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KANSAS CITY ASAP

SECTION I

Analytic Study 6
An Analysis of Diagnosis, Referral, Rehabilitation and Probation

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MARCH 1979

FINAL REPORT

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KANSAS CITY, MO. 64106

in cooperation with

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WASHINGTON, D.C. 20590

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16. Abstract

This study deals with the effectiveness of the Kansas City ASAP in rehabilitating or causing behavior modifications in persons arrested and convicted as a result of drunk driving. It examines both the normal diagnosis and referral process developed over the 5 years of ASAP, as well as the more intensively evaluated Short Term Rehabilitation program. The most effective treatment modalities were found to be somewhat more beneficial for selected types of clients than the more traditional, punitive sanctions approach. On the other hand, these same programs could be counterproductive for other clients, indicating a strong need for a careful screening and diagnosis process before referral.

This report is one of a series of analytic studies. The others are (1) An Analysis of Project Impact on Ultimate Performance Measures; (3) An Analysis of ASAP Patrol Activities; (4) Impact on The Traffic Safety System; and (7) Impact on Public Knowledge and Attitudes.

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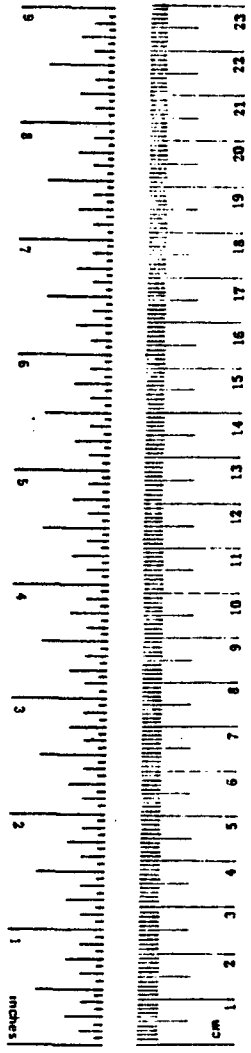
METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

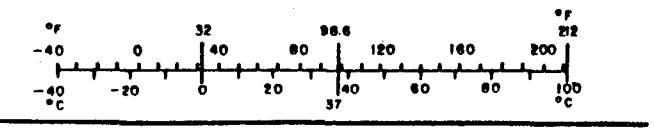
Symbol	When You Know	Multiply by	To Find	Symbol
	LENGTH			
in	inches	*2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
	AREA			
in^2	square inches	6.5	square centimeters	cm^2
ft^2	square feet	0.09	square meters	m^2
yd^2	square yards	0.8	square meters	m^2
mi^2	square miles	2.6	square kilometers	km^2
	acres	0.4	hectares	ha
	MASS (weight)			
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
	VOLUME			
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft^3	cubic feet	0.03	cubic meters	m^3
yd^3	cubic yards	0.76	cubic meters	m^3
	TEMPERATURE (exact)			
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

*1 in = 2.54 (exactly). For other exact conversions and more detailed tables, see NBS Misc. Publ. 286, Units of Weights and Measures, Price $2.25, SD Catalog No. C13.10:286.



Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
	LENGTH			
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
	AREA			
cm^2	square centimeters	0.16	square inches	in^2
m^2	square meters	1.2	square yards	yd^2
km^2	square kilometers	0.4	square miles	mi^2
ha	hectares (10,000 m^2)	2.5	acres	
	MASS (weight)			
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	
	VOLUME			
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m^3	cubic meters	35	cubic feet	ft^3
m^3	cubic meters	1.3	cubic yards	yd^3
	TEMPERATURE (exact)			
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F



PREFACE

The final evaluation consists of a series of analytic studies which comprise part of the Final Report of the Kansas City Alcohol Safety Action Project. These studies were performed under subcontract to the City of Kansas City, Missouri, as a part of their Contract No. DOT-HS-077-1-100 with the U.S. Department of Transportation.

The analytic studies evaluate the major aspects of the project for the period January 1, 1972 to December 31, 1976. This particular report combines the analyses of the activities previously split between two reports--Part 5 and Part 6. This approach, proscribed by the Department of Transportation, was also followed in the 1976 annual report. This combination enables the inclusion in one volume all aspects of the ASAP system that occur chronologically after adjudication and sentencing. The rehabilitation programs comprise two groups--those that were carried out and analyzed over most of the 5-year period, and those that were part of the Short-Term Rehabilitation study in 1975 and early 1976.

The authors gratefully acknowledge the steadfast assistance of Mr. John Fellinger of the Computer Systems Division of the Kansas City, Missouri, Police Department, who was responsible for much of the computer programming required to retrieve the appropriate information from the Kansas City ASAP client files. We are also appreciative of the cooperation provided by the University of South Dakota concerning the Short-Term Rehabilitation (STR) client data files. Mr. Steve Estes, of the ASAP management staff, and Ms. Mary Forsythe, STR follow-up coordinator, both provided valuable help in collecting and understanding the data. We also single out and thank Mr. James D. H. Reefer, Director, Kansas City Community Services, Mr. William Carson, Chief Probation Officer, Ms. Linda Fletcher, ASAP Probation Supervisor during much of the contract period, and many representatives of the treatment agencies for provision of data and comments useful to the evaluation.

Providing assistance in the tabulation and analysis of data at MRI was Ms. Rosemary Moran. Mr. Barry Sanders was responsible for much of the analysis of the data provided by the University of South Dakota.

Approved for:

MIDWEST RESEARCH INSTITUTE

A E Vandegrift

A. E. Vandegrift, Director
Economics and Management Science Division

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I. INTRODUCTION

The Kansas City Alcohol Safety Action Project (ASAP) has as its ultimate objective, the reduction of alcohol-related crashes,[1/] particularly the more serious ones involving injuries and fatalities. The City's approach toward meeting this objective was to assemble a team of cooperating agencies that can apply systems concepts under the coordination of a project director and administrative staff. Other studies in this series deal with some aspects of this approach, notably, the enforcement activities, the judicial process, and the overall impact. This report concentrates on those activities within the system which deal with the rehabilitation process. It includes the investigation activities that lead to the identification of each client's drinking problem severity, the referral process through which clients are directed to various treatment alternatives, the treatment modalities themselves, and the role of probation and the probation office in these activities. A separate description and preliminary analysis of the clients and activities in an experimental program termed "Short-Term Rehabilitation" (STR), is also included as a separate section.

Chapter II of this report describes the Kansas City ASAP system of investigation and identification (diagnosis), referral, rehabilitation treatment programs, and the probation role. Chapter III describes the methodology used in the study and the results (activities and effectiveness) are given in Chapter IV. STR is treated separately in Chapters V (Organization), and VI (Methodology and Results). A discussion of all the results (including STR) is presented in Chapter VII, which also contains the conclusions on a point-by-point basis. The overall conclusions and recommendations are in Chapter VIII.

II. DESCRIPTION OF THE SYSTEM

A. Investigation

A computerized data system provides the foundation for the investigation activities (as well as diagnosis and referral) for the Kansas City ASAP. This system can handle large numbers (6,000 or more) of arrests each year. Although it is physically a part of the Kansas City, Missouri, Police Department system, programmed and maintained by the department, data input is provided by many other agencies.

In this section, the investigation process is described from the preliminary investigatory activities through pre- or post-sentence investigations. The processing of nonbondable cases (cases in which the defendant cannot meet bonding requirements and which are therefore disposed of prior to the normally scheduled court date, representing only 6% of all cases) is noted in the following description, when it differs from the normal procedure.

The Kansas City ASAP system is outlined in the flowchart presented in Figure 1. The investigatory process starts within 24 hours of the arrest when the information from the traffic ticket (Driving Under the Influence--DUI--and other charges) is entered into the computerized data system. Every other day a computer listing, called the "Alert Sheet," is generated identifying each new DUI arrest and the pertinent portion of the defendants' computerized records. Copies of the Alert Sheet are sent to the probation office, the prosecutor, and the court records unit.

Initially the probation office checked each name on the Alert Sheet against its files to find out if the person was known to the probation office, and if so, if he was known to have an alochol problem. The information obtained from this "pretrial record check" was then entered into the data system. In early 1975 this check was automated and only the records of persons on probation were reviewed by the ASAP probation department. The prosecutors use the Alert Sheet to identify upcoming cases. The court records unit obtains the driver history for each person listed on the Alert Sheet from the Missouri Department of Revenue, Motor Vehicle Department (known as a DOR search), as well as from Kansas for drivers of that state. The driver's history of previous convictions, revocations, and suspensions is summarized and entered into the ASAP data system. This process was also automated, so that personal intervention was not required after September 1976.

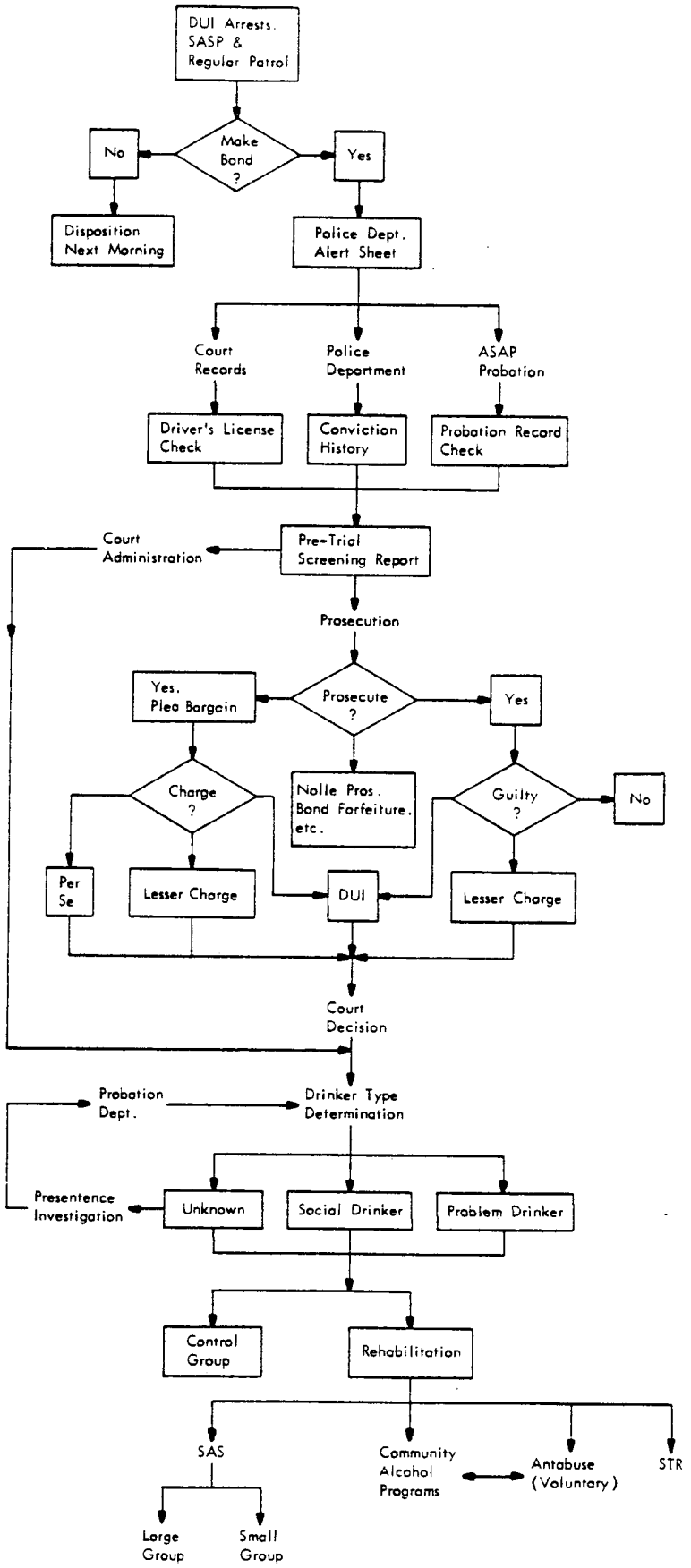

Figure 1 - Flow Chart

A few days prior to the scheduled court date, a computer-generated Pretiral Screening Report (PTSR) is prepared for each DUI case. This report serves a variety of functions and has undergone numerous changes and improvements since it became operational in the first quarter of 1972. A driver license search was a standard procedure prior to ASAP, so that such records had always been available to the court. However, summarization of these data, entry into the data system, and formal use of the data in assisting in drinker type classification and sentencing recommendations are ASAP innovations. The information regarding probation history, driver license history, and local arrest and conviction data provides the basis for the Pretrial Screening Report (PTSR).

The PTSR is provided to the prosecutor trying the case before trial and to the Municipal Court for the judge's review after adjudication and before sentencing. An illustrative example of the PTSR is shown in Figure 2.* The report begins with information about the current DUI arrest (ticket number; court date, place and time; and defendant identifiers). The driver license data are given next, followed by a summary including traffic, ordinance, misdemeanor, and felony convictions. Then the results of the probation record check are stated. Below this is a detailed listing of recent, local convictions. In the example, the defendant had one conviction, by plea, of DUI, for which he was sentenced to a $100 fine and 3 months in jail but placed on probation for 2 years (700 days). The report shows that this defendant also had aliases on file.

Next on the PTSR is a section concerning the "investigation" of the defendant. A listing of indicators of drinking problems is given, based on the National Highway Traffic Safety Administration (NHTSA) diagnostic guidelines for problem drinking drivers (PDDs).** The individual in this example, through prior arrests, showed strong indications of being a PDD, including a high score on the Mortimer-Filkins diagnostic test, administered after his previous conviction. He also had a high BAC with the present arrest. Thus, the available data indicate he is a PDD. (Alternatives for other defendants would be Social Drinking Driver (SDD) or Unknown, with an in-depth investigation suggested in the latter case.)

---

* A completely revised form was devised and instituted in September 1976 which covered all cases, not just DUI.[2/]

** See Section II-B for further details on drinker classification and indentification.

ALCOHOL SAFETY ACTION PROGRAM DUI PRE-TRIAL SCREENING REPORT

J0101L1 RESTRICTED INFORMATION-FOR OFFICIAL USE ONLY

CURRENT DUI TICKET= 1623432 02/22/74 COURT DATE: 03/17/74 DIVISION: H TIME: 1:30 PM

LAST NAME	FIRST NAME	M I	RACE	SEX	DATE OF BIRTH	DRIVERS LICENSE INFO NUMBER	ST	YR	ARREST SUMMARY-LOCAL TC	OC	MC	FC	ASAP PROB RECORDS PREV ASAP PROB	CURR PROB
DOE	JOHN	X	W	M	110229	D1234567890	MO	77	001	008	001	000	0	1

TTN- 1234567 04/07/73 116 FCH-SAME PLEA-G GUILTY AS CHARGED 08/05/73 DA-90 $100 PROB-700

ADDITIONAL NAMES ON FILE

INDICATORS OF ALCOHOL PROBLEMS

AT LEAST 2 PRIOR ALCOHOL-RELATED CONVICTIONS
HIGH SCORE ON PSYCHOLOGICAL ALCOHOL TEST
KNOWN TO PROBATION OFFICE BECAUSE OF DRINKING PROBLEMS
BAC OF .15 OR MORE

*****AVAILABLE DATA INDICATES PDD

NOTE -- CURRENTLY ON ASAP PROBATION

IF FOUND TO BE A SOCIAL DRINKER - ASSIGNMENT TO SASL IS RECOMMENDED
IF FOUND TO BE A PROBLEM DRINKER - ASSIGNMENT TO CAP IS RECOMMENDED

MISSOURI DOR DUI: 05 OTH: 08 SUS: 2 REV: 2 PTS: 020
KANSAS DOR DUI: 00 OTH: 00 SUS: 0 REV: 0 PTS:

* * * * * REFERRAL INFORMATION * * * * *

REFERRAL DATE	REFERRED BY	REFERRED TO	REASON REFERRED	REFERRAL STATUS
08/17/73	COURT	SASS	ALCOHOLISM COUNSELING	NO CHANGE, COOPERATIVE
08/05/73	COURT	ASAP PROBATION	ALCOHOLISM COUNSELING	NEW REFERRAL

Figure 2 - PTSR Example

Following these data are a computer-generated, "randomized" referral assignment for judicial consideration. The random assignments are suited, in type, to the depth of the defendant's drinking problem, and include a control group as well as rehabilitative modalities, but the punitive aspects of sentences are the prerogative of the court, as are the final referral assignments.* Following the referral recommendations are further details, including summaries of state licensing agency conviction records and actions, and previous ASAP referral actions and statuses.

If the judge desires more information after adjudication, he may request either a pre-sentence investigation or, upon passing sentence, a post-sentence investigation. Both are operationally essentially the same--an in-depth investigation conducted by the ASAP Probation Office including at least a personal interview and the Mortimer-Filkins (M-F) problem drinker questionnaire.** The in-depth investigation may also include contacts with persons associated with or related to the defendant and, on very rare occasions, may also involve a physical or psychiatric examination. The in-depth investigation concludes with a determination of either PDD or SDD and a recommended sentence and referral. About 20 such investigations per month were in 1976.

One final aspect of the investigation process is the administration of the M-F questionnaire to those persons referred to an educational or group therapy treatment program. In these cases the defendant is given the M-F questionnaire after sentencing has occurred by the persons administering the program. The score is entered into the data system and is available for use in determining drinker classification in the event of a subsequent DUI arrest, as well as for evaluation purposes. Persons referred to a no-treatment control group completed the M-F questionnaire at the ASAP Probation Office.

B. Identification

The Kansas City ASAP has used the NHTSA criteria for PDD identification, modified slightly to incorporate the types of data most readily available. Specifically, the identification process searched first for PDDs. They were identified as persons satisfying one of three "strong"

---

* See Section II-C for further details on the referral process.

** Developed under contract to DOT, NHTSA, by the University of Michigan. It is a psychological test aimed at detecting personal problems which are correlates to alcohol difficulties. Although designed as Step 1 of a two-step psychological identification process, we and others have found it fairly effective when used alone.

criteria, or two or more from a list of weaker criteria. Failing that, persons meeting none of the criteria were assumed to be SDDs, and the remainder considered "Unknown," pending further investigation. The specific criteria are given below.

1. Problem drinking driver:

   a. Satisfies at least one of the following:

      (1) Diagnosis as an alcoholic by a competent medical or treatment facility,

      (2) Self-admission of alcoholism or problem drinking,

      (3) Two or more alcohol-involved convictions (these can be nontraffic violations such as public drunkenness) in the previous 5 years, or

   b. A combination of two or more of the following:

      (1) A BAC $\geq$0.15% at the time of arrest,

      (2) A record of one or more convictions related to alcohol,*

      (3) A record of previous alcohol-related contacts with medical, social, or community agencies,

      (4) Knowledge of individual by ASAP probation due to alcohol problems,

      (5) Evidence of marital, employment, or social problems related to alcohol, and

      (6) Mortimer-Filkins score (a score $\geq$ 25 for the questionnaire to be indicative of a PDD).

2. Social drinking driver (SDD): Anyone who meets none of the criteria for PDDs classified as an SDD. The present arrest was alcohol-involved (DUI), but no other indicators of any alcohol problems were available.

---

* DUI convictions, convictions on the lesser per se charge, or convictions on related traffic charges leading to ASAP probation would be included here, as well as nontraffic alcohol-related convictions.

3. Unknown (UNK): If a person meets only one of the criteria that require two or more for diagnosis as a PDD, the UNK classification is used. Most commonly the one criterion satisfied is a BAC ≥0.15%. Further information is usually required concerning these individuals. Sometimes a formal pre-/post-sentence investigation is ordered; more commonly the Mortimer-Filkins (M-F) questionnaire is administered by a treatment agency or by the probation department. Because most tests are given post-sentence, this M-F score does little good in directing appropriate referrals. If the person is in the wrong type of rehabilitation program he is rarely reassigned. However, should the subject ever be rearrested the score would be available at that time for drinker type determination.

C. Referral (Normal Procedure)

Referral must be viewed in two stages. The first stage is a formal recommendation to the Municipal Court, reflecting the practices designed into the Kansas City ASAP system. This stage is described in detail here. The second stage is the actual court-ordered referral (all referrals are court-ordered conditions of probation), which may or may not agree precisely with the recommendation. The degree to which actual referrals correspond to the recommendations is presented in Chapter IV.

The PTSR contains the referral recommendations, which are based upon the above identification criteria for classification of drinking drivers. Prior to November 1973, the principle of referral was to refer the DUI offender with the most serious drinking problems to the countermeasures which provided the most intensive rehabilitation problems. Social drinkers (those with no background record and a low M-F test score, if taken) were recommended to an educational program; persons with an unknown drinking problem were recommended for further investigation (i.e., take the M-F test and, if necessary, the M-F interview); then referral per PTSR recommendation. Persons with progressively more serious alcohol problems were recommended for short-term group counseling, more intensive group counseling, individual counseling, and/or Antabuse chemotherapy, respectively.

Since November 1973, there has been a random referral process controlling the PTSR recommendation. Aproximately 20% are recommended for a control group that does not receive any rehabilitation. The rest are recommended to attend a treatment program appropriate to their drinker classification. Figure 3 illustrates the recommended flow of clients to the various modalities.

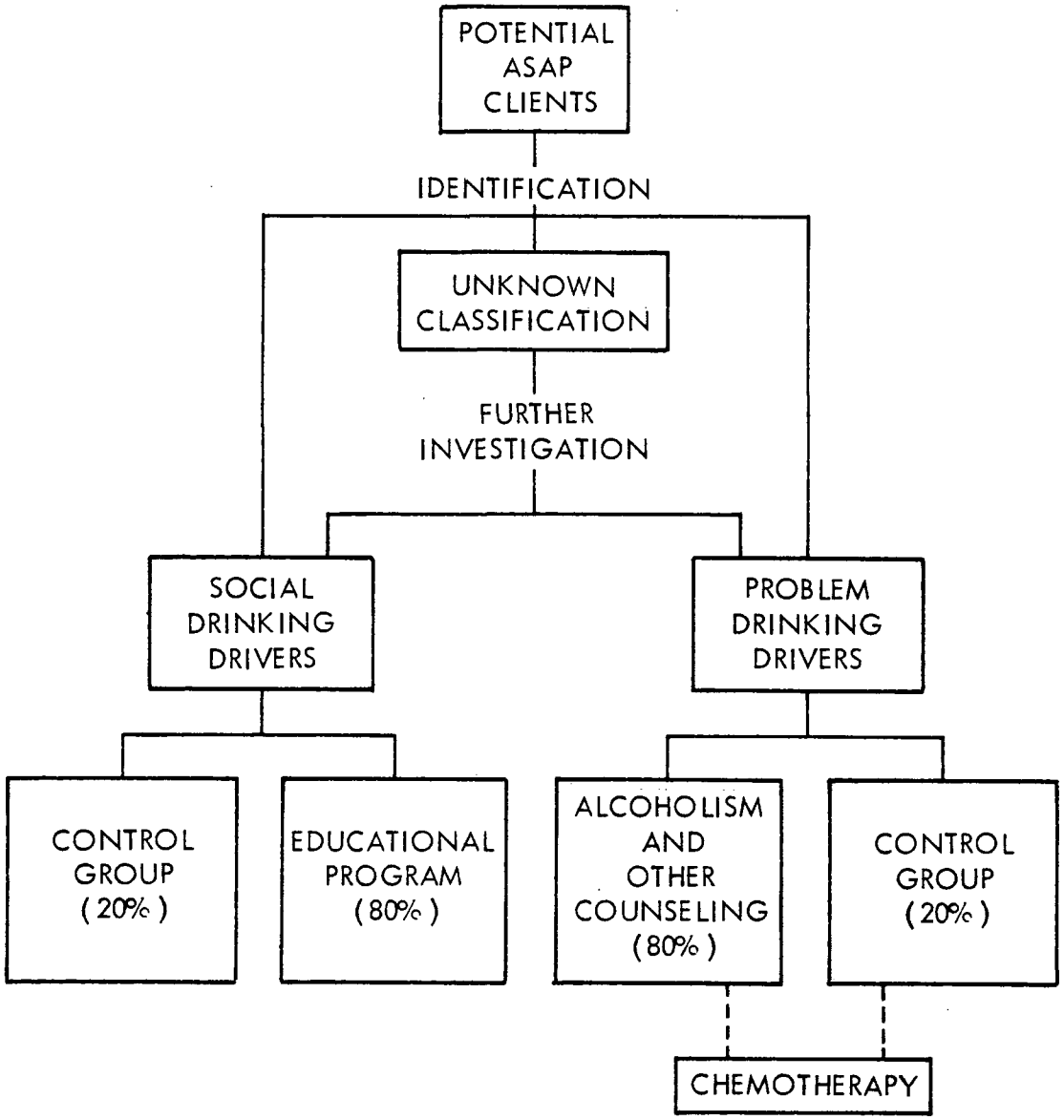

Figure 3 - Recommended Referral Process

The distributing of clients between treatment and control modalities was instituted to enable a more valid determination of the relative effectiveness of various treatments. The fact that very little scientifically valid information was available regarding the treatment of problem drinkers was presented to the judges and prosecutors, leading to their concurrence in a computer-generated random referral recommendation. It is noteworthy that these recommendations do not deal with the traditional sanctions (fine, jail, probation term). The court continued to maintain full authority (recognizing prosecutor recommendations) over such sanctions, subject to the assumption that probation terms would be of a length compatible with the treatment program needs.

Chemotherapy (see Figure 2) was an additional treatment program made available to the clients, via the court, but not on a random recommendation basis. Instead, the system considered chemotherapy (Antabuse) as a modality to be used in conjunction with other treatments (counseling) for those persons who: were deemed in need of it by the prosecutor and judge, could pass the mandatory physical examination, and would agree to participate in the program.

The mechanism leading to the actual referral was largely connected with the practice of plea bargaining and the associated sentencing recommendations of the prosecutor. In this practice, an initial charge of DUI was dismissed in return for a guilty plea to a related traffic charge (or, beginning in October 1975, the reduced per se charge of operating a motor vehicle while having a blood alcohol content of 0.10% or more). In exchange, the defendant agreed to accept an assignment to a treatment program in accordance with the PTSR. Under this arrangement, the judge would, upon accepting the guilty plea, ask for the prosecutor's recommendation. The prosecutor, in turn, would usually read the PTSR recommendation (plus a recommendation for a punitive sanction as described in Section II-G). In addition, the prosecutor would sometimes superimpose a recommendation that the defendant be considered for Antabuse chemotherapy, especially if he had one or more prior alcohol-related convictions or other indications of severe drinking problems.

With the understanding that the judges retain final discretion in any referral, a basic agreement to this referral system was reached by ASAP management and the judges, which was acceptable to other countermeasure officials and evaluation. The judges agreed to follow the recommendations except when previously defined situations or highly unusual circumstances prevailed. The former include, for example, clients from outside the metropolitan area and recidivists previously in a control group. The latter covers the area of judicial discretion and was hoped to involve only truly unusual cases--no more than a few percent of all cases. It was emphasized that the court should order the "test and referral per PTSR" as recommended for persons in the Unknown category. Thus, such persons would enter the appropriate modality based on the outcome of testing.

D. Referral to STR

An experimental program aimed at evaluating the effectiveness of several alternate treatment programs of a short-term nature, STR was intended for clients classified as problem drinking drivers. The program in Kansas City was but one of 11 programs being carried out simultaneously in various parts of the country using comparable (but not identical) guidelines and procedures.* The details of the Short-Term Rehabilitation program are presented in Chapter V. The intent of the brief discussion here is to demonstrate the special process by which ASAP clients were referred to STR during this experiment.

In Kansas City a screening process was used to select as STR candidates a portion of those persons referred by the court for group counseling. The screening process took part in two stages, and was modified several times during 1975 as experience with the screening process was gained. The first stage was intended to select in an unbiased way a suitable fraction of all persons assigned to counseling (CAP) for the second stage screening process. Initially (February 1975) a random sample of one-half of all persons referred to counseling was directed to the second stage screening. The selection process simply utilized the last digit of the DUI ticket number (odd numbers went to STR screening, even numbers did not). It was subsequently determined, however, than an insufficient number of persons was surviving the second stage of the screening process so it was necessary to increase the percentage at the input end from 50% to 75% of all those referred for group counseling. (This was accomplished by selecting any whose last or next to last digit in the traffic ticket number for the DUI arrest was odd.) Later it was found that the number of persons surviving the second stage screening was still inadequate, and moreover, the second stage screening process was requiring an inordinate amount of effort.

It was determined that the main reason why people failed to pass the second stage screening was that they were working on weekends and hence would be ineligible for one of the three STR treatment modalities. After realizing this, the first stage screening process was modified to simply eliminate those who had a work commitment on weekends. As a result, the majority of those entering the second stage screening process were ultimately deemed acceptable for the STR program.

The STR screening process at the second stage involved a personal interview with the client. This interview was conducted by one of the personnel associated with the agency offering group therapy, as described in Section IIF. Most of the people who failed the second stage screening process did

* For example, in some communities the Short-Term Rehabilitation program was offered only to "mid-range" problem drinking drivers as opposed to arrested drivers with severe drinking problems.

so because they were either not sufficiently adept at reading and writing, or they exhibited psychoses that were judged to be an impediment to the efficacy of a group counseling STR program. In addition, some people were eliminated early in the program when the interviewer determined subjectively that there was evidence of severe alcoholism. Finally, midway through the program it was determined by the U.S. Department of Transportation to eliminate females from STR because (a) they did not constitute a sufficiently large sample size to enable a valid statistical analysis, and (b) one of the STR treatment modalities had not been validated with females.

Persons who, for any reason, did not pass the screening process and thus were not included in the Short-Term Rehabilitation program remained in the normal ASAP group counseling program. Furthermore, persons who, although determined to be acceptable for STR, did not participate or complete their assigned treatment modality were also placed back in the normal group counseling program rather than being reassigned within the STR program.

E. ASAP Probation

Prior to 1974 the ASAP probation unit devoted a great deal of effort to counseling activities, particularly one-to-one counseling on alcohol problems. This activity was dropped during the first quarter of 1974, with the emphasis shifting to more conventional probation activities. With this shift came some personnel turnover, including a supervisory change in September 1974.

Since then the ASAP probation unit has been responsible for many functions including probation intake, recordkeeping, testing, fine collection, and reporting back to the court if a probationer violated his probation order. The ASAP probation unit also performed pre-sentence and post-sentence investigations as requested by the court.

Starting in 1975 the ASAP probation unit consisted of a staff of nine professionals and five clerical support personnel; five professionals and four of the clerical workers were federally funded, the remainder were financed by the city. The unit, termed the ASAP Probation Control and Investigation Unit utilized a team concept whereby probation officers were assigned areas of responsibility rather than handling a specified caseload.

One team of two probation officers handled all probation intake and new case processing. This included the conducting of pre-sentence and post-sentence investigations and administering the Mortimer-Filkins questionnaire to clients placed in the control group. This team also processed the paperwork and appeared in court for all cases involving revocations *in absentia*.

A second team of two officers handled the follow-up work on persons assigned to the educational treatment modality as well as handling all fine collections and restitutions. The third team, consisting of three probation officers, carried out follow-up monitoring on cases assigned to counseling and chemotherapy. They also took over the monitoring of all cases which involved a subsequent DUI arrest. The remaining two professionals in the ASAP Probation Control and Investigation Unit were the probation supervisor and an administrative assistant.

This unit was aided immensely in its functions through use of the ASAP computerized client data file. Special programming was undertaken during the course of the project which resulted, in 1975, in the production of an automated monthly caseload report. This report, once the bugs were out and it became quite accurate, proved to be a tremendous time-saver in terms of much of the day-to-day recordkeeping associated with the probation caseload (which was on the order of 5,000 cases). The report was also programmed so that expirations could be identified ahead of time, making it easier for the probation staff to keep their files current.

The Probation Control and Investigation Unit also had as one of its functions the supplying of data to the data system. One of the clerical personnel was assigned full time to the updating of case files via computer terminal. All client data subsequent to case disposition in the court, including probation records and progress reports from the treatment modalities, were entered into the automated data file by this person.

F. Treatment Modalities

In 1976 there were three rehabilitation programs, not including STR. These were a chemotherapy program, a social drinker educational program (SASL), and Community Alcohol Programs of Kansas City, Inc. (CAP), a counseling program for problem drinkers. The programs were not mutually exclusive and, in fact, frequently complemented one another. It was possible for an individual to be a participant in more than one of the rehabilitation modalities, especially if one was chemotherapy.

1. Chemotherapy: All persons assigned to this rehabilitation program were determined to be problem drinkers who passed a special physical examination. The program in itself was simply a medically supervised biweekly administration of Antabuse, with the intent of keeping the problem drinker or alcoholic from drinking. It was anticipated that once the client was in better physical and mental condition, he could be better motivated to accept therapy.

A physical examination is mandatory prior to starting Antabuse administration, to assure that the client is physically capable of taking the drug. Once it was medically determined that Antabuse was not contraindicated, the client was given 500 mg twice a week by a registered nurse. Although Antabuse was originally administered in pill form, that policy was changed in the summer of 1974. Presently, the pill is dissolved in a glass of water before being given to the client. In order to minimize client inconvenience, several treatment centers were available (Osteopathic Hospital,* Union Station, VFW Building, and Troost Family Health Center).

Typically, the duration of treatment was less than the entire probation period (1 to 2 years). It was judged impractical to administer Antabuse for such long periods of time; most counselors felt that if the client is going to respond, a period of 6 to 12 months is sufficient. The typical length of Antabuse treatment was 10 months.

The chemotherapy countermeasure in itself includes no counseling. For this reason, clients were usually referred to one of the other rehabilitation modalities simultaneously. It was not intended that the treatments be mutually exclusive, so this duality of rehabilitation assignment is not contrary to the ASAP effort, although it may confuse evaluation efforts to some degree.

The chemotherapy countermeasure was carried out under a subcontract to the Kansas City Department of Health until October 1974. At that time CAP accepted the responsibility for administering Antabuse. However, the Health Department continued to provide medical monitoring of the program and physical examinations were still a prerequisite. Even prior to October 1974, some clients were transferred to CAP where they continued to receive Antabuse but also received counseling. The change relieved the Health Department of the burden of Antabuse administration and eliminated duplication of effort between CAP and the Health Department.

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* This site was dropped in October 1974 when CAP assumed total responsibility for the administering of Antabuse. It was not being heavily utilized, and the consolidation of sites eased administrative problems.

2. School for Alcohol Safety: The School for Alcohol Safety* was an educational program for social drinkers. The program aimed at replacing old drinking/driving habits with newly learned values, at least to the extent that drinking and driving do not occur in combination.

Attitudinal (and behavioral) changes were sought through formal presentations and discussion. Typical subject matter included general problems of the drinking driver; effects of alcohol on driving skill; psychological effects of alcohol; and changes in individual attitudes when drinking.

The classes accommodated about 30 students. Originally, the 10-hour program was taught in four 2-1/2 hour sessions, and the classes were held only during daytime hours. However, numerous job conflicts for probationers resulted in the addition of evening classes to accommodate these people. During the fourth quarter of 1975 the program was reorganized and offered as three sessions of 3 hour and 20 minutes each. This change was motivated by greater clerical efficiency in client processing and in higher completion rates.

The school was operated by the Greater Kansas City Area Safety Council. A fee of $30 was charged to clients to cover the program costs. No ASAP or city funds were utilized for this program after 1974. (Earlier, it was partially subsidized by ASAP.)

3. Community Alcohol Programs: Community Alcohol Programs of Kansas City, Inc., (CAP) is a community-based agency which provides rehabilitation programs for problem drinking drivers. Clients are referred to CAP through the Kansas City ASAP as well as through other courts in the metropolitan area. Referral to CAP is a condition of probation set forth by the court.

CAP offers a treatment program emphasizing small group counseling. It does this through subcontract arrangements with various independent community agencies, including:

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* Originally called School for Alcohol Safety, Large Group (SASL) to distinguish it from a now-defunct modality, School for Alcohol Safety, Small Group (SASS), that was directed more toward problem drinkers.

Economic Opportunity Foundation;
Family and Children Services of Kansas City, Inc.;
Family and Children Services of Independence;
George Washington Carver Neighborhood Center;
Jewish Vocational Services;
Midwest Christian Counseling Center;
National Council on Alcoholism;
South Kansas City Mental Health Resource Network; and
Wise Council House, Inc.

The CAP program consists of three phases: evaluation, precounseling and weekly group counseling.* The first phase begins when CAP is notified of a referral by a probation officer. If the client breaks the first appointment (for any reason) a second appointment will be set up. The client cannot break more than one appointment with impunity. When the client first arrives at CAP, he is directed to an input counselor who orients the client and begins the treatment program. During the evaluation the input counselor assesses the client's secondary problems and makes a referral to a subcontracting agency based on the needs of the individual client. The types of secondary problems and the geographic location are the major determinates of the referral.

The second phase is Precounseling, a 3-hr orientation about drinking, driving, and alcoholism. It precedes the client's transfer to a counselor in a community agency. Precounseling is eliminated for clients who have previously been in alcoholism treatment or in a School for Alcohol Safety program. The third phase is 6 to 8 months of weekly counseling at a community agency, during which agency counselors keep track of the client's progress. Each of the community agencies could employ all or most of the following treatment modalities:

Group therapy
Gestalt therapy
Marital counseling
Individual counseling
Financial and vocational counseling
Reality therapy
Transactional analysis
Couples groups
Introduction to AA
Referrals for psychiatric evaluation and treatment, when indicated

* In October 1975 a fourth phase was formally implemented--an aftercare treatment plan involving quarterly follow-up visits with a counselor.

CAP is a nonprofit entity that was supported largely by the National Institute of Alcohol Abuse and Alcoholism. Additionally, CAP clients are charged for CAP services. The basic fee was $100.* Clients pay the fee in accordance with their ability to pay, and in calendar year 1975 CAP collected about 48% of its billings. CAP expends its treatment budget in the following approximate proportions:

30% Evaluation;
30% Precounseling; and
40% Additional Counseling.

4. Other modalities: Until October 1976, a fraction of those convicted were placed in a no-treatment control group, as described earlier. Persons in this group were placed on ASAP probation and reported to that office for a brief initial interview and to complete a Mortimer-Filkins questionnaire. Beyond that these persons were required only to conform to the normal conditions of probation (usually including a requirement not to drive after drinking) and to pay whatever fine was imposed by the court. The probation office maintained a file on each such person, and would be alerted if the person were subsequently rearrested for DUI.

Prior to 1975, there were two other treatment modalities in common use. One was the School for Alcohol Safety-Small Group (SASS), administered by the Greater Kansas City Area Safety Council. Designed for problem drinkers (mid-range), it consisted of a series of four 2-1/2 hour small group sessions, aimed at maximizing the opportunity for self-expression and discussion, followed by quarterly individual follow-up sessions. The other modality was intensive one-to-one counseling, intended for severe problem drinkers or problem drinkers with records of nontraffic convictions. It was carried out by the ASAP probation officers. More detailed descriptions of these modalities are given in a previous report.[4/]

G. Punitive Sanctions

In addition to the treatment referral possibilities offered by ASAP, persons convicted of DUI or a related charge were also subject to a fine and jail sentence. As with treatment referrals, these punitive sanctions commonly followed the prosecutor's recommendations as given below.

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* Initially there was no charge, but a $60 fee was instituted in late 1974, which was raised to $100 in January 1976.

1. January 1972 to November 1973: During the first 2 years of ASAP, the criteria under which ASAP prosecution accepted a plea bargain were usually:

a. The arrest is the defendant's first DUI arrest.

b. The case is "clear-cut."

c. The defendant has a defense attorney.

d. The defendant accepts a recommended fine, 60-day sentence, with stay of execution under a 2-year probation term and attendance at the School for Alcohol Safety.

2. November 1973 to October 1975: In November 1973, when the random assignment process using the PTSR began, the first condition was relaxed and the fourth modified to require other rehabilitative modalities (or control group "per PTSR"). The third condition became less of a factor in late 1974 when the court began to more frequently insist on DUI defendant representation by an attorney (often court appointed).

Through usage of the PTSR and years of DUI trial experience, the "rule-of-thumb" policies boiled down to the following:

a. First-time offenders: Accept plea bargain for a recommended sentence of $125, 30 days, a 6-month probation with referral per PTSR (usually the large-group School for Alcohol Safety).

b. Second-time offenders: Accept plea bargain for a recommended sentence of $150, 90 days, and 2-year probation with referral per PTSR (usually a modality involving numerous counseling sessions over a 6-month period). In addition, chemotherapy (Antabuse) was often recommended.

c. Third-time offenders: The preference was to seek (through the Probation Office) a probation revocation in lieu of trying the defendant on the new charge.*

3. October 1975 on: New guidelines for plea bargaining were adopted as a result of the passage of the per se ordinance.

a. First offender with BAC under 0.15: Dismiss DUI for plea to careless (or similar 2-point violation); recommend $150, 90 days, 6 months probation and large-group School for Alcohol Safety (unless PTSR recommends control group).

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* In fact, this does not always happen. Available (soft) data tend to indicate that such cases were often tried similarly to second-time offenders.

b. First offender, BAC above 0.15: Dismiss careless and amend DUI to 34.119 (per se); recommend $150, 90 days and, depending on Mortimer-Filkens test results, 2-year probation and CAP if problem drinker, 6-month probation and School for Alcohol Safety if social drinker (unless "control" in either case).

c. When a first offender refuses to take the breath test, amend to 6-point, 34.119 (per se) violation but recommend the "test and refer" so that, if a social drinker, he will only go to the School for Alcohol Safety.

d. Second offender (within 5 years) who has not had CAP: Dismiss careless and amend DUI to 34.119 (per se)* and recommend $250, 120 days, 2-year probation and CAP (unless control).

* Not applicable if the first offense had been plea bargained to 34.119 (per se).

III. METHODOLOGY

The data upon which all analyses and results are based come from a variety of sources. The major source is the Kansas City ASAP Data System. This computerized data base is an expanded version of the Kansas City, Missouri Police Department Data System, expanded to include those arrest, adjudication, referral, treatment, and follow-up activities peculiar to ASAP. A computer tape of the basic "client file," with names and other individual identifiers omitted, has been provided to NHTSA.

The extraction of information from the Data System was accomplished in several ways. Programming of summary tables for NHTSA (termed "Appendix H" tables) was carried out by agreement with the police department. Certain other special "evaluation" programs were written and executed by the police department. Also, much programming utilizing this data base or extractions thereof (such as the "client file") was performed by the evaluators, with the programs executed on the police department computer or the city's computer. MRI also wrote and executed analysis programs on other (subcontracted) computers using the "client file."

The data base exists because numerous agencies provided requested client data to the probation office or court records unit for data entry/update. Manual tabulations and summaries of such agency data are also used as appropriate in this Analytic Study.

Finally, all STR data were collected by ASAP personnel, assembled and "massaged" by the University of South Dakota (under NHTSA contract), and analyzed via MRI programming.

Analysis techniques used were often rather common and straightforward (such as Chi-squares); these are mentioned in the remainder of the study as appropriate. Other, more involved procedures are described below.

A. Subsequent Accident Frequency

The analysis of subsequent accidents is based on data tabulated in a format similar to that of Appendix H, Table 15.* The tabulations treated drivers in each of the three drinker classifications (PDD, SDD and Unknown) separately. Within each classification, the data were divided according to the rehabilitative program to which the driver was assigned (or, the type of punitive sanction if the driver was not assigned to a rehabilitative program). The tabulation was further subdivided according to the calendar quarter in which the person entered the system (that is, convicted). Then, subsequent accidents in which the drivers were involved were tabulated according to the calendar quarter in which they occured.

* A separately bound section of the annual and final reports.

Four important points must be made about the accident tabulations. First, the accidents need not be alcohol-related. Secondly, the convicted driver need not have been culpable in the subsequent accidents--he need only be involved as a driver. Thirdly, all subsequent (reported) accidents in Kansas City, Missouri, are tabulated. This is purposely a slightly different approach than was used with arrest recidivism, wherein only a first rearrest was tabulated. Finally, only drivers residing in Kansas City, Missouri, were included. The entire computer tabulations are too voluminous for this report; they include the subsequent accident histories of over 13,000 cases (fewer than 13,000 drivers because some drivers with multiple convictions appear more than once in the listings). The cases were tracked for over 4 years, and the drivers were involved cumulatively in over 4,000 subsequent accidents.

The formal analyses utilized the 1-, 2-, 3-, and 4-year accident rate results. They were examined via chi-square computations to identify:

1. "Class" effects, i.e., do subsequent accident rates vary according to year of conviction;

2. Modality effects, i.e., for PDDs (or SDDs) are there significant variations in subsequent accident recidivism rate(s);

3. Drinker classification effects, i.e., do PDDs and SDDs vary in their accident rates;

4. Time trends, i.e., do subsequent accident rates change after a period of time?

A complete list of all chi-square values was generated. When significant chi-square values were found, groups were separated by pairwise Kolgomorov-Smirnov tests.

B. Arrest Recidivism

The data used were displayed as a modified "Appendix H - Table 15." The modification consisted simply of tabulating all (first) rearrests by quarter, rather than by the mixed semiannual/quarterly format used by NHTSA. All Kansas City, Missouri Police Department DUI arrests were included, regardless of court disposition. Separate tabulations were made (and compared) for Kansas City residents and all clients.

Analyses of group differences (where "groups" were defined by treatment modalities, client characteristics, or combinations of the two) used chi-square tests as a seive for nonhomogeniety, and pairwise t-comparison to separate groups.

C. STR Effectiveness

A variety of techniques was used, depending on the type of data analyzed. Also, sequential analyses were used wherein later steps were determined by the results of earlier steps. For reader convenience, the specific techniques are discussed in Section VII in conjunction with the results obtained.

IV. RESULTS

This section describes the performance of the investigation/diagnosis/referral/rehabilitation/probation system. The performance is measured both by the level of activities pursued as well as by the findings based on these activities. For reference purposes, a summary of court dispositions (hence, the caseload available for referral) is presented first. Then, the investigative activity data are given followed by the preliminary and final drinker type classifications. Next, the referrals are described, by drinker classification. These are then compared with the PTSR recommendations. Special emphasis is placed on the "random" control group. The activities of the major treatment programs (SASL, CAP, chemotherapy) are presented, as are the probation control and maintenance activities. Finally, diagnosis and rehabilitation effectiveness is analyzed in three parts. The first of these treats subsequent accident rates. The second covers recent findings concerning arrest recidivism. The last reviews earlier arrest recidivism results.

A. Court Dispositions

The diagnostic and referral processes relate to the handling of cases subsequent to court disposition. As a prerequisite to the examination of the activities, caseloads, etc., it is necessary to review the initial client caseload available. The pertinent data are summarized in Table 1.

TABLE 1

DUI ARRESTS AND DISPOSITIONS

	Year				
	1972	1973	1974	1975	1976
Arrests	5,054	5,547	5,144	4,779	5,548
Convictions[a]	3,917	5,090	4,529	4,085	4,820
(DUI)	(2,456)	(2,407)	(1,681)	(1,219)	(1,134)
(Per Se)	--	--	--	(151)	(2,167)
(Other)	(1,461)	(2,683)	(2,848)	(2,715)	(1,519)
Acquitted[b]	427	788	781	421	584
Count Backlog[c]	1,417	1,086	920	1,193	1,337

a/ By plea or trial. This is the potential caseload for referral and treatment programs.

b/ Includes dismissals and other nonconviction dispositions.

c/ As of the end of the year.

In 1976 there were 5,548 DUI arrests in Kansas City, an increase of 16% over 1975. This caseload, plus the 1975 end-of-year backlog of 1,193 cases, represented the demand placed on the courts in 1976. Of this total, 5,404 cases were disposed (see Table 1). The dispositions included 4,820 cases in which a conviction, either on DUI or a related charge, was the result. In the remaining 584 cases, the disposition was either an acquittal, a dismissal, or some other disposition (bond forfeiture, transfer to another jurisdiction, conviction on another, unrelated DUI charge, etc.).

In summary, then, 4,820 cases were available from the courts in 1976 for diagnosis and referral activity.

B. Investigation Activities

The investigation activities undertaken in 1976 are summarized in Table 2 and compared with earlier data. As mentioned, the total number of arrests increased in 1976. As a result, a similar increase was experienced in most of the investigation activities. The 5,404 investigations completed reflect the number of final case dispositions in 1976. However, many of the investigation activities were performed more than once, usually because they were performed in advance of the first scheduled court date and then repeated because of court continuances.

A DOR search was made for every DUI case on the court docket. Most were summarized by court record clerks and entered into the data bank. Of this total, about 16% were made with the State of Kansas; the remainder were Missouri license checks. (It was not uncommon for license checks to be made in both states for some drivers.) The process became completely automated in October 1976.

TABLE 2

ASAP INVESTIGATION ACTIVITIES

Type	1974	1975	1976
Total Investigations Completed	5,310	4,506	5,404
DOR Driver License Searches	11,964	11,506	12,571
Kansas City, Missouri, Police Arrest Histories	5,144	4,779	5,548
Pretrial Record Checks (Probation Department)	2,402	369	81
Pretrial Screening Reports (PTSR)	11,964	8,226	11,764
In-Depth Background Investigations	295	351	219
M-F Questionnaires	4,314	4,297	5,124

Pretrial record checks by the probation department declined greatly in 1975 because of a major change in procedure. Earlier in the project the generation of the DUI Alert report would trigger a manual search of case file records by the probation department, but in mid-1975, the process became largely automated. Programming caused a computer search of probation records, relieving the probation officers of this task. No significant number of manual searches was performed in 1976.

The number of in-depth background investigations increased in 1975, despite the drop in arrests that year. However, such investigations declined greatly in 1976, to just over one per week during the last 6 months.

The Mortimer-Filkins questionnaire could have been administered by the probation office, by the School for Alcohol Safety, or by CAP. The data in Table 2 represent our best estimate of the number of questionnaires completed, which is not necessarily the same as the number of individuals filling out the questionnaire because some persons may have done it twice. For example, nearly all persons for whom a background investigation was conducted would have completed the questionnaire as part of that investigation. If they were subsequently referred to the school or to CAP, they quite likely would have completed it again as a part of that program.

In most cases the Mortimer-Filkins tests were not used to provide referral information. The treatment modality was not changed based upon the results of the Mortimer-Filkins test, except for persons referred by the court to the probation office for test and referral. It is not possible to determine precisely how many cases were of this nature because the probation office administered the questionnaire to persons referred for background investigation, to persons placed in the control group, and to persons referred by the Court for test and subsequent referral. Of the 5,124 Mortimer-Filkins questionnaires completed in 1975, 1,720 were performed at the probation office. However, this subtotal includes 219 background investigations and an unknown number that were given to people assigned to the control group (at most, 654).

C. Drinker Classifications

At the time of court sentencing, the prosecutor and the judge have available to them the Pre-Trial Screening Report (PTSR). The PTSRs include the preliminary drinker classification--preliminary in the sense that it is based on data on file at the time of trial and subject to revision upon consideration of additional data.

The preliminary drinker classifications according to the PTSRs are shown in Table 3 for 4 years.* A hand tabulation was performed using a sample of the total number of PTSRs produced each year (over 8,000 in 1975, nearly 12,000 in 1974). In 1975 the sample consisted of the 712 PTSRs generated in July of that year; the 1974 sample was drawn from the months of May and June. (A 1976 hand tabulation was not undertaken as explained subsequently with the discussion on final classifications.)

TABLE 3

PRELIMINARY DRINKER TYPE CLASSIFICATIONS (%)

	1972	1973	1974	1975
PDD	27.0	31.2	22.8	29.4
SDD	32.6	31.1	18.4	22.0
UNK	40.3	37.7	58.8	48.6

In better than 50% of all cases a definite preliminary drinker classification was possible, as illustrated in Table 3, for all years except 1974, when a procedural change resulted in a weakening of the PTSR capabilities. Prior to that time it was possible to interpret (for diagnostic purposes) convictions on companion charges to the original DUI charge as alcohol-related. The Missouri "Sunshine Bill" changed that, as legal opinion held that only convictions for DUI could be treated as alcohol-related by the PTSR. In 1975, however, two changes were made that improved this situation. One change incorporated the new state law concerning driving with a BAC of 0.10 or more, the per se law, which was implemented in October 1975.[3] Convictions on this charge, even though resulting from plea bargaining to a charge less than DUI, could still be labeled as alcohol related. The other change occurred earlier in 1975, however, and made it possible to identify as alcohol-related any conviction that resulted in an ASAP referral. It is this change that accounts for most of the decrease in the percentage of unknowns in 1975 compared with 1974.

* It is emphasized that the tabulated drinker type classifications are based on the NHTSA criteria described earlier, and the data in the computer corresponding to those criteria. Thus, for example, classifications in this and subsequent tables do not include knowledge that the prosecutor or the judge might gain from the defendant or the defense attorney regarding, for example, admitted alcohol problems. Such knowledge could obviously be used in making a court referral even though it was not a part of the computer record and, therefore, not included in the PTSR.

The preliminary classifications also do not include the impact of a high score on a psychological test--the Mortimer-Filkins questionnaire--unless the test had been administered in conjunction with a prior conviction and an ASAP referral. A sampling of previous PTSRs indicates that fewer than 5% of them possess this information (a high score). Nevertheless, the existence of the test serves a useful purpose in that the unknowns (48.6% in 1975, for example) could be court-referred to the probation office for testing and subsequent referral utilizing the results of the test. Moreover, persons referred to the School for Alcohol Safety or to CAP also complete the questionnaire and the results are placed in the computer files for use should they be rearrested.

By making use of the questionnaire data, even though not acquired until after referral but, in theory, available prior to referral, the final drinker classifications can be determined. These final classifications are shown in Figure 4, by quarter. The extremely stable distribution throughout 1975 and most of 1976 is a reflection of the uniformity of the procedures used during that period. The major changes in the classification distributions that occurred at the beginning of 1974 and again at the beginning of 1975 can be traced to policy changes in which proportionately more convicted drivers were required to complete the questionnaire. By these policy changes, the test was given routinely to all persons attending SAS and CAP beginning in 1974, and to persons in the control group starting in 1975. The latter group was discontinued in the last quarter of 1976. That, plus procedural changes as federal funds were being phased out led to a jump in the "unknown" category at the end of 1976.

During 1975 and most of 1976, therefore, nearly 40% of all drivers convicted as a result of a DUI arrest (regardless of the charge on which convicted) were ultimately classified as problem drinking drivers about 50% as social drinking drivers, and 10% remained in the unknown category. Thus, in comparison with the 1975 data in Table 3, the use of the Mortimer-Filkins questionnaire in conjunction with the classification criteria proposed enabled the classification of an additional 39% of all the convicted drivers. Moreover, of those persons who were finally classified after taking the questionnaire, most became classified as social drinking drivers (79% of the additional 38%, or 30% in total in 1975).

D. Referrals by Drinker Classification

The court referrals to the various treatment modalities are shown in Table 4, by drinker classification. The first five categories in Table 4 are essentially independent; there is less than a 2% overlap between these modalities. The sixth entry, chemotherapy, includes all persons assigned to that modality regardless of any other treatment assignment. (Nearly all persons in chemotherapy were also assigned to either

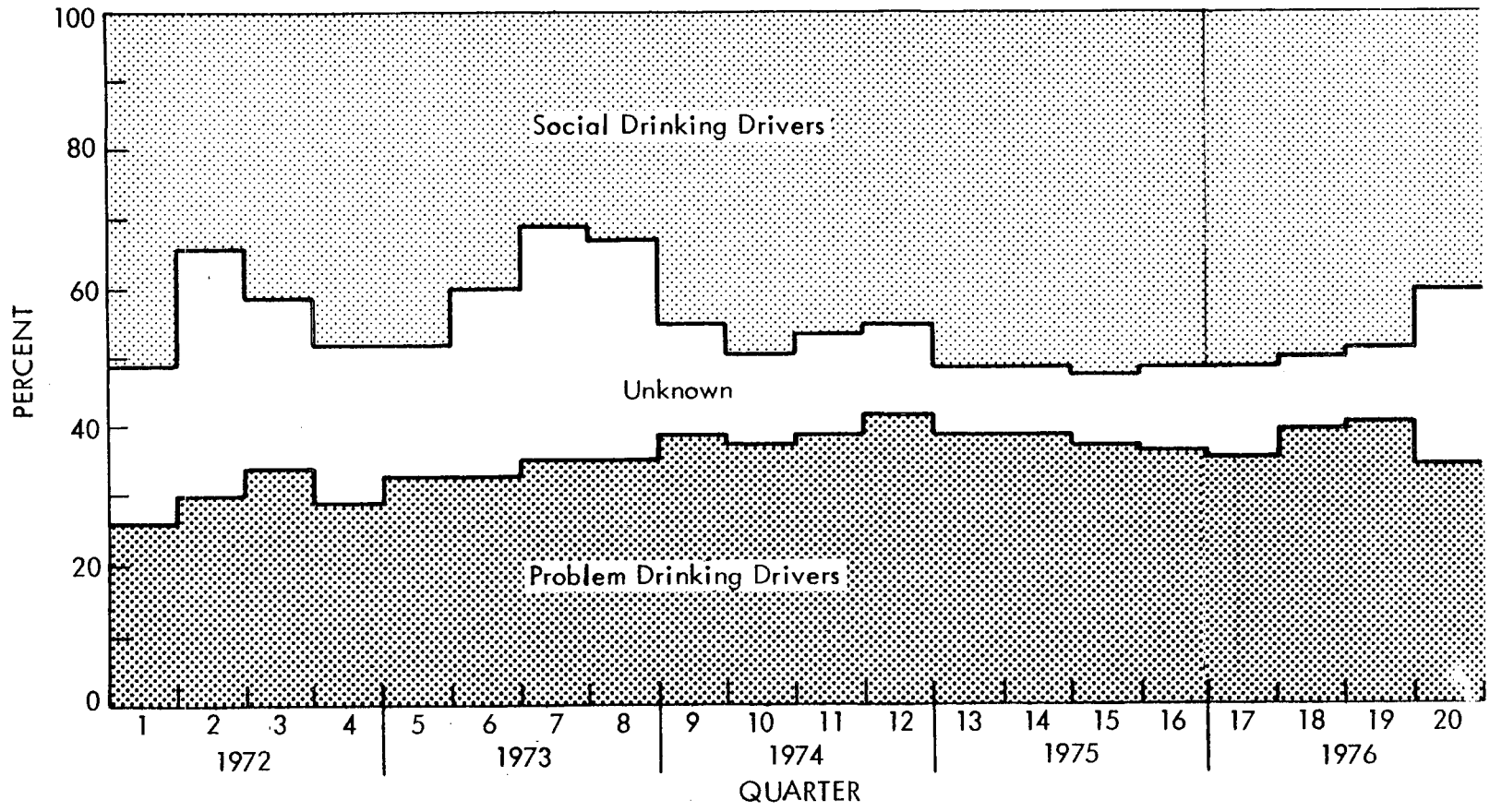

Figure 4 - Final Drinker Classification

CAP or STR.) The 1976 figures represent the first three quarters only; some of the data relating to drinker classification and referral modality were not available in time for this report.

TABLE 4

REFERRALS BY DRINKER CLASSIFICATION [e]

Modality	PDD		SDD		Unknown	
	1975	1976[d]	1975	1976[d]	1975	1976[d]
SASL	288	174	1,510	1,162	124	79
CAP	781	834	67	115	44	64
STR	245	55	97	29	13	4
Control[a]	136	174	394	403	24	32
Nonrehabilitative[b]	336	329	288	327	255	276
Chemotherapy[c]	302	119	16	9	4	5

a/ ASAP probation, no other treatment.
b/ Fine and/or jail; not referred to ASAP.
c/ These cases included in above totals, primarily CAP and STR.
d/ First three quarters, only.
e/ See footnote on page 26 regarding classification limitations.

Persons referred to the educational program, SASL, were predominately classified as social drinking drivers. However, 12.3% were determined to be problem drinking drivers in 1976, and 15% in 1975, and must be considered to have been misassigned. This is a significant improvement over 1974 when 18.5% of those assigned to SASL were problem drinking drivers.

As planned, the persons referred to CAP were predominately problem drinking drivers. It is highly probable that those who are not listed as such in Table 4 were, in fact, judged to be problem drinkers because of self admission of alcohol problems, or other information not available in the computer bank. Likewise, two-thirds of those referred to STR (and accepted for that program) were computer-classified as problem drinking drivers.

Theoretically, all drivers receiving a guilty disposition were equally likely to be referred to the control group. However, because the control group was dominated by social drinking drivers, the control group referral process obviously did not operate as intended. This subject will be dealt with further subsequently.

The nonrehabilitative referrals were distributed among the drinker classifications quite differently than the rehabilitative referrals. In fact, well over half of all persons classified as Unknown received nonrehabilitative referrals. Conversely, people not referred to ASAP were more likely to become classified as Unknowns because they would generally not complete the Mortimer-Filkins questionnaire, for example. Moreover, these persons were more likely to be nonlocal residents and therefore less likely to have local records (and less likely to be subsequently rearrested in Kansas City, Missouri).

Over 90% of the persons placed in the chemotherapy program were computer-identified as problem drinking drivers. Without doubt, the other persons were also problem drinkers, and were so identified using additional information.

E. Comparison of Referrals with Recommendations

Court referrals need not always agree with the PTSR recommendations. But, as shown in Table 5, the 1976 referrals differed markedly from the PTSR recommendations in many respects. The data in Table 5 are adapted from Appendix H, Table 15.* They represent the actual referrals of 4,057 cases in the first three quarters and are grouped according to the final drinker classification (after Mortimer-Filkins test, if any). Recall that, according to the PTSR, persons initially classified as Unknowns should be tested and reclassified before referral. By policy, persons in the Unknown category who are not tested should be treated as social drinkers for want of better information.

The figures in the "recommended" column are statistical values based on the random referral process in which 20% of all persons in each drinker classification group were recommended for the control group. Moreover, in this referral process no one was recommended for treatment modalities not appropriate to their drinker classification, and no one was recommended for nonrehabilitative sanctions (fine and/or jail only).

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* A separate document comprising part of the annual report.

TABLE 5

COMPARISONS OF REFERRALS WITH RECOMMENDATIONS IN 1976[a/]

Classification/Modality	Recommended	Referred
Problem Drinkers		
CAP[b/]	1,253	889
Control	313	174
SASL	0	174
Nonrehabilitative	0	329
Social Drinkers		
SASL	1,629	1,162
Control	407	403
CAP[b/]		144
Nonrehabilitative		327
Unknowns		
SASL	364	79
Control	91	32
CAP[b/]		68
Nonrehabilitative		276

a/ First three quarters, only. See footnote on page 26 regarding classification limitations.

b/ Includes STR.

Some of the major differences are as follows:

1. Problem Drinkers

   - Control group only a little over half as large as recommended.
   - Twenty-one percent not referred to ASAP probation or rehabilitation.
   - Eleven percent "misassigned" to SASL.

2. Social Drinkers

   . Sixteen percent not referred to ASAP probation or rehabilitation

   . Seven percent "misassigned" to CAP

3. Unknowns

   . Control group only about one-third as large as recommended

   . Well over half (61%) not referred to ASAP probation or rehabilitation

These differences are of the same type as were noted the prior 2 years.[4,8] Earlier reports have detailed a number of reasons for these variances. Briefly, the reasons are these:

1. Offenders with multiple prior convictions for whom ASAP treatment programs are not considered appropriate.

2. Nonlocal inhabitants who could not take part in local programs.

3. Nonbondable cases, for whom PTSRs were not available at the time of court disposition.

4. Multiple referrals, wherein persons were switched from one treatment modality to another.

5. Computer misclassifications, in the sense that the court or prosecutor had access to information beyond that in the data file.

6. Failure to obtain a Mortimer-Filkins psychological test score to aid in the drinker classification.

7. The obtaining of a Mortimer-Filkins test score <u>after</u> referral, rather than before.

8. Communications problems between the municipal court and the probation office, leading to referrals differing from the intent of the court.

9. Termination of the School for Alcohol Safety--Small Group (not a factor in 1975).

10. Lack of complete acceptance of the control group concept.

11. Prosecutor misunderstandings, and conflicts between plea bargaining practices and random assignments.

Data are not available to enable an assessment of the impact of each individual reason; moreover, more than one reason is probably applicable in some cases.

Because the problems of adhering to the random assignment process were evident in 1974, and these problems were made known to the agencies involved, it is instructive to compare the subsequent results with those observed in 1974, to determine if any improvement is evident. It was assumed that all persons given only a nonrehabilitative (non-ASAP) sanction were treated in that manner because they were not local residents, had had multiple previous convictions, or for some other good reason. Such cases were subtracted from the initial total, leaving for subsequent analysis only those cases that received an ASAP referral. Of the remaining cases, then, the PTSR recommendations should have directed 20% to the ASAP control group and 80% to an appropriate treatment modality. Table 6 compares the percentages actually referred to these modalities to the referral goals.

TABLE 6

ADHERENCE TO PTSR RECOMMENDATIONS IN 1974-1976 [a/]
(All entries are percentages)

Classification/Modality	Goal	1974	1975	1976
PDD				
Counseling	80.00	69.03	70.76	71.87
Control	20.00	2.47	9.38	14.07
SASL	0.00	28.50	19.86	14.07
SDD				
SASL	80.00	87.61	73.02	67.99
Control	20.00	7.54	19.05	23.58
Counseling	0.00	4.85	7.93	8.43
Unknown				
SASL	80.00	66.06	60.49	44.13
Control	20.00	8.18	11.71	17.88
Counseling	0.00	25.76	27.80	37.99

a/ See footnote on page 26 for classification limitations.

The data of Table 6 indicate a marked improvement. For example, among PDDs the percentage assigned to the control group increased over fivefold. The percentage of PDDs referred to counseling increased slightly while the percentage misreferred to the School for Alcohol Safety--Large Group dropped by about one-half. Among social drinking drivers, referrals to the control group increased to over the goal of 20%. The percentage referred to the educational treatment modality declined from a 7.6% overage to a 12% shortage, in comparison to the goal of 80%. SDD referrals to counseling nearly doubled. Finally, the differences in the Unknown group included an increase in the referrals to the control group and to CAP at the expense of a drop in referrals to SASL.

As stated earlier, completely accurate data are not available for cross-tabulating drinker type with referral for the last quarter of 1976. During this quarter the control group was discontinued so there were no recommendations and no referrals to it. Table 7 shows the approximate referrals of people during that quarter. (The row and column totals are fairly accurate; the subdivisions entail some estimation based on prior history.)

TABLE 7

REFERRALS BY DRINKER CLASSIFICATION FOR OCTOBER-DECEMBER 1976[a/]

Modality	PDD	SDD	Unknown	Totals
SASL	65	436	50	551
CAP	260	38	39	337
Nonrehabilitative[b/]	132	74	257	463
Total	457	548	346	1,351

a/ Subtotals are estimates. See footnote on page 26 for classification limitations.

b/ Fine and/or jail; not referred to ASAP.

The number of unknowns increased greatly over prior quarters, as proportionately fewer people took the Mortimer-Filkins questionnaire. Also, nonrehabilitative referrals increased to 34% of all cases, compared with a typical value of around 20%.

The control group shortage was studied further to determine where the people were going who should have been referred to the control group but who were not.[8/] The major finding was that not only were people being placed into rehabilitative modalities who should have been in the control group, but that substantial numbers of people who should have been referred to a rehabilitation program were being placed in the control group. A special study of 1975 cases showed that 746 persons were recommended to be in the control group, but only 283 (37.9%) of them were referred to it. The majority were placed instead in a rehabilitation modality. Moreover, 42% of the persons placed in the control group should have been in a treatment program, according to the PTSR recommendation. Finally, there were significant differences in misreferrals to the control group by drinker classification (χ^2 (2) = 9.2, $p < 0.01$); PDDs were more often in the wrong group than the others.

F. Treatment Program Activities

This section presents the caseload and related data for the treatment programs. The data are taken from modality records and are presented in tabular format. The discussions highlight major actions and changes over the previous year(s).

1. School for Alcohol Safety: Table 8 shows the enrollments, completions, and revocation requests by month during 1976, according to the school records. The total enrollment for the year (1,993 new cases) was about the same as for 1975 (2,030), which was down approximately 19% from 1974.

TABLE 8

SCHOOL FOR ALCOHOL SAFETY STATISTICS, 1976[a/]

Month	New Referrals	Completions	Revocation Requests
January	141	128	5
February	161	170	12
March	168	147	17
April	199	188	10
May	177	144	10
June	179	187	18
July	134	190	15
August	158	165	19
September	125	145	18
October	171	165	5
November	199	190	30
December	181	NA	15
Total	1,993	NA	174

a/ Based on school records.

During 1976 the school forwarded 174 revocation requests to the probation department. This represents a slight decrease over the 210 requests in 1975.

2. Community Alcohol Programs: The activities of CAP, Inc., are summarized in Table 9. The number of clients entering this program has steadily increased since its beginning in late 1972. The 1976 entries (1,403) exceeded those of 1975 by 24% which, in turn, exceeded those of 1974 by 32%.

TABLE 9

CAP STATISTICS, 1976 AND EARLIER[a/]

Year and Quarter		Entered	Completed[b/]	Dropped[c/]
1973	1	164	1	18
	2	195	1	13
	3	54	36	72
	4	99	35	35
	Total	512	73	138
1974	1	170	53	93
	2	233	90	93
	3	242	105	111
	4	212	58	112
	Total	857	306	409
1975	1	270	158	157
	2	270	182	138
	3	267	166	160
	4	323	164	159
	Total	1,130	670	614
1976	1	386	250	272
	2	366	265	150
	3	314	431	241
	4	337	230	191
	Total	1,403	1,176	854

a/ Based on CAP records.
b/ "Satisfactory" completions.
c/ "Unsatisfactory" or "other" completions, such as died, left town, excused for health or medical reasons, or as a result of a sentence change by a judge.

Persons who enter the CAP caseload either complete the treatment program satisfactorily or are dropped from the caseload because of unsatisfactory performance or for some other reason. Through 1976 a total of 3,974 persons entered CAP treatment (including 72 who entered in late 1972). Of these 2,225 (56%) had successfully completed the program by the end of 1975. There were 2,017 unsuccessful completions. These figures do not reflect the fact that some persons may be assigned to more than one program within CAP, such as precounseling, group therapy, and chemotherapy, so that more than one completion is possible per client. The data show that the active caseload increased steadily during the first 2 years of CAP operations, reaching a peak at the end of 1974. It has remained rather steady since that time, at about 600 cases.

3. Chemotherapy: As shown in Table 10, 237 persons entered chemotherapy in 1976, while 268 successfully completed treatment and 102 were dropped from treatment. The chemotherapy program activity started slowly in 1972 but, as measured by the number of entries, nearly tripled in 1973 and doubled again in 1974. In 1975, the activity leveled off and, in fact, dropped 20 to 30% during the last half of the year. This decline in activity continued throughout 1976, to the point that only about 1 in 30 persons convicted were referred to chemotherapy.

The caseload at the end of 1976 was calculated to be 184 (enrollments minus completions and drop outs). The countermeasure books showed only 136 active cases at that time, suggesting either that some completions were not reported, or that some entries were counted more than once. We suspect the latter, based on comparisons with the computerized data base.

4. Probation Control and Maintenance: The data in Table 11 reflect the caseload problems of the probation control and maintenance functions. The ASAP probation office duties were redefined and their functions reorganized during the second half of 1973. (Prior to that time their major emphasis was the conduct of a one-to-one counseling treatment modality.) Table 11 covers the activities since that reorganization.

The probation office performed intake functions for over 4,000 cases per year, for the last 3 years. As a result, their total caseload quickly grew from under 3,000 at the beginning of 1974 to nearly 6,000 in April 1975. Since that time the total caseload declined, primarily because of clearing the expired probations from the books--4,467 probations were expired during 1975, compared with only 1,243 in 1974. In 1976 the caseload remained stable at about 4,400.

TABLE 10

CHEMOTHERAPY STATISTICS, 1976 AND EARLIER

Year	Quarter	Entered	Completed	Dropped	Caseload[a/]
1972	1	6	0	0	6
	2	15	0	3	18
	3	11	0	3	26
	4	47	0	7	66
	Total	79	0	13	-
1973	1	46	8	12	92
	2	53	44	5	96
	3	61	39	10	108
	4	63	26	11	134
	Total	223	116	38	-
1974	1	85	16	26	171
	2	103	2	34	244
	3	123	3	23	341
	4	103	38	44	362
	Total	414	59	127	-
1975	1	112	84	14	376
	2	122	99	39	360
	3	82	94	44	304
	4	86	54	19	317
	Total	402	331	116	-
1976	1	60	78	17	282
	2	77	92	33	234
	3	59	61	27	205
	4	41	37	25	184
	Total	237	268	102	--

a/ Caseload at end of quarter, calculated.

TABLE 11

PROBATION ACTIVITY SUMMARY

Year	Quarter	New Cases	Expirations	Revocations	Caseload[a/]
1973	4	630	347	18	2,804
1974	1	1,008	154	24	3,659
	2	1,187	85	70	4,727
	3	1,066	310	129	5,539
	4	1,035	694	89	5,800[b/]
	Total	4,296	1,243	312	-
1975	1	1,073	849	104	5,900[b/]
	2	1,164	1,152	197	5,636
	3	964	1,073	171	5,312
	4	935	1,393	222	4,705
	Total	4,136	4,467	694	-
1976	1	1,281	1,369	241	4,487
	2	1,160	1,072	211	4,363
	3	947	728	178	4,411
	4	1,045	872	162	4,422
	Total	4,433	4,041	792	--

a/ Caseload at end of quarter.
b/ Estimate.

The probation officers pursued the subject of probation violations with more vigor in 1975 and into 1976. Of those in the initial one-to-one counseling program, 71 had their probations revoked in 1972 and 43 in 1973. There were 18 other revocations in 1973, as shown in Table 11. In 1974, increased emphasis was placed on obtaining court action for persons who were not complying with probation requirements, resulting in 312 revocations in 1974, 694 in 1975 and 792 in 1976. It must be noted, however, that the majority of these revocations are in absentia, but the precise numerical breakdown in that regard is not available.

G. Subsequent Accident Frequency

Accident rates subsequent to an alcohol-related conviction were examined and compared. The accident rates were based on all accidents reported in Kansas City and recorded in the Kansas City data system. It was determined that Kansas City residents experienced a 30 to 40% higher accident rate in Kansas City than nonresidents. It was also determined that persons classified as problem drinkers were more likely to be Kansas City residents than persons classified as social drinkers or as unknowns. Therefore, the detailed analyses treated only persons who were residents of Kansas City.

The cumulative subsequent accident rates per 100 drivers are plotted in Figure 5. The rates are nearly identical for problem drinkers and for social drinkers for the first 2 years after the conviction. A noticeable difference is observed only after 3 or more years. Persons classified as unknowns had lower subsequent accident rates than either PDDs or SDDs.

The subsequent cumulative accident rates are summarized in Table 12, again for Kansas City residents only. The same features shown in the graph are readily seen here also--that SDDs and PDDs experienced essentially identical subsequent accident rates for the first 2 years, and differed only after 3 or 4 years, while persons classified as unknown had generally lower subsequent rates. The data are shown on a yearly basis in Table 13. For PDDs the yearly accident rate increased substantially in the third and fourth year after conviction, after a drop in the second year. For SDDs however, the subsequent accident rate declined yearly. After a first year decrease, the subsequent accident rate for persons classified as unknowns remained essentially constant. During the fourth year, the subsequent accident rate of SDDs was about the same as that of unknowns.

The formal analysis of the subsequent accident rate data involved a comparison on the basis of "class" (year of conviction), treatment modality, drinker type, and time since conviction. The results are summarized in Table 14. Only the significant effects are discussed.

In general, there seems to be little "class" effect, except among social drinkers assigned to SASL. The difference is illustrated in Table 15. The significance arises because of the difference between the classes of 1972 and 1973, with the former experiencing substantially lower subsequent accident rates.

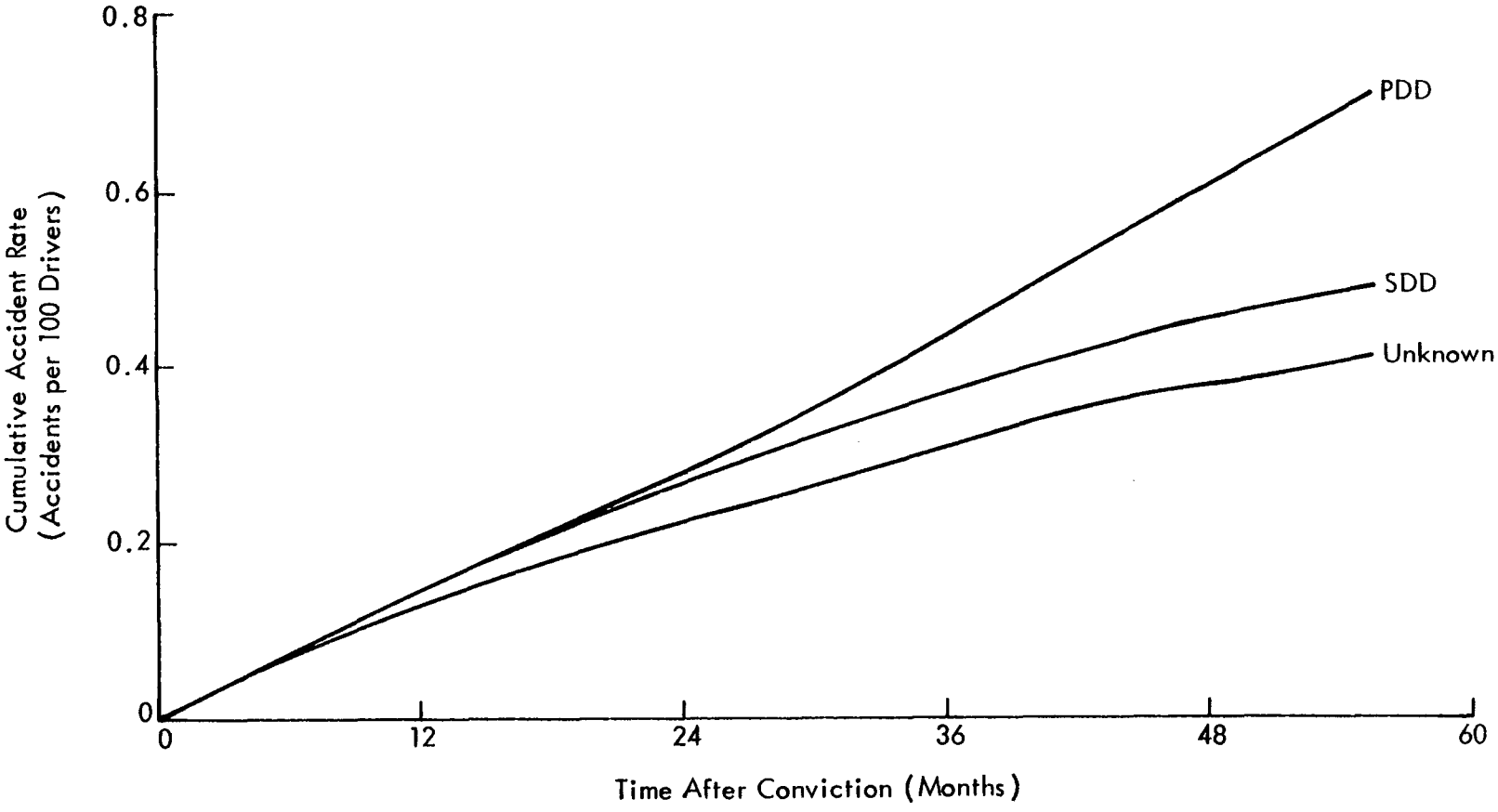

Figure 5 - Reported Accident Rates

TABLE 12

SUBSEQUENT ACCIDENTS PER 100 DRIVERS, BY DRINKER CLASSIFICATION

Period of Observation	PDD	SDD	Unknown
1 year	14.81	14.94	12.96
2 years	27.67	27.12	22.75
3 years	43.61	38.08	31.74
4 years	61.16	46.93	40.32

TABLE 13

YEARLY ACCIDENTS PER 100 DRIVERS, BY DRINKER CLASSIFICATION

Time Period After Conviction	PDD	SDD	Unknown
First year	14.81	14.94	12.96
Second year	12.86	12.18	9.79
Third year	15.94	10.96	8.99
Fourth year	17.55	8.85	8.58

TABLE 14

SUBSEQUENT ACCIDENT RATE ANALYSIS FINDINGS

Source	χ^2 - Value
I. Class Effects	
PDD, SASS, 1 year rates	χ^2 (2) = 0.11, NS
PDD, SASS, 2 year rates	χ^2 (2) = 1.99, NS
PDD, SASS, 3 year rates	χ^2 (1) = 0.20, NS
PDD, CAP, 1 year rates	χ^2 (3) = 7.77, NS
PDD, CAP, 2 year rates	χ^2 (2) = 2.63, NS
PDD, CAP, 3 year rates	χ^2 (1) = 0.09, NS
PDD, CHEMO., 1 year rates	χ^2 (3) = 4.79, NS
PDD, CHEMO., 2 year rates	χ^2 (2) = 0.16, NS
PDD, CHEMO., 3 year rates	χ^2 (1) = 0.06, NS
PDD, SASL, 1 year rates	χ^2 (3) = 7.32, NS
PDD, SASL, 2 year rates	χ^2 (2) = 5.50, NS
PDD, SASL, 3 year rates	χ^2 (1) = 6.62, $p < 0.02$
PDD, 1-1 Couns, '72 vs. '73	χ^2 (3) = 2.19, NS
SDD, SASL, 1 year rates	χ^2 (3) = 1.07, NS
SDD, SASL, 2 year rates	χ^2 (2) = 10.17, $p < 0.01$
SDD, SASL, 3 year rates	χ^2 (1) = 16.40, $p < 0.01$
SDD, SASS, 2 year rates	χ^2 (2) = 2.00, NS
SDD, "Random" Control, 1 year rate	χ^2 (1) = 0.00, NS
SDD, Fine only, 1 year rate	χ^2 (3) = 3.81, NS
SDD, Fine only, 2 year rate	χ^2 (2) = 3.52, NS
SDD, Fine only, 3 year rate	χ^2 (1) = 3.26, NS
SDD, Fine and Prob., 1 year rate	χ^2 (2) = 4.12, NS
SDD, Fine and Prob., 2 year rate	χ^2 (2) = 1.04, NS
SDD, Fine and Prob., 3 year rate	χ^2 (1) = 0.08, NS
SDD, Probation only, '72 vs. '73	χ^2 (3) = 1.88, NS
Unknown (SASL), 1 year rate	χ^2 (1) = 3.24, NS
II. Modality Effects	
PDD, 1 year rates	χ^2 (4) = 3.57, NS
PDD, 2 year rates	χ^2 (4) = 9.27, $p < 0.10$
PDD, 3 year rates	χ^2 (4) = 21.19 $p < 0.01$
PDD, 4 year rates	χ^2 (4) = 9.34, $p < 0.10$
SDD, 1 year rates	χ^2 (4) = 8.23, $p < 0.10$
SDD, 2 year rates	χ^2 (4) = 0.88, NS
SDD, 3 year rates	χ^2 (4) = 1.48, NS
SDD, 4 year rates	χ^2 (4) = 2.74, NS
III. Drinker Type	
1 year rates	χ^2 (2) = 4.96, $p < 0.10$
2 year rates	χ^2 (2) = 19.36 $p < 0.01$
3 year rates	χ^2 (2) = 68.52 $p < 0.01$
4 year rates	χ^2 (2) = 101.64, $p < 0.01$
IV. Time Trends	
PDD	χ^2 (3) = 25.84, $p < 0.01$
SDD	χ^2 (3) = 20.02, $p < 0.01$
Unknown	χ^2 (3) = 8.93, $p < 0.10$

TABLE 15

SASL SUBSEQUENT ACCIDENT RATES FOR SDDs

Year of Conviction	Cumulative Accident Rate (Accidents Per 100 Drivers) 1 Year	2 Years	3 Years
1972	12.24	20.65	29.83
1973	13.46	28.16	40.39
1974	13.93	25.77	a/
1975	13.94	a/	a/

a/ Insufficient follow-up data.

Relative effectiveness of the treatment programs for SDDs and PDDs are shown in Tables 16 and 17 (insufficient data were available to make these comparisons for persons classified as unknown). For SDDs, persons assigned to SASL had the highest subsequent accident rates, and those assigned to SASS had the lowest. The differences are not significant for the 2, 3 and 4-year data, and only marginally significant for the first year. It is noted that the number of SDDs assigned to SASS was rather small (only 133 Kansas City residents), so large differences would be required in order to be significant. For PDDs, on the other hand, there were significant differences between modalities that were consistent through the 4-year period, except for the first year (when the modalities were not distinguishable by subsequent accident rates). Specifically, SASS and one-to-one counseling had the lowest (best) subsequent accident rates but were indistinguishable from one another. Next came chemotherapy and CAP, which were also not distinguishable from each other. Finally, SASL had the worst subsequent accident rate of the five modalities.

The analyses also confirmed the subjective statements made earlier regarding Figure 5. That is, although subsequent accident rates were not distinguishable by drinker classification after 1 year, they were distinguishable after a longer period of time. Persons classified as unknowns had a significantly lower accident rate after 2 or more years, and PDDs had higher rates than SDDs after 3 or more years. Moreover, the subsequent accident rates declined significantly in time for SDDs but increased significantly in time for PDDs. The slight numerical decline for persons classified as unknowns was only marginally significant.

TABLE 16

SDD SUBSEQUENT ACCIDENT RATES,[a] BY MODALITY

Years After Conviction	SASS	Fine and Probation[b]	"Random" Control[b]	Fine Only[b]	Probation Only[b]	SASL
1	6.02	10.75	10.93	12.32	13.07	13.56
2	20.31	22.71	[c]	25.09	24.92	25.78
3	30.42	33.87	[c]	36.94	34.05	36.94
4	[c]	42.69	[c]	44.90	45.23	45.93

a/ Accidents per 100 drivers.
b/ No referral to a treatment program.
c/ Insufficient follow-up data.

TABLE 17

PDD SUBSEQUENT ACCIDENT RATES,[a] BY MODALITY

Years After Conviction	SASS	1-1 Counseling	Chemotherapy	CAP	SASL
1	12.75	14.58	13.59	13.66	15.54
2	23.91	24.49	25.52	26.80	30.63
3	37.71	35.74	41.34	43.80	49.87
4	50.44	48.63	60.93	[b]	70.92

a/ Accidents per 100 drivers.
b/ Insufficient follow-up data.

H. Arrest Recidivism

The overall rearrest rates are shown in Table 18 by drinker classification. The rearrest rate of persons classified as problem drinkers is roughly twice as high as that for social drinkers up to 4 years after the initial conviction. The arrest rate of persons classified as unknowns is inbetween.

TABLE 18

OVERALL RECIDIVISM RATES,[a/] by DRINKER CLASSIFICATION

Years Since Conviction	Percentage Rearrested for DUI		
	PDDs	SDDs	Unknowns
1	16.11	7.55	9.71
2	24.99	12.96	16.15
3	30.89	17.28	20.37
4	35.78	19.88	23.66

a/ For all clients, regardless of residence.

Figure 6 shows similar findings, but presented in terms of the survival rates. These rates, which are simply one minus the fraction who have become recidivists, indicate the proportion of persons who have not been rearrested for DUI after the index conviction. The other difference between Figure 6 and Table 18 is that whereas Table 18 includes all ASAP clients, Figure 6 applies only to those clients who were residents of Kansas City, Missouri. Nonresidents tended to have lower recidivism rates (higher survival rates) and were also more likely to be classified as unknowns or social drinking drivers. Examining survival rates for only Kansas City residents eliminates this potential bias.

Correlation coefficients of the survival rates over time were computed for various groups of clients. Generally speaking, the correlation coefficients were 0.99+. That is, the relative differences in survival rates between groups remained essentially the same over long periods of time, as is illustrated in Figure 6. Therefore, the subsequent analyses were, for simplicity, limited to the 1-year recidivism rates.

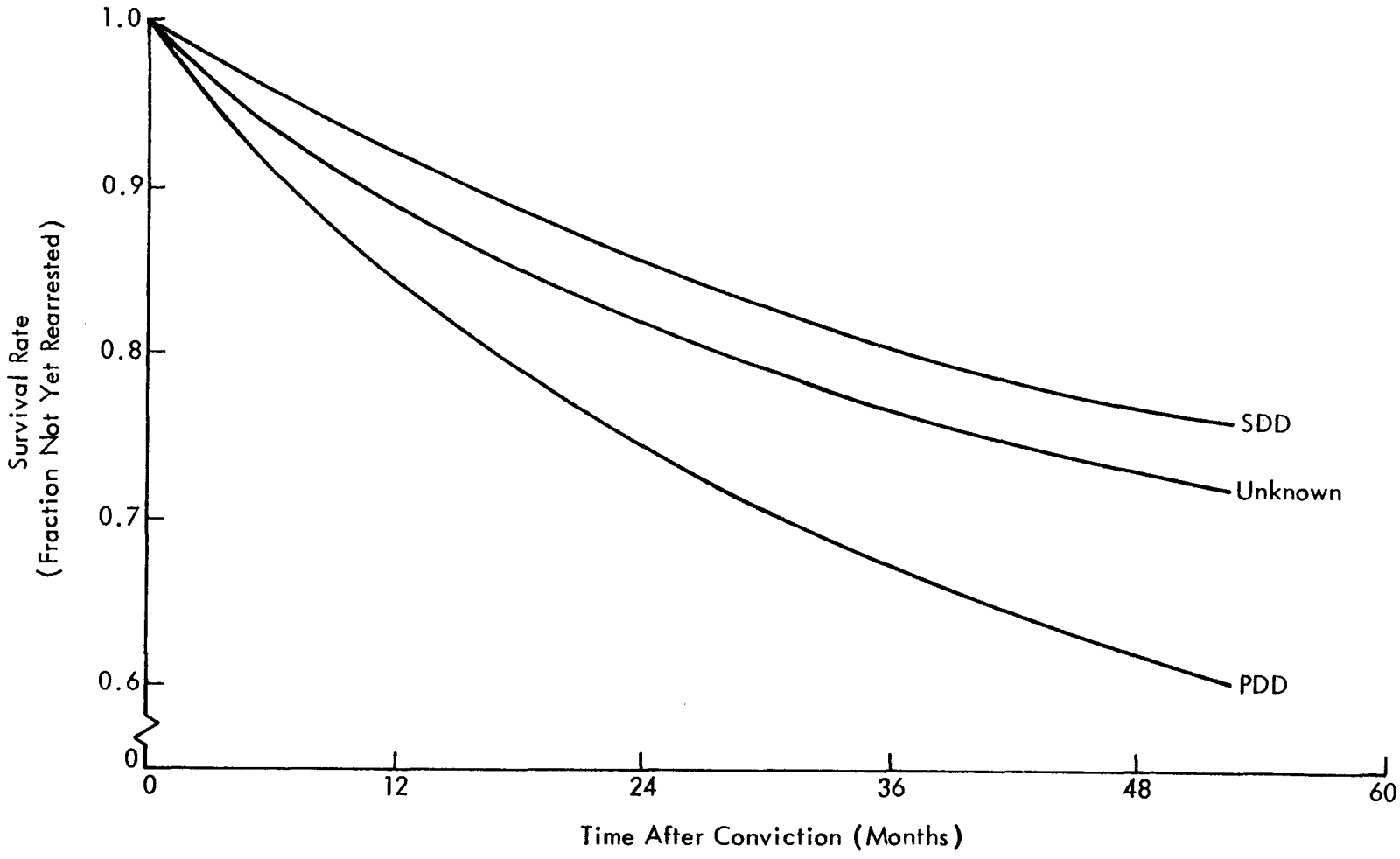

Figure 6 - Survival Rates for Kansas City Residents

The data shown in Table 19 are the 1-year recidivism rates for the five treatment modalities used in the Kansas City ASAP, separated by the drinker classifications. The results of the formal analyses of the recidivism data by drinker type, residency and modality are as follows:

- Nonresidents of Kansas City, Missouri had a significantly lower 1-year recidivism rate (4.32% lower) than residents of Kansas City. This effect applies to all three drinker types.

- The 1-year recidivism rates of the three drinker types are significantly different, with PDDs highest and SDDs lowest.

- For PDDs, the one-to-one counseling group had a significantly higher recidivism rate than the others, and CAP had a marginally lower recidivism rate.

- For SDDS, SASL had a significantly lower recidivism rate than the others.

- The differences in modalities for "unknowns" are not highly significant, perhaps due to small sample sizes.

TABLE 19

1-YEAR RECIDIVISM RATES,[a/] BY MODALITY AND DRINKER CLASSIFICATION

	Percentage Rearrested for DUI		
Modality	PDDs	SDDs	Unknowns
SASL	17.29	8.40	12.19
CAP	15.32	17.92	16.18
Chemotherapy	18.82	35.23[b/]	25.44[b/]
SASS	19.09	18.84	7.04[b/]
1-1 Counseling	27.43	21.82[b/]	20.00[b/]

a/ Kansas City residents, only.
b/ Less than 100 clients in sample.

Profile analyses were performed using the recidivism data. The investigation considered seven modalities (SASL, SASS, CAP, and chemotherapy, M5 = "random," control group, ASAP probation, and "nothing"). The control group was the no-treatment assignment made on a pseudo random basis in 1975 and 1976. The ASAP probation group was similar, but not based on a randomized procedure and used mostly during the first 3 years. The list group ("nothing") were people not assigned to ASAP, but just given a fine and or probation (non-ASAP). The analyses were designed to determine:

- Do modality recidivism rates vary?
- Do observable traits of the subjects influence recidivism results?
- Do the trait effects themselves vary according to modality?

To a limited extent, the interactions among the traits were also examined.

The overall (raw) recidivism results per modality are shown in Table 20. These are not all equal, and separation of means shows that the first two ("random" and SASL) were the best, the next two were about equal, and the last three modalities were the worst (perhaps ASAP probation was worst of all).

TABLE 20

ARREST RECIDIVISM RATES BY MODALITY

Modality	Recidivism (1-Year, %)	Sample Size
Random	10.9	534
SASL	11.3	6,458
Nothing	14.4	2,735
CAP	15.3	1,084
SASS	21.2	618
Chemotherapy	22.8	855
ASAP Probation	25.6	613

The raw recidivism values have an uncertain meaning, since subjects were not randomly assigned to particular modalities. An attempt to adjust the rates was undertaken using seven observed traits. Mortimer-Filkins questionnaire score, arrest BAC, age, income, race, prior (alcohol-related) convictions, and residence (Kansas City or other). All of these traits did influence recidivism behavior, as can be seen in Table 21.

TABLE 21

TRAIT EFFECTS ON RECIDIVISM

Trait	Range	Adjustment[a/]
Mortimer-Filkens	0-14	-3.58
Mortimer-Filkens	15-24	-0.79
Mortimer-Filkens	25+	4.67
Mortimer-Filkens	Unknown	0.68
Arrest BAC	0-14	-3.77
Arrest BAC	15-24	0.33
Arrest BAC	25+	6.35
Arrest BAC	Unknown	1.41
Age	0-29	-3.33
Age	30-49	1.92
Age	50+	0.12
Income	0-7,999	3.03
Income	8,000-12,499	1.30
Income	12,500+	-2.60
Income	Unknown	-1.55
Race	White	-0.78
	"Black"	2.09
Prior Convictions	None	-0.59
	1+	9.48
Residence	Kansas City	0.98
	Other	-3.01

a/ Signifying, for example, that subjects with a M-F score of 0-14 had a 1-year recidivism rate 3.58% less than the average.

If all modality rates are "adjusted" according to the traits of their clients, the resulting modality recidivism rates generally go toward the mean (except for CAP), but not heavily enough (see Table 22).

TABLE 22

ADJUSTED VS. ACTUAL 1-YEAR RECIDIVISM RATES

Modality	Actual (%)	Adjusted (%)
Random	10.86	13.03
SASL	11.26	12.29
Nothing	14.41	14.89
CAP	15.31	12.41
SASS	21.20	19.57
Chemotherapy	22.81	19.07
ASAP Probation	25.61	24.37
All	14.17	

Examination of the variance in recidivism rates show that the adjustment explains only 14% of the total variation in recidivism rates. However, it does indicate that the observed differences between groups are probably larger than the true group effects (if any) would produce. That is, there are definite differences in the clients that tend to make the modalities appear to be more diverse than they really are, as far as recidivism rates.

Three of the traits (M-F score, age and prior convictions) interact statistically with modality (see Table 23) for detailed recidivism rates. The interactions arise because:

- CAP is unusually good for persons with very high M-F
- "Nothing" is unusually bad for persons with very low M-F scores.
- CAP is unusually good for persons with one or more prior alcohol-related convictions.
- CAP is unusually bad for younger persons.
- "Random" control group is unusually bad for older persons.

TABLE 23

MODALITY - TRAIT INTERACTIONS IN TERMS OF 1-YEAR RECIDIVISM RATES

A. Modality x M-F Score

	0-14	15-24	25+	Unknown
SASL	8.60	10.81	16.72	12.71
SASS	17.50	18.80	26.95	21.65
CAP	12.57	14.95	13.79	23.39
Chemotherapy	18.95	22.28	21.67	29.22
Random	9.17	10.57	25.00	10.34
ASAP Probation	25.00	40.82	37.29	22.54
Nothing	37.66	25.00	29.31	13.03

B. Modality x Prior Conviction

	0	1+
SASL	11.02	18.06
SASS	20.04	34.69
CAP	15.07	17.21
Chemotherapy	21.97	28.32
Random	10.67	14.29
ASAP Probation	26.34	27.27
Nothing	13.38	29.21

C. Modality x Age

	0-29	30-49	50+
SASL	8.72	12.75	12.03
SASS	17.60	23.62	18.67
CAP	16.36	8.08	11.40
Chemotherapy	23.65	25.67	20.55
Random	10.00	11.65	20.55
ASAP Probation	20.71	25.57	10.19
Nothing	10.33	17.36	13.19

In other words, persons indicating more severe problems (high M-F score, prior convictions) are best placed in CAP, but younger persons probably should receive different treatment.

Three interactions between traits are also significant (see Table 24). Although recidivism probability generally increases by almost 10% for persons with a prior alcohol-related conviction, this effect is only 2.5% for older (50+) people, but is 14% for 30-49 year olds. A prior conviction increases a white person's probability of recidivating by a factor of two, but has a much less marked effect for black persons. Persons 30-49 years old are by far the worst group of Kansas City residents, but age is relatively unimportant among nonresidents.

TABLE 24

TRAIT INTERACTIONS[a/]

A. Prior Convictions

	0-29	30-49	50+
0	10.45	15.20	14.15
1+	17.95	29.02	16.67

B. Prior Convictions x Race

	White	Black
0	12.72	15.94
1+	25.10	20.58

C. Residence x Age

	0-29	30-49	50+
Kansas City	11.20	17.50	14.90
Other	9.93	11.72	11.91

a/ One-year recidivism rates.

I. Earlier Findings

Analyses of recidivism rates (or survival rates) were carried out numerous times at earlier stages of the project, using earlier (hence, smaller) data sets and a variety of techniques.[8,4] The most recent (and most complete) results from the preliminary studies are briefly reviewed here as they complement and augment the recent findings.[8] These comparative results are based on data extending through early 1976.

1. Treatment Program Effectiveness--Actual: Here and in the following, treatment program effectiveness is measured by the probability that the clients remain free of a subsequent DUI arrest for a specified period of time--termed the survival rate.

The actual survival rates over 3 years, without regard to drinker type or any other traits of the clients in the treatment programs, were as given in Table 25.

TABLE 25

ACTUAL 3-YEAR SURVIVAL RATES

	Percent	
SASL	75.65	
Punitive Sanctions Only	73.90	
CAP	67.66	
ASAP Probation Only	61.67	Statistically Equal
Chemotherapy	61.24	
SASS	59.67	
One-to-One Counseling	51.44	

These results rank the programs in the same statistical order as found in the current analysis.

2. Treatment Program Effectiveness--Adjusted: The above figures are undoubtedly affected by data, records, and criteria available to the judges when making the referrals. Thus, they tended to refer persons with fewer indicators of alcohol problems to the less intensive programs, etc. Thus, it is more instructive to examine the survival rates of the various modalities as they would have been observed had a completely random assignment process been in effect. This process would have ignored all drinker classification criteria and, thus, would approximate the conditions that would obtain if no PTSR, no records, no data or criteria of any kind were used in making the referrals. These rates are obtained by adjusting the actual results according to the characteristics of the persons in each program and the role of those characteristics in predicting a subsequent rearrest.

The relative effectiveness (3-year survival rates) expected based on random referrals are given in Table 26.

TABLE 26

ADJUSTED 3-YEAR SURVIVAL RATES

	Percent	
SASL	74.04	Statistically Equal
Punitive Sanctions Only	73.48	
CAP	73.33	
Chemotherapy	66.94	Statistically Equal
SASS	63.99	
ASAP Probation Only	63.83	
One-to-One Counseling	57.93	

The above figures were projected based on the records and data available for males only, who lived in the Kansas City metropolitan area and who were convicted on or after the scheduled court date, not before. Analysis showed that the cases not satisfying these conditions (a minority of all cases) displayed statistical biases.

The adjustment process differed slightly from that used in Section IV-H. The process used to develop Table 26 corrected the raw (actual) rates by consideration of the client traits taken independently one at a time. The more recent process also treated interactions between the traits. Nevertheless, the results in both cases yielded the same statistical rank ordering of the treatment programs.

3. Profile Characteristics as Rearrest Predictors: The effects on survival rate of several profile characteristics were examined; some were powerful predictors, indeed. In particular, over half (54%) of persons with a record of two or more prior alcohol-related arrests were arrested again for DUI within 3 years. The characteristics, listed in order of predictive ability, are given in Table 27.

TABLE 27

3-YEAR SURVIVAL RATES BY PROFILE CHARACTERISTICS

	Percent
Prior Alcohol/Related Convictions	
None	73.26
One or more	58.73
Two or more	46.22
BAC at Time of Arrest	
0-14	79.70
15-24	71.84
25+	61.27
Refused	69.73
M-F Questionnaire Score	
0-14	75.88
15-24	71.87
25+	65.79
Not available	72.43
Race	
White	74.68
Other	66.47
Age	
Under 30	77.75
30-49	69.88
50+	70.98
Income	
Under $8,000	66.15
$8,000 - $12,500	70.40
$12,500+	73.12

4. Survival Rates by Drinker Classification: Because of the profound influence of certain profile characteristics on survival rates, and because people were recommended to treatment programs according to criteria that included some of these characteristics, it is illuminating to examine survival rates based on the criteria. The criteria are reduced to a judgment of drinker-driver status (PDD, SDD, UNK); these form the basis for the rates in Table 28.

TABLE 28

3-YEAR SURVIVAL RATES BY DRINKER-DRIVER CLASSIFICATIONS

	Percent
PDDs (Overall)	70.2
CAP	73.0
ASAP Probation	72.9
Chemotherapy	70.3
SASL	70.2
SASS	67.8
One-to-One Counseling	62.7
SDDs (Overall)	81.9
SASL	82.3
ASAP Probation	81.4
SASS	75.0
UNK (Overall)	78.8
ASAP Probation	80.5
SASS	78.0
SASL	76.1

The overall 3-year survival rates by drinker-driver classification are within about 1% of the more recent findings. Moreover, the rank orders of treatment programs within classifications are statistically identical to those in Section IV-H.

V. DESCRIPTION OF STR SYSTEM

A. Overview of STR

The STR program was an outgrowth of two related activities instigated by the National Highway Traffic Safety Administration. One was the development, under contract to McBer and Company of Boston, Massachusetts, of a new alcohol treatment program called Power Motivational Training (PMT).[9,10] This program was designed scientifically on the basis of extensive research into alcoholism. It capatalizes on the premise that drinking is the manifestation of power concerns, by trying to redirect the client's needs for power. PMT, intended as a short-term, group counseling program requiring only modest training of the therapist, had high face validity as a potentially effective rehabilitation program for problem drinking drivers, although perhaps not for "hard-core" alcoholics.

The second activity was the national attack on drinking and driving as implemented in 35 Alcohol Safety Action Projects, one of which is the Kansas City ASAP. A major desire from these projects was a scientific evaluation of the effectiveness of various rehabilitative treatment programs. Unfortunately, there has so far been little if any success in this regard because of the inability of the projects to institute and follow rigorous plans assigning clients to alternate programs in an unbiased manner.[11] Most evaluators, therefore, either performed invalid analyses or were forced to recognize the biases and attempt to control for them.

The STR program is designed to rigorously evaluate PMT and other short-term treatment programs. It encompasses truly random assignment of clients to alternate programs, the conduct of the programs and the collection and analysis of extensive data concerning the clients and their records at the time of referral as well as at three 6-month intervals thereafter. The basic program, with local modifications, was implemented at 11 ASAP sites. Data collected at each site are forwarded to the University of South Dakota, which is under contract to NHTSA to perform the overall evaluation of the STR program. In addition, the University provides each site with codified data, test scores, etc., for its local evaluation needs.

B. Referral to, and Acceptance by STR

The process of referral of problem drinkers to STR is discussed in Part E of Chapter II. The screening process is described in Appendix A.

C. Treatment Modalities

The STR program in Kansas City utilized three treatment modalities--the normal Kansas City group counseling alternative for problem drinkers (CAP), PMT, and an abbreviated "precounseling" modality utilized for comparison and control purposes. Moreover, a client in any of these modalities could also be court-referred to a chemotherapy program in conjunction with the counseling. Also, punitive sanctions (fine and/or probation) were levied.

Power Motivational Training is a short-term, intensive group counseling program developed by McBer and Company.[12] Therapists, who work in pairs, were trained and certified by that company assuring that all STR sites offering PMT would implement the program uniformly.

The program consists of 12 3 hour segments. These are conducted over two consecutive 2-day weekends plus a 3 hour follow-up session held approximately 30 days later. This session is to review and reinforce the concepts learned in the two weekend sessions. The program is offered to groups not to exceed 15 people; many actual groups were somewhat smaller as a result of dropouts and insufficient enrollment.

Each client was assessed a $60 fee (increased to $100 in January 1976).

The precounseling modality served as a minimal treatment comparison or control group for the evaluation of STR. Clients assigned to this modality underwent only the precounseling phase of the CAP program, described in Chapter II. Initially this consisted of three 1-hour sessions of an introductory, educational nature. Beginning October 1, 1975, it was modified slightly, to take place in a single 3-hour session.

Each client was assessed a $30 fee (increased to $60 in January 1976).

The CAP and chemotherapy programs are described in Chapter II, as are the punitive sanctions.

D. Random Referral Process

The random referral process was the portion of the STR program that assured the scientific validity of the subsequent evaluation. The process, shown as a portion of the STR experimental design, is diagrammed in Figure 7.

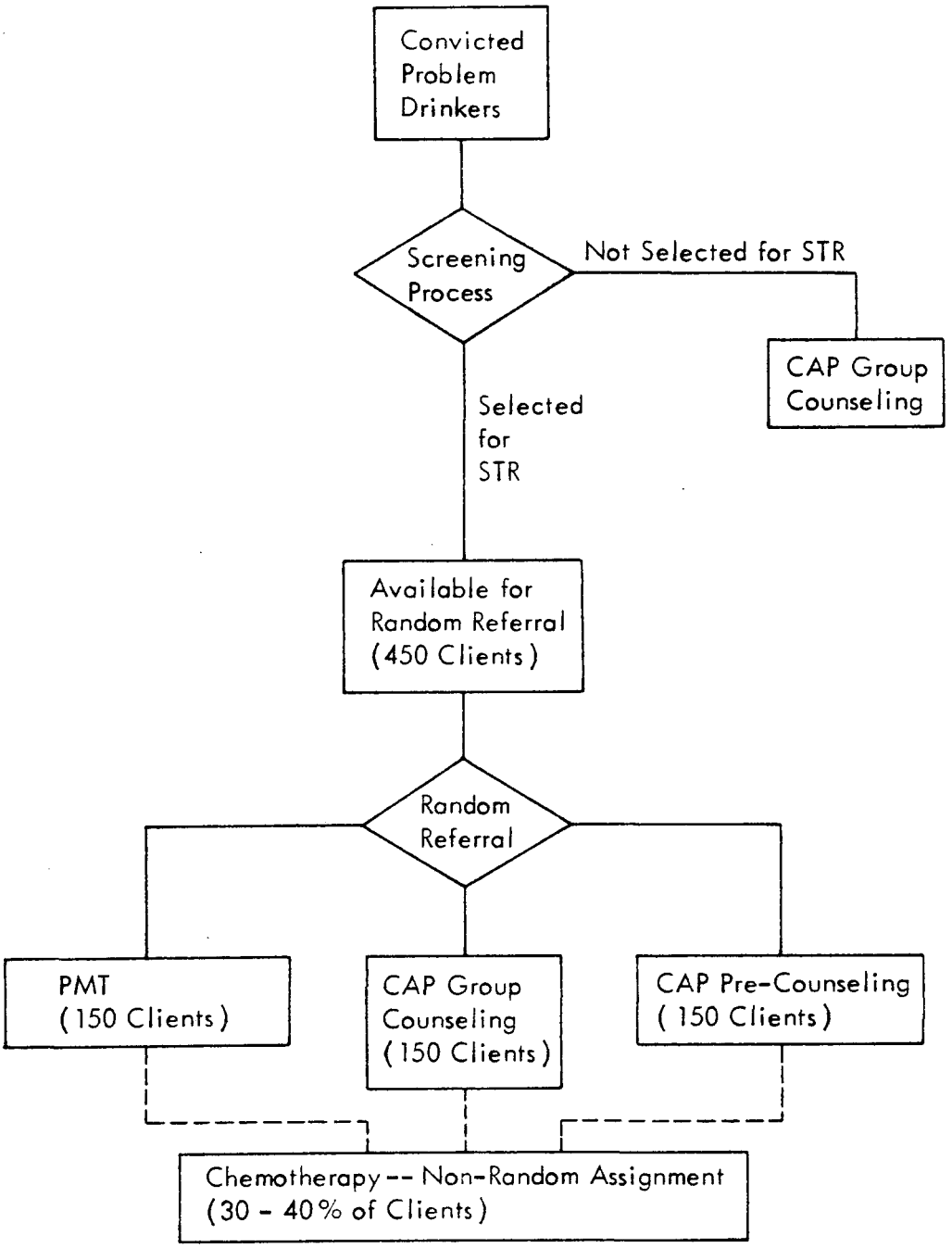

Figure 7 - STR Experimental Design

The STR experimental design called for the Kansas City ASAP to provide treatment programs for 450 clients, with 150 clients to be randomly referred to each of the three programs discussed in the previous section. In addition to the referral process to the three modalities, the court could also assign certain clients to take part in the Chemotherapy (Antabuse) program. Assignment to chemotherapy was non-random, but independent of the random referral to the three counseling programs. It was initially anticipated that 30 to 40% of all the STR clients would be referred to chemotherapy.

The referral process itself utilized a sealed envelope technique. After completion of the screening process the interviewer selected a sealed envelope from a box of such envelopes. The envelope contained the name of the program to which the client was to be referred. This procedure was implemented with the beginning of the STR program and continued through August 1975. The only planned deivation from this procedure during that time occurred late in the month during months when it appeared that the monthly quota of 15 persons assigned to the PMT modality would not be met (PMT was designed for a group size of about 15; groups significantly smaller than that size would presumably not receive the full benefits of it). Thus, toward the end of some months the mix of envelopes in the box was adjusted to "stack the odds" toward PMT.

It was subsequently determined that, on a few occasions, the interviewer might not have rigorously followed the designed procedure. Therefore, beginning September 1, 1975, the referral process was placed in the hands of the ASAP rehabilitation coordinator. Subsequent to that date, the interviewer called the rehabilitation coordinator on the telephone, after the screening process was completed. The coordinator, in turn, drew a sealed envelope and read the referral requirements to the interviewer. This process, it is believed, was completely unbiased as the coordinator had no contact with the client and was unaware of the client's background.

E. Data Collection

The effectiveness of the STR treatment modalities relative to one another was to be determined through examination of a variety of effectiveness measures. These measures are derived from data collected from each STR client, regardless of the modality to which he is assigned. The data were to be collected initially when the client was first referred to one of the treatment programs. Subsequently, each client was to report back to an ASAP follow-up coordinator three times, at 6-month intervals after initial assignment (see Appendix B). Thus, data would be obtained for each client upon initial assignment as well as 6 months, 12 months and 18 months thereafter.

All of these data were sent in their original form to the University of South Dakota. The identity of the individuals involved was not disclosed; only an identification number was attached to the data. It is emphasized that none of the data were retained in Kansas City. The University of South Dakota, in turn, entered the data into their computer base together with similar data from the other 10 sites. Finally, portions of that data were abstracted and returned in coded form to each project evaluator. These data carry newly assigned South Dakota identification numbers, to further ensure the anonymity of the clients.

The types of data collected as a part of the STR program are discussed in the paragraphs below. Further details, including copies of the forms and questionnaires used, are available in a recent NHTSA report.[13/]

1. Crash Involvement: Records contained in the Kansas City, Missouri, Police Department and in the Missouri Department of Revenue (DOR) driver license files serve as the source for these data. Each accident occurring during the 4-year period prior to the index arrest, plus any occurring during the 18 months subsequent to referral are included. The data in the file include the accident type, date and severity as well as indications of alcohol involvement and subsequent license action.

2. Traffic Offenses: Convictions on traffic offenses are reported based upon data in the Kansas City, Missouri, Police Department and the Missouri DOR records systems. The period covered again includes 4 years prior to the index arrest plus 18 months subsequent to the treatment program referral. The types of offenses are distinguished (i.e., DUI, lesser alcohol-related offense, reckless driving, other hazardous moving violation and nonhazardous traffic offense).

3. Nontraffic Offenses: The Kansas City, Missouri, Police Department data files also contain conviction histories of nontraffic offenses. All such offenses during the 6-month period prior to the index arrest and extending through 18 months subsequent to treatment referral are included in this category. Each such conviction is identified by type (property crimes, assault/battery, sex crimes, public intoxication, and other crimes), as well as whether it was alcohol-related.

4. Mortimer-Filkins Questionnaire: Each client completed the University of Michigan-developed Mortimer-Filkins questionnaire at the time of initial referral. (It is not included in the 6-, 12-, and 18-month follow-up interviews because repeat applications of the test are

not considered valid.) The self-administered questionnaire has been designed and highly validated,[7] as a reliable indicator, in combination with other indicators, of the severity of the client's drinking problem.

5. Life Activities Interview: This interview was developed specifically for the STR study by the University of South Dakota. The interview consists of 81 questions which are coded to yield 134 separate scores. These scores are then combined to form 64 variables which, in turn, generate, six scales or measures of potentially observable behavioral activity in areas of the individual's life situation which are most apt to show the influence of alcohol abuse:

a. Employment/Economic Stability
b. Current Drinking Pattern (Quantity and Frequency)
c. Family Status (marriedness)
d. Social Interaction/Involvement
e. Current Physical Health Problems
f. Immoderate Drinking Behavior

These interviews are completed initially and at each of the three follow-up periods.

6. Current Status Questionnaire: The CSQ instrument was developed by researchers at the University of Denver and the Fort Logan Mental Health Center in an extensive program of alcohol treatment evaluation. As adopted for use in the STR program, it is an 81-item, self-administered questionnaire. Six measures or scales have been derived from 69 of these questions, and the other 12 items generated a "Marital Problem" scale applicable only to married clients. Together the CSQ generated the following seven dimensions of life status:

a. Marital Problems
b. Control of Drinking Problems
c. Income/Employment Stability
d. Physical Health
e. Residential Stability
f. Social Interaction
g. Control of Drinking

The CSQ is completed initially and at each of the three follow-up sessions.

7. Personality Assessment Survey: The PAS survey instrument was also developed by researchers at the University of Denver and the Fort Logan Mental Health Center. It consists of a 151-item, self-administered questionnaire, from which 14 scales or measures of personality were derived:

a. Strange, Ecentric Thoughts
b. Anxiety, Depression and Tension
c. Projection of Attributes
d. Intellectual, Aesthetic Interests
e. Phobias
f. Self-Image
g. Moralism
h. Group Attraction
i. Introversion/Extroversion
j. Paranoia
k. Emotional Control
l. Hypochondria
m. Acting Out, Anxiety
n. Sensitivity

The PAS is completed initially and at each of the three follow-up sessions.

In addition, five scales were developed by the University of South Dakota, by combining the responses to the LAI and CSQ instruments. The five combined LAI-CSQ scales are:

a. Current Quantity/Frequency of Drinking
b. Employment/Economic Stability
c. Current Physical Health Problems
d. Social Interaction
e. Current Drinking Problems

The detailed meanings of all 32 test scores are given in Appendix C, taken from USD studies.[15]

VI. STR PROGRAM--PRELIMINARY RESULTS

This section presents the result obtained (and methodologies used) by MRI from data available through December 1976 and early 1977. As such, the data base contained only the 6- and 12-month follow-up information. Further analysis of these and subsequent data is expected to be accomplished by the University of South Dakota under an NHTSA contract.

This section consists of six parts. The first deals with the initial assignment procedure, the numbers of persons assigned to each group, and the characteristics of those persons. The next part examines the effectiveness of the follow-up procedure in obtaining the cooperation of the clients to participate in the follow-up interview. The third part deals with subsequent crash involvement while the fourth treats DUI rearrest recidivism. The latter is examined in great detail, and accounts for the characteristics of the individuals involved. The fifth part briefly looks at subsequent non-DUI traffic arrests and criminal arrests. Finally, the last part contains an in-depth treatment of changes in life styles as measured by the battery of questionnaires, and the affects on those changes of the traits of the individuals as well as their initial interview scores.

Throughout this section we are dealing with two types of client characteristics. One type consists of demographic data, arrest and accident records, etc. These data are termed "traits." The other type, termed "scores" are the numerical values of the 32 initial and follow-up scales derived from the battery of questionnaires and defined in Section V.

A. Assignment to STR

STR was designed for persons classified as problem drinking drivers. Kansas City used a classification process that was essentially that espoused by NHTSA, which is described in Section II. Briefly, a problem drinking driver is one who satisfied two or more of the following criteria.

1. An arrest blood alcohol content (BAC) of 0.15 or more.

2. A prior alcohol-related conviction.

3. A record of prior alcohol-related contacts with a medical, social, or community agency.

4. Knowledge of individual by ASAP probation due to alcohol problems.

5. Evidence of marital, employment or social problems related to alcohol.

6. A Mortimer-Filkins questionnaire score of 25 or more.

In practice items 1, 2, 4, and 6 are the criteria actually used because data are seldom available on items 3 and 5. Furthermore, item 2 can be used more than once; that is, the Kansas City criteria stipulates that a record of two or more convictions related to alcohol classifies an individual as a problem drinking driver. Finally, a self-admission of problem drinking overrides the above criteria.

A review of individual computerized client data files showed that, whereas all STR clients were presumably problem drinking drivers, less than two-thirds of them actually satisfied the formal criteria. The files of the 363 clients for whom data were available in March 1976 were examined. The results, shown in Table 29, indicate that only 63.6% of the clients exhibited two or more indicators of problem drinking driving. A total of 119 (32.8%) exhibited only one problem drinking driver indicator, usually just a high arrest BAC or a single prior alcohol-related conviction. In the Kansas City classification process, such persons would normally have been classified as unknown and referred to the social drinking driver School for Alcohol Safety, rather than alcohol rehabilitation through group counseling. Finally, 13 clients (3.6%) exhibited none of the problem drinking driver indicators and are presumably social drinking drivers.

TABLE 29

PROBLEM DRINKER DRIVER INDICATORS OF STR CLIENTS

Category	No. of Clients	
Two or More Indicators	231	(63.6%)
High BAC Only	68	(18.7%)
Prior A/R Conviction Only	48	(13.2%)
Probation Contact Only	1	(0.3%)
High Mortimer-Filkins Score Only	2	(0.6%)
No Indicators	13	(3.6%)
Total	363	(100.0%)

It is possible, of course, that some or all of these persons admitted to problem drinking. (Such admission overrides the more formal criteria listed above and is a valid part of the Kansas City classification process.) The client data system is designed to capture this information. However, data in the files indicates that none of the 363 clients admitted to being a problem drinker. Nevertheless, the STR intake process considered that all persons were PDDs. The analyses subdivided them into two groups, termed PD3 (serious problem drinker--one who has two or more PDD indicators), and PD2 (moderate problem drinker--the remainder of the clients).

The initial plan was to randomly assign 450 persons to three treatment programs, 150 to each. In addition, on a nonrandom (objective) basis, a fraction of the persons in each program (initially anticipated to be about 30 to 40%) would also be placed on chemotherapy (Antabuse). The actual results of the STR assignments are displayed in Figure 8.

A total of 437 clients were in the program, nearly reaching the goal of 450. To obtain this number, the screening process was carried out with 808 clients, of whom 461 were found initially acceptable and assigned to a modality. A few were later dropped from the study for a variety of reasons, leaving the net total of 437.

The clients were not quite equally distributed between the three basic treatment modalities. PMT had the most clients (38%) and the Minimum Exposure group had the fewest (29%). The difference between the ideal split of one-third in each program, and the actual split was marginally significant (χ^2 (2) = 4.96, $p < 0.10$).

A total of 90 persons (21%) were placed in chemotherapy. The persons in this treatment were proportionately distributed between the three treatment modalities (χ^2 (2) = 0.60, not significant).

The assignments to the treatment modalities were analyzed according to 24 traits of the clients, using analysis of variance. In each case, the trait was treated as the dependant variable, and the two-way analysis of variance treated the effects of group, PMT, CAP, or Minimum Exposure and chemotherapy (yes or no). The 24 dependent variables are listed below:

- Age (years)
- Race (1 = white; 2 = black; 3, 4, 5, 6 = others)
- Education (years completed)
- Monthly Income (dollars)
- Marital status code (five categories)
- Number of times married
- Occupation code (15 categories)

POWER MOTIVATIONAL TRAINING	COMMUNITY ALCOHOL PROGRAMS	MINIMUM EXPOSURE
No Chemotherapy 128	No Chemotherapy 116	No Chemotherapy 103
Chemotherapy 37	Chemotherapy 29	Chemotherapy 24
165	145	127
Total: 437 Clients		

Figure 8 STR Assignments

- Religion (five categories)
- Drinker classification (PD2 or PD3)
- Mortimer-Filkins questionnaire score
- Arrest-to-conviction lag time (days)
- Index DUI jail sentence (days)
- Index DUI fine (dollars)
- Index DUI arrest BAC
- Number of prior DUI arrests
- Number of prior reckless driving arrests
- Number of prior hazardous moving violations arrests
- Number of prior other traffic offense arrests
- Number of prior property crime arrests
- Number of prior assault/battery arrests
- Number of prior public intoxication arrests
- Number of prior other criminal offense arrests
- Number of prior accidents
- Number of prior alcohol-related treatment entries

As shown in Table 30, there are a large number of differences in the traits of persons selectively assigned to chemotherapy and those not so assigned. Persons placed in chemotherapy tended to have lower incomes, more indications of problem drinking, higher Mortimer-Filkins scores, longer jail sentences, smaller dollar fines, more prior reckless driving arrests, fewer hazardous moving violation arrests (other than reckless driving), and more prior public intoxication arrests.

Because of these differences, and also because the number of persons placed into chemotherapy was relatively small, they were eliminated from most of the subsequent analyses in an attempt to reduce the variance in some of the trait values (as well as test scores) due to these differences. In this way it was felt that there would be a higher likelihood of detecting true differences between the treatment modalities of PMT, CAP, and Minimum Exposure. Thus, only the 347 persons not placed on chemotherapy were used in the subsequent analyses (unless otherwise noted).

As shown in Table 29, there were three client traits that differed significantly between the treatment modalities. The analysis of variance of drinker classifications showed that persons assigned to CAP were somewhat more likely to be classified as serious problem drinkers (PD3) than those assigned to the other groups ($F\ (2,423) = 2.41$, $p < 0.10$). However, this marginal significance disappeared when persons placed in chemotherapy were eliminated ($\chi^2\ (2) = 3.82$, not significant). Thus, the drinker classification is not a significant trait between groups when chemotherapy is not considered.

TABLE 30

TRAIT DIFFERENCES BETWEEN GROUPS[a/]

Trait	No Chemotherapy			Chemotherapy			Significant	
	PMT	CAP	Min Exp	PMT	CAP	Min Exp	Modality	Chemo
Age	37.58	36.52	37.50	34.95	35.05	38.47	No	No
Race	1.35	1.35	1.35	1.36	1.41	1.33	No	No
Education	11.65	11.81	11.79	11.40	10.93	10.54	No	No
Monthly Income	868.94	887.98	786.93	703.35	698.48	607.65	No	Yes
Marital Status Code	2.70	2.85	2.72	2.62	2.76	2.92	No	No
Number of Time Married	1.13	1.28	1.05	1.03	0.93	1.13	No	No
Occupational Code	8.34	8.28	8.61	8.00	9.71	10.00	No	No
Religion	2.18	2.13	1.99	1.75	3.17	2.29	No	No
Drinker Classification	2.60	2.72	2.62	2.87	2.93	2.88	Yes	Yes
Mortimer-Filkins Questionnaire Score	15.75	19.26	16.24	21.03	22.17	19.46	Yes	Yes
Arrest-to-Conviction Lag Time	63.49	72.79	66.60	76.76	64.55	74.50	No	No
Index DUI Jail Sentence (days)	92.37	93.60	85.21	116.84	107.17	101.13	No	Yes
Index DUI Fine (dollars)	130.48	141.60	147.48	94.19	113.28	109.58	No	Yes
Index DUI Arrest BAC[b/]	19.26	18.87	18.30	20.52	18.39	19.10	No	No
Number of Prior DUI Arrests	0.94	1.07	0.70	1.16	1.07	1.17	No	No
Number of Prior Reckless Driving Arrests	0.28	0.29	0.23	0.24	1.31	0.25	No	Yes
Number of Prior Hazardous Moving Violations Arrests	0.88	1.17	1.23	0.76	1.00	0.38	No	Yes
Number of Prior Traffic Offense Arrests	0.32	0.47	0.27	0.49	0.41	0.46	No	No
Number of Prior Property Crime Arrests	0.23	0.16	0.21	0.19	0.28	0.08	No	No
Number of Assualt/Battery Arrests	0.15	0.16	0.09	0.32	0.07	0.25	No	No
Number of Prior Public Intoxication Arrests	0.16	0.19	0.19	0.57	0.38	0.33	No	Yes
Number of Prior Other Criminal Offense Arrests	0.61	0.83	0.81	1.38	0.79	0.58	No	No
Number of Prior Accidents	0.43	0.60	0.50	0.62	0.31	0.50	No	No
Number of Prior Alcohol-Related Treatment Entries	0.45	1.15	0.52	2.49	0.59	0.75	Yes	No

a/ Mean values are given for each trait.
b/ Missing values and refusals ommitted.

The other two traits--Mortimer-Filkins score and prior alcohol-related treatment entries--retained significant differences between groups even after the chemotherapy persons were eliminated. Of the 347 persons not placed in chemotherapy, those assigned to CAP were more likely to have very high Mortimer-Filkins scores (χ^2 (6) = 20.19, $p < 0.005$), and to have had more prior alcohol-related treatment entries (χ^2 (4) = 9.16, $p < 0.10$). Conversely, persons assigned to PMT tended to have lower Mortimer-Filkins scores and fewer prior alcohol-related treatment entries. Aside from these two differences, the clients could not be distinguished between the three treatment modalities on the basis of their traits.

The 32 initial test scores* were analyzed via one-way analysis of variance with the six groups (three with chemotherapy and three without) as the factor. The average initial scores by group are shown in Table 31. All scores were scaled such that each has an average value of 500 for the 3,681 clients from the 11 cities taking part in the Short Term Rehabilitation program,[15] and each score has a standard deviation of 100.

The 32 analyses of variance resulted in eight significant group effects, i.e., eight instances in which the six groups were not homogeneous ($p < 0.05$). Further analysis showed, however, that for six of these eight effects, the difference is attributed solely to the presence or absence of chemotherapy. That is, performing individual analyses within chemotherapy levels removes six of the effects, leaving only two of the 32 scores which differ between the basic treatment modalities of PMT, CAP and minimum exposure. These two scores were CSQ II and PAS XI. The first difference (CSQ II--Control of Drinking problems) indicates that CAP clients initially tended to have somewhat more difficulty controlling their drinking problems than did the other clients. The other difference (PAS XI--Emotional Control) indicates that CAP clients tended to have somewhat less emotional control and were more easily angered than the other clients.

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* Test score data from all 437 STR clients were not used in the analyses, because after the STR program was operational for approximately 3 months in Kansas City, the interview instrument provided through NHTSA was modified slightly. As a result, the first 85 clients had a different initial interview than the remainder of the clients, and some of the scale scores could not be calculated. Moreover, other scale scores were approximated by the University of South Dakota, but our examination showed that often times these approximations lead to anomalous values, which could seriously distort subsequent calculations. Therefore, only the test scores of the remaining 352 persons were utilized. However, other data such as subsequent accidents, arrests, etc., from all 437 clients were available and were used.

TABLE 31

AVERAGE INITIAL SCORES

Scale	No Chemotherapy			Chemotherapy			All
	PMT	CAP	MIN	PMT	CAP	MIN	
LAI I	473	467	454	484	441	428	463
LAI II	486	491	499	458	464	487	487
LAI III	486	495	494	499	504	525	495
LAI IV	466	467	478	487	467	450	470
LAI V	522	523	546	555	544	543	533
LAI VI	487	499	482	499	545	511	495
CSQ I	504	510	492	533	539	489	506
CSQ II	519	474	510	481	442	438	493
CSQ III	479	471	456	471	497	431	470
CSQ IV	491	505	495	483	485	454	494
CSQ V	512	518	520	524	502	483	514
CSQ VI	515	483	500	485	460	456	494
CSQ VII	518	521	507	536	506	493	515
LAI/CSQ I	446	441	444	345	401	387	430
LAI/CSQ II	436	430	419	374	405	351	418
LAI/CSQ III	496	479	518	416	488	458	487
LAI/CSQ IV	466	466	478	473	465	449	469
LAI/CSQ V	512	542	518	584	583	559	535
PAS I	501	499	518	523	506	525	508
PAS II	477	507	494	496	518	533	496
PAS III	506	503	496	490	445	486	497
PAS IV	504	495	498	528	528	533	505
PAS V	503	492	505	497	527	536	503
PAS VI	485	504	506	500	500	552	500
PAS VII	515	503	510	503	461	487	505
PAS VIII	503	509	498	498	512	528	505
PAS IX	508	500	495	480	427	468	494
PAS X	508	480	496	497	460	458	491
PAS XI	480	517	489	555	507	481	499
PAS XII	507	502	515	514	496	533	509
PAS XIII	517	492	487	489	497	437	496
PAS XIV	506	504	506	505	488	533	506

Since 32 independent hypothesis were treated in the examination, it is entirely compatible with a random assignment process that two significant differences could be found, since 2/32 = 0.06.

For the record, the other six scores that suggested differences between chemotherapy clients and clients not on chemotherapy are listed below:

- LAI VI: Chemotherapy clients were more likely to display inmoderate drinking behavior than those not on chemotherapy.
- CSQ VI: Chemotherapy clients were less likely to be socially interactive than persons not on chemotherapy.
- LAI/CSQ I: Chemotherapy clients said they tended to drink less frequently or in lesser quantities than persons not on chemotherapy.
- LAI/CSQ V: Chemotherapy clients tended to have more drinking problems than persons not on chemotherapy.
- PAS IX: Chemotherapy clients tended to be more introverted than persons not assigned to chemotherapy.
- PAS XIII: Chemotherapy clients tended to have more anxieties and to be less calm than persons not assigned to chemotherapy.

B. Follow-Up Interviews

Follow-up interviews were attempted for all clients at 6-, 12-, and 18-month intervals after the initial interview. The success of the project in obtaining these interviews is shown below:

6 month interviews:	333	(76.2%)
12 month interviews:	295	(67.5%)
18 month interviews:	208	(63.6%)

The 18-month interviews are still in progress as of this writing; the percentage quoted above is based on the number of interviews that should have been completed thru June, 1977.

Chi-square analyses were made of the completions at the 6- and 12-month intervals by treatment program (PMT, CAP, or minimum exposure) and by chemotherapy (yes or no). In no instance was there any significant difference in the completion rates. Therefore, no bias should exist in the subsequent analyses of the test scores because of a self-selection process associated with completing or refusing to complete the interview process. Finally, it should be noted that all of the completed interview data after the 12-month follow-up level were not available in time for these analyses. Instead of 295 clients, only 274 had their interviews completed in time for inclusion in the data base used for these analyses.

Further analysis was performed, using an earlier data set[16/] to determine the effect on the completion rate of current employment status together with interactions, if any, between employment status and treatment modality. The method of chi-square decomposition was used for this analysis. It was found that employment status was not related to overall interview completion rates--the same fraction of employed clients completed their interviews as unemployed clients.

In addition to examining the follow-up interview completion rates by treatment modality, analyses were performed to compare completion rates of clients with various demographic and other profile characteristics. The results of the analyses performed are shown in Table 32. (These figures are based on data for 165 clients who, at the time of compilation, should have completed their 6-month interviews. Of these, complete data were available for only 82.) As the table indicates, none of the characteristics examined was significantly related to whether or not the clients completed their follow-up interviews, except age. Young clients were significantly less likely to complete their follow-up interviews than the others. Specifically, 46% of the clients under age 28 did not complete them, compared to only 18% of the remainder of the clients.

TABLE 32

FOLLOW-UP INTERVIEW COMPLETIONS BY PROFILE CHARACTERISTIC

Characteristic	Sample Size	Significance
Arrest BAC	165	NS
Prior A/R Arrests	165	NS
Mortimer-Filkins Score	165	NS
Age	82	$p < 0.05$[a/]
Race	82	NS
Education	82	NS
Prior Marriages	82	NS
Religion	82	NS

a/ χ^2 (3) = 8.37

C. Subsequent Crash Rates

At 6-month intervals the local accident records were searched for evidence of crashes involving STR clients, and the STR data base was appropriately updated. At the time of these analyses there was at least a 12-month follow-up interval for every client, and 18 months for some. The number of accidents found during this time period is shown in Table 33 by group.

TABLE 33

RECORDED SUBSEQUENT CRASHES[a/]

	No Chemotherapy			Chemotherapy			Total
	PMT	CAP	MIN.	PMT	CAP	MIN.	
Clients	128	116	103	37	29	24	437
Crashes	6	3	7	1	1	1	19
A/R Crashes	3	2	5	1	0	1	12

a/ Data shown are probably grossly inaccurate--see text.

The data suggest that there were only 19 crashes recorded during this period, for an average rate of 4.3 crashes per 100 drivers. This value is absurdly low and obviously in error. A check of local, unofficial records located 34 crashes within the city limits of Kansas City, Missouri, involving only STR clients who were residents (311 persons), for a rate of 10.9 crashes per 100 clients per year. This is more than double the rate shown by the data in Table 33.

The table also suggests that 12 of the 19 crashes were alcohol-related (63%). This number is also highly suspect, because in our experience only rarely does an accident report indicate alcohol involvement, except for fatal crashes.

Because the data are undoubtedly incorrect, as well as because the numbers are too small for analytical purposes, no further analyses of subsequent crash rates were performed.

D. DUI Arrest Recidivism

The number of subsequent DUI arrests for the STR clients are shown by group in Table 34. The exposure period for most of the clients was essentially 12 months, although for some it was 18 months. Overall, 84.2% of the STR clients had no subsequent DUI arrests during this period, for a recidivism rate of 15.8%. During this time period 14% of the clients had one subsequent DUI arrest, while 1.9% had two or more subsequent DUI arrests.

TABLE 34

DUI ARREST SURVIVAL RATES (PERCENT)

	No Chemotherapy			Chemotherapy		
	PMT	CAP	MIN.	PMT	CAP	MIN.
Survival (No Arrests)	85.2	84.5	86.4	75.7	82.8	83.8
1 Arrest	14.8	14.7	8.7	21.6	13.8	16.7
2+ Arrests	0.0	0.9	4.9	2.7	3.4	0.0
Sample Size	128	116	103	37	29	24

There are no differences in the DUI recidivism rates between groups. Although, the recidivism rate was slightly higher, numerically, for persons on chemotherapy than for those not on chemotherapy the difference was not significant (χ^2 (1) = 1.52). For persons not in chemotherapy--the clients on which most analyses are based--there are no differences in DUI recidivism rates between treatment modalities (χ^2 (2) = 0.17).

Nevertheless, it is possible that different kinds of people (as defined by their observed traits) recidivate differentially between modalities, and it is possible that the relationships, if any, between the initial test scores and recidivism rates are variable between modalities. A number of traits were examined as categorical variables within treatment modality via chi-square tests.* The traits examined were the following: age, race, education, income, marital status, number of marriages, occupation, religion, drinker type, Mortimer-Filkins score, arrest BAC, "Tickets,"** prior lesser

* Sometimes small sample sizes caused the multi-geometric (extension of Fisher test) to be used in place of the ordinary chi-square.

** Tickets = number of prior reckless driving or other hazardous moving violation arrests.

traffic arrests, "crimes,"* prior public intoxication arrests, prior other criminal arrests, prior accidents, prior alcohol-related treatment entries, and prior DUI arrests.

Only one of the 19 traits displayed a significant difference between modalities ($p < 0.05$). This difference arose because persons with two or more prior DUI arrests that were randomly assigned to Minimum Exposure had a significantly greater recidivism rate than persons with similar prior records that were assigned to either of the other two modalities (6/13 versus 3/20, 1/20, $p = 0.047$). In other words, it appears that persons with a bad prior DUI arrest record were better off in either of the treatment groups than in the Minimum Exposure control group. However, a compatible result is not apparent for persons with just one prior DUI arrest, or for persons with no prior DUI arrests. Also, of course, considering that 58 different tests or compairsons were made (19 traits, each with two or more categories), it is likely that at least one significant result, at $p = 0.05$, would arise simply by chance.

The 32 initial test scores were also examined with an analogous objective, although because the scores are quantitative the statistical method employed was a two-way analysis of variance with recidivism as a factor and test score as the response. In this context, a treatment modality x recidivism interaction is the result that would indicate the differential effect we are seeking.

A significant interaction ($p < 0.05$) was found for three of the 32 test scores. Two of the scores (LAI V and LAI/CSQ III) measure essentially the same parameter (physical health), and both exhibited the same interaction. PMT and CAP clients who recidivated tended to be less healthy than those who did not, whereas the reverse was true with Minimum Exposure clients. In fact, although recidivists in general scored higher (more health problems) than others, the control group recidivists appeared to have fewer problems than the overall average client, by about 1/3 σ. The implication is that healthier persons would do better with treatment than without. The other interaction related to LAI/CSQ V (current drinking problems). Recidivists did not differ from nonrecidivists on this scale if they were in PMT or Minimum Exposure, but CAP recidivists had a much higher (worse) score here than nonrecidivists. However, this might be due to the fact that CAP clients, in general, initially had more drinking problems.

Incidentally, the analyses of variance also showed that two of the 32 test scores were themselves significant indicators (predictors?) of

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* Crimes = number of prior property crime or assault battery arrests.

subsequent recidivism. These scores were the PAS X and PAS XI scales. The first suggested that recidivists were more likely to be paranoid or suspicious than nonrecidivists ($p = 0.042$). The second implies that recidivists were more apt to lack emotional control or to be easily angered than nonrecidivists ($p = 0.008$).

E. Other Subsequent Behavioral Indicators

In addition to subsequent DUI arrests, other types of traffic and criminal arrests were recorded and analyzed. The data covering a 12- to 18-month follow-up period are shown in Table 35.

TABLE 35

OTHER SUBSEQUENT BEHAVIORAL INDICATORS

Indicator	No Chemotherapy			Chemotherapy			Total
	PMT	CAP	MIN	PMT	CAP	MIN	
Reckless Driving	8	3	5	0	1	1	18
Hazardous Traffic Violations	16	26	16	5	5	4	72
Other Traffic Violations	23	17	18	12	3	1	74
Property Crimes	5	8	1	5	1	2	22
Assault/Battery Crimes	4	7	4	3	2	1	21
Sex Crimes	0	0	0	1	0	0	1
Public Intoxication Arrests	3	7	3	5	3	3	24
Other Crimes	33	37	32	15	4	3	124
(Sample Size)	128	116	103	37	29	24	437

Overall, the clients accounted for 164 traffic arrests other than DUI, for an average of about three arrests for each eight clients. Very few of these arrests were for reckless driving. The group also accounted for 192 criminal arrests (where, for purposes of this report, public intoxication arrests are included in the total). This number approaches one criminal arrest for every other client.

Most of the individual arrest categories had entries too small to warrant statistical analysis. However, an analysis of variance was applied to hazardous traffic violations, other traffic violations, and other crimes (see Table 35). The analyses examined the effects of chemotherapy (yes or

no) and treatment modality (PMT, CAP, and Minimum Exposure), as well as their statistical interaction. There were no statistically significant findings. That is, there were no differences in any of these subsequent behavioral indicators that could be related to the treatment modality or to the assignment to chemotherapy.

F. Life Style Changes

1. Approach: This portion of the analyses of STR effectiveness deals with changes in the 32 scaled scores obtained from the LAI, CSQ, and PAS interviews, as described in Section V.

An overriding consideration in all of these analyses is the sample size. There were 437 STR clients in Kansas City, but 85 of these started before the final version of the interviews was released, so they could not be included. Many of the analyses dealt only with persons not on chemotherapy, which eliminates another 20%. Finally, persons who did not complete the 6-month (or 12-month) interview obviously could not be included in an analysis of 6-month (or 12-month) changes. All of these factors, together, reduced the sample size from 437 to only 212 (6-month) and 183 (12-month) for most of the analyses (and about half as much for the scale dealing with marital problems--CSQ I--that applies only to married clients).

In testing for treatment modality effects as reflected in score differences there are two fundamental approaches available. One approach, which is the easier of the two to accomplish, treats the average scores among people in a group, and the differences over time in these averages. The other approach treats separately the scores and differences of each individual within a group. Presumably, clients scores would have a positive autocorrelation i.e., their 6- and 12-month scores would be correlated to their initial scores rather than being another set of random variables.

Let r_{12} be the correlation between the initial and 6-month scores, and r_{13} the correlation between the initial and 12-month scores. Now, if only the group averages are considered, then the variance of the difference scores is

$$V\ (\bar{X}_1 - \bar{X}_2) = \sigma_1^2/n_1 + \sigma_2^2/n_2, \simeq 2\ \sigma^2/n$$

if the initial and follow-up sample sizes are the same and the initial and follow-up standard deviations are the same. (Examination of the 32 scales indicated that nearly all of them had an unvarying standard deviation with time.) On the otherhand, by treating the individual difference scores, $\delta_i = x_{i1} - x_{i2}$,

$$V(\bar{\delta}) = (\sigma_1^2 + \sigma_1^2 - 2\, r_{12}\, \sigma_1\, \sigma_2)/n \simeq 2\, \sigma^2\, (1 - r)/n$$

under the same assumptions. Thus, if r is positive, $V(\bar{\delta}) < V(\bar{X}_1 - \bar{X}_2)$, making the treatment of individual differences statistically preferable (more likely to detect group differences).

Table 36 shows the set of r_{12}s and r_{13}s. All of them are positive and most (52/64) are $> 1/2$. And, somewhat surprisingly, $r_{13} \simeq r_{12}$ in magnitude. Thus, clients are positively autocorrelated, and the strength of this correlation is about as strong over 12-months as it is over 6 months. Therefore, the decision is made to analyze individual change scores rather than group differences or the actual scores themselves, and subsequent results are quoted in this way.

TABLE 36

SCALE SCORE CORRELATIONS[a/]

Scale	r_{12}	r_{13}	Scale	r_{12}	r_{13}
LAI I	0.329	0.379	PAS I	0.504	0.308
LAI II	0.539	0.525	PAS II	0.530	0.599
LAI III	0.779	0.772	PAS III	0.639	0.588
LAI IV	0.627	0.563	PAS IV	0.700	0.728
LAI V	0.366	0.486	PAS V	0.740	0.721
LAI VI	0.560	0.561	PAS VI	0.538	0.542
CSQ I	0.612	0.707	PAS VII	0.633	0.640
CSQ II	0.582	0.324	PAS VIII	0.628	0.600
CSQ III	0.621	0.573	PAS IX	0.703	0.664
CSQ IV	0.475	0.537	PAS X	0.559	0.564
CSQ V	0.574	0.581	PAS XI	0.574	0.482
CSQ VI	0.642	0.645	PAS XII	0.530	0.483
CSQ VII	0.536	0.497	PAS XIII	0.477	0.373
LAI/CSQ I	0.781	0.750	PAS XIV	0.574	0.614
LAI/CSQ II	0.583	0.607			
LAI/CSQ III	0.685	0.692			
LAI/CSQ IV	0.691	0.663			
LAI/CSQ V	0.823	0.812			

a/ r_{12} = correlation between initial and 6 month scores.
r_{13} = correlation between initial and 12 month scores.

Finally, we note that although the scales developed within each "questionnaire" (LAI, CSQ, LAI/CSQ, and PAS) are statistically independent measures (they measure different and independent characteristics of the clients), this is not necessarily true between questionnaires. Thus, for example, LAI I (Employment/Economic Stability) and CSQ III (Income/Employment Stability) measure a similar characteristic. Moreover, LAI/CSQ II (Employment/Economic Stability) is similar to these two and, in fact, is derived as a composite of items from the two questionnaires.

Five groupings of characteristics are possible, corresponding to the five composite LAI/CSQ scales. They are the following:

I. Current Quality and Frequency of Drinking

LAI/CSQ I	(-)
LAI II	(-)
CSQ VII	(+)

II. Employment/Economic Stability

LAI/CSQ II	(+)
LAI I	(+)
CSQ III	(+)

III. Current Physical Health Problems

LAI/CSQ III	(-)
LAI V	(-)
CSQ IV	(+)

IV. Social Interaction

LAI/CSQ IV	(+)
LAI IV	(+)
CSQ VI	(+)

V. Current Drinking Problems

LAI/CSQ V	(-)
LAI VI	(-)
CSQ II	(+)

The sign attached to each scale is its valence, ie., the favorable direction. Thus, a low score on the LAI/CSQ I scale suggests a lesser quantity and frequency of drinking (favorable), as does a low score on LAI II and a high score on CSQ VII. Further details are in Appendix C.

The University of South Dakota, developers of these scales, suggests that the composite scales constitute a better set of criterion measures than the comparable LAI or CSQ scales.[17] To eliminate a great detail of "duplicated" analyses, we therefore often used the composite scales as representative of the corresponding, related scales.*

2. Overall Changes. The average differences in scale scores after 6- and 12-months are shown in Table 37 and 38, respectively. These differences are listed by treatment modality, with and without chemotherapy, as well as for all clients together.

The differences in scale scores for all clients together (that is, independent of type of treatment) were tested for significance using t-tests. The majority of the scales did show a significant change after 6 months, 12 months or both. Moreover, nearly all of the changes observed were in a desirable direction, one in which an improvement of life style is suggested. Specifically, after 6 to 12 months the clients tended to drink lesser amounts of less frequently; to have a more stable employment/economic situation; to have fewer physical health problems; to be more socially interactive; to have fewer drinking problems; to have a more stable residency situation; to have fewer strange eccentric thoughts; to have less anxiety, depression and tension; to be less paranoiac; to have better emotional control; to have less hypochondriasis; and to be more calm and relaxed. One scale score (LAI III) had a significant change after 6 months in an "undesirable" direction, indicating that the clients were less likely to be married or to live with or do things with a family. Furthermore, three of the personality assessment scales that do not possess an obvious preferred direction also changed significantly. These were PAS VI, VII, and IX, and the changes suggested that after 6 to 12 months the clients had a lower self image, had more liberal moral values, and were more extroverted.

The above changes were the observed averages for all clients, without regard to the treatment modality to which they were assigned. The correlation between the 6-month and 12-month average difference scores was 0.875. Also, 19 of the 32 12-month scores suggested a tendency for the clients to revert somewhat back toward their initial scores as compared to the 6-month differences, while the other 13 indicated a continuing divergence from the initial values. In other words, for the most part the 12-month difference scores merely repeat the information that the 6-month difference scores contained. However, both sets of scores were retained and used in subsequent analyses.

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* At the time of this writing one of the composite scales (LAI/CSQ V) has been found to display some anomalous characteristics, and its development and implementation are being reviewed by USD.

TABLE 37

6-MONTH DIFFERENCE SCORES

Scale	No Chemotherapy PMT	No Chemotherapy CAP	No Chemotherapy MIN	Chemotherapy PMT	Chemotherapy CAP	Chemotherapy MIN	AVG	Overall Change Significant
LAI I	18.9	38.9	65.1	-1.1	13.5	58.5	35.8	yes
LAI II	18.0	-12.2	-2.5	-81.5	-94.3	-124.5	-16.8	yes
LAI III	-19.8	3.1	-10.6	-40.7	-1.4	1.0	-10.1	yes
LAI IV	59.8	42.3	47.4	15.9	43.3	40.5	46.3	yes
LAI V	-13.5	-5.8	-28.2	-27.7	4.1	-1.3	-14.1	no
LAI VI	-16.5	-20.9	-15.1	-38.8	-90.4	-107.5	-27.7	yes
CSQ I	17.3	5.5	-2.3	3.7	-11.8	-30.4	3.8	no
CSQ II	11.6	24.5	5.5	38.9	76.6	120.9	24.7	yes
CSQ III	19.7	45.3	56.6	16.8	7.3	73.3	37.5	yes
CSQ IV	-8.3	3.6	-6.9	24.0	9.6	38.9	1.2	no
CSQ V	19.1	8.8	13.4	19.4	22.4	64.0	16.8	yes
CSQ VI	2.9	6.6	0.8	14.5	50.1	-17.4	6.5	no
CSQ VII	10.1	26.3	9.1	82.3	115.9	103.3	30.7	yes
LAI/CSQ I	1.0	-22.6	-6.4	-100.9	-131.4	-136.4	-29.9	yes
LAI/CSQ II	15.9	34.3	62.0	-5.8	10.2	53.5	32.0	yes
LAI/CSQ III	-6.7	-12.7	-25.0	-24.0	-4.1	-32.3	-15.1	no
LAI/CSQ IV	45.6	36.2	41.2	12.9	52.8	41.7	39.4	yes
LAI/CSQ V	81.6	17.6	63.7	-35.7	7.5	23.1	45.0	yes
PAS I	-23.4	-11.4	-18.9	-1.7	5.0	-34.5	-15.8	yes
PAS II	3.6	-0.1	-11.8	-14.8	-17.4	-42.5	-5.7	no
PAS III	2.9	-3.0	25.2	38.0	21.4	1.1	10.0	no
PAS IV	-4.0	3.2	-0.4	-15.5	-14.3	-38.1	-3.9	no
PAS V	-13.0	2.8	5.5	-4.3	-16.1	-26.5	-4.0	no
PAS VI	24.2	16.7	6.1	11.3	-11.9	-30.1	12.2	yes
PAS VII	11.1	12.8	7.2	32.3	48.4	-1.5	14.1	yes
PAS VIII	-0.1	3.4	-1.9	14.6	-36.3	-10.7	-1.0	no
PAS IX	9.2	-1.7	12.5	4.7	34.3	-0.2	7.4	no
PAS X	-13.3	12.4	7.7	10.2	8.4	16.8	3.8	no
PAS XI	14.4	-13.1	5.6	-40.3	9.1	1.8	-1.1	no
PAS XII	-14.9	-15.5	-1.1	-18.5	6.9	-39.9	-11.8	yes
PAS XIII	17.3	7.7	3.1	14.3	12.6	68.7	12.7	no
PAS XIV	15.6	-7.0	26.6	13.4	33.4	10.0	11.9	no

TABLE 38

12-MONTH DIFFERENCE SCORES

Scale	No Chemotherapy PMT	CAP	MIN	Chemotherapy PMT	CAP	MIN	AVG	Overall Change Significant
LAI I	13.2	39.6	51.4	30.8	1.0	124.1	35.2	yes
LAI II	-0.1	-18.2	1.3	-20.8	-17.8	-80.3	-10.5	no
LAI III	-12.2	1.2	9.6	-32.4	22.0	25.5	-1.4	no
LAI IV	59.1	36.6	66.8	-8.7	67.7	35.8	48.8	yes
LAI V	-18.5	-16.8	-26.2	-58.1	-23.9	-37.5	-23.7	yes
LAI VI	-26.4	-24.7	0.5	-37.4	-61.8	-133.6	-25.7	yes
CSQ I	-2.7	15.7	-15.8	6.8	-124.0	-34.2	-6.5	no
CSQ II	28.4	8.0	11.1	18.9	53.3	151.4	23.1	yes
CSQ III	7.9	49.1	55.4	20.8	19.6	135.7	38.0	yes
CSQ IV	-3.4	9.7	12.5	41.6	25.3	76.0	12.0	no
CSQ V	22.2	3.7	15.0	31.5	24.3	12.4	15.4	yes
CSQ VI	2.4	-2.4	25.8	3.6	55.9	34.9	10.6	no
CSQ VII	16.2	15.4	10.8	67.6	73.7	93.6	24.1	yes
LAI/CSQ I	-11.4	-22.0	-1.8	-37.6	-57.9	-79.8	-18.8	yes
LAI/CSQ II	5.8	40.8	40.4	27.4	2.0	116.1	30.2	yes
LAI/CSQ III	-13.6	-18.1	-29.5	-55.3	-22.3	65.9	-24.2	yes
LAI/CSQ IV	49.8	29.0	63.4	1.7	78.2	38.5	44.2	yes
LAI/CSQ V	74.3	49.1	64.3	19.1	64.4	72.3	60.6	yes
PAS I	-36.0	-28.3	-48.7	-21.8	-56.9	-2.3	-35.5	yes
PAS II	-3.9	-14.7	-35.4	-24.8	-58.9	-44.9	-20.5	yes
PAS III	7.6	-0.6	12.7	-7.8	-7.5	-9.0	3.8	no
PAS IV	-6.1	-1.1	-15.6	-11.6	-31.1	-9.5	-8.6	no
PAS V	-11.9	-1.5	-4.2	-12.9	-46.3	-29.9	-9.4	no
PAS VI	11.9	11.0	-12.9	35.1	-20.5	-61.3	3.1	no
PAS VII	-0.0	-0.7	-9.0	16.6	25.9	0.5	0.2	no
PAS VIII	8.6	12.1	-3.9	51.6	-27.3	-25.4	6.7	no
PAS IX	6.1	4.8	20.5	-5.8	81.3	-1.3	11.8	yes
PAS X	4.2	10.2	22.7	1.4	61.5	30.3	14.1	yes
PAS XI	-5.4	-25.5	-12.6	-43.3	-25.5	16.5	-16.2	yes
PAS XII	-15.5	-27.9	-31.7	-43.6	-15.7	-4.0	-24.7	yes
PAS XIII	11.7	-3.6	49.2	15.6	-2.5	2.9	15.2	yes
PAS XIV	11.3	-10.6	1.3	0.9	51.1	-23.1	2.3	no

The consistency and magnitude of these changes is a most important finding. On the average the clients showed significant improvement in nearly every characteristic measured, regardless of the treatment program. Three explanations for the phenemonena can be postulated:

> Postulate 1: The process of arrest, prosecution, and conviction was in itself remedial, causing improvement in the clients whether they received further rehabilitative treatment or not.
>
> Postulate 2: The clients "learned" how to take the tests, so that they scored better on them the second and third times than they did initially.
>
> Postulate 3: At that time period in their lives when the clients completed the initial interviews, which was typically within a few months of their arrest and within a few days of their conviction, they were temporarily faced with many problems, and therefore, scored more poorly on the tests than they would score at other times.

Postulate 2 is probably the least likely of the three. Taken together, the batery of tests is sufficiently long that it is doubtful whether much of significance can be remembered by the clients after a 6 month lapse. Moreover, it seems unlikely that persons in the Minimum Exposure group would have "learned" how to get better scores just as well as those exposed to the more intensive treatment programs. Finally, there was little difference between the 6-month and 12-month testing intervals, suggesting that if they had "learned" how to give better answers after the first exposure, they didn't learn anything more with a second exposure. For these reasons, we tend to believe that either postulate 1 or postulate 3 prevails.

3. Treatment Modality Differences: Three-way analyses of variance of the data in Tables 37 and 38 were executed, and 6 x 32 pairwise t-tests were performed comparing these 6- and 12-month differences, to determine whether the changes were consistent at the two time intervals, or whether the effects seemed to differ at these two times. The analyses of variance could detect effects of the treatment modality, the presence or absence of chemotherapy, or interactions between treatment and chemotherapy. Of the total set of analyses (64), only two treatment modality effects were found (at $p < 0.05$). These are the following.

At the 6-month interval, but not at the 12-month interval, a significant difference was found between treatment modalities for LAI III (family status or marriedness). As seen in Table 37, clearance in PMT declined far more than average on this scale suggesting the undesirable trait that they became less likely to be married or to live and do things

with a family. The other effect was observed after 12 months, but not after 6 months. It involved a significant difference between treatment modalities for scale CSQ III (income/employment stability). Although clients in general showed an improvement in this characteristic, those assigned to PMT tended to show substantially less improvement (see Table 38).

There were several scales which showed a significant difference after a 6- or 12-month time period between the chemotherapy and the non-chemotherapy clients. These findings suggest two major differences. First, chemotherapy clients improved more than the nonchemotherapy clients on the three measures relating to current drinking patterns. The composite score, LAI/CSQ I, showed significant differences after 6 and 12 months, as did the related CSQ VII scale, and the LAI I scale showed this difference after 6 months. (It showed the same direction of change at 12 months, but it was not significant.) The other difference was in current drinking problems, where again the chemotherapy clients showed a stronger improvement than the nonchemotherapy clients. The composit scale, LAI/CSQ V, showed this effect to be significant at both the 6- and 12-month intervals, whereas the related scales, LAI VI and CSQ II, showed them to be significant at 6-months but not at 12 months. The only other significant differences related to chemotherapy were after 12 months, and were related to the scales CSQ I and CSQ IV (see Table 38 for the differences).

Among the 64 analyses, six statistical interactions were found between chemotherapy and the treatment modality. After 6 months only scale PAS XIV showed such an effect. For the 12-month interval, five scales showed a statistical interaction: LAI VI, CSQ I, CSQ II, LAI/CSQ IV, and PAS IX. These effects may be understood by reference to Tables 37 and 38.

4. Client traits as covariates: This stage of the analysis was designed to determine whether treatment modality differences could be explained (or discovered) in terms of differences in the traits of their clients. The first step involved two-way analyses of variance. The dependent variables were the difference scores to be examined, while the factors were the treatment modality (PMT, CAP, or Minimum Exposure, with chemotherapy clients eliminated) and one of a number of client traits expressed as a categorical variable.

To keep the number of analyses within manageable bounds, decisions had to be made concerning which scores and which traits to examine. We initially included 16 scores and 19 traits (304 analyses). The 16 scores actually involved eight scales, using the 6-month and 12-month differences. Two of the scales selected were LAI III (family status) and CSQ III (income/employment stability), the only two scales that demonstrated a significant treatment affect. To these two were added the three scales dealing

with current drinking pattern (LAI II, CSQ VII, LAI/CSQ I), and the three scales dealing with drinking problems (LAI VI, CSQ II, LAI/CSQ V). These scales were selected because they bear the most direct relationship to the kinds of life style changes that the treatment modalities attempted to bring about; the remaining LAI and CSQ scales, although they may indicate desirable changes, are only remotely related to drinking, and the personality change scales appear to be even less directly connected.

The relationships of interest in these two-way analyses of variance are the statistical interactions between treatment modalities and client traits. The traits examined were: age, race, education, income, marital status, number of times married, occupation, religion, drinker classification, Mortimer-Filkins score, arrest BAC, prior DUI arrest, prior hazardous or reckless driving arrests, prior other traffic offense arrests, prior property crime or assault/battery arrests, prior public intoxication arrests, prior other criminal offense arrests, prior accidents, and prior alcohol-related treatment entries.

A complete listing of all significant statistical interactions found in the 304 analyses is shown in Table 39, together with the level of significance of the statistical interaction (the table was constructed for $p < 0.05$). Note that there are relatively few significant interactions, and among those few, almost none were significant at both the 6- and 12-month intervals. In fact, there were only four that retained significance at both time intervals, and all four involved scales measuring drinking problems. The four interactions are:

- LAI VI : modality x "tickets"
- LAI VI : modality x public intoxication arrests
- CSQ II : modality x income
- LAI/CSQ V: modality x Mortimer-Filkins score

These four interactions were studied further using an analysis of covariance approach. In this approach, we first determined the regression lines for the appropriate difference score versus the related trait for each of the three treatment modalities separately, and for all clients combined. The sets of regression results then allowed an analysis of covariance to be performed as follows:

1. Is the overall slope (β) significant?

2. Are the group slopes (β_i, $i = 1, 2, 3$) equal?

3. If the modality slopes are not homogeneous, which ones are different from one another?

In other words, the analysis of covariance proceeds analogously to an analysis of variance, except that the "relationship" (slope) between the response and the covariate is examined between groups rather than the mean value of the response. The results of the analysis are described below.

TABLE 39

SIGNIFICANT MODALITY x TRAIT INTERACTIONS ON SCALE SCORES[a]

Scale	Trait	6-Months	12-Months
CSQ III	Race	0.018	--
	Education	--	0.011
	Prior A/R Treatments	0.008	--
LAI III	Income	0.032	--
	Marital Status	--	0.042
	"Other" Criminal Arrests	--	0.008
LAI II	(None)		
LAI VI	Education	0.035	--
	M-F Score	0.007	--
	BAC	--	0.034
	"Tickets"	0.046	0.047
	"Crimes"	0.038	--
	Public Intoxication Arrests	0.019	0.031
CSQ II	Income	0.031	0.046
	M-F Score	--	0.022
CSQ VII	(None)		
LAI/CSQ I	(None)		
LAI/CSQ V	Income	0.036	--
	Occupation	--	0.043
	M-F Score	0.085	0.014

a/ Entries are levels of significance.

In general, persons with a larger number of prior tickets or reckless driving or other hazardous moving violations tended to have slightly more drinking problems after 6 months than persons with fewer tickets as measured by scale LAI VI, although the overall slope was not significant (β = 0.82, p = 0.40). However, CAP clients with more tickets got worse in 6 months on this scale to a nearly significant degree (β = 8.34, p = 0.05) whereas those in the minimum exposure group tended to improve (β = -7.14, p = 0.07). PMT clients fell between these extremes. After 12 months, however, these differences disappeared.

PMT and CAP each appeared to produce a more desirable change according to the LAI VI scale than the minimum exposure group, at both the 6- and 12-month intervals, for persons with more prior public intoxication arrests. This effect was particularly noticable for the minimum exposure clients after 12 months, whose LAI VI scores tended to increase (get worse) by an average of 109 points, or over one standard deviation, for every prior public intoxication arrest, whereas similar clients in CAP and PMT tended to improve by 13 points and 3 points, respectively.

The LAI/CSQ V difference scores also designed to measure current drinking problems, are negatively correlated to income for all clients, regardless of the treatment modality. That is, persons with higher incomes tended to improve (have fewer drinking problems) with time more than persons with lower incomes. Further there appears to be slight modality differences at both 6 and 12 months, but in reverse directions. Thus, it is concluded that this particular interaction is not real.

There is no overall correlation between the LAI/CSQ V difference scores and the initial Mortimer-Filkins scores, but there is some marginal evidence that PMT subjects showed a positive association (β = 2.2 at 6 months, and 5.2 at 12 months) while CAP clients exhibited a negative correlation (β = -2.4 at 6 months and -1.4 at 12 months). Thus, persons with higher Mortimer-Filkins scores tended to do better, as measured by this scale, if they were assigned to CAP, while persons with lower Mortimer-Filkins scores did better if assigned to PMT. There is no evidence of any correlation between this scale and Mortimer-Filkins score for persons placed in the minimum exposure group.

5. Initial scale scores as covariates: The initial step in this sequence of analyses was to perform a series of regression analyses to look for significant correlations between selected 12-month difference scores and the entire set of 32 initial scores. The difference scores selected were the same as employed in the above analyses: LAI III and CSQ III, the two scales that showed a significant treatment modality effect; LAI II, CSQ VII, and LAI/CSQ I, the three scales that measure the quantity and frequency of drinking; and LAI VI, CSQ II, and LAI/CSQ V, the three scales

that measure current drinking problems. These 256 regression analyses were performed using the combined data from the clients for all three treatment modalities (PMT, CAP, and Minimum Exposure) who were not on chemotherapy.

A large number of significant correlations were found. First of all, every one of the eight difference scores was very highly, and negatively, correlated with its initial value ($p < 0.00001$). The negative correlation means that persons with initially high scores tended to get lower scores 12 months later, and vice versa. Thus, there was a very remarkable and consistent pattern of a regression to the mean, wherein persons who initially reflected having the most severe problems tended to improve the most, and people with the least severe problems tended to stay the same or get worse.

The next sequence of significant correlations noted were between the difference scores and the related, but different, initial scales. For example, the LAI/CSQ I difference score was negatively correlated with the LAI II initial score, but these two scales are both measures of the quantity or frequency of drinking. An examination of the correlations showed that nearly every pair of such related scales was correlated with a high degree of significance ($p < 0.00001$) and that all of these correlations were in the negative, or regression-to-the-mean sense.

There were a few other correlations that were significant at this same level ($p < 0.00001$). The three initial scales that measure the degree of social interaction (LAI IV, CSQ VI, and LAI/CSQ IV) were all highly correlated with the LAI/CSQ V 12-month difference score. The sense of the correlation was such that, clients who were initially the most socially interactive or socially involved were the most likely to have an increased number or severity of drinking problems 12 months later, whereas those who were less socially involved tended to improve more, according to this scale. The other two correlations significant at this level were between LAI/CSQ V difference score and the CSQ V and PAS IX initial scores (persons with more initial residential stability, and persons who were initially more introverted tended to improve most as regards drinking problems).

Finally, there were four other correlations found, although at a lower level of significance ($p < 0.01$). The initial PAS III scores were correlated with the difference scores measured by the LAI II and LAI/CSQ I scales, both of which suggest that persons who initially tended to be more suspicious and less trusting showed the greatest likelyhood of a decrease in the reported quantity and frequency of drinking. Also, people most likely to have phobias and fears (PAS V) were also most likely to reduce their quantity and frequency of drinking. Finally, persons who initially tended to drink more frequently or in larger quantities (LAI/CSQ I) showed the greatest improvement in the level of their drinking problems (LAI VI).

Thus, of the 256 comparisons, only six relationships between scales or related scales were found to be significant, other than the correlations between a difference measurement and an initial measurement of the same or related scale. Nevertheless, for the next step in the analysis, all variables were retained that showed any promise of being related significantly to a modality through an interaction with an initial scale score, even though there was no highly significant relationship overall. That is, variables were retained if they were correlated to anything, even at a level as low as $p = 0.1$, in hopes of discovering a group effect that could be explained or detected on the basis of initial scale scores. Specifically, we retained LAI III and CSQ III as difference scores to be analyzed, even though neither showed any significant overall correlation with any initial score other than itself simply because both exhibited a treatment modality effect (without consideration of covariates). We also retained the composite scores, LAI/CSQ I and LAI/CSQ V, as representative of all six drinking- or drinking-problem-related difference scores. As covariates, we retained 16 of the 32 initial scores, namely LAI III, CSQ I, CSQ V, LAI/CSQ I, LAI/CSQ II, LAI/CSQ III, LAI/CSQ IV, LAI/CSQ V, PAS III, PAS IV, PAS V, PAS VI, PAS IX, PAS XI, PAS XIII, PAS XIV. The analysis of covariance was carried out through sets of regression analyses, the same as when the client traits were used as covariates. Of the 256 regressions thus computed, only the significant results will be discussed below.

a. Changes in family status, LAI III versus LAI/CSQ IV: In general, LAI III difference scores are negatively correlated to LAI/CSQ IV initial scores ($\beta = -0.1230$). However, this is not true for PMT clients ($\beta_1 = 0.0589$). The CAP and Minimum Exposure slopes are indistinguishable ($\beta_2 = -0.1400$, $\beta_3 = -0.0974$). Thus, socially interactive people did better in PMT than elsewhere, as measured by changes in family status.

No other treatment modality are significantly related to changes in family status.

b. Changes in employment/economic stability, CSQ III versus LAI/CSQ II: The subjects in general exhibit a negative correlation between CSQ IV difference score and initial LAI/CSQ II ($\beta = -0.3692$). However, the correlation for PMT people is weaker than this ($\beta_1 = -0.1214$). The CAP and Minimum Exposure subjects are indistinguishable ($\beta_2 = -0.3846$, $\beta_3 = -0.3840$). Thus, persons who drank most frequently (or in greatest amount) were more likely to do better in PMT than in the other groups as measured by changes in employment/economic stability, and persons who drank less were better off not in PMT.

CSQ III versus PAS VI: The slope overall is not significant (β = 0.0730, p = 0.19); but the three modality slopes are all distinct:

PMT = No correlation (β_1 = 0.0479)

CAP = Positive correlation (β_2 = 0.3836)

Minimum Exposure = Negative correlation (β_3 = -0.2340).

Thus, insecure persons did best in CAP, and confident persons in Minimum Exposure, as measured by changes in employment and economic stability. No other treatment modality regressions are significantly related to this measure.

c. Changes in drinking quantity/frequency, LAI/CSQ I versus CSQ I: All three groups are distinguishable, with

PMT: No relationship (β_1 = -0.0043)

CAP: Negative relationship (β_2 = -0.4424)

Minimum Exposure: More negative relationship (β_3 = -0.7102).

Thus, people with more marital problems did best in Minimum Exposure, and worst in PMT, as measured by changes in drinking quantity/frequency.

LAI/CSQ I versus PAS III: In general, there is a positive connection between LAI/CSQ I difference care and initial PAS III (β = 0.1460). The CAP subjects exhibit less of such an association (β_2 = 0.2819, β_3 = 0.3024). Thus, suspicious persons did better in PMT or Minimum Exposure, and trustful people in CAP, as measured by changes in drinking quantity/frequency.

LAI/CSQ I versus PAS V: These results are analogous to (but with different meaning than) the PAS III data, except that all the slopes are negative (β = -0.1176). The PMT and Minimum Exposure groups are equal (β_1 = -0.2148, β_3 = -0.2651), but the CAP subjects exhibit no particular correlation (β_2 = -0.0579). Thus, clients exhibiting most phobias do better in PMT or Minimum Exposure and those with least phobias in CAP, as measured by changes in drinking quantity/frequency.

No other treatment modality regressions are significant as related to changes in drinking quantity/frequency.

d. Changes in severity of drinking problems, LAI/CSQ V versus LAI/CSQ II: The generally negative relationship between LAI/CSQ V difference score and initial LAI/CSQ II (β = -0.1122) arises only due to

PMT people (β_1 = -0.3751). In the other two groups, there is no apparent connection between the two variables (β_2 = -0.0179, β_3 = 0.0767). Thus, persons who drink the most in frequency or quantity did best in PMT, as measured by changes in severity of drinking problems.

LAI/CSQ V versus LAI/CSQ IV: There is a positive association between LAI/CSQ V difference score and initial LAI/CSQ IV (β = 0.1372); but the relationship is less positive or absent for CAP clients (β_2 = 0.1384) than for the other two groups (β_1 = 0.3840, β_3 = 0.3340). Thus, the more sociable persons did better in PMT or Minimum Exposure, and the less sociable persons in CAP, as measured by changes in severity of drinking problems.

LAI/CSQ V versus PAS VI: There is no LAI/CSQ V - PAS VI correlation for CAP clients (β_2 = 0.0914), but LAI/CSQ V difference scores are negatively related to the initial PAS VI values for the other modalities (β_1 = 0.4134, β_3 = -0.2546). Thus, insecure persons did best in PMT, and confident persons in CAP, as measured by changes in severity of drinking problems.

LAI/CSQ V versus PAS IX: PMT clients have a more positive association between LAI/CSQ V difference scores and initial PAS IX values (β_1 = 0.3467) than do the other two groups (β_2 = 0.2623, β_3 = 0.2525). Thus, extroverts tended to be best in PMT, and introverts in CAP or Minimum Exposure, as measured by changes in severity of drinking problems.

LAI/CSQ V versus PAS XIII: All three groups are distinguishable:

$$\beta_1 = 0.3934$$

$$\beta_2 = -0.1884$$

$$\beta_3 = 0.1336$$

Thus, calm persons did better in CAP and anxious people, who tend to act out their aggressions, in PMT as measured by changes in severity of drinking problems.

LAI/CSQ V versus PAS XIV: PMT clients show a significant negative correlation between LAI/CSQ V difference scores and initial PAS XIV values (β_1 = -0.3359). The other groups are not distinguishable from zero (β_2 = -0.1748, β_3 = -0.0565). Thus, rather insensitive people did better in PMT, and sensitive people in CAP or Minimum Exposure, as measured by changes in severity of drinking problems.

No other treatment modality regressions are significant as related to changes in severity of drinking problems.

Although any or all of the above relationships may be useful in yielding insight into treatment effects, it should be emphasized that, quantitatively, the correlations are all quite low. Only one correlation (CSQ III difference score versus initial LAI/CSQ II) is of sufficient magnitude to explain more than 5% of the variation in the scores. Thus, from a quantitative standpoint, the score covariates do not go very far toward explaining variability in response (changes) among the clients.

VII. DISCUSSION AND CONCLUSIONS

A. Identification

Three drinker types were defined in Kansas City: Problem drinking drivers (PDD), social drinking drivers (SDD), and unknown. The latter group generally resulted because of the lack of enough information to make a PDD/SDD determination.

The screening process, which was based on the Kansas City ASAP Data System, was able to make definite classification decisions on slightly over half of all persons arrested. These preliminary identifications classified about 30% of the subjects as PDDs and about 20% as SDDs, with the remainder being unclassified.

The final classification, which took advantage of the Mortimer-Filkins diagnostic questionnaire as well as the information used in the preliminary classifications, resulted in definite PDD/SDD determinations for about 90% of all persons arrested. Forty percent were classified as PDDs and 50% as SDDs. These final classifications could have been used by the court in making treatment referrals, although more frequently the referrals were made on the basis of the preliminary (screening) identifications.

Subsequent accident rates and, more convincingly, subsequent DUI arrest rates confirmed the basic validity of the identification process. Although subsequent accident rates between the groups did not differ substantially during the first year or two after the index arrest, after 4 years they were distinctly different. During this period persons classified as PDDs were involved in 61 accidents per 100 persons, compared with rates of 47 per 100 persons for SDDs and 40 accidents per 100 persons with unknown classification.

Recidivism rates differed more dramatically, and differed consistently even for observation periods as short as 1 year or less. After 4 years, 36% of all PDDs had been rearrested for DUI at least once. This compares with 20% of those classified as SDDs and 24% of those with unknown classifications.

Overall, the classification process worked quite well and, because of its low cost, was very cost effective.[2/] However, the criteria on which the classifications are based are clearly not foolproof. They assume that complete and up-to-date prior histories are available, which is often not the case--even in Kansas City. Moreover, problem drinkers may not always exhibit problem drinking criteria. For example, a problem drinker must have a first DUI arrest, and a problem drinker may be arrested

with a BAC below 0.15. Information on problem drinker profile characteristics bears these statements out. Such data has been presented in great detail, for example, in earlier annual reports.[4,5,6,7] Nevertheless, the classification process (which is really a screening process) is relatively inexpensive and it properly identifies most problem drinkers (assuming the basic criteria are accepted), making it a valuable and efficient component of the ASAP system.

B. Recommendations and Referrals

Nearly 80% of all persons convicted as a result of a DUI arrest were referred to ASAP* in 1976, indicating excellent acceptance of the program by the court. Within drinker classifications, 80% of all PDDs, 85% of all SDDs, and 40% of those with unknown classification were referred to ASAP. The low referral rate of unknowns to ASAP was not directly related to the fact of their unknown classification. Rather, because some persons were not refered to ASAP, they were less likely to have records and other data sufficient to make a definite classification.

By the fifth year of the project, most persons identified and classified as PDDs were being referred to CAP (and/or STP). About 10 to 15% however were referred to SASL, the educational program designed for social drinkers, not problem drinkers.

The large marjority of SDDs were referred, as planned, to SASL (as were the majority of all ASAP referrals among persons with unknown classifications). Some of them, however, were referred to problem drinker treatment modalities--most notably CAP. (Subsequent arrest rates indicate that such persons tended more frequently to be PDDs than SDDs, perhaps because of problem drinker indicators known to the court although not a part of their formal records.)

Within the ASAP plan was a control group, designed on a random referral basis. Approximately 20% of all persons convicted were recommended, on a random basis, to be referred to this group, to facilitate valid evaluation of treatment effectiveness. Actual referrals were greatly disparate with these recommendations, however. For example, less than half of those who were recommended for the control group were actually referred to it. Further, over 40% of those who were referred to the control group had been recommended for a treatment program. Also, referral percentages differed by drinker classification, with 1976 values (which reflected great improvements over referrals of the prior 2 years) being 14%, 24%, and 18% for PDDs, SDDs, and unknowns, respectively. Thus, the control group was largely a selected group, and not a random group; as such, the usefulness of this group for evaluation purposes was destroyed.

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* Any of the ASAP programs, including rehabilitation, ASAP probation, or control group.

Considering the various treatment programs themselves, tremendous changes in their activities occurred over the 5-year period. SASL generally handled the largest case load of any modality, except that referrals to that program declined in 1975 and again in 1976, as a percentage of all referrals. On the other hand, CAP referrals increased consistently throughout the 5 years and, in combination with the STR referrals, closely approached the caseloads of SASL.

Chemotherapy was never used as extensively as originally conceived, and never were more than 10% of all convicted persons referred to this program. Over the last 2 years, referrals droppped off to as low as 3 to 4% of those convicted.

The ASAP probation caseload increased tremendously during the first 2 years, as was predicted. As a result, the originally proposed probation concept was abandoned and the operation reorganized to better cope with case loads approaching 6,000. During the last 2 years the case load declined somewhat. Also during the last 2 years, the probation office was more apt to seek probation revocations (there were 2-1/2 times as many in 1976 as in 1974).

Other treatment programs that were part of the initial ASAP were abandoned part way through the 5-year period for a variety of reasons. SASS, a small group, short-term program combining education and group counseling designed for problem drinkers, was abandoned after 3 years because of its relatively high costs and lack of effectiveness. A one-to-once counseling program conducted by probation officers was dropped even earlier because of case load problems and because the program was quickly shown to be ineffective.

C. Treatment Modality Program Effectiveness

The major measure of effectiveness used in Kansas City was the incidence of rearrest for DUI. Secondarily, subsequent accident rates were examined. The latter will be discussed first.

Among PDDs, SASL was consistently the least effective program in reducing subsequent accident rates. These clients were involved in 2-3 more accidents per 100 drivers per year than those in other programs. The best subsequent accident records were achieved by problem drinkers assigned to SASS and one-to-one counseling. However, we do not put much faith in these differences because assignment was not random. If there had been a true random assignment, then each modality would have had the same cross section of types of clients. Because assignments were not random, there are known differences between the clients which were not accounted for in the analyses. Furthermore, no information is available on differences

between the clients' subsequent driver license status and, more importantly, their subsequent driving frequencies and amounts. It may well be that persons assigned to SASS and one-to-one counseling did substantially less subsequent driving than those assigned to SASL. This fact, alone, could more than account for the difference in subsequent accident rates.

A similar situation, although not as extreme, prevails for SDDs. SASL clients had marginally poorer subsequent accident rates for the first year (1-2 more accidents per 100 drivers per year). This numerical difference prevailed over longer time periods, but was not statistically significant.

Recidivism (rearrest) rates appear to be more valid indicators (although certainly not perfect) of program success or failure. Perhaps the major imperfections in this measure are the low probability of drunk drivers being arrested in general, and the differences in arrest rates in various parts of the community.[18]

Among problem drinkers, the recidivism rates varied greatly among the five treatment modalities used. One-to-one counseling had by far the least success, with a 27.4% 1-year recidivism rate. The best of the treatment modalities was CAP, with a 15.3% 1-year recidivism rate. Among persons classified as SDDs, those assigned to chemotherapy performed the poorest (35.2% 1-year recidivism rate), and those assigned to SASL did the best (8.4% 1-year recidivism rate).

Another way of viewing the recidivism rates is to adjust the observed rates in each modality to try to account for differences in characteristics of their clients. This tends to approximate the results that would have prevailed if random assignment had been carried out. After adjustment for all factors considered (which included prior arrest history, Mortimer-Filkins score, arrest BAC, age, race, and income), the following adjusted recidivism rates (1-year) were found:

- SASL - 12.3%
- CAP - 12.4%
- "Random" control group - 13.0%
- Punitive sanctions only - 14.9%
- SASS - 19.6%
- Chemotherapy - 19.1%
- ASAP Probation only - 24.4%

(The latter group consists of persons assigned to ASAP Probation but not placed in any treatment program or in the "random" control group.) These are our best estimates of the overall effectivness of each modality for a truly random cross section of all ASAP clients. The one-to-one counseling

modality was not included in the particular analysis from which the above results were obtained, but other analyses indicate that it rates well below ASAP Probation.

From the above, it is obvious that the two best treatment programs are SASL and CAP, the two most widely used programs at the end of the project. However, the numerical improvement attributable to these programs is not large. The 1-year recidivism rates (adjusted) are only 1 to 2 percent better than those of clients in the control group or receiving the more traditional, punitive-only sanctions. Further, it appears that the poorer treatment programs can result in more recidivism than punitive sanctions only.

D. Guidelines for Future Referrals

Recidivism rates were found to depend not only upon the treatment program, but on the traits of the clients at the time of their conviction. In other words, some persons could be predicted, initially, to be more likely to be rearrested than others, regardless of subsequent treatment. These predictors are listed below, with the most dominant given first.

- One or more prior DUI convictions
- High Mortimer-Filkins score
- High arrest BAC
- Low income
- Age between 30 and 49
- Race other than white
- Residence in Kansas City

Not only do the above factors have an overall effect, but to some extent the importance of these factors varies between treatment modalities. As a result, some treatment modalities are differentially better for clients possessing certain characteristics. For example, persons with a prior DUI conviction history are probably better referred to CAP than to any other program, if recidivism is used as the measure of effectiveness. Likewise, persons with high Mortimer-Filkins scores appear to do better at CAP, although young persons (under 30) should probably be referred elsewhere. Persons with low Mortimer-Filkins scores were least likely to do well when given only punitive sanctions; some type of treatment program was better than none. Likewise, older persons (50 and above) who were placed in the "random" control group did the poorest, and a treatment program would be preferred.

Finally, each of the treatment programs can be examined and compared with the others according to its effectiveness for persons with individual profile characteristics. The key findings are given below.

SASL--not outstandingly good or bad for any particular characteristic, but yields better than average survival rate for all characteristics. Relatively better for persons in moderate income category than for those of higher or lower income.

CAP--the most effective modality for persons with one or more prior convictions, for persons with very high M-F scores, and for persons in the lower income range. Also moderately effective for those with very low M-F scores.

One-to-One Counseling--overall the least effective modality, but fairly successful for persons with low M-F scores (based on a small sample).

Chemotherapy--overall not particularly effective, but did relatively better with older clients and those with moderate to very high M-F scores.

ASAP Probation Only--no significant relationships, and generally less effective than average.

SASS--no significant relationships, and generally less effective than average.

Punitive Sanctions Only--generally more effective than average, except for the low income group. Most clients (91%) did not take the M-F test; those who did faired far worse than average, regardless of the score! This represents a bias to be examined in future analyses.

E. Short Term Rehabilitation

1. Program operation: The STR program, by design, randomly referred persons to one of three treatment modalities--PMT, CAP, and a Minimum Exposure control group. After rather exhaustive statistical testing of the client referrals, it appears that the random assignment process was highly successful in achieving a balance of client characteristics between these groups. Examination of 2 dozen client traits, as well as 32 scales derived from a battery of tests given to each client, only a few differences were noted, and they could well have occurred purely by chance. There is a slight preponderance of clients at CAP who had a few indications of more

severe drinking problems. That is, CAP clients were somewhat more likely to have higher Mortimer-Filkins scores, to have had more prior entries into an alcohol-related treatment program, to have somewhat more varied or severe drinking problems, and to have less emotional control (to be more easily angered). No other trait or scale score exhibited any significant difference between treatment modalities.

Superimposed on this random assignment structure was the possibility of a (nonrandom) referral to chemotherapy, in addition to the random referral. Examination of the traits and test scores of the clients showed that in almost every respect, the chemotherapy clients differed greatly from those not assigned to chemotherapy. In balance, the differences suggested that the objective of an assignment to chemotherapy had been fulfilled, in that such persons did possess consistently more severe and more involved problems.

By intent, all STR clients should be identified problem drinker drivers. Analysis of available records indicates that the majority are. Of those for whom breath tests were made at time of arrest, 85% had blood alcohol concentrations indicative of problem drinking; 62% had at least one prior alcohol-related conviction, 42% were known to the probation office because of alcohol-related problems, and 21% had Mortimer-Filkins (MF) test scores indicative of problem drinking.

The formal process of making drinker driver identifications in Kansas City requires, in effect, two or more of the above indicators. Applying this process to the clients, using the available records, only 63.6% of them can be formally classed as problem drinkers. Only one indicator was found for 32.8%, and 3.6% possessed none.

The follow-up interview process used in the STR program appears to have operated successfully. At the 6-month interval, 76.2% of all clients were contacted and completed the follow-up interview process. At 12 months, 67.5% were successfully completed and, to date, 63.6% have completed their 18-month follow-up interviews. Analysis of the persons who did or did not complete their follow-up interviews showed that there was no difference in the completion rates by modality or by whether or not they were assigned to chemotherapy. Moreover, there was no differential that could be accounted for by employment status or by any of a number of client traits examined with the exception of age. Young clients (under 30) were somewhat less likely to complete their follow-up interviews than others.

2. Treatment modality effectiveness: Treatment modality effectiveness can be judged on the basis of several measures. The most direct (and most important for this, a traffic safety, program) is subsequent crash involvement. Other measures, which are successively further removed from the ultimate project objective--to reduce alcohol-related accidents--

are subsequent arrests for DUI, subsequent arrests for offenses and violations other than DUI, and subsequent changes in life style. The relative effectiveness of the STR treatment programs according to these measures are described below, both for the three treatment modalities without chemotherapy as well as, in some instances, the addition or absence of chemotherapy.

a. Crashes: Only 19 crashes in total were recorded in 1 year for the 437 STR clients, a data base too small to enable any comparisons. Further study is needed to determine why so few accidents were recorded in the STR data system.

b. DUI rearrests: The 1-year recidivism rates for PMT, CAP, and the Minimum Exposure control group were 14.8%, 15.5% and 13.6%, respectively. From a statistical viewpoint, these rates are essentially identical--they cannot be distinguished. Persons referred to chemotherapy had an average recidivism rate that was slightly, but not significantly, higher (19%). However, this was based on a very small sample--only 18 chemotherapy clients were rearrested.

c. Other arrests: There were no significant differences between clients in the three treatment modalities, and between clients in chemotherapy versus those not in chemotherapy, that were reflected in subsequent arrests of any type.

d. Life style changes: As many as 32 scales of life style changes were examined, although some of them measured similar characteristics. Changes were calculated for each individual after 6 months and again after 12 months of assignment to STR. None of the 32 scales showed a significant difference between treatment modalities at both the 6-month and 12-month intervals. At the 6-month interval only, clients assigned to PMT faired somewhat worse than others regarding the scale that measures change in "marriedness" or the extent to which the individual tended to live with or do things with a family group. At the 12-month interval only, clients assigned to PMT tended to show less improvement in scales measuring income or employment stability.

Many of the scales showed a greater life style improvement in clients placed in chemotherapy than those not placed in chemotherapy. However, these same scales showed that the chemotherapy clients consistently scored much lower initially, so (presumably) they had more room for improvement.

3. Overall effects and predictors of success/failure: The most startling and pervasive overall effect observed was the improvement (sometimes substantial) in the life styles of the clients as measured by nearly every scale score, independent of treatment modality. This is probably either because, at the time of arrest, the clients were at an abnormally

stressful period in their lives, and therefore scored unusually poorly on the tests, or the very process of arrest, prosecution and adjudication had a remedial effect independent of the subsequent referral and treatment modality.

The overall improvements were not uniform among individuals, however. There was also a pervasive finding, that was in all cases extremely significant, that the clients with the lowest rating in any particular scale tended to improve the most on the scale, while those with the highest ratings tended to remain unchanged or to worsen somewhat.

Several initial traits (and scale scores) were observed to have some power of prediction of subsequent changes in the clients, independent of the treatment modality referral. However, the selection of a "predictor" depends upon the measure of success or failure to be applied. If DUI recidivism is to be the measure, then most of the traits discussed previously, such as multiple prior arrests, high Mortimer-Filkins scores, etc., are also useful predictors within the STR program. In addition, it was found that persons exhibiting relatively high amounts of paranoia (suspiciousness) or who were unusually emotional or easily angered had a higher than average likelihood of becoming recidivists.

If improvement in the severity of drinking problems is to be a measure of success, then on the average, more improvement can be expected of persons who are initially more introverted, or who are less socially active or involved, or who have more residential stability, or who drink more frequently or in greater quantities!

Finally, if the measure of success is a reduction in the quantity and/or frequency of drinking, then the best predictors are personality assessment scales relating to phobias and to projection of attributes. Persons who have the most phobias and fears, and persons who tend to be the most suspicious and least trusting of others, are likely to improve the most according to this measure.

4. Guides for future referrals: Analyses which considered the interactive effects on subsequent behavior between client traits or initial scale scores and treatment modality suggest a number of guidelines to optimize the treatment assignment. The optimization, however, depends somewhat on the measure of success to be employed, in the same fashion that overall predictors of success or failure depend on the measure employed.

If DUI recidivism is the measure, then two guidelines were developed. Clients with multiple (more than one) prior DUI convictions are more likely to do better in a treatment program (either PMT or CAP) than in the Minimum Exposure group. This same differentiation does not appear to apply for persons

with just one prior DUI conviction or with none. Also, persons with average or fewer than average health problems are more likely to do better in a treatment modality (either PMT or CAP) than in a Minimum Exposure group. Persons with more health problems may do as well without a rehabilitation program, according to the data available, although more study of this issue is suggested.

If the desired improvement is a reduction in the severity of drinking problems then many guidelines can be suggested, based upon the statistical analyses conducted. These are simply listed below:

- Persons with a record of public intoxication arrests are better placed in PMT or CAP than in a control group.

- Persons with a bad driving record, as reflected by many traffic tickets for reckless driving or other hazardous violations, apparently do as well without a rehabilitation program, although persons with good driving records do better at CAP.

- Persons with high Mortimer-Filkins scores should be referred to CAP, and those with low scores to PMT.

- Clients who drink more frequently or in greater quantity than average do better in PMT.

- Clients who tend to be more socially active than average tend to do better in PMT or in the Minimum Exposure group.

- Clients who exhibit symptoms of insecurity tend to do better in PMT, while those who are more self confident do better at CAP.

- Clients who tend toward extroversion, as opposed to introversion, tend to do better in PMT.

- Persons expressing more than average anxiety and who tend to act out their aggressions do better in PMT.

- Persons who seem to be less sensitive than average tend to do better in PMT.

If the measure of success is to be a reduction in the quantity and/or frequency of drinking, then the following guidelines apply:

- Clients who seem to have more than the average marital problems tend to be better in the control group and worst with PMT.

- Unusually suspicious persons tend to do better in PMT or in the Minimum Exposure control group, whereas more trustful people are better assigned to CAP.

- Persons with abnormal phobias and fears tend to do best in PMT or the Minimum Exposure control group.

If the measure of success is a more stable employment or economic situation, then the following guidelines are suggested:

- Clients who tend to drink more frequently or in greater quantity than average tend to do better in PMT.

- Persons who exhibit above average insecurity and indecisiveness tend to do better in CAP, whereas self confident persons tend to do better in the Minimum Exposure group.

If the measure of success is to be an improvement in family status (more family activities) then persons who are more socially active than normal do better in PMT.

All of the above suggestions are based on findings which exhibit a reasonable statistical significance. However, none of them are likely to result in very drastic changes in people in general. The guideline that was most discriminating resulted in only a 5% decrease in the variability in the outcome of the measured parameter.

F. Conclusions

1. Rehabilitation, or behavior modification, of convicted drunk drivers so that they will discontinue drinking and driving was the most difficult task faced by the Kansas City ASAP, the most difficult facet to evaluate, and the most elusive to prove effective.

2. A court-ordered rehabilitation program, to have any chance of success, must be backed up by a strong effort by the court and/or a probation agency to keep the clients in the program.

3. All rehabilitation programs are not equally suitable for everyone, so a screening or diagnostic activity is necessary as a prerequisite to informed referral.

4. Kansas City's Pretrial Screening Report and its backup Data System was a highly efficient and effective means of screening and classifying over half of all persons arrested; and in combination with the Mortimer-Filkins Questionnaire, about 90% could be classified according to level of drinking problems.

5. Although much improvement was noted, the court still often referred people with severe drinking problems to inappropriate treatment programs because insufficient information was available at the time of referral.

6. The court at times apparently had information other than that in the Data System, which enabled it to improve upon the preliminary diagnosis.

7. The "random" control group concept designed to enable scientifically valid evaluation of treatment program effectiveness was not adhered to, the group was actually highly selective, and the evaluation was seriously hampered.

8. Within the limitations of the evaluation technology, and lacking random referrals, differences in effectiveness (as measured by subsequent rearrests) between treatment programs were generally relatively small.

9. For persons classified as problem drinkers, CAP was the most effective of the treatment programs; while for those classified as social drinkers, SASL was most effective.

10. After corrections for differences in client traits that are known to affect recidivism rates, the best treatment programs reduced rearrest rates by about 1 to 2 percent per year over the more traditional, punitive-sanctions-only approach; the least effective programs were counter productive compared to the traditional approach.

11. The experimental Short-Term-Rehabilitation program was implemented, operated, and followed up successfully.

12. Preliminary (1-year follow-up) results from STR, which involved only 437 persons in Kansas City who were randomly assigned to one of three treatment modalities (of which one was a minimum exposure control group) showed no significant modality affects on subsequent accidents, subsequent DUI arrests, subsequent other traffic or criminal arrests, or on any of 32 life activity changes measured at both 6 and 12 months after assignment.

13. There are many indicators of the future likelihood of DUI recidivism regardless of type of treatment modality, including prior arrest history, Mortimer-Filkins score, BAC, income, race, paranoia, and emotional control.

14. Some treatment programs appear to offer, differentially, more benefits for some types of clients than others. For example, SASL is better than CAP for SDDs while the reverse is true for PDDs. The complete list of such differences, involving both STR and other modalities, is lengthy and depends on the measure of success used, but is given in the preceding discussion.

VIII. RECOMMENDATIONS

Despite the general lack of convincing evidence that the treatment programs produced dramtic improvements in the clients, we believe that the slight differences that were found are indicative of potential fruitful developments. In other words, the results to date should not be considered final, or the last word on the subject. Rather, much has been learned about evaluation methodology, pitfalls in some rehabilitation modalities, and some directions for future improvements. Thus, our recommendations tend to emphasize further study, rather than simply the implementation of the fairly weak and tentative findings to date.

1. More carefully conducted evaluative research of treatment program effectiveness is needed.

2. Further research must incorporate an inviolable random assignment process.

3. More innovative treatment approaches, such as PMT and some industrial alcoholism programs, should be investigated.

4. In the implementation of any referral program, every effort should be made to carefully screen and diagnose clients, and then selectively refer them to local programs according to the best available information on differential effectiveness.

5. Relatively concentrated and extensive counseling modalities should be implemented for referral of persons with indicators of severe drinking problems.

6. Relatively inexpensive, but concise, factual, and direct educational modalities should be implemented for referral of persons who appear not to have indicators of severe drinking problems.

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APPENDIX A

STR SCREENING PROCEDURES

REVISED SCREENING PROCEDURES

Forty-five DWI offenders per month will be assigned to three study groups to determine the effectiveness of short-term rehabilitation. Selection will be based on the following factors:

1. Client must exhibit signs of Level II problem drinker.
2. Client must be able to communicate with others.
3. Client must be literate.
4. Client must be between the ages of 18 and 55.
5. Client must be physically able to participate in activities.
6. Client must be psychologically able to participate in activities with others.
7. Client must live within ASAP jurisdiction.
8. Client must be available for weekend workshops and follow-up interviews.

ASAP probation differentiates between social drinkers and problem drinkers using a six-point criteria: BAC, number of DWI arrests, history of alcohol problems, self-admission, Mortimer-Filkins Questionnaire score, and traffic record. Probationers exhibiting two or more signs of problem drinking are referred to Community Alcohol Programs.

The interviewers at CAP determine the level of the client's problem based on the amount of previous treatment, the history of alcohol-related difficulties, and the responses to a self-questionnaire. If a client exhibits signs of Level III or chronic alcoholism and long-term treatment would be most beneficial, then the client is referred to a counselor in a community agency for weekly group therapy.

If a client indicates that his drinking problems are at Level II, meaning that he/she could benefit from short-term, intensive treatment and if the client meets the criteria for the STR study, then he/she could be randomly assigned to one of the three study groups, Power Motivation Training, weekly group counseling, or alcohol awareness seminars.

Three packages of tests must be administered to clients assigned to the STR study. The tests, two of which are self-administered, require approximately 75 min to complete and must be administered in a non-threatening environment.

The CAP screening procedures have been revised to effectively evaluate, test, and prepare clients for the STR study. Several problem areas have been considered.

1. The length of an interview including the test package could take approximately 2 hr per person.

2. At least 60 clients must be interviewed in order to find 45 qualified for STR which means at least 120 interview hours.

3. A non-threatening environment must be created for the testing. Antabuse assignments and fee payments occur on the interview day which tends to create hostility.

4. Confidentiality and rapport between the client and interviewer need to be established for effective evaluation and testing.

5. The number of office visits prior to the treatment assignment should be minimal.

Screening interviews are now organized as Introductory Seminars in which three of four clients as a group receive information about CAP, discuss their alcohol consumption and the signs of problem drinking, and complete STR forms after surface hostility has been reduced and some rapport developed. Fee payments, Antabuse physical appointments, precounseling discussion, and treatment assignments have been incorporated into the one 3-hr office visit.

APPENDIX B

STR FOLLOW-UP PROCEDURES

SHORT-TERM REHABILITATION STUDY
PROCEDURE FOR SIXTH MONTH FOLLOW-UP INTERVIEW

1. Four weeks prior to the 6th month follow-up interview, an initial letter is sent to each client reminding him of his ongoing participation in the Short-Term Rehabilitation Study. A concise statement defining the purpose of STR is included in the letter. The client is also reminded of the particular treatment modality to which he was assigned, and the initial month marking the beginning of that treatment. The client is assured of the confidential nature of the study. An appointment time, date, and place are scheduled for the client.

2. Two weeks prior to the first 6th month follow-up interview, a second letter is mailed to the client reconfirming the appointment. The client is also informed of the possible consequence if he fails to participate with the interview. Non-participation results in referring the subject to ASAP Probation.

3. The 6th month follow-up is organized as a 2-hr interview, in which two or three clients meet as a group. The interviewer informs the clients who she is, and whom she represents. Her credentials are available upon request. The sponsoring agent is made known. The clients are reminded of the confidential nature of the interview. The purpose and goals of STR are reviewed, including the selection process of clients.

Time is provided to give the clients an opportunity to ask questions or to clarify any statements. A 30-min limit is allotted for the discussion.

This discussion is used to reduce any surface hostility the clients may feel; to establish a non-threatening environment; and to develop a rapport with the clients to insure effective testing.

Administration of the Life Activities Inventory follows the group discussion, beginning with the self-administered questionnaire (Section 2), to be followed by the follow-up interview (Section 3) conducted privately with the client. After the completion of the interview, the client is informed of the expected date of the 12th month follow-up interview. The client may leave.

4. A follow-up Record Check (Section 4) of the client is then registered.

APPENDIX C

DATA ON 32 SCALE SCORES

LAI FACTOR I

EMPLOYMENT/ECONOMIC STABILITY

VALENCE: +

Item	Hi Score
Is primary financial support from earned income?	Yes
How many hours do you work per week?	High
Are you currently working?	Yes
Is primary financial support from public assistance?	No
Has income source changed in past 6 months? (How?)	Favorable
Has income amount changed in past 6 months? (How?)	Increased
How many times were you discharged in past 6 months?	None
What is total monthly family income amount?	High

LAI FACTOR II

CURRENT DRINKING PATTERN (Q + F)

VALENCE: -

How many days last week did you have some drinks?	Most
What is total number of drinks consumed last week?	Many
Are you primarily a beer drinker?	Yes
What is the most drinks on one occasion in past month?	Many

LAI FACTOR III

FAMILY STATUS (Marriedness)

VALENCE: +

Are you currently married?	Yes
How many dependents do you currently have?	Many
How many people do you currently live with?	Many
How often last month did you go out for recreation with family?	Often
How many people do you take care of?	Many
How often have you watched TV alone?	(R) Seldom

LAI FACTOR IV

SOCIAL INTERACTION/INVOLVEMENT

VALENCE: +

Item	Hi Score
How often have you helped someone with a task?	Often
How many self accomplished activities in past 6 months?	Many
How often have you entertained others in your home?	Often
How often have you talked with a friend about his problem?	Often
How many new acquaintances did you make last month?	Several
How often do you engage in physical fitness activities?	Often
How many gifts have you given to others?	Several
How often have you engaged in sedentary activities with others?	Often
How often have you engaged in participant sports?	Often
How many close friends do you have?	Many

LAI FACTOR V

CURRENT PHYSICAL HEALTH PROBLEMS

VALENCE: -

How many days last week with health complaints?	Many
How many allergy problems or colds last week?	Many
How many sleep problems and nervousness last week?	Many
How many drugs are you currently taking?	Many
How many fatigue and muscle aches last week?	Many
How many days were you ill last month?	Several
How many digestive problems and headaches last week?	Many
Are you currently taking tranquilizers?	Yes
How many medical visits for health care last month?	Several

LAI FACTOR VI

IMMODERATE DRINKING BEHAVIOR

VALENCE: -

How many times were you drunk last month?	Several
How often did you get away with DUI last month?	Several
How many times did you drive with three-four drinks last month?	Several
How many blackouts did you have last month?	Several
How many binges did you go on last month?	Several
Did you miss work because you were drunk or hung over?	Yes

CSQ FACTOR I

MARITAL PROBLEMS
VALENCE: -

Item	Hi Score
How does present relationship with spouse compare to previous times?	Worse
How are you getting along with your spouse?	Argue
Is your spouse satisfied with you?	Dissatisfied
Do you and your spouse argue?	Continuous
Does spouse make fair demands of you?	Demands too much
Do you and spouse reach agreement on important issues?	Never
Do you express innermost thoughts to spouse?	Never
Do you feel spouse understands you?	Puzzled
Do you feel spouse accepts you?	No
Does spouse want to remain married to you?	No
Does spouse do the work you expect of a marriage partner?	No
Would you like to terminate marriage if could do so in a reasonable manner?	Yes

CSQ FACTOR II

CONTROL OF DRINKING PROBLEMS
VALENCE: +

Is drinking a problem for you at this time?	No
Does drinking interfere with responsibilities?	No
When drinking, are you able to regulate the amount you drink?	Always
Are you finding it difficult to live without alcohol now?	No
Are you able to regulate the times you drink?	Always
Do you have any physical problems from excessive use of alcohol?	None
Have you been drunk in public in past 6 months?	Never

CSQ FACTOR III

INCOME/EMPLOYMENT STABILITY

VALENCE: +

Item	Hi Score
What is total earned income last month?	High
How long employed during last 6 months?	Constantly
How many hours spent in work activities last week?	High
How do you feel about present work situation?	Satisfied
Is your financial situation changing?	Improving

CSQ FACTOR IV

PHYSICAL HEALTH

VALENCE: +

Are you currently having medical problems?	None
Are you receiving medical assistance for health problems?	No
Number of current health problems?	(R) None
Have you been feeling tired or exhausted?	Never
How is your health?	Improved
How would you compare health to others your age?	Above average
Have you been ill with colds, flu, etc?	Never
How are you sleeping at night?	Soundly

CSQ FACTOR V

RESIDENTIAL STABILITY

VALENCE: +

How often changed residences last 6 months?	Never
Length of time lived at present residence?	Long Time
How often do you change residence?	Infrequently
How many jobs in the past 6 months?	None
Do you have your own telephone?	Yes
How often do you typically change jobs?	Seldom

CSQ FACTOR VI

SOCIAL INTERACTION
VALENCE: +

Item	Hi Score
Do you do things with other people?	Often
Number of hours in activities per week?	Many
Have you any close friends?	Many (R)
Do you prefer not to get close to others?	False (R)
Are you devoting time to improvement of work skills?	Much
How much free time do you spend alone?	Little (R)
Are you close to members of your immediate family?	Very (R)
Do you participate in groups or clubs?	Regularly (R)
Do eating habits provide a balanced diet?	Good Diet
Does your work require you to meet people?	Often

CSQ FACTOR VII

CONTROL OF DRINKING
VALENCE: +

How long since your last drink?	Months
What is the longest time without alcohol in past 6 months?	Months
Do most of your friends drink?	Few
Compare present quantities/frequency of drinking to that of past times.	Decrease

LAI/CSQ FACTOR I

CURRENT QUANTITY/FREQUENCY OF DRINKING

VALENCE: -

Item	Hi Score
How many drinks (alcohol) did you have last week?	Many
How many days with drinks last week?	Many
How long has it been since last drink?	Hours (R)
What is most drinks on one occasion last month?	Many
Are you a beer drinker?	Yes
What is longest time without booze.	Hours (R)
Compare present F/Q of drinking to past times.	Increase (R)

LAI/CSQ FACTOR II

EMPLOYMENT/ECONOMIC STABILITY

VALENCE: +

Are you supported by earned income?	Yes
How many hours do you work per week?	High
How long have you been employed during the past 6 months?	Constantly
How satisfied are you with work situation?	Satisfied
Has your income amount changed in past 6 months?	Increased
Has your income source changed in past 6 months?	Favorable
Total monthly family income?	High
Have you been discharged from work in past 6 months?	No

LAI/CSQ FACTOR III

CURRENT PHYSICAL HEALTH PROBLEMS

VALENCE: -

How many days last week with health complaints?	Many
Are you having any medical problems?	Yes (R)
Are you receiving medical assistance?	Yes (R)
How many drugs are you taking?	Several
How often have fatigue or muscle aches?	Often
How many medical visits for health care last month?	Many
Are you currently taking tranquilizers?	Yes
How many days ill last month?	Many
How often have sleep problems or nervous?	Often
How often have allergy or colds?	Often
How often have digestive problems or headache?	Often
How is your health?	Worsened (R)

LAI/CSQ FACTOR IV

SOCIAL INTERACTION
VALENCE: +

Item	Hi Score
How many self accomplished activities in last month?	Many
How often have you talked with a friend about his problems?	Often
How often have you helped someone with a task?	Often
How often have you entertained others in your home?	Often
How many new acquaintances have you made?	Many
How many gifts have you given to others?	Many
How often do you engage in physical fitness activities?	Often
How many times last month did you go out for recreation with family?	Often
How much time devoted to improve work skill?	Much
How many close friends do you have?	Many
How often have you engaged in participant sports?	Often
How often have you engaged in sedentary activities with others?	Many
Do you participate in clubs or groups?	Often (R)
Do you do more than is expected at work?	Often
How much free time do you spend alone?	Little (R)
Does work require meeting people?	Often (R)

LAI/CSQ FACTOR V

CURRENT DRINKING PROBLEMS
VALENCE: -

Is drinking a problem at this time?	Yes (R)
Does drinking interfere with responsibilities?	Yes (R)
Can you regulate your drinking amount?	No (R)
Are you finding it hard to live without alcohol?	Yes (R)
How many times were you drunk last month?	Many
How many blackouts last month?	Many
How many times did you get away with DUI last month?	Many
How often drunk in public in past 6 months?	Several
Any physical problems from alcohol?	Many (R)
How many binges last month?	Many
Can you regulate your drinking times?	No (R)
How many times did you drive with three-four drinks last month?	Often
How are you getting along with others?	Not Well
How many times miss work because drunk or hung over?	Many

PAS FACTOR I

STRANGE, ECCENTRIC THOUGHTS

VALENCE: -

Item	Hi Score
I see or hear or feel strange things which are not quite real.	Often
My life and things around me seem unreal, as if in a dream.	Often
I suspect that someone is following me.	Often
I think about ending it all.	Often
I have pretended to be ill in order to get out of something.	Often
Terrible thoughts come into my mind and tend to persist.	Often
The wish that I were dead occurs to me.	Often
I have periods when I laugh or cry in an uncontrollable manner.	Often
I fear that I may be losing my mind.	Often
I get attacks of nausea.	Often
I experience dizzy spells.	Often
When things were bothering me, I have felt like starting a fight.	Often
I find myself memorizing numbers or repeating words for no apparent reason.	Often
I have weird dreams I feel I should not talk about.	Few
My thoughts are strange and peculiar.	Few

PAS FACTOR II

ANXIETY, DEPRESSION AND TENSION

VALENCE: -

I am under a great deal of tension.	Often
I am unhappy or depressed.	Often
I am satisfied with my life.	Not
I am nervous and anxious about things.	Often
I lose sleep worrying about things.	Often
It seems that I am more easily hurt than most people.	False
I hide my feelings so that others do not know they hurt me.	Often
I worry beyond reason over things that really do not matter.	Often
I brood or feel sorry for myself.	Often
I have not lived up to my potential.	False
I have many interests to keep me busy and occupied.	False
I feel no one really cares what happens to me.	Often
When things were bad, I have felt like leaving home.	Often
I think about possible misfortunes.	Often

PAS FACTOR III

PROJECTION OF ATTRIBUTES

VALENCE: +

Item	Hi Score
People will use somewhat unfair means to get what they want.	Few
Given the opportunity people will take advantage of an easily deceived person.	Few
People in authority arrange to get credit for the good work and blame the bad work on others.	Few
When people act in an unselfish way, it is because there is something in it for them.	Few
People expect more respect for their own rights than they are willing to allow for others.	Almost Never
People make friends primarily for the purpose of feathering their own nest.	Few
People are honest primarily because they are afraid of being caught.	Few
It takes a lot of argument to convince a persons of the truth.	Few
In order to get what they want, people in power will get around a law without actually breaking it.	Few
People really do not want to go out of their way to help others.	False
One should be suspicious when people are quite friendly.	Almost Never

PAS FACTOR IV

INTELLECTUAL, AESTHETIC INTERESTS

VALENCE: ?

I enjoy reading books about history.	No
I am interested in science.	No
I like poetry.	No
I do not enjoy going to art museums.	False
I keep up with reading in my areas of interest.	Almost Never
I might like the work of a librarian.	False
I read newspaper editorials.	Almost Never
I liked school.	Almost Never
I listen to classifical or symphonic music.	Often
Displays of flowers or plants catch my attention.	Almost Never

PAS FACTOR V

PHOBIAS
VALENCE: -

Item	Hi Score
Snakes do not particularly frighten me.	False
There is nothing particularly fearful about spiders.	False
A lightening storm is a fearful experience.	False
Hardly anything frightens me.	False
A bloody person or animal frightens or sickens me.	False
Sharp or pointed objects make me nervous.	False
I become nervous when I look down from a high place.	Almost Never
Mice and beetles and other small animals and insects make me nervous.	Almost Never
I have very little or no fear of being near to deep water.	False
It worries me a great deal to be closed into a small room of closet.	Almost Never
I fear traveling by airplane.	False

PAS FACTOR VI

SELF IMAGE
VALENCE: -

I have succeeeded at the things I have tried.	Almost Never
My judgment is sound and mature.	Almost Never
I have a hard time getting started on a task.	Often
My decisions are governed by my head rather than my heart.	Almost Never
I give up trying to do something because it has so many difficulties and alternatives.	Often
I have missed out on things because I could not make up my mind quickly enough.	Often

PAS FACTOR VII

MORALISM
VALENCE: ?

When talking with others I do not discuss sexual matters.	False
All forms of gambling should be outlawed.	Disagree
I might enjoy a sexy show.	False
I am embarrassed by dirty stories.	Almost Never
Under no circumstances would I break a law.	False
If given a choice I would rather have job security than a high paying job.	False

PAS FACTOR VIII

GROUP ATTRACTION
VALENCE: -

Item	Hi Score
I can forget my problems just by joining a playful group of friends.	Almost Never
I trust others.	Almost Never
The words of other people can be trusted.	Almost Never
All it takes is a little excitement to bring me out of feeling low.	Almost Never
The excitement of a crowd attracts me.	Almost Never
I feel excited and happy for no apparent reason.	Almost Never
In my life people have treated me fairly.	Almost Never
I am in good spirits and cheerful.	Almost Never
I am able to please other people.	Almost Never

PAS FACTOR IX

INTROVERSION/EXTROVERSION
VALENCE: ?

I find it difficult to make conversation with strangers.	Almost Never
I have trouble making new friends.	Often
I talk with strangers when I am traveling about town.	Often
I enjoy meeting new people.	Often
When I meet new people I am the first to strike up a conversation.	Almost Never
It is hard for me to take part in group conversations.	Almost Never
I enjoy leading discussions and exchanging opinions with people.	False
I wish I could be more outgoing than I am.	False
It bothers me to enter a party that has already started.	False

PAS FACTOR X

PARANOIA
VALENCE: +

Certain people would like me out of the way.	False
Others are plotting against me.	Unlikely
Someone is out to ruin me.	Unlikely
I would have been more successful if certain people had not had it in for me.	False
I wonder if there is something wrong with my mind.	False
I can "pitch in" and get a job done.	False
People try to take advantage of me.	Few
People do not understand me.	False