1-O6	3	6

TABLE 3-3

WORK AND LIVING ARRANGEMENTS OF ALCOHOL AND DRUG USERS

Arrangement	Equivalent number of drinks per day						Drugs (by time period)		Percent in population
	0	<1	2	4	6	>6	12 months	30 days	
Length at installation (months)									
<1	17	20	21	20	8	15	45	29	1
1-7	15	31	26	12	6	9	29	13	22
7-12	14	29	25	12	8	11	30	16	22
>12	16	30	24	12	8	10	30	18	56
Number of people supervised									
None	15	28	24	13	8	12	38	22	38
1-5	14	30	26	13	8	9	31	16	33
6-10	16	33	24	11	8	9	24	12	9
11-15	17	36	22	10	7	8	21	11	5
16-20	19	34	24	11	5	7	18	9	3
>20	17	36	26	10	6	6	12	6	12
Live with mate at duty station?									
No mate	14	26	26	14	9	11	34	19	42
Yes	19	39	23	10	4	5	18	9	36
No	11	26	26	13	9	15	40	25	21
Type of housing									
Military barracks/BOQ	13	25	26	14	9	13	38	22	55
On-base family	23	41	20	9	3	4	12	5	10
Off-base family	17	37	20	13	7	6	28	14	3
Civilian	18	35	25	11	5	7	21	12	33
Number of dependents less self									
None	13	25	26	14	10	12	37	21	50
1	16	33	26	10	6	9	28	16	19
2	17	37	23	11	5	8	24	13	15
3	22	39	19	11	4	5	15	9	10
4 or more	22	36	24	9	3	5	12	6	6

Note: Row percentages for the index sum to 100, within errors due to rounding.

although the reported incidence of dependent drinking and drug use problems was low, there is a correlation between level of use by Marines and prevalence of dependents' problems. Dependents of heavy drinkers are more likely to have a drinking problem than those of light drinkers.

TABLE 3-4
PERCENTAGE OF MARINES WHO HAVE DEPENDENTS WITH DRINKING
AND DRUG PROBLEMS

Usage level by Marines	Equivalent number of drinks per day						Drug use	
	<u>0</u>	<u><1</u>	<u>2</u>	<u>4</u>	<u>6</u>	<u>>6</u>	<u>Use</u>	<u>Don't use</u>
Dependents with problems	2	3	3	3	5(2) ^a	8(3)	3	1

^aValues in parentheses represent 1.96 standard errors of the estimate. Error is 1 percent or less for results without parentheses.

REASONS FOR STARTING TO USE ALCOHOL AND DRUGS

Related to the social context of use are the reasons people started to use alcohol and drugs. It seems that social reasons were the primary impetus for starting substance use (table 3-5). Few Marines seem to start using as a way to help cope with problems.

ATTITUDES TOWARD HEAVY DRINKING AND DRUG USE

To round out our description of alcohol and drug users, we asked respondents to indicate how they felt about issues related to drinking and drug use. There were 15 items on the questionnaire that dealt with Marine Corps policy on drug use and whether heavy drinking or drug use was a greater problem. An analysis of the correlations among the responses to these items is shown in appendix F of volume II. The results suggest that these items were measuring three general attitudes: agreement with Marine Corps drug use policy, attitudes about using drugs on base, and relative severity of drinking and drug use problems.

TABLE 3-5

REASONS FOR STARTING SUBSTANCE USE
(Percent total population)

<u>Reason</u>	<u>Drinking</u>	<u>Drugs</u>
Friends use	32	15
Try it	36	23
Liked it	26	20
Bored	15	7
New "kick"	5	5
Marine Corps troubles	7	5
Available	16	11
Help relax/sleep	26	14
Help job performance	2	5
Family problems	N/A ^a	6
Get high	N/A	18

^aN/A means particular reason was not a response alternative.

Table 3-6 shows the percentage of Marines agreeing with five of the attitude opinion statements. (The percentages reported are combinations of those who agree and agree strongly.) The data are broken down to contrast heavy with light drinkers and drug users with nonusers.

Note that most of the Marines surveyed, even those using drugs, believed that Marines should not use marijuana while on duty. The data also show that few of them, even heavy drinkers, believed that drugs can have a greater, and presumably "worse," effect on physical fitness and job performance than heavy drinking. Otherwise, the users and nonusers tended to respond differently to the items. In general, those who do not use drugs agreed with Marine Corps drug use policy, while the users did not.

In sum, heavy alcohol consumption and drug use were more prevalent among whites, males, those in Division units, those with less education, those who were 20 years old or younger, those not married or married with spouse not present, and those with little supervisory responsibility. Most drinkers first began drinking for social reasons, and indeed, most drinking in the Marine Corps occurs in a social context. While most Marines believed drugs should not be used on the job, those who do use drugs tended to disagree with other aspects of Marine Corps drug use policy.

TABLE 3-6

PERCENT AGREEING WITH ISSUES RELATED TO DRINKING AND DRUG USE

Issue	Equivalent number of drinks per day						Drug use (by time period)					
	0	<1	2	4	6	>6	12 months		30 days		Average	
							No use	Use	No use	Use		
Marine Corps policy on drug use okay	73	66	53	45	31	24	70	19	63	13	54	
Marines who use drugs make the Marine Corps look bad	66	61	49	40	31	25	64	19	58	13	50	
Drugs have a greater effect than heavy drinking on physical fitness	25	24	22	20	21	18	26	14	24	13	23	
Marines should not use marijuana on duty	79	82	82	82	77	64	82	73	82	70	79	
More important for Marine Corps to crack down on drug users than heavy drinkers	33	36	35	31	30	25	39	19	37	14	33	

CHAPTER 4

PERCEIVED CONSEQUENCES OF ALCOHOL AND DRUG USE

In this chapter we examine some deleterious effects, or consequences, of alcohol and drug use on job performance, health, social relationships, and interactions with the criminal justice system. Included in the questionnaire were parallel sections relating to consequences of drinking and drug use. Marines were asked to report "things" that happened to them "because of" drinking and drug use and "things" that happened to them "in general." Responses to the "in general" category were used to obtain an estimate of how frequently things like failure to be promoted might occur, independent of problems associated with drinking and drug use. This approach was helpful for interpreting the effects of drinking and drug use on these same "things."

The proportion of nondrinkers perceiving a particular event as happening to them "in general" can be used as a baseline against which to compare the proportion of drinkers perceiving that same event happening to them because of drinking. The baseline against which we compared perceived consequences of drug use was the proportion of nonusers perceiving an event as happening "in general."

For comparison purposes, we show perceived consequences of drinking and drug use, as measured by prior surveys of Marines. If the level of perceived consequences is to be interpreted as an indicator of the effects of substance abuse, a positive correlation between the variation, over time, of consequences and use should be observed. Therefore, if Marines accept the premise that drinking "causes" problems, a drop in drinking levels should decrease the number of Marines perceiving consequences.

Table 4-1 shows the levels of perceived consequences (events) of drinkers and drug users. Also shown are the proportions of nondrinkers and nondrug users who reported the same events happening "in general" at least once in the past 12 months. Few of the things happened more than "once or twice" in the past 12 months. We selected three drinking levels for reporting the results: no drinking, four drinks per day, and more than six drinks per day. Differentiation does not become apparent until at least four drinks per day are consumed.

The overall pattern of results suggests that the more alcohol consumed, the greater the perceived consequences. We observed the same pattern for drug use.

Although respondents may perceive cause and effect between drinking and consequences (such as a low performance rating), both the heavy drinking and the perceived consequence could be caused or influenced by

TABLE 4-1

THINGS THAT HAPPEN TO PEOPLE
AS A RESULT OF DRINKING OR DRUG USE
(Percent reporting consequence)

Event/consequence	Alcohol use		Drug use	
	Nondrinkers	"Because of" drinking	Nondrug users	"Because of" drug use in last 12 months
		4 drinks per day	>6 drinks per day	
Ill	8	1	5	3
Not promoted	30	5	13	11
Got low performance rating	22	6	13	9
Involved in UCMJ actions	9	7	18	15
Driving while under influence (DWUI)	5	6	11	2
Arrested for DWUI	3	4	12	N/A
Spent time in brig	3	5	13	5
Hurt in accident	11	5	11	3
Caused accident	3	2	7	3
Hit mate	4	3	7	3
Hit kids	0	0	4	2
Hit others	9	18	31	7
Mate threatened to leave	8	4	9	4
Mate left	3	2	4	3
Hospitalized	7	2	7	5

some other factor, such as a family problem. Therefore, treating the substance abuse alone may not affect, for example, low performance ratings.

The responses to the items specifically suggesting that these events are consequences of drinking and drug use are shown for drinkers and drug users only. The data suggest that the greatest consequence of drinking (that is, the consequence affecting the most alcohol users) is getting into fights. The data suggest that 31 percent of heavy drinkers perceive that they get into fights because of their alcohol use; in comparison, 9 percent of nondrinkers generally get into fights. Interpreting the other percentages in a similar manner suggests that 13 percent of heavy drinkers' low performance ratings are also related to alcohol use.

Drug use also has serious perceived consequences. Many drug users attributed UCMJ actions (15 percent), failure to be promoted (11 percent), and low performance ratings (9 percent) to drug use.

WORK CONSEQUENCES

Several questions in the survey asked Marines to estimate the perceived effect of drug and alcohol use on job performance. Table 4-2 shows the responses of junior personnel to one of these questions. Of those E1-E5s who used marijuana on the job, 8 percent indicated that it had no effect on performance, and 4 percent claimed improved performance.

TABLE 4-2
PERCEIVED EFFECTS OF DRUG USE ON JOB PERFORMANCE
(Percent)

	E1-E5		
	<u>Marijuana</u>	<u>Other drugs</u>	<u>Pills</u>
Do not use drugs on the job	86	94	93
No effect	8	2	3
Degrades performance	2	2	1
Improves performance	4	2	3

The data shown in tables 4-3 and 4-4 summarize items focusing on more specific consequences of drug and alcohol use on the job.

TABLE 4-3

WORK-RELATED CONSEQUENCES OF DRINKING
(Percent experiencing consequences)

Consequence	Pay grade					
	E1-E5			E6-06		
	Drinking level (drinks per day)			Drinking level (drinks per day)		
	<u>0</u>	<u>4</u>	<u>>6</u>	<u>0</u>	<u>4</u>	<u>>6</u>
Poor work	7	59	72	3	56	54
Late for work	6	37	55	3	32	48
Missed work	2	11	27	0	7	22
Hurt at work	1	7	15	0	2	12
Drunk at work	4	33	61	0	10	31
Drunk before work	3	26	47	0	11	34

TABLE 4-4

WORK-RELATED CONSEQUENCES OF DRUG USE
(Percentage of E1-E5s reporting occurrences
during past 12 months)

Consequence	Frequency				
	<u>Ever</u>	<u>1-2</u>	<u>3-5</u>	<u>6-8</u>	<u>>8</u>
Poor work	9	6	1	1	-
Left work early	6	4	1	1	-
Hurt	2	1	-	-	-
High on job	14	6	2	1	5
Reported high	8	4	1	-	2
Missed work	3	2	-	-	-

Table 4-3 shows the percentage of the total population ever experiencing particular consequences of drinking. All but the heaviest drinkers experienced these consequences once or twice during the past 12 months. Heavy drinkers reported poor work more frequently--once or twice per month.

Poor work was the most frequently perceived consequence of drinking. A greater proportion of heavy drinkers and E1-E5s experienced these consequences than light drinkers and more senior Marines.

Table 4-4 shows the responses to a series of questions about work-related consequences of drug use. The consequences described in the questions parallel those used in the section on alcohol. Only the data for E1-E5s are shown; E6s and above reported no work-related consequences. The responses suggest that a smaller proportion of the drug users tended to experience job-related consequences of use compared to consequences based on drinking. Being high on the job seemed to occur most often.

SUBSTANCE DEPENDENCE

Several questions described consequences of drinking that are considered to be symptomatic of alcohol dependence. Table 4-5 shows the responses to these questions and to one related to getting into fights.

The first two items, "disoriented" and "sick," are what could be described as a "hangover." These consequences of drinking seemed to happen occasionally to about half of the population, but not very often. Again, these consequences happened to a smaller proportion of those in the senior pay grades and of those who drank less.

The 1982 Worldwide Survey had constructed a measure of alcohol dependence from the first four items shown in table 4-5. The measure was based on the cumulative frequency with which any of these symptoms occurred during a 12-month period. Those drinkers falling into the top 10 percent of the distribution of number of times a symptom occurred were considered alcohol dependent. (The 1982 alcohol dependence scale showed 48 or more symptoms that occurred to at most 10 percent of the military personnel and about 9 percent of the Marines.)

Figure 4-1 shows the cumulative distribution of occurrences of symptoms, as constructed from responses to the 1983 Survey. Marines indicating 26 or more symptoms composed the top 10 percent. The difference in the number of symptoms used in 1982 and in the current study to determine alcohol-dependent Marines is probably due to differences in the methods used to count symptoms. Here, we counted a response of "once or twice a week" as 52 annual occurrences. In a similar fashion, the lesser frequency associated with each response category was used to scale responses. We do not know the method used in 1982.

TABLE 4-5

FREQUENCY OF SYMPTOMS OF ALCOHOL DEPENDENCE
(percent)

Symptom	All Marines and all drinking levels				Heavy drinkers only			
	Ever	1,2 times per year	1,2 times per month	1 or more times per week	Ever	1,2 times per year	1,2 times per month	1 or more times per week
Was disoriented	46	30	12	4	86	29	32	26
Got sick	54	41	11	2	81	39	27	15
Stayed drunk	28	18	8	2	79	29	31	20
Had shakes	18	12	4	2	49	20	15	14
Got into fights	21	17	4	-	57	35	14	9

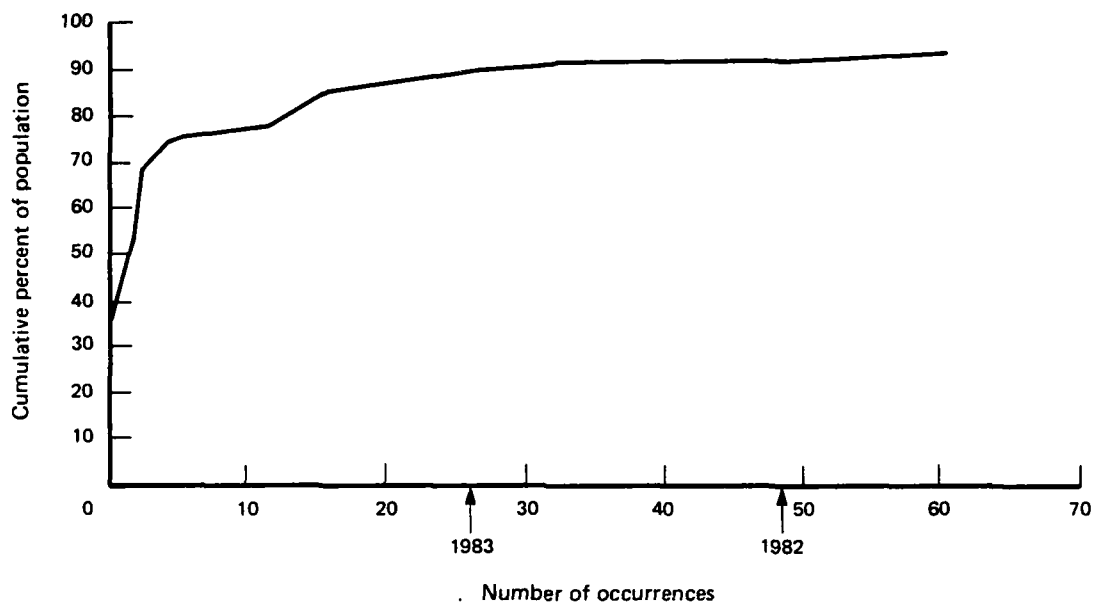


FIG. 4-1: OCCURRENCE OF SYMPTOMS INDICATIVE OF ALCOHOL DEPENDENCE

Table 4-6 shows the proportion of Marines by unit type and location reporting 26 or more symptoms. Marines in Division units have the highest incidence of alcohol-dependent symptoms. The distribution of those with 26 or more symptoms seems to be proportional to overall drinking level. The more alcohol consumed, the more likely one will experience these symptoms.

TABLE 4-6

PERCENTAGE OF POPULATION WHO WERE ALCOHOL DEPENDENT

Unit type	Location				
	West	East	Hawaii	Okinawa	Combined
FSSG	8	8	10	9	8
Division	11	14	15	15	13
Air	6	7	11	8	7
Base	4	3	7	8	5
Combined	8	10	13	12	10

Note: These are 95 percent confidence intervals, as follows:
 Within: all <3 percent margin: <1 percent. Dependence is defined at the 90th percentile of distribution of frequency of symptoms (disorientation, illness, extended drunk, shakes).
 Corresponds to 26 occurrences of any symptoms.

The incidences of drug-dependent symptoms are shown in table 4-7. Staying high and being disoriented occurred at least once during the past 12 months for 14 and 9 percent, respectively, of E1-E5s. Few differences in levels of symptoms of drug dependence were observed across unit types and locations. We did not construct a measure of drug dependence from the data.

TRENDS IN PERCEIVED CONSEQUENCES

The trends of perceived consequences of drinking and drug use are shown in table 4-8. Reporting categories are limited to those comparably measured in the 1980 and 1982 Surveys. The results suggest that the proportion of Marines perceiving consequences of drinking increased from 1980 to 1983, while the trend for consequences of drug use has been erratic. Drug use consequences decreased sharply from 1980 to 1982, but increased slightly in 1983.

These results should be interpreted within the context of changes in the levels of drinking and drug use. We see that rising levels of perceived consequences of drinking are associated with falling levels of heavy drinking. These results seem paradoxical since a higher proportion of heavy drinkers tend to perceive drinking consequences than do light drinkers. There are several possible explanations for the rising level of perceived consequences: awareness through education, changes in policy, differences among survey questionnaires.

Awareness Through Education

Recent emphasis of Drug and Alcohol Education programs has been on the effects or consequences of substance abuse. Perhaps more Marines are now perceiving that drinking too much alcohol may be the reason for their poor job performance and, as a consequence, a low performance rating.

An indirect effect of education is that leaders are being trained to recognize effects of substance abuse. Their performance evaluations of Marines with now-recognized drinking problems may be the source of awareness for those evaluated.

Changes in Policy

The number of UCMJ actions resulting from drinking and drug use depends on efforts of commanders to identify and take action against abusers. A policy for encouraging participation in education and rehabilitation programs will also increase the number of Marines who can recognize consequences of substance abuse.

TABLE 4-7

FREQUENCY OF SYMPTOMS OF DRUG DEPENDENCE
(Percentage of E1-E5s)

Symptom	Frequency during past 12 months				
	Ever	1-2	3-5	6-8	>8
Was disoriented	9	6	1	-	1
Stayed high	14	6	3	1	-
Had shakes	5	3	-	-	-
Got into fights	6	4	-	-	-

TABLE 4-8

TRENDS IN PERCEIVED CONSEQUENCES OF DRINKING AND DRUG USE
(Percent perceiving)

Perceived consequence	Drinking (all pay grades)			Drug use (E1-E5)		
	1980	1982	1983	1980	1982	1983
<u>General</u>						
Illness	2	1	2	2	1	1
Not promoted	3	4	4	5	3	5
Low performance rating	4	5	5	5	4	3
UCMJ action	3	4	6	5	3	6
Spent time in brig	5	4	4	3	1	2
Fights	-	7	11	-	0	3
Mate threatened to leave	2	2	3	2	1	1
<u>Work related</u>						
Poor work	29	33	38	13	6	9
Late for work	16	16	24	8	3	6
Missed work	5	4	8	5	1	3
"High" on the job	15	12	20	25	10	14
Any work related	34	38	45	28	11	15
<u>Dependence</u>						
Prolonged high	16	19	29	24	9	14

Differences Among Survey Questionnaires

Items used to elicit perceptions of consequences of drinking and drug use have varied somewhat among the three surveys. Differences in response levels could be subtly related to the way questions have been phrased, or even placement of questions in the survey booklets. Questions appearing toward the end of the booklet will be answered after respondents have had the benefit of insights gained from reading earlier questions. Each of these factors plays an unknown, yet important role, in the level of perceptions of the consequences of drinking and drug use.

EFFECTS OF DRUG AND ALCOHOL USE ON UNIT PERFORMANCE

The responses of some heavy drinkers and some drug users suggest that substance abuse can cause serious personal problems and hamper job performance. Here, we pursue the effects of substance abuse on performance, using measures exogenous to the survey. The performance measures were the scores given semiannually to E1-E4s for proficiency (PRO) and conduct (CON).

Because the survey was anonymous, it was not possible to match the survey responses of individuals with their performance scores. Rather, we grouped data by reporting unit code (RUC). We computed average PRO and CON scores of all E1-E4s who were in the RUCs that participated in the survey during the period of survey administration.

We also averaged responses to selected survey items for those within the same RUC and pay grade. This made it possible to correlate averaged performance and survey data at the RUC level.

The survey items chosen for this purpose included the stratification variables such as unit type and location, in addition to age, drug use, and alcohol consumption. We used the stratification variables to separate any differences in average performance that might exist between unit types and locations before determining the effects of substance abuse and performance. This procedure is analogous to measuring how average performance for a given unit type could change with changes in the proportion of drug users and different amounts of alcohol consumption.

We used the age variable to control for differences in performance that might be due to differences in age. And we used multiple regression analysis to determine the marginal effects of drug use and alcohol consumption on performance, while holding constant any effects of location, unit type, and age.

The results of the analysis are summarized in table 4-9. While drug use was significantly related to PRO and CON scores, alcohol consumption was not. However, a much larger proportion of the variation in

the performance scores was accounted for by the variables for location and unit type. While all variables accounted for 52 percent of the PRO scores, drug use accounted for only 2 percent of the variability. The drug use variable accounted for 4 percent of the variability in CON scores.

TABLE 4-9
EFFECTS OF DRUG USE ON PRO-CON SCORES
(208 RUCs)

Control variables ^a	PRO		CON	
	Regression coefficient	Beta weight	Regression coefficient	Beta weight
FSSG	-0.95	-0.26	-1.28	-0.30
Division	-1.63	-0.63	-1.88	-0.60
Air	0.14	0.06	0	0
West	-0.37	-0.15	-0.61	-0.20
East	-0.57	-0.22	-0.70	-0.23
Okinawa	0.06	0.02	-0.02	-0.01
Age	-0.02	-0.03	-0.04	-0.05
Drug use (30 days)	-1.85	-0.15	-3.00	-0.20
(Constant)	46.57		46.69	
R ²	0.52		0.47	
Mean score	44.86		44.06	

^aBase and Hawaii personnel are subsumed in the constant. The coefficients of the other unit types and locations reflect differences in PRO-CON scores, relative to those in Base and Hawaii.

In general, higher levels of drug use were associated with lower PRO and CON scores. The magnitude of the effect can be gauged by estimating performance scores at various levels of drug use. A base-line estimate of performance was made at the mean levels of drug use in the units. Holding all the variables constant at their means resulted in a PRO score of 44.86 and a CON score of 44.06, which are also the respective means of these measures.

The results of the regression analysis can be used to estimate what the average PRO and CON scores would be at various levels of drug use. Holding the other variables constant at their means, the estimated PRO scores are shown in figure 4-2. To determine what the estimated PRO score would be for a particular level of drug use, first locate the percentage of unit using drugs on the bottom axis. Then, move up along

the vertical axis to the diagonal line. The value of the vertical axis at that point represents the estimated PRO score. CON scores can be estimated in a similar way.

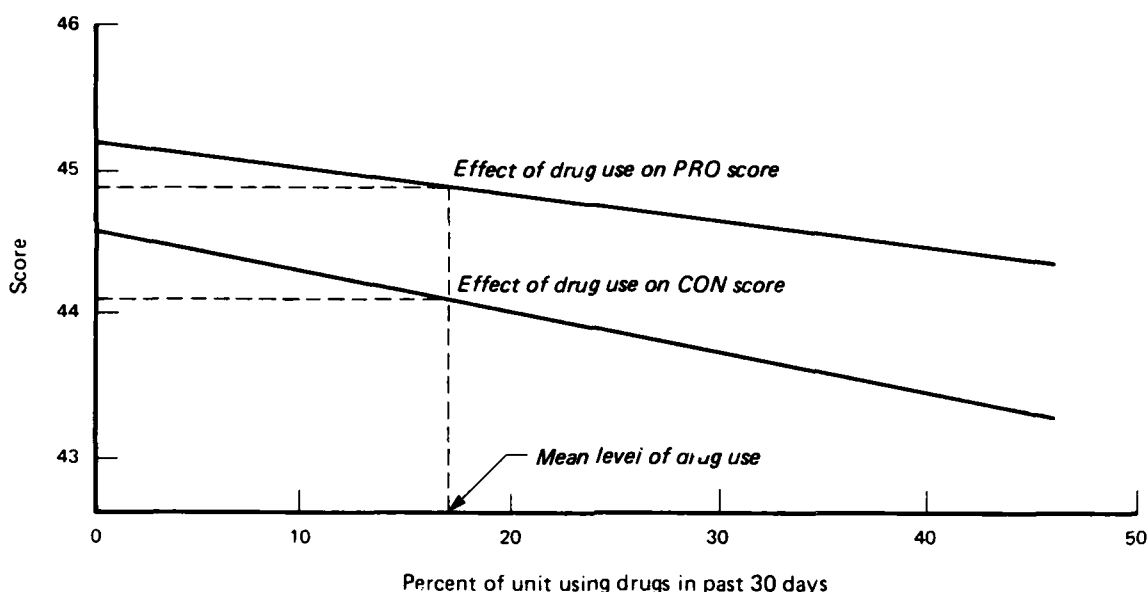


FIG. 4-2: ESTIMATED EFFECTS OF DRUG USE ON PRO-CON SCORES

Using the aforementioned procedures, we estimated PRO and CON scores associated with extreme levels of drug use, i.e., zero and 46 percent (which includes 99 percent of the observed variation in drug use), as well as the 1983 average level of 17 percent. These estimates are shown in table 4-10. The data indicate that the average PRO and CON scores for units in which no one uses drugs would be 45.18 and 44.57, respectively. In comparison to the average RUC, with 17 percent drug users, this is about a 0.32- and 0.51-point improvement, respectively, in the scores.

TABLE 4-10

ESTIMATES OF PRO-CON SCORES FOR VARIOUS LEVELS OF
DRUG AND ALCOHOL USE

	Percent drug users in unit		
	0	17	46
Proficiency	45.18	44.86	43.32
Percentile	66	50	11
Conduct	44.57	44.06	43.19
Percentile	63	50	27

Another way of looking at the difference between any two PRO or CON scores is to compare the standing of the units with the scores of interest relative to all other units. The "percentile" values shown in table 4-10 indicate that a unit with a PRO score of 44.86 stands at the 50th percentile. This means that half of the units have PRO scores greater than 44.86, and half have less than 44.86. A unit with no drug users and a PRO score of 45.18 is at the 66th percentile, meaning that 34 percent of the units will still have average PRO scores greater than 45.18. The reason units with no drug users are not at the top of the PRO score distribution is simply because there are factors other than drug use that contribute to PRO scores. Nevertheless, these results suggest that the proportion of drug users within the RUC does significantly affect average PRO and CON scores.

CHAPTER 5

MARINE CORPS DRUG AND ALCOHOL PROGRAM

There are four basic aspects to the Marine Corps Drug and Alcohol Program: education, detection, administration and discipline, and treatment and rehabilitation. Contact with the program is, for some Marines, a sequential process. Education about alcohol and drug use begins before they join the Marine Corps. One way is through exposure to information about alcohol and drugs while in high-school, or often before then. Another is by information supplied by the recruiter. And, of course, many learn by word of mouth from buddies. Education continues upon entering the Marine Corps through activities that alcohol and drug officers at local commands organize.

Detection efforts, such as urinalysis, are considered as deterrents to drug use. Like any effective deterrent, awareness may prevent use. Thus, awareness can be considered the link between the education and detection programs.

Upon being detected as a drug user, a Marine is likely to encounter the other two aspects of the program: discipline and rehabilitation. The most likely form of discipline is office hours or court-martial. Rehabilitation services are provided for those who are dependent on alcohol or drugs and for those drug or alcohol abusers who are considered likely to respond to therapy and subsequently be productive Marines.

Our analysis looked in more detail at drug-related aspects of the program than at the alcohol-related aspects. This imbalance does not reflect the importance of one over the other, but rather is a consequence of the content of the questionnaire. When we developed the questionnaire there seemed to be a greater emphasis in the Marine Corps on drug abuse, and we shaped the questions accordingly.

Our evaluation begins by looking at specific aspects of the program. We follow the same sequence a Marine would experience in his contacts with the program: education, detection, and rehabilitation. (Lacking any meaningful data, we did not evaluate disciplinary actions resulting from alcohol and drug use.) We then shift to how Marines evaluate the program and their perceptions about effectiveness.

EDUCATION

Awareness

A goal of education is awareness. By awareness we mean the level of information Marines seem to have about various programs. When and

how did they learn about programs? Some of the items in the questionnaire concentrated on generic programs (that is, "what the Marine Corps does to identify drug users"), and others on more specific ones (such as "the urinalysis program at current installation"). The level (location and unit type) at which the questionnaire responses were reported was determined by applicability and differences in responses. Therefore, an item that measured a Marine's knowledge about a program prior to joining the Marine Corps was summarized at a global level, summing across current location, and would be reported for E1-E5s, for whom the item would be most relevant.

Table 5-1 summarizes the responses of E1-E5s to the "prior knowledge" item. The results are shown for those who used any drug for nonmedical purposes during the past 12 months and for those who did not use drugs. The data suggest that prior to joining, nonusers are more aware of drug use identification procedures than are users.

The educational value of alcohol and drug programs is that they deter use. A series of questions focused on whether the respondents were aware of alcohol and drug-related services available at current installations. The responses show significant proportions of Marines did not even care to guess about the existence of the programs. Tables 5-2 and 5-3 show the percent of Marines who responded other than "don't know." About 10 percent responded "no."

Of the Marine Corp drug programs, the best known in all of the areas surveyed except Okinawa was urinalysis. A general pattern that emerges from the data is that the lowest level of awareness about most programs is on Okinawa.

TABLE 5-1

AWARENESS OF MARINE CORPS DRUG IDENTIFICATION
PROCEDURES PRIOR TO ENTERING THE SERVICE
(Percent E1-E5s)

<u>Awareness level</u>	<u>Nonuser</u>	<u>User</u>
Very well	15	9
Fairly well	17	14
Not well	19	21
None	42	50
Forgot	5	6

TABLE 5-2

AWARENESS OF ON-BASE ALCOHOL PROGRAMS FOR ALL MARINES
(Percent)

<u>Program</u>	<u>Location</u>				<u>All</u>
	<u>West</u>	<u>East</u>	<u>Hawaii</u>	<u>Okinawa</u>	
Education	85	84	82	77	83
Counseling	87	86	85	78	85
Referral	65	61	62	62	62
Treatment	74	73	78	67	73
AA	51	50	62	56	52

TABLE 5-3

AWARENESS OF ON-BASE DRUG PROGRAMS FOR ALL MARINES
(Percent)

<u>Programs</u>	<u>Location</u>				<u>All</u>
	<u>West</u>	<u>East</u>	<u>Hawaii</u>	<u>Okinawa</u>	
Urinalysis	98	96	96	88	96
Education	82	80	79	70	79
Counseling	83	80	78	69	79
Referral	62	57	61	54	59
Treatment	65	61	69	65	62

Participation

Overall, 43 percent of all Marines in the population are estimated to have participated in drug education of some kind while in the Marine Corps. The level of participation was about the same at the major commands.

A greater percentage of those who used drugs during the past 12 months (50 percent) participated than did nonusers (41 percent). This is not surprising because all identified abusers are required to participate in some form of remedial education. Table 5-4 shows the participation rates for various kinds of drug education activities as well as the influence of those activities on drug use--not use or use less--as a consequence of participation. A large proportion of those who participated in most activities said they were influenced to use less, or not to start using drugs. These results suggest that if they can be encouraged to participate, most Marines will be influenced to reduce their use or not to use drugs at all.

Also included in this group of activities were "discussions with friends and co-workers (buddies)." Among those who used drugs in the past 12 months, discussions with buddies was the most popular and effective activity. That is, of the drug users, 38 percent talked about drug use with their friends and co-workers. Of these, 58 percent reported being influenced to use less.

Reading pamphlets or books about drug use was a popular form of participation in the drug education program. This seemed to be an effective way to keep people from using drugs.

Drug education programs suggest several activities that may help people to reduce their drug use or not to start using drugs (table 5-5). In our survey, work and sports were the most frequently mentioned (presumably as substitutes for drug use) and effective activities for reducing use or influencing people not to use drugs.

An essential step in developing effective drug education programs is to get Marines to talk among themselves about drug use. Most of the Marines who participated in programs were then influenced to reduce their use or not to start using drugs.

There are 13 other things that influence drug use (e.g., cost, fear of addiction). Thirty-four percent stopped using drugs for one or more of the 13 reasons (table 5-6). About three-fourths of those who stopped were self-motivated to do so, while the second most important influence for stopping drug use was fear of identification or detection by urinalysis.

DETECTION

Perhaps the most publicized and commonly known Marine Corps drug program is urinalysis. We saw that 44 percent of those who stopped using drugs in the Marine Corps did so out of fear of detection by urinalysis (table 5-6). This finding suggests that urinalysis is an effective deterrent.

TABLE 5-4

PARTICIPATION IN AND INFLUENCE OF DRUG
EDUCATION PROGRAMS FOR ALL MARINES
(Percent)

Activity	Drug use past 12 months			
	Used		Did not use	
	Participated	Influenced ^a	Participated	Influenced ^a
Talk with/by:				
Commanding officer	29	45	32	63
NCO	34	44	35	60
Chaplain	11	45	13	62
Drug education				
program personnel	36	50	38	58
Drug Enforcement				
Administration	22	45	28	64
representative	22	55	19	68
Former addict	38	58	28	68
Buddies				
Visual aid show	23	41	36	64
Literature	36	42	40	65

^aInfluenced to stop, not use, or use fewer drugs.

TABLE 5-5

ACTIVITIES MENTIONED IN DRUG EDUCATION PROGRAM
AND THEIR INFLUENCES ON DRUG USE FOR ALL MARINES
(Percent)

Activity	Drug use past 12 months			
	Used		Did not use	
	Mentioned	Influenced	Mentioned	Influenced
Religion	38	47	41	63
Hobbies	46	52	44	61
Sports	58	57	56	66
Other recreation	51	53	47	64
Yoga	15	33	13	38
Work	61	57	62	68

TABLE 5-6

INFLUENCES FOR STOPPING DRUG USE

Influence	Percentage of those who stopped using drugs ^a
Self	74
Treatment	3
Education	9
Religion	15
Mate	24
Unavailability of drugs	6
Cost	18
Fear of addiction	15
Fear of poor job performance	18
Fear of poor physical fitness	24
Fear of urinalysis identification	44
Busted	9
Drink instead	24

^aThirty-four percent of the Marines surveyed said they had stopped using drugs.

The survey included a number of questions designed to ascertain the deterrent value of several programs and institutions. Table 5-7 indicates that 67 percent of those who used drugs in the past 12 months reduced their use because of urinalysis. Only 9 percent of nondrug users indicated that urinalysis kept them from using drugs.

TABLE 5-7
DETERRENTS TO DRUG USE FOR ALL MARINES
(Percent)

<u>Deterrent</u>	<u>Users</u>	<u>Nonusers</u>
Urinalysis	67	9
Unit company/NCO	12	2
Buddies	11	2
MP	10	2
Naval Investigative Service	7	1
Punishment	33	6
Sniffer dogs	12	5

It is difficult to evaluate the deterrent value of the program based on the 9-percent response level of the nonusers. It could be argued that a deterrent such as urinalysis is effective mainly for people motivated to use drugs. Many who don't use and don't want to use drugs probably do not consider the consequences of use, and so would not see these deterrents as applying to them. Therefore, the "users" profile of responses is the better indication of the program's deterrent value. The deterrent value of urinalysis is closely linked with drug education. People need to be aware of the urinalysis program before it serves as a deterrent. (Although it is possible to learn about the program after one has been caught!)

Earlier, we talked about awareness of programs in general. Given that urinalysis is the most publicized program, it is interesting to discover when and how the Marines we surveyed learned about the urinalysis program. More E1-E5s (twice as many) learned about urinalysis after recruit training than before (table 5-8). As suggested in the previous discussion about deterrents, a large proportion of Marines, particularly drug users, learned about the program through personal experiences.

TABLE 5-8

SOURCES OF INFORMATION ABOUT URINALYSIS PROGRAM
(Percent within group)

Source	Use drugs	Pay grade	
		E1-E5	E6-06
Recruit training	No	17	5
	Yes	16	5
After training	No	37	70
	Yes	35	48
Buddies	No	28	11
	Yes	45	28
Chain of command	No	37	70
	Yes	35	48
Personal experience	No	37	36
	Yes	45	43
Recruiter	No	6	1
	Yes	7	4
(Know nothing)	No	9	3
	Yes	4	7

As expected, most of those in senior pay grades learned about the program after training and by the chain of command (48 percent). However, this represents only about half of the drug users, compared to 70 percent of the nonusers. A small fraction (7 percent) knew nothing about the program. It is hard to understand why even 3 percent of those in the E6-06 group knew nothing about urinalysis, even those who did not use drugs.

Detection Rates

Another way of evaluating a program such as urinalysis is by its detection rate. Of interest here is how many drug users urinalysis identifies. An associated issue is the incidence of incorrect detections, also called "false positives." These are people who are identified by the test as having used drugs, when in fact, they did not.

Urinalysis is responsible for the greatest proportion of identifications of drug users among the various methods the Marine Corps uses. Table 5-9 shows the proportion of Marines identified as drug users and the method by which they were initially identified. Overall, only 13 percent were identified. Of this 13 percent, the greatest fraction,

43 percent, were identified by urinalysis. Identification by someone else in the unit accounted for the next largest fraction of detections.

TABLE 5-9
METHOD OF INITIAL IDENTIFICATION FOR DRUG USE

<u>Method</u>	<u>Percentage of those identified</u>
Positive urinalysis	43
Medical exam	1
Commanding officer	5
Someone in unit	19
Civil law	2
MP	14
Self (forced)	2
Self (voluntary)	8
Forgot	6
(Percentage of Marines identified as users)	13

The relationship between identification (or detection) and actual use is shown in table 5-10. The first part of the table shows that of the 13 percent who were identified as drug users by the Marine Corps, only slightly more than half (7/13) claimed to have used any drugs at the time. If this claim were true, the false positive rate would be 46 percent.

Because most identifications were due to urinalysis, we looked at the relationship between "result of last urinalysis test" and actual use based on the survey responses. These data are also summarized in table 5-10. Of the 91 percent tested, about 4 percent were positive. (This compares to the 6 percent positive rate from 97,492 laboratory urinalysis tests conducted by the Marine Corps during the 3 months preceding the survey [5].) Of the 4 percent positives reported by respondents, again about half claimed they were not using drugs at the time.

A variety of factors could contribute to false positives. One source of these errors is misperception by the respondents themselves. For example, suppose urinalysis identified a Marine for marijuana use and the Marine had used drugs 7 days ago. But if the Marine believed that urinalysis only detects marijuana within, say, 3 days of its use, he might not have associated the detection with use during the past

week. Thus, he would indicate on the questionnaire that he was not using at the time.

TABLE 5-10

DETECTIONS AND DRUG USE FOR ALL MARINES
(Percent detected/identified)

<u>Used at time</u>	<u>Identified by any means</u>		
	<u>Yes</u>	<u>No</u>	<u>Total</u>
Yes	7	17	24
No	6	70	76
Total	13	87	100

<u>Used at time</u>	<u>Last urinalysis result</u>		
	<u>+</u>	<u>-</u>	<u>Total</u>
Yes	2	10	12
No	2	77	79
Total	4	87	91 ^a

^aNine percent not tested.

The likelihood that such a misperception would bias the false positive rate was investigated using the responses of those who did not use any drugs during the past 12 months. The results parallel those of all Marines. Two percent of this nonuser group also tested positive on their last urine test. Therefore, it seems unlikely that false positives were due to misperceptions of vulnerability to detection and when drugs were used.

Another kind of misclassification apparent in these data is the proportion who tested negative and, indeed, were using drugs at the time. These errors are also called "false negatives." Of the 87 percent who tested negative, 10 percent said they were using drugs but were not detected, producing a false negative rate of about 11 percent (10/87). An alternative way of describing the error rate in urine testing is to compute the proportion of total misclassifications (2 + 10 percent) that were false positives. This is the proportion of

errors that can be considered an inequity to individuals who are non-users. It amounts to about 17 percent (2/12). Thus, in spite of the high false positive rate, errors in the system tend to favor the individual rather than the institution. If an error is made, it is more likely that a user will not be identified.

A more detailed breakdown of the detection and reported drug use data by major command is shown in appendix H of volume II. A large amount of variation among false positive rates is observed, varying from 77 percent for those in the Base/West group, to 42 percent for those in the Division/West group. Overall, Base personnel account for the highest false positive rate (74 percent) and Division personnel the lowest (47 percent). With respect to location, those from the East stand out with a 62 percent false positive rate. These results also suggest a negative correlation between percent using and percent false positives, but a positive correlation between use and overall detection rates. The higher the proportion of users within a subpopulation, the higher the urinalysis detection rate and the lower the false positive rate.

To further investigate the relationships among urinalysis variables, we next looked at the distribution of the reported number of urine tests given in the past 12 months (table 5-11) and the average number of tests given to Marines at each location and by unit type (table 5-12). On average, each Marine received 2.7 tests in the 12-month period. There is a correlation between number of tests, detection, and usage rates, suggesting the following general picture:

- Urinalysis detects drug users.
- The more users and the more urine tests given, the higher the detection rate.
- But, along with low detection rates comes high false positive rates, with a higher probability of making a false detection per test.

TABLE 5-11

NUMBER OF URINE TESTS GIVEN IN PAST 12 MONTHS

<u>Number of tests</u>	<u>Percentage of population</u>
9 or more	4
6-8	6
3-5	28
1-2	47
None	15

TABLE 5-12

AVERAGE NUMBER OF URINE TESTS
GIVEN IN PAST 12 MONTHS, BY COMMAND

<u>Unit type</u>	<u>Location</u>				<u>Total</u>
	<u>West</u>	<u>East</u>	<u>Hawaii</u>	<u>Okinawa</u>	
FSSG	4.0	2.7	3.6	1.8	3.0
Division	2.5	2.7	3.0	2.4	2.6
Air	2.8	2.2	2.3	2.0	2.4
Base	3.1	2.1	3.2	1.8	2.6
Total	2.9	2.6	3.0	2.1	2.7 ^a

^aStandard deviation is 2.4.

This pattern of results suggests something is amiss in test procedures or the way the tests are administered. The reasons large proportions of users were not detected by urinalysis is the subject of the next section.

Problems in Detection

Of those who were drug users, 39 percent were not tested while they were using drugs. Many of those who were tested while using but came up negative (37 percent) did not know why this happened. About 20 percent somehow "cheated" on the test (table 5-13). These results help explain why 10 out of 12 users were not detected on their last urine test, but they do not fully explain the problems in detection.

TABLE 5-13

REASON NOT DETECTED ON LAST URINE TEST

<u>Reason</u>	<u>Percent undetected and using drugs</u>
Not tested	39
Excused absence	3
Unexcused absence	1
Faked sample	6
Ate something to foul up test	14
Don't know	37

REHABILITATION

The survey asked Marines to indicate if they had had professional counseling or treatment for a drinking or drug problem since entering the Marine Corps. Responses to these and related questions can be used to evaluate several aspects of drug and alcohol rehabilitation programs. Of particular interest is the relative effectiveness of the programs for reducing or eliminating substance abuse.

Alcohol Rehabilitation

There were 1,301 Marines from the sample who indicated by their response to the following question that they had received professional help for a drinking problem.

Since entering the Marine Corps, have you ever had professional counseling or treatment or joined a group (such as AA) to get help for a drinking problem? Where did you get help since entering the Marine Corps? What type of treatment or help did you get? Who staffed the program? Are you now using alcohol more, about the same, or less than you did before you got help?

By relating program participation to subsequent amounts of drinking we evaluated the effectiveness of the programs. About 400 people participated in more than one program. If a person indicated participation in several programs, a common outcome was associated with each of these programs.

Table 5-14 shows the distribution of post-rehabilitative drinking levels for individuals who participated in particular programs. We used the percentage of participants subsequently drinking less or not at all as the overall measure of "success." The table shows that the combined inpatient and outpatient programs had the highest success rate (84 percent), while "other" (unidentified) programs had the lowest (56 percent). Ignoring program type, 64 percent of the 1,301 individuals who indicated that they had participated in any programs subsequently stopped drinking or drank less.

We then looked at several characteristics of programs and participants to see if they could be used to distinguish successful from unsuccessful rehabilitation experiences. We excluded from the analysis people who did not answer the relevant questions. This resulted in a sample of 1,051 people. Despite this attrition, we considered these people representative of the 1,301 people, because the distribution of drinking levels subsequent to program participation was almost identical for each program in the full and edited samples (table 5-15).

TABLE 5-14

SUBSEQUENT DRINKING LEVELS BY PROGRAM TYPE
(Percentage of program participants)

Subsequent drinking behavior	Program			
	Inpatient	Outpatient	In/Outpatient	AA Other
Don't drink/anymore	40	18	34	29 15
Drink less	41	44	50	46 42
(Subtotal)	(81)	(62)	(84)	(75) (56)
Drink same	6	8	4	5 6
Drink more	13	30	12	20 37
Number of people	212	346	131	547 444

TABLE 5-15

SUCCESS RATES FOR ALCOHOL REHABILITATION PROGRAMS

	Program					
	<u>In</u>	<u>Out</u>	<u>In/Out</u>	<u>AA</u>	<u>Other</u>	<u>Combined</u>
Complete data						
Number of observations	212	348	131	547	444	1301
P(Success)	.81	.62	.85	.75	.57	.64
Partial data						
Number of observations	170	271	106	417	361	1051
P(Success)	.81	.61	.86	.76	.58	.66

We used multiple regression analysis to estimate the marginal effect of the characteristics shown in table 5-16 on the dichotomous outcome measure (successful or unsuccessful rehabilitation experience). Separate analyses were performed for each rehabilitation program. These were used to determine if certain discriminating characteristics were peculiar to specific programs, or tended to apply across the board. Because the results were similar, we pooled the 1,301 respondents to determine the net effect of a particular characteristic on the overall rehabilitation success rate. The results of these analyses are summarized in table 5-16. We show only those characteristics, or variables, that tend to differentiate statistically between successful and unsuccessful outcomes at the 5-percent level of significance.

The results indicate that certain characteristics that are good discriminants of success in general fail to show strong relationships to specific programs. The overall level of discrimination is indicated by the coefficient of determination (R^2). The characteristics shown explain about 19 percent of the variability in the outcome measure.

The contribution of a particular characteristic to success in a specific program is indicated by a plus or minus. A plus indicates that the characteristic contributes to success, while a minus indicates a negative contribution. Two numerical values are shown, along with the sign of the significant variables. Both values can be used to estimate the marginal contribution of the variables to an individual's probable success rate in a rehabilitative program. For example, being married tends to contribute to the probability of success. All other things being equal, the probability of successful rehabilitation for a married person is .08 greater than that of a nonmarried person. The regression coefficients, b , indicate the difference in the probability of success for those with and without the characteristic represented by the variable associated with the coefficient.

TABLE 5-16

PATTERNS OF CHARACTERISTICS SIGNIFICANTLY CONTRIBUTING TO SUCCESS IN
ALCOHOL REHABILITATION PROGRAMS^a

Characteristic	In		Out		In/Out		AA		Other		Combined	
	b	P	b	P	b	P	b	P	b	P	b	P
Inpatient											.09	.74
Outpatient												
In/outpatient											.04	.67
AA											.12	.73
Military							-.09	.69				
Civilian			-.21	.44								
FSSG												
Division							-.09	.69			-.07	.61
Air	-.19	.67										
Pay grade												
Age			.01	.63			.01	.77	.02	.60	.01	.67
Male												
White												
Black												
Hispanic												
High-school graduate			-.17	.60	.22	.89			-.16	.49		
Single												
Married			.13	.69							.08	.70
Number of dependents												
Health	.13	.84	.09	.63	.13	.87	.08	.77	.11	.60	.08	.68
Crackdown							-.03	.76				
Fitness												
Job performance												
Look bad	.06	.83					.08	.78			.04	.67
R ²	.19		.14		.15		.23		.15		.19	
Proportion successful	.81		.61		.86		.76		.58		.66	

^aAssigned table entries indicate direction of significant (p = .05) contribution.

This finding implies that the probability of success P of a married person would be .70, in contrast to .62 if unmarried. The P measure shown in table 5-16 was computed by applying the regression coefficients to the means of the variables in the equation. When evaluating the probability of success associated with a particular variable, we used the mean of successful people on that variable for the calculation. For example, the contribution of age to success is .01 for each year of age. Applying this coefficient to the mean age of successful people, 27, and using the overall means for the remaining variables, gives a value of .67 for 27-year-olds. In a similar manner, we could also calculate the probability of success at the average age (24) of unsuccessful people. This would be .64.

A definite pattern emerges from these results. Successful rehabilitation tends to be associated with an individual's belief that "drinking excessive amounts of alcohol is dangerous to one's health," and that "a Marine who drinks too much makes the entire Marine Corps look bad." It is difficult to say whether these attitudes become internalized as a result of the rehabilitation experience or are beliefs held prior to entering a program.

Age is an important discriminant of success in most programs. Generally, older people tend to have a higher rate of success.

Among the unit types, Division personnel tended to do worse than others in the programs, particularly inpatient programs where their probability of success was .67 versus .86 for those from non-Division units.

The following conclusions can be drawn from these data:

- People participating in any kind of alcohol rehabilitation program tend to drink less, or not at all, after treatment.
- Rehabilitation programs differ in their effectiveness, as seen by their success rates. The programs with inpatient facilities tend to have the highest success rate. However, AA tends to have a higher success rate than other kinds of outpatient programs.
- Positive attitudes toward not drinking contribute to successful outcomes for all kinds of alcohol rehabilitation programs.

Drug Abuse Treatment

From our data, 502 survey respondents indicated they had received some kind of rehabilitation for drug abuse while in the Marine Corps. Fifty-three percent of these individuals responded that after receiving help they no longer use any drugs.

The responses of those who stopped using drugs after receiving help were compared on a variety of items to those who continued to use. The items labeled "reasons for stopping drug use" (motivation for entering program) were used as predictors of success. We believe the responses to these items are indicative of reasons for entering a drug rehabilitative program. However, a motive for joining the rehabilitative program may have been a desire to stop using drugs.

The results of the analysis are shown in table 5-17. The probability of success measures shown in the table indicate the probabilities that Marines with (+) and without (-) the characteristic indicated will have a successful treatment outcome. For example, being self-motivated to stop using drugs contributes positively to the overall success rate. Self-motivated Marines have an expected probability of success of .66 versus .40 for those who are not self-motivated. Again, note the differential between these two numbers is equal to the value of the regression coefficient.

The results can be summarized as follows. If a Marine entered a rehabilitation program because drugs were not available, he was less likely to stop using drugs than if he entered the program for some other reason (.36 versus .56). On the other hand, people who entered a program because of self-motivation (i.e., "because I decided to stop," or counseling, fear of detection by urinalysis, or because they were "busted") tended to have a higher probability of success than those who were not influenced to enter programs for those reasons.

People who received "Marine Corps help," in contrast to "civilian help," for a drug problem had a lower probability of success (.51 versus .66).

Attitudes toward drug use also contribute to successful outcomes in drug rehabilitation programs. Those who disagreed with the Marine Corps policy of "no marijuana use under any circumstances" tended to have a lower probability of success (.50) than those who agreed (.57) with the policy. The results also indicate that those of Hispanic origin are less likely to stop using drugs than those of other ethnic groups (.38 versus .55).

TABLE 5-17

VARIABLES RELATED TO DRUG REHABILITATION OUTCOME

Variable	Regression coefficient	Probability of success	
		+	-
Reason for stopping use			
Self	.26	.66	.40
Counseling	.20	.69	.49
Urinalysis	.16	.63	.47
Busted	.15	.65	.50
Unavailability of drugs	-.19	.36	.56
Attitudes			
Agree with Marine Corps no-drug-use policy	.07	.57	.50
Believe marijuana use should be legal	-.04	.55	.51
Shouldn't use marijuana while on duty			
Others			
Hispanic	-.17	.38	.55
Marine Corps versus civilian help	-.15	.51	.66
(Constant)	.70		
$R^2 = .45^a$			

^aThe proportion of the variability (R^2) in the success measure accounted for by the independent variables was .45.

Marine Corps Inpatient Drug Rehabilitation

The Marine Corps uses the drug rehabilitation facility operated at the Miramar Naval Air Station. Each year about 200 Marines are treated there for drug dependence. Because this is a scarce resource, an extensive screening procedure is used before a Marine with a drug problem is sent to Miramar. Essentially, the Marine must be considered likely to complete the therapeutic program, return to his unit, and productively complete his tour of duty. The Marine Corps uses the following criteria for a successful rehabilitation: remain drug free, stay out of trouble after returning to unit, and, eventually, be recommended for reenlistment. During the past several years, about 82 percent have completed the program, and about 70 percent of those who returned to their units

6 months later. Thus, the program boasts a long-term success rate of about 57 percent.

Unfortunately, in the survey we did not ask questions that would enable us to identify participants in the Miramar program. Nevertheless, the success rate from the Miramar program can be used to place the survey data in perspective. While the success criteria for the Miramar program are not the same as the single criterion applied to the survey data, i.e., "no more drug use," the similarity of the results suggests that the survey data corroborates the Miramar statistics.

PERCEPTIONS ABOUT PROGRAMS

Keeping in mind Marines' experiences with urinalysis, we now look at the "trust" placed in test results and other perceptions.

The data in table 5-18 show the proportion of Marines in all pay grades at different locations and by unit type who trusted the test results. The data are also broken down by whether the respondent used any drugs in the past 12 months. Overall, only 32 percent of the combined user and nonuser groups trusted the results. Users trusted them a lot less than nonusers, and, although not shown in the table, E1-E5s trusted them less than E6-06s (26 versus 62 percent). A large part of the variation in the numbers can be accounted for by differences in drug use levels and in the proportion of false positives in the groups.

TABLE 5-18

LEVEL OF TRUST IN URINALYSIS RESULTS FOR ALL MARINES (Percent)

<u>Unit type</u>	<u>Use drugs</u>	<u>Location</u>				<u>Total</u>
		<u>West</u>	<u>East</u>	<u>Hawaii</u>	<u>Okinawa</u>	
FSSG	No	34	30	33	48	35
	Yes	15	15	12	22	16
Division	No	43	36	39	40	40
	Yes	16	11	13	19	14
Air	No	45	36	35	42	40
	Yes	21	9	12	21	16
Base	No	51	44	48	60	49
	Yes	17	12	12	17	15
Total	No	43	36	38	44	40
	Yes	17	12	13	20	15

Program Emphasis

The previous analyses of items discriminating drug users from nonusers showed that these two groups differed with respect to the desired degree of emphasis the Marine Corps should place on elements of the drug program. Table 5-19 recapitulates those findings. The pattern seen here is that drug users felt there should be less emphasis on detection and discipline than nonusers. Note, however, that about half of the drug users felt that at least some detection and discipline should be emphasized.

Perceived Effectiveness

The survey asked Marines if they felt that the drug education program at their installation was effective. With a few exceptions, the major differences observed were between the two pay grade groups. Table 5-20 summarizes the responses to the "perceived effectiveness" question by pay grade group. While a significant proportion (38 percent) of Marines didn't know, the majority of E1-E5s who cared to make an evaluation felt that the education program was not effective. Those in the senior pay grade group were about evenly split on the matter.

TABLE 5-19
EMPHASIS ON ELEMENT OF DRUG PROGRAM

<u>Element</u>	<u>Drug user</u>	<u>Degree of emphasis</u>				
		<u>Heavy</u>	<u>Some</u>	<u>Little</u>	<u>None</u>	<u>Uncertain</u>
Education	No	64	23	3	1	9
	Yes	52	30	5	5	9
Detection	No	58	23	6	4	10
	Yes	18	30	20	22	10
Discipline	No	62	22	5	3	9
	Yes	23	36	18	13	9
Treatment	No	68	16	4	3	9
	Yes	52	27	6	6	9

TABLE 5-20

PERCEIVED EFFECTIVENESS OF DRUG EDUCATION PROGRAM
(Percentage of pay grade group)

	<u>Effective</u>	<u>Not effective</u>	<u>Don't know</u>
E1-E5	17	43	40
E6-06	33	36	31
Total	20	42	38

Choice of Help for a Drug Problem

Where would a Marine with a problem go for help for a drug problem? Survey respondents generally would turn to their spouses or mates (table 5-21). The biggest difference between users and nonusers was in the reliance on authority figures for help. A greater proportion of nonusers would go to their Commanding Officer, senior NCO, and drug program advisor. Drug users tended to favor civilian friends and Marine Corps buddies.

Note that only 37 percent of those using drugs in the past 12 months indicated that they would seek any kind of help. This response may be an indication that many drug users, who are mainly marijuana users, feel that they do not have a problem, do not need help, or would not consider these sources of help. Also, keep in mind that many users indicated that drug use did not affect their ability to perform their jobs, nor did they perceive any serious consequences of drug use. These perceptions suggest that drug education in the Marine Corps is still at a low level.

TABLE 5-21

CHOICE OF HELP FOR DRUG PROBLEMS FOR ALL MARINES
(Percent)

<u>Source</u>	<u>Nonuser</u>	<u>User</u>
Commanding officer	17	8
Other officer	9	5
Senior NCO	20	14
Other Marine	11	17
Religious leader	28	23
Civilian friend	11	21
Civilian counselor	12	13
Military counselor	11	7
Mate	34	37
Exemption representative	14	11
Drug program advisor	28	20

CHAPTER 6

IMPLICATIONS

The 1983 Marine Corps Alcohol and Drug Survey produced a variety of useful information. We were able to use it to estimate the prevalence of alcohol and drug use in many subpopulations within the Marine Corps. Patterns of responses to various questions have provided insights into circumstances, motives for, and consequences of Marines' nonmedical use of alcohol and drugs. Using other data from the survey, we were able to evaluate certain aspects of Marine Corps programs that deal with substance abuse. In this chapter we discuss some of the implications of these findings. The discussion centers on improving current programs and developing and administering future surveys of alcohol and drug use.

CURRENT PROGRAMS

While the urinalysis program is the greatest deterrent to drug use in the Marine Corps, about 13 percent of recent test results showed a discrepancy with claimed use patterns. Most of the discrepancies were for drug users who went undetected, but nearly half of those with positive results claimed not to be using drugs. Several steps can be taken to improve this situation: verify survey results, improve the urinalysis program, make good programs better. Many of the suggestions that follow could also be used to improve other aspects of the Marines' alcohol and drug programs.

Verifying Survey Results

While we believe that the survey results are accurate, remember that they represent opinions and are subject to errors of memory and false self-perceptions of behavior. An independent effort could validate answers using ancillary data.

To the extent that local commands are responsible for autonomous operation of their education, counseling, and urine testing programs, they could be tasked with maintaining a record of these activities. Examples of data that could be maintained to validate relationships shown in this study include:

- Labor hours of counseling
- Number of Marines counseled
- Number of participants in education programs
- Amount of time spent in program per participant

- Frequency of participation
- Numbers and results of urine tests administered (by reason and outcome)
- UCMJ actions related to alcohol and drugs.

These data could be used to relate changes in drug use as measured by actual urinalysis results and UCMJ actions to the level of effort in programs by administrators and participants.

Improving the Urinalysis Program

Perhaps the most important findings of this study worth following up were the discrepancies between test results and reported use and lack of trust in urinalysis testing. Two steps could be taken to improve this situation. One centers on quality control, the other on using urinalysis results to gauge the extent of drug use in the Marine Corps.

Quality Control

How accurate are the urine test results? DoD sponsors a urinalysis quality control program managed by the Armed Forces Institute of Pathology. The institute sends urine samples with known content to various commands within each service. Each test sample is encoded at the institute with a bogus social security number. The commands are instructed to include the test samples with their own for processing at laboratories.

Test results indicating the content of each sample are reported by message to the commands and the institute. The institute then compares the laboratory results against the known content of the samples and publishes a quarterly report.

We examined the report covering the period during which the survey was administered. The results from the tests run by the five Navy laboratories used by the Navy and Marine Corps are summarized in table 6-1.

The error rate was very low for the samples tested. The only errors reported were some false negatives, in which about 2 percent (1/67) of the samples containing drugs tested negative. There were no false positives. Note, however, that 20 percent of the samples were not tested. These are samples that the institute sent to the commands, but the laboratories never received. We do not know what happened to the missing samples because there is no audit trail for their distribution from the commands.

The results of the tests suggest that the laboratories do a good job of analyzing urine samples. The few errors again favor the individual: they fail to indicate that drugs were used.

TABLE 6-1

RESULTS FROM URINALYSIS QUALITY CONTROL TEST
(Percentage of samples)

<u>Test result</u>	<u>Sample contents</u>		<u>Total</u>
	<u>Drugs</u>	<u>No drugs</u>	
Positive	66	0	66
Negative	1	13	14
Not tested	8	2	20
Total	85	15	100

Source: Reference [7].

Urinalysis is also done in the field, using semiautomated systems and port-u-kits. All positive field results must be confirmed by a laboratory test. About one-third of current urinalysis testing is done in the field, and only 65 percent of the positive results from the field are later confirmed in the laboratory. These discrepancies may be explained by several factors:

- Differences in test procedures. Field equipment uses different chemical tests than laboratories.
- Differences in the sensitivity levels of field equipment. A positive result on one unit may be negative on another.
- Logistics errors, such as incorrect labeling of test samples, bottle switching, loss of samples.

However, because the laboratory test results are likely to reject an erroneous field result, the individual again benefits.

These results suggest that urine testing policy is aimed at minimizing false positives and not identifying a Marine as a drug user without strong evidence. Unfortunately, many Marines do not feel this way. Most do not trust urinalysis results. Perhaps their trust is influenced by their perception of a high false positive rate that can be partially accounted for by differences in field screening and laboratory test results. Perhaps they are suspicious of the potential errors inherent in getting urine samples to and from the laboratories. Although no actions are supposed to be taken based on field test results

alone, perhaps some Marines are disciplined before these results are confirmed.

Several steps could be taken to regain the trust of many Marines while maintaining the deterrent effect of urinalysis. These include: reducing the discrepancies between field and laboratory test results, ensuring that urine samples are properly labeled, and publicizing the fact that individuals are given the benefit of any doubt before being identified as drug users.

Reducing Discrepancies

The Marine Corps could assume responsibility for its own quality control of field screening equipment testing. Samples with known content could be tested and sent for verification to several laboratories. Test results could be compared across types of equipment and laboratories to identify any discrepancies. If multiple laboratory results for a field test confirm each other but different field screening systems have different error rates, this could indicate different levels of sensitivity, calibration problems, or procedural problems at local commands.

In any case, Marines should not be told the results of field testing. Known discrepancies reduce credibility.

Labeling Samples

Logistics problems involving mislabeling of samples, losses, or switching could be investigated by sending duplicate urine samples to the laboratories and noting any discrepancies in the results.

Emphasizing Equity in Testing

Drug education programs should emphasize that the individual gets the benefit of the doubt in urine testing.

Using Urine Test Results as a Barometer of Overall Usage Rates

It is difficult to use results from urine tests to measure overall drug use in the Marine Corps. For urine tests to be a valid indicator, the Marines to be tested must be selected randomly, much as participants were selected for the 1983 Survey. This is not an easy task. Even with a random sample, the very existence of the testing program could alter the results because Marines could get word of the program and change their patterns of use to avoid detection.

Making Good Programs Better

The analysis suggested that participants in drug and alcohol education programs were strongly influenced to reduce their use of

drugs. But only about 40 percent participate in education programs. An obvious help would be to expose more Marines to these programs. Visual aid shows, books and pamphlets, and group discussions among peers are effective in reducing drug use, and they are relatively inexpensive.

The study results suggested that sports and work tend to serve as substitutes for drinking and drug use. The implication here is that if there is little else to do, drinking at the local club, where alcohol is relatively inexpensive, is one way to spend one's off-duty hours.

While we are not suggesting limiting access to the clubs, we are suggesting that the availability of other leisure activities be investigated.

FUTURE SURVEYS

The Marine Corps wants to conduct more alcohol and drug use surveys in the future. Lessons learned from the 1983 Survey could be applied to improve the development and administration of these surveys. We explore several possibilities. For development, these areas can be broken down to anonymity of responses, use of civilian administrators, and scheduling of survey sessions.

Anonymity

While administering the survey in the field, we talked with many Marines about the accuracy of responses. We were concerned that survey participants might not be honest or willing to answer the questions, or perhaps would not remember some of the behavior alluded to in the questionnaire. The general impression, however, was that most Marines would be candid if they could be convinced that their responses would be kept anonymous, would not be seen by others at their command, and would not result in disciplinary action against their unit. Several steps were taken to ensure the anonymity of respondents, and these steps should be continued in future surveys.

Civilian Administrator

In each command a civilian unattached to the command administered the survey, explained its purpose, and expressed a convincing guarantee of anonymity and assurance that no repercussions would result from "frank and honest" answers. This approach seemed to work. Casual discussions with participants suggested that most of them believed their responses were anonymous and that they answered the questions honestly. However, several factors worked against us.

At many locations, facilities for administering the survey were far from ideal. Sometimes dark movie theaters or crowded, noisy mess halls were used. Such facilities either made it difficult to proctor the

session or made it impossible for one Marine to answer questions without his neighbor being able to see the answers. Oftentimes we were told that these were the only facilities available.

Scheduling

Perhaps the biggest problem we encountered was scheduling large numbers of Marines for the survey. Local commands did the scheduling under the constraints we placed on them. To avoid prolonging the administration period, we tried to minimize the number of administration sessions while maximizing the number of those surveyed per session. The commands did such an excellent job that crowded conditions resulted. Future efforts should aim at smaller groups for administration. Although this approach can be more expensive, more accurate results from the survey should accrue. Smaller groups can be achieved by either increasing the number of sessions, thereby prolonging the total administration time, or decreasing the sample size. Decreasing the sample size is one of the possibilities we look at next.

Sample Size

Several factors contributed to the need for the large sample used in the 1983 Survey. One was the large number of individual subpopulations, or strata, we used.

An early objective of the study was to assemble a large data base to allow "customized" reporting of alcohol and drug use for the nine unit types by location and pay grade level. That involved 72 subgroups (9 unit types x 4 locations x 2 pay grade levels). However, we were able to aggregate the nine unit types into four. If our initial stratification plan had been based on only four unit types we would have needed a sample about 4/9ths as large. The key to sample size requirements is the number of subgroups.

As discussed earlier, we oversampled by about 40 percent to compensate for "no shows." Based on our experience, this planning factor could be cut in half.

A third factor influencing sample size is the actual prevalence of the phenomenon being studied. The closer the overall prevalence rate is to 0.5, the larger the required sample. Because we were measuring many things with different prevalence rates, we were conservative and based the sample size on a value of 0.5. If we had assumed an overall prevalence rate of, say 0.35, we could have reduced the required sample size by 10 percent.

Only 13,000 Marines would have been required if we had drawn a sample based on four unit types, a 20 percent "no show" factor, and a 0.35 prevalence rate.

A rough approximation for determining the sample size requirement is:

$$n_0 = \frac{g (z^2 pqf)}{2} , \text{ and } n = \frac{n_0}{1 + \frac{n_0 - 1}{N}} ,$$

where:

n_0 = initial approximation of sample size

n = required sample size

g = number of subgroups ($4 \times 4 \times 2 = 32$)

z = size of confidence interval (95% = 1.96)

p = prevalence rate (0.35)

q = $1-p$ (0.65)

f = overage factor (1.2)

d = level of sensitivity in detecting differences in measured rates (0.05 used)

N = population size.

A final factor to be considered is our ability to use results from very detailed breakdowns of the population. The $9 \times 4 \times 2$ subgroups sampled make it possible to look at interactions of the data for virtually all combinations of strata. For example, we could have compared marijuana use by E1-E5 personnel in Infantry units at Camp Lejeune with that of E6-O6 personnel from Air units on Okinawa. While we made a few comparisons at this level, we generally looked for more global effects by comparing larger aggregates of Marines such as Air versus Division, or East versus West. To the extent that information about usage rates at the marginal level of unit type, location, or pay grade is sufficient, sample size requirements could be reduced again by a factor of four.

Questionnaire Length

Analyses explained in appendix F suggested there was considerable redundancy in the questionnaire. Future surveys could select only those items that were found to measure factors of interest.

We used a variant of this approach in selecting items for inclusion in the regression analyses presented in the report. We used factor analysis to determine groups of items measuring the same thing. The item with the highest coefficient on a particular factor was considered to correlate highest with the factor. Therefore, a single item was used in lieu of several to represent the factor. This technique, used to describe the structure of the current questionnaire, could also be a data reduction technique for future surveys.

The survey could also be improved by shortening the questionnaire.

Compatibility

A paradox results from improving the current survey in the two ways just mentioned. It is related to compatibility with other surveys.

In one sense any changes to a survey create incompatibilities with earlier ones. Purists will argue that results can be compared only when the measuring instruments are identical. The paradox is that as we improve the instrument designed to measure trends in alcohol and drug use, we are less able to measure use in exactly the same way, and faulty comparisons may result. A possible solution is to use both the original and improved items on which the trend is measured in the same questionnaire. This approach would allow the improved item to be calibrated relative to the original. Then the improved item could be used in future surveys.

If the Marine Corps wants to incorporate results from the Worldwide Alcohol and Nonmedical Drug Use Surveys to measure changes, a link must be established. The link should be the inclusion of equivalent items for establishing the trend. By equivalent items we mean those to which the same proportion of a population respond in a like manner, i.e., the items also have equal mean values. Thus, improved items could be used if the original and improved items both result in the same estimated prevalence rates for the same or similar groups of Marines.

In sum, current programs could be enhanced by verifying survey results, improving the urinalysis program, and making good programs better. Future Marine Corps surveys of alcohol and drug use could be improved by reducing the sample size, shortening the questionnaire, and linking items used to measure trends to items from other surveys.

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