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METHADONE MAINTENANCE -- MODEST HELP FOR A FEW

The Final Report of the Research Project on Evaluation
of the Effects of Methadone Treatment on Crime and
Criminal Narcotic Addicts - Part I

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INTRODUCTION

The Addiction Research and Treatment Corporation accepted its first patient for treatment, in Brooklyn, N.Y., in October 1969, and the last treatment date covered in this report is October 1974. The five years thus spanned were ones of enormous changes in the field of methadone treatment -- as regards both number and size of programs and public optimism about the probable results of treatment.

The first patients treated for heroin addiction with methadone were in an initially small, experimental program, set up by Drs. Vincent Dole and Marie Nyswander in 1964. The first publication regarding their efforts was available in the Journal of the American Medical Association in 1965. This and the subsequent early reports of the Dole-Nyswander program were extremely promising, and the public press of the time expressed enthusiasm about methadone maintenance.

On August 16, 1966, The New York Times carried an article entitled: "City Program Finds Methadone Curbs Need for Heroin." Several months later (March 10, 1967), an even more laudatory piece appeared, titled "City Test Program for Addicts is 78% Successful." The optimistic sub-heading stated: "Methadone Treatments End Patients' Need for Heroin." This attitude reached one sort of culmination in the conversion of the N.Y.C. Addiction Services Agency from its sole reliance on the therapeutic community approach, when the first A.S.A. methadone program opened in November 1970.

Ironically, this was also the year in which one of the first serious warning notes about the effects of methadone treat-

ment was sounded. Chambers and Taylor (1970), reporting on a Philadelphia program, reported rates of continued abuse of heroin that were considerably higher than the early, negligible levels of abuse reported for the Dole-Nyswander program.

By 1973, the Sunday Magazine Section of The New York Times, in an article by James M. Markham, questioned the assumption that a criminal addict would automatically stop his criminal behavior once he no longer needed heroin. Edward Jay Epstein, in 1974, wrote an article for The Public Interest whose conclusions were expressed in its title, "Methadone, the Forlorn Hope." Early A.R.T.C. results, discussed by Epstein and Markham, were among the sources of their sceptical assessments. This report expands on and clarifies the bases for a negative evaluation of methadone treatment, but it does not alter them in any substantial way.

One of the unique contributions of the current report to the methadone literature lies in its division of patients into "cohorts" based on calendar year of admission to treatment. This strategy enables us to see that patients admitted to treatment in Brooklyn during the third year of the program's existence, between November 1971 and October 1972, had an enormously high drop-out rate compared to patients admitted in the two previous years.

Another important analytic device in the current report is the division of patients into those retained for varying periods of time. This strategy enables us to see that such improvements in post-program employment and crime as did occur were limited to those patients who were retained in treatment for more than three years; further, at least as regards crime and comparative

missed methadone performance, these patients had superior records in their very first year of treatment. These findings suggest that the program's impact was limited mainly or exclusively to that small group of patients who apparently had a high level of change motivation at the outset.

Although the authors believe that the quality of analysis represented in this report is high, a caveat must nevertheless be introduced at this point. The data come exclusively from one, single methadone program, run by particular individuals, and serving a group of addicts who are not representative of the total treatment population. In the "Summary and Conclusions" section we attempt to place A.R.T.C. in a context of comparison with other methadone maintenance programs. But we are forced to conclude that, for a variety of reasons detailed below, comparison though eminently desirable is fraught with hazards.

I. The Program*

The First Days of ARTC

The Addiction Research and Treatment Corporation (ARTC), a non-profit corporation for the ambulatory treatment of heroin addiction, admitted its first patient in October 1969. ARTC, originally located at 937 Fulton Street in the Bedford-Stuyvesant section of Brooklyn, N.Y., was to be supported as a five-year experimental program by the National Institutes of Mental Health, the Department of Housing and Urban Development (through its Model Cities program), and the City of New York. The Vera Institute of Justice provided technical assistance in the establishment of the program. Since its inception, Beny J. Primm, M.D. has been the Executive Director and since a few months after inception Conrad E. Mauge has been the Administrative Director.

When it was first established, ARTC was unusual in several respects. In contrast to both private and publicly supported therapeutic communities in New York City and New York State, and federal programs (such as the federal hospital at Lexington, Kentucky), ARTC was to provide methadone on an ambulatory basis. It was to be different from other methadone programs already in existence, in that selectivity in patient admission was to be minimal. Admission criteria were that applicants reside within the program's catchment area, be at least 21 years of age, addicted to heroin for at least two years and have no major physical or emotional conditions which would interfere with treatment. Thus ARTC would treat addicts with long histories of criminal activity, unsuccessful experiences in other programs and those who were unemployed.

*This section was written in collaboration with Alice Sardell Catchen.

The original ARTC catchment area, which included 14 health areas in the Bedford/Stuyvesant-Fort Greene area, was an area of low median family income, low median education, high unemployment,¹ and according to New York City Narcotics Register statistics (Narcotics Register, 1964), a high rate of heroin addiction. The population served by the program was and is predominantly black. The program's Brooklyn catchment area was expanded at two subsequent times, so that by 1975 it serves a large segment of north Brooklyn.

Because ARTC was an ambulatory program, which admitted residents of the area with few restrictions, it was expected to have a patient population which would be more representative of the general addict population than other, more selective, methadone programs already in existence.

In addition to actively recruiting a "hard core" patient population, ARTC was to experiment with methadone dosage levels in an attempt to establish whether "lower" dosages of methadone could be used as successfully as "higher" dosages. The option of eventual detoxification from methadone itself was also to be offered to patients in the program.

Along with methadone maintenance, patients were to be provided with a range of services, including group therapy, individual counseling, vocational counseling and job referral services, medical care, educational programs and legal aid.

One of the provisions of the program's funding was that its

1. Human Resources Administration (1969).

treatment processes be subject to continuous evaluation and that its patient population serve as a source of data for research on various aspects of heroin addiction. Research at the Center for Criminal Justice at the Harvard Law School was to examine the issues of the relationship of crime and addiction and the treatment of addicts by the criminal justice system and the impact of the treatment program itself on criminal behavior. Work at the Yale Medical School was to monitor ARTC medical records and to examine the question of the efficacy of various dosage levels. The research team at the Columbia University School of Social Work would be responsible for evaluating the long-term impact of the program in terms of such outcome measures as recidivism, drug use, employment, criminal behavior and family relationships, as well as studying predisposing psychological and sociological factors relevant to addiction itself. This report marks the conclusion of the work of the Social Evaluation Team. Its research staff and Columbia evaluation teams.

The ARTC Program (1969-1973)

During this period, the site located at 100 Fulton Street, formerly a Salvation Army building, was subdivided into several "clinics," with counselors for each separate clinic located in different parts of the building. Each clinic was initially assembled roughly by admission date; had about 100 patients. Services other than counseling were provided on a building-wide basis. Thus, there was one pharmacy and one dispensing unit. Other services were offered by the Legal, Social, Services (several different kinds of therapy groups), Medical, Job Trainings and Staff and Patient Education departments. As a retreat or office for unstructured activities, was available in the basement.

Both staff and patients were provided with identification cards, which had to be presented, on all arrivals at the building, to uniformed guards stationed at each entrance. These, in conjunction with the size and grimness of the interior, lent an unsympathetic air to the facility as a whole.

Three smaller facilities were also opened during this period. Quincy Village, a residential program modelled on therapeutic community lines, was established to treat patients identified as having special problems in functioning in the main program. Patients judged to be doing well were transferred back to the Fulton Street building. "Superhouse," also a residential facility, was open to addicts from any part of Brooklyn.

The Dosage and Social Services Experiment

The third separate facility was set up as part of the Dosage and Social Services Experiment, organized jointly by the program staff, and the Yale and Columbia evaluation teams. Its purpose was to test the treatment effects of high (100 milligram) and low (50 milligram) methadone dosage levels, and high and low availability of social services. To this end, 160 incoming patients, starting in March 1971, and excepting those with spouses or siblings already in the program, were randomly assigned to one of the following four groups: 1. high dosage, high services; 2. high dosage, low services; 3. low dosage, high services; 4. low dosage, low services.

In order, as was then thought, to prevent "low services" patients from gaining access to the full range of services offered on Fulton Street, a small separate facility with only one counselor for 80 patients was set up. It later appeared that the close

personal contact made possible by the small size of the separate facility was in fact conducive to treatment effectiveness. A report on this aspect of the experiment, renamed from "low availability of social services" to "decentralized," can be found in the report of the Medical Evaluation Team (Yale University, 1973). A discussion of the impact of high versus low methadone dosage on outcome variables appears later in the present report.

The Detoxification and Lowered Dosage Phase

Starting in late 1972, a radical downward shift in the highest allowable dosage level of methadone was ordered by the Director. Earlier in the life of the program, dosage levels of 100 occurred occasionally, and many patients were maintained on dosages of 80 mg. a day. At this time, 50 mg. was made the highest allowable dosage, and all patients maintained at higher levels were reduced to the 50 mg. level.

There was a corresponding pressure on those who had been receiving 50 mg. dosages to accept further downward shifts in their medication levels. At the same time, program staff became interested in increasing the number of "drug free" patients, and accordingly influenced many patients to become entirely detoxified from methadone.

Brooklyn patients studied in this report were admitted during the first three years of the program's existence, between October 1969 and September 1972. In order to determine whether either changing patient characteristics or changing program policy had an effect on treatment as time went on, we have, for analytic

purposes, divided this body of patients into three groups, or admission cohorts. The first cohort, consisting of 457 individuals, was admitted between October 1969 and September 1970; the second, which included 741 patients, was admitted between October 1970 and September 1971; and the third, with an "n" of 620, was admitted between October 1971 and September 1972. Thus, a total of 1818 persons were admitted into treatment in the time period under study.

Decentralization in Brooklyn

By June of 1972, the ARTC Fulton Street facility had an official patient census of 1,100. The study done by the Medical Evaluation Team at Yale University suggested that treatment services would be more effectively provided to patients at ARTC in smaller, decentralized treatment units. Administration of methadone programs in other areas of the country had reached similar conclusions; many methadone patients were being treated in small, physically dispersed clinics. NIMH, ARTC's primary funding agency, was also encouraging program decentralization, in order to assure that high staff-patient ratios would be operationalized.

The immediate impetus for decentralization at ARTC came from action by the New York City Board of Estimate, which, in the summer of 1972 refused to renew the ARTC contract (and therefore approve the City matching funds provided to ARTC through the Addiction Services Agency) unless plans for such restructuring were put into effect. During the period prior to this action, local planning boards in several areas of the City had opposed the establishment or the mode of operation of various methadone maintenance programs in their communities. In the case of ARTC, a group called the Fort Greene Crisis Committee had, through

the local planning board, expressed its concern to the members of the New York City Board of Estimate about the size of the ARTC patient population.

During the summer of 1973 ARTC Brooklyn operations were decentralized. In June, patient intake was discontinued at Fulton Street and during the next two months patients and staff were reassigned to three geographically dispersed Brooklyn clinics; one on Dean Street in the Park Slope section, one on Myrtle Avenue in the Bushwick section, and the third on Hopkinson Avenue in Brownsville. In reassigning patients and staff to the new facilities, both the geographic proximity of the clinic to the patient's home and the continuity of particular staff-patient relationships were taken into consideration.

After this initial process of decentralization, each clinic was assigned a sub-catchment area and prospective ARTC patients were required to apply to the clinic nearest to their home. Unless school or employment in a different area of Brooklyn made their attendance at another clinic more convenient, patients would remain at the clinic to which they had first applied.

Each ARTC department was decentralized so that all clinics would have a full complement of services. This structure remains to the present time. The medical staff of each clinic consists of one physician (assigned to the clinic for approximately four hours per day), one full-time registered nurse and two licensed practical nurses. The social service staff includes a senior counselor, a group counselor and five staff counselors. A medical social worker was later added to the staff of each clinic. Each clinic also has one job developer, one staff member of the education department and either one or two staff members of the

legal services department. Since each of the four Brooklyn clinics generally had a patient population of about 200 to 250 the ratio of individual counselors to patients was approximately 1 to 50, the ratio of legal, educational and job development staff to patients, approximately 1 to 200.

Methadone is dispensed by the medical staff of each clinic, although it is prepared at the central pharmacy located on Fulton Street. In addition to the pharmacy, the Professional Mental Health Unit, consisting of a psychiatrist and a psychologist, is also located on Fulton Street. This department is used on a consulting basis by the staff of the clinics.

At the same time that ARTC was decentralized, the "Superhouse" at Fulton Street was eliminated. The action was taken in response to pressure from the Fort Greene Crisis Committee. Superhouse members were from various areas of Brooklyn and the Crisis Committee argued that only addicts who were residents of the Fort Greene area should be treated at the Fulton Street facility.

Along with the establishment of the new clinics, an innovation in the pattern of staff functioning was instituted. Staff members were constituted into interdisciplinary teams for the purpose of planning and implementing individual patient treatment. In principle, the purpose of creating these interdisciplinary teams was to de-emphasize the role of methadone in the treatment process and to assure that the social service and other staff members had a role in clinical decision-making equal to that of the medical department.

Because cohort three patients were followed for two years from their entry date, this report includes objective data on

the Brooklyn program's existence through September 1974. As will be shown below, to the extent that either decentralization or the IDT approach had beneficial effects, these were offset or more than counterbalanced by other factors, probably including a heightened emphasis on detoxification.

As of the Fall of 1975, there are three ARTC clinics in Brooklyn. The Dean Street site was closed in September 1974, when it failed to receive approval from the local planning board.

ARTC in Harlem

In August of 1972, ARTC opened a small (50 patient) clinic on 125 Street and Lenox Ave. in Manhattan. During the first months of 1973, under pressure from the National Institute of Mental Health (which was interested in the establishment of a large methadone program in central Harlem), the ARTC administration began a process of the rapid expansion of its Harlem operations. Two methods were used to increase the patient population in Harlem, which grew from 50 to 450 between January and June of 1973. An outreach program was initiated to attract patients to the 125 Street clinic, and ARTC established a sub-contractual relationship with two small (50-75 patient) storefront programs.

An additional ARTC clinic opened on 119 Street in June of 1974 and one of the two sub-agency clinics, on 132 Street and Lenox Avenue, later officially became an ARTC clinic. The second other sub-agency program later became independent.

Staff and services are organized in the Harlem clinics in roughly the same way that they are in Brooklyn. The IDT approach to treatment is used and the same staff titles are represented at each clinic. During most of the time of the Harlem

program's existence, all methadone was dispensed at 125 Street while dispensing licenses for the other clinics were being processed.

The official patient census at each of the three Harlem clinics was approximately 250-300 in the Fall of 1975. Plans to open a fourth clinic on 145 Street were delayed due to opposition of a community group in the area, but it is possible that a drug-free treatment facility may open at that site some time in the future.

II. Methods

1. The Treatment Population

Brooklyn

Sex, Ethnicity, Age at Admission and Marital Status

A total of 1818 patients were admitted to the Brooklyn program in the period under study. Because 51 deceased patients were excluded from all analysis, the largest possible base number in any table is 1767.

As is the case among N.Y.C. addicts as a whole (Newman, 1974), over three-quarters (79 percent) of the total population is male (Table 1). There are no significant differences in sex among the three admission cohorts.

Reflecting the character of the area served by the program, the preponderance of patients are black (79%); Puerto Ricans contribute 13%, and whites 7%, to the total sample (Table 1). By contrast, for individuals first reported to the Narcotics Register, blacks comprise 45 percent, whites 35 percent and Puerto Ricans less than 20 percent (Newman, 1974).

The mean age at admission of the sample as a whole was 30 (29.8). Age at admission declined as program time went on: while mean age of those in the first cohort was 33.1, it was 29.4 in the second and 28.1 in the third (Table 1).

Forty-two percent of the patients had never been married; 29 percent had been married at some point but were not at entry, and the same proportion were married, including common-law relationships, at entry (Table 1). Just as age declined with program time, so did the proportion who had ever been married.

Education and Employment History

Mean number of years of education was constant at about 10.5 throughout the program's life.

Table 1

Demographic Characteristics of Brooklyn and Harlem Treatment Populations

	<u>Brooklyn Patients</u>						<u>Harlem Patients</u>			
	<u>All Patients</u>		<u>First Cohort</u>		<u>Second Cohort</u>		<u>Third Cohort</u>		<u>All Patients</u>	
	<u>N</u>	<u>\bar{X} or $\%$</u>	<u>N</u>	<u>\bar{X} or $\%$</u>	<u>N</u>	<u>\bar{X} or $\%$</u>	<u>N</u>	<u>\bar{X} or $\%$</u>	<u>N</u>	<u>\bar{X} or $\%$</u>
Percent Male	1376	79	326	78	577	79	476	78	314	70
Ethnic Classification	1749	100	412	100	726	100	611	100	449	100
Black	1385	79	323	78	565	78	497	81	429	96
Puerto Rican	232	13	32	8	110	15	90	15	10	2
White	119	7	53	13	48	7	18	3	10	2*
Other/Spanish American	13	1	4	1	3	0	6	1		
Average Age at Admission	1746	29.8	411	33.1	725	29.4	610	28.1	446	31.7
Marital Status	1749	100	412	100	726	100	611	100		
Never Married	746	42	148	36	298	41	306	49		
Formerly Married	501	29	121	29	227	31	153	25		
Currently Married	502	29	143	35	201	28	158	26		
Average Number of Years of Education	1744	10.5	412	10.6	722	10.5	610	10.5	450	10.7
Longest Period on One Job	1734	100	406	100	719	100	609	100		
One Year or Less	621	36	131	32	256	36	234	38		
13 mo. - 3 yr.	654	38	141	35	279	39	234	39		
More than 3 yr.	459	26	134	33	184	26	141	23		

*Whites and other ethnic groups were combined into one residual category.

Thirty-six percent of the sample reported that the longest period they had ever worked at one job was a year or less; 38 percent had held the same job for 13 months to 3 years and only 26 percent had ever held the same job for longer than three years (Table 1). As the program became older, the proportion of clients who had held the same job for three years or more declined.

Demographically, then, the population as a whole is predominantly male, black, and under thirty. Less than a third are currently married. Almost three-quarters of the program's patients have not completed high school. Over one quarter, however, have spent three or more years at the same place of employment.

The first admission cohort contains a larger proportion of white patients than the other two cohorts and is older. Perhaps because of the age differential, the proportion of those never married is lower in the first cohort than in the second or third. More of those in the first than in the other two cohorts have stable work histories, and a slightly higher proportion has completed high school or gone beyond, and lived in the same place in the two months before admission. As time progressed the program admitted younger people, including a somewhat higher proportion of Puerto Ricans, and fewer who had remained for an extended period of time at one job.

Drug Usage

The mean age of first daily use of heroin in all three cohorts is 21. Two-fifths of all patients had used no illicit drugs other than heroin in the two months prior to entrance. Thirty-three percent had used one other illicit drug, and fully 20

(Table 2). No significant differences in polydrug use exist among cohorts.

Criminal Activity

Fully half of the patients reported that they had been first arrested at the age of eighteen or younger! Those in the third cohort were even more likely (at a statistically significant level) to have become involved with the criminal justice system in early adolescence than were those in the first and second cohorts. Twenty-two percent of those in the third cohort had their first contact at the age of fifteen or younger, compared to 12 and 17 percent respectively of those in the first two cohorts (Table 2).

As might be expected in light of the juvenile arrest records of those in the sample, fully 59 percent had been arrested prior to their addiction. The high proportion of those whose criminal records precede their period of daily heroin use again demonstrates that criminal activity of addicts must not be understood simply as a response to their addiction, as previously discussed by Lukoff (1973) and Vorenberg and Lukoff (1973). No significant differences in proportions of pre-addiction arrests are found among the three cohorts (Table 2).

At entrance, 70 percent of the sample were not involved with the criminal justice system. Eighty-two percent of the first cohort, however, were free of all legal entanglements as compared to only 65 percent of those in the second and 68 percent of those in the third (Table 2). The second admission cohort contained a higher proportion of patients awaiting trial (23 percent) than did either the first cohort (8 percent) or the third (14 percent).

Two-thirds of the population said they had been convicted

Table 2

Drug Use and Criminal Characteristics of Brooklyn and Harlem Treatment Populations

	<u>Brooklyn Patients</u>							
	<u>All Patients</u>		<u>First Cohort</u>		<u>Second Cohort</u>		<u>Third Cohort</u>	
	\bar{X} or		\bar{X} or		\bar{X} or		\bar{X} or	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Average Age of First Daily Heroin Use	1747	21	412	21	726	21	609	21
Extent of Polydrug Use in Two Mo. Preceding Admission	1764	100	425	100	726	100	613	100
None	709	40	165	39	273	38	271	45
1	533	30	139	33	226	31	168	27
2+	522	30	121	28	227	31	174	28
Age at First Arrest	1500	100	358	100	623	100	519	100
18 or under	748	50	178	50	288	46	282	54
19-21	291	19	68	19	126	20	97	19
22 or older	461	31	112	31	209	34	140	27
Pre-addiction Arrests	716	59	220	56	369	60	127	62
Legal Status at Entry	1745	100	412	100	726	100	607	100
Probation/Parole	145	9	22	5	49	7	74	12
Awaiting Trial	286	16	31	8	167	23	88	14
Other	95	5	23	6	39	5	33	5
None	1219	70	336	81	471	65	412	69
Number of Convictions - Self-reported	1737	100	407	100	723	100	607	100
None	597	34	102	25	268	37	227	37
1	309	18	63	15	113	16	133	22
2-8	642	37	171	43	273	37	198	33
9+	189	11	71	17	69	10	49	8

Harlem Patients

	<u>N</u>	\bar{X} or <u>%</u>
Average Age of First Daily Heroin Use	449	21

of some offense, other than a traffic violation, upon entering ARTC (Table 2). A lower proportion of the second and third cohorts, however, had such convictions; 37 percent in these groups had never been convicted, as opposed to 25 percent of the first cohort.

Those in the second and especially the third cohort, then, appear to have been arrested for the first time at a somewhat younger age, and to have been more involved in the criminal justice system (as measured by referral through probation and legal status at entry), than those in the first cohort.

Yet, a slightly higher proportion of those in the second and third cohorts stated that they had never been convicted of an offense before entering the program. It is possible that, because those in the second and third cohorts were younger, they were "at risk" for a shorter period of time; in addition, it may also be so that, with the passage of time, the tendency to refer addicts to rehabilitative programs in lieu of conviction and incarceration had increased.

Harlem

Four-hundred fifty-one patients are the largest possible number of Harlem patients to appear in any table.

Seventy percent of the Harlem sample (Table 1), compared to 79 percent of those in both the Brooklyn sample and the addict population known to the Narcotics Register are male. The Harlem population overrepresents blacks to an even greater extent than does the Brooklyn population: ninety-six percent of those in the Harlem sample are black compared to 79 percent of those in the Brooklyn sample and 45 percent of those on the Narcotics Register (Table 1).

The average age at admission of Harlem patients is 31.7, which makes them somewhat older than the total Brooklyn population (Table 1). The Harlem patients closely resemble those in Brooklyn in education: the mean number of years of school completed is 10.7.

As is true of Brooklyn patients, the mean age of first daily heroin use of Harlem patients is 21 (Table 2).

Thus, the Harlem patient population is generally similar to the Brooklyn patient population. It differs in that an even larger proportion of Harlem than Brooklyn patients are black, and a somewhat larger proportion of them are female.

2. The data base

In this report, five measures of "success" of the treatment program are used. They can all be accepted as face-valid indicators of the extent to which a methadone program for the treatment of heroin addicts has met its rehabilitation goals. The five outcome measures are: 1. retention in the program -- two different versions; retention in the program is discussed, below, separately for those patients who were detoxified from methadone; 2. frequency of methadone pick-up ("missed medications"); 3. frequency of heroin abuse ("morphine positives"); 4. level of employment after entry into the program; and 5. level of criminal activity after entry.

The data base in this report is somewhat unusual, and complex, in the sense that it derives from five separate and distinct sources. First, the measure of official termination derives from a computer-outputted "Status Report Sheet" which is based on input from program counselors.

Operational termination is determined by a coding scheme, described in detail below, and developed by the social evaluation team. It is based on data from the "urine tape," which contains information on each patient, separately for each month that he/she was in the program, concerning a number of medication-related variables. The measures of missed medications and positive morphines ("dirty" urines) are also derived from the urine tape, as detailed below.

The third source of outcome data is based on follow-up forms, filled out on each patient bi-monthly by program counselors, and required by the National Institutes of Mental Health of all programs that receive support from it. These data, stored on computer tape at Texas Christian University, are the basis for determination of whether or not the patient was employed after admission.

Data on patient criminal behavior were ordered by the social evaluation team directly from the two New York City agencies concerned with such behavior, the Bureau of Criminal Identification (finger-printable offenses), and the Office of Criminal Records (non-printable offenses). These records were coded for each patient individually by the social evaluation team, using the coding scheme of the Penal Law Code.

The NIMH Intake form, a fifth source of data, is based on personal interviews at intake with each patient by a member of the ARTC staff. This form is used to obtain most of the pre-program variables used, for example, sex, age of addiction, level of education, period of longest employment.

Data from all of the above sources, in the form, as appropriate, of computer tapes, or code sheets which were punched on IBM cards and transferred to computer tape, were aggregated by the social evaluation team into one file of integrated data (located on computer disc). The job of integration was necessary in order to make comparisons, for instance, of rates of missed medications among those retained in the program for varying periods of time.

As might be expected, each data source is characterized by varying, and distinctive, rates and types of missing information, described in Appendix A. Here it need only be noted that for analytic purposes, the evaluation team had to make one basic decision: Whether to base the analysis only on that subset of individuals for whom data existed from all sources; or whether to allow all individuals for whom data existed in one particular analysis to enter that analysis. The later procedure, which maximizes the base in each table, but which allows the "n" to vary by table, was chosen. Footnotes for each table, in which the number of and reasons for missing cases are presented, are found in Appendix B.

1a. Official Retention

According to the criteria used in defining this measure, patients were simply assigned that month and year of termination noted on the Status Report Sheet. When the notation "lost contact" appeared before the date of termination, and no period of intervening activation was noted, the "lost contact" date was used as the date of termination. The lapse between date

of admission and date of official termination, which determined into which "official retention" category patients fell, was computer-calculated.¹

1b. Operational Termination

In most cases, the month and year of operational termination were determined simply as the last ones in which information about the patient appeared on the urine tape. Patients who missed methadone 20 or more times in two or more consecutive months were operationally terminated as of the first of the two months, unless such a period of inactivity was followed by a period of two or more consecutive months in which fewer than 20 methadones were missed. In the latter case, the patient was not terminated as of the first period of inactivity, but was retained indefinitely, or until he met the criterion described above.

1c. Detoxified Patients

Some patients who entered the program as methadone maintenance patients were later detoxified from methadone; that is, their dosages were gradually reduced to zero. In order to determine just who these patients were, when they were detoxified, and how soon after detoxification they were terminated, we followed the following procedure: A random sample of half of those whose dosage was altered in any way was selected as the target population. Those whose dosage levels reached "0" were considered to be detoxified from methadone, and the month in which the level

1. Further details on the mode of construction of, and sources of missing data in, each of the outcome variables is found in Appendix A.

reached "0" was considered to be the month of detoxification.

These patients were operationally terminated as of the last months in which information about the patient appeared on the urine tape. Because such patients received no medication, no dosages were made up and obviously no missed medications could be recorded. However, monthly data on morphine positives were recorded as long as the patient continued to submit urine samples.

2. Missed Medications

Missed medications in each year of treatment are measured by the average number of medications missed, in the last three (or at least, two out of three) months of each treatment year in which the patient was retained in the program. A computer calculation determined the correspondence between calendar month of the urine file (a datum on the tape), and the patient's year in treatment, by subtracting date of entry from calendar month of the file. The average for the quarter was used, rather than a monthly figure, both because 12, or even 3, separate monthly figures are unwieldy to present and interpret, and also because any single month might not be an accurate representation of a patient's performance in a given year.

3. Morphine Positives

The purpose of administering methadone to heroin addicts is to induce them to refrain from use of heroin, with its frequent cycles of withdrawal symptoms, and its presumed connection, through its high street price and its illegality, with criminal behavior. Patients' abstention from heroin is, in methadone treatment programs, conventionally monitored by the requirement that they submit urine samples, which can then be laboratory-

tested for positive indications of morphine. This substance can be detected in urine for 24 hours after its use.²

A proportion of morphine positives is formed by the ratio of morphine positives to total urine samples submitted, in the last three months, or at least two out of three months (or the last quarter with available information), of each year in which the patient was operationally retained. This ratio is an underestimate of morphine positives, because it ignores the possibility of motivated failure to submit urine samples. We return to this point in the Findings section.

4. Employment

For each two months of retention, the number of days in which the patient worked are reported by his/her counselor. Six such reporting periods constitute one full year. We have aggregated the six consecutive reports of each year in treatment, to arrive at the patient's total employment during his/her period of retention in the program. (Clearly, once a patient is terminated, reports on employment can no longer be filled out by the counselor.)

Patients for whom the counselor did not fill out a report sheet in three or more, out of six, reporting periods in a given year of retention are considered as missing information only for that year. Patients with sufficient information for at least one year during their treatment are included in the index of

2. However, see Riordan et al. (1972) for demonstration that the error rate in urine testing is high.

total employment

5. Criminal Behavior

Four measures of criminal behavior are presented: 1. the mean overall charge rate includes all charges, of whatever nature; 2. the mean assaultive charge rate (e.g. assault, manslaughter, rape, homicide); 3. the mean drug-related charge rate (e.g. criminal possession of dangerous drugs, criminally possessing a hypodermic needle); 4. mean charge rate for misdemeanors, larcenies, and felonies (e.g. burglary, forgery). (The exact code numbers of the Penal Law Code were transferred to coding sheets, and categorized by computer "variable descriptions.")

Criminal behavior in five time periods -- onset of addiction to entry into the program; one year before entry to entry; entry to one year after entry; one year after entry to two years after entry; and two years after entry to three years after entry -- is reported for all patients in the first cohort. Criminal behavior in four time periods -- all but the last of the above -- is reported for patients in the second cohort. Unfortunately no objective data on criminal behavior was collected on patients in the third cohort. As described in Appendix A, crime behavior reported represents mean charge rates for aggregates of individuals and in no way relies on the man/years concept criticized below.

Deceased Patients

In December 1972, a list of 51 patients who had died up to that time was compiled. These patients are excluded from all analyses presented here, because it is meaningless to present retention data for those who have been terminated by death.

III. Findings

In this section we will first discuss the official and operational rates of termination from the program, and then show how the rates changed by admission cohort. Next, we will present findings for each of the other outcome measures, i.e. missed medications, morphine positives, employment, and criminal behavior, first for all patients who entered treatment in the first three years of the program's existence; second, for those who were retained for differing lengths of time; third, for each of the three admission cohorts separately. Finally, when we analyze missed medications and criminal behavior, we will look at those retained for varying time periods within each cohort separately.

1. Retention

The ability of any rehabilitation program to retain its patients in treatment is in theory a prerequisite to any further change efforts. This is particularly true of methadone programs, because administration of the medication on a daily basis is such an integral part of the program. Persons who are addicted to heroin experience withdrawal pains 6 to 8 hours after the last administration. Patients stabilized on methadone also experience withdrawal pains in its absence, 24-30 hours after the last administration. If methadone is not taken at that point, this is a constraint in the direction of heroin use. However, in actuality this criterion must be qualified in two important ways. First, what happens to patients who leave the program? If they remain heroin-free and lead socially productive lives, then there is no further need for them to remain in treatment.

Second, what proportion of retained patients are conforming to what should be basic program requirements (e.g., methadone attendance)? Patients who somehow remain on the rolls but are receiving few or no benefits can not be credited to the program's success. Both of these questions will be dealt with below, but first we turn to a simple presentation of rates of retention.

The official version of retention in the program shows that one-quarter of the patients (26%) drop out within 12 months of their date of entry, 20% are retained for up to 24 months and 28% are retained for up to 36 months. Thirty-eight percent of those in the first two cohorts are officially retained for more than three years; those in the third cohort because of later entrance could not have been retained for so long and were thus excluded from the base.

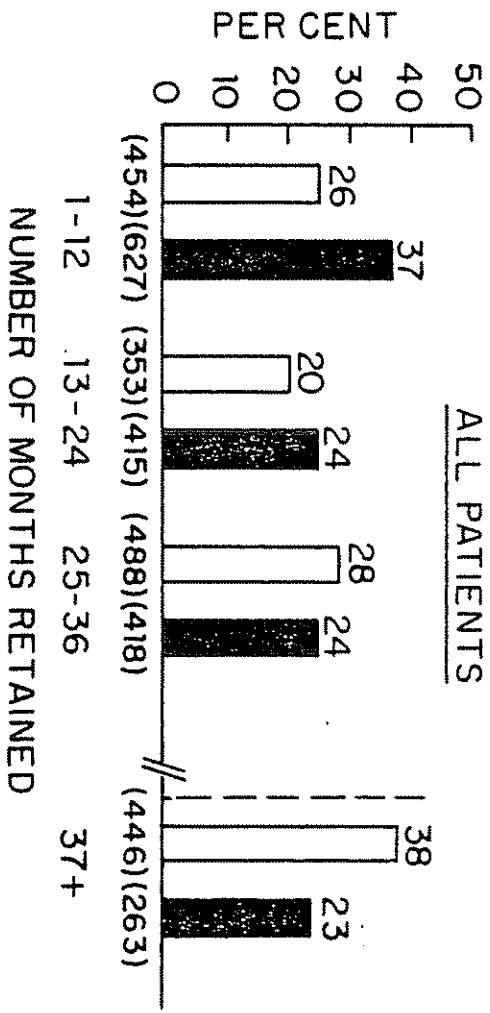
When we look at the retention picture that is presented when our own definition of retention is used, a distinctly less favorable picture emerges. According to the "operational" definition, over a third (37%) of the patients were terminated during their first year of treatment, and 61% were terminated within the first two years. Only 23% of those in the first two cohorts were retained for 37 months or more (Chart 1).

As described above, a patient was classified as terminated when he/she failed to pick up methadone (missed medication) 20 or more times in each of two consecutive months. If a patient had 20 or more missed medications in two consecutive months, and then re-appeared as an active participant (missed 19 or fewer methadones) for two or more consecutive months, he/she was not terminated at the time of such a lapse.

In other words, our operational definition of termination is,

CHART 1

LEGEND: OFFICIAL, OPERATIONAL



The base N for the first three sets of bars is 1741 and 1774 respectively, i.e. all patients in cohorts one through three. The base N for the last set of bars is 1178 and 1164 respectively, i.e. all patients in cohorts one and two. Thus, percentages do not total 100.

DISTRIBUTION OF OFFICIAL AND OPERATIONAL RETENTION FOR ALL PATIENTS.

itself, a fairly permissive one.¹ Indeed, it is much more permissive than the F.D.A. regulations. According to the Methadone Treatment Manual (Law Enforcement Assistance Administration, 1973): "FDA regulations require that a patient absent in excess of 14 days must be considered terminated. Continuation in the program thereafter requires readmission procedures to be followed." It is reasonable, we think, to assume that persons who do not receive even the basic treatment -- methadone -- for two months or more, and whose activity, if any, after those two months is minimal, are no longer patients in any meaningful sense of the word.² When length of retention is discussed in the remainder of this paper we will be referring to operational retention.

Comparisons of ARTC with other methadone maintenance programs are deferred until the Conclusions section. Here we confine ourselves to emphasizing that the figure of 63% retained for at least 12 months is based on our relatively lax operational definition. Had we used a definition which resulted in the termination of anyone who had missed as many as 15 medications in any single month, the rate of retention would be very much lower.

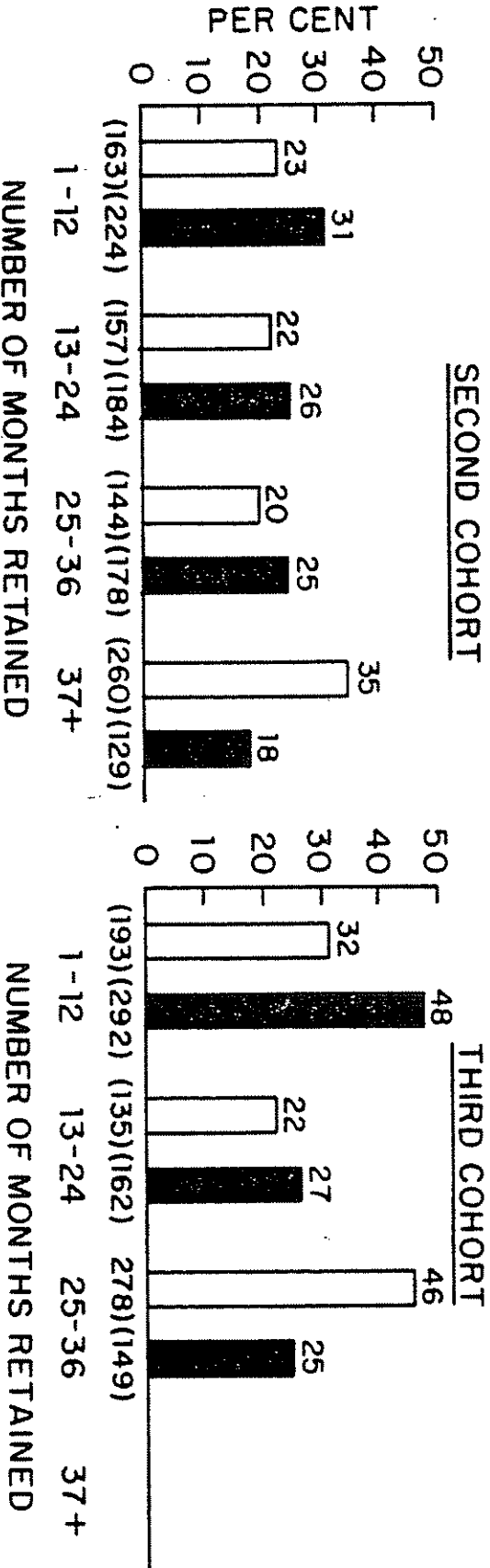
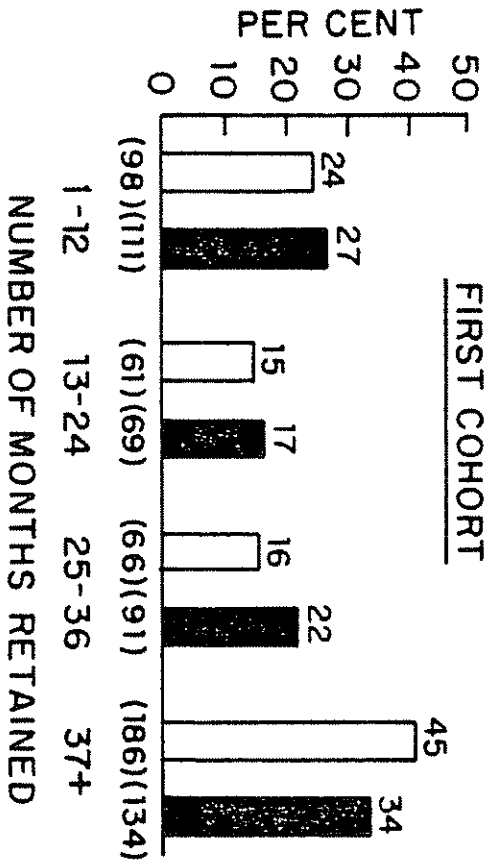
Retention by Admission Cohort

Each succeeding cohort has a higher rate of termination than does the preceding one (Chart 2). While 27% of those in the

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1. The Yale definition of operational termination is more demanding, and its application results in a considerably higher rate of termination within the first year than does the one used here, as will be discussed in more detail below.
 2. Detoxified patients, of whom this is not true, are discussed below.

CHART 2

LEGEND: OFFICIAL, OPERATIONAL



DISTRIBUTION OF OFFICIAL AND OPERATIONAL RETENTION FOR EACH COHORT.

first cohort and 31% of those in the second cohort were terminated 1-12 months after the date of entry, fully half (48%) of those in the third cohort terminated before twelve months were up. Similarly, if we consider the proportion terminated within 24 months of entry date, we find that 44% of those in the first cohort, 57% of those in the second cohort, and 75% of those in the third cohort were terminated in that time period.^{3,4} (Cohort

3. Because patients in the third cohort could not have been retained for 37 or more months, χ^2 tests of differences in retention rates between the three cohorts were done using only two retention categories: retained for 1-12 months, and retained for 13 or more months. For official retention $\chi^2 = 16.31$, with 2 degrees of freedom, and for operational retention $\chi^2 = 59.76$, with 2 degrees of freedom, both significant at the .01 level.

4. Chart 2 shows that there was a similar, though not so dramatic increase in proportion officially terminated by cohort. Comparison of official and operational rates of termination, with admission cohort controlled, shows, as expected, that the proportion terminated within the first twelve months is higher according to the operational definition than according to the official definition, in all three cohorts. The gap between the two definitions widens with each succeeding cohort.

The retention by admission cohort data presented in Chart 2 afford grounds for comparison with those of previous reports of the ARTC social evaluation team. Evenson (1975) reports that of those admitted in the first two years of the program's existence (the first two admission cohorts), 41% were terminated within twelve months of date of entry, while 30% of the same patients are defined as operationally terminated within the first year of treatment according to our definition. The definition of termination used by Evenson was the operational definition of the Yale Medical Evaluation Team, which coded as terminated all patients who missed 20 or more methadones in one months, regardless of whether such a month was or was not followed by a period of increased activity.

The 11% difference between the 30% defined as operationally terminated within 12 months, in cohorts one and two combined, by the present definition, and the 41% so defined by the Yale definition, indicates the amount of discrepancy that can be produced merely by the application of two different, but lax, sets of rules.

In the first report on retention of the ARTC social evaluation team (Quatrone, 1972), the official definition of termination was employed. The first 500 patients admitted to treatment (entry dates from Oct. 1, 1969 - Oct. 31, 1970) were followed until

three patients could not have been retained in treatment for 37 or more months, because there was insufficient time between their entry dates and the dates of final data collection for them to do so. However, this fact has no bearing on proportion terminated within the first 36 months).

One conceivable explanation for the declining retention rates by cohort might be that as time went on patient characteristics changed in such a way as to make termination more likely. It has previously been shown that young patients are more likely than old ones to terminate from the ARTC program (Quatrone, 1972; Evenson, 1975). We saw above that a larger proportion of patients in both the second and third admission cohorts than in the first were young (between 21 and 25 years of age), and therefore the possibility of a contaminating effect of age at admission on the varying cohort rates of termination must be raised. The data show that even with age at admission held constant, the rate of termination of cohort three patients is higher than the rates of termination of patients in cohorts one and two (Table 3).

These data also show that the previously observed association between retention and age at admission is most marked among those in the first admission cohort. Among those in the

Nov. 1971, and accordingly, depending on the exact date of admission, patients were followed for a period of time ranging from one to two years. The termination rate of 37% reported in that paper is similar to the 44% rate of official termination within 24 months of admission reported in the present study for the first cohort (the first 457 patients admitted to treatment). The 7% discrepancy is accounted for by the facts that all the patients in the present study were followed for the full two years, and also that 43 patients included in the earlier paper are excluded from the present one (500-457).

second and third cohorts, no clear relationship between termination and age at admission can be observed.

Quatrone (1972) also found that, at least among younger patients, those addicted when young were more likely to terminate early. When retention is analyzed by cohort, with age of addiction controlled, it is found as before, that those in cohort three are more likely to terminate by the end of month 12 than are those in cohorts one and two (Table 4).

Similarly, the data show that when highest grade completed (Table 5) and ethnic group (Table 6) are controlled, those in the third cohort are consistently more likely than those in the other two groups to terminate within the first year (except that whites show the same high rates of termination regardless of cohort). When involvement with the criminal justice system at entry is controlled, cohort three patients are again found to be more likely to terminate (data not shown in tabular form).

In summary, we have shown that regardless of which of the potentially relevant background characteristics of patients are held constant, those in the third cohort are the most likely to drop out within the first year.

Wilmarth and Goldstein (1974:2) also note, in a review of a number of methadone programs, that "success rates tend to be greater for earlier cohorts admitted." They suggest that this may be due to the more advanced age of earlier patients (an explanation denied by the data presented above, as regards ARTC at any rate), or the greater commitment or enthusiasm of staff in the beginning days of a new program. It seems unlikely that even this factor could account for the magnitude of cohort differences in retention rates noted above.

Table 3

Operational Retention by Cohort and Age at Admission

Operational Retention	Age at Admission Cohort																	
	21 - 30 ¹			31 - 40 ²			41+ ³											
	First ⁴ N	Second ⁵ %	Third ⁶ %	First N	Second %	Third %	First N	Second %	Third %									
1 - 12 months	58	35	153	33	222	51	39	25	49	26	47	38	13	17	21	31	22	52
13 - 24 months	36	21	127	28	115	26	21	13	45	24	37	30	12	16	12	18	10	24
25 - 36 months	33	19	104	23	100	23	39	25	52	26	39	32	19	25	22	33	10	24
37+ months	43	25	72	16	--	0	59	37	45	24	--	0	32	42	12	18	--	0
	170	100	456	100	437	100	158	100	191	100	123	100	76	100	67	100	42	100

1. $X^2=112.0$, with 6 degrees of freedom, significant at .001 level.
2. $X^2=60.1$, with 6 degrees of freedom, significant at .001 level.
3. $X^2=34.9$, with 6 degrees of freedom, significant at .001 level.
4. Age is related to retention among those in the first cohort: $X^2 = 14.3$, with 6 degrees of freedom, significant at .05 level.
5. But in the second cohort, the chi-square test for the relationship of age to retention = 12.45, with 6 degrees of freedom, not significant.
6. In the third cohort, $X^2 = 6.96$, with 6 degrees of freedom, not significant.

Table 4

Operational Retention by Cohort and Age of First Daily Heroin Use

Operational Retention	Age First Daily Use					
	11-17 ¹			18-21 ²		
	Cohort					
	First	Second	Third	First	Second	Third
	N	N	N	N	N	N
	%	%	%	%	%	%
1-12 months	35	48	56	41	97	130
	37	33	47	27	34	48
13-24 months	18	38	36	28	76	69
	19	26	30	19	26	26
25-36 months	16	31	27	35	70	70
	17	22	23	23	24	26
37+ months	26	27	--	47	48	--
	27	19	0	31	16	0
	95	144	119	151	291	269
	100	100	100	100	100	100
		22-25 ³			26-47 ⁴	
Cohort						
	First	Second	Third	First	Second	Third
	N	N	N	N	N	N
	%	%	%	%	%	%
1-12 months	19	46	72	16	33	33
	21	32	53	24	24	44
13-24 months	16	35	35	7	35	21
	18	24	25	10	26	28
25-36 months	21	39	31	19	38	21
	23	27	22	28	29	28
37+ months	35	25	--	26	29	--
	38	17	0	38	21	0
	91	145	138	68	135	75
	100	100	100	100	100	100

Table 4 (Cont.)

1. $X^2 = 36.2$, with 6 degrees of freedom, significant at .001 level.
2. $X^2 = 90.8$, with 6 degrees of freedom, significant at .001 level.
3. $X^2 = 69.2$, with 6 degrees of freedom, significant at .001 level.
4. $X^2 = 40.2$, with 6 degrees of freedom, significant at .001 level.

Table 5

Operational Retention by Cohort and Highest Grade Completed

Operational Retention	Highest Grade Completed																	
	1-9 ¹			10-11 ²			12+ ³											
	First	Second	Third	First	Second	Third	First	Second	Third									
N	%	N	%	N	%	N	%	N	%									
1-12 mos.	18	22	43	28	70	51	56	31	107	29	150	49	37	26	73	38	71	46
13-24 mos.	18	22	46	31	32	24	23	13	92	25	84	27	28	20	46	23	46	29
25-36 mos.	15	19	33	22	34	25	39	21	97	27	75	24	37	26	46	23	40	25
37+ mos.	30	37	29	19	--	0	64	35	68	19	--	0	40	28	31	16	--	0
	81	100	151	100	136	100	182	100	364	100	309	100	142	100	196	100	157	100

1. $X^2 = 63.8$, with 6 degrees of freedom, significant at .001 level.

2. $X^2 = 127.8$, with 6 degrees of freedom, significant at .001 level.

3. $X^2 = 52.4$, with 6 degrees of freedom, significant at .001 level.

Table 6

Operational Retention by Cohort and Ethnic Group

Operational Retention	<u>Black</u> ¹			<u>Ethnic Group</u>			<u>Puerto Rican</u> ²			<u>Other White</u> ³								
	<u>First</u>	<u>Second</u>	<u>Third</u>	<u>First</u>	<u>Second</u>	<u>Third</u>	<u>First</u>	<u>Second</u>	<u>Third</u>	<u>First</u>	<u>Second</u>	<u>Third</u>						
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>						
1-12 mos.	72	23	175	31	235	48	9	28	28	25	45	50	27	51	20	43	8	45
13-24 mos.	50	16	132	24	131	27	10	31	34	32	24	27	9	17	17	36	6	33
25-36 mos.	79	25	145	26	123	25	4	13	31	28	21	23	7	13	2	4	4	22
37+ mos.	115	36	103	19	--	0	9	28	17	15	--	0	10	19	8	17	--	0
	316	100	555	100	489	100	32	100	110	100	90	100	53	100	47	100	18	100

1. $X^2 = 211.4$, with 6 degrees of freedom, significant at .001 level.

2. $X^2 = 31.9$, with 6 degrees of freedom, significant at .001 level.

3. $X^2 = 11.6$, with 6 degrees of freedom, not significant.

Retention and Detoxification

We think the most likely explanation for the high drop-out rate of cohort three patients is that a massive policy of detoxification was in effect between November 1972 and October 1973 (program months 36 to 50), as shown in Table 7. Table 7 shows that, regardless of when they entered treatment, the most probable times for commencement of detoxification for all patients were in the 15 months mentioned above. Because the beginning of these high-detoxification months coincided with the first entry dates of cohort three patients, the latter were more likely to be detoxified within their first year of treatment than were patients in the other two cohorts (Table 8).

Further, once the detoxification process was completed, the likelihood was great that drop-out would occur within the next several months (Table 9).⁵

5. In other words, once a patient no longer received methadone at ARTC, he/she was very likely to disappear from the urine tape. While it is, of course, impossible for the patient to receive a missed medication score when he/she was no longer receiving medication, disappearance from the tape indicates that he/she submitted no further urine samples for testing. Submission of urine samples, as proof of sustained heroin-free performance, would, in a conscientiously-run methadone program be required of all detoxified patients in good standing. The reason for this general rule is that patients who relapse to heroin use can be quickly identified by their morphine positive urine samples, and returned to methadone maintenance. Therefore, the absence of any urine samples for such a large proportion of the detoxified patients makes it clear that either ARTC did not require adherence to such standards, or that detoxified patients dropped out of the program entirely shortly after their detoxification was complete. Either conclusion is damaging to the program.

Table 7

Distribution of Patients Who Started and Eventually Completed Detoxification Sequence by Program Month and Cohort

<u>Program Month</u>	<u>Calendar Year</u>	<u>Cohort</u>							
		<u>All Patients</u>		<u>First</u>		<u>Second</u>		<u>Third</u>	
		<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
20 or less	Before May 1970	11	4	11	15	-	0	-	0
21-30	June 1971 - March 1972	21	8	6	9	14	14	-	0
31-35	April 1972 - Aug. 1972	28	11	9	13	11	11	8	9
36-40	Sept. 1972 - Jan. 1973	32	12	19	26	30	29	37	41
41-45	Feb. 1973 - June 1973	25	10	15	21	24	24	27	29
46-50	July 1973 - Dec. 1973	32	12	4	6	16	16	12	13
51+	Jan. 1974 and later	20	8	7	10	6	6	7	7
	<u>Calendar Year</u>	<u>264</u>	<u>100</u>	<u>71</u>	<u>100</u>	<u>101</u>	<u>100</u>	<u>92</u>	<u>100</u>

$\chi^2 = 48.80$, with 12 degrees of freedom, significant at .001 level.

Table 8

Distribution of Patients Who Completed Detoxification Sequence by Year in Treatment and Cohort

Year in Treatment	Cohort							
	All-Patients		First		Second		Third	
	N	%	N	%	N	%	N	%
First	71	27	6	8	14	14	51	55
Second or later	193	73	65	92	87	86	41	45
	264	100	71	100	101	100	92	100

Year	First	Second	Third
30 or less	4	11	11
31-30	8	21	14
31-32	11	28	11
32-40	13	38	11
41-42	12	32	11
43-50	4	12	16
51+	7	20	10
Total	71	101	92

χ^2 test for significance was not performed as year in treatment categories are not mutually exclusive.

$\chi^2 = 48.80$, with 12 degrees of freedom, significant at .001 level.

Table 9

Length of Retention Following Detoxification by Cohort
for Patients Who Completed Detoxification Sequence Only

<u>Length of Retention</u>	<u>Cohort</u>					
	<u>First</u>		<u>Second</u>		<u>Third</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
1-6 months	59	83	85	84	80	87
7-12 months	12	17	16	16	12	13
	<u>71</u>	<u>100</u>	<u>101</u>	<u>100</u>	<u>92</u>	<u>100</u>

The fact that such a high proportion of those completing detoxification did so in this particular time period suggests strongly that it was not careful consideration of the specific needs of individual patients that prompted these moves. Rather, it appears to be the result of a blanket policy. As discussed in the introduction, Dr. Primm did promulgate such a policy in early 1973.

Some patients detoxified during this crash program probably abstained from heroin after dropping out of the program. However, because of the lack of thought apparently given to who was to be detoxified, it is unlikely that they were, on the whole, any more apt to be successful than products of the typical 10- or 30-day detoxification program. See, for example, the several studies showing the "dismal record" of detoxification programs cited by Wilmarth and Goldstein (1974:15).

The Fate of Drop-Outs

In general, to the extent that the data are reliable, retention in methadone programs appears to lead to more favorable outcomes for the patients than does dropout. For example, a follow-up of the first 100 patients to enter the Santa Clara County Methadone Program showed that the largest single group of dropouts were in jail. Similarly, a follow-up of dropouts from 1969 admissions to the Illinois Drug Abuse Program showed that 39% were in jail and 25% were in other drug treatment programs (Wilmarth and Goldstein, 1974).

Retention in the Harlem Program

Retention in Harlem, both official and operational, closely resembles retention in the third cohort in Brooklyn. Thus, 32% of Brooklyn cohort 3 patients and 32% of Harlem patients were officially terminated, and 48% of Brooklyn cohort 3 patients and 45% of Harlem patients were operationally terminated, within 12 months of entry (Table 10). In other words, retention rates in Harlem were very similar to those rates in Brooklyn during the period when the Brooklyn drop-out rate was highest. Although we do not have data on Harlem employment and positive morphines, and the data on missed medications and crime are ambiguous for reasons to be discussed below, the fact that more than two-fifths of the Harlem patients dropped out during the first year in treatment provides one indication that the program may not have been operating in an adequate way.

2. Missed Medications

Dole and Nyswander (1965) originated the metabolic-change theory of rehabilitation of heroin addicts. This theory holds that, because the addict's metabolism has been forever changed by his addiction, the only way in which he/she can be helped to stop heroin use is by a chemical agent which will prevent or "blockade" the effects of heroin. Although that theory has been challenged (Robins, 1974, provides an excellent basis for such challenge), the basic premise of all methadone programs remains that daily administration of methadone is an unquestionable prerequisite to any and all other treatment efforts. The reason is that, even though there may not have been an unalterable, metabolic change in the addict, most addicts (especially those addicted under

Table 10

Distribution of Official and Operational
Retention for All Harlem Patients

<u>Number of Months Retained</u>	<u>Retention</u>			
	<u>Official</u>		<u>Operational</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
1-12	140	32	197	45
13+	296	68	239	55
	<u>436</u>	<u>100</u>	<u>436</u>	<u>100</u>

present social conditions in U.S. society) will experience withdrawal pains after the previous methadone treatment has worn off. The pressure to use heroin under these circumstances is great, unless forestalled by the next methadone administration.

Thus, no matter what other services a methadone program supplies, daily methadone pick-up is absolutely vital to the goal of discontinued heroin use. Because it is also the aspect of treatment that requires least effort from the patient, it is certain that the person who on a particular day does not pick up his/her methadone is not receiving any other rehabilitative services on that day either.

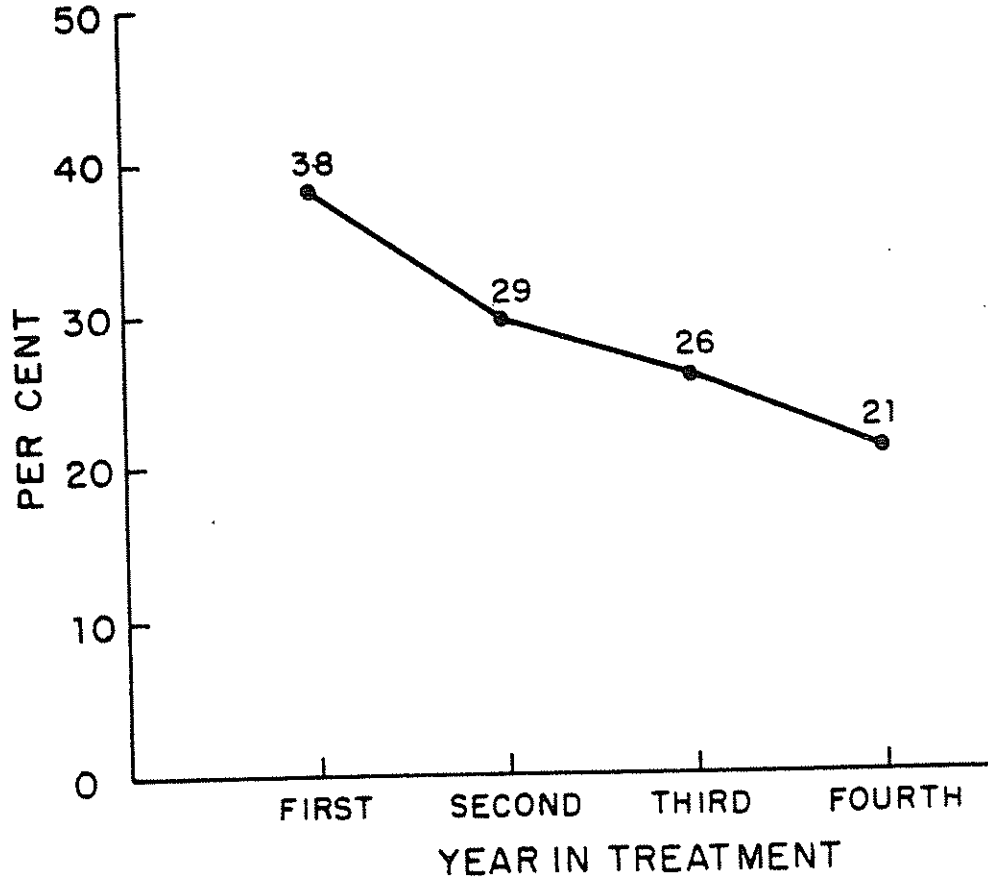
In light of these considerations, it is appalling to see that almost two-fifths of all ARTC patients (38%) missed their methadone pick-up 26% of the time or more during the last three months (for which information was available) in the first year of treatment (Chart 3).⁶ Half (49%) of the patients missed methadone from 1-25% of the time, and only 13% never missed medication in the time period specified above.⁷

The data in Chart 3 suggest that, deplorable as the initial rate of missed medications is, there is an improvement in missed medication rate with each passing treatment year. We will show below that even this apparent bright spot is merely an artifactual effect of combining groups of patients who have very different

6. Appendix Table C1 shows complete distribution of missed medications by year in treatment for all patients.

7. The skeptical reader may wonder whether detoxified patients have been mistakenly included with those who missed medications 26% or more of the time. This is not the case.

CHART 3



PROPORTION OF PATIENTS WHO MISSED MEDICATION
26 OR MORE PER CENT OF THE TIME BY YEAR IN
TREATMENT : FOR ALL PATIENTS

A-M-0050 W.L.

rates of missed medications.

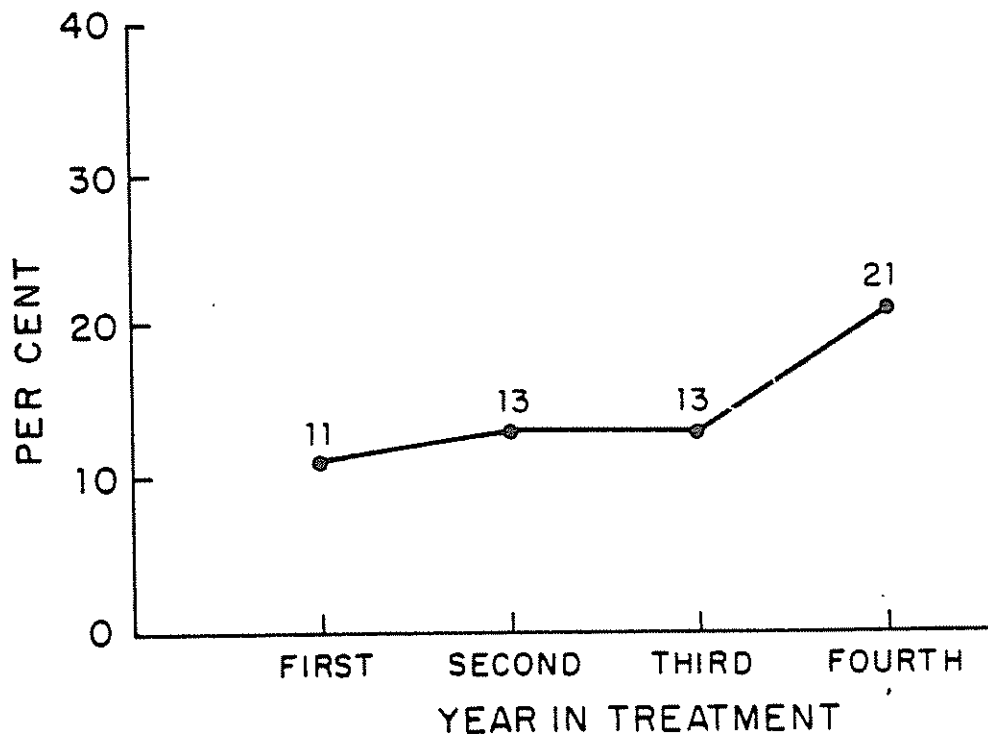
Chart 4⁸ shows that a strikingly lower proportion (11%) of those who were eventually retained in treatment for three or more years missed medications 26% or more of the time even in their first year in treatment than did patients in all retention categories combined (38%, shown in Chart 3). In other words, those who were eventually destined to remain in treatment for a long time showed a superior level of performance even in their very first year in treatment. Indeed, the trend suggested by Chart 4 is one of some deterioration in performance among the long-term patients, as length of treatment increases.

These data suggest that possibly methadone programs in general, and certainly ARTC staff in particular, do not work with their retained patients over a prolonged period of time, gradually effecting their rehabilitation as time goes on. Rather, the data presented here support either the hypothesis that the program does nothing, and those already determined at admission to change simply do so on their own; or that the program does have some impact, but only upon those who are initially motivated to change. Information on changes in criminal behavior, shown below, support the general line of reasoning presented here.

A detailed examination of the proportions of patients who missed medication 26% or more of the time by length of retention, for each cohort separately, fully supports the line of thinking

8. Appendix C Tables 2-4 show complete distribution of missed medications by year in treatment for those in different retention categories.

CHART 4



PROPORTION OF PATIENTS WHO MISSED MEDICATION 26 OR MORE PER CENT OF THE TIME BY YEAR IN TREATMENT : FOR THOSE RETAINED MORE THAN THREE YEARS ONLY.

proposed above (Table 11 and Appendix C Tables 3 and 4).

For example, among those in the first cohort, fully 37% of those who dropped out in the first year, but only 9% of those retained for 3 or more years (first panel, third row, Table 11) missed medication 26% or more of the time. Similarly, looking at the second year in treatment, 50% of those who dropped out during that year, 23% of those who dropped out in 25-36 months, and 14% of those retained for three or more years (second panel, third row, Table 11) missed medications 26% or more of the time.

Missed Medication in the Harlem Program

A smaller proportion of patients in Harlem than in Brooklyn missed medication 26% or more of the time. While 38% of all Brooklyn patients in the first year of treatment missed medication this often, only 20% of the Harlem patients did so (Table 12).

This suggests that staff in the Harlem program may have emphasized the necessity for methadone pick-up somewhat more than the Brooklyn staff did. However, this possible higher level of staff involvement with patients did not produce a comparably higher rate of retention in Harlem than in Brooklyn, as shown above (Table 10). Thus there is not sufficient data to conclude that the Harlem program is operating in a more effective manner than is the Brooklyn program.

Table 11

Missed Medications by Operational Retention and Year in Treatment for Patients in First Cohort

<u>Proportion of Medications Missed</u>	<u>Year in Treatment</u>							
	<u>First Year¹</u>							
	<u>Operational Retention</u>							
	<u>1 - 12 Months</u>		<u>13 - 24 Months</u>		<u>25 - 36 Months</u>		<u>37 or more Months</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
0%	34	35	13	20	12	12	24	18
1-25%	27	28	39	61	61	69	94	73
26+%	37	37	12	19	17	19	12	9
	<u>98</u>	<u>100</u>	<u>64</u>	<u>100</u>	<u>90</u>	<u>100</u>	<u>130</u>	<u>100</u>

<u>Proportion of Medications Missed</u>	<u>Second Year²</u>					
	<u>Operational Retention</u>					
	<u>13 - 24 Months</u>		<u>25 - 26 Months</u>		<u>37 or more Months</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
0%	6	9	6	7	30	23
1-25%	26	41	62	70	83	63
26+%	32	50	20	23	19	14
	<u>64</u>	<u>100</u>	<u>88</u>	<u>100</u>	<u>132</u>	<u>100</u>

<u>Proportion of Medications Missed</u>	<u>Third Year³</u>				<u>Fourth Year</u>	
	<u>Operational Retention</u>				<u>Operational Retention</u>	
	<u>25 - 36 Months</u>		<u>37 or more Months</u>		<u>37 or more Months</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
0%	8	9	40	31	20	19
1-25%	33	38	65	51	66	63
26+%	45	53	23	18	19	18
	<u>86</u>	<u>100</u>	<u>128</u>	<u>100</u>	<u>105</u>	<u>100</u>

Table 11 (Cont.)

1. $\chi^2 = 55.7$, with 6 degrees of freedom, significant at the .001 level.
2. $\chi^2 = 38.6$, with 4 degrees of freedom, significant at the .001 level.
3. $\chi^2 = 31.9$, with 2 degrees of freedom, significant at the .001 level.

Table 12

Distribution of Missed Medications by
Year in Treatment for Harlem Patients

<u>Missed Methadone</u>	<u>Year in Treatment</u>			
	<u>First</u>		<u>Second</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
0	40	10	51	22
1-25	280	70	137	58
26+	81	20	48	20
	<u>401</u>	<u>100</u>	<u>236</u>	<u>100</u>

Morphines in Urine⁹

In surprising contrast to the discouraging picture of performance in treatment presented by the data on missed methadones, the data on indications of morphines in urine appear to show considerable positive change in heroin abuse over time.

However, critical analysis of these data on "dirty urines" has led us to the conclusion that they are almost totally misleading as applied to third cohort patients during all of their years in treatment, to second cohort patients during their last three years in treatment, and to first cohort patients during their last two years in treatment. We will review the facts which lead us to doubt the validity of the data on morphines in urine before we present these data.

Heroin addicts experience a craving for heroin seven or eight hours after their last use of it, or 24-30 hours after their last use of methadone. Methadone-maintained individuals who frequently miss their methadone are very likely to be using heroin -- if they could not obtain heroin, they would be sure to pick up their methadone. This line of thinking leads us to expect that a valid measure of morphines in urine would be negative for individuals who were frequently missing their methadone

9. This section includes no discussion of Harlem patients. Data on morphine positives of Harlem patients were processed by a different computer group than the one that handled the Brooklyn data. Morphine information was kept on computer file for only 6 weeks, and then erased. This procedure made it virtually impossible to retrieve the information.

pick-up only on very rare occasions.

Table 13 shows that in their first treatment year a small percentage -- 6% -- of first cohort patients who missed medication as often as 26% of the time have zero positive morphine indications. This is true of a somewhat larger proportion -- 18% -- of cohort two patients. But among third cohort patients, fully three-fifths of those who missed medication more than a quarter of the time have zero positive morphine indications. This clearly implies that among third cohort patients in their first year in treatment, the measure of morphine positives is invalid.

This invalidity of the morphine positives measure may be explained by reference to the small number of urine tests submitted by patients in the third cohort. For example, when we look at number of urine tests submitted, by program month and cohort (data not shown in tabular form), we see that in its first year of treatment (program months 1-12), the proportion of cohort one patients who submitted 6 or more urines a month ranges from 38% to 98%. The same figures for the second cohort, in its first year of treatment (program months 13-24), show a range of from 1% to 49%. And for the third cohort, in its first treatment year (program months 25-36) the proportion who submitted 6 or more urines a month ranges from 0 to 24%. (Moreover, the single month in which 24% submitted 6 or more tests was the only month in the year in which more than 3% submitted such a comparatively large number of urines for testing.)

However, the small number of tests submitted at certain times does not fully account for the probable invalidity of the mor-

Table 13

Morphine Positives First Year in Treatment by Missed Medications
 First Year in Treatment and Cohort

Proportion of Morphine Positives First Year in Treatment	Proportion of Medications Missed First Year in Treatment																							
	First ¹						Cohort						Second ²						Third ³					
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%						
0	15	19	33	15	4	6	34	53	133	40	36	18	57	87	156	67	111	60						
1-25%	26	32	92	43	17	26	20	31	96	29	39	20	7	11	66	28	40	21						
26-50%	19	24	47	22	10	15	5	8	56	17	41	21	1	2	6	3	19	10						
51+%	20	25	44	20	34	53	5	8	48	14	83	41	0	0	5	2	17	9						
<u>15</u>	<u>80</u>	<u>100</u>	<u>216</u>	<u>100</u>	<u>65</u>	<u>100</u>	<u>64</u>	<u>100</u>	<u>333</u>	<u>100</u>	<u>199</u>	<u>100</u>	<u>65</u>	<u>100</u>	<u>233</u>	<u>100</u>	<u>187</u>	<u>100</u>						

1. $X^2 = 28.8$, with 6 degrees of freedom, significant at .001 level.

2. $X^2 = 82.4$, with 6 degrees of freedom, significant at .001 level.

3. $X^2 = 40.6$, with 6 degrees of freedom, significant at .001 level.

phines in urine data. This is suggested by the fact that, among those in the first cohort, the proportion of those who missed methadone more than 25% of the time and had no morphine positives rises dramatically in the third year of treatment and in the second cohort, that proportion jumps in the second treatment year. However, there was no drastic decline in number of urines submitted for testing, within the first cohort, in the third treatment year, or within the second cohort, in the second treatment year. Some additional, unknown factor must also have been in operation, starting in October 1971. In any event, the quality of the data for cohorts and time periods specified is clearly such as to warrant the most extreme caution in their interpretation.

Table 14 shows that while 40% have no "dirty urines" in their first year of treatment, this figure rises to 65% in the second year, 75% in the third year, and recedes only slightly to 79% in the fourth year of treatment. Because of the reasons set forth above, we do not attempt to interpret these data.

Within the first and second cohorts, longer treatment appears to be associated with declining proportions of positive morphine indications (Table 15 and Appendix C Table 5). As regards the second cohort, this apparent finding is of little value because of the reservations expressed above. Possibly, however, there is some real improvement in the second treatment year among first cohort patients.

The third cohort has an unusually low incidence of positive morphine indications, compared to the two other cohorts (Appendix C Table 6). This finding is probably meaningless, as explained above.

Table 14

Morphine Positives by Year in Treatment

Proportion of Morphine Positives	<u>Year in Treatment</u>							
	<u>First Year</u>		<u>Second Year</u>		<u>Third Year</u>		<u>Fourth Year</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
0%	585	40	619	65	432	75	147	70
1-25%	405	28	214	22	124	21	58	24
26-50%	209	14	55	6	19	3	14	6
51+%	267	18	65	7	7	1	1	0
	<u>1466</u>	<u>100</u>	<u>953</u>	<u>100</u>	<u>582</u>	<u>100</u>	<u>220</u>	<u>100</u>

NOTE: χ^2 test for significance was not performed as year in treatment categories are not mutually exclusive.

Table 15

Morphine Positives by Operational Retention and Year in Treatment for Patients in First Cohort

Proportion of Morphine Positives	<u>Year in Treatment</u>							
	<u>First Year¹</u>							
	<u>Operational Retention</u>							
	<u>1 - 12 Months</u>		<u>13 - 24 Months</u>		<u>25 - 36 Months</u>		<u>37 or more Months</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
0%	8	9	14	21	14	16	19	15
1-25%	22	25	22	34	34	38	57	43
26-50%	17	20	14	21	21	24	27	21
51+%	40	46	16	24	20	22	27	21
	<u>87</u>	<u>100</u>	<u>66</u>	<u>100</u>	<u>89</u>	<u>100</u>	<u>130</u>	<u>100</u>

Proportion of Morphine Positives	<u>Second Year²</u>					
	<u>Operational Retention</u>					
	<u>13 - 24 Months</u>		<u>25 - 36 Months</u>		<u>37 or more Months</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
0%	19	36	40	45	54	42
1-25%	14	26	26	30	46	35
26-50%	9	17	9	10	11	8
51+%	11	21	13	15	20	15
	<u>53</u>	<u>100</u>	<u>88</u>	<u>100</u>	<u>131</u>	<u>100</u>

Proportion of Morphine Positives	<u>Third Year³</u>				<u>Fourth Year</u>	
	<u>Operational Retention</u>					
	<u>25 - 36 Months</u>		<u>37 or more Months</u>		<u>37 or more Months</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
0%	53	72	104	81	81	69
1-25%	14	19	21	17	32	27
26-50%	4	5	2	2	5	4
51+%	3	4	--	0		
	<u>74</u>	<u>100</u>	<u>127</u>	<u>100</u>	<u>118</u>	<u>100</u>

Table 15 (Cont.)

1. $\chi^2 = 23.2$, with 9 degrees of freedom, significant at .01 level.
2. $\chi^2 = 5.3$, with 6 degrees of freedom, not significant.
3. $\chi^2 = 8.2$, with 3 degrees of freedom, significant at .05 level.

In sum, we do not suggest that the index of morphine positives is totally invalid. Those who fall in the positive morphines 50% or more of the time category are very likely to include more individuals who have abused heroin heavily than does the category representing "0" positive morphines. We do suggest, however, that the index of morphine positives underestimates the amount of heroin abuse, and that this is increasingly so with passing program time.

Employment¹⁰

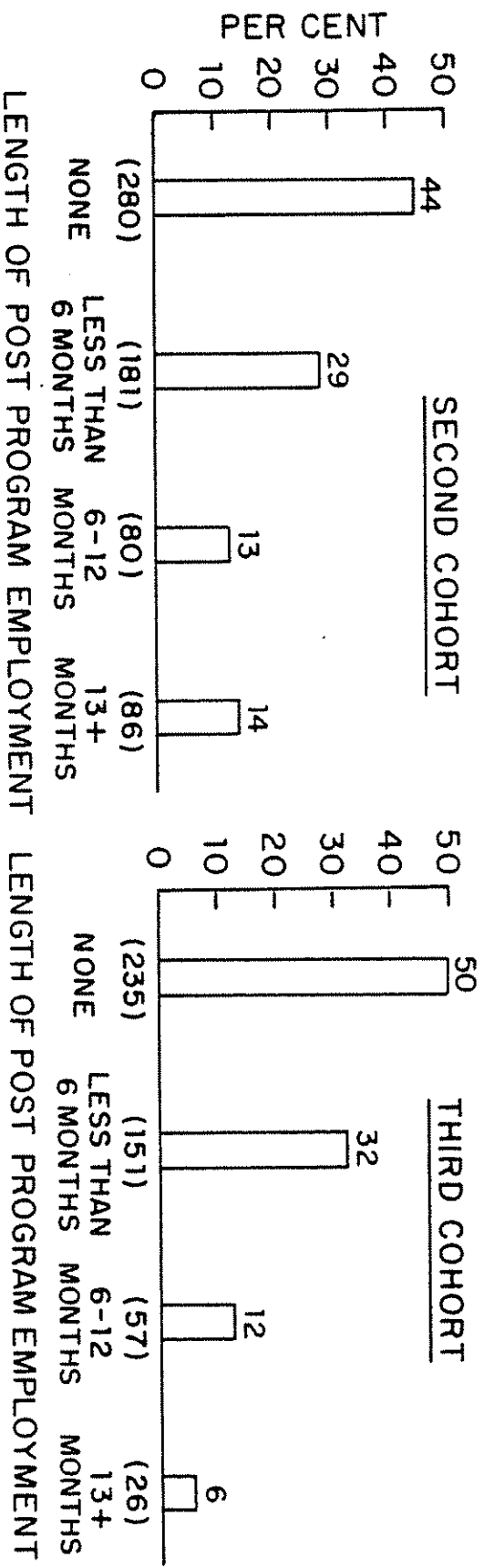
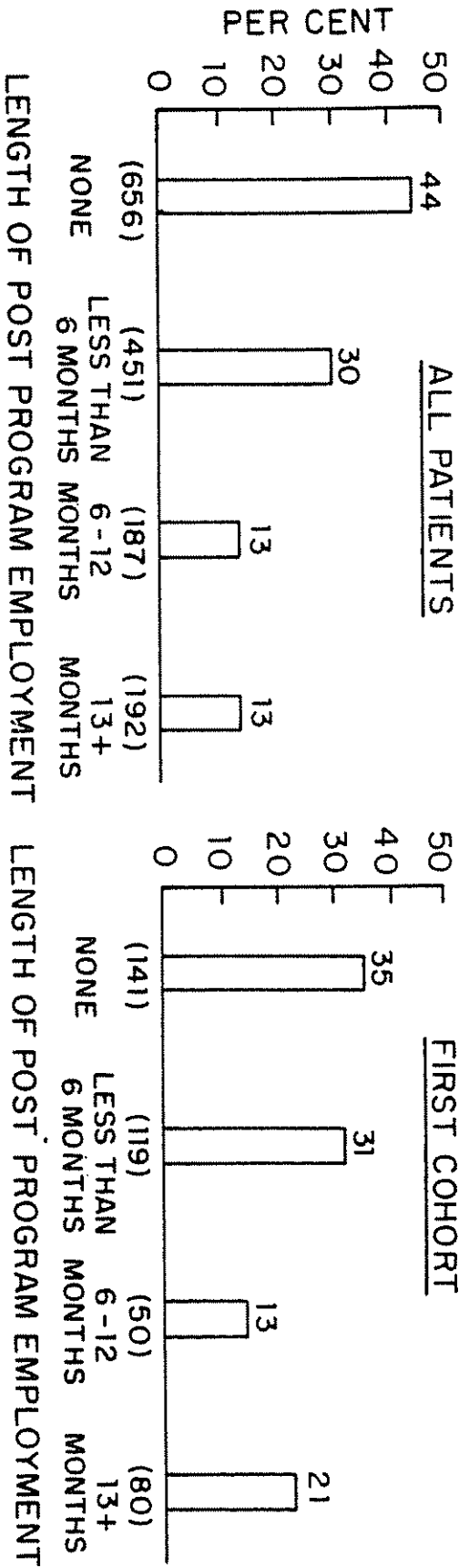
Since employment is a major area of rehabilitation, it is critical to determine the proportion of patients who were working while in treatment. Forty-four percent of all those who entered ARTC were unemployed for the duration of their stay, and only 13% worked for as long as a year or more (Chart 5).

Those in the first admission cohort were most likely to be employed for at least a portion of the time while in treatment (65%), those in the second cohort were less likely to be employed (56%), and those who entered in the third year were least likely to be employed (50%). (Chart 5).¹¹ This finding, like those regarding retention and missed medications, supports the conclusion that those who entered in the third year of the program's existence fared less well than those who entered in the first or second year. When age at admission, ethnic group,

10. This section includes no discussion of Harlem patients. The date on which the computer tape had to be requested from Texas Christian University, in order to complete this analysis on time, was so early that it allowed for inclusion of only a very small number of Harlem patients.

11. $\chi^2 = 48.02$, with 6 degrees of freedom, significant at .001 level.

CHART 5



DISTRIBUTION OF POST PROGRAM EMPLOYMENT FOR ALL PATIENTS AND FOR EACH COHORT.

highest grade completed, and age of addiction are held constant, those in the third cohort are consistently found to be less likely to be employed than those in the second, who are in turn less likely to be employed than those in the first cohort (data not shown in tabular form).

Patients who were ultimately retained for long periods of time were also somewhat more likely to have worked in the year before treatment, than were patients terminated in 1-12 or 13-24 months (Table 16, top panel). Comparison of the top and bottom panels shows that the amount of increase in employment was greatest among those retained 25-36 and 37 or more months. There was a smaller increase in employment among those retained 13-24 months, and among the early dropouts, there was actually a smaller proportion employed after treatment than in the year before treatment.¹²

Although these figures show a decided improvement in employment with passage of time in treatment, it is important to realize that they fall far short of the desired goal of full employment for the treated ex-addict. Even in that select group of patients who remained in the program for more than three years, only 31% had worked for more than 12 months out of at least 37 available months. Failure to reach this goal is undoubtedly due in part to the lack of skills and training of patients in the

12. While it is, of course, true that the longer a patient remained in treatment, the more time was available during which he could have worked, it seems unlikely that the magnitude of difference reported here could be accounted for entirely by the time factor alone. We do not necessarily suggest, however, that the program is entirely responsible for the improvement noted. As we suggest in the next section, those retained for more than three years are probably more highly motivated to change from the very beginning.

Table 16

Pre- and Post-Program Employment by Operational Retention

	<u>Operational Retention¹</u>							
	<u>1 - 12</u>		<u>13 - 24</u>		<u>25 - 36</u>		<u>37 or more</u>	
	<u>Months</u>		<u>Months</u>		<u>Months</u>		<u>Months</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Employment One Year								
Before Entry								
None	369	60	246	59	234	57	138	53
1-6 months	151	24	102	25	111	27	64	25
7-12 months	100	16	64	16	66	16	57	22
	<u>620</u>	<u>100</u>	<u>412</u>	<u>100</u>	<u>411</u>	<u>100</u>	<u>259</u>	<u>100</u>

	<u>Operational Retention²</u>							
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Total Post Program								
Employment								
None	269	69	177	44	134	32	67	25
1-6 months	94	24	143	35	136	33	76	29
7-12 months	24	6	52	13	70	17	40	15
13+ months	4	1	32	8	75	18	80	31
	<u>391</u>	<u>100</u>	<u>404</u>	<u>100</u>	<u>415</u>	<u>100</u>	<u>263</u>	<u>100</u>

1. $\chi^2 = 7.16$, with 6 degrees of freedom, not significant.

2. $\chi^2 = 229.90$, with 9 degrees of freedom, significant at .001 level.

program. Moreover, the high rates of unemployment among blacks during the years under consideration (1970 - 1974) -- in 1975 black unemployment nationwide was estimated at 25.7% for the first quarter of that year (New York Times, June 9, 1975) -- also contributed heavily to this negative result. Further, many employers refuse to hire methadone-maintained patients. However, some part of the responsibility for patients' unemployment and underemployment must also rest with the program. A study of employment among a sub-group of ARTC patients found that only 13% of the patients who were employed one year after entry had been helped to find their jobs by the program (Rothenberg and Kleinman, 1975).

Criminal Behavior

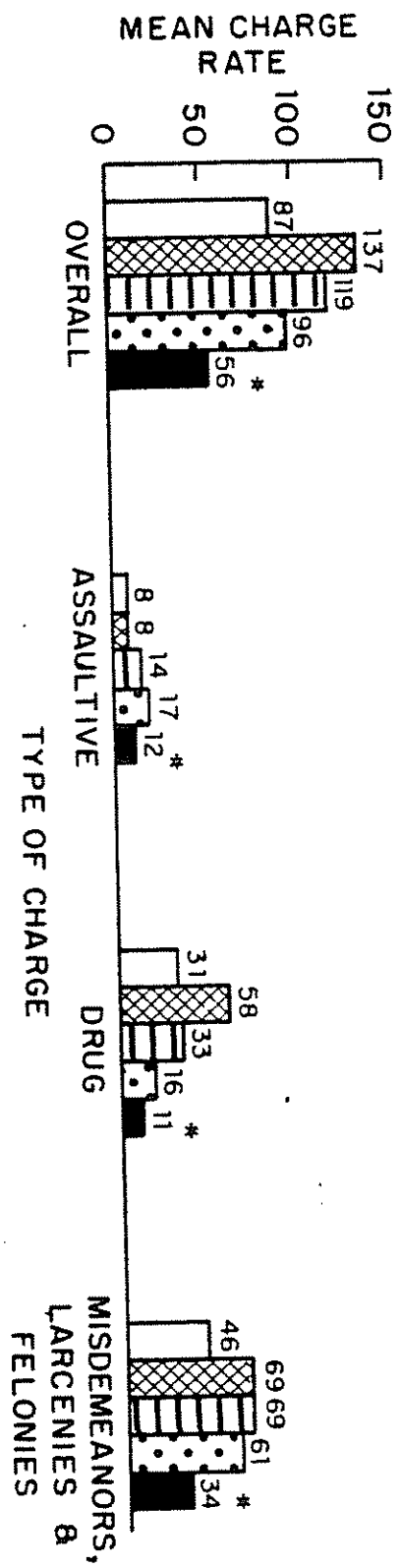
Charge rates for all patients

The level of criminal activity of Brooklyn patients was, as would be expected in a group of ghetto heroin addicts, very high in the pre-treatment period. In the period between onset of addiction to entry into the program, the mean overall charge rate of patients in the first two cohorts combined was 87; or over 4/5 of a charge per patient per year (Chart 6).¹³

Even in comparison to the generally high onset-to-entry crime rate, patients dramatically increased their criminal activity in the year just before entry into the program. In that year, the charge rate was 137, or a little over 1 1/3 charges per person. Perhaps the increase in number of contacts with the criminal justice system was one of the forces that motivated

13. The stars above the "three year after" bars in Charts 5, 6, and 7 refer to the record-keeping lag discussed below and shown in Table 17.

CHART 6



LEGEND: TIME PERIODS

- ONSET - ENTRY (n = 1011)
- ▨ ONE YEAR BEFORE (n = 1011)
- THREE YEARS AFTER (n = 391)
- ▤ ONE YEAR AFTER (n = 1011)
- ▥ TWO YEARS AFTER (n = 881)

MEAN CHARGE RATE BY TYPE OF CHARGE AND TIME PERIOD FOR PATIENTS IN THE FIRST AND SECOND COHORTS

these patients to seek treatment when they did.

In both time periods, charges for misdemeanors, larcenies and felonies predominated, closely followed by drug charges. The assaultive charge rate in both time spans was only 8, or a little less than 1/10 of a charge per person per year.

Chart 5 shows that, although the charge rate declined in the first, and again in the second year after entry into treatment, the overall rate in the second year after entry, 96, was still greater than the rate in the entire onset-to-entry period. (However, if we look at patients who were retained in the program for three years or more, as below, we find that their crime rates dropped in the first year of treatment to approximately their onset-to-entry levels.) Virtually all of the drop in crime in the two years after entry is due to a marked decline in drug-related charges. While this charge rate dropped from 58 in the year before entry to 33 in the year after entry and 16 in the second year after entry, the rate for misdemeanors, larcenies and felonies dropped only slightly from the first to the second year after treatment, and the assaultive charge rate actually doubled over the two-year span.

In the third year after entry (which, because data are available on first cohort patients only, was calendar year October 1972 to September 1973), the overall charge rate appeared to drop to a lower level than that of the onset-to-entry period for the first time in the years studied. The meaning of this apparent drop will be discussed below.

Charge Rates by Cohort

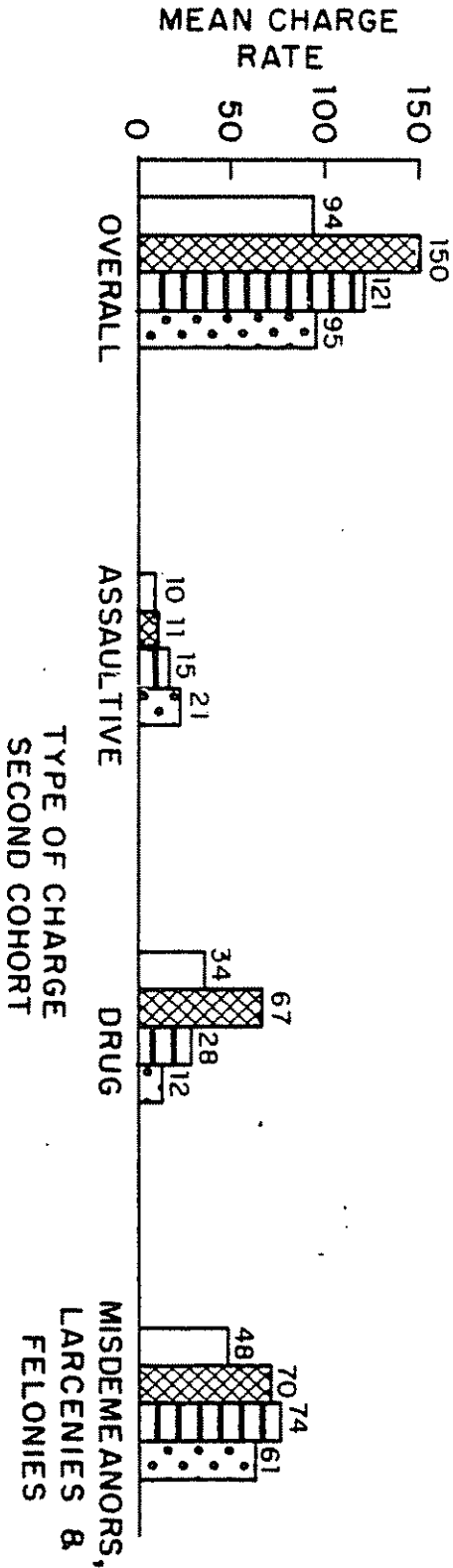
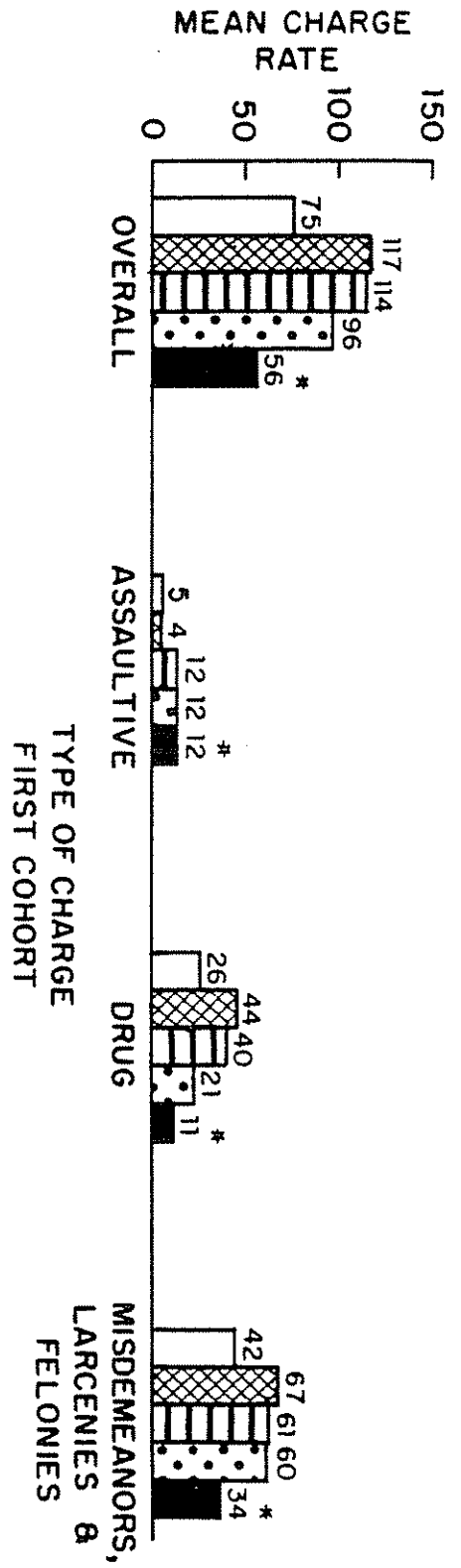
Chart 7 shows that, although the general trends described above are similar for both the first and the second cohorts, the second cohort had a higher overall charge rate in both the entire onset-to-entry period and in the year just before entry. These higher overall rates reflect higher rates in each of the three specific charge categories.

However, in the year after entry, those in the second cohort have an overall charge rate which is similar to that of the first cohort. This suggests the possibility that the program may have become more effective in reducing crime as time went on. However, the decline in crime rate among second cohort patients, as in the two cohorts combined, is accounted for entirely by the drop in drug-related charges. Participation in the program may have sharply reduced the need for possession of works, but assaultive charges and misdemeanors, larcenies and felonies actually rose slightly in the year after treatment, compared to the year before treatment, among those in the second cohort (Chart 7).

In the material presented so far, the retainees and the dropouts have been lumped together. Because we expected the criminal behavior of the retained to be very different from the dropouts, a separate discussion of those in the different retention categories follows.

One of the most striking differences between those in the different retention categories relates to pre-program criminal behavior. Charts 8 and 9 discussed below show that those retained for 25 months or more had much lower rates of overall crime in the onset-to-entry period than did those retained for only 1-12 or 13-24

CHART 7



LEGEND: TIME PERIODS

- ONSET - ENTRY (n = 391, n = 620)
- ▨ ONE YEAR BEFORE (n = 391, n = 620)
- ▩ ONE YEAR AFTER (n = 391, n = 620)
- ▧ TWO YEARS AFTER (n = 391, n = 490)
- THREE YEARS AFTER (n = 391)

MEAN CHARGE RATE BY TYPE OF CHARGE, TIME PERIOD AND COHORT

months, among those in both cohorts. Thus, pre-program criminal behavior appears to be an important predictor of retention in the program: Those with relatively low rates of criminal behavior in the pre-program period are more likely to remain in the program for more than two years than are those with high levels of pre-program criminality.

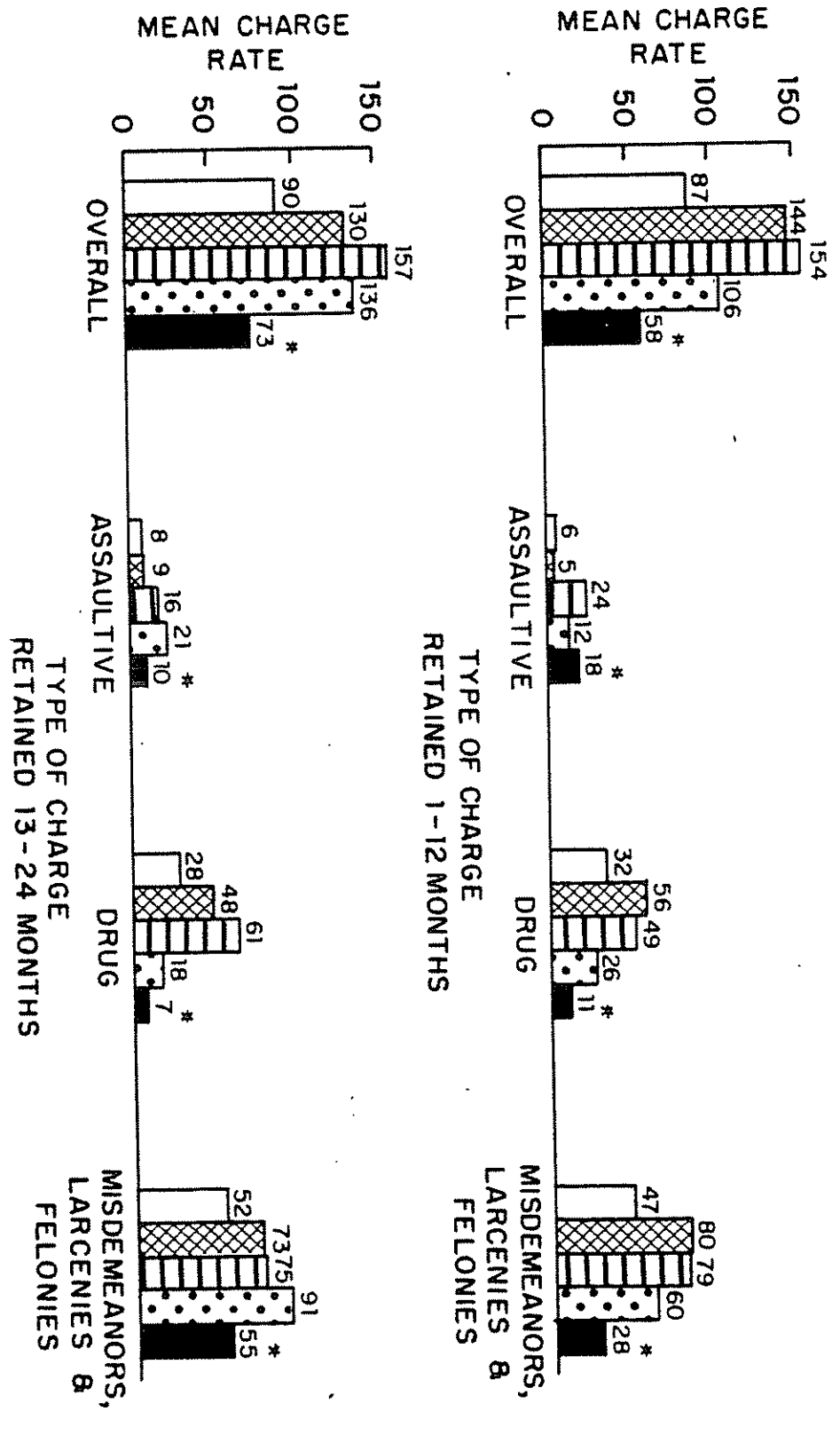
Charge rates of first cohort patients in different retention categories

With respect to post-program criminal behavior, the bulk of the data do not support the hypothesis that treatment results in reduced crime. For example, among those in the first cohort, patients who were treated for 13 to 24 months have a slightly larger increase in overall crime rate in the year after, compared to the year before, entry (up to 157 from 130), than do those who dropped out during the first year in treatment (up to 154 from 144) (Chart 8). In the second year after entry into treatment, both those retained for less than a year and those retained for 13-24 months, had higher overall charge rates two years after entry than they did in the onset-to-entry period. Indeed, those terminated after 13-24 months of treatment showed a smaller decline in overall charge rates in that year (157 down to 136) than did those retained for only 1-12 months (154 down to 106). We discuss rates in the third year after entry, for all patients in the first cohort, below.

Even those in the first cohort who were retained for 25-36 months have a slightly higher level of criminal behavior during their first, and even their second, year in treatment than they had in the year before entry (Chart 8).

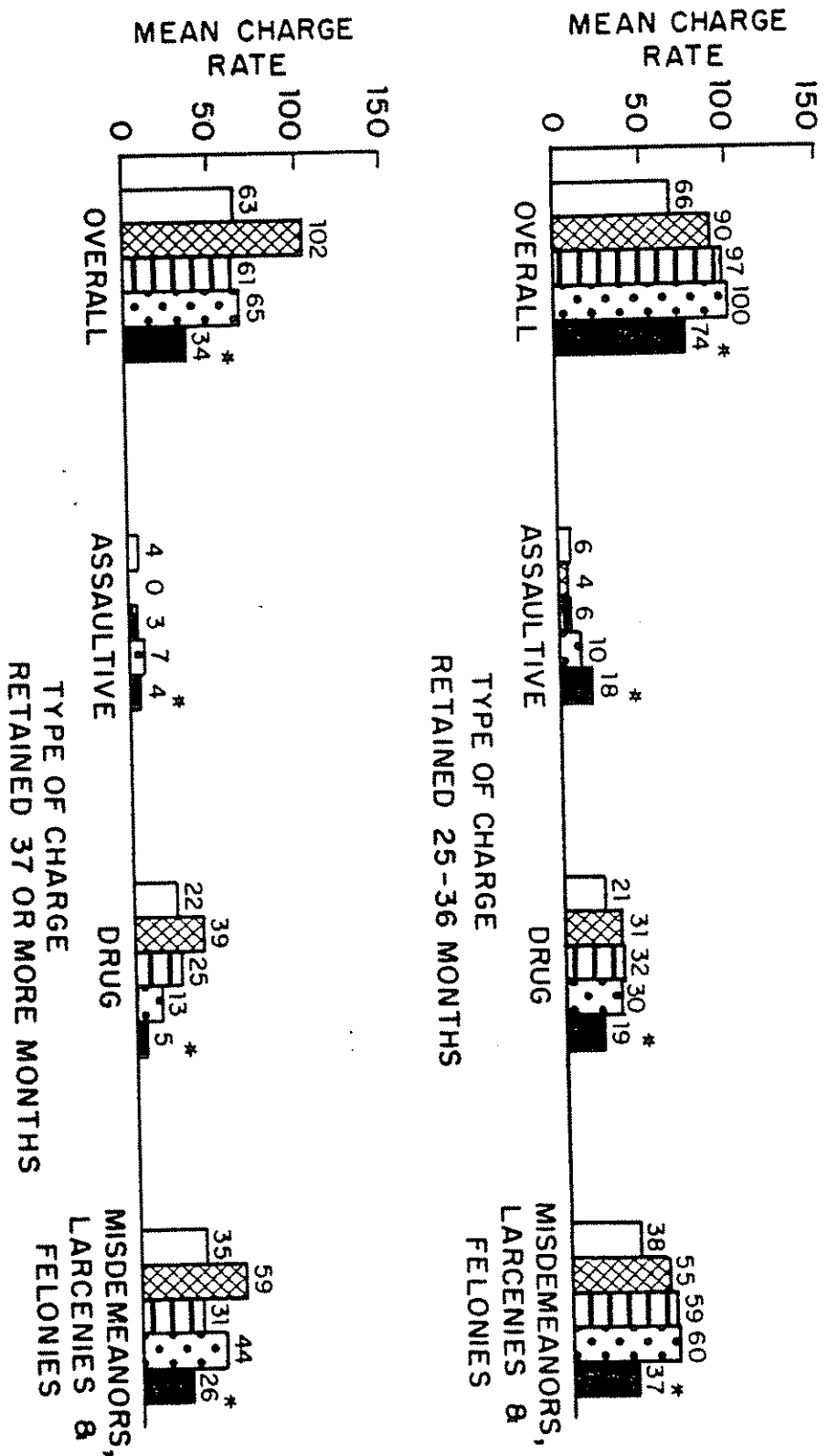
However, among those in the first cohort, patients who were retained for more than three years radically reduced their

CHART 8



MEAN CHARGE RATE BY TYPE OF CHARGE, TIME PERIOD AND OPERATIONAL RETENTION FOR PATIENTS IN THE FIRST COHORT - 1

CHART 8



LEGEND: TIME PERIODS

- ONSET-ENTRY (n = 84, n = 129)
- ▨ ONE YEAR BEFORE (n = 84, n = 129)
- ▩ ONE YEAR AFTER (n = 84, n = 129)
- ▧ TWO YEARS AFTER (n = 84, n = 129)
- THREE YEARS AFTER (n = 84, n = 129)

MEAN CHARGE RATE BY TYPE OF CHARGE, TIME PERIOD AND OPERATIONAL RETENTION FOR PATIENTS IN THE FIRST COHORT - 2

criminal activity in the very first year after entry into treatment. Further, this drop was actually steeper in the misdemeanors, larcenies and felonies charge rate than in the drug-related charge rate (Chart 8).

This replicates, exactly, what we saw about the missed medication performance of those retained for more than three years. There is a post-treatment improvement in crime, in one group of patients. But it is the group which, from the very first year of entry into treatment, showed itself as the most disposed to change. The facts that neither missed medication performance nor criminal charge rates showed, even for this group, any further improvement in the second year of treatment, suggest that the efforts of a select group of highly motivated patients, rather than an effective treatment program, are responsible for the observed changes.

A dramatic drop in all of the charge rates in the third year after entry is seen among those in all four retention categories among cohort one patients (Chart 8). Clearly, the treatment program cannot be credited with a decline which is as large among those treated for less than a year as it is among those treated for three years or more. Even if we hypothesize that those who drop out of the program within the first year obtain some benefit from the program, if there were a program effect, it would be greater among those who remain longer.

It is more plausible to suppose that the apparent across-the-board decline in criminal behavior is an artifact of some external factor. As noted in the Methods section, there is a lag between the date on which a person is charged and entry of his/her charges

onto the BCI and OCR records.

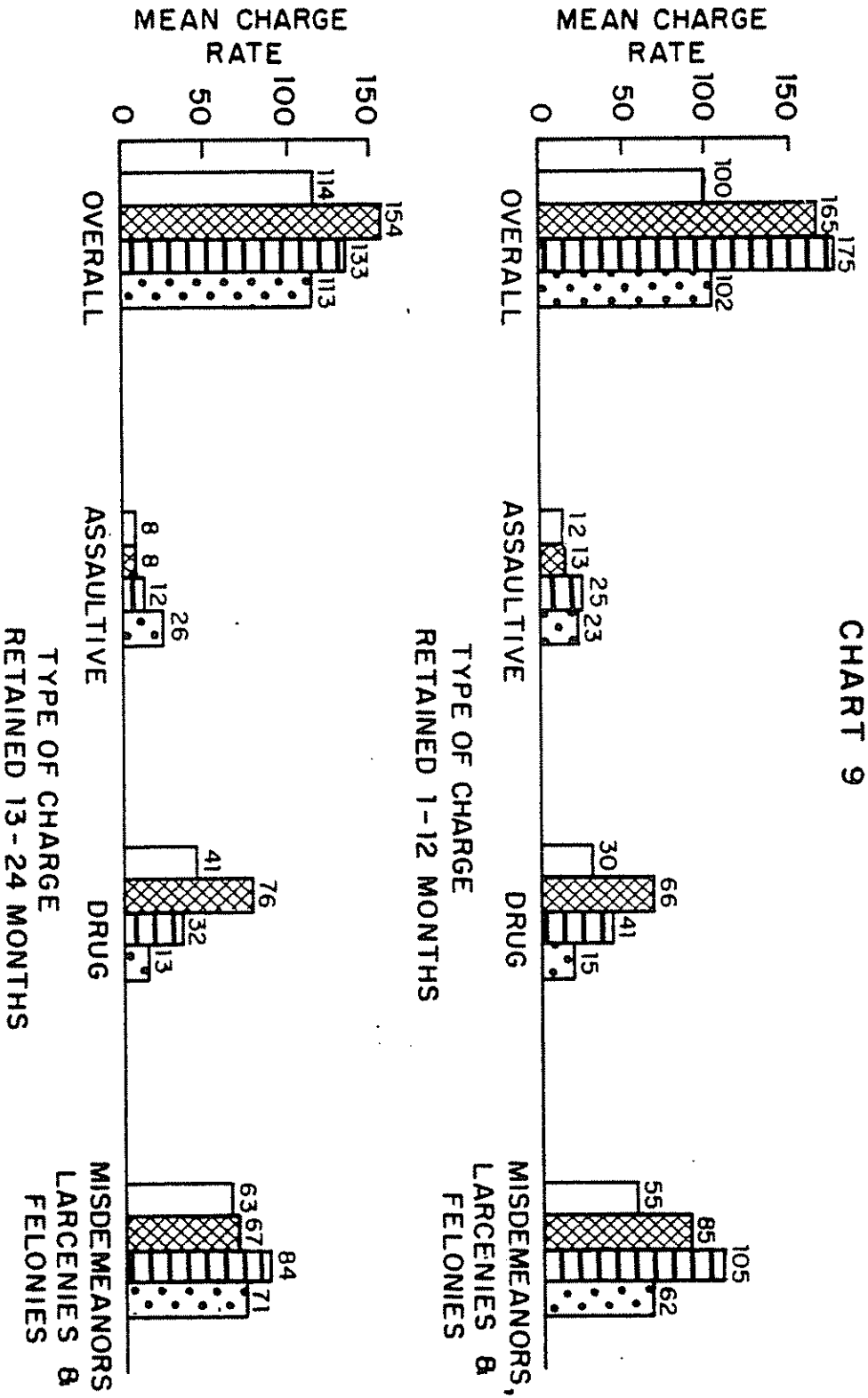
The results of this record-keeping lag are illustrated in Table 17. When criminal data about the same group of individuals were collected at two different points in time, the later data collection resulted in a higher charge rate for every period. When the three single-year intervals (i.e. one year before entry, one year after entry, two years after entry) are examined, we see that the most recent interval registered the largest net increase in mean charge rate.

We suggest that the record-keeping lag demonstrated in Table 17 may be operating to artificially lower the three-year-after mean charge rates of the cohort one patients. We cannot be at all sure that, if we collected records for cohort one patients in 1976, there would be a precisely 5:9 ratio of increase. However, the data certainly support the hypothesis that there would be some increase, perhaps one large enough to render the three-year after rates similar to the two-year after rates.

Charge rates of second cohort patients in different retention categories

Those who were in the second admission cohort, and were retained for 13-24 months, differed from those retained for that length of time in the first cohort, in that they were charged with fewer crimes in the year after entry into treatment than they had been in the year before entry into the program. The drop in the overall crime rate is accounted for entirely by a drop in their drug-related charges; charges for misdemeanors, felonies and larcenies among those in this group actually rose in the year

CHART 9

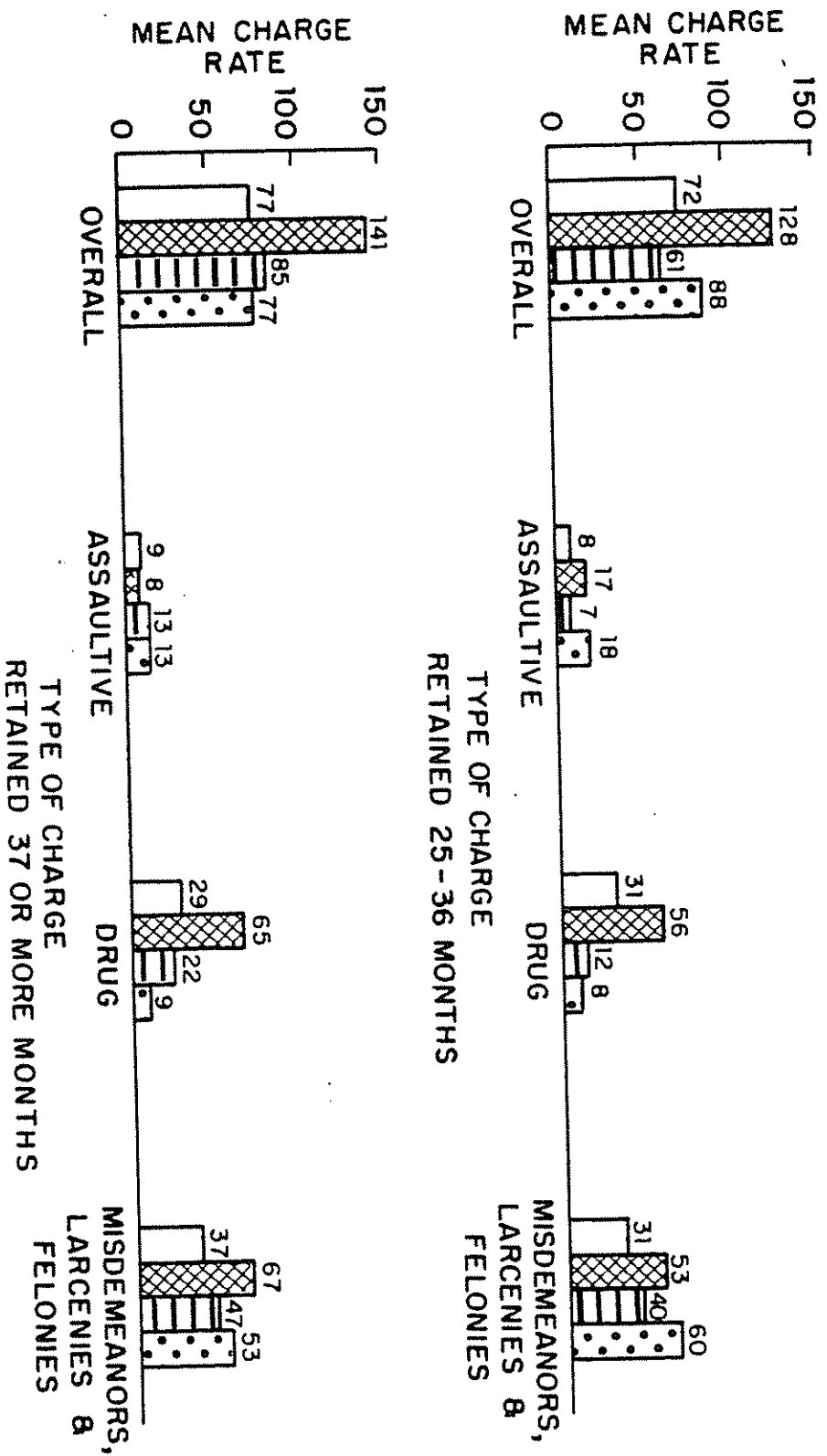


LEGEND: TIME PERIODS

- ONSET - ENTRY (n = 198, n = 156)
- ▨ ONE YEAR BEFORE (n = 198, n = 156)
- ▤ ONE YEAR AFTER (n = 198, n = 156)
- ▥ TWO YEARS AFTER (n = 164, n = 118)
- ▧ THREE YEARS AFTER

MEAN CHARGE RATE BY TYPE OF CHARGE, TIME PERIOD AND OPERATIONAL RETENTION FOR PATIENTS IN THE SECOND COHORT - 1

CHART 9



LEGEND : TIME PERIODS

- ONSET-ENTRY (n=139, n=118)
- ▨ ONE YEAR BEFORE (n=139, n=118)
- ▤ ONE YEAR AFTER (n=139, n=118)
- ▥ TWO YEARS AFTER (n=99, n=100)
- THREE YEARS AFTER

MEAN CHARGE RATE BY TYPE OF CHARGE, TIME PERIOD AND OPERATIONAL RETENTION FOR PATIENTS IN THE SECOND COHORT - 2

after, compared to the year before, treatment, and the assaultive charge rate also rose slightly in that time period. In the second year after treatment, drug related and other charges of patients in this group continued to drop, but their assaultive rate was actually twice as high in that year as it had been in the preceding one (Chart 9).

Among those in the second cohort, both those who were eventually retained for 25-36 months, and also those who were retained for more than three years, reduced their level of criminal behavior in the first year of treatment. Patients in both of these retention categories differed from those retained for only 24 months or less, in that they reduced their level of charges for misdemeanors, felonies and larcenies as well as their drug-related crimes (Chart 9).

However, in the second year after entry, those who were retained for 25-36 months had a charge rate higher than they had in the first year of treatment, accounted for by large increases in both assaultive charges and charges for misdemeanors, larcenies and felonies. Thus, after the second year in treatment, those who were retained for 25-36 months had a lower overall charge rate than they had had in the year before entry, but the rate was, nevertheless, somewhat higher than it had been in the onset-to-entry period (Chart 9).

By contrast, among those who had been retained for more than three years, there was a slight decline in charge rate in the second year after entry into treatment compared to the first. Drug charges declined the most, while assaultive charges were at the same level as in the preceding year, and other charges

rose slightly (Chart 9). This is a pattern similar to, but not as strong as, the one shown above for those retained the longest among cohort one patients.

Criminal behavior of Harlem patients

Chart 10 shows that the mean onset-to-entry charge rate of the first 172 patients to enter treatment in Harlem (all those for whom complete criminal data are available), was 61 -- lower than the onset-to-entry rate of all Brooklyn patients (87). In contrast to the Brooklyn pattern, the level of criminal activity of Harlem patients was not higher in the year before entry into the program than it had been in the onset-to-entry period as a whole. Finally, the charge rate in the year after entry was even lower than it had been in the year before entry.

The low one-year-before-entry rate of the Harlem patients is particularly difficult to explain, especially since a peak in pre-entry criminality appears also to be found by Newman, Bashkow and Cates (1973).

We speculated that Harlem patients might have been previously treated by other programs, and that their relatively low one-year-before rates might reflect the positive effects of other treatment programs, but this is not the case. When Harlem patients are divided into those who did and did not have at least 3 months of treatment prior to their entry into ARTC, we find that those who did not have such treatment had lower one-year-before rates than did those who had such treatment experience (Table 18).

It is possible that police practices in the Harlem precincts in 1971-1972 (the calendar year before entry of the Harlem patients

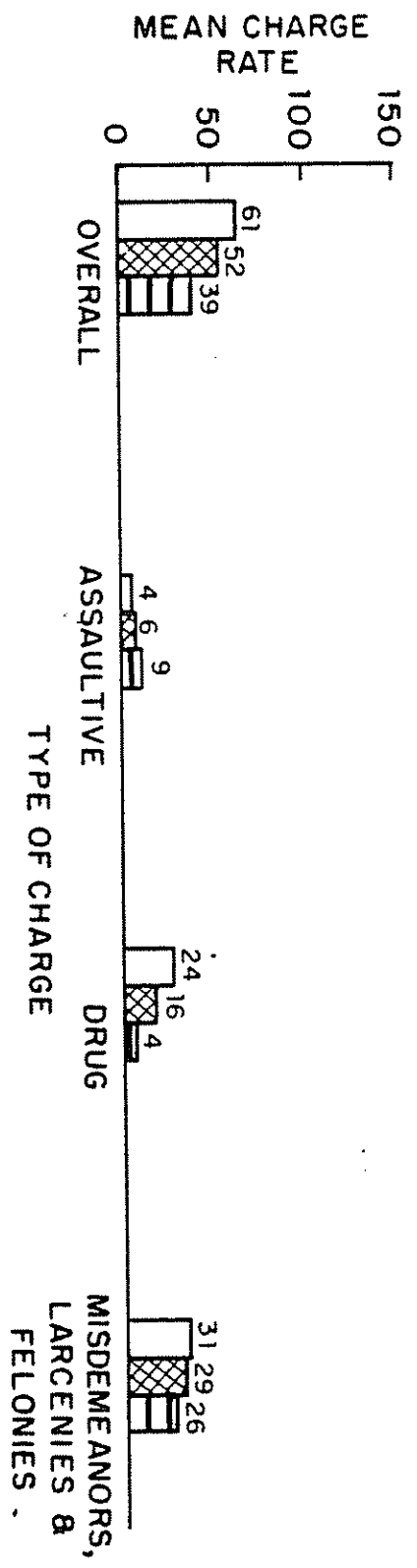
CHART 10

CHARGE

ARTC

NEW YORK STATE DEPARTMENT OF CORRECTIONS AND INSTITUTIONS

CHART 10



LEGEND : TIME PERIODS

- ONSET - ENTRY (n = 172)
- ▨ ONE YEAR BEFORE (n = 172)
- ▤ ONE YEAR AFTER (n = 172)
- ▧ TWO YEARS AFTER
- THREE YEARS AFTER

MEAN CHARGE RATE BY TYPE OF CHARGE AND TIME PERIOD FOR PATIENTS 5000-5202 IN THE HARLEM CLINIC

Table 17

Mean Charge Rates of Patients Studied by Lukoff and Quatrone, Based on Data Collected in 1972 and Data Collected in 1974

<u>At-Risk Period</u>	<u>Time of Data Collection</u>		<u>Net Change</u>
	April - May, 1972*	May - Aug., 1974**	
<u>Onset-to-Entry</u> (N=765) Entry dates: Oct. 1969- Dec. 1970 Lapse Between at-risk period and data col- lection	67	85	+18
	Variable	Variable	

<u>One Year Before Entry</u> (N=765) At-risk period: Oct. 1968-Dec. 1969 Lapse between at-risk period and data collection	120	129	+9
	$2\frac{1}{2} - 3\frac{1}{2}$ yrs.	$4\frac{1}{2} - 5\frac{1}{2}$ yrs.	

<u>One Year After Entry</u> (N=765) At-risk period: Oct. 1970-Dec. 1971 Lapse between at- risk period and data collection	84	112	+28
	$\frac{1}{2} - 1\frac{1}{2}$ yrs.	$2\frac{1}{2} - 3\frac{1}{2}$ yrs.	

<u>Two Years After Entry</u> (N=216) At-risk period: Oct. 1971-Mar. 1972 Lapse between at-risk period and data collection	50	90	+40
	1 to 6 mos.	2 - $2\frac{1}{2}$ yrs.	

* Lukoff and Quatrone in Hayim, Lukoff and Quatrone (1973), Chart IV
 **Subset of data shown in present report, Chart 5, restricted to the same sample shown in the 1973 report.

Table 18

Mean Charge Rates by Time Period, Type of Charge and Previous Treatment Experience for Patients 5000-5202 in the Harlem Clinic

<u>Time Period</u>	<u>N</u>	<u>Previous Treatment Experience</u>		<u>Type of Charge</u>						
		<u>With Previous Treatment</u>		<u>Without Previous Treatment</u>						
		<u>Overall</u>	<u>Assaultive</u>	<u>Misdemeanors Larcenies Felonies</u>	<u>N</u>	<u>Overall</u>	<u>Assaultive</u>	<u>Misdemeanors Larcenies Felonies</u>		
Onset-entry	43	66	3	22	40	129	59	5	24	28
1 year before	43	56	2	9	44	129	51	8	18	24
1 year after	43	65	16	5	44	129	31	7	4	20

studied here) were such as to reduce addicts' arrest rates, but we have no evidence to support this possibility.

We do not believe that the recording-time lag referred to above accounted for the drop in year-before-entry charges. These data, which refer to the period from Aug. 1971 to Feb. 1972, were collected in Nov. 1974. Thus, there was a lapse of about three years between the dates of possible charges and the dates of request. This lapse was sufficient, as regards Brooklyn patients, to produce the considerable peak in year-before-entry charges seen in the second panel of Table 17.

It is possible, however, that the apparent decline in the one-year-after charge rate is due at least in part to the recording-time lag. The period referred to is Aug. 1973 to Feb. 1974, and the data were collected only about a year later. This lapse between dates of charges and dates of request produced a modest, but noticeable increase in mean charge rate (84 to 112) among Brooklyn patients, as shown in the one-year-after panel of Table 17.

In looking at the types of charges (Chart 10) we see in Harlem as in Brooklyn that the drop in the overall charge rate is almost exclusively accounted for by the drop in the drug-related charge rate. Misdemeanors, larcenies and felonies show a minimal decline, while the assaultive rate shows a small increase.

IV. Summary

1. Retention

Over a third (37%) of all patients under study dropped out within twelve months of their entry date, and an additional 24% were terminated between 13 and 24 months from date of entry. Only 23% of those 1198 patients who could, because of time considerations, have remained in treatment for 37 or more months, did so.

The figures just cited are based on an operational definition of termination. Official figures, based on program administration - derived data, show a smaller proportion -- 26% compared to 37% -- terminated within the first 12 months; and a larger proportion -- 38% compared to 23% -- retained for more than three years. When patients are divided into cohorts based on year of admission, both the proportion terminated within 12 months, and the discrepancy between operational and official termination, is seen to increase in each succeeding cohort. Thus, a relatively small proportion of patients in the first cohort (24%) is operationally terminated within the first twelve months, but 31% of those in the second cohort, and fully 48% of those in the third cohort, drop out within twelve months of admission date. Even in the first cohort, the one with the best retention performance, fully 44% dropped out within 24 months of admission date.

2. Missed medications

Fully 38% of all patients studied missed medication more than a quarter of the time in their first year in treatment. There is an inverse relationship between length of retention and proportion who missed medication 26% or more of the time in the first

year in treatment. Thus, among those in the first cohort, while 37% of those terminated in the first 12 months missed medication more than a quarter of the time, 19% of those retained for 13-36 months, and only 9% of those retained for three or more years, missed medication so often. Similar trends were observed in the second and third cohorts.

The missed medication performance of those in each retention category considered separately was found to become somewhat worse with each year in treatment. The year of dropout was uniformly the year in which the highest proportion of patients missed medications more than one-quarter of the time.

3. Morphines in Urine

The validity of much of the data on morphines in urine was found to be questionable, for reasons discussed in detail in the text. Thus we are reluctant to present any figures on "dirty urines" for the total population studied. However, data for the first cohort in its first year in treatment appear to be valid. In that year, 46% of those retained 1-12 months, 24% of those retained 13-24 months, 22% of those retained 25-36 months, 21% of those retained for more than three years, had positive morphine indications in more than half of the urines submitted for testing.

4. Employment

More than two-fifths (44%) of all patients did not work at all during the treatment period. Thirty percent worked for less than six months, 13% for 6-12 months, and 13% for more than a year.

The employment picture grew less favorable by cohort: Thirty-five percent of those in the first cohort, 44% of those in the second, and fully half of those in the third cohort did not work at all during the treatment period.

Those who were retained the longest were most apt to have worked for 13 months or more. But even among those patients retained for more than three years, only 31% had worked for longer than 12 months.

5. Crime

The overall pre-program mean charge rate of all patients studied was high -- it was 87, or over four-fifths of a charge per person. The rate in the year before entry was sharply higher than the rate for the entire onset-to-entry period. There was a modest decline in mean charge rate in the first, and again in the second year, after entry into treatment. But even in the second year after entry, the mean overall charge rate was higher than the onset-to-entry rate. The rate declined sharply in the third year after entry, but critical analysis revealed this to be probably a function of the lag in recording-time of criminal charges.

Even the decline from the year before to the second year after entry was shown to be accounted for exclusively by a decline in drug charges, for most patients. Misdemeanors, larcenies and felonies showed almost no change over time, and the mean number of assaultive charges doubled in most patient categories.

When charge rate was analyzed by retention category, those retained for more than three years were found to show the largest decline in charges. Moreover, this decline occurred in the first

year after admission, so that patient characteristics, rather than program efforts, are more likely to be responsible for the change.

In sum, ARTC helped most those who were retained for the longest. These patients were distinguished from their very first year in treatment by their relatively low level of missed medications and by their rapid decline in charge rates. Those retained for more than three years also showed the largest increase in proportion employed during treatment. While the long-term retainees constituted only 23% of ARTC patients who could potentially have been retained for so long, methadone treatment was for them productive of modest changes in the direction of conventional social behavior.

V. Implications

These data are obviously very damaging to the methadone maintenance treatment approach. The burning question that any reader of this report will want to have answered, is: Is the ARTC program an exceptionally bad one? In this case, future endeavors must be directed to the development and maintenance of good methadone programs. Or, is the ARTC program typical of all or most methadone maintenance programs? In this case the policy implication would be to be humane to those patients currently maintained on methadone, but to curtail expansion of all methadone programs.

Unfortunately, it is virtually impossible to compare ARTC with other methadone maintenance programs, as regards retention in treatment, or the effect of the program on employment and crime. Although many studies have dealt with these issues, our review of numerous evaluations of methadone maintenance treatment programs has resulted in the identification of only one other methodologically sound piece of research (Maddux and McDonald, 1973). Although this review has not been exhaustive, it has been broad. Accordingly, we turn next to a discussion of some of the reasons for our inability to provide a data-based comparison of ARTC with other programs. Excellent critical commentaries, which confirm the views we set forth here, are provided by Greenberg and Adler (1974); Epstein (1974); Maddux and Bowden (1972); and the Second Report of the National Commission on Marijuana and Drug Abuse (1973: 176-180). Many of the same issues are discussed in the review by one of the authors of Gearing's work (Lukoff, 1975).

Critique of Other Evaluations

Retention

The obstacle most often in the path of one who would want to know the retention rate of a methadone maintenance program is the failure of the evaluator to specify the time period under study. For example, Scher, Chambers and Crown (1973:68) note that, of 500 patients accepted for treatment in Jackson Memorial Hospital "250 dropped out the first year." Close reading shows that the authors are referring to one calendar year. The proportion of patients treated for as long as 12 months must, accordingly, be less than the 50% that might at first be inferred by the incautious reader.

Similarly, Newman and Kagen (1973:797) find that "The retention rate one year after admission for all patients (including every person who received even a single dose of methadone) is 76%, and after two years 65% of all patients admitted remain in active treatment in the program." Sixty-five percent retained in treatment for two years sounds like a high proportion, but the program opened in November 1970, and the report was delivered in March 1973. Only a very small proportion of the total could possibly, because of the reality of passing time, have been treated for two years. We would like to know what proportion had been treated for two years, one year, or even 6 months, but this information is nowhere to be found.

A related confusion is perpetrated in the otherwise valuable critical comparison of patients admitted and not admitted to treatment during the first three years of existence of the Morris J. Bernstein Institute (Perkins and Bloch, 1970). The reader is first informed that 14% of the 521 patients admitted during those

first informed that 14% of the 521 patients admitted during those three years were discharged. (It is later revealed that an additional 10% were no longer in treatment for other reasons.) But Perkins and Bloch state that fully 54% of the 521 patients had been treated for less than one year. Thus the base number on which the proportion 14% -- or 24% -- has been calculated has been inflated by the inclusion of fully 281 individuals who could not have been in treatment for as long as one year.

It is also necessary, as implied in the parenthetical note of Newman and Kagen (1973) quoted above, to indicate whether any patients have been excluded from the numerator. In the heading of a table relating to criminal behavior, Gearing (1971: 184) notes that figures are calculated for all those in "MMTP Three Months or Longer." Perhaps patients retained less than three months are excluded from none, some, or all of Gearing's many figures on retention, but in either event the procedure followed is never made clear to the reader.

Maddux and McDonald (1973) avoid the pitfalls noted above. They state that information was collected on the first 100 individuals "consecutively admitted" (p. 240), between February 1, 1970, and July 1, 1970, and that "at the first anniversary of each subject's admission" (p. 241) his treatment status was determined. Fully 74% of all 100 had been continuously in treatment at the San Antonio Hospital for one year. This clearly is a rate much higher than that achieved by ARTC.

Employment

The biggest block to clarity here is the practice of reporting the employment status of all admissions to the program at entry,

but follow-up status of the retainees only. This was done, for example, by Gearing (1974); Jaffee (1970b); Scher, Chambers and Crown (1973). Had we followed a similar policy in the ARTC evaluation, the increase in proportion employed (see Table 16) would have been striking indeed. A similar problem is created when no figures on pre-program employment are offered (DuPont, 1972; Rosenberg, 1972).

Maddux and McDonald (1973), correctly, calculated the proportion of employed patients on the base of 100 both at entry and on the one year anniversary (information on employment status could not be found for four of the dropouts). On this basis, the proportion employed one year after entry is 44 percentage points larger than the proportion employed at entry (65% compared to 21%).

Corresponding figures (drawn from Table 16) show a 15 percentage point increase in proportion employed among those retained for 12-24 months, a 25 percentage point increase among those retained for 25-36 months and a 23 percentage point increase among those retained for more than three years. Thus both ARTC and the San Antonio program show increased employment after admission, but the degree of change is much more marked in the San Antonio program. A possibly biasing factor discussed by Maddux and McDonald is that San Antonio patients, who enjoyed good relations with their caseworkers, may have been motivated to tell them what they wanted to hear. Neither Maddux and McDonald nor the present evaluators attempted to obtain any external validation of employment information.

Criminal Behavior

Most studies of the criminal behavior of methadone patients show a post-treatment decline in crime (Cushman, 1972; Gearing, 1971, 1974; Goldstein, 1974; Newman, 1973). However, all of these studies are flawed for one or more of the reasons listed below. Possibly even if the analyses had been based on sounder research design the same results would have been obtained. The difficulty is that we can not know at present whether this is true or not.

Many studies report the pre-program criminal behavior of all entrants into the program, but follow-up data on retainees only. This is likely to have the effect of artificially inflating the baseline rates, at least if dropouts from other programs resemble those from ARTC in having unusually heavy criminal involvement (see Charts 7 and 8). This procedure is followed by Gearing (1974), Newman (1973). Similarly, Langrod and Lowinson (1972) fail to report on the pre-program arrests of the treatment population studied.

Similarly, although Wilmarth and Goldstein (1974) are careful in noting the difference between post-treatment rates obtained for retainees only and for retainees and drop-outs lumped together (the latter, as would be expected, are higher), they do not separate the pre-program rates in like manner. Had this procedure been followed, the pre-to-post decline in criminal activity of the retained might have appeared to be smaller.

Numberous investigators report criminal activity rates in terms of "man/years" in treatment (Cushman, 1972; Gearing, 1971; Goldstein, 1974; Newman, 1973). This measure makes it impossible

to separate those who have been treated for different lengths of time.

Further, as shown by the authors of the Second Report of the National Commission on Marijuana and Drug Abuse (1973:179-80), use of this average measure can result in a figure which biases the reader's perception, even though it is factually correct. The authors offer a calculation of man/months in treatment, in which they show both the distribution and the summary figure and conclude that: "Both the total and the average man-month or man-year figures, however, provide for varying interpretation depending upon motive and requirements. In the case [calculated] above, for example, an individual's average time in treatment was calculated to be five months; yet the actual situation shows that 15 out of the 20 (75%) of these individuals dropped out of the program after two months, the latter being the modal length of stay."

Possibly the most serious criticism is that arrest figures without accompanying information on charges may be trivial (e.g. DeLeon, 1972; Gearing, 1971, 1974; Goldstein, 1974). Because possession of works and sale of heroin are themselves criminal offenses, a declining arrest rate may simply reflect a decline in heroin use, with no change, or even an increase, in non-drug criminal behavior (shown for the ARTC program in all four panels of Chart 8 above, for example). Some of the enormous drops in arrest rates reported, even had they been based on otherwise-dependable research design, might reflect little or nothing more than a drop in the "crime" of drug use.

What can we conclude, on the basis of the ARTC data, about the effect of treatment on crime? The decline in crime after

entry into treatment is small at best; in most cases the decline is mainly in the category of drug-related crimes; in most cases there is a small but disturbing increase in the assaultive crime rate; and finally, even within the group that showed the most change, i.e. those patients retained for more than three years, the crime rate two years after entry into the program was no lower than it had been in the onset-to-entry period. Moreover, the latter patients, who appear to have benefitted the most from treatment, are precisely those who had the lowest charge rates in the onset-to-entry period. In sum, the impact of this methadone program, at least on other-than-drug-related crime, was minimal or even non-existent.

Implications for Future Research

Unfortunately, the clearest implication to be drawn from the foregoing attempt to place the effectiveness of ARTC in the context of other methadone maintenance programs is that it is useless to require program evaluations unless they are good evaluations.

We recommend an end to the blanket requirement that all methadone programs funded by the National Institute on Drug Abuse be evaluated. Instead, it would be worthwhile to poll methadone professionals for an impressionistic identification of the best programs. These should be subject to well-designed, carefully analyzed evaluations. Criterion measures should be identical. Sufficient funding should be provided to this small number of evaluations to make reliable, valid research possible.

With respect to retention, clear criteria for date of entrance and date of dropout must be provided. And time must be measured

from each individual patient's own date of entrance to date of dropout, with last date of data collection, for the retained, also specified. Retention, and other outcomes as well, should be analyzed by admission cohort, in order to take account of the effects of passing program time, and such possibly attendant events as major shifts in personnel, in size, and in dosage or other policies.

Accurate, detailed reportage of missed medication levels, including rules and procedures for discharge, is absolutely essential. Post-program employment data must be compared with pre-program figures. Finally, crime data should be collected in such a way that type of crimes committed can be analyzed. The man-years measure should be put to rest, and rates for distinct and locate-able groups of patients should be separately reported.

Implications for Methadone Treatment

The fact that the authors of this report are critical of published evaluations of other methadone programs makes it difficult for us to compare ARTC with other programs. We have not attempted to do our own evaluation of any other program. Yet within the limitations of our situation, we will try to present the implications we have drawn from our data.

The discrepancies between the termination figures yielded by the operational and official definitions are disturbing. The perpetuation of so large a number of highly delinquent patients cannot reasonably be justified by the desire of program administration to give enrolled patients the opportunity to avail themselves of treatment as they (the patients) see fit. If the entire

explanation of the discrepancies lies in inadequate record-keeping, then the program must have an extraordinary level of organizational incompetence. A third possible explanation is that the program administration was motivated by a need to keep patients on the rolls for a long time in order to receive Medicaid benefits.

Whatever the explanation, it seems that a known policy of allowing patients with spotty attendance records to remain officially enrolled in the program actually results in lower attendance as program time goes on. We showed that each succeeding cohort had an increased likelihood of operational termination within 12 months of entry. Since this was so even with relevant patient characteristics held constant, it can probably be attributed in part to patients' knowledge that they would not surely be terminated even if they came for methadone only once or twice a month for several months in a row.

It might be suggested that the program was providing some service even to patients who picked up methadone only twice a month, because at least on those days they were freed from the need to "hustle" and "cop." Even if there were no governmental objections to such a viewpoint, we believe it should be rejected. To the extent that a methadone program can be helpful in producing rehabilitation, it must be so not only by dispensing methadone, but by the provision of counseling services and pro-social models of behavior. Patients who are permitted to pick up methadone only a few times a month are permitted to avoid all such psychosocial benefits.

Among those patients who were operationally retained, ob-

jections similar to the above apply to the high proportions permitted to miss their methadone more than a quarter of the time. The program's tolerance of high levels of missed medication appeared to encourage a pattern of nonconformity to program norms which over time resulted, for all groups of patients, in rising levels of missed medications. The report of the Yale Medical Evaluation Team, made available to the program in 1973, emphasized that missed medications early in treatment predicted early drop-out. In spite of that, we find that missed medication levels continued to be very high in 1974.

Two other problem areas are the unexplained invalidity of the positive morphines measure; and the fact that only 13% of employed patients said that the program had been helpful to them in finding a job.

In conclusion, we have tried not to hold the program up to impossible standards of 100% retention, cessation of crime or employment. But concern for those heroin addicts who enter treatment in earnest search of help for their habits has caused us to seriously question, on grounds of their consequences, the practices of the ARTC administration.

Bibliography

- Adams, R., Capel, W., Bloom, W., & Stewart, G. Heroin addicts on methadone replacement: a study of dropouts. International Journal of the Addictions, 1971, 6(2), 269-277.
- Arnold, M. City Test Program for Addicts is 78% Successful. New York Times, March 10, 1967.
- Babst, D., Chambers, C., & Warner, A. Patient characteristics associated with retention in a methadone maintenance program. British Journal of Addiction, 1971, 66(3), 195-204.
- Baganz, P. & Maddux, J. Employment status of narcotic addicts one year after hospital discharge. Public Health Reports, 1965, 80(7), 615-621.
- Bass, V. & Brown, B. Methadone maintenance and methadone detoxification: a comparison of retention rates and client characteristics. International Journal of the Addictions, 1973, 8(6), 889-895.
- Bloom, W. & Capel, W. An exploratory study of the relation of heroin addiction to crime in New Orleans. In National Association for the Prevention of Addiction to Narcotics, Proceedings of the Fifth National Conference on Methadone Treatment. Washington, D.C. 1973, 123-132.
- Bloom, W. & Sudderth, E. Methadone in New Orleans: patients, problems and police. International Journal of the Addictions, 1970, 5(3), 465-487.
- Bowden, C. & Langenauer, B. Success and failure in the NARA addiction program. American Journal of Psychiatry, 1972, 128(7), 853-856.
- Brown, B., Bass, V., Gauvey, S. & Kozel, N. Staff and client attitudes toward methadone maintenance. International Journal of the Addictions, 1972, 7(2), 247-255.
- Chambers, C., Cuskey, W. & Wieland, W. Predictors of attrition during the outpatient detoxification of opiate addicts. Bulletin on Narcotics, 1970, 22(4), 43-47.
- Chambers, C. & Taylor, W. Patterns of cheating among methadone maintenance patients. Presented to the Eastern Psychiatric Association, Fifteenth Annual Meeting. New York, 1970.
- Chambers, C. & Taylor, W. The incidence and patterns of drug abuse among long-term methadone maintenance patients. In National Academy of Science, Proceedings of the 33rd Annual Meeting of the Committee on Problems of Drug Dependence. Toronto, Canada, 1971, 1-16.
- City Program Finds Methadone Curbs Need for Heroin. New York Times, August 16, 1966.

- Cushman, P. Methadone maintenance in hard core criminal addicts: economic effects. New York State Journal of Medicine, 1971, 71, 1768-1774.
- Cuskey, W., Ipsen, J., & Premkumar. An inquiry into the nature of changes in behavior among drug users in treatment. In National Commission on Marijuana and Drug Abuse, Drug Use in America: Problem in Perspective. Appendix IV. Washington, D.C.: Government Printing Office, 1973.
- Cuskey, W. Methadone use in the outpatient treatment of narcotic addicts. Bulletin on Narcotics, 1971, 23(3), 23-30.
- Dale, R. & Dale, F. The use of methadone in a representative group of heroin addicts. International Journal of the Addictions, 1973, 8(2), 293-308.
- DeFleur, L., Ball, J., & Snarr, R. The long term correlates of opiate addiction. Social Problems, 1969, 17(2), 225-233.
- DeLeon, G., Holland, S., & Rosenthal, M. Phoenix House criminal activity of dropouts. JAMA, 1972, 222, 686-689.
- Dole, V. & Nyswander, M. A medical treatment for diacetyl morphine (heroin) addiction. JAMA, 1965, 193, 646-650.
- Dole, V. & Nyswander, M. Heroin addiction -- a metabolic disease. Archives of Internal Medicine, 1967, 120, 19-24.
- Dole, V., Nyswander, M. & Warner, A. Successful treatment of 750 criminal addicts. JAMA, 1968, 206, 2708-2711.
- Dupont, R. Heroin addiction treatment and crime reduction. American Journal of Psychiatry, 1972, 128(7), 856-860.
- Duvall, H., Locke, B. & Brill, L. Followup study of narcotic drug addicts five years after hospitalization. Public Health Reports, 1963, 78(3), 185-193.
- Epstein, E. Methadone, the forlorn hope. The Public Interest, Summer 1974, (36), 3-24.
- Etzioni, A. Shortcuts to social change. The Public Interest, Summer 1968, (12), 40-51.
- Evenson, D. "Retention in a methadone maintenance program as a function of post program crime and drug abuse." Mimeo-graphed, 1975.
- Garbutt, G., & Goldstein, A. Blind comparison of three methadone maintenance dosages in 180 patients. In National Association for the Prevention of Addiction to Narcotics, Proceedings of the Fourth National Conference on Methadone Treatment, San Francisco, 1972, 411-414.
- Gearing, F. Evaluation of methadone maintenance treatment program. International Journal of the Addictions, 1970, 5(3), 517-543.

Gearing, F. Methadone maintenance treatment five years later -- where are they now? American Journal of Public Health Supplement, 1974, 64, 44-49.

Goldstein, A. Blind controlled dosage comparisons with methadone in 200 patients. National Association for the Prevention of Addiction to Narcotics, Proceedings of the Third National Conference of Methadone Treatment, 31 - 37.

Goldstein, A. Heroin addiction and the role of methadone in its treatment. Archives of General Psychiatry, 1972, 26(4), 291-297.

Greenberg, S. & Adler, F. Crime and addiction: an empirical analysis of the literature 1920-1973. Contemporary Drug Problems. 1974, 3(2), 221-270.

Hayim, G., Lukoff, I. & Quatrone, D. Heroin use and crime in a methadone maintenance program: an interim report. U.S. Department of Justice. Law Enforcement Assistance Administration, National Institute of Law Enforcement and Criminal Justice, Washington, D.C.: Government Printing Office, 1973.

Henchy, T., Eckerson, B. & Paez, J. The relationship between age and/or negative experiences and success on a methadone maintenance program. International Journal of the Addictions, 1974, 9(2), 221-227.

Holsendolph, E. Black jobless rate put at 25.7% for quarter by urban league. New York Times, June 9, 1975.

Human Resources Administration. Directory of Needs: Selected Socioeconomic Characteristics of Youth in New York City by Borough and Health Area, New York, April 1969.

Hunt, G. & Odoroff, M. Followup study of narcotic drug addicts after hospitalization. Public Health Reports, 1962, 77(1), 41-54.

Jaffe, J. Further experience with methadone in the treatment of narcotics users. International Journal of the Addictions, 1970, 5(3), 375-389.

Jaffee, J. Methadone maintenance: variations in outcome criteria as a function of dose. National Association for the Prevention of Addiction to Narcotics, Proceedings of the Third National Conference on Methadone Treatment, 37-44.

Jaffee, J., Zaks, M. & Washington, E. Experience with the use of methadone in a multimodality program for the treatment of narcotics users. International Journal of the Addictions, 1969, 4(3), 481-490.

Jansen, D., Brown, B. & Bass, V. Comparison of attitudes and beliefs about methadone of clients retained and lost to treatment. Drug Forum, 1974, 3(3), 215-223.

Kleinman, P. & Lukoff, I. Generational Status, Ethnic Group and Friendship Networks: Antecedents of Drug Use in a Ghetto Community. U.S. Department of Justice, Law Enforcement Assistance Administration, National Institute of Law Enforcement and Criminal Justice, May 1975.

Krakowski, M. & Smart, R. Social and psychological characteristics of heroin addicts dropping out of methadone treatment. Canadian Psychiatric Association Journal, 1974, 19(1), 41-47.

Langenauer, B. & Bowden, C. A follow up of narcotic addicts in the NARA program. American Journal of Psychiatry, 1971, 128(1), 41-46.

Langley, M., Norris, B., & Parker, L. Methadone dosage levels, positive urine tests and length of time in a methadone treatment program. National Association for the prevention of Addiction to Narcotics, Proceedings of the Fifth National Conference on Methadone Treatment. Washington, DC. 1973, 963-971.

Langrod, J. & Lowinson, J. The scope and nature of criminality in a group of methadone patients. National Association for the Prevention of Addiction to Narcotics, Proceedings of the Fourth National Conference of Methadone Treatment, San Francisco, 1972, 95-96.

LaRosa, J., Lipsius, S., & LaRosa, J. Experiences with a combination of group therapy and methadone maintenance in the treatment of heroin addiction. International Journal of the Addictions, 1974, 9(4), 605-617.

Lewis, V., Pollack, S., Petersen, D. & Gers, G. Nalline and urine tests in narcotics detection: a critical overview. International Journal of the Addictions, 1973, 9(1), 163-171.

Lukoff, I. Issues in the evaluation of heroin treatment. In Josephson, E. & Carroll, E. (Eds.) Drug Use: Epidemiological and Sociological Approaches. Washington, D.C.: Hemisphere Publishing Corp., 1974.

Lukoff, I. Analysis of the Gearing study of Methadone Maintenance Treatment Program. In Research and Program Planning Information, Research Utilization Briefs. New York: Community Council of Greater New York, October 1975.

Lukoff, I. & Vorenberg, J. Methadone maintenance evaluation studies: some unresolved issues on crime and drug abuse. National Association for the Prevention of Addiction to Narcotics, Proceedings of the Fourth National Conference of Methadone Treatment, San Francisco, 1972, 489-492.

- Maddux, J. & Bowden, C. Critique of success with methadone maintenance. American Journal of Psychiatry, 1972, 129(4), 440-446.
- Maddux, J. & McDonald, L. Status of 100 San Antonio addicts one year after admission to methadone maintenance. Drug Forum, 1973, 2(3), 239-252.
- Markham, J. Heroin Hunger May Not a Mugger Make. New York Times Magazine, March 18, 1973.
- McCabe, O., Jurland, A. & Sullivan, D. A study of methadone failures in an abstinence program. International Journal of the Addictions, 1974, 9(5), 731-740.
- Methadone Maintenance Evaluation Committee. Progress report of evaluation of methadone maintenance treatment program as of March 31, 1968. JAMA, 1968, 206, 2712-2714.
- Newman, R. Narcotic addiction in New York City: trends from 1968 to mid 1973. American Journal of Drug and Alcohol Abuse, 1974, 1(1), 53-66.
- Newman, R., Bashkow, S. & Cates, M. Arrest histories before and after admission to a methadone maintenance treatment program. National Association for the Prevention of Addiction to Narcotics, Proceedings of the Fifth National Conference on Methadone Treatment. Washington, D.C. 1973, 109-115.
- Newman, R. & Kagen, J. New York City Methadone Maintenance Treatment Program after two years -- an overview. National Association for the Prevention of Addiction to Narcotics. Proceedings of the Fifth National Conference on Methadone Treatment. Washington, D.C. 1973, 794-802.
- New York City, Department of Health, Director of Research and Development, Narcotics Register. Rates of Heroin Use by Boroughs and Health Areas in New York City. New York, 1964. (mimeographed.)
- Nightingale, S., Michaux, W. & Platt, P. Clinical implications of urine surveillance in a methadone maintenance program. International Journal of the Addictions, 1972, 7(3), 403-414.
- O'Donnell, J. A follow up of narcotic addicts. American Journal of Orthopsychiatry, 1964, 34(5), 948-954.
- O'Donnell, J. Narcotic addiction and crime. Social Problems, 1966, 13(4), 374-385.
- Perkins, M. & Bloch, H. Survey of a methadone maintenance treatment program. American Journal of Psychiatry, 1970, 126(10) 1389-1403.
- Perkins, M. & Richman, A. Prevalence of participation in methadone programs. American Journal of Psychiatry, 1972, 129(4), 447-450.

- Quatrone, D. Profile of active and terminated patients in a methadone maintenance program. U.S. Department of Justice, Law Enforcement Assistance Administration, National Institute of Law Enforcement and Criminal Justice, February 1975.
- Rothenberg, P. & Kleinman, P. Addiction and employment: a study of the employment status of a cohort of methadone maintenance patients. U.S. Department of Justice, Law Enforcement Assistance Administration, National Institute of Law Enforcement and Criminal Justice, February 1975.
- Robins, L. Veterans' drug use three years after Viet Nam. Department of Psychiatry, Washington University School of Medicine, 1974. (mimeographed.)
- Riordan, C., Slobetz, F., Wall, S. & Primm, B. A comparison study of thin layer chromatography urinalysis results. In National Association for the Prevention of Addiction to Narcotics, Proceedings of the Fourth National Conference of Methadone Treatment, San Francisco, 1972, 333-336.
- Rosenberg, C., Davidson, G. & Patch, V. Patterns of drop outs from a methadone program for narcotic addicts. International Journal of the Addictions, 1972, 7(3), 415-425.
- Rosenberg, C. & Patch, V. Twelve month follow-up of adolescent addicts treated with methadone. In National Association for the Prevention of Addiction to Narcotics, Proceedings of the Fourth National Conference of Methadone Treatment, San Francisco, 1972, 51-54.
- Rozytko, V. & Stein, K. Social and psychological factors associated with length of stay in a drug treatment facility. International Journal of the Addictions, 1974, 9(6), 873-878.
- Scher, J., Chambers, C. & Crown, B. Methadone maintenance: two cities, two programs, one public, one private. Drug Forum, 1973, 3(1), 65-77.
- Schut, J., Wohlmuth, T. & File, K. High dose methadone maintenance: an evaluation. British Journal of Addiction, 1973, 68(2), 145-150.
- Sells, S., Chatham, L. & Joe, G. The relation of selected epidemiological factors to retention in methadone treatment. In National Association for the Prevention of Addiction to Narcotics, Proceedings of the Fourth National Conference of Methadone Treatment, San Francisco, 1972, 89-90.
- Sells, S., Person, P. & Joe, G. Comparison of behavioral indices of methadone maintenance patients who remain in treatment with those of patients who drop out early. In National Association for the Prevention of Addiction to Narcotics, Proceedings of the Fourth National Conference of Methadone Treatment, San Francisco, 1972, 221-224.

- Stephens, R. & Cottrell, E. A follow up study of 200 narcotic addicts committed for treatment under the Narcotic Addict Rehabilitation Act. British Journal of Addiction, 1972, 67(1), 45-53.
- Stephens, R. & Weppner, R. Patterns of cheating among methadone maintenance patients. Drug Forum, 1973, 2(4), 357-366.
- Sutker, P. & Allain, A. Addict attitudes toward methadone maintenance: a preliminary report. International Journal of the Addictions, 1974, 9(2), 337-343.
- Swezey, R. Estimating drug - crime relationships. International Journal of the Addictions, 1973, 8(4), 701-721.
- U.S. Department of Justice, Law Enforcement Assistance Administration, National Institute of Law Enforcement and Criminal Justice. Methadone Treatment Manual. Washington, D.C.: Government Printing Office, 1973.
- Vaillant, G. Twelve year follow up of New York Narcotic addicts: the relation of treatment to outcome. American Journal of Psychiatry, 1966, 122(7), 727-737.
- Vaillant, G. A twelve year follow up of New York narcotic addicts: IV. Some characteristics and determinants of abstinence. American Journal of Psychiatry, 1968, 123(5), 573-584.
- Vorenberg, J. & Lukoff, I. Addiction, crime and the criminal justice system. Federal Probation, 1973, 37(4), 3-7.
- Weppner, R. & Stephens, R. Methadone maintenance: a re-evaluation. NIMH Clinical Research Center, Lexington, Kentucky, 1971. (mimeographed.)
- Williams, H. Low and high methadone maintenance in the out-patient treatment of the hard core heroin addict. International Journal of the Addictions, 1970, 5(3), 439-447.
- Williams, H. & Johnston, W. Factors related to treatment retention in a methadone maintenance program. In National Association for the Prevention of Addiction to Narcotics, Proceedings of the Fourth National Conference of Methadone Treatment, San Francisco, 1972, 439-442.
- Wilmarth, S. & Goldstein, A. Therapeutic effectiveness of methadone maintenance programs in the USA. Geneva: World Health Organization, 1974.
- Wolfe, R. Methadone Maintenance as a medical treatment: the continuing need for controlled clinical study. National Association for the Prevention of Addiction to Narcotics, Proceedings of the Fifth National Conference on Methadone Treatment. Washington, D.C. 1973, 723-727.

Yale University, Medical Evaluation Team. Two Year Report to the
Addiction Research and Treatment Corporation, 1970-1972.
Yale University, New Haven Connecticut, 1973. (mimeographed.)

Zahn, M. & Ball, J. Factors related to cure of opiate addiction
among Puerto Rican addicts. International Journal of the
Addictions, 1972, 7(2), 237-245.

Appendix A

Additional Information on the Measures of Outcome Variables

1a. Official retention

The terminated group includes both patients who were discharged for cause and those who withdrew on their own, for any reason. The Status Report Sheet issued on July 1, 1974, was the basis for making this determination. Thus, patients not terminated by that date were categorized as retained in the program for the maximum period of time that their date of entry would allow.

A total of 72 patients in the Brooklyn program were officially dropped from the program and later re-admitted to it. Some of these patients were later officially terminated for a second time. The latter date was used as the date of official termination for purposes of this report.

A total of 26 cases were missing from the Status Report Sheet of July 1, 1974, for the Brooklyn treatment program, and 15 cases for the Harlem treatment program.

1b. Operational Retention

The criterion of operational termination resulted in an extremely generous, or retarded, date of termination, not only because such a large amount of missed medication is presumed to be unusual in most programs, but also because in some cases patients missed more than 20 methadones, or even disappeared from the file entirely, for as many as 12 months and then reappeared as active again. This definition, however, was the one most consistent with a minimum conventional understanding of

activity, which was also compatible with fairly rapid and reliable coding. Appendix B is a memorandum in which the exact rules for determining operational date of termination are set forth.

(In addition to serving this function, the memorandum duplicated in Appendix B also gives a few concrete examples of the type of erratic attendance performance which was tolerated by the program. A 10% reliability check of Brooklyn patients yielded a reliability rate of 91.1, with a two month margin of latitude allowed. A 10% reliability check of coding of Harlem patients yielded a reliability rate of 93.3%, with the same margin allowed.

The last treatment month which appeared on the urine tape is October 1974. As was done in determination of official termination, patients not terminated by the last date available were considered to be retained in the program for the maximum period of time that their date of entry would allow. As before, the lapse between date of admission and date of termination was computer-calculated. There were a total of 44 cases in the Brooklyn treatment program, and 15 cases in the Harlem program, for whom no date of operational termination could be established. These were due almost entirely to the complete absence of the missing patients from the urine tape; in addition, in a few cases it was so difficult to establish a date of termination that a missing data code was entered instead.

Because the last month which appeared on the urine tape was four months later than the month of the Status Report Form used to establish official termination (October, rather than July 1974), a slightly higher proportion of patients operationally terminated as compared to officially terminated is to be expected

in the final treatment year only. As shown below, there is in fact a higher proportion of patients operationally than officially terminated in every year of treatment.

2. Missed Medications

If missed medications data were not available for the last three months of the treatment year, either because the patient had been terminated earlier in the treatment year, or because the patient was in a period of inactivity, such as described above in the section on operational termination, then the computer searched back in the file for the three months prior to the last quarter. It continued this search until the first quarter of the treatment year in question, but it did not continue this search into the previous year in treatment. Thus, although missed medication data for most cases in the tables which refer to them come from the last quarter of the patient's treatment year, when those data were missing or incomplete, the data come from the last quarter of the treatment year for which there is information available.

One source of missing data in the missed medications variables is the following. A patient who had been terminated in the first or second month of a given year in treatment would be categorized as retained for that year. However, since he/she would not meet the requirement that methadone information exist in at least two out of three months in the treatment year, such a patient would be missing from the missed medications tables.

Another source of missing data in these tables also relates to the way in which the operational termination variable was constructed. As noted above, a patient who was active for one

year, who disappeared from the urine file for the entire period of his/her second year from date of entry, but reappeared on an active basis for the third year, would be operationally retained for 25-36 months, but would have no missed medications information in the second year.

Patients were also intentionally excluded from the missed methadone index if they had submitted fewer than five urine tests in the quarter. We reasoned that patients who were conforming so marginally to program requirements were probably picking up their medications so irregularly as not to qualify for inclusion with the "treated" population. The effect of this decision is probably to underestimate the proportion of those who missed medications 26% or more of the time.¹

1. In retrospect, the decision to exclude from the missed medications indices persons who had submitted less than five urine samples in the quarter is seen to be somewhat unfortunate. When the decision was made, the assumption of the evaluation team was that almost all patients were submitting at least five urine tests per quarter. As discussed in the text below, this assumption was false as it applied to the third admission cohort, and to the later years in treatment of the first and second cohorts. Evidently, especially in the more recent years of the program's existence, there was little program emphasis on conforming to its nominal requirement that urine samples be submitted. Thus, fairly large numbers of patients, some of whom may have picked up medications with some regularity, are excluded from these tables. In general, however, as stated above, the effect of inclusion of patients in the low urine sampled category would have been to further enlarge the already substantial numbers of those who missed medications 26% or more of the days in the quarter (see Chart 2).

The net effect of all three of these sources of missing information is to present a "better" overall picture of patient levels of missed medications than would be produced if the full set of data for all patients were available. This is so because patients with spotty attendance over the year, patients with inadequate numbers of urine samples submitted and patients who are about to terminate from treatment are all likely to have high levels of missed medications. Thus, the already grim data on missed medications presented in the Findings Section, would be even grimmer if there were less missing information.

Patients who were coded as "blank" as regards number of urines sampled in at least two of three months in the quarter were allowed to enter the missed medications indices, if missed medications information was available. The reasoning was that no inference about actual number of urines submitted could be made on the basis of missing information.

Because, as described above, our definition of operational retention was based on number of missed medications, some patients who had been operationally terminated might continue to appear on the urine tape, if they continued to miss more than 20 medications. These patients were excluded even from those missed medications tables which did not directly involve the retention variable, on the grounds that it was illogical to continue to represent as treated patients previously defined as operationally terminated. However, those for whom no operational retention data were available were included in those missed medication tables which did not involve retention.

3. Morphine positives

Those patients who were operationally terminated in the first or second month of any year in treatment are, as in the missed medications variables, missing from the tables relating to morphine positives. Similarly, those patients whose periods of inactivity extended for one full year in "treatment," are also excluded. Patients who submitted fewer than 5 urine samples in three, or at least two out of three, months are also excluded. Finally, of necessity, those patients with blanks in all three months of the quarter are also missing. (But those lacking retention data were included, in the tables not involving the retention variable, as long as the morphine information was adequate.) Like the missing information re. missed medications, the missing information about morphine positives would, if present, probably serve to inflate the proportion of patients with many morphine positives. However, as discussed in the Findings Section, the morphine positives measure is suspect on even more serious grounds.

4. Employment

There are 281 patients who are missing total employment data. It seems reasonable to assume that more than half of those patients were unemployed or employed for only a short period of time, because the counselor is probably often apt to find out about information when it exists. However, some of those patients whose activities are unknown to the counselor may be unknown precisely because they are employed full-time, and hence unavailable for counseling during the daytime hours.

5. Criminal Behavior

For the period of onset of addiction² to entry into the program, a rate is first computed for each individual, according to the following formula:

$$\text{Charge Rate} = \frac{\text{Total number of charges in period}}{\text{Total number of months in period}} \times 100 / .0833$$

Thus, adjustment is made for the fact that the length of the onset-to-entry period varies by individual, because the first step is to compute a separate rate for each person. An individual with 6 charges over an onset-to-entry period of 6 years (72 months) has a rate of 100, just as an individual with 4 charges over an onset-to-entry period of 4 years (48 months) does. This method of computing charge rates avoids the difficulty of the "man-years" method, in which the numerator and denominator are arrived at separately. The purpose of the introduction of .0833 into the above formula was to make a charge rate of one arrest per year equal to 100.

For each of the yearly time periods, the rate is again first computed for each individual. The formula is simply number of charges x 100. Thus a person who had one charge in the year before entry would have a rate of 100 in that period. Again, the "man/years" method is avoided. Charge rates for categories of patients are formed by adding the individual charge rates and dividing by the number of persons in the category.

2. Age at onset of addiction is determined by answer to the question: "How old was the patient when he first used heroin or other opiates daily?"

Patients for whom no age of onset of addiction could be established constitute missing data in the onset-to-entry rate. Administrative oversight also resulted in missing data in all time periods, for some patients. A small number of cases were marked by the police department as "out of file" and these also contributed to the missing data category. (This is to be distinguished from cases with no B-numbers, or marked "no records in file," who contribute a score of 0 to the charge rates in all time periods.) Thus, 187 patients altogether are missing from cohorts one and two in all the charts bearing on criminal behavior. An additional 130 are missing from cohort two in the two year after entry cells.

Separate requests for information about patients in the first cohort were made at three, and in some cases four, different times: The impact of collecting the data at several different time periods on the reported charge rate is analyzed in the text.

Appendix B

Information on Cases Missing from Tables in Text

General Points:

1. Fifty-one deceased patients treated in the Brooklyn clinic are excluded from all tables based on this population.
2. Patients appear only in those treatment years during which they remain operationally retained.
3. In each table those who have data on all the relevant variables are included in that table even if operational retention can not be computed for them.

Table 1: Demographic Characteristics of Brooklyn and Harlem Treatment Populations

Table 2: Drug Use and Criminal Characteristics of Brooklyn and Harlem Populations

Table 3: Operational Retention by Cohort and Age at Admission
44 patients for whom operational retention could not be computed and 3 for whom age at admission is unknown are excluded from this table.

Table 4: Operational Retention by Cohort and Age of First Daily Heroin Use
44 patients for whom operational retention could not be computed and 2 whose age of first daily heroin use is unknown are excluded from this table.

Table 5: Operational Retention by Cohort and Highest Grade Completed
44 patients for whom operational retention could not be computed and 5 whose highest grade completed is unknown are excluded from this table.

Table 6: Operational Retention by Cohort and Ethnic Group
44 patients for whom operational retention could not be computed are excluded from this table.
2 patients of Spanish-American descent and 11 falling into a residual "other" category are excluded from this table.

Table 7: Distribution of Patients Who Started and Eventually Completed Detoxification Sequence by Program Month and Cohort
This table is based on a 50 percent sample of those who began a detox sequence whether or not it was later completed.

Table 8: Distribution of Patients Who Completed Detoxification Sequence by Year in Treatment and Cohort
This table is based on a 50 percent sample of those who began a detox sequence whether or not it was later completed.

Table 9: Length of Retention Following Detoxification by Cohort for Patients Who Completed Detoxification Only
This table is based on a 50 percent sample of those who began a detox sequence whether or not it was later completed.

Table 10: Distribution of Official and Operational Retention for all Harlem Patients
15 patients for whom official retention and 15 for whom operational retention could not be computed are excluded from this table.

Table 11: Missed Medication by Operational Retention and Year in Treatment for Patients in First Cohort
23 patients for whom operational retention could not be computed are excluded from all years in treatment.
23 patients for their first year in treatment, 5 for their second, 11 for their third and 29 for their fourth whose proportion of medications missed could not be computed are excluded from this table.

Table 12: Distribution of Missed Medications by Year in Treatment for Harlem Patients
50 patients in their first year of treatment and 18 in their second whose proportion of missed medication could not be computed are excluded from this table.

Table 13: Morphine Positives by Year in Treatment
301 in their first year of treatment, 187 in their second, 143 in their third and 87 in their fourth whose proportion of morphine positives could not be computed are excluded from this table.

Table 14: Morphine Positives by Operational Retention and Year in Treatment for Patients in First Cohort
23 patients for whom operational retention could not be computed are excluded from all years in treatment.
33 patients in their first year of treatment, 22 in their second, 24 in their third and 16 in their fourth whose proportion of morphine positives could not be computed are excluded from this table.

Table 15: Morphine Positives First Year in Treatment by Missed Medications First Year in Treatment and Cohort
22 patients in the first cohort, 19 in the second and 36 in the third whose proportion of missed medications and morphine positives could not be computed are excluded from this table.
20 patients in the first cohort, 2 in the second and 2 in the third whose proportion of missed medication could not be computed are excluded from this table.
25 patients in the first cohort, 108 in the second and 91 in the third whose proportion of morphine positives could not be computed are excluded from this table.

Table 16: Pre- and Post-Program Employment by Operational Retention
44 patients for whom operational retention could not be computed are excluded from this table.
21 patients for whom employment one year before entry is unknown are excluded from this table.
250 patients for whom post-program employment is unknown are excluded from this table.

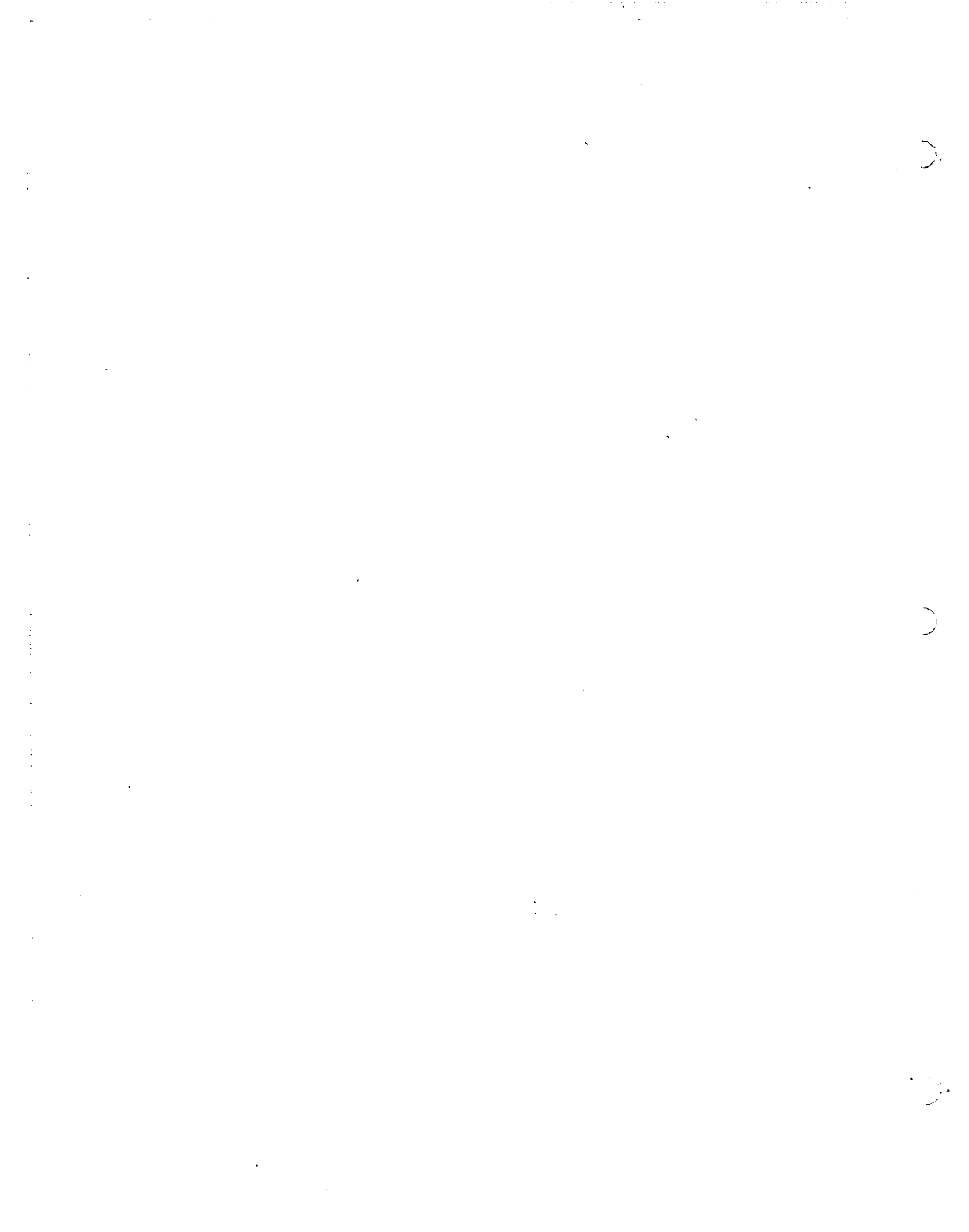
Table 17: Mean Charge Rates of Patients Studied by Lukoff and Quatrone, Based on Data Collected in 1972 and Data Collected in 1974.

Table 18: Mean Charge Rates by Time Period, Type of Charge and Previous treatment Experience for Patients 5000-5202 in the Harlem Clinic
Due to problems in securing data from the Bureau of Criminal Identification and Office of Criminal Records or question concerning the linkage of patients to data, 22 patients are excluded from all time periods.

Appendix C

Information on Cases Missing from Appendix Tables C1-C6

- Table 1: Distribution of Missed Medications by Year in Treatment**
101 patients in their first year of treatment, 129 in their second, 139 in their third and 98 in their fourth whose proportion of medications missed could not be computed are excluded from this table.
- Table 2: Distribution of Missed Medications by Operational Retention and Year in Treatment**
44 patients for whom operational retention could not be computed are excluded from all years in treatment. 66 patients in their first year of treatment, 88 in their second, 98 in their third and 56 in their fourth whose proportion of medications missed could not be computed are excluded from this table.
- Table 3: Missed Medications by Operational Retention and Year in Treatment for Patients in Second Cohort**
11 patients for whom operational retention could not be computed are excluded from all years in treatment. 12 patients in their first year of treatment, 27 in their second, 50 in their third and 27 in their fourth whose proportion of medications missed could not be computed are excluded from this table.
- Table 4: Missed Medications by Operational Retention and Year in Treatment for Patients in Third Cohort**
10 patients for whom operational retention could not be computed are excluded from all years in treatment. 31 patients in their first year of treatment, 51 in their second and 36 in their third whose proportion of medications missed could not be computed are excluded from this table.
- Table 5: Morphine Positives by Operational Retention and Year in Treatment for Patients in Second Cohort**
11 patients whose operational retention could not be computed are excluded from all years in treatment. 118 patients in their first year of treatment, 75 in their second, 44 in their third and 29 in their fourth whose proportion of morphine positives could not be computed are excluded from this table.
- Table 6: Morphine Positives by Operational Retention and Year in Treatment for Patients in Third Cohort**
10 patients whose operational retention could not be computed are excluded from all years in treatment. 119 patients in their first years of treatment, 49 in their second and 33 in their third whose proportion of morphine positives could not be computed are excluded from this table.



Appendix C1.

Distribution of Missed Medications
by Year in Treatment

<u>Proportions of Medications Missed</u>	<u>Year in Treatment</u>							
	<u>First</u>		<u>Second</u>		<u>Third</u>		<u>Fourth</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
0%	220	13	165	16	130	22	49	23
1 - 25%	809	49	550	55	306	52	115	55
26+%	637	38	296	29	150	26	45	22
	<u>1666</u>	<u>100</u>	<u>1011</u>	<u>100</u>	<u>586</u>	<u>100</u>	<u>209</u>	<u>100</u>

χ^2 test for significance was not performed as year in treatment categories are not mutually exclusive.

Appendix C2

Distribution of Missed Medications by Operational Retention and Year in Treatment

First Cohort

Year in Treatment

First Year¹

Length of Retention

<u>Proportion of Medications Missed</u>	<u>1 - 12 Months</u>		<u>13 - 24 Months</u>		<u>25 - 36 Months</u>		<u>37 or more Months</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
	0%	51	9	44	11	73	18	49
1-25%	134	23	224	55	265	63	181	70
26+ %	391	68	139	34	78	19	28	11
	<u>576</u>	<u>100</u>	<u>407</u>	<u>100</u>	<u>416</u>	<u>100</u>	<u>258</u>	<u>100</u>

Second Year²

Length of Retention

<u>Proportion of Medications Missed</u>	<u>13 - 24 Months</u>		<u>25 - 36 Months</u>		<u>37 or more Months</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
	0%	35	10	65	17	64
1-25%	139	38	255	65	156	62
26+%	188	52	72	18	34	13
	<u>362</u>	<u>100</u>	<u>392</u>	<u>100</u>	<u>254</u>	<u>100</u>

Third Year³

Fourth Year

Length of Retention

<u>Proportion of Medications Missed</u>	<u>25 - 36 Months</u>		<u>37 or more Months</u>		<u>37 or more Months</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
	0%	57	17	72	30	49
1-25%	164	48	141	57	114	55
26+ %	118	35	31	13	44	21
	<u>339</u>	<u>100</u>	<u>244</u>	<u>100</u>	<u>207</u>	<u>100</u>

Appendix C2 (Cont.)

1. $\chi^2 = 371.8$, with 6 degrees of freedom, significant at .001 level.
2. $\chi^2 = 151.3$, with 4 degrees of freedom, significant at .001 level.
3. $\chi^2 = 39.9$, with 2 degrees of freedom, significant at .001 level.

Appendix C3

Missed Medications by Operational Retention and Year in Treatment for Patients in Second Cohort

Second Cohort

Year in Treatment

First Year¹

Operational Retention

<u>Proportion of Medications Missed</u>	<u>1 - 12 Months</u>		<u>13 - 24 Months</u>		<u>25 - 36 Months</u>		<u>37 or more Months</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
	0%	10	5	11	6	22	12	25
1 - 25%	46	22	96	52	116	66	87	67
26+%	157	73	76	42	40	22	16	13
	<u>213</u>	<u>100</u>	<u>183</u>	<u>100</u>	<u>178</u>	<u>100</u>	<u>128</u>	<u>100</u>

Second Year²

Operational Retention

<u>Proportion of Medications Missed</u>	<u>13 - 24 Months</u>		<u>25 - 36 Months</u>		<u>37 or more Months</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
	0%	12	7	31	18	34
1 - 25%	68	39	104	62	73	60
26+%	94	54	33	20	15	12
	<u>174</u>	<u>100</u>	<u>168</u>	<u>100</u>	<u>122</u>	<u>100</u>

Third Year³

Fourth Year

Operational Retention

Operational Retention

<u>Proportion of Medications Missed</u>	<u>25 - 36 Months</u>		<u>37 or more Months</u>		<u>37 or more Months</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
	0%	22	16	32	28	29
1 - 25%	68	48	76	65	48	47
26+%	50	36	8	7	25	25
	<u>140</u>	<u>100</u>	<u>116</u>	<u>100</u>	<u>102</u>	<u>100</u>

Appendix C3 (Cont.)

1. $\chi^2 = 169.4$, with 6 degrees of freedom, significant at the .001 level.
2. $\chi^2 = 80.7$, with 4 degrees of freedom, significant at the .001 level.
3. $\chi^2 = 30.7$, with 2 degrees of freedom, significant at the .001 level.

Appendix C4

Missed Medications by Operational Retention and
Year in Treatment for Patients in Third Cohort

Third Cohort

Year in Treatment

First Year¹

Operational Retention

<u>Proportion of Medications Missed</u>	<u>1 - 12 Months</u>		<u>13 - 24 Months</u>		<u>25 - 36 Months</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
	0%	7	3	20	13	39
1 - 25%	61	23	89	55	88	60
26+%	197	74	51	32	21	14
	<u>265</u>	<u>100</u>	<u>160</u>	<u>100</u>	<u>148</u>	<u>100</u>

<u>Proportion of Medications Missed</u>	<u>Second Year²</u>				<u>Third Year</u>	
	<u>Operational Retention</u>		<u>Operational Retention</u>		<u>Operational Retention</u>	
	<u>13 - 24 Months</u>	<u>25 - 36 Months</u>	<u>25 - 36 Months</u>	<u>25 - 36 Months</u>	<u>N</u>	<u>%</u>
0%	17	14	28	21	27	24
1 - 25%	45	36	89	65	63	56
26+%	62	50	19	14	23	20
	<u>124</u>	<u>100</u>	<u>136</u>	<u>100</u>	<u>113</u>	<u>100</u>

1. $\chi^2 = 171.4$, with 4 degrees of freedom, significant at the .001 level.
2. $\chi^2 = 39.5$, with 2 degrees of freedom, significant at the .001 level.

Appendix C5

Morphine Positives by Operational Retention and Year in Treatment for Patients in Second Cohort

Second Cohort

Year in Treatment

First Year¹

Operational Retention

<u>Proportion of Morphine Positives</u>	<u>1 - 12 Months</u>		<u>13 - 24 Months</u>		<u>25 - 36 Months</u>		<u>37 or more Months</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
	0%	28	21	48	28	82	48	45
1-25%	27	21	49	29	39	23	39	31
26-50%	26	20	30	18	32	19	15	12
51+%	50	38	43	25	17	10	26	21
	<u>131</u>	<u>100</u>	<u>170</u>	<u>100</u>	<u>170</u>	<u>100</u>	<u>125</u>	<u>100</u>

Second Year²

Operational Retention

<u>Proportion of Morphine Positives</u>	<u>13 - 24 Months</u>		<u>25 - 36 Months</u>		<u>37 or more Months</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
	0%	84	63	125	76	90
1-25%	30	22	32	20	21	18
26-50%	11	8	3	2	4	3
51+%	10	7	4	2	3	3
	<u>135</u>	<u>100</u>	<u>164</u>	<u>100</u>	<u>118</u>	<u>100</u>

Third Year³

Fourth Year

Operational Retention

<u>Proportion of Morphine Positives</u>	<u>25 - 36 Months</u>		<u>37 or more Months</u>		<u>37 or more Months</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
	0%	106	76	97	78	64
1-25%	30	21	25	20	26	26
26-50%	3	2	2	2	9	9
51+%	1	1	-	-	1	1
	<u>140</u>	<u>100</u>	<u>124</u>	<u>100</u>	<u>100</u>	<u>100</u>

Appendix C5 (Cont.)

1. $\chi^2 = 51.2$, with 9 degrees of freedom, significant at .001 level.
2. $\chi^2 = 15.8$, with 6 degrees of freedom, significant at .05 level.
3. $\chi^2 = .01$, with 3 degrees of freedom, not significant.

Appendix C6

Morphine Positives by Operational Retention and
Year in Treatment for Patients in Third Cohort

Third Cohort

Year in Treatment

First Year¹

<u>Proportion of Morphine Positives</u>	<u>1 - 12 Months</u>		<u>13 - 24 Months</u>		<u>25 - 36 Months</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
	0%	109	59	111	72	105
1-25%	38	21	35	22	39	27
26-50%	18	10	7	4	1	1
51+%	18	10	3	2	1	1
	183	100	156	100	146	100

Second Year²

<u>Proportion of Morphine Positives</u>	<u>13 - 24 Months</u>		<u>25 - 36 Months</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
	0%	105	84	100
1-25%	15	12	29	21
25-50%	3	2	5	4
51+%	2	2	2	1
	125	100	136	100

Third Year

<u>Proportion of Morphine Positives</u>	<u>25 - 36 Months</u>	
	<u>N</u>	<u>%</u>
	0%	71
1-25%	33	29
25-50%	8	7
51+%	3	3
	115	100

Appendix C6 (Cont.)

1. $\chi^2 = 35.2$, with 6 degrees of freedom, significant at .001 level.)
2. $\chi^2 = 4.6$, with 3 degrees of freedom, not significant.

Information on Cases Missing From Charts

- Chart 1: Distribution of Official and Operational Retention for All Patients and for Each Cohort**
17 patients in the first admission cohort, 3 in the second and 6 in the third for whom official retention could not be calculated are excluded from this chart.
23 patients in the first admission cohort, 11 in the second and 10 in the third for whom operational retention could not be calculated are excluded from this chart.
- Chart 2: Proportion of Patients Who Missed Medication 26 or More Per Cent of the Time by Year in Treatment: For All Patients**
101 patients in their first year of treatment, 129 in their second, 139 in their third and 98 in their fourth whose proportion of medications missed could not be computed are excluded from this chart.
- Chart 3: Proportion of Patients Who Missed Medication 26 or More Per Cent of the Time by Year in Treatment: For Those Retained Three or More Years Only**
44 patients for whom operational retention could not be computed are excluded from all years in treatment.
66 patients in their first year of treatment, 88 in their second, 98 in their third and 56 in their fourth whose proportion of medications missed could not be computed are excluded from this chart.
- Chart 4: Distribution of Post Program Employment for All Patients and For Each Cohort**
38 patients in the first admission cohort, 99 in the second and 144 in the third for whom post program employment is unknown are excluded from this table.
- Chart 5: Mean Charge Rate by Type of Charge and Time Period for Patients in the First and Second Cohorts**
Due to problems in securing data from the Bureau of Criminal Identification and Office of Criminal Records or question concerning the linkage of patients to data: 187 patients are excluded from Onset to Entry, One Year Before and One Year After time periods and 317 from the Two Year After time period. Information for the Three Year After was requested for only the first cohort; 66 are excluded for the reasons cited above.
- Chart 6: Mean Charge Rate by Type of Charge, Time Period and Cohort.**
Due to problems in securing data from the Bureau of Criminal Identification and Office of Criminal Records or question concerning the linkage of patients to data: 66 patients in the first cohort are excluded from all time periods; 121 patients in the second cohort are excluded from all time periods except Two Years After from which 251 are excluded.

- Chart 7: Mean Charge Rate by Type of Charge, Time Period and Operational Retention for Patients in the First Cohort
Due to problems in securing data from the Bureau of Criminal Identification and Office of Criminal Records or question concerning the linkage of patients to data:
6 patients retained 1-12 months, 2 retained 13-24 months, 7 retained 25-36 months and 5 retained 37 or more months are excluded from all time periods.
- Chart 8: Mean Charge Rate by Type of Charge, Time Period and Operational Retention for Patients in the Second Cohort
Due to problems in securing data from the Bureau of Criminal Identification and Office of Criminal Records or question concerning the linkage of patients to data:
26 patients retained 1-12 months, 28 retained 13-24 months, 39 retained 25-36 months, and 11 retained 37 or more months are excluded from all time periods except Two Years After, from which 60, 66, 79 and 29 are excluded from the four retention groups.
- Chart 9: Mean Charge Rate by Type of Charge and Time Period for Patients 5000-5202 in the Harlem Clinic
Due to problems in securing data from the Bureau of Criminal Identification and Office of Criminal Records or question concerning the linkage of patients to data:
22 patients are excluded from all time periods.