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CHARACTERISTICS OF MULTI-DRUG ABUSE INCIDENTS AND ABUSER POPULATIONS

Drug Enforcement Administration - U.S. Department of Justice - Washington, D.C. 20537

CHARACTERISTICS OF MULTI-DRUG ABUSE INCIDENTS AND ABUSER POPULATIONS

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ABSTRACT

Data on drug abuse incidents for single drugs and combinations of two or more drug substances were analyzed to identify and compare both the drugs most frequently involved and the characteristics of the abuser populations. For the initial period of the Drug Abuse Warning Network (DAWN I), more than 1000 different substances were reported, and the 50 most frequently cited drugs accounted for the large majority (89%) of the more than 35,000 multi-drug reports. The largest pharmacological class among them was depressants (23 out of 50), with most (34 out of 50) being substances controlled under the CSA of 1970.

Overall, for the most frequently appearing drugs, more than 40% of their appearances were in multi-drug incidents. Analyses indicated that the proportion of multi-drug mentions among these substances was negatively correlated with relative frequency of abuse; that the average age of abusers and the severity of multi-drug incidents tended to increase progressively with the number of drugs involved; and the greater numbers of drugs tended to involve progressively greater proportions of whites than blacks, but not generally greater proportions of males than females. Such demographic patterns were also compared for specific drugs in progressively larger multi-drug combinations. Implications of the methodologies

are discussed for validation of these relations and for evaluation of long-term trends in abuse patterns.

Introduction:

When people abuse a drug, they often abuse it in conjunction with other drugs, rather than just one at a time. The reasons for such multi-drug abuse may vary. People may abuse several substances together because they want to enhance or modify the effects of one drug alone, or because their sources only supply the drug to them in a form that is combined with one or more other drugs, or for any of a great many other possible reasons that reflect the particular substances, and people, and circumstances. Overall, multi-drug abuse represents a very large and hazardous part of our nation's drug abuse problem. Data emerging from such primary referral and treatment facilities as crisis centers and hospital emergency rooms serving the general population indicate that multi-drug abuse incidents account for almost half of the reported uses of the most frequently reported drugs, and that these multi-drug incidents tend to be more hazardous than those involving just single drugs.

This paper briefly summarizes an exploratory study of nationwide patterns of multi-drug abuse incidents from two broad aspects: the drugs and the people who take them. It

summarizes the overall patterns found for the substances that were most frequently reported singly and in multi-drug combinations, and some of the characteristics of the abuser populations, during the initial phases of the Drug Enforcement Administration's Drug Abuse Warning Network (DAWN) system.

For the purposes of these analyses, the terms "drug abuse" and "multi-drug abuse" are defined as follows: (1) Drug abuse is the non-medical use of a chemical substance because of dependence, or for psychic effects or self-destruction. This includes licit and illicit substances, and sources. (2) Multi-drug abuse refers only to the number of drugs involved in an incident and should be distinguished from the term "poly-drug abuse," which has recently been applied to the non-medical use of all non-opiate drugs except alcohol and marihuana. Multi-drug abuse is simply the non-medical use of any two or more drugs, either taken simultaneously or so closely in time that the effects of the first drug have not worn off when the second and later drugs are taken, so that their effects interact or combine in some way.

Data Base:

The data and analyses presented here represent findings from the initial developmental and operational phases of DEA's Project DAWN, over the 8-month period from September 1972, through April 1973. The data covered incidents re-

ported each month by a network of 320 facilities located in 38 Standard Metropolitan Statistical Areas distributed throughout the nation. They represent abuse incidents within the sample population from these types of facilities: hospital emergency rooms and in-patient units, medical examiners, student health services and crisis centers; but do not cover incidents handled solely by private physicians. Within these general populations, they essentially reflect the unsuccessful drug abuse incidents; that is, the ones in which the abuser and his (or her) associates sought help, or which resulted in a drug-related death. Since the hidden abuse incidents in which reactions were minimal, or in which the abuser successfully avoided detection, may not necessarily exhibit these same patterns, it would be unwise to attempt to directly extrapolate the present patterns to them.

In the following sections, we will discuss the data and analyses in terms of their possible implications for both the drug phenomena themselves and for the methods that may be applied to assessing and controlling the problems they present.

Single vs. Multi-Drug Abuse:

Our primary objectives for the present study were to explore how single and multi-drug abuse patterns might involve similar or different substances or abuser populations, in order to gain a better understanding of some of the parameters

of the overall abuse problem and translate this knowledge into better countermeasures.

Figure 1 summarizes the most frequently abused drugs reported within the DAWN I period, and how their overall frequencies of occurrence broke down into single and multi-drug incidents. Alcohol is also a very much abused drug, but is omitted from most of the analyses reported here since the DAWN system did not gather data on alcohol incidents where no other drugs were involved. However, alcohol may appear as part of the multi-drug combinations in this figure. The data showed that most drugs of abuse contribute to multi-drug incidents, except for a very small number of substances. Overall, from the more than 1000 substances reported, over 66% appeared in combination with one or more other drugs, with more than 20% appearing only in combination and never in single abuse episodes. The remaining substances, those which appeared only alone and never in conjunction with other drugs, represent only a small fraction of the total drug mentions (less than 0.7%)

Many forms of exploratory analysis were tested to evaluate how the data might reflect differential patterns of single and multi-drug abuse. Some of them stimulated lines of inquiry we are attempting to follow up on in later DAWN data. Among them, in order to assess the degree to which the same drugs might tend to be involved in both types of abuse, we correlated the single and multi-drug reports for the top

DAWN I SINGLE & MULTI-DRUG INCIDENTS

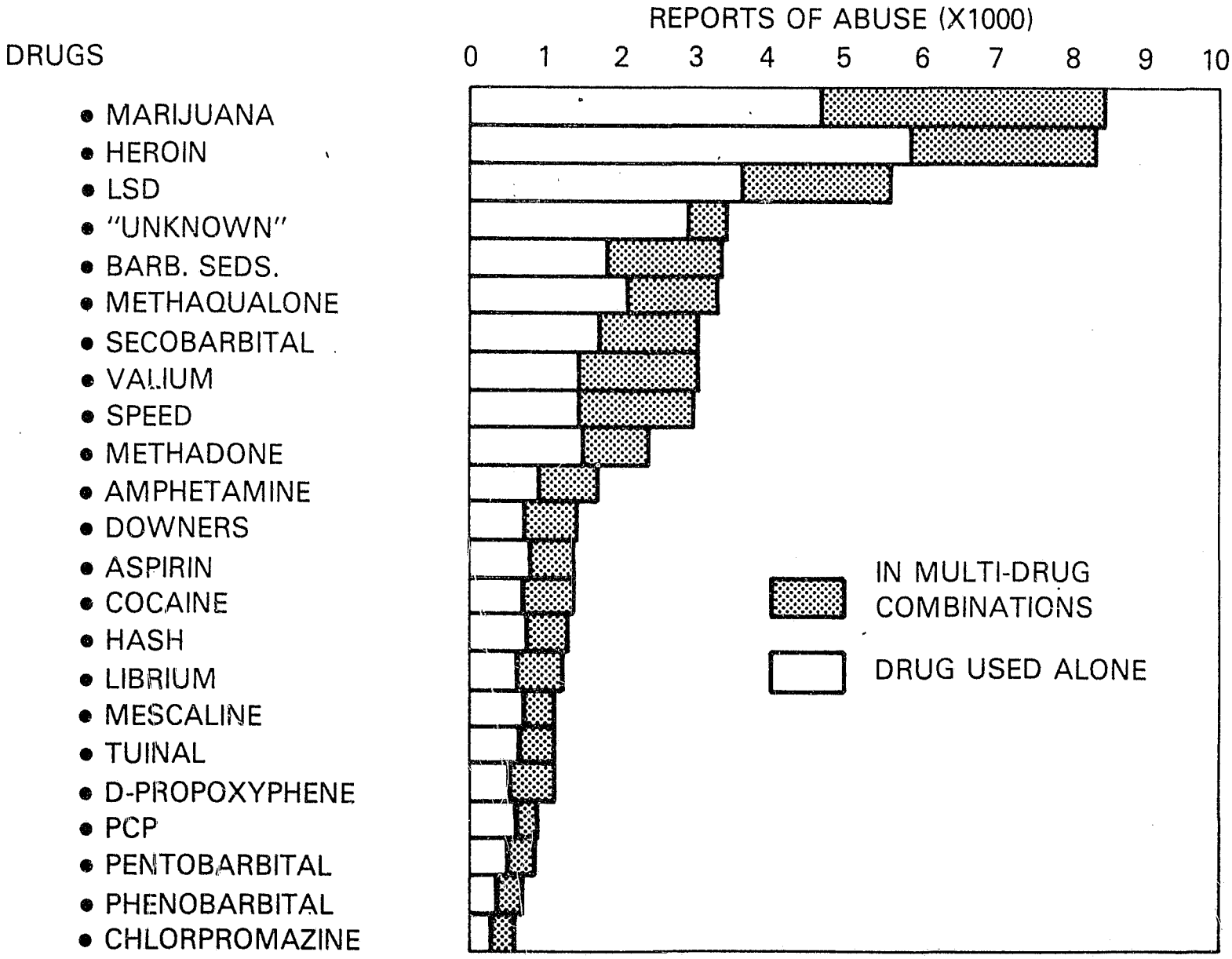

Figure 1

40 substances. Excluding alcohol, for which no single abuse data was available, this correlation was +0.90; and, if we omit substances reported as "unknown," the correlation was +0.93. For just the very top-ranking substances shown here in Figure 1, the single-multiple abuse correlation was +0.83. These clearly suggest that the most widely abused substances form parts of behavioral patterns where the abuser populations tend to use the same drugs, so that changing from single to multiple abuse (or vice versa) does not generally imply a need for people to get other types of drugs than those they were using.

But this does not necessarily imply that the abuse markets are the same. As another way to explore the possibilities of different types of abuse being associated with different drugs, we examined whether the dominant drugs tended to be more likely used as sole drugs of preference, with the so called "garbage mouth" pattern being more associated with the less frequently abused drugs. We correlated the rank orders of overall abuse for this set of drugs with the relative proportions of their appearances within multi-drug incidents and found a moderate inverse correlation of -0.313 ($p<0.10$). An initial check within the DAWN II data indicates that this negative correlation still was evident, and at about the same value.

The many provocative relations which can be developed from these data provide the interested researcher and the

potential user of drug abuse information with a rich tool for a wide variety of applications. The potential variety and utility of this information depend, of course, on the nature of the basic data available. For all DAWN analyses, the basic raw data are derived from the original reports submitted by the participating facilities, each of which record their data on forms essentially similar to the one for Emergency Rooms illustrated in Figure 2. Although the content and format have undergone some progressive changes as DAWN has evolved, these reports still provide essentially these same types of information on the patient, the drug substances, and how the facility handled the individual case.

For some analytic purposes, the number of times a drug is reported should be distinguished from the number of drug incidents or episodes. For each abuse episode, all drugs that are detected or mentioned by the patient as being involved in the incident are counted as one "mention" or appearance for each. Thus, the number of times each drug appears, and in what combination, may be investigated to detect trends related to periods, regions, facilities, populations, pharmacological categories, or almost any other factor of interest. It is important to note however, that for multi-drug incidents each individual appears under each drug he used and, to avoid multiple counting of abusers, "episodes" rather than drug mentions are the more appropriate measure.

Figure 2

HOSPITAL EMERGENCY ROOM

HOSPITAL City-County Memorial

PATIENT NUMBER (OPTIONAL) 78531

DATE 9/2/72

TIME OF VISIT 10:00 p.m.

A. PATIENT INFORMATION

AGE 18 years

PATIENT SEX
- ( ) Male
- (X) Female

RACE
- (X) Caucasian
- ( ) Negro
- ( ) Oriental
- ( ) Latin American
- ( ) American Indian
- ( ) Unknown
- ( ) Other, specify

EMPLOYMENT STATUS
- ( ) Student (specify)
  - ( ) Grade School
  - ( ) High School
  - ( ) College
- ( ) Employed
- ( ) Unemployed
- (X) Dependent
- ( ) Unknown

REASON FOR TAKING SUBSTANCE(S)
- (X) Euphoria, "High," or "Kicks."
- ( ) Unhappiness
- ( ) Dependence
- ( ) Self-destruction
- ( ) Unknown
- ( ) Other, specify

REASON FOR PRESENT ILLNESS
- (X) Adverse reaction
- ( ) Overdose
- ( ) Chronic effects
- ( ) Unknown
- ( ) Other, specify

DISPOSITION OF CASE
- ( ) Referred to another agency
- (X) Treated and released
- ( ) Admitted to hospital
- ( ) Died
- ( ) Unknown

B. DRUG SUBSTANCE INFORMATION

List each substance name (chemical, generic, trade or street name) in one of the numbered spaces below.

1.	2.	3.
Seconbarbital	Alcohol	

For each of the substances listed above, check appropriate answers in each response field below.

	Substance Number 1	2	3
DOSAGE FORM			
Tablet			
Capsule	X		
Liquid		X	
Powder			
Paper			
Injectable			
Unknown			
Other, specify			
ROUTE OF ADMINISTRATION			
Oral	X	X	
Injection (specify site)			
Inhaled (gas)			
Smoked			
Sniffed (e.g. cocaine)			
Other, specify			
Unknown			

	Substance Number 1	2	3
SOURCE OF SUBSTANCE			
Legal Prescription			
Forged Prescription			
Other Prescription	X		
Stolen from			
Physician			
Pharmacy			
Wholesaler or Mfr.			
Other/Unknown			
Street Buy			
(How much paid)$			
Illegal Synthesis			
Unknown		X	
Other, specify			
USE STATUS			
How often used?			
Daily	X		
Weekly		X	
Monthly			
Unknown			
How long used?			
Days			
Weeks	X		
Months		X	
Unknown			

LABORATORY TESTS ORDERED TO IDENTIFY DRUGS

Test	Specimen	Findings (in mg.% if available)

IDENTIFICATION OF SUBSTANCE (check all that apply)	Substance Number 1	2	3
Patient's statement of identification	X	X	
Doctor's statement of identification			
Hospital records containing unsupported assertion			
Positive clinical response to symptomatic treatment for drug	X		
Possession of commercial identifiable dosage form			
Laboratory identification of substance from dosage form			

C. CLINICAL STATUS (functional decompensation)

- ( ) None: no effect on function
- (X) Slight: functions without assistance
- ( ) Grossly incompetent but ambulatory
- ( ) Stupor or delirium but responds to verbal stimuli
- ( ) Unconscious: responds to light pain
- ( ) Unconscious: responds to deep pain only
- ( ) No pain response, respiration adequate
- ( ) Respiration inadequate or apneic
- ( ) Constant inst. heart rate, isoelectric EEG
- ( ) Death

Overall, about 1.33 drugs were mentioned per episode, and this ratio was approximately the same for all types of reporting facilities.

In Figure 3, the number of different substances and combinations which were reported are indicated for every quantitative category from single through sextuple drug usage. Since 1055 different drugs were reported in one or more contexts, the number of possible two-drug, three drug, and up to six-drug combinations is many billions.

We are obviously not dealing with simple chance drug combinations when we review the relatively consistent co-appearances of some substances with each other. A total of 5755 two-drug combinations appeared within the nearly twelve thousand two-drug mentions, with marihuana being involved in the top three combinations (marihuana-LSD (462), marihuana-alcohol (336) and marihuana-heroin (298 mentions) respectively). The influence of many factors beyond those reported in the DAWN data, such as relative price and availability, pharmacological effects, psychosocial contexts etc., must be considered in trying to evaluate the reasons for these patterns, and in trying to predict the probable impacts of possible changes in any of these variables on what might show up in future multi-drug abuse patterns. Considered from the viewpoint of the treatment facilities attempting to care

TYPE OF ABUSE	*NUMBER OF SUBSTANCES*	*PERCENT OF TOTAL MENTIONS*	*PERCENT OF TOTAL EPISODES*
SINGLE	842	56.9	75.2
DOUBLE	560	27.5	18.2
TRIPLE	443	13.6	6.0
QUADRUPLE	151	1.1	0.4
QUINTUPLE	94	0.5	0.1
SEXTUPLE	84	0.3	0.1

Figure 3

for abusers, about 3 out of 4 of the cases they had to handle involved only one drug; but, from the viewpoint of how the drugs were abused, almost half the total appearances were in the multi-drug categories. It is also important to note, in reviewing the patterns in Figure 3, that appearances in these categories are not mutually exclusive; that is, most of the drugs in the single-drug incidents were also involved in two-drug incidents, etc., so that the total number of different substances reported was not the sum of the numbers in the first column of this figure.

Figure 4 pictures each of these quantitative categories in another way, and shows that they form a nearly logarithmic distribution that goes from more than 46,000 single-drug episodes through only 46 reported six-drug episodes. The slight discontinuity apparent between the triple and quadruple categories invites the possible suspicion that there is either a qualitative difference between the upper and lower sets of categories, or that the provision of only 3 spaces for listing substances on the data form may have induced some under-reporting so that the data on multi-drug usage reported here are actually conservative and the relative extent of the multi-drug problem is greater than indicated here. Although our field scientific teams have investigated this possibility and failed to detect any evidence of under-reporting in higher category abuse episodes, awareness of the possibilities of data artifacts is necessary to anticipate and avoid any undesired data contamination.

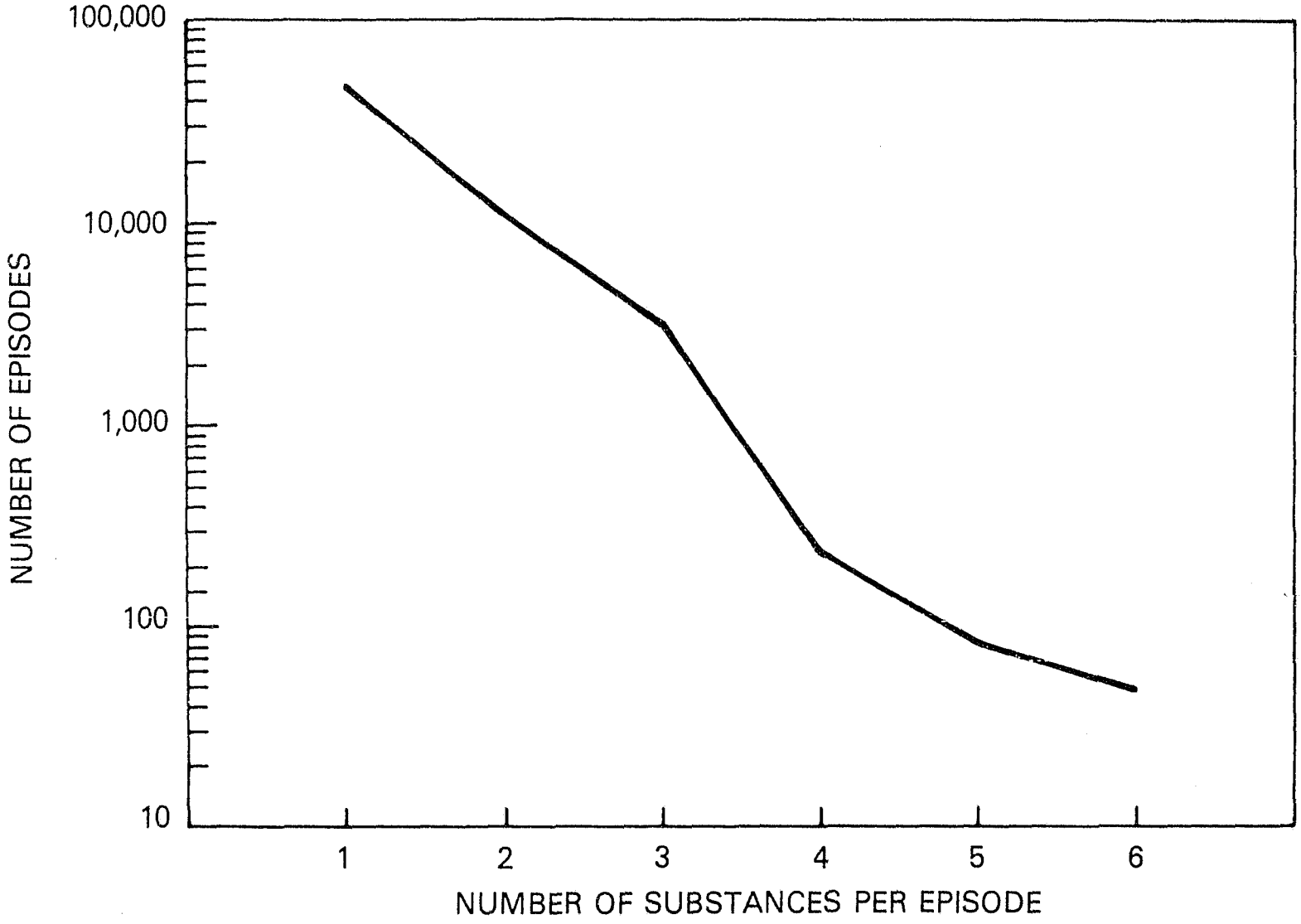
100,000
10,000
1,000
100
10
NUMBER OF EPISODES
1
2
3
4
5
6
NUMBER OF SUBSTANCES PER EPISODE

Figure 4

As a further illustration of the types of analyses we have made, Figure 5 indicates how the reported two-drug combinations clustered across some pharmacological classes. Alcohol-depressant combinations were by far the largest of these with marihuana showing up in more different combinations than any other of our classes. These data, in contrast to those in other figures, indicate the numbers of different cross-combinations, and not the frequency with which each of these combinations appeared. Of course the number of such possible comparisons is almost endless, and is basically limited only by the time and interests of the researcher.

As a last example of the types of potential drug comparisons we explored, we classified the data by pharmacological classes and control schedules. For the 50 most frequently cited drugs, which collectively accounted for the large majority (89%) of the multiple usage mentions, the largest pharmacological class was Depressants (23 out of 50), with most of these substances (34 out of 50) being drugs controlled under the Controlled Substances Act of 1970.

Profiles of Abuser Populations:

What do the DAWN data indicate about the age, race, sex and other major characteristics of the abuser populations and the circumstances of the abuse incidents? Before we discuss some of those patterns, we should bear in mind some of the characteristics of the basic sources and methods by which we gather our data. DAWN collects its information from

TWO-DRUG COMBINATIONS BY PHARMACOLOGICAL CLASS

	HASH.	*HALL.*	*ALC.*	*DEPR.*	*STIM.*	*NARC.*	*UNK*
MARIHUANA	148	591	336	357	357	298	59
HASH	—	—	45	—	—	—	—
HALLUCINOGEN		47	87	—	225	—	—
ALCOHOL			—	1376	104	258	161
DEPRESSANT				206	168	411	—
STIMULANT					—	283	—
NARCOTIC						238	—

Figure 5

a broad nationwide sample of facilities and locations using a controlled form of self-report method. That is, the people in the reported incidents have some options as to whether or not they enter the data base and what they will report -- but there are many checks and balances on those options, perhaps more than in most user surveys in other fields. We have to recognize the limitations imposed by the real-world facts that the initial detection of a drug abuse incident is generally made by the people directly involved, and so also is the evaluation that it is serious enough for the abuser or his associates to seek help (i.e., to report the incident). However, especially with the more serious abuse reactions, the people involved generally have little real hope of totally concealing that an illness had some drug involvement or of evading detection completely by not seeking medical help and simply hoping the condition will subside spontaneously and safely.

Ideally, of course, we would like our data bases to be totally error-free. In attempting to make DAWN approach that ideal as closely as possible, we can logically identify two broad categories of factors which might tend to induce inaccuracies in our original reports. First, there may be honest inaccuracies in the patient's own information; as when an abuser thinks he is buying one particular drug and is sold some other drug (or drugs) instead, but in which he

reports the whole truth as he knows it and show clinical symptoms consistent with the reported drugs. Second, the patient may attempt to intentionally misrepresent an event; as when a multi-drug abuser tries to report fewer (or less serious) drugs than those he actually took, or to conceal other prior drug usage that may have contributed to his reactions within a given incident.

To a large extent, of course, we are not totally dependent on the patient's information or honesty. Knowledgable physicians, nurses and crisis center interviewers can contribute a great deal toward eliciting truthful responses, by probing areas of apparent coverup indicated by their own direct evaluations of the patients's clinical symptoms, and from the consistency or inconsistency of patient reactions to treatment for the drugs they report, in addition to the availability of laboratory tests on body fluid samples. Therefore, we feel reasonable confidence in the basic validity of the original reports, although we recognize that we are trying to deal with topics and situations that may involve the users in great deals of social stress, incoherence, behavioral disruption, and possible criminal implications -- all of which must be considered in interpreting the results of any potential data analyses.

Typical modal values for the single and multiple abuse incidents are not radically different, either for the char-

DAWN I ABUSER POPULATION CHARACTERISTICS
(Modal Values)

	SINGLE DRUG INCIDENTS		*MULTIPLE DRUG INCIDENTS*	
AGE:	15-19 YRS	(30.9%)	15-19 YRS	(30.3%)
SEX:	MALE	(52.1%)	MALE	(50.8%)
RACE:	WHITE	(58.0%)	WHITE	(67.4%)
OCCUPATION:	STUDENT	(25.2%)	STUDENT	(22.0%)
			EMPLOYED	(21.5%)
			UNEMPLOYED	(20.9%)

Figure 6

DAWN I INCIDENT PROFILES

	SINGLE DRUG INCIDENTS		*MULTIPLE DRUG INCIDENTS*	
PROBLEM:	OVERDOSE	(20.9%)	OVERDOSE	(26.7%)
MOTIVATED:	PSYCHIC EFFECTS	(46.0%)	PSYCHIC EFFECTS	(44.0%)
CASE DISPOSITION:				
EMERGENCY ROOMS	TREATED & RELEASED	(59.9%)	TREATED & RELEASED	(49.8%)
HOSPITAL IN-PATIENTS	DISCHARGE: REGULAR	(96.7%)	DISCHARGE: REGULAR	(96.7%)
CRISIS CENTERS	CALLER SATISFIED	(47.3%)	CALLER SATISFIED	(32.3%)
			RECONTACT C.C.	(32.4%)
CLINICAL DISABILITY:	NONE OR SLIGHT	(49.3%)	NONE OR SLIGHT	(34.6%)
C.C. CONTACT MODE:	TELEPHONE	(72.6%)	TELEPHONE	(52.9%)

Figure 7

acteristics of the abuser populations (Figure 6) or abuse incidents (Figure 7). Depending upon the researcher's interests the data can be cross-tabulated across any of these variables so that the numbers or proportions for different specific populations can be compared for specific drugs. We have investigated a number of such breakdowns to compare single and multi-drug distributions for specific drugs and, in most cases, find the distributions to be very similar for the demographic variables within our data base.

If we look at the frequency distributions of abuse reports compared to the distributions of various age groups within the U.S. population (Figure 8) it is immediately evident that drug abuse is far from proportionally distributed by age - the numbers of reports for the youngest and oldest segments of the sample population are radically lower than a simple chance distribution hypothesis would indicate, and drug abuse is quite obviously a behavior dominated by young adult age groups. In terms of simple frequency, this is true for both single and multi-drug abuse. However, if we look at the relationships of multi-drug abuse to age in another way (Figure 9), we find some indications of an interesting trend toward increasing percentage of multi-drug abuse with increasing age of the abuser. Although we have not had a chance to explore <u>why</u> such a trend might exist, it appears

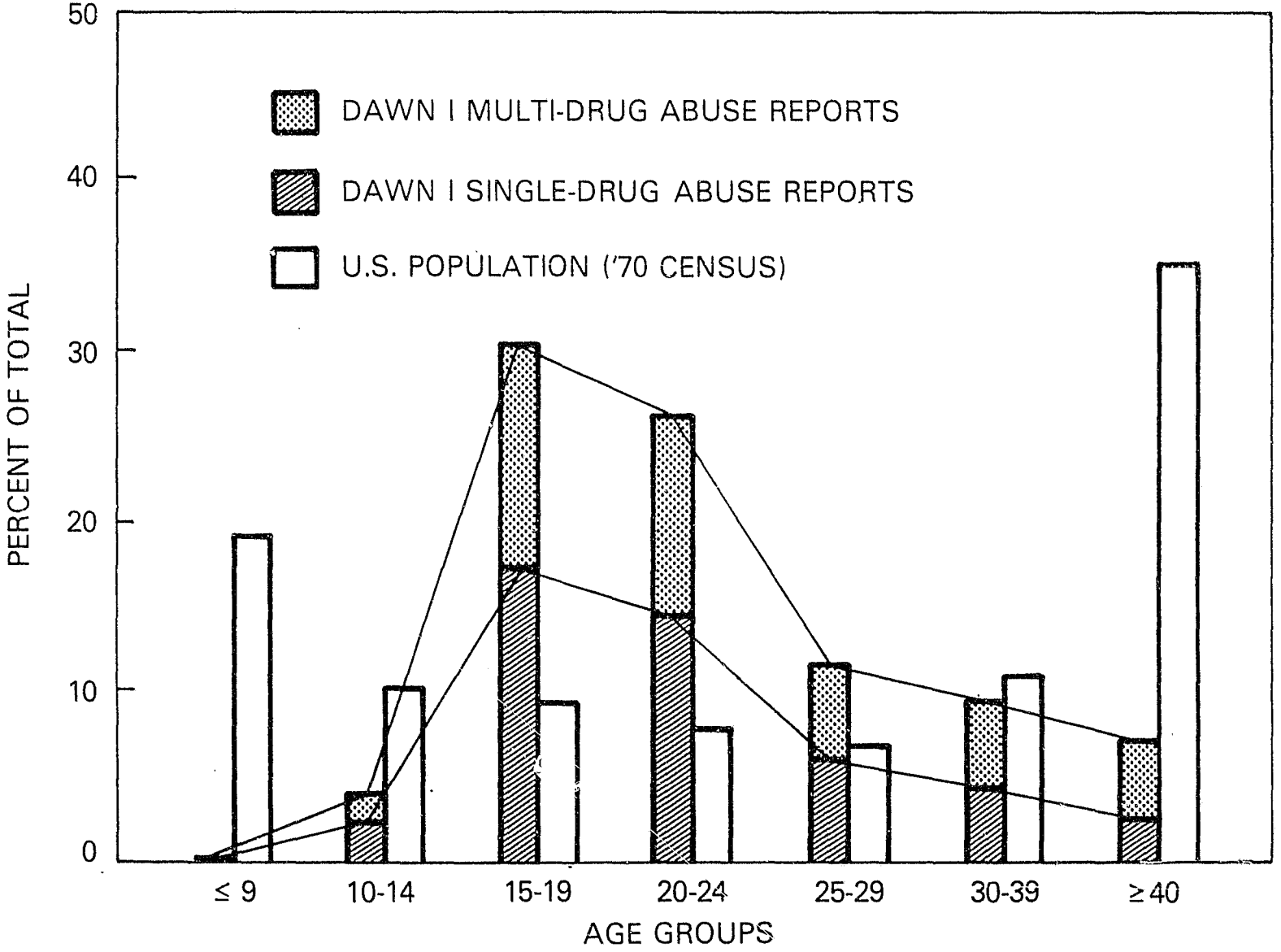
DAWN I MULTI-DRUG ABUSE REPORTS
DAWN I SINGLE-DRUG ABUSE REPORTS
U.S. POPULATION ('70 CENSUS)
PERCENT OF TOTAL
50
40
30
20
10
0
≤ 9
10-14
15-19
20-24
25-29
30-39
≥ 40
AGE GROUPS

Figure 8

GIVEN THAT A PERSON IS A DRUG ABUSER, DOES THE TENDENCY TOWARD MULTI-DRUG ABUSE VARY WITH THE AGE OF THE ABUSER?

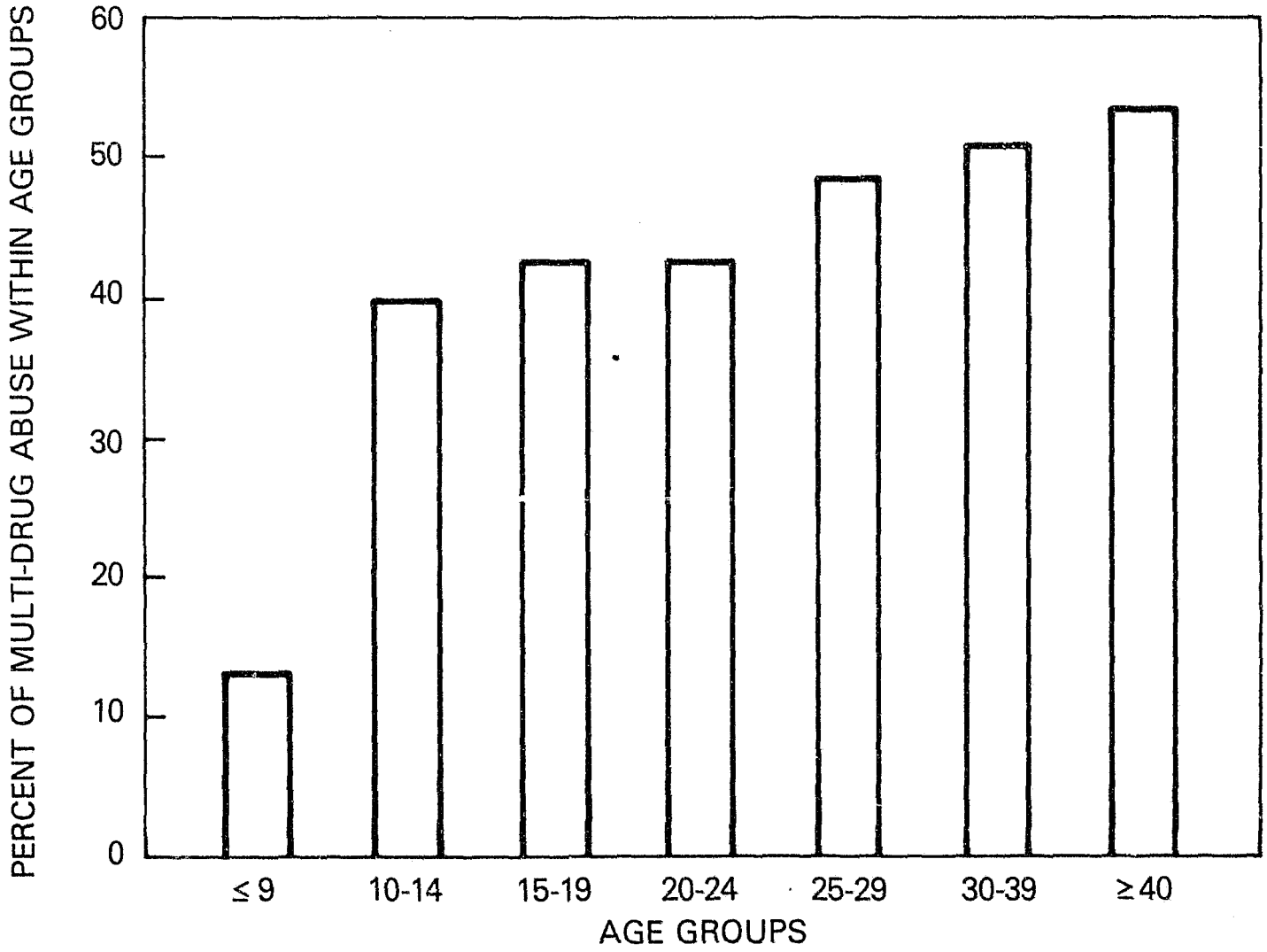

Figure 9

that, within the dominant 10-40 year range of abuser populations, as the abuser population grows older it is progressively more likely to be involved in multi-drug incidents. Again, an initial check with the DAWN II data appears to confirm that this effect is real and not a chance result within the DAWN I sample.

Overall, men and women were nearly equally involved in DAWN mentions, across all quantitative categories of single and progressively higher numbers of drugs. But, the relationship of the sex of the abuser for drug abuse patterns with specific drugs becomes more complex. Several types of patterns appeared when we plotted the percent of male and female abusers for progressively higher quantitative categories. As indicated in Figure 10, with some substances men dominated the picture, and with others the reverse was true. In some cases the relative positions the sexes had for single-abuse incidents were maintained, yielding two nearly flat lines across the graph. For example, with heroin, men appeared approximately twice as often as women for all the single and multi-drug abuse categories. In other cases, the sexes tended to diverge; while for some other drugs the picture tended to grow less polarized, with the sex proportions tending to converge for progressively higher categories of multi-drug reports. For example, as shown in Figure 10, women far outranked the men by about three-to-one for single-drug abuse of the tranquilizer Valium; but the proportional differences between the sexes

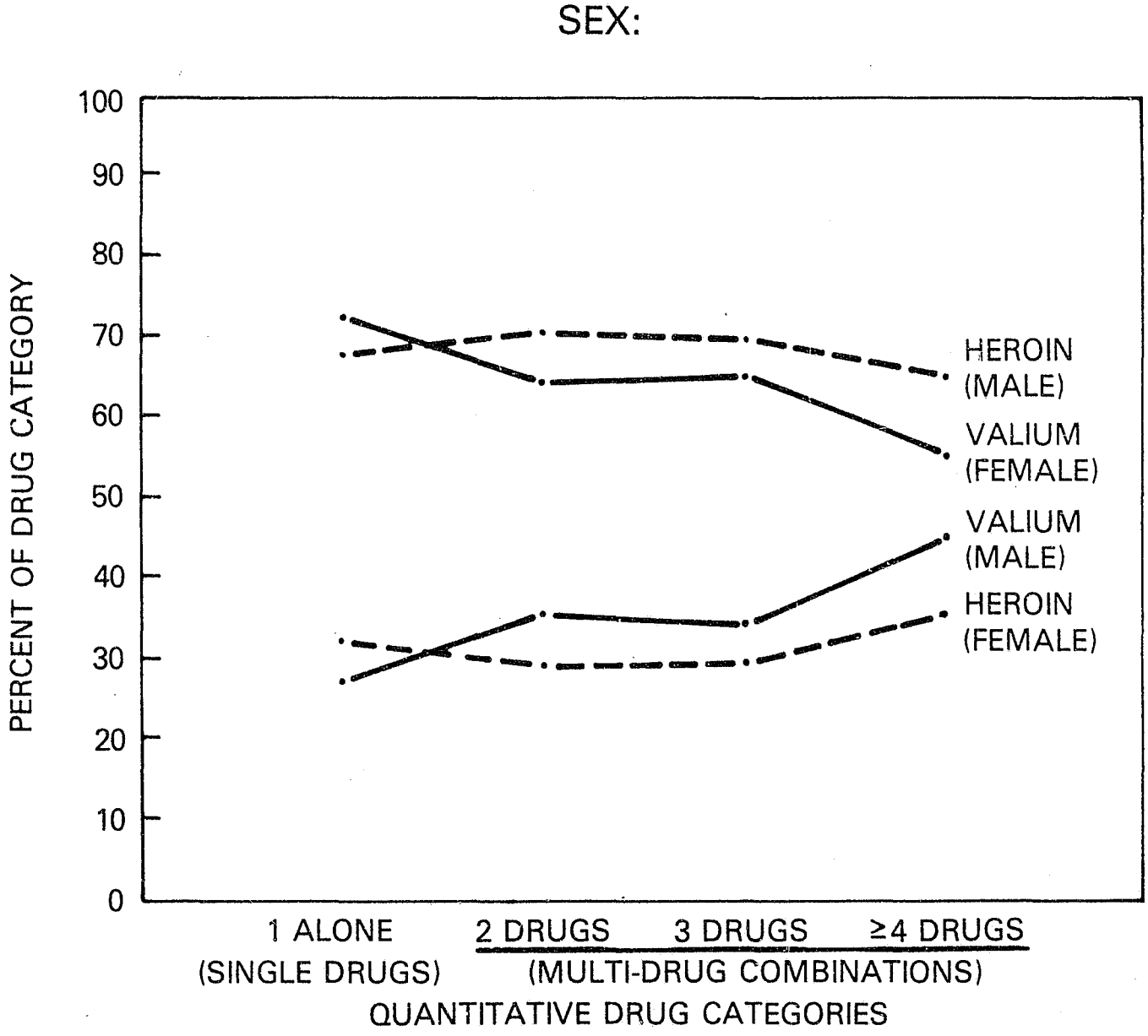
SEX:
100
90
80
70
60
50
40
30
20
10
0
PERCENT OF DRUG CATEGORY
HEROIN (MALE)
VALIUM (FEMALE)
VALIUM (MALE)
HEROIN (FEMALE)
1 ALONE
2 DRUGS
3 DRUGS
≥4 DRUGS
(SINGLE DRUGS)
(MULTI-DRUG COMBINATIONS)
QUANTITATIVE DRUG CATEGORIES

Figure 10

decreased when Valium was involved in multi-drug incidents. Although we have not indicated the frequencies for each of these categories here, the numbers of reports tended to decrease for each higher category and, accordingly, the reliability of these relations is greater for the single drug incidents than for the successively higher multi-drug combinations.

When we look at the picture of the race of abusers, we find an overall trend for the racial proportions to diverge. That is, within the populations covered by the DAWN I data, there was a general tendency for abusers to be White, and this tendency tended to increase from about 4:1 for single-drug mentions to about 10:1 for multi-drug mentions involving four-or-more drugs within an incident. Compared to their distributions in the 1970 U.S. census, with White = 87.5% and Black = 11.1%, the DAWN breakdown tends to show Whites in the majority of reports, but less than their percentage within the overall population across all of these quantitative categories. But again, this increasing polarization of the races may not be true for any specific substance or sub-population, and the numbers of reports grow thinner for the higher multi-drug categories. In fact, as indicated in Figure 11, this race variable was often not positively reported and this overall picture itself may not be dependable when the categories of "Other and Unknown and No Response" are taken into consideration. The proportions of these non-

RACE: OVERALL DRUG ABUSE INCIDENTS

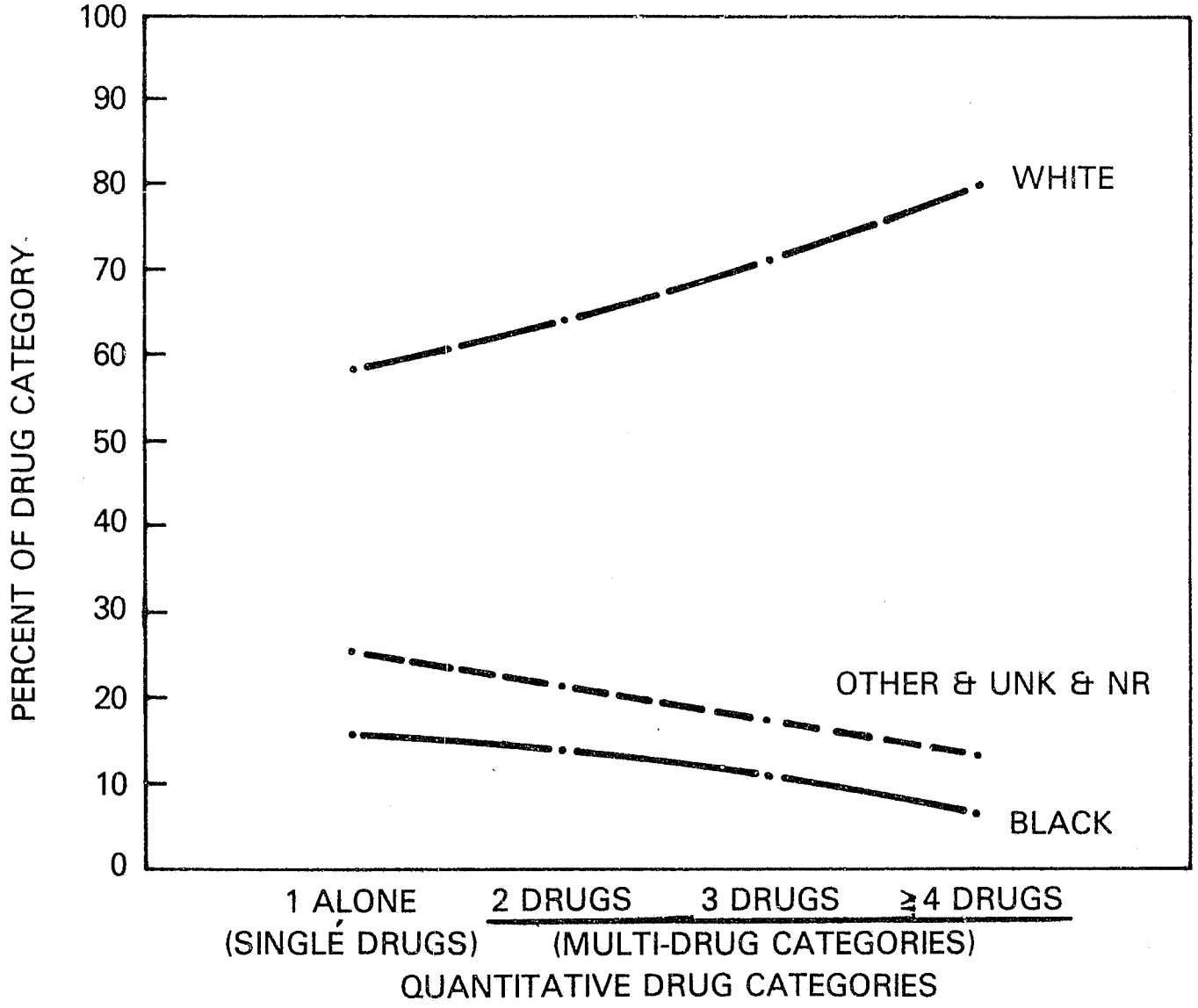

Figure 11

specific categories were generally trivial compared to the proportions for categories positively reported (for example, with Sex the "No Response" rate was only 0.6%). But, for Race these combined unknown rates ranged from over 25% for single-drug incidents to over 13% for incidents involving 4-or-more drugs. Overall, then we cannot be as sure of this apparent trend as for the others, and an initial look as this same factor within the DAWN II data does not indicate the same divergence, although the White race still is by far the largest for overall single and multi-drug incidents.

These summaries represent only a brief overview of the ways in which we have explored how single and multi-drug abuse patterns relate to specific drugs and population characteristics.

As a final illustration of our methods, we can turn to asking about some of the consequences of these types of abuse. Since, as we have said, these data were derived from the initial developmental and operational phases of the DAWN system, we were really exploring two things in parallel - the phenomena and our methods of assessing them through analyses of the DAWN network. We attempted to verify whether or not the system reflected relations which we believe should be true, and in these ways to check both the internal consistency of these beliefs and to provide additional

calibrations on the overall validity and reliability of the system. For these reasons, we examined the immediate consequences of abuse incidents. Logically, we can divide the categories for disposition of the cases handled by each type facility (for example Emergency Rooms) into two groups - those which should probably show an increase with increasing severity of the incident and those which should probably do the opposite. As you can see in Figure 12, we plotted the combined percentages for these two groups of results and found the interactive effects for overall abuse to be even cleaner than we had anticipated. For single-drug incidents approximately twice as many cases showed relatively minor immediate consequences, in terms of those abusers who got up and left the facility spontaneoulsy or were successfully treated and released without any referrals for additional help -- in contrast to those who died or had to be admitted to the hospital, or were referred to other agencies for additional help. For 2-drug cases these proportions tended to converge; for 3-drug cases they were about equally divided; and for cases involving 4-or-more drugs they had almost reversed their single-drug proportions, with severe cases now dominating. Overall, this provides clear support for the view that multi-drug abuse presents a more serious hazard than single-drug abuse, and appears to indicate that the degree of hazard is directly related to the number of drugs involved.

DISPOSITIONS: EMERGENCY ROOMS

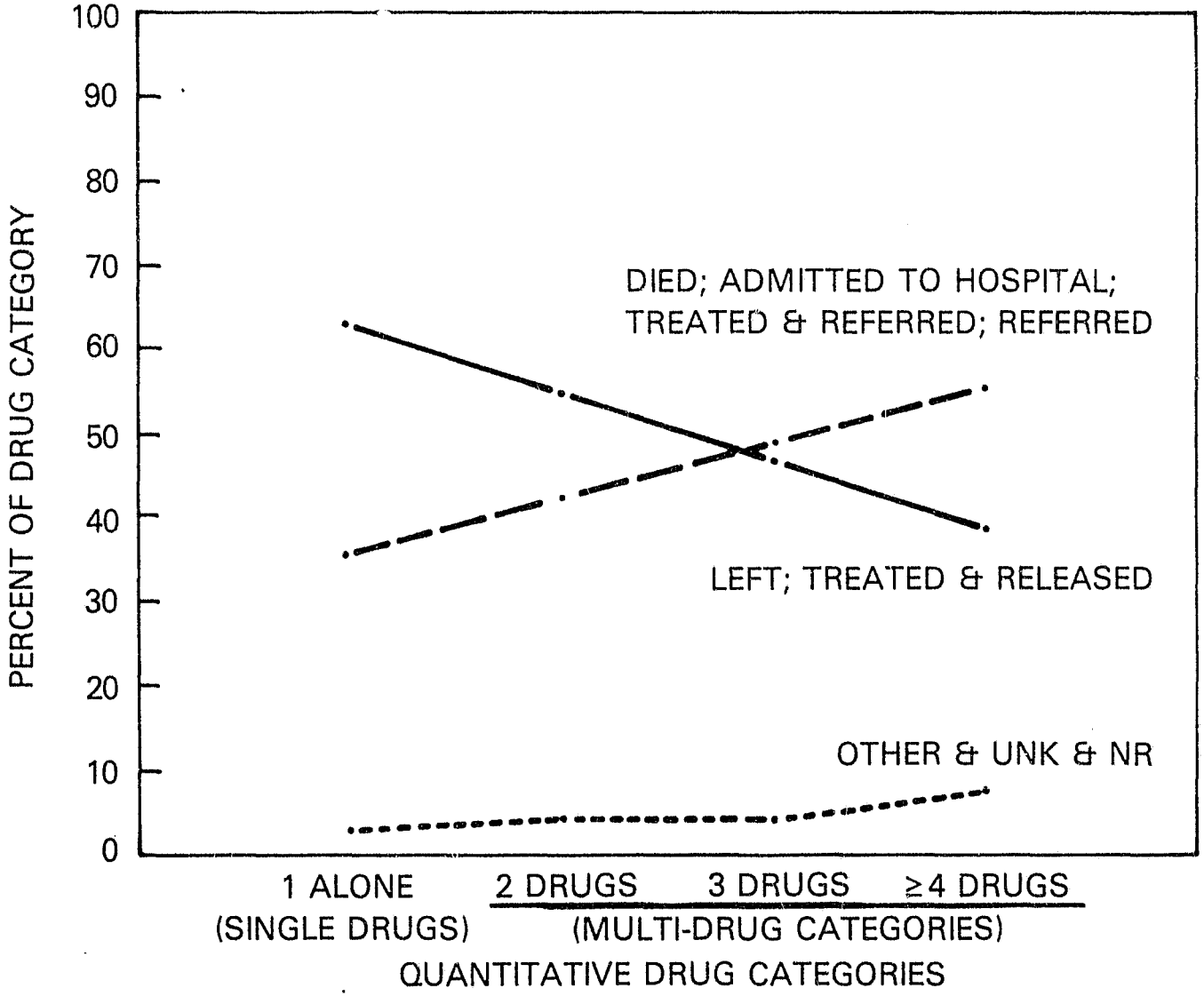

Figure 12

In summary then, we have described some of the exploratory analyses we have made of the DAWN I data, comparing single and multi-drug abuse with regard to general characteristics of the drugs, the populations abusing them, and to our network's responses to different types of incidents. As with most such exploratory research efforts, we have provided tentative answers to some questions and stimulated additional questions in the process. In all these inquiries our objectives have been to apply the results wherever possible. Thus, for example, if we can anticipate or detect trends we can support efforts toward countermeasures, such as allocation of resources for improved surveillance, public information directed toward specific user populations, or other areas of our responsibility. Considering the potential scope of related questions, we know that no single data base can attempt to measure everything that would be relevant or provide more than a partial answer to such complex questions. Some answers may be better approached by trying to develop convergent lines of inquiry across different data bases than by trying to probe only within a single source. We hope to continue to improve DEA's present monitoring and response capabilities by being able to get more information into our data bases more rapidly, and to retrieve and analyze them more rapidly. We have no reason to believe that patterns of multi-

drug abuse are static; and better knowledge of who is abusing what, where, when and why will help improve our abilities to change these pictures.