Patterns of Arrests Among Drug Users During Treatment

by

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Research Problem and Method

Many studies have pointed to a sharp reduction in criminal activities upon entry into drug treatment programs. Frequently cited also are statistics which suggest that criminal behavior remains at a generally low ebb during treatment. The present study endeavored to add to such findings by taking a close look at several indicators of criminality in a large sample of outpatients during the first 6 months of treatment, with particular attention to patterns of arrests during treatment.

Method

Sample

The sample came from drug users admitted into treatment over a one-year period, starting June 1, 1971, at 31 different agencies under the Drug Abuse Reporting Program. For purposes of this study all patients who were in outpatient methadone maintenance or drug-free programs and remained in treatment for at least 6 months were included. Thirteen patients were dropped, however, for incomplate data on arrests, leaving a final sample of 3483 patients.

The characteristics of the sample are depicted in Table 1. Males made up three-fourths of the sample. About one-third were 21-25 years of age; the remainder were about equally divided among patients under 21, 26-30 and over 30 years of age. Blacks accounted for about half the sample; Whites and Puerto Ricans for approximately 20% each; and, Mexican-Americans for 7%. A

TABLE 1

Sex, Age, Ethnic Group, and Treatment Type Among 3483 Outpatients Who Remained in Treatment for 6 Months or Longer

	N	%
Male	2666	76.6
Female	817	23.4
Under 18	146	4.2
18-20	480	13.8
21-22	583	16.7
23-25	734	21.0
26-30	685	19.7
31-40	603	17.4
Over 40	252	7.2
Black	1776	50.9
Puerto Rican	666	19.2
Mexican-American	244	7.0
White	741	21.3
Others	56	1.6
Methadone Maintenance	3096	89.0
Drug Free	387	11.0
Total	3483	100.0

small group consisting of less than 2% of the patients, was labeled "Others." Approximately nine out of ten were in methadone maintenance programs, while the remaining tenth received drug-free outpatient treatment. Excluded from the sample were patients who were in residential programs, such as therapeutic communities and who therefore had little or no opportunity to commit criminal acts.

Data of the Study

The data for the present study came from the Admission Record and bimonthly status reports which were submitted for each patient by the agency for each 2-month period in treatment. Detailed information about these reports and the measures which were constructed can be found elsewhere (Demaree & Neman, 1974). Brief information concerning the variables employed in the present study follows.

Jail. For each intreatment period of 2 months, index values for Jail represented the number of days spent in jail: 1 = 0 days in jail; 2 = 1-2 days; 3 = 3-10 days; and, 4 = more than 10 days in jail during the period.

Illegal activities as a source of support. If illegal activities were reported as a patient's major or minor source of support during a 2-month period, an index value of 2 was assigned; otherwise a 1 was coded. This variable may be referred to as Illegal Support.

Arrests. Available for intreatment periods only, the Arrests variable was determined by totaling the number of times during each 2 months that a patient was arrested for gambling or running

numbers, prostitution or pimping, stealing or forging, drug violations, and crimes against persons. Index values of 1 to 4 represented 0, 1, 2, and over 2 arrests, respectively.

In certain of the analyses, categories of arrests are considered. Due, however, to the infrequent occurrence of arrests for gambling or running numbers, and prostitution or pimping, these were combined with stealing and forging to make up the category, crimes of profit.

Note should be taken here that the present data did not include arrests for minor offenses, such as disorderly conduct, vagrancy, drunkenness, failure to provide family support, and motor vehicle violations. The reason for this was that the bimonthly report form which was in use at the time much of the data were collected did not provide for arrests to be reported under such charges as just mentioned. These were included, however, in a revision of the report form and will be analyzed in future research.

Criminality. The Criminality variable was based on the presence or absence of three criminality indicators. For each 2-month period in treatment, the indicators were one or more arrests, one or more days in jail, and illegal activities as a source of support. Index values of 1, 2, 3, and 4 corresponded respectively to 0, 1, 2, and 3 indicators present.

Six additional variables reflected patient background characteristics. Age at the time of admission was represented by index values 1-7 as follows:

1 under 18
2 18-20
3 21-22
4 23-25
5 26-30
6 31-40
7 over 40

Sex was indicated by a code of 1 for male and 2 for female. The four ethnic group variables were Black (2 = Black; 1 = all others), Puerto Rican (2 = Puerto Rican; 1 = all others), Mexican-American (2 = Mexican-American; 1 = all others), and White (2 = White; 1 = all others).

Analysis of Data

Most of the analyses in the present report are descriptive in nature and are based on simple statistics, such as the percent of patients arrested during particular periods in treatment or the correlations among criminality variables. The present data on the prevalence of illegal support, arrests, and jail as a function of the period in treatment and the sex, age, and ethnic identity generally did not lend themselves to chi-square tests or the customary analyses of variance. For this reason, nonparametric tests were made. Patterns of arrests over the first 6 months in treatment were investigated by a method of hierarchical cluster analysis (Ward, 1963).

Results

Prior to considering the patterns of arrests, information will be presented on the pretreatment criminality of the present sample of patients, the distribution of criminality indicators during treatment, relationships among the criminality variables, and the relationships between arrests and demographic variables.

Pretreatment Criminality

The Admission Record for each patient contained information about legal status at admission, total number of prior arrests, total number of convictions, and length of time incarcerated. Based on other research with DARP data (Sells, 1974), it is known that criminal histories differ sharply according to the ethnic identity, sex, and age of patients. Although such relationships were not examined systematically in the present sample of patients they were abundantly evident and will be commented on briefly.

About one-third of the patients had a legal status, such as probation (13.2%) or parole (5.0%), or some legal action pending, such as awaiting trial (11.5%) or other (1.8%). Although legal status did not appear to differ with age, about 7% more males than females had some kind of special legal status. A particular legal status was reported for only 13.0% of the Puerto Ricans, compared to 43.9% of the Mexican-Americans.

In the total sample, 23.4% were reported to have had no prior arrests, and 16.3% had been arrested only once, but 11.4% were reported to have been arrested more than ten times. As expected,

the percent of patients with no prior arrests declined with age, while the percent with four or more arrests increased with age. About 20% of the males had no arrests, compared to 36% of the females; also, the 13.1% of males with more than ten arrests was twice as great as the 6.5% of females. Again, the Puerto Ricans and Mexican-Americans were the most different of the ethnic groups; 37.3% of the Puerto Ricans had no arrests, compared to 11.0% of the Mexican Americans.

Slightly over half (51.8%) of the patients had been convicted of a crime. Convicted only once were 19.1%. Convicted two or three times were 17.4%, while 7.6% had more than five convictions. The relationships between the number or convictions and demographic variables were much the same as for arrests. The percent of patients with one or more criminal convictions were 42.6 for Puerto Ricans, 52.5 for Whites, 54.3 for Blacks, and 58.7 for Mexican-Americans. Among males, 56.5% had been convicted, compared to 36.6% among the females. About three-fourths (75.4%) of the 857 patients who were over 30 years of age had been convicted, compared to 29.4% of the 630 patients who were 20 years of age or under.

A considerable number of patients in the present sample had been incarcerated for long periods of time. Among the 857 patients who were over 30 years of age, 43.6% had spent more than 3 years in confinement. In the sample at large, 58.0% had spent one or more days in jail, but as expected, this percent rose with age. For example, in the 21-22 year old group, 46.3% had spent some time in jail, but this rose to 64.3% in the 26-30 year old group. Thus the experience of having spent some time in jail by patients

in their later twenties was 18% commoner than by patients in their early twenties. Among males, 63.8% had been confined, compared to 43.3% of the females; 20.3% of the males had spent over 36 months in jail, but this was true for only 8.2% of the females. A pronounced difference in incarceration was found for Mexican-Americans, compared to other ethnic groups; 83.2% of the 244 Mexican-Americans had spent some time in jail, and 33.6% had been confined for over 36 months. While the Puerto Rican group had the lowest percent of patients with time in jail (49.5%), this group had the next-to-the-highest percent of patients with over 36 months in jail (20.4%).

Indicators of Criminality During the First 6 Months in Treatment

For each 2-month period, three indicators of criminality were available for each patient. These were the total number of arrests, the number of days in jail, and illegal activities as either a major or minor source of support. The latter indicator was also available for the 2-month period preceding entry into treatment.

Illegal activities as a source of support. As can be seen in Table 2, 39.5% of the patients were reported to have had an illegal source of support during the pretreatment period. During the first 2 months in treatment the percent of patients so reported dropped to 5.8, but did not decline further during the next two periods in treatment.

TABLE 2

Number and Percent of 3483 Patients Reporting Illegal Activities as a Major or Minor Source of Support During the Pretreatment Period and the First 6 Months in Treatment

Time Period	Illegal Activites Reported as: Major Source N	Major Source %	Minor Source N	Minor Source %
Pretreatment	1041	30.3	318	9.2
First 2 months	96	2.8	106	3.0
Second 2 months	58	1.7	133	3.8
Third 2 months	68	2.0	117	3.3

Arrests. The percent of patients arrested one or more times during each of the three 2-month periods spanning the first 6 months in treatment was surprisingly constant. As can be seen in Table 3, this was 2.6% in the first two periods and 2.8% in the third. Constancy over the three periods was shown also for the percent of patients with given numbers of arrests.

Days in jail. As can be seen in Table 4 , the percent of patients who spent one or more days in jail increased slightly from 2.6% in the first 2 months to 3.0% in the second period and 3.6% in the third. Although, as will be discussed later, this trend did not continue beyond the first 6 months in treatment, the prevalence of time in jail did hold steady at about 3.6% during the second half of the first year in treatment.

With respect to the amount of time in jail, shown in Table 4, patients who were in jail for more than 10 days during given periods spent an average of 30 days in jail. Further examination disclosed that about one-third of these patients were reported to have had no arrests during the 2-month period in which time was spent in jail. There are several explanations for this. For some patients, incarceration in jail carried over from one period to another. None of the patients in the present sample, however, were in jail more than 40 days during two periods in succession; such patients, 35 in number, were excluded from the file of 12,297 patients which served as a source for the present sample. In addition, it is generally the case that patients who are incarcerated are terminated due to their unavailability for treatment. Inasmuch as all the patients in the present sample remained in treatment

TABLE 3

Percent of 3483 Patients and Mean Number of Arrests per 2-Month Period by Index Values for Total Arrests During the First 6 Months in Treatment

Time Period	Percent of Patients by Index Value				Mean Number of Arrests by Index Value			
	1	2	3	4	1	2	3	4
First 2 Months	97.4	2.1	0.3	0.2	0	1.0	2.0	4.43
Second 2 Months	97.4	2.2	0.3	0.1	0	1.0	2.0	3.80
Third 2 Months	97.2	2.3	0.3	0.2	0	1.0	2.0	4.83

Key to Index Values:

1 0 arrests per 2-month period
2 1 arrest
3 2 arrests
4 >2 arrests

TABLE 4

Percent of 3483 Patients and Mean Days in Jail per 2-Month Period by Index Values for Jail During the First 6 Months in Treatment

Time Period	Percent of Patients by Index Value				Mean Days in Jail by Index Value			
	1	2	3	4	1	2	3	4
First 2 Months	97.4	1.1	0.8	0.7	0	1.3	5.6	29.9
Second 2 Months	97.0	1.2	0.7	1.1	0	1.4	5.9	32.7
Third 2 Months	96.4	1.7	1.2	0.7	0	1.3	5.3	30.6

Key to Index Values:

1 0 days in jail per 2-month period
2 1-2 days
3 3-10 days
4 >10 days

for at least 6 months without termination, prolonged stays in jail are ruled out.

A strong association, as expected, was found between prevalence of arrests and time in jail. The probability that during a given 2-month period a patient who was arrested one or more times would spend one or more days in jail was 0.61, 0.77, and 0.86, respectively, for the first three periods. Expressed in numbers, 54 of the 89 patients who were arrested during the first 2 months also spent time in jail, in the second 2 months, the corresponding figures were 70 out of 91, and in the third period, 83 out of 97.

Criminality composite. The distribution of the Criminality composite for the pretreatment period, appearing in Table 5, is strikingly different than the distributions of this variable during the intreatment periods and deserves comment. First, only 26 or 0.8% of the 3483 patients resided mainly in jail during the pretreatment period. Second, 76.6% of the patients had one or more arrests prior to entry into treatment. Third, as shown previously in Table 2 , 39.5% of the patients were reported to have had an illegal source of support during the 2-month pretreatment period. To have been included among the 17.3% with a pretreatment index value of 1, a patient would have had none of these indicators.

During the three periods covering the first 6 months in treatment, 8.7% had one or more indicators of criminality during the first and third periods, while 8.4% were so reported in the second 2-month period. Again, just as with the distributions for each indicator, the Criminality composite also showed no

TABLE 5

Percent of Patients with Given Index Values for Criminality During the Pretreatment Period and the First 6 Months in Treatment

Time Period	Percent of Patients by Index Value				Index Value	
	1	2	3	4	Mean	S.D.
Pretreatment	17.3	49.2	33.2	0.3	2.164	.700
First 2 Months	91.3	6.7	1.7	0.3	1.110	.385
Second 2 Months	91.6	6.3	1.6	0.5	1.111	.402
Third 2 Months	91.3	6.2	2.1	0.4	1.117	.412

Based on three indicators of criminality as follows:

For the pretreatment period - one or more previous arrests; jail reported as primary residence during pretreatment period; and, illegal activities reported to be a source of support during the period.

For each intreatment period - one or more arrests during the period; one or more days in jail during the period; and, illegal activities reported to be a source of support during the period

Key to Index Values:

1 No indicator reported
2 One indicator reported
3 Two indicators reported
4 All three indicators reported

appreciable trend on the average over the first 6 months in treatment.

Relationships Among Criminality Variables

Appearing in Table 6 are correlations among the criminality variables within given periods and across periods. Included also are correlations between the 14 criminality variables and six variables representing the ethnic identity, sex, and age of the patients.

For each intreatment period, the variables are Jail, Illegal Support, Arrests, and a composite of these three, Criminality. For the pretreatment period, only Criminality and Illegal Support are given. For given periods in treatment, the correlations between the three variables and the composite ranged from 0.616 to 0.730. Jail and Arrests within the three periods, in order, were correlated 0.511, 0.585, and 0.663. The apparent increase in strength of this relationship over the three periods is in keeping with the conditional probabilities of time in jail, given one or more arrests, which were 0.61, 0.77, and 0.86.

The dichotomous variable, Illegal Support, had low correlations with Jail and Arrests within given periods. Across periods of time, however, Illegal Support, showed strong correlations with itself. Between the first and second 2-month periods, this correlation was 0.587, but it was still 0.331 between the first and third periods. Illegal Support in the second and third periods was correlated 0.569.

TABLE 6

Correlations Among Criminality Variables for the Pretreatment Period and the First Three Periods in Treatment, Including Correlations with Demographic Variables, Based on 3011 Outpatients With Complete Data (Decimal Points Omitted)

(1)	Criminality Pretreatment														
(2)	784	(2)	Illegal Support Pretreatment												
(3)	150	028	(3)	Criminality 1st 2 Months											
(4)	086	074	653	(4)	Jail 1st 2 Months										
(5)	122	106	674	067	(5)	Illegal Support 1st 2 Months									
(6)	086	077	660	511	099	(6)	Arrests 1st 2 Months								
(7)	122	090	413	203	422	129	(7)	Criminality 2nd 2 Months							
(8)	070	043	232	237	120	127	724	(8)	Jail 2nd 2 Months						
(9)	121	104	391	050	587	025	673	152	(9)	Illegal Support 2nd 2 Months					
(10)	057	037	196	170	094	140	679	585	108	(10)	Arrests 2nd 2 Months				
(11)	110	066	192	119	193	060	365	215	364	166	(11)	Criminality 3rd 2 Months			
(12)	075	033	086	135	016	041	186	215	057	147	730	(12)	Jail 3rd 2 Months		
(13)	089	066	226	053	331	040	403	114	569	086	616	081	(13)	Illegal Support 3rd 2 Months	
(14)	066	037	065	068	014	042	160	168	054	163	724	663	091	(14)	Arrests 3rd 2 Months
(15)	122	100	015	014	002	019	-026	-018	-034	-012	-014	008	-019	008	(15) Black
(16)	-131	-045	-045	-029	-031	-035	-016	-025	-009	003	-010	-023	016	-020	(16) Puerto Rican
(17)	073	020	068	053	068	012	105	131	069	051	079	060	057	014	(17) Mexican-American
(18)	-047	-082	-016	-022	-012	-001	-010	-031	013	-014	-013	-018	-023	008	(18) White
(19)	-136	-053	-001	002	-017	026	-022	-014	-023	-009	-033	-026	-016	-013	(19) Sex
(20)	179	029	005	-003	011	-007	017	025	008	010	038	042	030	032	(20) Age

The across-period correlations for Jail and Arrests were low in value. For adjoining periods these values ranged from 0.140 to 0.237, but dropped to 0.042 for Arrests and 0.135 for Jail between the first and third periods. Values much higher than these, but not as high as the across-period correlations for Illegal Support, were taken by the correlations between the Criminality composite in different periods. These results indicate that the stability of Criminality over time in treatment is due largely to the Illegal Support variable.

The correlations between the criminality and demographic variables were either low or negligible in value. Even so, it is worthy of note that the correlations were positive in direction between the Mexican-American ethnic variable and the criminality variables, whereas they were generally negative for the Puerto Rican and White groups. Directionality was mixed for Blacks. These results suggest that Puerto Ricans and Whites had fewer indicators of criminality on the average during treatment than did Mexican-Americans. This is borne out also by other investigations of outcomes over time in treatment (Demaree, Neman, Long, & Gant, 1974).

Relationships Between Arrests and Demographic Variables

Results are presented in this section for the percent of patients arrested in the three periods, broken down by ethnic group, sex, and age. Following this, results are presented for arrests under the categories of crimes of profit, drug violations, and crimes against persons.

Arrests, by period in treatment and ethnic group. The percent of patients in each of the four ethnic groups who were arrested one or more times during each of the three intreatment periods are shown in Fig. 1. The result which stands out is that the percent of Mexican-Americans who were arrested was higher than for any other ethnic group in all three periods. In the first and third 2-month periods, Puerto Ricans had the lowest percent of patients arrested. Also, it might be noted that the ordering of the groups according to the percent of patients arrested was the same for the first and third periods.

Separate chi-square tests, with 3 degrees of freedom each, were made between arrested versus not arrested and the ethnic groups for given periods in treatment. The chi-square values and their probability levels for the three periods in order were as follows: $\chi^2 = 6.80$, $p = .08$; $\chi^2 = 9.94$, $p = .02$; and, $\chi^2 = 3.36$, $p = .34$. A test of the hypothesis of no differences in arrest rates among ethnic groups per 2-month period during the first 6 months in treatment was made in terms of the S statistic, based on Friedman rank sums, as described by Hollander and Wolfe (1973). Under the null hypothesis, the probability of obtaining as large an S as the observed value of 7.55 was .03. Based on this result, the alternative hypothesis was accepted that the arrest rates of the ethnic groups are not all equal. With respect to this outcome, attention is drawn to the Mexican-Americans, inasmuch as the arrest rates in the Mexican-American group of 4.5, 5.7, and 4.5% for the three periods, respectively, were consistently higher in the present sample than the arrest rates for the other ethnic groups, with an average of 2.2, 2.4, and 2.6%.

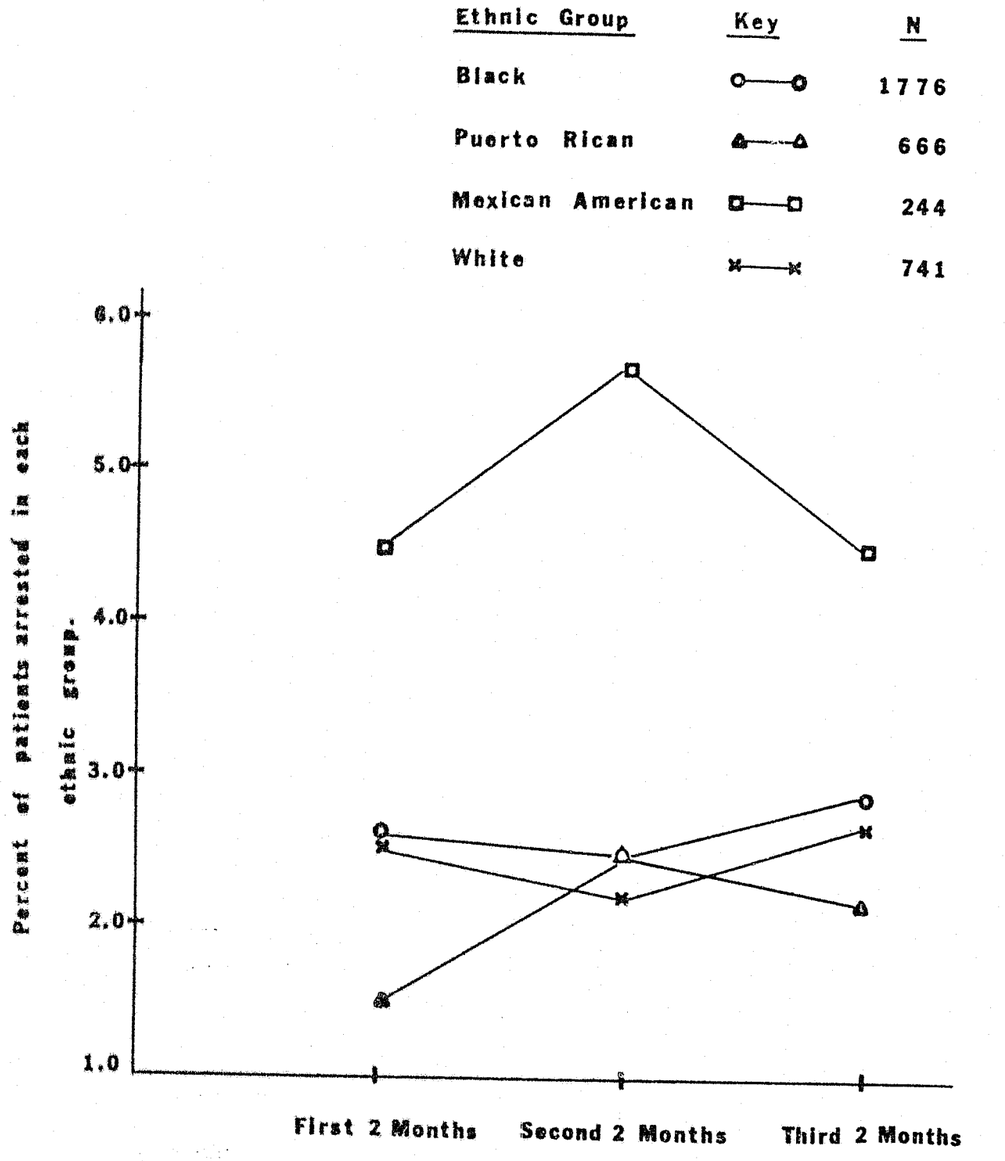

Fig. 1 Percent of patients in each ethnic group arrested per 2-month period during the first 6 months in treatment.

Arrests, by period in treatment and sex. The percent of patients arrested in the first, second, and third periods were 2.5, 2.6, and 2.8, respectively. Over the three periods the average percent arrested per period was 2.7 for males and 2.4 for females. These results offer no evidence that arrest rates differ by period or by sex. When arrest rates were examined for males and females in given 2-month periods, however, the results shown in Fig. 2 were obtained.

The first question which was asked was whether the evidence supports an association between sex and arrests in given periods. The chi-square values and their probability levels, based on 1 degree of freedom, for the three periods, respectively, were as follows: $\chi^2 = 1.69$, $p = .20$; $\chi^2 = .70$, $p = .41$; and, $\chi^2 = 2.69$, $p = .10$. Although none of these chi-square values permitted the hypothesis of independence to be rejected, the uneven marginal distributions represented by the percent arrested versus non-arrested and the percent of males versus females imposed upper limits on both the chi-square value and the associated phi coefficient. The latter is the product-moment coefficient of correlation between two binary or 1, 0 variables, and as is well known, the maximum attainable value of this coefficient may be sharply limited by the differences in the marginal distributions. In the case of the sex-by-arrests data for the third period, the phi coefficient (based on females = 1, males = 0, and arrested = 1, not arrested = 0) had a value of -0.028. The maximum attainable value in the negative direction (given that 2.8% of the patients had been arrested and thus had a score of 1 on the arrest variable,

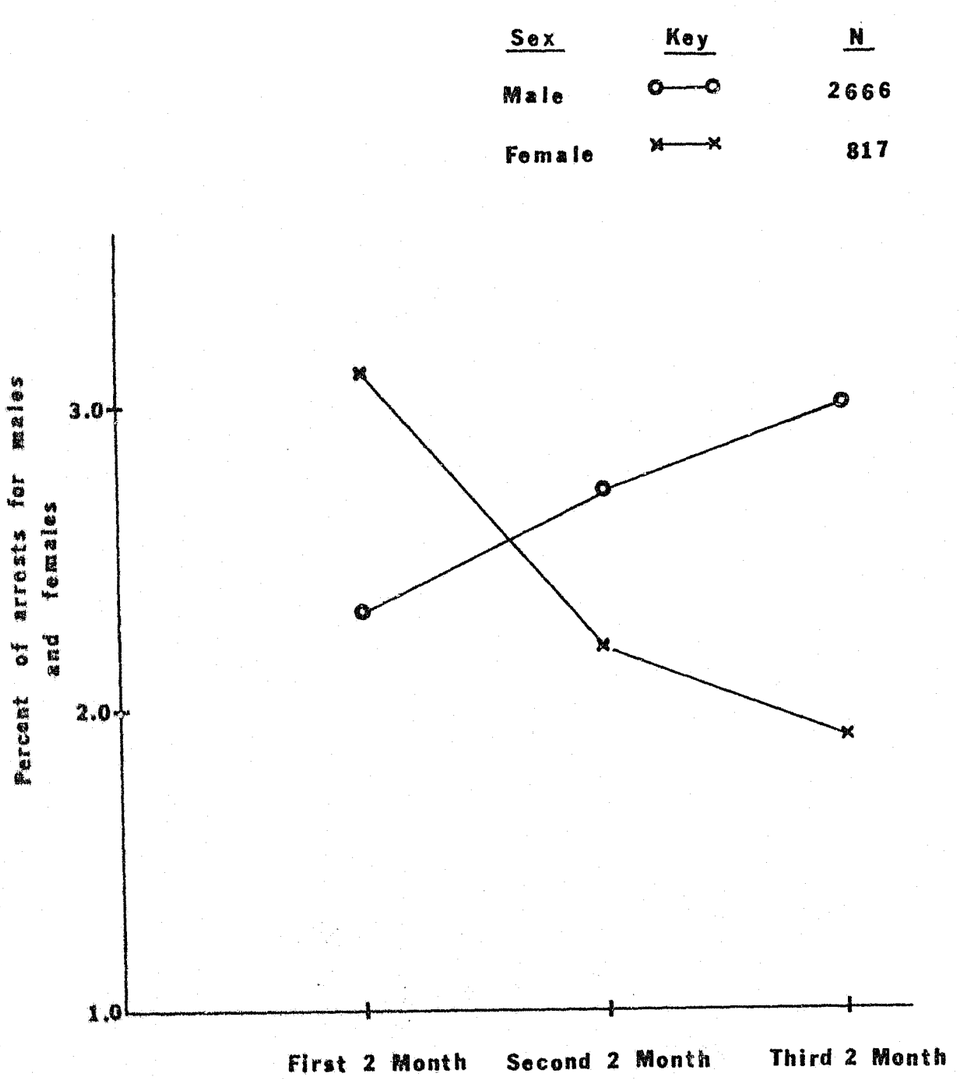

Fig. 2 Percent of patients arrested for each sex group per 2-month period during the first 6 months in treatment.

and that 23.4% of the sample were females) was only -0.094. Following Johnson (1945), it is suggested that the signed ratio of the observed value to its maximum attainable value, which was -0.297 in the present instance, gives a more realistic indication of the strength of the association. The standard error of this ratio (Demaree, 1950) in the present instance was 0.182 under the assumption that the value of the ratio in the population is zero. The observed value thus is 1.63 standard errors removed from a value of 0. With reference to the normal distribution, a difference as large as this has a probability of .106. This is virtually the same probability as was found for the chi-square value of 2.69.

A similar result was obtained for the arrest-by-sex correlation in the first period. The observed phi coefficient of 0.022 was compared with its maximum value of 0.293. The ratio, ϕ/ϕ_{max}, had a value of .075, with a standard error of .058. With an observed value removed 1.30 standard errors from zero, the probability of as great a difference under the hypothesis of independence was 0.171. This result is almost the same as was obtained with the chi-square value of 1.69 which had a probability of .20.

The preceding results leave doubts about the association, if any, between arrests and sex. In particular, there is doubt regarding the second question to be asked of the present data. This question is whether the decrease in the arrest rate for females and the increase in arrest rate for males over the three periods is reliable. If the arrest-by-sex correlation had been convincingly positive in the first period and negative in the third

period, an affirmative answer would have been indicated. Another approach taken to the question at hand was an analysis of variance of the binary scores for arrests by sex and time period. This analysis yielded an F-ratio of 2.69 for the sex-by-time period interaction, which had a probability less than 0.10 for 2 and 6962 degrees of freedom. Although this result suggests that the trends in arrests may differ over the first 6 months in treatment, the present data are not well suited to a variance analysis. It thus appears wise to withhold conclusions concerning the very enticing results portrayed by Fig. 2, and await an opportunity to replicate the present analysis with other samples of patients.

Arrests, by period in treatment and age. The percent of patients in each of seven age categories who were arrested per 2-month period is shown in Fig. 3. As can be seen, the 23-25 year old group had the highest arrest rate in all three periods. The group of patients under 18 had the lowest arrest rate during the first two periods and the next-to-the-lowest during the third period. Both the 31-40 and over 40 age groups showed an increase in arrest rate over the three periods, while the 26-30 year old group showed a decline. The question to be asked about these results is whether they are reliable in the sense that they would be likely of confirmation in random samples from the same population as is represented by the present sample.

The first approach to the foregoing was to test the hypothesis of independence between arrests and age by computing the chi-square values for each of the three periods in treatment. These values and their associated probability levels, based on 6 degrees of freedom, were as follows: $\chi^2 = 10.38$, $p = .11$; $\chi^2 = 4.52$,

Age Groups	Key	N
Under 18		146
18-20		480
21-22		583
23-25		734
26-30		685
31-40		603
Over 40		252

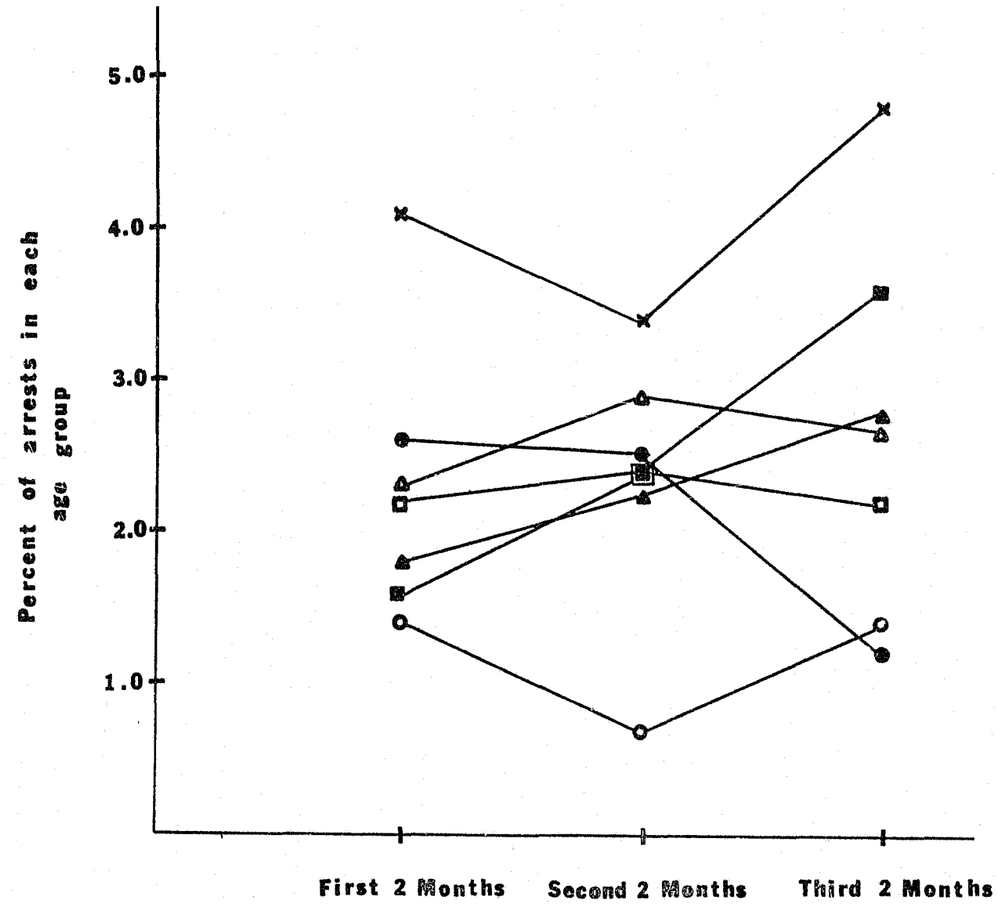

Fig. 3 Pecent of patients in each age group arrested per 2-month period during the first 6 months in treatment

$p = .61$; and $\chi^2 = 19.61$, $p = .003$. The second approach was to test the hypothesis of no difference in arrest rates among the age groups per 2-month period during the first 6 months in treatment. This test was made using the S statistic, based on Friedman rank sums (Hollander & Wolfe, 1973). The observed value of S of 10.428 fell between the .05 and .10 probability levels under the null hypothesis. This result, together with an F-ratio significant at the .05 level, based on an analysis of variance of the binary variable for arrests, inclines the present investigators toward rejecting the null hypothesis, primarily on the basis of a higher arrest rate by the 23-25 year old patients.

The trends toward increasing or decreasing arrest rates over the first three periods for particular age groups were intriguing, but of questionable reliability based on the relatively low prevalence of arrests, small numbers of patients in the age groups, and the low correlation of the Arrests variable from one period to the next. As a case in point, the increase in the percent of arrests in the over-40 group from 1.6% in the first period to 3.6% in the third period represents an increase from 4 to 9 of the 252 patients in this group who were arrested in these two periods. It may be obvious that little or no confidence can be placed on this result in the absence of verification in other samples of patients.

Arrests Under Different Categories of Charges

In the bimonthly status report on each patient, the number of arrests was reported for each of several categories. Two of these, gambling or running numbers and prostitution or pimping

were reported infrequently and were combined with stealing or forgery to form a category called "crimes of profit." The other categories were "drug violations" and "crimes against persons."

The number and percent of patients arrested one or more times under the above categories of charges is shown in Table 7 for each 2-month period. Arrests for crimes against persons were less frequent than arrests for drug violations, and the latter were less frequent than arrests for crimes of profit. For none of the three categories was there any indication of a trend upward or downward in the arrest rate over the first 6 months in treatment. Finally, it is apparent that the number of instances during given periods of patients being arrested one or more times under more than one category of charge was quite low. For example, during the first 2 months in treatment the total number of patients arrested under the three categories of charges was the sum of 52, 36, and 10 which equals 98. This is greater, by 9, than the total number of patients, 89, who were arrested irrespective of the charges. Thus, during the first 2 months in treatment there were only nine instances of patients being arrested under more than one category of charges.

Crimes of profit. During the first three periods in treatment, the 23-25 year old group had an arrest rate of 2.7, 2.0, and 3.1%, respectively, for crimes of profit. This group had an average rate of 2.6%, which was 1% higher than the average rate of any other age group. The lowest rates were observed in the under-18 and over-40 groups. The hypothesis of equal arrest rates for the seven age groups over the three periods was tested by the S statistic

TABLE 7

Number and Percent of 3483 Patients Arrested for Crimes of Profit, Drug Violations and Crimes Against Persons During the First Six Months in Treatment

Percent Shown in Parentheses

Category	First 2 Months	Second 2 Months	Third 2 Months
Crimes of Profit	52 (1.5)	59 (1.7)	57 (1.6)
Drug Violations	36 (1.0)	24 (0.7)	34 (1.0)
Crimes Against Persons	10 (0.3)	16 (0.5)	12 (0.3)
All Categories	89 (2.6)	91 (2.6)	97 (2.8)

(S = 10.3; df = 6, p = .11). While this result was equivocal, the chi-square test for the third period was not. The chi-square test of independence between the prevalence of arrests for crimes of profit in the 23-25 year old group versus all other age groups yielded a chi-square value of 12.95, which was significant beyond the .01 probability level, with 1 degree of freedom.

Differences of note were not observed in the prevalence of arrests for crimes of profit among the ethnic or sex groups.

Drug violations. None of the 146 patients in the under-18 age group were arrested for drug violations during the first 4 months in treatment. Among the 252 patients in the over-40 group, 3 or 4 patients were arrested on drug charges during each 2-month period. The arrest rates for the other age groups varied in slight ways, but were not notably different.

With respect to sex, the drug arrest rate for females declined from 1.2% in the first period to 0.5% in the next two periods, while the rate for males was about 1.0% during all three periods.

In contrast to the slight differences in relation to age and sex, the prevalence of arrests for drug violations differed considerably among the four ethnic groups. The Mexican-American group, with an arrest rate during the three periods of 1.6, 2.8, and 2.0%, had the highest prevalence of any of the ethnic groups in all three periods. ~~The Puerto Rican group had the lowest prevalence of any of the ethnic groups in all three periods~~. The Puerto Rican group had the lowest prevalence in two of the three periods. These differences were considered to be significant (S = 7.00, df = 3, p = .05).

Crimes against persons. Arrests for these charges were so infrequent that comparisons among different groups of patients could not be made reliably. An example is offered by the prevalence of arrests for crimes against persons in the Mexican-American group. During the first 2 months in treatment, 4 of the 244 Mexican-Americans were arrested on such charges. During the second 2 months only two patients in this group who were arrested for crimes against persons. Expressed as a percent of the patients in the group who were arrested on such a charge, the values of 1.6 and 0.8% are the two highest for any period or ethnic group.

The main finding from the study of arrests under different categories of charges was that the higher arrest rate in the 23-25 year old age group, which was described on page 23, appears to be associated primarily with arrests for crimes of profit.

Arrests for minor offenses. As previously mentioned on page 4, information about arrests for disorderly conduct, vagrancy, and other violations of a minor nature was not available in some of the bimonthly reports which were submitted for the present sample of patients. This information was available, however, for patients who were admitted into treatment during the second half of the year, starting June 1, 1971. For 1440 outpatients who remained in treatment at least 6 months and for whom the data in question were present, the prevalence of arrests for minor offenses during the first, second, and third 2-month periods in treatment was 1.8, 1.7, and 2.6%. For this sample of patients, the prevalence of arrests for crimes of profit, drug violations, and crimes against persons was 3.0, 3.3, and 4.3% for the three periods. Although

these results do not support the finding in a study by Maddux and McDonald (1974) of 100 opioid addicts that the majority of arrests during the year following admission were for minor offenses, the present data indicate that during the first 6 months in treatment arrests for minor offenses accounted for a bit more than half again as many arrests as occurred under all other charges.

Patterns of Arrests Over Time in Treatment

The pattern of arrests over the three 2-month periods for a patient was represented by his three index values on the Arrests variable. As the reader may recall, an index value of 1 signified no arrests, a value of 2 was assigned for one arrest, a 3 for two arrests, and a 4 for more than two arrests.

Among the 3483 patients, 234 or 6.7% were arrested one or more times during the first 6 months in treatment. Among these 234 patients, 160 or 68.4% were arrested only once during the 6 months. The three Arrest index values for each of the remaining 74 patients were entered into a hierarchical cluster analysis (Ward, 1963) to delineate the patterns of arrests. The pure forms of the patterns disclosed are given in Table 8.

Next in number to the patients who were arrested only once were the 27 or 11.6% of the 234 patients who were arrested once during two of the three periods. Next were the patients who were arrested more than once during a single 2-month period. These included 20 or 8.5% who were arrested twice, and 13 or 5.6% with more than two arrests in one of the periods. Three patients were arrested once during the second period and twice during the third

TABLE 8

Number and Percent of Individuals With Given Patterns of Arrests During the First Six Months in Treatment

	Time Period			Number of Patients with Pattern	Percent of 234 Patients with Pattern
	First 2 Months	Second 2 Months	Third 2 Months		
Pattern:	2	1	1	50	21.4
	1	2	1	48	20.5
	1	1	2	62	26.5
	1	2	2	10	4.3
	2	1	2	7	3.0
	2	2	1	10	4.3
	3	1	1	8	3.4
	1	3	1	7	3.0
	1	1	3	5	2.1
	4	1	1	6	2.6
	1	4	1	3	1.3
	1	1	4	4	1.7
	1	2	3	3	1.3
	*	*	*	11	4.6
Total:				234	100.0

*Includes patterns which pertained to one or two patients.

Key to Index Values:

1 0 arrests per 2-month period
2 1 arrest
3 2 arrests
4 >2 arrests

period. The remainder of the 234 patients included two with a 222, signifying a single arrest during each of the three periods and two with a 231, indicating one arrest during the first period and two arrests during the second period. The remaining seven patterns were as follows: 213, 321, 331, 431, 124, 142, and 144.

An examination of the ethnic composition, sex, and age of the 74 patients with multiple arrests failed to disclose anything unusual about these patients.

Illegal Sources of Support Over Time in Treatment

Although Illegal Support was a dichotomous variable (scored 2 if illegal activities were reported to have been a major or minor source of support during a given period, and scored 1 otherwise), it proved to be highly interesting as an indicator of criminality. As previously reported on page 15, Illegal Support had relatively high correlations from one period to the next, whereas the Arrests variable had low correlations. Neither of these measures showed appreciable change over the first 6 months in treatment. The percent of patients for whom illegal support was reported during the first three periods, in order, were 5.8, 5.5, and 5.3. During these three periods, 343 or 10.0% of the 3464 patients for whom data were available were reported to have had an illegal source of support during one or more periods. Half of these patients had illegal support during only one of the three periods; 109 or 31.7% of the 343 had an illegal source of support during two periods and 63 or 18.4% during all three periods.

Some other findings of interest were the following. A higher percent of males than females were reported to have been engaged in illegal activities during the first 6 months in treatment. For the first, second, and third 2 months, the percent of males with illegal support were 6.1, 5.9, and 5.7, respectively, and for females, 5.1, 4.3, and 4.3. The chi-square for the mean percent over the three periods had a value of 2.31 which is significant at the .14 probability level with 1 degree of freedom.

A much higher percent of Mexican-Americans were reported to have had an illegal source of support during the first 6 months in treatment than any other ethnic group. The percent of Mexican-Americans with illegal support during the first three periods were 11.1, 11.1, and 9.5. The remaining ethnic groups did not appear to differ in any consistent way; for these groups combined, the percent with illegal support in the three periods were 5.5, 5.1, 5.0.

Prevalence of Criminality Indicators Over the First Year in Treatment

The findings presented thus far have been limited to criminality prior to entry into treatment and during the first 6 months in outpatient treatment of a sample of 3483 patients. These patients were followed for 4, 5, or 6 two-month periods in treatment, depending on whether they were terminated. Approximately one out of every eight patients were terminated during the fourth 2-month period and likewise during the fifth period. Almost 70% were continued in treatment beyond the sixth period. It is of

interest that during the second half of the first year in treatment, 73 or 2.1% of the 3483 patients were terminated due to incarceration in jail.

The reason for presenting the results separately for the first 6 months and the first year in treatment will be discussed later, but it has to do with the mixing of termination reports with continuation-in-treatment reports and with the shifting sample base as patients terminate. Nevertheless, the results for the second half of the first year in treatment do provide a comparison with the levels and trends observed over the first 6 months in treatment, and are therefore considered.

The percent of patients with an illegal source of support during the three periods covering the second half of the first year in treatment were, in order, 5.5, 5.2, and 4.8. The corresponding values for the first three periods were 5.8, 5.5, and 5.3. These results suggest that the prevalence of illegal activities as a major or minor source of support does not change over the first year in treatment.

The percent of patients arrested during the fourth, fifth, and sixth periods in treatment, respectively, were 2.9, 2.8, and 2.7. These percentages, together with the 2.6, 2.6, and 2.8% arrested during the first three periods, indicate that the prevalence of arrests is remarkably steady from one 2-month period to another over the first year in treatment.

With respect to the prevalence of time in jail, the reader may recall that the percent of patients who spent one or more

days in jail increased slightly from 2.6% in the first 2-month period to 3.6% in the third period. In the three periods covering the second half of the first year in treatment these percentages, in order, were 3.6, 3.7, and 3.1. These results lend no support to the already doubtful significance of the slight increase in prevalence of time in jail during the first six months in treatment, and are more in keeping with a conclusion that the prevalence of time in jail shows no trend over the first year in treatment. Such a conclusion is consistent also with the findings in an earlier cohort (Demaree, 1974).

Relationships Between Demographic Variables and Criminality Indicators Over the First Year in Treatment

The percent of patients with an illegal source of support in the six periods covering the first year in treatment revealed that Mexican-Americans had a higher prevalence of illegal support than any other ethnic group in all six periods. As shown in Table 9, however, the percent of Mexican-Americans with an illegal source of support declined from 11.1 in the first two periods to 8.3 and 7.1 in the fifth and sixth periods. A lesser decline in the prevalence of illegal support was found for Whites. A further finding of significance was that the prevalence of illegal support did not differ in any consistent way among the Black, Puerto Rican, and White ethnic groups.

With respect to the prevalence of arrests over the first year in treatment, the results in Table 9 offer no evidence of a trend in prevalence for any ethnic group, but again the

TABLE 9

Prevalence of Illegal Support, Arrests, and Time in Jail During the First Six 2-month periods for Each of Four Ethnic Groups and the Total Sample

Including Sample Size

Percent With Illegal Support

Ethnic Group	Period 1	2	3	4	5	6
Black	5.7	4.7	5.1	5.7	5.3	5.3
Puerto Rican	4.9	5.3	5.7	5.1	5.0	3.9
Mexican-American	11.1	11.1	9.5	7.9	8.3	7.1
White	5.7	6.1	4.6	4.8	4.3	3.7
Total	5.8	5.5	5.3	5.5	5.2	4.8

Percent Arrested

Ethnic Group	Period 1	2	3	4	5	6
Black	2.7	2.6	2.9	3.0	3.0	3.0
Puerto Rican	1.5	2.4	2.3	2.0	1.6	1.6
Mexican-American	4.6	5.8	4.6	5.0	5.1	3.8
White	2.6	2.2	2.7	3.0	3.1	2.3
Total	2.6	2.6	2.8	2.9	2.8	2.7

Percent With Time in Jail

Ethnic Group	Period 1	2	3	4	5	6
Black	3.1	3.3	3.6	3.9	4.1	3.6
Puerto Rican	1.7	2.1	2.4	1.6	2.4	2.0
Mexican-American	5.0	8.7	8.7	8.3	8.3	7.7
White	1.7	1.9	3.3	3.6	3.1	2.0
Total	2.6	3.0	3.6	3.6	3.7	3.1

Sample Size[1]

Ethnic Group	Period 1-4	5	6
Black	1776	1567	1375
Puerto Rican	666	587	518
Mexican-American	244	198	159
White	741	628	523
Other	56	43	41
Total	3483	3023	2616

[1]Due to missing data, actual sample sizes were somewhat less than indicated; for the total sample this was under 2%.

Mexican-Americans had the highest arrest rate in all six periods. Except for the second period, the Puerto Ricans had a consistently lower arrest rate than the other ethnic groups. Though there was little question of the outcome, the S statistic (see page 18) was used to test the hypothesis of no difference in arrest rates among the ethnic groups over the six 2-month periods. The value of 15.61 for S, with 3 degrees of freedom, was significant beyond the .01 level.

The results in Table 9 for the prevalence of time in jail are much the same as for the prevalence of arrests. An even sharper difference than with arrests appears to exist, however, between the percent of Mexican-Americans with time in jail and the percent of other ethnic groups who spent some time in confinement. The S statistic for these data had a value of 16.96 which was significant beyond the .01 level for the 3 degrees of freedom present.

Prevalence of criminality indicators, by sex. The prevalence of illegal activities as a source of support during the first 6 months in treatment was higher for males than females. As shown in Table 10, however, there was little difference between males and females in the prevalence of illegal support during the third and fourth 2-month periods. During the sixth period, 5.8% of the females were reported to have had an illegal source of support, compared to 4.4% of the males.

With respect to arrests, there was weak evidence, as previously discussed on page 20, of a differential trend in prevalence during the first 6 months for males and females. The

TABLE 10

Prevalence of Illegal Support, Arrests, and Time in Jail During the First Six 2-month Periods in Treatment, Shown Separately by Sex and the Total

Including Sample Size

Percent With Illegal Support

Sex	Period 1	2	3	4	5	6
Male	6.1	5.9	5.7	5.6	5.1	4.4
Female	5.1	4.3	4.3	5.4	5.3	5.8
Total	5 8	5.5	5.3	5.5	5.2	4.8

Percent Arrested

Sex	Period 1	2	3	4	5	6
Male	2.4	2.8	3.1	3.0	3.2	3.0
Female	3.2	2.3	2.0	2.6	1.8	1.6
Total	2.6	2.6	2.8	2.9	2.8	2.7

Percent With Time in Jail

Sex	Period 1	2	3	4	5	6
Male	2.7	3.2	4.0	3.9	4.5	3.7
Female	2.5	2.4	2.4	2.9	1.7	1.3
Total	2.6	3.0	3.6	3.6	3.7	3.1

Sample Size[1]

Sex	Period 1-4	5	6
Male	2666	2297	1987
Female	817	726	629
Total	3483	3023	2616

[1] Due to missing data, actual sample sizes were somewhat less than indicated; for the total sample this was less than 2%.

prevalence for females declined from 3.2% in the first period to 2.0% in the third, while a slight increase from 2.4 to 3.1% was shown by males during these two periods. In the second half of the first year in treatment, the females showed a further drop of 1% in prevalence of arrests, while the arrest rate for males held steady at about 3.0%. The pattern of these results suggests that females have a lower arrest rate than males over the first year in treatment.

The prevalence among females of time in jail was lower than for males over the time in treatment. This was particularly the case for the last 4 months of the first year. During the two periods covering these 4 months, 1.7 and 1.3% of the females spent one or more days in jail compared to 4.5 and 3.7% of the males.

Prevalence of criminality indicators, by age. The prevalence of arrests over the first six periods in treatment was compared over the seven age groups. As shown in Table 11, the 23-25 year old group had the highest prevalence of arrests during the first four periods and next to the highest during the last two periods of the first year in treatment. The under-18 group had the lowest arrest rate in five of the six periods. The next-to-the-lowest rate was taken in four of the six periods by the 252 patients who were over 40 years of age. The S statistic (see page 18) for these data had a value of 22.5 which was significant beyond the .01 level with 6 degrees of freedom.

The findings with respect to the prevalence of time in jail mirrored the findings for arrests. Over the first three periods

TABLE 11

Prevalence of Illegal Support, Arrests and Time in Jail During the First Six 2-month Periods in Treatment, Shown Separately by Age Groups and the Total

Including Sample Size

Percent With Illegal Support

Age Group	Period 1	2	3	4	5	6
Under 18	2.7	0.6	2.0	2.0	2.5	3.0
18-20	6.0	2.3	3.4	4.8	4.9	5.7
21-22	5.1	2.4	4.9	4.8	4.6	3.2
23-25	7.5	5.9	7.0	7.0	6.6	5.8
26-30	4.9	3.2	4.9	5.6	5.7	5.2
31-40	6.4	3.6	4.8	4.8	3.2	3.3
Over 40	4.4	1.1	7.5	6.8	6.3	6.0
Total	5.8	5.5	5.3	5.5	5.2	4.8

Percent Arrested

Age Group	Period 1	2	3	4	5	6
Under 18	1.4	0.7	1.4	0.7	0.9	1.1
18-20	2.3	3.0	2.8	3.0	4.2	3.0
21-22	2.3	2.5	2.3	3.3	3.0	2.1
23-25	4.1	3.4	4.8	4.1	3.0	3.1
26-30	2.7	2.5	1.2	3.1	2.6	2.2
31-40	1.9	2.4	2.9	2.4	2.7	3.5
Over 40	1.6	2.4	3.6	0.8	1.8	2.0
Total	2.6	2.6	2.8	2.9	2.8	2.7

Percent With Time in Jail

Age Group	Period 1	2	3	4	5	6
Under 18	2.1	0.7	1.4	0.7	0.9	1.1
18-20	2.1	3.0	3.0	3.2	4.8	3.1
21-22	2.3	3.0	2.6	3.2	3.9	2.1
23-25	3.7	3.7	5.6	4.6	4.0	3.7
26-30	2.7	3.0	3.0	3.7	4.3	2.8
31-40	2.7	3.4	4.4	4.7	3.1	4.5
Over 40	1.6	2.8	2.8	2.0	3.2	2.6
Total	2.6	3.0	3.6	3.6	3.7	3.1

Sample Size[1]

Age Group	Period 1-4	5	6
Under 18	146	118	98
18-20	480	409	343
21-22	583	501	442
23-25	734	647	559
26-30	685	598	514
31-40	603	525	458
Over 40	252	225	202
Total	3483	3023	2616

[1]Due to missing data, actual sample sizes were somewhat less than indicated; for the total sample this was less than 2%.

the 23-25 year old group had the highest percent of patients with one or more days in jail; during the second half of the first year in treatment this group had the next-to-the-highest percent during two periods and the third highest in the other. The under-18 group had the lowest prevalence of time in jail for all periods, except the first. Again, the over-40 group in all six periods had a relatively low percent of patients who were in jail for one or more days. The S value (see page 18) was 25.98 and was significant beyond the .01 level with 6 degrees of freedom.

Patterns of Criminality Over the First Year in Treatment

In a sample of 2824 methadone maintenance patients, drawn from the present sample, a series of studies (Demaree, Neman, Long, & Gant, 1974) was made of the relationships between differential outcomes over time in treatment and patient characteristics, pretreatment variables, and intreatment measures. In this research it was found that an illegal source of support during the 2-month pretreatment period was indicative of adverse outcomes for employment, alcohol consumption, and drug use during the first year in treatment. Illegal activities, arrests and time in jail during treatment were indicative of adverse outcomes for employment and drug use during the first year in treatment.

One of the above studies was based on the mean level and pattern of the Criminality composite over time in treatment. With respect to this composite of dichotomous variables for illegal support, arrests, and jail, 85% of the 2824 methadone patients displayed few, if any, indications of criminality during the time in

treatment. Next were 7% for whom the mean level of criminality indicators was low, but variable from one period in treatment to another, without an appreciable trend upward or downward. For over 5% the mean level was low, but steady over the time in treatment. Only 20 patients, or less than 1%, showed a decreasing pattern, while 16 patients showed an increasing pattern over the time in treatment. Finally there were 16 patients for whom two of the three criminality indicators were typically present during the 2-month periods in treatment.

Even though only 412 or 15% of the 2824 methadone patients showed appreciable indications of criminality during treatment, the following were clearly evident. The results are expressed in terms of correlations (N = 2824) between selected variables and a discriminant function which maximally separated the six criminality outcome groups, relative to the within-group dispersion. On this dimension the group with few or no indications of criminality was widely separated from the group with frequent indicators of criminality during treatment.

1. An illegal source of support during the 2-month pretreatment period was predictive (r = 0.332) of criminality over the first year in treatment.

2. Lack of gainful employment or engagement as a student or housewife during treatment was correlated 0.509 with criminality outcome. The extent to which patients were unemployed had a similar correlation of 0.452.

3. There was greater opiate use during treatment by the group of patients with frequent criminality indicators than by

the groups of patients which had fewer indications of criminality. This applied particularly to heroin use, which correlated 0.543 with the criminality discriminant function.

4. The use of barbiturates and cocaine was associated with an adverse criminality outcome. These drug use variables correlated 0.356 and 0.472, respectively, with the criminality discriminant function.

With regard to ethnic differences, Mexican-Americans were over-represented, while Puerto Ricans were under-represented, among the 412 patients for whom there were appreciable indications of criminality over the time in treatment. Of the 412 patients, 9.5% were Mexican-Americans; in the remainder of the sample, 5.6% were Mexican-Americans. By comparison, 17.5% of the 412 were Puerto Ricans, but this group made up 22.6% of the 2412 patients in the remainder of the sample. These results, however, are unimpressive when cast into correlations. The correlation between the Mexican-American ethnic variable and the criminality discriminant function was only 0.158. The corresponding correlation for the Puerto Rican ethnic variable was -0.112.

Discussion and Conclusions

With a focus on illegal support, arrests, and time in jail as indicators of criminality, 3483 drug abusers were followed for the first 6 to 12 months in methadone maintenance or drug-free outpatient treatment at 31 different agencies participating in the Drug Abuse Reporting Program. The data available on each patient, admitted during a one year period starting June 1, 1971, consisted of an Admission Record and bimonthly status reports which were prepared by the agencies in interviews with the patients. Prior criminality, as indicated by arrests, convictions, and incarceration, was greatest for the Mexican-American ethnic group and the least for Puerto Ricans, while Blacks and Whites fell in between. Less criminality prior to admission was reported for females than for males, and as expected, a strong relationship to age was found. The ethnic and sex differences, just noted, were maintained in the prevalence per 2-month period of arrests (exclusive of arrests for minor offenses) and time in jail during treatment. No trends in prevalence were observed within ethnic groups over the time in treatment. There was a slight decline in the prevalence of arrests among females over the first year in treatment. The prevalence of illegal activities as a source of support was much higher for the Mexican-American group than the other ethnic groups, which did not differ appreciably.

Among seven age groups, the 23-25 year old group had the highest prevalence on all three criminality indicators during treatment. The under-18 and over-40 groups had the lowest.

Arrests for crimes of profit were more common among the 23-25 year olds than in any other group, while arrests for drug violations were more common in the Mexican-American group than in any other ethnic group.

Among the 3483 patients, 234 or 6.7% were arrested one or more times for other than minor offenses during the first 6 months in treatment. Only 41 or 1.2% were arrested during more than one 2-month period. During the first 6 to 12 months that 2824 patients remained in methadone treatment, only 15% showed any appreciable or recurring indications of criminality from one 2-month period to another. Among the three indicators of criminality, illegal activities as a reported source of support had a prevalence per 2-month period on the average of 5.5% and showed a strong tendency to carry over from one period in treatment to the next, but this was decidedly not the case for arrests or time in jail.

Although the prevalence estimates in the present study were considered to be conservative, for a number of reasons, the findings support the conclusion that arrests and brief periods in jail, by and large, are isolated events in the lives of individual patients. At the same time it was strongly evident that patients in different ethnic groups, who tended to come from different agencies, urban settings, and geographical regions, are exposed to different risks of arrests and time in jail.

References

Demaree, R. G. An investigation of homogeneity in the interpretation and scaling of test items. Urbana, Illinois: University of Illinois Library. Unpublished doctoral dissertation, 1950.

Demaree, R. G. Behavioral measures and related criteria for assessment of outcomes during treatment for drug users in the DARP: 1969-71 admissions. In S. B. Sells (Ed.) Studies of the effectiveness of treatments for drug abuse: Vol. 1 Evaluation of treatments. Cambridge, Mass.: Ballinger Publishing Company, 1974. (Also published as IBR Report No. 73-4, 1973).

Demaree, R. G., & Neman, J. Behavioral criteria for assessment of outcomes during treatment for drug users in the DARP: 1971-72 admissions. Fort Worth, Texas: Institute of Behavioral Research, Texas Christian University. IBR Report No. 74-23, 1974.

Demaree, R. G., Neman, J. F., Long, G. L., & Gant, B. L. Patterns of behavioral outcomes over time in methadone maintenance treatment. Fort Worth, Texas: Institute of Behavioral Research, Texas Christian University. IBR Report No. 74-21.

Hollander, M., & Wolfe, D. A. Nonparametric statistical methods. New York, N.Y.: John Wiley & Sons, 1973.

Johnson, H. M. Maximal selectivity, correctivity and correlation obtainable in 2 by 2 contingency tables. American Journal of Psychology, 1945, 58, 65-68.

Long, G. L., & Demaree, R. G. Indicators of criminality during treatment for drug abuse. Fort Worth, Texas: Institute of Behavioral Research, Texas Christian University. IBR Report No. 74-27, 1974.

Maddux, J. F., & McDonald, L. K. Status of 100 San Antonio addicts one year after admission to methadone maintenance. Drug Forum, 1973, 2, 239-252.

Sells, S. B. (Ed.) Studies of the effectiveness of treatments for drug abuse: Vol. 1, Evaluation of treatments. Cambridge, Mass.: Ballinger Publishing Company, 1974. (a).

Sells, S. B. (Ed.) Studies of the effectiveness of treatments for drug abuse: Vol. 2, Research on patients, treatments, and outcomes. Cambridge, Mass.: Ballinger Publishing Company, 1974. (b).

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