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The Traffic Safety Effectiveness of Education Programs
For First Offense Drunk Drivers

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16. Abstract

This document is the final report concerning the effectiveness of the CDUI Project's education programs for first DUI offenders. There is a complemental report on educational counseling program effectiveness for multiple offenders. First offense drunk drivers were randomly assigned to a home study program, an in-class education program, or a no-treatment control group. Treatment effectiveness was measured by DUI offenses, accident involvement, and client life changes occurring subsequent to assignment.

When the total first offender research sample was analyzed, the results indicated that both of the education programs produced significant reductions in DUI recidivism relative to the control group but there was no significant difference between the home study and in-class education methods. The analysis of client subsamples suggested that the home study program was not appropriate for all clients, but for the majority of clients the two education methods were equally effective.

The Project's education programs had no effect on accident involvement, or on client life status. Neither of the secondary interventions, letter monitoring and follow-up interviews, had any traffic safety impact.

The findings of this study should be interpreted in the proper context. Alcohol safety education programs are only one countermeasure in the post-detection portion of a drinking-driver control system. The CDUI Project's research design did not provide for a direct comparison of education programs with other post-detection countermeasures such as licensing action. Moreover, the existence of education programs certainly has no deterrent effect on the majority of drunk drivers who are not detected through law

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16. Abstract (Cont.)

enforcement efforts. But when considered as a single component
in a system of countermeasures, the findings of this study pro-
vided evidence that education programs can make a positive
contribution to alcohol traffic safety by reducing the DUI
recidivism of first offense drunk drivers.

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LIST OF ABBREVIATIONS AND DEFINITIONS

Abbreviation or Term	Explanation
α	Alpha level or significance level
ANCOVA	Analysis of covariance
ANOVA	Analysis of variance
A/R	Alcohol related
ASAP	Alcohol Safety Action Project
ATSP	Alcohol Traffic Safety Program. Sacramento County treatment referral unit which preceded the CDUI Project. Multiple Offenders referred to CDUI Project without license retention were called ATSP clients.
BAC	Blood Alcohol Concentration, the percent by weight of alcohol in the blood.
Biweekly Contacts (BWC)	A procedure involving 26, 15-minute individual interviews every other week for one year.
CDUI or CDUI Project	Comprehensive Driving Under the Influence of Alcohol Offender Treatment Demonstration Project.
Chemotherapy	Supervised administrations of disulfiram, a drug which hinders the complete metabolism of alcohol resulting in an accumulation of toxic byproducts and unpleasant sensations.
χ^2	chi-square test statistic
Control Group	DUI offenders randomly assigned to a no-treatment condition, i.e., no education classes, counseling, etc.
CVC	California Vehicle Code
Disease Model Counseling	A counseling philosophy in which the clients' life problems were viewed as the direct results or symptoms of the disease of alcoholism.
df	degrees of freedom
DMV	California Department of Motor Vehicles
DUI	Driving Under the Influence of Alcohol or Alcohol and Drugs

Abbreviation or Term	Explanation
Educational Counseling	Year-long group alcohol counseling programs involving 66 to 68 group hours of which 12 hours were directed toward alcohol traffic safety education.
F	F-statistic, F-ratio, critical F was the minimum F-ratio needed to exceed the stated level of significance.
First Offender	A person with only one officially recorded conviction for Driving Under the Influence of Alcohol.
Follow-up Interviews (FI)	A series of three in-depth individual interviews administered prior to entering treatment and again at 10 months and 20 months from the initial interview, used to assess life changes resulting from the treatment interventions.
Home Study	A self-study, self-paced alcohol traffic safety education program.
In-Class Education	An alcohol traffic safety school which consisted of four, 2½ hour class sessions.
KR20	Generalized Kuder-Richardson-20 internal consistency reliability coefficient.
LAI	Life Acitivities Inventory, the follow-up interview protocol and questionnaires.
Letter Monitoring (LM)	A procedure in which clients were mailed letters on a quarterly basis to periodically remind them that they were on informal probation for two years.
Licensing Action	One-year suspension or three-year revocation of the driving privilege.
Life Skills Counseling	A counseling philosophy in which the clients' problem drinking was viewed as primarily a dysfunctional response to life stress.
MANOVA	Multivariate analysis of variance
Mean	Average
Median	The variable value at which 50% of the sample cases were above, and 50% were below (computed for variables such as time, age, BAC, etc).

Abbreviation or Term	Explanation
MMPI	Minnesota Multiphasic Personality Inventory
Multiple Offender	A person with two or more officially recorded convictions for Driving Under the Influence of Alcohol.
NHTSA	National Highway Traffic Safety Administration
N	Number of cases
Observation Time or Follow-up Time	The period of time between the date of random assignment to one of the treatment conditions and the date of the last DMV records search. During this period client driving behavior could be assessed through officially recorded driving offense convictions and reported accidents, for the purpose of program evaluation.
Outcome Criteria	Recorded driving violations (convictions), accidents, and client life changes occurring subsequent to treatment assignment. The measures used to assess program effects on dirving behavior and life status.
p	Probability: the p value may be thought of as the probability that the observed differences in outcome criteria or client characteristics between treatment groups could have been obtained by chance (i.e., they were just random fluctuations).
PCPS	Post-Conviction Presentence, a special court referral procedure used by Sacramento Municipal Court for offenders with only one prior DUI conviction. The procedure involved accepting a guilty plea to DUI but postponing sentencing for 13 months. If the client successfully completed treatment during this period the charge was reduced to reckless driving. Inadequate participation resulted in sentencing on the original charge of DUI.
Post Hoc Treatment Groups	Treatment groups developed on the basis of treatment program or client characteristics after random assignment. Clients were not randomly assigned to post hoc groups.

Abbreviation or Term	Explanation
Random Assignment	A procedure for distributing clients among two or more treatment conditions in an unbiased manner, such that every client has the same probability of being assigned to one of the treatment conditions as every other client in the research sample. This does not necessarily mean that a client has an equal probability of being assigned to each of the treatment conditions, rather, whatever the assignment proportions between treatment conditions they are the same for every client.
Reckless Driving Offense	The most common charge reduction from DUI. It was standard practice for the Sacramento County District Attorney to reduce low BAC cases (.12 or less) to reckless driving.
SB38	California State Senate Bill No. 38, the legislation which permitted multiple DUI offenders to participate in alcohol treatment programs in lieu of license suspension/revocation.
Statistically Significant Difference	A difference between treatment groups on an outcome measure (e.g., DUI survival rate) or a client profile variable (e.g., age, BAC) that was unlikely to have resulted from pure chance. In the present study any difference in outcome that could be obtained by chance less than 10 times out of 100 was considered statistically significant. Any difference in client profile that could be obtained by chance less than 5 times out of 100 was considered statistically significant.
STR or STR Study	Short Term Rehabilitation Study
Survival Rate	The proportion of clients for which outcome events (violations, accidents, etc.) were not detected during a specific observation time period. The converse of rearrest and accident rates.
U Score	A statistical index reflecting a client's survival experience relative to all other clients in the research sample.

INTRODUCTION

In the fall of 1976 the Sacramento County, California, Health Department was awarded a five-year contract to implement the Comprehensive Driving Under the Influence of Alcohol Offender Treatment Demonstration Project, or CDUI Project, as it has been abbreviated. From September of 1977 through January of 1981, the CDUI Project provided a broad range of alcohol education and educational counseling programs to convicted drunk drivers under controlled experimental conditions. Comparatively short-term alcohol traffic safety education programs were provided to persons having only one recorded conviction for driving under the influence of alcohol (DUI), while year-long educational counseling programs were provided, with and without chemotherapy (disulfiram) support, to persons having two or more convictions for driving under the influence.

Through the assignment of a proportion of DUI offenders to a no-treatment control condition each program's potential for reducing alcohol related accidents and driving violations, as well as inducing positive life changes, was assessed relative to those offenders who were not provided treatment. With these research procedures it was determined whether such programs can function as useful components in a total drinking-driver control system.

Background

The CDUI Project was a continuation of previous research. The final selection of the Project's treatment programs was based primarily on findings generated by the Alcohol Safety Action Projects (ASAPs) funded by the National Highway Traffic Safety Administration (NHTSA) between 1970 and 1977. A concise presentation of the ASAP research may be found in the NHTSA's final report on the results of the National ASAP Program (USDOT, 1979). This report summarized the findings in all countermeasure areas used in the ASAPs including enforcement, adjudication, public information and education, and rehabilitation. The focus of the CDUI Project was limited to the rehabilitation component of the total system of counter-measures necessary to impact traffic safety.

In the rehabilitation area the ASAP findings suggested that for DUI offenders who did not evidence problem drinking symptoms, referral to an

in-class alcohol safety school reduced rearrest rates for drunk driving but did not affect subsequent accident involvement. One ASAP site, however, found a home study education program to be as effective as an in-class education program in reducing drunk driving rearrest rates. (Swenson & Clay, 1977). A new self-study, self-paced home study curriculum was developed for the CDUI Project and was incorporated into the research design for first offense drunk drivers. With the new home study program, a standard in-class alcohol safety school, and a no-treatment control group, the CDUI first offender research design provided the means to clarify and extend the earlier ASAP findings.

For DUI offenders with moderate to severe drinking problems, the ASAP findings suggested that the rehabilitation programs provided at the ASAP sites had little or no effect on drunk driving behavior or accident involvement. The CDUI Project's year-long educational counseling programs for multiple DUI offenders, who had moderate to severe drinking problems, provided almost double the in-group contact time of even the longest of the ASAP rehabilitation programs. Consequently, the Project's multiple DUI offender research design enabled the NHTSA to determine whether longer duration rehabilitation programs were necessary in order to produce a measurable change in the behavior of problem drinkers. Moreover, by providing educational counseling programs with and without chemotherapy, in the form of supervised disulfiram administrations, it was determined whether such support enhanced the behavior modifying potential of group counseling, a possibility suggested by the ASAP research.

Purpose and Scope of Report

The present study examines the effect of the CDUI Project's education programs on the behavior of first offense drunk drivers. The determination of treatment effectiveness was based primarily on direct traffic safety criteria such as DUI recidivism and subsequent accident involvement. Other outcome criteria were also analyzed to assess program effects on a broad range of client life activities in addition to drunk-driving behavior.

This document is one of two final reports on program effectiveness or impact. The complemental report presents the analysis of educational counseling program effects on multiple offense drunk drivers (Reis, 1982).

METHOD

Court Referral Process

The CDUI Project's primary source of referrals was the Sacramento
County Municipal Court. Typical of other jurisdictions in California,
the Municipal Court rarely suspended the driving privilege upon the first
conviction of drunk driving. The second DUI conviction in five years,
however, carried a 12-month suspension, and the third or more conviction
in seven years carried a 36-month revocation of the driving privilege.
Since January of 1978, the California courts have had the discretion to
refer DUI offenders to year-long, state approved treatment programs in
lieu of license suspension/revocation. This new treatment alternative
has been used almost exclusively with multiple DUI offenders, where the
standard licensing sanctions could be imposed for inadequate participation.

Since license suspension was not a realistic option for encouraging
participation in first offender education programs, the Municipal Court
agreed to reduce the fine as incentive. With the $50 Project fee for
participation, the net savings for volunteers averaged $105. This in-
centive resulted in a 62% referral rate for persons convicted of first
offense drunk driving.

Throughout the court referral period, it was the policy of the
District Attorney to allow offenders charged with DUI to plead down to a
charge of reckless driving if their blood alcohol concentration (BAC) was
between .10 and .12. In many instances, DUI offenders with a BAC of .13
were also allowed to plead to reckless driving if there were no prior DUI
convictions on their record. Offenders allowed to plead to reckless driv-
ing were considered eligible for the first offender education programs,
but the referral rate was only 23%. Overall, considering both the low BAC
reckless driving cases and the first DUI offense conviction cases, the
referral rate from the Municipal Court was 55% for the period September,
1977 through December, 1979.

Volunteers were placed on two-year informal (summary) probation and
were directed to the Project's Court Referral Office located in the
Municipal Court building. At the Court Referral Office the clients were
provided with a detailed description of the treatment alternatives to
which they would be randomly assigned, and were scheduled for an intake

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interview. Information concerning the Project's first offender program was
also provided to all offenders prior to volunteering through the court's
mass advisement procedures. Consequently, upon receipt of their intake
date, most clients fully understood what to expect. None the less, of the
6,048 clients who volunteered 8% never showed up for intake.

First Offender Research Design

At the Intake Office, the clients were given a 20 to 30 minute diag-
nostic interview to gauge the severity of their drinking problems and to
collect other descriptive information for the Project evaluation. During
these interviews 17% of the clients were excluded from the random assign-
ment process. Because the CDUI Project functioned as the sole referral
agency for the Court, it accepted all referrals regardless of residence.
As a result, many of the clients excluded from the research simply lived
too far to commute. Other clients were excluded because they were non-
English speaking or functionally illiterate in English. All excluded
clients were referred to appropriate education programs. Volume II of
the CDUI Project's 1980 Annual Report (Reis, 1981) addresses attrition of
the potential client population from nonvolunteers, intake no shows, and
nonrandom treatment assignments.

After the diagnostic interview, the clients were directed to an
assignment clerk, thus the diagnostic counselors were not directly in-
volved in the random assignment process, except for infrequent periods
of overload. To get a treatment assignment, the assignment clerk called
the Evaluation Unit, located in a neighboring suite of offices. Upon
receipt of the treatment assignment, the assignment clerk scheduled the
client accordingly. This process was carefully monitored throughout
the 28-month assignment period and no attempt to circumvent the research
procedures was ever detected. Volume III of the 1980 Annual Report (Reis,
1981) provides a detailed description of the random assignment process and
compares the clients in each treatment group on a number of pretreatment
characteristics.

The actual randomization was accomplished through a set of computer
listings of the various treatment alternatives, according to the research
design illustrated in Figure 1. Of the total 4,639 randomly assigned

Figure 1

Diagram of First Offender Research Design

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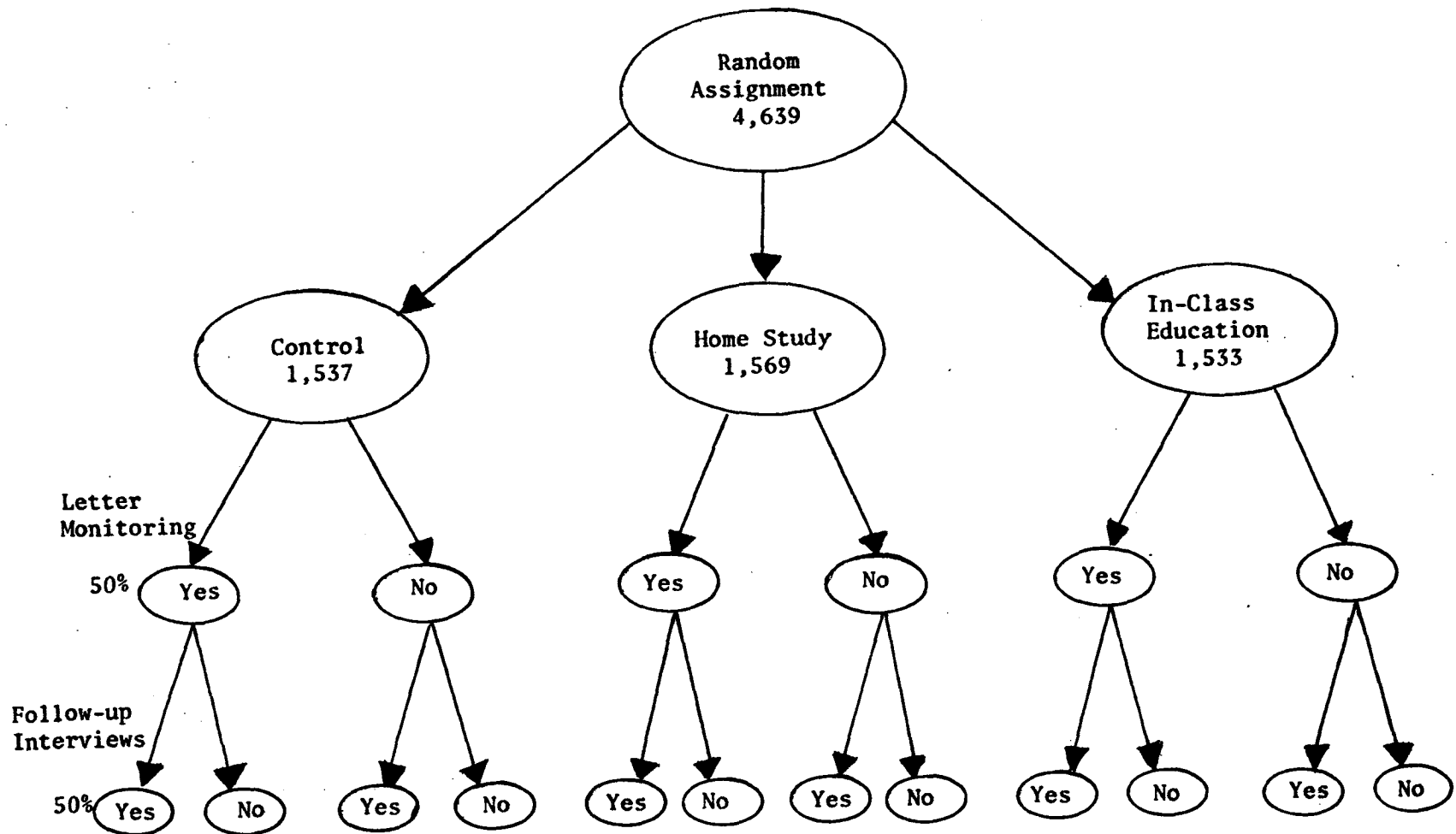
clients (representing 4,352 DUI convictions and 287 reckless driving reductions), one-third were assigned to each level of the treatment factor.

1. Control Group: These clients received the reduced fine, as did all first offender research clients, but they did not have to attend classes or read any educational materials.

2. Home Study: The home study program consisted of an organized set of reading materials designed as a self-study, self-paced package. The home study document, which covered the same topics as the in-class education program was first introduced to the clients in a one-hour orientation session. A preprogram knowledge test was also administered during the orientation. Each client then returned in four weeks for an individual interview of approximately five minutes duration. The purpose of the final interview was to determine whether the clients had satisfactorily completed the work assignments, and to administer the post-program knowledge test.

3. In-Class Education: The in-class program consisted of four classroom sessions lasting 2½ hours each, over a four-week period. The typical class size was 18 clients. The CDUI in-class curriculum included all the standard topics and was designed to be typical of the alcohol education programs in use around the country. As with the home study program, knowledge tests were administered during the first and last sessions.

Both the home study and in-class education programs covered the same topics and shared the same knowledge and attitude change objectives. The essential difference between the two programs was the method of presentation. The basic goal of the education programs was to assist clients to develop a personal plan to prevent another DUI occurrence. Thus, the program emphasis was on self-directed change. Appendix A presents a summary of the specific education objectives and highlights the course content.

It should be noted that the first offenders were a heterogeneous group exhibiting a wide range of drinking problem severity from minimal to extensive. During the Project's referral period the California courts

rarely referred first offenders to programs longer than a typical alcohol safety school, and consequently, the inclusion of more extensive treatment alternatives in the first offender research design was not feasible.

In addition to the primary treatment conditions, one-half of the clients were randomly assigned to receive quarterly monitoring letters. The function of these letters was to periodically remind clients that they were on informal summary probation for two years, and to encourage them to drive safely and soberly at all times. It was hypothesized that such periodic reminders, which extended beyond the date of treatment completion, might enhance the behavior modifying potential of the education programs. Thus, the monitoring letters were used as an adjunct to the summary probation process. An example of the quarterly monitoring letter and a summary of the content analysis can be found in Appendix B of this report.

Lastly, one-half of the clients were randomly assigned to receive follow-up interviews. The follow-up interview process involved three indepth interviews: the first shortly after assignment (and prior to beginning treatment), and then again at ten and twenty months from the initial interview. Although the primary purpose of these interviews was to collect life activities data for treatment outcome analyses, their effect on driving behavior was examined. A description of the follow-up interview protocol can be found in Volume VI of the CDUI Project's 1980 Annual Report (Holden & Reis, 1981).

Traffic Safety Outcome Criteria

Driving record data were collected from the California Department of Motor Vehicles (DMV) every six months. Through a largely automated process (detailed in Reis & Davis, 1980), new accident, driving violation, and licensing action events were identified at each update cycle and were accumulated in the Project's data base. The last driving record data were collected in mid-November of 1981.

Two driving violation measures and two accident measures were used in this study. There were two versions of each measure: the first occurrence of the target event (violation/accident) after the date of random assignment to the treatment conditions (the basis for recidivism and accident rates), and the total number of target events occurring after random assignment.

1. <u>The first Driving Under the Influence offense (conviction) and the total number of convictions occurring subsequent to the date of random assignment.</u> Reckless driving convictions were included in this measure because they frequently represented reductions from DUI.

2. <u>The first reported accident and the total number of accidents occurring subsequent to the date of random assignment.</u> Two accident subgroups were examined.

    a. Accidents identified as <u>alcohol related</u> in police reports, or which occurred at <u>night and involved injuries or fatalities</u>, or which occurred at <u>night and involved a single vehicle which ran off the road or hit a fixed object</u>. Nighttime was defined as 7:30 pm to 5:29 am. This accident subgroup contained the highest proportion of alcohol related events but the lowest frequency of events.

    b. Accidents identified as <u>alcohol related</u> in police reports, or which occurred at <u>night</u> regardless of the circumstances, or which involved <u>injuries or fatalities</u> regardless of the time of day. This subgroup contained a relatively smaller proportion of alcohol related events but a higher frequency of events.

    The small number of alcohol-related accidents which were reported subsequent to random assignment makes them an insensitive measure for detecting treatment effects. Consequently, accidents identified as alcohol related in police reports were supplemented with other accidents of the type often associated with alcohol involvement. In the second accident subgroup, the criteria for alcohol-relatedness were relaxed to further increase the number of observed events and possibly the statistical sensitivity of the outcome analyses.

3. <u>The first non-alcohol related moving violation and the total number of violations occurring subsequent to the date of random assignment.</u> All moving violations carrying one or more negligent operator points were included, except reckless driving convictions and violations involving alcohol or drugs.

The non-alcohol related moving violation measure was used to clarify the nature of a potential education program impact by determining the specificity of the effect. The objective of the education programs was to assist the clients in preventing another DUI. The primary emphasis of both the home study and in-class approaches was on alcohol and drunk driving. The programs were not intended to be general driver improvement schools. Therefore, a positive treatment effect would most likely take the form of a lower DUI rearrest rate in the education groups (relative to the control group) but no difference between education and control groups in regard to non-alcohol related moving violations.

If, however, both DUI and non-alcohol related violation rates were lower in the education groups than the control group, the effect would appear to be more general, resulting in safer driving habits, or perhaps less visibility to law enforcement.

In the least likely event of a reduction in the non-alcohol related violation rate but no reduction in the DUI rate, the education programs could not be said to have achieved their alcohol traffic safety objective.

In any case, this measure was not essential to the impact evaluation for first offender programs, but it could provide supplemental descriptive information.

Life Status Outcome Criteria

Client life status information was obtained in a series of three individual interviews: the first shortly after assignment (and prior to beginning treatment), and then again at 10 and 20 months from the initial interview. The structured interview protocol and questionnaires (collectively called the Life Activities Inventory) were first used in the evaluation of the NHTSA's Short Term Rehabilitation (STR) Study, (Ellingstad, 1976; Struckman-Johnson & Strawn, 1976). In 1977 the Life Activities Inventory was revised for use in the CDUI Project.

With factor analytic techniques, the numerous questionnaire and interview items were combined to produce a smaller number of scales reflecting client life status in different domains. The scale development was based on a sample of 2,892 initial interview cases obtained from first and multiple offenders. A scale (or factor) score was computed for

each client on each of the scales for every initial, 10-month, and 20-month interview completed. The scores ranged from 000 to 999 with a mean of 500 and standard deviation of 100 (across the 2,892 initial cases). The technical details of the factor analysis and scoring procedures are presented in Volume VI of the 1980 Annual Report (Holden & Reis, 1981). The computational procedures used to obtain the scale scores were identical to the procedures used by the STR Study researchers (Ellingstad & Struckman-Johnson, 1977).

Seven life status scales were used to gauge program effects on client life activities.

1. ALC1: Alcohol consumption/quantity-frequency. This scale reflects the clients' recent drinking pattern in terms of the quantity and frequency of alcohol consumption. A high score on ALC1 indicates frequent drinking, a relatively large number of drinks consumed on each occasion, and relatively short periods of abstention. A low score on ALC1 suggests infrequent drinking, smaller quantities of alcohol consumed on each occasion, or abstention. The generalized KR20 internal consistency reliability (or Cronbach's coefficient alpha) for the ALC1 scale was .76.

2. ALC2: Alcohol problems/control. This scale reflects the clients' ability to control when they drink and the amount consumed, as well as the extent to which alcohol is interfering with the clients' ability to fulfill life responsibilities. A high score on ALC2 indicates the presence of substantial drinking problems and symptoms of alcoholism. A low score indicates few or no self-reported drinking problems and the ability to control alcohol consumption. The KR20 for ALC2 was .83.

3. PHL1: Physical health problems. This scale represents a broad dimension of current health problems. Clients with a high score on PHL1 reported numerous health problems-complaints. Clients with low scores reported few or no health problems. The KR20 for the PHL1 scale was .69.

4. <u>FIN1: Financial status/employment situation.</u> This scale represents a broad dimension of current financial status and employment situation. Clients with high scale scores reported full-time employment, relatively high family income, relatively high rent or mortgage payments and debts (excluding mortgage). The higher debts in this case were probably related to the clients' ability to obtain credit. Low scores indicate the opposite situation, i.e., unemployment or part-time employment, relatively low family income, etc. The internal consistency reliability of FIN1 was .79.

5. <u>SOC1: Family status/living situation.</u> The SOC1 scale reflects the clients' family status, that is, whether or not the clients are currently married with dependents, and in the company of others in the home or living situation. Clients with a high score on SOC1 were typically married with dependents and usually spent little time alone while at home. Clients with a low score on SOC1 were not currently married, with few or no dependents, and tended to live alone. The KR20 for this scale was .70.

6. <u>SOC2: Social interaction/involvement.</u> SOC2 represents a broad dimension of social interaction and involvement extending beyond the home or living situation. Clients with a high score on SOC2 tended to be outgoing and sociable, concerned and helpful toward others, reported close friends and frequently made new acquaintances, and were involved in recreational activities with others. A low score on SOC2 implied a low level of social interaction and involvement. Clients with low scores tended to be withdrawn from others with very few, if any, close friends, and participated in few social-recreational activities. The KR20 for the SOC2 scale was .64.

7. <u>MAR1: Marriage/marriage-like situation.</u> The MAR1 scale reflects the quality of the clients' marriage or marriage-like situation. The qualitative nature of this dimension distinguishes it from SOC1 which indicates the extent to which the clients are living in a family-type situation without reference to the quality of that situation. A high score on MAR1 indicates a satisfying

relationship with mutual understanding and relatively few con-
flicts. A low score reflects a relationship with the opposite
qualities. The internal consistency reliability of this scale
was .87.

Two additional scales were used for descriptive purposes in the
examination of differential attrition, that is, differences in follow-up
interview return rates between treatment groups.

1. TRT1: Treatment receptiveness. A high score on this scale
   indicates the recognition of the need for help and, to a
   somewhat lesser extent, the willingness to accept help. A
   low score reflects the lack of problem recognition or denial,
   and consequently, an unwillingness to accept help. This
   scale was not used as an outcome measure because it was rather
   highly correlated with ALC2, self-reported drinking problems.
   The relationship between admission of drinking problems and
   the recognition of the need for help is quite clear. The
   KR20 for the TRT1 scale was .70.

2. IMP1: Improbable responses/probable responses. A low score
   on the IMP1 scale suggests the tendency to make socially
   desirable responses and to deny unfavorable characteristics,
   to a degree that the responses appear improbable. A high
   score suggests the absence of this type of response bias.
   This scale is essentially an MMPI type lie scale. The KR20
   for the IMP1 scale was .65.

Overall, the CDUI Project's version of the Life Activities In-
ventory produced a set of reliable and generally independent scales
that are directly comparable to those used in the evaluation of the
NHTSA's Alcohol Safety Action Projects. This comparability will facil-
itate the integration of the CDUI Project's findings with prior research
on the treatment of drunk drivers.

Statistical Analysis of Traffic Safety Outcome Criteria

Clients were assigned to the first offender research design from
mid-September of 1977 through early January of 1980. The last driving
records search was conducted in mid-November of 1981. The last few

clients assigned in January of 1980 had a driving record observation
period or follow-up period (i.e., date of assignment to date of records
search) of approximately 22 months. In contrast, the first clients assigned
in September of 1977 had a follow-up period of 50 months. Overall, the
median follow-up period was 2.9 years but within each of the research
design treatment groups client follow-up periods varied considerably.

The longer the follow-up period during which the client was exposed
to the risk of rearrest or accident involvement, the more likely the
client was to be identified as a recidivist. Therefore, group rearrest
and accident rates must be related to follow-up time to be meaningful.
For example, to compute a one month rearrest rate for control group
clients one would divide the number of control group clients rearrested
for DUI during the first month following their date of assignment by
the total number of control group clients who had follow-up periods of
at least one month. For the present analysis all clients had a minimum
follow-up period of 22 months.

In this study, group arrest and accident rates were computed for
successive 60-day intervals of follow-up time using a procedure known
as survival analysis. A survivor, in the present application, was a
client who was not rearrested or involved in an accident during a
given follow-up period (or, more accurately, there was no official
record of such an event). Thus, for example, if the proportion of
clients rearrested for DUI during the first 60 days subsequent to the
date of their random assignment was .04, the 60-day survival rate would
be .96. Once a client incurred the outcome event (in this example
a DUI) the case was excluded from the computation of the survival rates
for succeeding 60-day intervals. In other words, a client was counted
as a program failure only once for each outcome criterion analyzed. A
client arrested for DUI 80 days after assignment would be considered a
survivor in the first 60-day interval, a non-survivor or recidivist in
the 60-120 day interval, and the case would be excluded from the analysis
of the 120-180 day interval.

The number of clients available for analysis decreased progressively
with succeeding 60-day intervals, partly because of non-survivors and
partly because of insufficient follow-up time. By successively multi-

plying the proportions surviving in each of the 60-day intervals, one obtained a running estimate of the cumulative survival rate through the end of each interval for the total sample of clients. It should be noted, however, that because of the steady decrease in effective sample size, estimates of the cumulative survival rate beyond about 1,260 days became increasingly unreliable.

The cumulative survival rate provided an easily understood measure for comparing the effectiveness of the various treatment groups. However, the Lee-Desu test statistic, which was used to assess the statistical significance of between group differences, was actually based on a statistical index called a U score. A U score was computed for each client by comparing his survival time with that of all other clients in the total research sample. A client's score started at zero and was incremented by one for every case that was known to have a survival time less than the client's and decremented by one for every case known to have a survival time greater than the client's. Thus, a low or negative score indicated that most other clients were surviving longer without a rearrest (or accident, whatever the outcome criterion). The Lee-Desu statistic calculated from these U scores is distributed as chi-square with g-1 degrees of freedom (where g is the number of treatment groups). This statistic used all available information to test the null hypothesis that the treatment groups were samples from the same survival distribution. The alpha level was set at .10 for all tests of treatment effects. A more detailed explanation of survival analysis and the Lee-Desu statistic may be found in a procedures manual for the Statistical Package for the Social Sciences (Hull & Nie, 1979).

Survival analysis was the principal statistical procedure used in the evaluation of traffic safety impact. The application of survival analysis to the total research sample, i.e., all first offender clients assigned to the research design, provided the most methodologically sound and statistically sensitive approach to measuring treatment effects.

The survival analysis considered only the first occurrence of the target events subsequent to the date of random assignment. It was also of interest to examine the extent to which the treatment programs affected the total number of driving violations and accidents occurring subsequent to random assignment. This analysis amounts to a comparison of the mean

(average) number of target events incurred by the clients in each treatment group. Computing event means for the various treatment groups was a simple process, but obtaining a sensitive and reliable estimate of the statistical significance of the observed differences in group means was more difficult.

The most commonly used technique for testing differences in group means is to compute an F-statistic with analysis of variance (ANOVA) procedures. The application of ANOVA requires that certain assumptions be made about the nature of the data analyzed. One such assumption is that the data are reasonably normally distributed. The distribution of total DUI recidivist events for the first offender research sample is presented below.

# DUIs	Clients #	Clients %
0	3466	74.7
1	922	19.9
2	200	4.3
3	41	0.9
4 or more	10	0.2
Total	4639	100.0

This distribution shows more than a moderate departure from normality and is markedly skewed in a positive direction. Although the data were not particularly suitable for the analysis of variance, it was felt preferable to compute F-statistics rather than report the group means without significance tests. In an attempt to make the data more appropriate for the ANOVA, the total number of violation/accident events for each client (X) was transformed $\log_{10} (X+1)$. Applying the Cochran C-statistic (Winer, 1971) to both the raw and transformed data it was observed that, for most of the outcome criteria, the heterogeneity of within group error variances was reduced with the transformation (reduced to the point that one could not reject the null hypothesis of homogeneity, $\alpha = .10$).

The mean exposure times for the treatment groups (i.e., number of days from assignment to last DMV records search) were as follows:

Control	1073 days
Home Study	1079 days
In-Class Education	1075 days

The mean group exposure times were not significantly different, but the individual client exposure times varied considerably within the treatment groups of the design, thus contributing to the within group error variance. In order to remove this source of error variance and increase the sensitivity of the tests for treatment effects, individual client exposure times were employed as covariates in the analysis of covariance (ANCOVA). In addition to increasing sensitivity, the covariance procedure adjusted the outcome criteria for the minor differences observed in mean group exposure times.

The analysis of covariance requires an additional assumption, that is, the relationship between the covariate and the outcome criterion is the same for each of the treatment groups. This assumption of homogeneity of regression coefficients was tested for each ANCOVA by conducting a separate analysis which contained a treatment by covariate interaction term in the model. If the regression coefficients were not homogeneous, an analysis of variance was conducted on the outcome criterion without the exposure time covariate.

Through the log transformation and the use of exposure time as a covariate, the analyses of treatment effects based on total violation/accident events were made more acceptable. However, the ANCOVA results should be considered basically descriptive in nature. The ANCOVA results do not take precedence over the results of the survival analysis, a superior technique for analyzing the traffic safety outcome criteria.

Statistical Analysis of Life Status Outcome Criteria

The extent to which the CDUI Project's education programs were able to induce positive client life changes was determined by examining the changes in life status scale scores over time, i.e., between initial (pretreatment), 10-month, and 20-month follow-up interviews. Not all clients assigned to receive the follow-up interviews completed them. While most of the clients completed the initial interview, fewer clients completed the 10-month interview, and fewer yet completed the 20-month interview. In order to make use of the maximum information available, two analyses were conducted for each of the life status criteria. The first analysis was based on clients completing both the initial and 10-

month interviews, while the second analysis was based on clients completing all three interviews.

The statistical analysis of the initial and 10-month data was accomplished by first subtracting the 10-month scale scores from the initial scale scores (initial minus 10-month) for every client. The resulting difference or change scores became the life change outcome criteria and were compared between treatment groups with the analysis of variance (ANOVA).

The analysis of life status change across all three interviews could be conducted using a traditional repeated-measures analysis of variance, i.e., a treatment by time design with subjects repeated across time (initial, 10-month, and 20-month interviews). This approach requires the assumption of homogeneity of covariances (correlations) between the repeated measures (Winer, 1971). The evidence suggests that this assumption is frequently violated, particularly in the presence of a treatment effect, and the result of violating this assumption is that the null hypothesis is rejected too often for a given significance level.

An alternative approach to the analysis of repeated-measures designs is provided by McCall and Appelbaum (1973). In this approach the univariate repeated-measures design is conceived as a multivariate analysis of variance (MANOVA), i.e., an analysis of variance which considers two or more dependent variables simultaneously. For each life status scale, the three measures were transformed to obtain two contrasts using a set of orthogonal polynomial coefficients. These contrasts contained all the information regarding life-change time trends provided by the initial, 10-month, and 20-month scale scores. Thus, the two contrasts can be used as dependent variables in a one-way (treatment factor) MANOVA, thereby avoiding the requirement of homogeneity of covariances.

The first contrast reflects the linear trend in life status and the second contrast reflects the quadratic trend in life status. The contrasts were computed for every client by multiplying the appropriate polynomial coefficient by the clients' scale scores at each interview. For example:

Linear Trend Contrast $\quad C_L = -1\ (500) + 0\ (426) + 1\ (434) = -66$

Quadratic Trend Contrast $C_Q = 1\ (500) - 2\ (426) + 1\ (434) = 82$

Plotting the polynomial coefficients, the trends appear as follows:
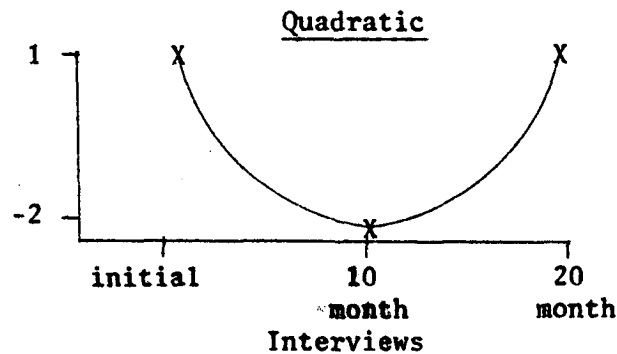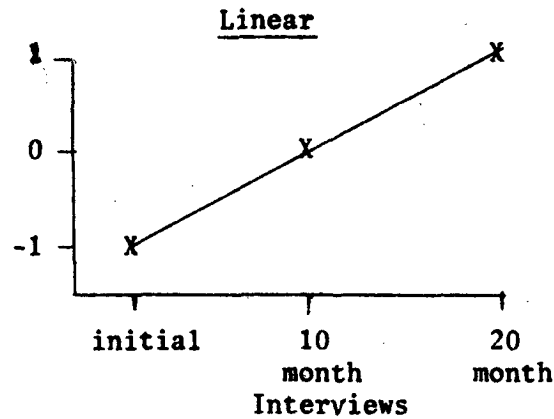
Linear

Quadratic

A linear trend over time indicates a relatively constant increase or decrease in the scale scores across the three interviews. A quadratic trend indicates a decrease or increase in the scale scores between the initial and 10-month interviews, but a return toward the pretreatment (initial interview) level at the 20-month interview. When the two contrasts are used simultaneously in a MANOVA, the multivariate results reflect the overall trend or profile in the scale scores across the three interviews.

A related technique known as profile analysis (Morrison, 1967), uses the simple difference scores (e.g., initial minus 10-month, and 10-month minus 20-month scale scores) as the dependent variables in a one-factor MANOVA. The multivariate results are the same whether one uses orthogonal polynomial contrasts or difference scores, but the univariate tests of the polynomial contrasts provide more information about the nature of life status changes over time.

The traditional repeated-measures analysis of variance provides tests

for the treatment main effect, the time main effect, and the treatment by time interaction. The same effects were tested using the multivariate approach as follows:

1. A one-factor (treatment groups) MANOVA was conducted using the two polynomial contrasts as the dependent variables. Two multivariate tests were made. The first test was of the grand mean, i.e., a test to determine whether the mean vector (set) of linear and quadratic contrasts over all clients was significantly different from zero. This is the test of slope in profile analysis terminology and is equivalent to a test of the time main effect. Given that there is no significant treatment by time interaction, a significant time main effect simply indicates a similar change over time for all treatment groups in the research design.

   The second and principal test was of the treatment factor. This test determined whether the mean vectors of contrasts were different among the levels of the treatment factor. This is the test of parallel profiles in profile analysis and is equivalent to a test of the treatment by time interaction. A significant interaction indicates that the change in client life status over time is different for the various treatment groups, thus suggesting the presence of a treatment effect.

2. Finally, a separate univariate ANOVA was conducted using the mean scale score for each client (i.e., the average of the three interview scores) as the dependent variable. This is the test of equal levels in profile analysis and is equivalent to a test of the treatment main effect. (In profile analysis the sum of scores is often used instead of the mean, the results are the same.) Given that there is no significant treatment by time interaction, a significant treatment main effect simply indicates a group difference in pretreatment scale scores which persisted through the 10-month and 20-month follow-up interviews.

When the presence of a treatment effect was suggested by a significant treatment by time interaction, the nature of the effect was clarified by comparing the treatment groups at each time interval with F-statistics.

RESULTS OF THE TRAFFIC
SAFETY IMPACT ANALYSES

The results of the traffic safety effectiveness (impact) analyses
are presented and discussed below. The presence of a traffic safety
impact was determined from the analysis of the total first offender
research sample (i.e., all clients randomly assigned to the research
design). All other analyses presented in this section should be consid-
ered descriptive, helping to clarify the nature of the treatment effects.

The specific evaluative topics are presented in the following order.

1. Analysis of client participation data and processing time.

2. Treatment group comparisons using total research sample:
   driving violation measures.

3. Treatment group comparisons using total research sample:
   accident measures.

4. Treatment group comparisons using subsamples based on client
   profile data.

5. Treatment group comparisons using only successful completion
   cases.

6. Analysis of letter monitoring conditions.

7. Analysis of follow-up interview conditions.

Following these topics, the analysis of changes in client life
status is presented in a separate results section.

Analysis of Client Participation Data and Processing Time

The successful completion rate was 84.1% for the in-class education
program and 88.1% for the home study program. The in-class education
program required attendance at 4 class sessions for a total of 10 hours
of instruction, compared with 2 contacts and slightly over 1 hour of
instruction/orientation for the home study program (plus completion of
the home study materials). The results of the knowledge tests adminis-
tered at the first and last program contact were not used to determine
successful completion, nor were they used to determine program effect-
iveness. The knowledge tests primarily functioned as an instructional
aid for the clients.

Although the control group clients had no education requirements,

9.7% were known to have had their informal probation terminated mostly for failure to participate in follow-up interviews or failure to pay the program fee. Therefore, the control group could be said to have had a 90.3% completion rate.

A factor which could affect attrition rates and treatment effectiveness is the length of time between the DUI arrest event and the start of the treatment intervention. It is generally believed that the sooner clients begin treatment after the drunk driving incident, the better the prognosis for behavior change. Table 1 below summarizes the median processing time from the date of arrest to various points in the referral/treatment system for first offenders.

Table 1

Median Processing Times for First Offense Clients

From Arrest To:	Median Time (days)
Conviction/Referral (All cases)	10.3
Random Assignment/Scheduling (All cases)	30.1
First Class Session/Orientation Session Attended	
(All education clients)	62.2
(Education-successful completion)	61.4

Fifty percent of the clients assigned to in-class education or home study programs attended their first education class session or group orientating session within 62 days of their arrest. The median processing time for successful completion cases was only slightly less than the processing time for all education clients in the research sample.

These data were reported to better describe the total court referral treatment process. The actual effect of processing time on treatment outcome was difficult to assess.

Treatment Group Comparisons Using Total Research Sample:
Driving Violation Measures

The cumulative DUI survival rates for the three first offender treatment groups are plotted over the entire four-year follow-up period in Figure 2. The results of the statistical analysis, summarized in Table 2, indicated that, overall, there was a statistically significant

Figure 2

Plot of Cumulative DUI Survival Rates for First Offender Treatment Groups

Table 2

Summary of DUI Survival Analysis
for First Offender Treatment Groups

Cumulative DUI Survival Rate	Days After Treatment Assignment							
	60	180	360	540	720	900	1080	1260
Control	.9720	.9122	.8556	.8126	.7662	.7376	.7208	.7053
Home Study	.9732	.9222	.8738	.8279	.7985	.7695	.7487	.7372
In-Class	.9693	.9224	.8780	.8356	.7996	.7745	.7582	.7428
No. Clients Exposed to Risk								
Control	1537.0	1450.0	1347.0	1267.0	1180.5	921.0	541.5	268.5
Home Study	1569.0	1486.0	1392.0	1320.0	1249.0	973.5	607.5	311.5
In-Class	1533.0	1446.0	1370.0	1301.0	1219.0	966.5	582.5	290.0

Note: Above data represent the cumulative proportion of clients surviving through the end of selected follow-up time intervals, and the estimated number of clients exposed during the last 60 days of each selected interval.

Overall Comparison

Lee-Desu = 6.283, df = 2, p = .0432*

Pairwise Comparisons   Mean U Scores

Cont. vs. H.S.	p = .0509*	Cont. - 102.970
Cont. vs. I.C.	p = .0207*	H. S. 37.999
H.S. vs. I.C.	p = .7080	I.C. 64.344

*Statistically significant, α = .10

difference in the survival experience of the three groups (p = .0432). This means that the magnitude of the between group differences could have occurred by chance alone, on the average, less than 10 times out of 100.

Since the overall comparison was statistically significant, the specific pairwise comparisons among the treatment groups were examined. Both the home study and in-class education groups had significantly higher survival rates than the control group (p = .0509 and p = .0207, home study and in-class education respectively). There was no statistically significant difference between the home study and in-class education survival rates (p = .7080).

Table 2 also shows the cumulative DUI survival rates for each group at selected follow-up intervals. The intervals selected were approximately 2, 6, 12, 18, 24, 30, 36, and 42 months following the date of random assignment to the treatment conditions. To help gauge the reliability of the cumulative survival rates, Table 2 presents the estimated number of clients exposed to the risk of arrest, i.e., having sufficient follow-up time to be under observation, during the last 60 days of each selected interval. The procedure for estimating the number of clients exposed to risk could result in fractions of a client. For the sake of completeness, the cumulative survival rates were plotted through the maximum follow-up time for first offender clients, but relatively little attention should be paid to survival rates beyond 1,260 days from assignment.

Finally, Table 2 presents the mean U score for each group from the overall comparison. The higher the mean U score in a positive direction, the better the group was doing relative to the other groups in the analysis. The mean U score was useful in comparing the relative performance of each treatment group, particularly when the cumulative group survival rates were close and frequently crossed each other.

The performance of the two education programs was so similar that it would be very misleading to discuss differences in their survival experience, one would simply be interpreting random fluctuations. In order to obtain a reliable estimate of program impact the two education programs were collapsed for a second analysis. The results of the DUI

survival analysis for the two group design are summarized in Table 3.

As expected, the overall comparison indicated a statistically significant difference in the survival experience of the two groups (p = .0132). To quantify the difference between the combined-education and control groups, the DUI recidivism rates (1 - survival rate) were computed for three time intervals: approximately 1 year, 2 years, and 3 years from the date of treatment assignment.

	360 days	720 days	1080 days
Control	.14	.23	.28
All Education	.12	.20	.25

By subtracting the education group recidivism rate from the control group rate, and then dividing the resulting difference by the control group recidivism rate, one can obtain the percentage reduction in recidivism (from the control group baseline) that the treatment interventions produced at each time interval. These percentage reductions estimate the magnitude of the treatment effects, or impact.

	360 days	720 days	1080 days
All Education	14%	13%	11%

The median lag time between assignment and entry into the education programs was about 1 month. The majority of clients completed the programs in 1 month, but with holidays and excused absences some clients took 6 or more weeks to complete the programs. With the processing delays, the majority of clients completed their education programs in about 3 months from the date of assignment. Because the probability of detection/arrest for a drunk driving event is low (estimated at 1 out of 500 to 1 out of 2,000), DUI recidivism is not sensitive enough to measure behavior change over very short periods of time. Consequently, it was difficult to tell exactly how long after the education intervention drunk driving behavior began to change.

Considering the percentage reduction data and the cumulative survival rates in Figure 2, a measurable effect on recidivism began to emerge at 6 months after assignment or 3 months after program completion. This effect increased in magnitude to a maximum impact of 14% at about 1 year
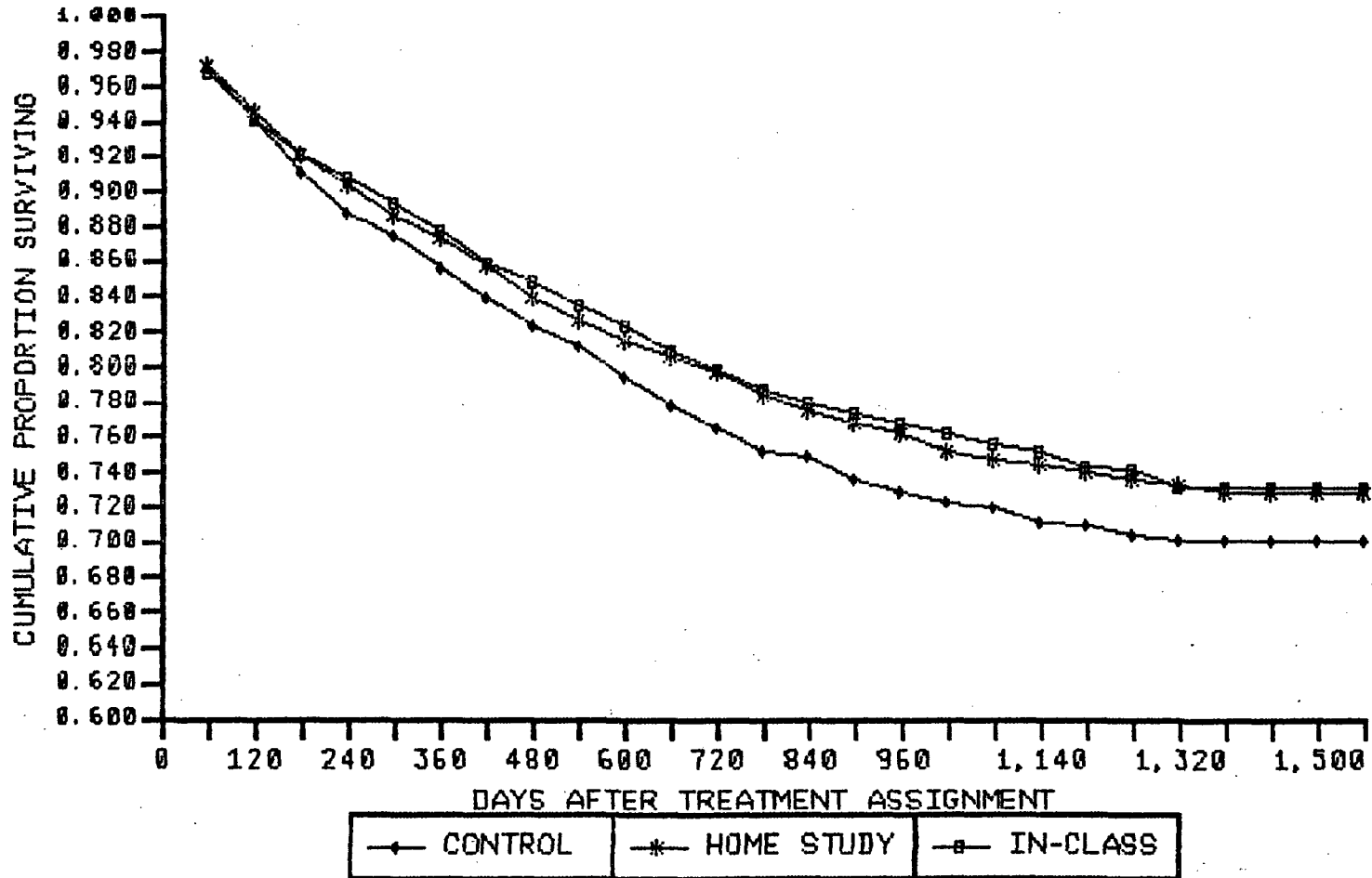
Table 3

Summary of DUI Survival Analysis for First Offender
Treatment Groups: Two Group Design

Cumulative DUI Survival Rate	Days After Treatment Assignment							
	60	180	360	540	720	900	1080	1260
Control	.9720	.9122	.8556	.8126	.7662	.7376	.7208	.7053
All Education	.9713	.9223	.8759	.8317	.7990	.7720	.7534	.7400
No. Clients Exposed to Risk								
Control	1537.0	1450.0	1347.0	1267.0	1180.5	921.0	541.5	268.5
All Education	3102.0	2932.0	2762.0	2621.0	2468.0	1940.0	1190.0	601.5

Note: Above data represent the cumulative proportion of clients
surviving through the end of selected follow-up time
intervals, and the estimated number of clients exposed
during the last 60 days of each selected interval.

Overall Comparison

Lee-Desu = 6.148, df = 1, p = .0132*

*Statistically significant, α = .10

Mean U Scores

Cont.   -102.970
All Ed.   51.019

after assignment or 9 months after treatment completion. After the first year from assignment both education and control group recidivism rates increased at a similar rate. After the second year of observation the relative magnitude of the education program impact had decreased to 13%, and after the third year it dropped to 11%.

When interpreting these results one must remember that the home study and in-class education programs were minimal interventions. One would not expect such programs to have an impact as great as that expected from a year-long counseling program. A 14% reduction in DUI recidivism was quite respectable for a brief exposure to educational materials. The form of the cumulative survival rates for the total research sample suggested that the programs' effect on drunk driving behavior developed within a relatively short period of time after program participation and once the effect was established, the magnitude of the initial impact gradually decreased over time.

The analysis of covariance was employed to determine whether the home study and in-class education programs affected the total number of DUI rearrests (arrests which resulted in convictions). As in the survival analysis, the DUI recidivism measure included reckless driving reductions. Table 4 summarizes the results of the analysis of covariance (ANCOVA) comparing the mean number of reconvictions between the three first offender treatment groups. The data presented in Table 4 were obtained in three separate analyses: 1. an ANCOVA on the raw (untransformed) data to obtain the observed (unadjusted) means and the adjusted means; 2. an ANCOVA on the transformed data to obtain the observed and adjusted transformed means, and the significance tests for the treatment effect and the covariate (i.e., the covariate-criterion regression); and 3. an analysis was conducted using exposure time, treatment, and an exposure by treatment interaction term in the model to test the assumption of homogeneity of regression coefficients.

Table 4

Summary of DUI ANCOVA For
First Offender Treatment Groups

DUI Convictions	N	Untransformed Observed Mean	Adjusted Mean	Transformed Log_{10} (X+1) Observed Mean	Adjusted Mean
Control	1537	.3442	.3449	.0939	.0941
Home Study	1569	.3136	.3127	.0852	.0850
In-Class	1533	.3059	.3061	.0829	.0829

Results on Transformed Data

Treatment Effect : $F = 2.244$, $df = 2/4635$, $p = .106^*$

Covariate (Exposure Time): $F = 39.816$, $df = 1/4635$, $p < .001$

(Exposure X Treatment: $F = 1.189$, $df = 2/4633$, $p = .305$)

Mean Exposure Time (All 4639 cases) = 1075.9 days

*Not statistically significant, $\alpha = .10$

The results presented in Table 4 indicated that the relationship between the exposure time covariate and the number of DUI reconvictions was statistically significant ($p < .001$), and that the hypothesis of homogeneity of regression coefficients could not be rejected (i.e., the exposure by treatment interaction was not statistically significant, $p = .305$). These results indicated that the adjusted group means were interpretable. However, there was no statistically significant difference in the adjusted means between the treatment groups ($p = .106$). The mean exposure time for these data was 1075.9 days or about 3 years. Thus, on the average, control clients had .34 DUI convictions during the 3 year period following assignment to the control condition.

The cumulative group survival rates for the non-alcohol related moving violation measure are illustrated in Figure 3. The results of the statistical analysis, summarized in Table 5, indicated no statistically significant difference in the survival experience of the three groups ($p = .5196$).

The results of the ANCOVA on non-alcohol related moving violations are presented in Table 6. These results indicated that there was no significant difference in mean non-alcohol related moving violations between groups ($p = .290$). Thus, it appeared that the education programs had a specific effect on drunk driving behavior.

Figure 3

Plot of Cumulative Non-Alcohol Related Moving Violation
Survival Rates for First Offender Treatment Groups
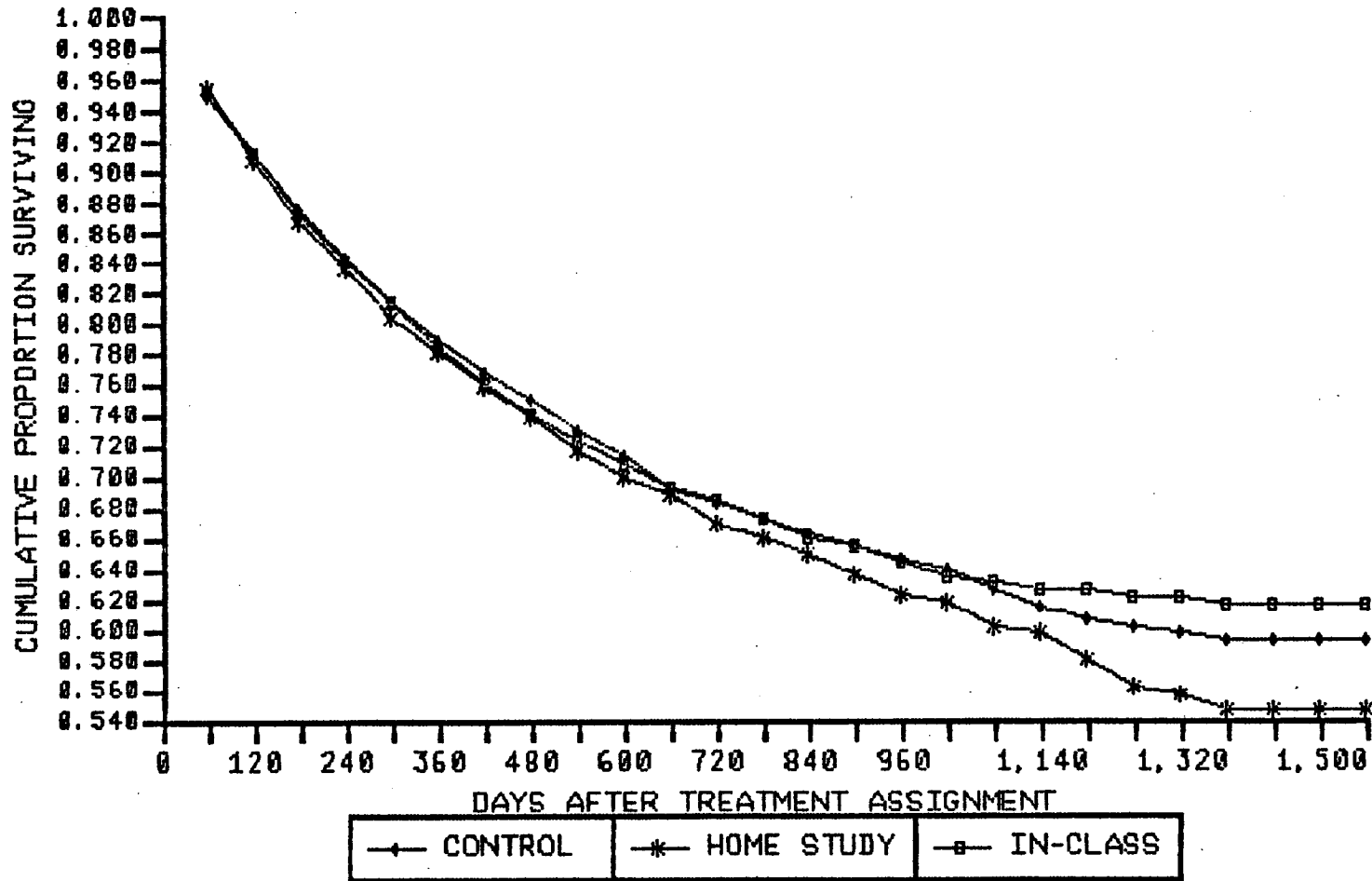
Table 5

Summary of Non-Alcohol Related Moving Violation
Survival Analysis for First Offender Treatment Groups

Cumulative Non-A/R Violation Survival Rate	Days After Treatment Assignment							
	60	180	360	540	720	900	1080	1260
Control	.9512	.8770	.7899	.7313	.6837	.6564	.6284	.6026
Home Study	.9547	.8693	.7820	.7183	.6708	.6380	.6016	.5634
In-Class	.9543	.8741	.7854	.7254	.6868	.6568	.6329	.6221
No. Clients Exposed to Risk								
Control	1537.0	1420.0	1252.0	1156.0	1048.0	806.5	492.0	231.0
Home Study	1569.0	1425.0	1263.0	1161.0	1062.0	812.0	495.5	229.0
In-Class	1533.0	1399.0	1250.0	1137.0	1051.5	803.5	450.5	221.5

Note: Above data represent the cumulative proportion of clients surviving through the end of selected follow-up time intervals, and the estimated number of clients exposed during the last 60 days of each selected interval.

Overall Comparison	Mean U Scores	
Lee-Desu = 1.309, df = 2, p = .5196*	Cont.	25.172
	H.S.	-53.362
*Not statistically significant, α = .10	I.C.	29.378

Table 6

Summary of Non-Alcohol Related Moving
Violation ANCOVA For First Offender Treatment Groups

Non-A/R Moving Violations	N	Untransformed Observed Mean	Adjusted Mean	Transformed Log_{10} (X+1) Observed Mean	Adjusted Mean
Control	1537	.6168	.6185	.1468	.1472
Home Study	1569	.6750	.6730	.1587	.1582
In-Class	1533	.6334	.6337	.1485	.1486

Results on Transformed Data

Treatment Effect : $F = 1.238$, df = 2/4635, $p = .290*$

Covariate (Exposure Time): $F = 87.880$, df = 1/4635, $p < .001$

(Exposure X Treatment: $F = 0.521$, df = 1/4633, $p = .594$)

Mean Exposure Time (All 4639 cases) = 1075.9 days

*Not statistically significant, $\alpha = .10$

The effect that the CDUI Project's education programs had on DUI recidivism supported the findings of the Phoenix ASAP researchers (Swenson & Clay, 1977). A four session alcohol traffic safety school and a home study/literature only approach are equally effective in reducing DUI recidivism relative to a no-treatment control group. The clients in the Phoenix study were randomly assigned to education and control groups without regard to drinking problem severity. The Phoenix research sample contained a relatively small proportion of clients who were identified as problem drinkers, unlike the CDUI research sample which contained a much larger proportion of problem drinkers (as determined by the Project's subjective classification procedures). However, both the Phoenix and CDUI research samples were primarily composed of clients with no recorded prior DUI/DWI convictions. Thus, the findings of both studies suggested that minimal education programs had a positive traffic safety impact on the recidivism of first offenders.

Treatment Group Comparisons Using Total Research Sample:
Accident Measures

The first subgroup of accidents examined included police reported alcohol related accidents, night injury/fatality accidents, and night single vehicle accidents of the "ran off the road" or "hit fixed object" type. The cumulative survival rates for this accident subgroup are

plotted in Figure 4, and the results of the survival analysis are summarized in Table 7. The results indicated no statistically significant difference in the accident survival rates of the three first offender treatment groups (p = .5792). Although this accident subgroup included a relatively high proportion of alcohol related accidents, after three years of observation less than 10% of all clients had such accidents on their driving records. The low frequency of observed events makes this accident subgroup an insensitive criterion for detecting treatment effects.

The second accident subgroup included reported alcohol related accidents, any night accidents, and any injury/fatality accidents. The cumulative survival rates for this accident subgroup are illustrated in Figure 5. The results of the survival analysis, summarized in Table 8, indicated no statistically significant difference in the accident survival rates of the first offender treatment groups (p = .3284).

The analyses of covariance comparing average frequency of accidents between treatment groups are presented in Table 9. The results indicated no statistically significant differences in accident involvement between the treatment groups for either the first accident subgroup (p = .564) or the second accident subgroup (p = .351).

Overall, these results provided no evidence that the CDUI Project's education programs had an impact on client accident involvement.

Treatment Group Comparisons Using Subsamples Based on Client Profile Data

When the total research sample was examined, there was no difference in the traffic safety effectiveness of the home study and in-class education programs. The lack of an overall difference did not necessarily mean that the two education approaches were equally effective for all clients. There could have been subsamples of clients that were not particularly successful in one modality or the other. The performance of these subsamples would not be apparent in the gross analysis.

The methodological problem encountered in the analysis of subsamples was the loss of statistical power to detect treatment effects (i.e., to identify a "true" treatment effect as statistically significant). Although the first offender research sample had over 1,500 clients in each treatment group, the magnitude of the education program effects were relatively small (for purposes of statistical analysis). These conditions made it

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Figure 4

Plot of Cumulative Alcohol Related or Night Injury/Fatality or Night Single Vehicle (Ran Off Road or Hit Fixed Object) Accident Survival Rates for First Offender Treatment Groups

Table 7

Summary of Alcohol Related or Night Injury/Fatality or Night Single Vehicle (Ran Off
Road or Hit Fixed Object) Accident Survival Analysis for First Offender Treatment Groups

Cumulative Accident Survival Rate	Days After Treatment Assignment							
	60	180	360	540	720	900	1080	1260
Control	.9915	.9798	.9623	.9447	.9323	.9188	.9077	.8995
Home Study	.9917	.9745	.9579	.9446	.9279	.9190	.9100	.9017
In-Class	.9915	.9837	.9641	.9498	.9354	.9262	.9178	.9158

No. Clients Exposed to Risk								
Control	1537.0	1515.0	1488.0	1460.0	1418.5	1140.0	701.5	358.0
Home Study	1569.0	1542.0	1512.0	1486.0	1439.5	1164.0	737.5	370.5
In-Class	1533.0	1510.0	1490.0	1461.0	1415.0	1156.0	705.5	359.5

Note: Above data represent the cumulative proportion of clients
surviving through the end of selected follow-up time
intervals, and the estimated number of clients exposed
during the last 60 days of each selected interval.

Overall Comparison

Lee-Desu = 1.092, df = 2, p = .5792*

*Not statistically significant, α = .10

Mean U Scores

Cont.   -15.448
H.S.   -11.268
I.C.   27.020

Figure 5

Plot of Cumulative Alcohol Related or Night or Injury/Fatality
Accident Survival Rates for First Offender Treatment Groups

Table 8

Summary of Alcohol Related or Night or Injury/Fatality Accident Survival Analysis for First Offender Treatment Groups

Cumulative Accident Survival Rate	Days After Treatment Assignment							
	60	180	360	540	720	900	1080	1260
Control	.9876	.9720	.9486	.9226	.9010	.8829	.8628	.8546
Home Study	.9866	.9611	.9331	.9152	.8910	.8768	.8647	.8476
In-Class	.9876	.9739	.9465	.9237	.9066	.8965	.8814	**.8685**
No. Clients Exposed to Risk								
Control	1537.0	1505.0	1469.0	1427.0	1375.5	1092.2	666.5	339.5
Home Study	1569.0	1527.0	1481.0	1442.0	1384.0	1112.5	697.5	349.5
In-Class	1533.0	1500.0	1466.0	1426.0	1371.5	1114.0	675.5	340.0

Note: Above data represent the cumulative proportion of clients surviving through the end of selected follow-up time intervals, and the estimated number of clients exposed during the last 60 days of each selected interval.

Overall Comparison

Lee-Desu = 2.227, df = 2, p = .3284*

*Not statistically significant, α = .10

Mean U Scores

Cont.	-9.517
H.S.	-33.608
I.C.	43.939

Table 9

Summary of Accident ANCOVAs for
First Offender Treatment Groups

Alcohol Related or Night Injury/Fatality or Night Single
Vehicle (Ran Off Road or Hit Fixed Object) Accidents

Accident Events	N	Untransformed Observed Mean	Adjusted Mean	Transformed Observed Mean	Log_{10} (X+1) Adjusted Mean
Control	1537	.0963	.0966	.0283	.0283
Home Study	1569	.0975	.0972	.0283	.0282
In-Class	1533	.0874	.0875	.0253	.0253

Results on Transformed Data

Treatment Effect   : $F = 0.572$, df = 2/4635, p = .564*
Covariate (Exposure Time): $F = 23.453$, df = 1/4635, p <.001
    (Exposure X Treatment: $F = 0.367$, df = 2/4633, p = .693)
Mean Exposure Time (All 4639 cases) = 1075.9 days

*Not statistically significant, α = .10

Alcohol Related or Night or Injury/Fatality Accidents

Accident Events	N	Untransformed Observed Mean	Adjusted Mean	Transformed Observed Mean	Log_{10} (X+1) Adjusted Mean
Control	1537	.1464	.1468	.0421	.0422
Home Study	1569	.1530	.1525	.0439	.0437
In-Class	1533	.1344	.1344	.0382	.0382

Results on Transformed Data

Treatment Effect   : $F = 1.046$, df = 2/4635, p = .351*
Covariate (Exposure Time): $F = 31.437$, df = 1/4635, p <.001
    (Exposure X Treatment: $F = 0.281$, df = 2/4633, p = .755)
Mean Exposure Time (All 4639 cases) = 1075.9 days

*Not statistically significant, α = .10

difficult to obtain stable and/or statistically significant trends within the subsamples. Any interpretation of the subsample data should emphasize general trends and overall impressions, and not details. One should definitely avoid making quantitative estimates of impact by computing percentage changes in DUI recidivism rates.

The client characteristics selected for analysis were blood alcohol concentration at time of arrest (BAC), number of prior DUIs (including reckless driving convictions), education level, ethnicity, and age. The Project's drinker type classification was not selected for presentation because it was a subjective decision which was unlikely to be accurately replicated elsewhere.

The selected profile variables were dichotomized to form ten subsamples as follows:

BAC (.19 or lower, and .20 or higher)

Ethnicity (Caucasian, and all minorities)

Prior DUIs (none, and one or more)

Education Level (High school diploma or less, and one or more
            years college)

Age (24 years or younger, and 25 years or older)

The Project's diagnostic counselors generally considered a BAC of .20 or higher to be indicative of an experienced, heavy drinker and potentially severe drinking problems. The ethnic categories simply reflected the fact that no single minority group was large enough to be analyzed separately. The prior DUIs and education level categories were the most logical dichotomies given the distributions of these variables. The age categories selected were those used as stratification criteria in the random assignment process. The selected age categories also provided a sufficient number of cases in the younger subsample to obtain reasonably stable trends.

The results of the four education level and age subsample analyses were not detailed in this study because they showed trends which were similar to those observed in the total research sample. These analyses provide no evidence of a differential treatment effect on DUI survival rate for the home study and in-class programs. It should be recalled that non-English speaking and functionally illiterate clients were

excluded from the research design. Thus, it appeared that the level of education beyond the ability to read had little relationship to program effectiveness.

For the six remaining subsamples, the number of clients in each of the treatment groups was as follows.

	Control	Home Study	In-Class Education
BAC .19 or lower	906	936	891
BAC .20 or higher	505	505	499
Caucasian	1149	1125	1123
All minorities	317	392	342
No prior DUIs	1306	1353	1321
One or more priors	231	216	212

Approximately 9% of the total research sample cases were missing BAC data, and approximately 4% were missing ethnicity data. This loss of data was uncorrelated with treatment assignment.

The cumulative DUI survival rates are plotted in Figure 6 for the lower BAC subsample, and in Figure 7 for the higher BAC subsample. The results of the statistical analyses for both subsamples are summarized in Table 10. The results indicated that the differences in group survival rates were not statistically significant for the lower BAC sample (p = .1729). The results of the significance tests were reported for the subsample analyses, but they were generally ignored when discussing trends in the data. Both Figure 6 and the mean U scores in Table 10 suggested that the lower BAC clients in the home study program tended to have a higher DUI survival rate than the in-class education clients throughout the follow-up period. None of the subsamples were expected to show a higher survival rate for the home study program. These results could of course be due to chance. Perhaps the safest statement one can make about the trends is that a BAC of .19 or less is one criterion for selecting clients that are suitable for a home study program.

The higher BAC subsample contained clients who were generally more experienced drinkers. For these clients the treatment group survival rates were significantly different (p = .0671). During the first year following assignment to the treatment conditions home study

Figure 6

Plot of Cumulative DUI Survival Rates for First Offender Treatment Groups: BAC .19 or Lower

Figure 7

Plot of Cumulative DUI Survival Rates for First Offender Treatment Groups: BAC .20 or Higher

Table 10

Summary of DUI Survival Analyses for
First Offender Treatment Groups: Blood Alcohol Concentration Subsamples

BAC .19 or Lower

Cumulative DUI Survival Rate	60	180	360	540	720	900
Control	.9735	.9227	.8720	.8245	.7802	.7575
Home Study	.9744	.9306	.8846	.8504	.8246	.7946
In-Class	.9686	.9203	.8799	.8350	.8000	.7734

Days After Treatment Assignment

Overall Comparison

Lee-Desu = 3.510, df = 2, p = .1729*

*Not statistically significant, α = .10

Mean U Scores

Cont.   -49.423
H.S.   50.526
I.C.   -2.823

BAC .20 or Higher

Cumulative DUI Survival Rate	60	180	360	540	720	900
Control	.9703	.8911	.8317	.7921	.7422	.7017
Home Study	.9743	.9129	.8634	.7960	.7602	.7283
In-Class	.9699	.9218	.8697	.8297	.7894	.7713

Days After Treatment Assignment

Overall Comparison

Lee-Desu = 5.404, df = 2, p = .0671*

Pairwise Comparisons

Mean U Scores

Cont.   -46.333
H.S.   -4.859
I.C.   51.808

Cont. vs. H.S.   p = .3322
Cont. vs. I.C.   p = .0205*
H.S. vs. I.C.   p = .1699

*Statistically significant, α = .10

and in-class education clients performed equally well, but between 12 and 18 months following assignment the DUI survival rate for the home study clients dropped rapidly to the level of the control group. It should also be noted that the control group survival rate decreased sharply during the first year of follow-up, thereby contributing to the early development of the overall treatment effects observed in the total research sample. The in-class education program maintained a significantly higher survival rate than the control group. In Figure 7, the cumulative survival rates were not reliable beyond 3 years (1080 days). These results suggested that if high BAC clients are to be referred to an education program, an in-class environment would be more appropriate.

The cumulative survival rates for Caucasian clients are plotted in Figure 8, and the cumulative survival rates for all minority clients are plotted in Figure 9. Table 11 presents the DUI survival analyses for both client subsamples. The results of the statistical analysis for Caucasian clients indicated that the treatment group survival rates were significantly different (p = .0721). The pattern of group survival rates was very similar to the pattern observed in the total research sample. The category of Caucasian clients was too broad to provide useful information and the survival rates were presented mainly as a contrast for the performance of the minority subsample.

The results of the survival analysis for all minority clients indicated no statistically significant difference in the survival experience of the treatment groups (p = .2166). The lack of statistical significance was probably due to the loss of statistical power. The minority subsample was small in relation to the magnitude of the potential treatment effects. This subsample was composed of 50% Mexican-American, 31% Black, 13% American Indian, and 6% others (mostly Asian). The trends in Figure 9 are quite clear. The ethnic minority clients did poorly in the home study program having a DUI survival rate similar to that of the control group. In comparison, the minority clients appeared to benefit from the in-class education program. The in-class education group had a higher survival rate than both the home study and control

Figure 8

Plot of Cumulative DUI Survival Rates for First Offender Treatment Groups: Caucasian Clients
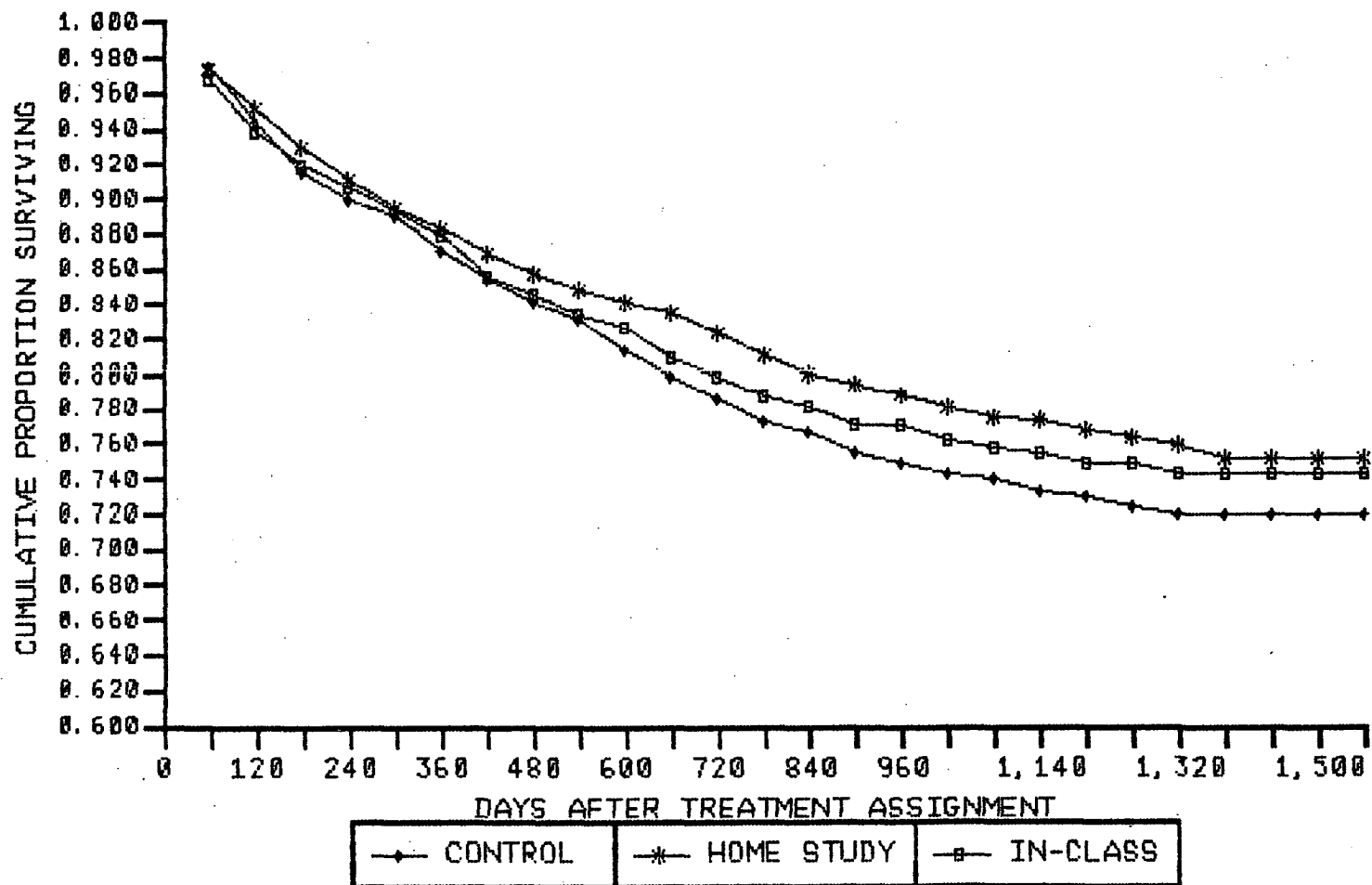
Figure 9

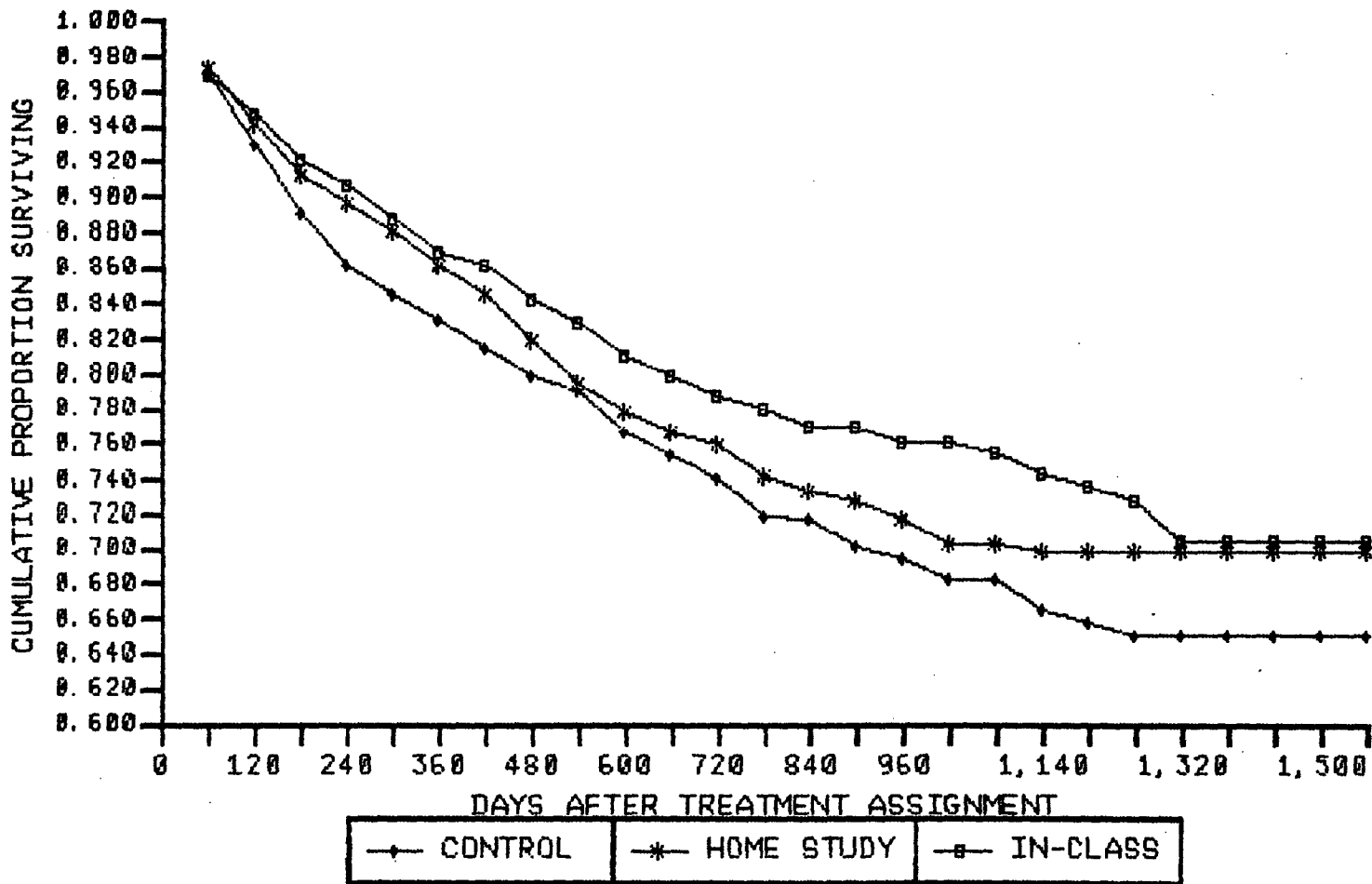Plot of Cumulative DUI Survival Rates for First Offender Treatment Groups: All Minority Clients
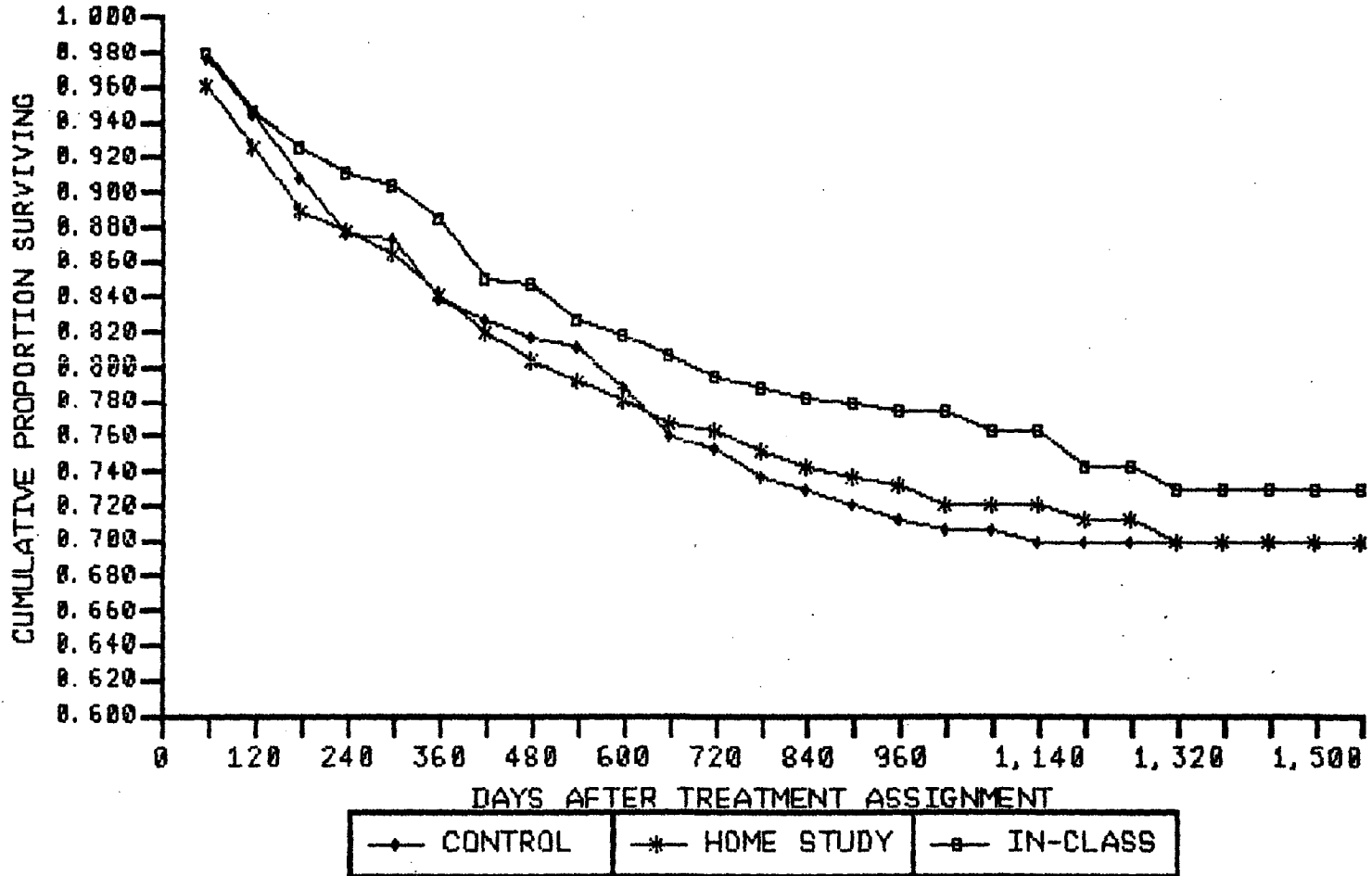
Table 11

Summary of DUI Survival Analyses for
First Offender Treatment Groups: Ethnic Subsamples

Caucasian Clients

Cumulative DUI Survival Rate	Days After Treatment Assignment					
	60	180	360	540	720	900
Control	.9721	.9147	.8625	.8146	.7726	.7442
Home Study	.9778	.9333	.8862	.8400	.8114	.7823
In-Class	.9644	.9181	.8789	.8406	.8039	.7757

Overall Comparison

Lee-Desu = 5.261, df = 2, p = .0721*

Pairwise Comparisons

Mean U Scores	
Cont.	-78.355
H.S.	51.055
I.C.	29.023

Cont. vs. H.S.   p = .0330*
Cont. vs. I.C.   p = .0803*
H.S. vs. I.C.   p = .7174

*Statistically significant, α = .10

All Minority Clients

Cumulative DUI Survival Rate	Days After Treatment Assignment					
	60	180	360	540	720	900
Control	.9779	.9085	.8391	.8107	.7539	.7219
Home Study	.9617	.8903	.8418	.7934	.7627	.7366
In-Class	.9795	.9269	.8860	.8275	.7951	.7788

Overall Comparison

Lee-Desu = 3.059, df = 2, p = .2166*

*Not statistically significant, α = .10

Mean U Scores	
Cont.	-21.161
H.S.	-14.005
I.C.	35.667

groups. The cumulative survival rates in Figure 9 became unreliable after about 900 days from assignment. These results suggested that a home study program might be inappropriate for ethnic minority clients, or at least a home study program which does not have an ethnic orientation.

The last client subsamples examined were based on the number of recorded prior DUI and reckless driving convictions with arrest dates prior to random assignment to the treatment conditions. Clients who had a prior DUI conviction which was over five years old, giving them two DUIs in seven years, were sentenced as first offenders. Further, low BAC DUI charges which had been reduced to reckless driving were not considered in sentencing and referral. Although some "legal" first offenders had priors, there was a relatively small number of such cases in the research sample. The number of priors was an important variable, however, since it represents the single best predictor of highway safety risk (i.e., probability of rearrest for drunk driving).

The research of Mushill and Struckman-Johnson (1977) has demonstrated that the relationship between past and future DUI events is very strong. In fact, the relationship is so strong that for persons with at least one prior DUI neither arrest BAC nor diagnostic instrument scores (Mortimer-Filkins questionnaire/interview) could further improve the prediction of future DUI events.

The cumulative DUI survival rates for the no-priors subsample are illustrated in Figure 10, and the survival rates for the one or more priors subsample are illustrated in Figure 11. Table 12 summarizes the statistical analyses for both client subsamples. The results of the survival analysis for the no-priors subsample indicated that there was no statistically significant difference in the treatment group survival rates (p = .1656). Inspection of the survival rates in Figure 10 and the mean U scores in Table 12 suggested a treatment effect was present but it was of slightly smaller magnitude than was evident in the total research sample. Thus, even with approximately 1,300 cases in each treatment group there was not sufficient power to achieve statistical significance. The mean U scores in Table 12 also suggested that there was no difference in the survival experience of the home

Figure 10

Plot of Cumulative DUI Survival Rates for First Offender Treatment Groups: No Prior DUIs
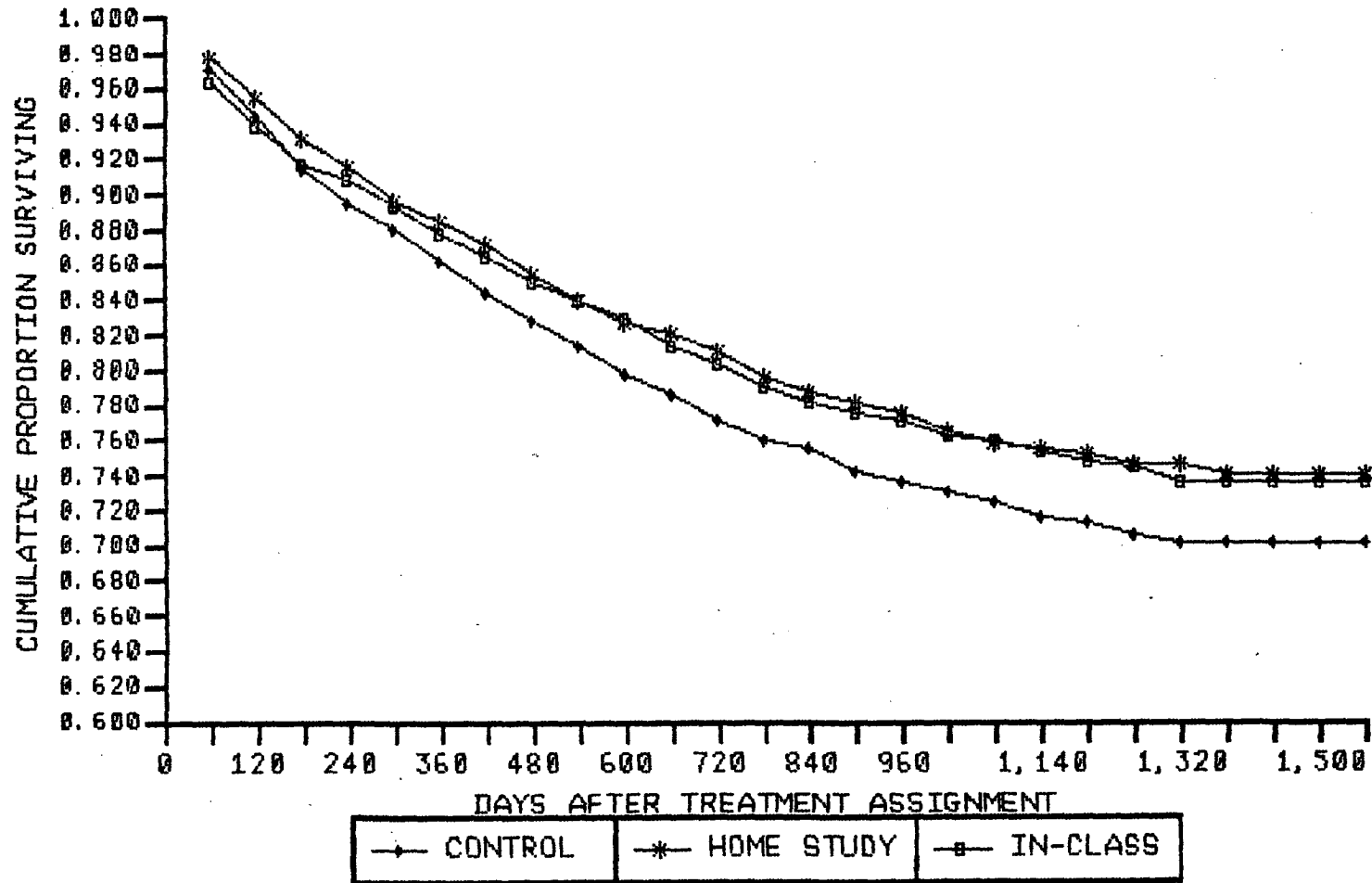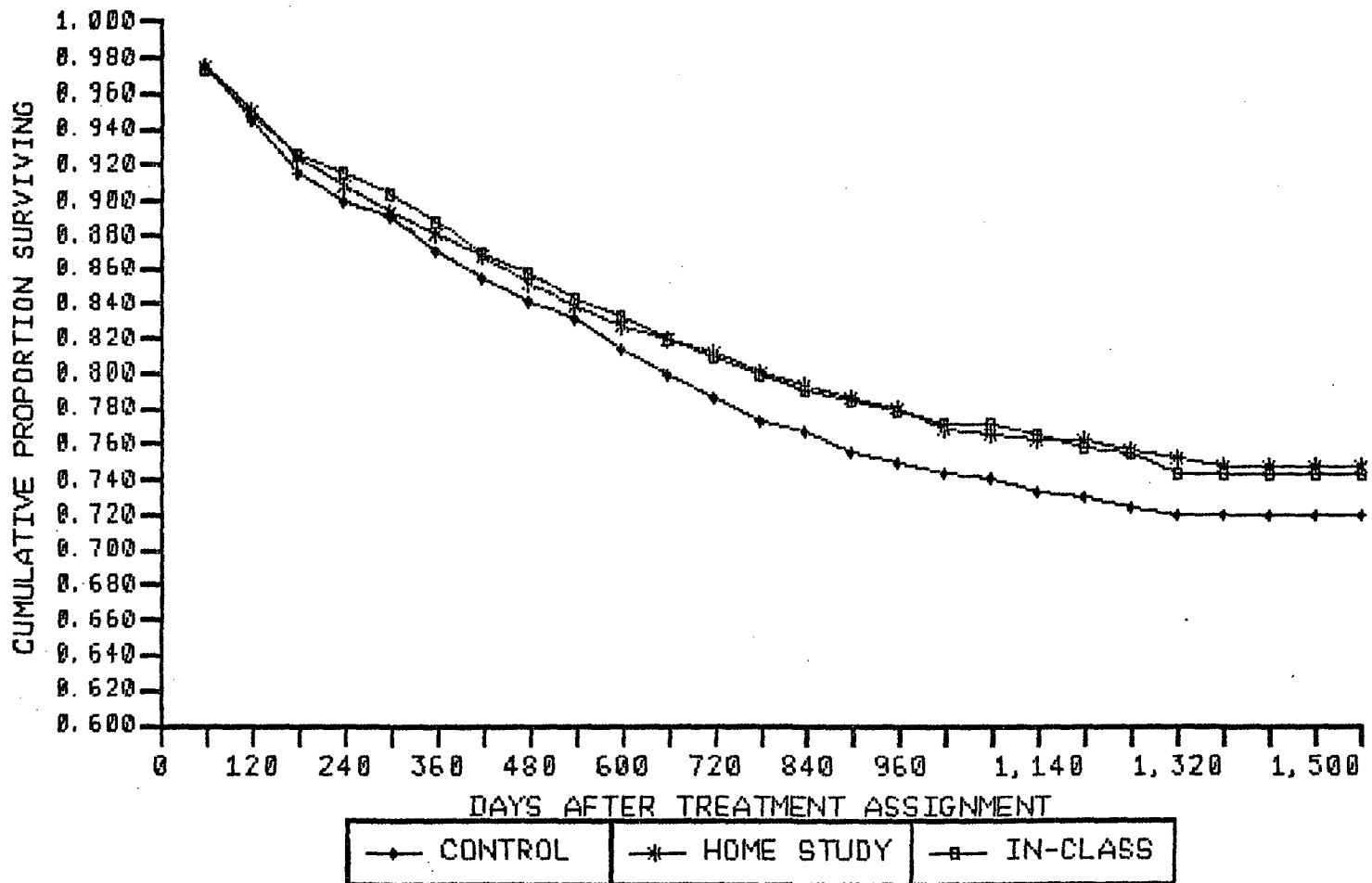
Figure 11

Plot of Cumulative DUI Survival Rates for First Offender Treatment Groups: One or More Prior DUIs
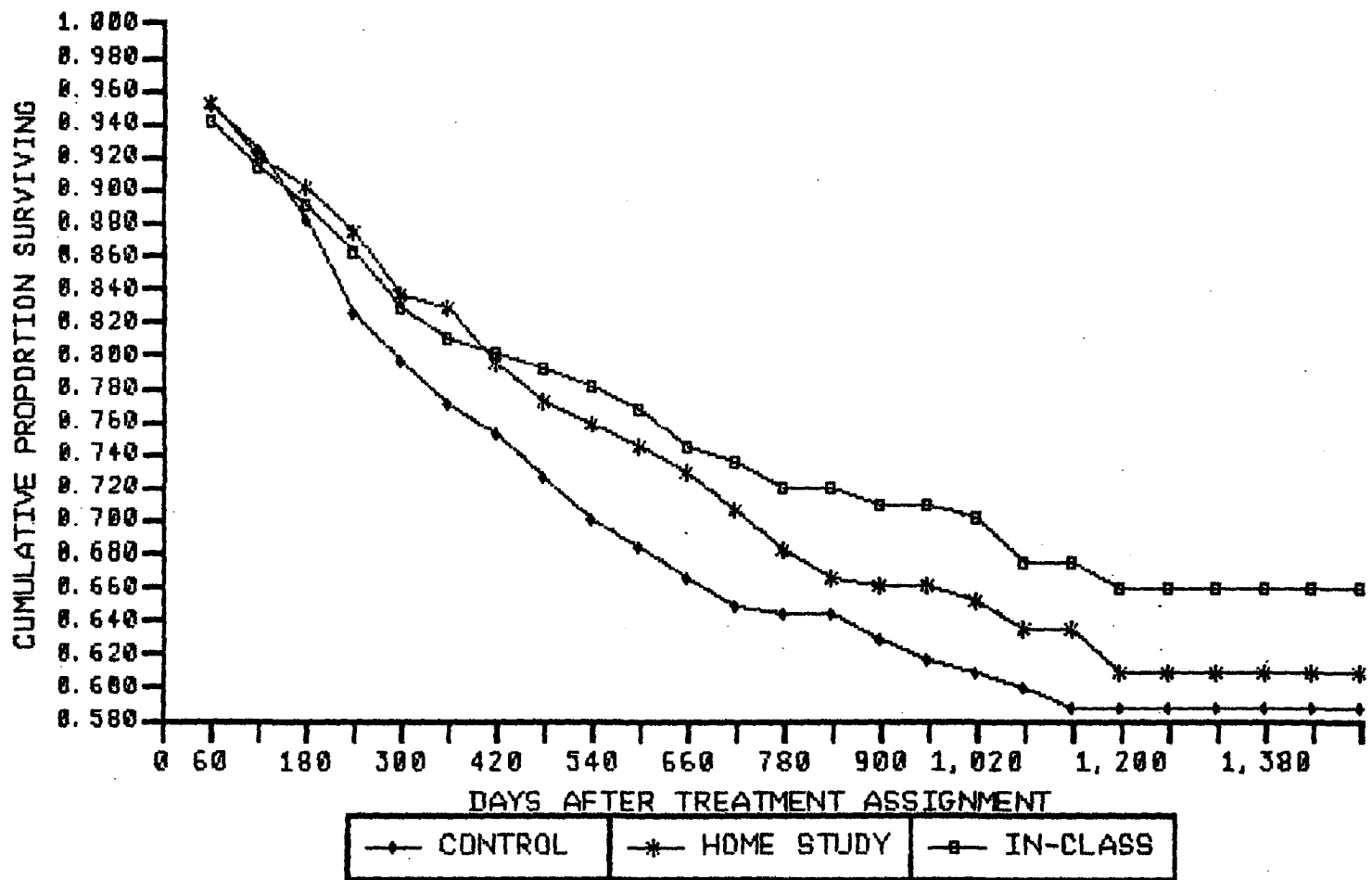
Table 12

Summary of DUI Survival Analyses for First Offender
Treatment Groups: Prior DUI/Reckless Driving Conviction Subsamples

No Prior DUI or Reckless Driving Convictions on Record

Cumulative DUI Survival Rate	60	180	360	540	720	900
Control	.9755	.9173	.8706	.8323	.7869	.7569
Home Study	.9763	.9254	.8810	.8389	.8129	.7869
In-Class	.9735	.9273	.8887	.8441	.8098	.7849

Overall Comparison	Mean U Scores	
Lee-Desu = 3.597, df = 2, p = .1656*	Cont.	-71.541
	H.S.	33.582
*Not statistically significant, α = .10	I.C.	36.332

One or More Prior DUI or Reckless Driving Convictions on Record

Cumulative DUI Survival Rate	60	180	360	540	720	900
Control	.9524	.8831	.7706	.7013	.6491	.6290
Home Study	.9537	.9028	.8287	.7593	.7079	.6607
In-Class	.9434	.8915	.8113	.7830	.7358	.7100

Overall Comparison	Mean U Scores	
Lee-Desu = 2.910, df = 2, p = .2334*	Cont.	-26.407
	H.S.	3.782
*Not statistically significant, α = .10	I.C.	24.920

study and in-class education clients.

The analysis of clients with one or more priors also indicated no statistically significant difference in group survival rates (p = .2334). This was the smallest subsample and the trends got increasingly unreliable beyond two years (720 days) from assignment. The prior DUIs subsample had the worst overall survival experience of all the subsamples examined. The control group survival rate dropped sharply between the sixth and eighth month after assignment to the control condition, and then continued to decline at a slower but steady rate. There was a tendency for the home study clients to have a lower survival rate than the in-class clients, however, for the first two years subsequent to treatment assignment, the survival experience of all education clients was similar, and distinctly better than that of the control group clients.

In summary, the results of the subsample analyses suggested some factors to consider in selecting an appropriate education program for drunk drivers. The more experienced drinkers with BACs of .20 or higher, and ethnic minority clients appeared to benefit more from an in-class education program. Nevertheless, one should not lose sight of the fact that the CDUI Project and the Phoenix ASAP findings indicated that the majority of clients referred to alcohol traffic safety education had an equivalent DUI survival rate in either a home study or in-class education program.

One possible explanation for the equivalent effectiveness of the two education methods for the majority of clients requires the relatively safe assumption that there exists in the first offender population certain individuals who are receptive to the information presented to them. These receptive individuals want to avoid another DUI, and make some attempt to understand and use the alcohol traffic safety information. Further, the receptive clients need the information to avoid another DUI. For these receptive clients any competent presentation of the educational material is sufficient. The results of both the CDUI Project and the Phoenix ASAP suggested that within the duration of a four-session school, the instructors could not reach enough of the unreceptive clients to increase the traffic safety effectiveness of the school beyond that produced by a self-instruction process.

If one accepts this hypothetical situation, the implications are clear. Any attempts to further refine the educational materials may improve test scores, but are unlikely to improve traffic safety impact, that is, not as long as the instructor/counselors are restricted to a short term, largely didactic program.

Treatment Group Comparisons Using Only Successful Completion Cases

Analyses of treatment effectiveness were performed using all clients assigned, whether or not they completed their treatment conditions. The greater the differences in completion rates among the treatment group, the greater the possibility of introducing a between group bias in client characteristics by removing the noncompletion cases (or, to be more accurate, by allowing certain clients to identify themselves for removal). Between group differences in client characteristics provide an alternative explanation for differences in treatment outcome. This problem was precisely what the random assignment process was designed to avoid.

In addition, the more one restricts the characteristics of the clients under study, the more difficult it is to generalize the findings and make statements about the traffic safety impact of the total court referral treatment process.

The sole purpose for presenting analyses based on completion cases was to document the DUI recidivism and accident rates. No valid assessments of treatment effectiveness can be made with this self-selected subsample.

There were 1388 completion cases in the control group, 1383 in the home study group, and 1289 in the in-class education group. Table 13 presents the results of the DUI and accident survival analyses. The accident criterion used was any alcohol related or night injury/ fatality or night single vehicle (ran off road or hit fixed object) accident. The results of the DUI survival analysis indicated a statistically significant difference between treatment group survival rates (p = .0889). The survival experience of the education and control group completion cases was similar to that observed for the total research sample.

Table 13

Summary of DUI Survival Analysis for First Offender Treatment Groups: Completions Only

Cumulative DUI Survival Rate	Days After Treatment Assignment							
	60	180	360	540	720	900	1080	1260
Control	.9741	.9164	.8653	.8220	.7742	.7466	.7287	.7119
Home Study	.9718	.9226	.8778	.8322	.8017	.7714	.7482	.7356
In-Class	.9760	.9317	.8875	.8448	.8059	.7822	.7634	.7478

Overall Comparison   Mean U Scores

Lee-Desu = 4.841, df = 2, p = .0889*   Cont.   -77.407
                                                    H.S.   15.025
Pairwise Comparisons   I.C.   67.232

Cont. vs. H.S.   p = .1646
Cont. vs. I.C.   p = .0309*
H.S. vs. I.C.   p = .4297

*Statistically significant, α = .10

Summary of Alcohol Related or Night Injury/Fatality or Night Single Vehicle (Ran Off Road or Hit Fixed Object) Accident Survival Analysis for First Offender Treatment Groups: Completions Only

Cumulative Accident Survival Rate	Days After Treatment Assignment							
	60	180	360	540	720	900	1080	1260
Control	.9928	.9798	.9618	.9438	.9315	.9190	.9076	.8987
Home Study	.9920	.9754	.9617	.9487	.9320	.9218	.9119	.9048
In-Class	.9938	.9876	.9728	.9573	.9425	.9335	.9238	.9216

Overall Comparison   Mean U Scores

Lee-Desu = 2.848, df = 2, p = .2408*   Cont.   -27.239
                                                    H.S.   -10.053
*Not statistically significant, α = .10   I.C.   40.117

The results of the accident survival analysis indicated that there was no statistically significant difference in the accident survival experience of the first offender treatment groups (p = .2408).

Table 14 shows the accident means for the first offender treatment groups. The analysis of covariance indicated that the differences in group means were not statistically significant (p = .194).

Table 14

Summary of DUI ANCOVA for First Offender
Treatment Groups: Completions Only.

| DUI Convictions | N | Untransformed | | Transformed Log_{10} (X+1) | |
		Observed Mean	Adjusted Mean	Observed Mean	Adjusted Mean
Control	1388	.3293	.3310	.0906	.0910
Home Study	1383	.3167	.3158	.0857	.0854
In-Class	1289	.2940	.2932	.0804	.0802

Results on Transformed Data

Treatment Effect : $F = 1.641$, df = 2/4056, p = .194*

Covariate (Exposure Time): $F = 42.954$, df = 1/4056, p <.001

(Exposure X Treatment: $F = 1.157$, df = 2/4054, p = .315)

Mean Exposure Time (All 4060 cases) = 1081.6 days

*Not statistically significant, $\alpha = .10$

Analysis of Letter Monitoring Conditions

The purpose of the quarterly letter monitoring procedure was to periodically remind clients that they were on informal probation for two years and to encourage them to drive safely and soberly at all times. First offender clients randomly assigned to the letter monitoring condition were mailed a total of seven letters beginning three months after the date of their treatment assignment.

It was hypothesized that periodic reminders, which extended beyond the date of treatment completion, might enhance the behavior modifying potential of the education programs. This hypothesis was tested by comparing the total number of first offender clients assigned to the letter monitoring condition with the total number of clients assigned to the no letter monitoring condition on the traffic safety outcome criteria. It was also of interest to examine the effect of monitoring letters on control clients only. Since the monitoring letters were the only experimental intervention affecting control clients such an analysis might

provide a more sensitive assessment of the letters' impact on driving behavior. It is quite possible, however, that any potential increase in sensitivity resulting from the use of control clients only was offset by the reduction in statistical sensitivity resulting from a decrease in the total sample size available for analysis.

Although it was not possible to determine how many clients read the monitoring letters, by recording the number of letters returned to the CDUI Project by the U. S. Postal Service as undeliverable, the number of letters delivered (or at least not returned) could be computed. These data are reported below.

Number of Letters Delivered (Not Returned)

	0	1	2	3	4	5	6	7
# Cases	85	75	96	123	168	150	258	1360
%	3.7	3.2	4.1	5.3	7.3	6.5	11.1	58.7

While many of the letters did not reach their intended targets, the practical problems of maintaining current addresses over long periods of time would be common to many jurisdictions in which the procedure might be implemented.

Of the total 4,639 first offender clients randomly assigned 2,315 were assigned to the letter monitoring condition and 2,324 were assigned to the no letter monitoring condition. The letter monitoring conditions were compared using all four traffic safety outcome criteria: DUIs, non-alcohol related moving violations, accident subgroup 1 including alcohol related or night injury/fatality or night single vehicle (ran off road or hit fixed object) accidents, and accident subgroup 2 including alcohol related or night or injury/fatality accidents.

The results of the survival analyses based on the total research sample are summarized in Tables 15 through 18. None of the analyses indicated statistically significant differences between the survival experience of clients in the letter monitoring and no letter monitoring conditions. The results of the significance tests were as follows.

Table 15, DUIs	p = .9139
Table 16, Non-A/R Violations	p = .2030
Table 17, Accident Subgroup 1	p = .3800
Table 18, Accident Subgroup 2	p = .4469

Table 15

Summary of DUI Survival Analysis for
First Offender Letter Monitoring Conditions

Cumulative DUI Survival Rate	Days After Treatment Assignment							
	60	180	360	540	720	900	1080	1260
Letter Monitoring	.9720	.9214	.8687	.8285	.7872	.7599	.7441	.7279
No Letter Monitoring	.9729	.9165	.8705	.8223	.7890	..7614	.7410	.7290

Overall Comparison

Lee-Desu = 0.012, df = 1, p = .9139*

*Not statistically significant, α = .10

Mean U Scores

L.M.   -3.167
No L.M.   3.155

Table 16

Summary of Non-Alcohol Related Moving Violation
Survival Analysis for First Offender Letter Monitoring Conditions

Cumulative Non-A/R Violation Survival Rate	Days After Treatment Assignment							
	60	180	360	540	720	900	1080	1260
Letter Monitoring	.9538	.8778	.7927	.7313	.6896	.6613	.6298	.5950
No Letter Monitoring	.9531	.8692	.7788	.7186	.6711	.6393	.6115	.5953

Overall Comparison

Lee-Desu = 1.621, df = 1, p = .2030*

*Not statistically significant, α = .10

Mean U Scores

L.M.   42.570
No L.M. -42.405

Table 17

Summary of Alcohol Related or Night Injury/Fatality or
Night Single Vehicle (Ran Off Road or Hit Fixed Object) Accident Survival
Analysis for First Offender Letter Monitoring Conditions

Cumulative Accident Survival Rate	Days After Treatment Assignment							
	60	180	360	540	720	900	1080	1260
Letter Monitoring	.9972	.9806	.9650	.9473	.9339	.9249	.9164	.9097
No Letter Monitoring	.9905	.9781	.9578	.9454	.9298	.9178	.9072	.9015

Overall Comparison

Lee-Desu = 0.771, df = 1, p = .3800*

*Not statistically significant, α = .10

Mean U Scores

L.M.   16.042
No L.M. -15.980

Table 18

Summary of Alcohol Related or Night or Injury/Fatality Accident Survival
Analysis for First Offender Letter Monitoring Conditions

Cumulative Accident Survival Rate	Days After Treatment Assignment							
	60	180	360	540	720	900	1080	1260
Letter Monitoring	.9896	.9702	.9469	.9231	.9010	.8887	.8738	.8643
No Letter Monitoring	.9849	.9677	.9385	.9178	.8979	.8820	.8655	.8494

Overall Comparison

Lee-Desu = 0.579, df = 1, p = .4469*

*Not statistically significant, α = .10

Mean U Scores

L.M.   16.550
No L.M. -16.486

Of the 1,537 control group clients 767 were assigned to letter monitoring and 770 were not. Only the DUI criterion was used in the analysis of control group clients and the results were not reported in detail. The results indicated that there was no significant difference in the DUI survival experience of control group clients in the letter monitoring and no letter monitoring conditions (Lee-Desu = 0.828, df = 1, p = .3630).

The evidence indicated that the letter monitoring procedure had no effect on the driving behavior of first offense drunk drivers. It should be emphasized that the CDUI Project's letter monitoring procedure was used as an adjunct to informal probation, and was not functionally similar to the letters used to warn negligent drivers of possible licensing action.

Analysis of Follow-up Interview Conditions

In addition to letter monitoring, first offenders were randomly assigned to receive three follow-up interviews: the first at the time of assignment (prior to treatment entry), and again at ten and twenty months from the initial interview. While the primary purpose of these interviews was to collect life activities data for treatment outcome analyses, their effect on driving behavior was examined.

The random assignment of first offender clients began in September of 1977 but the Project's Follow-up Unit was not staffed and operational until May 15, 1978. Consequently, all clients assigned prior to this date did not actually receive follow-up interviews and were excluded from the analysis of traffic safety impact. Throughout most of the Follow-up Unit's operational period 50% of the first offender clients were randomly assigned to the follow-up interview condition but there were two exceptions. The assignment proportion was set at 20% to follow-up interviews during the first month of unit operation between May 15, 1978 and June 20, 1978, in order to allow the first follow-up counselors and clerical staff a period of on-the-job training. Further, the evaluator was forced to reduce the assignment proportion to 20% again for a two-month period between March 23, 1979 and May 23, 1979 because of delays in hiring additional counselors to handle both initial and ten-month interviews. The 1979 reduction coincided with a high volume period of court referrals.

There was a total of 3,656 first offender client cases available for analysis of which 1,603 were assigned to the follow-up interview condition and 2,053 were assigned to the no follow-up interview condition. Comparisons were made between the two follow-up interview conditions using all four traffic safety outcome criteria.

The results of the survival analyses are summarized in Tables 19 through 22. None of the analyses indicated statistically significant differences between the survival experience of clients in the follow-up interview and no follow-up interview conditions. The results of the significance tests were as follows.

Table 19, DUIs   p = .6404

Table 20, Non-A/R Moving Violations   p = .8579

Table 21, Accident Subgroup 1   p = .2832

Table 22, Accident Subgroup 2   p = .5488

In addition to the analyses based on all available client cases, a comparison was made between the follow-up interview conditions using only control group clients. Of the total 1,217 control group clients available for analysis, 534 were assigned to receive follow-up interviews and 683 were not. The results of this analysis indicated that there was no statistically significant difference in the DUI survival experience of control group clients in the follow-up interview and no follow-up interview conditions (Lee-Desu = 0.661, df = 1, p = .4162).

Considering all of the results, there was no evidence that the three follow-up interviews had any effect on the driving behavior of first offenders.

Table 19

Summary of DUI Survival Analysis for First Offender Follow-up Interview Conditions

Cumulative DUI	Days After Treatment Assignment						
Survival Rate	60	180	360	540	720	900	1080
Follow-up Interviews	.9732	.9208	.8734	.8203	.7870	.7591	.7450
No Follow-up Interviews	.9732	.9206	.8699	.8276	.7933	.7683	.7520

Overall Comparisons	Mean U Scores	
Lee-Desu = 0.218, df = 1, p = .6404*	F.I.	-13.556
	No F.I.	10.585
*Not statistically significant α = .10		

Table 20

Summary of Non-Alcohol Related Moving Violation Survival Analysis for First Offender Follow-up Interview Conditions

Cumulative Non-A/R	Days After Treatment Assignment						
Survival Rate	60	180	360	540	720	900	1080
Follow-up Interviews	.9595	.8808	.7991	.7399	.6978	.6669	.6397
No Follow-up Interviews	.9571	.8855	.8022	.7379	.6915	.6644	.6423

Overall Comparison	Mean U Scores	
Lee-Desu = 0.032, df = 1, p = .8579*	F.I.	5.893
	No F.I.	-4.601
*Not statistically significant α = .10		

Table 21

Summary of Alcohol Related or Night Injury/Fatality or Night Single Vehicle (Ran Off Road or Hit Fixed Object) Accident Survival Analysis for First Offender Follow-up Interview Conditions

Cumulative Accident	Days After Treatment Assignment						
Survival Rate	60	180	360	540	720	900	1080
Follow-up Interviews	.9925	.9788	.9607	.9470	.9307	.9214	.9105
No Follow-up Interviews	.9937	.9825	.9683	.9552	.9405	.9283	.9200

Overall Comparison	Mean U Scores	
Lee-Desu = 1.152, df = 1, p = .2832*	F.I.	-18.906
	No F.I.	14.762
*Not statistically significant, α = .10		

Table 22

Summary of Alcohol Related or Night or Injury/Fatality Accident Survival Analysis for First Offender Follow-up Interview Conditions

Cumulative Accident	Days After Treatment Assignment						
Survival Rate	60	180	360	540	720	900	1080
Follow-up Interviews	.9888	.9676	.9407	.9208	.8988	.8881	.8724
No Follow-up Interviews	.9893	.9722	.9518	.9318	.9079	.8906	.8774

Overall Comparison	Mean U Scores	
Lee-Desu = 0.360, df = 1, p = .5488*	F.I.	-12.687
	No F.I.	9.906
*Not statistically significant, α = .10		

RESULTS OF THE CLIENT
LIFE STATUS ANALYSES

When alcohol education and educational counseling programs are employed as traffic safety countermeasures, decisions about treatment effectiveness must be based primarily on the direct traffic safety criteria, such as DUI recidivism and subsequent accident involvement. But a more complete evaluation of the CDUI Project's treatment programs was achieved through the analysis of changes in client life status.

The Problem of Attrition

During the CDUI Follow-up Unit's operational period (which began on May 15, 1978), a total of 1,603 first offender clients were randomly assigned to receive a series of three follow-up interviews. The interview completion rates are presented below.

Treatment Groups	Total Assigned	Interviews Completed					
		Initial #	%	10-Month #	%	20-Month #	%
Control	534	525	98.3	444	83.1	375	70.2
Home Study	533	521	97.7	406	76.2	369	69.2
In-Class Education	536	514	95.9	387	72.2	341	63.6
Total	1603	1560	97.3	1237	77.2	1085	67.7

Most of the clients who failed to complete their education program did not return for the follow-up interviews. Once the clients dropped out of their education program and had their probation terminated, the CDUI Project could no longer insist on their participation in the follow-up interviews. An attempt was made to contact all program dropouts and persuade them to voluntarily participate in the follow-up interviews, but this tactic was usually unsuccessful. Other procedures were considered to increase the follow-up interview return rate, such as paying clients for the interviews or conducting the interviews at the clients' residence. These procedures were dismissed as too costly, considering that the life change data were not the primary measure of treatment effectiveness.

In addition to the attrition which resulted from program dropouts, about an equal number of clients completed their education programs but could no longer be located. Reasonable attempts were made to contact

all clients through relatives, friends, and employers.

While interviews were obtained on some program dropouts, the clients who returned for the 10 and 20-month interviews were primarily those who completed their treatment conditions. This situation limited the ability to generalize findings to the total research sample. Furthermore, different return rates among the treatment groups could introduce differences in the characteristics of the clients available for analysis in each treatment group.

The simplest approach to estimating the magnitude of group bias was to compare the initial (pretreatment) life status scale scores between treatment groups. Any bias of a magnitude that would seriously confound treatment effects should produce a significant difference in the pretreatment client characteristics represented by the initial interview scale scores.

Table 23 presents the average life status scale scores for each first offender treatment group. The averages were based on all clients who completed their initial interview. The results of the statistical analyses indicated that the treatment groups were not significantly different on any of the scale scores. (A significance level, α, of .05 was used for all profile comparisons.) Although not significant at the .05 level, there was a notable difference between groups on the SOC1 scale. Overall, these results showed little evidence of an attrition-induced group bias between assignment and initial interview. Since the total initial interview sample contained over 95% of the clients randomly assigned to the follow-up interview condition, these findings also suggested that there was no group bias introduced by the random assignment process.

The analysis of life status changes was performed using two subsamples of all clients assigned to the follow-up interview condition: 1. clients who completed the initial and 10-month interviews, and, 2. clients who completed all three interviews. A complete set of treatment group comparisons using initial interview scores was not conducted for these subsamples. Only when the results of the outcome analyses indicated a significant treatment effect on a life status scale were comparisons made between treatment groups on the initial interview scores to check for a possible bias in pretreatment client characteristics.

Another method used to detect treatment group differences in client

Table 23

Comparison of Initial Interview Life Status Scale Scores
Between First Offender Treatment Groups

Scale	Description	High Scale Score	N	Mean Scale Scores for Treatment Groups Control	Home Study	In-Class
ALC1	Alcohol Consumption/Quantity-Frequency	High Q/F	1,556	505.94	503.12	506.21
ALC2	Alcohol Problems/Control	Many Problems	1,559	483.93	482.61	485.19
PHL1	Physical Health Problems	Many Problems	1,559	491.52	480.83	491.36
FIN1	Financial Status/Employment Situation	Sound Financial Status	1,560	494.13	496.54	500.07
SOC1	Family Status/Living Situation	Married, Living with Family, Others	1,560	491.25	499.41	504.91
SOC2	Social Interaction/Involvement	Socially Active	1,560	509.87	508.41	508.54
MAR1	Marriage/Marriage Like Situation	Good Relationship	719	488.91	506.14	493.54
TRT1	Treatment Receptiveness	Receptive	1,558	477.62	483.98	482.38
IMP1	Improbable Responses/Probable Responses	Probable	1,558	496.95	485.78	493.47

Overall Comparisons Between Groups

ALC1: F = 0.171, df = 2/1553, p = .8430
ALC2: F = 0.120, df = 2/1556, p = .8871
PHL1: F = 2.249, df = 2/1556, p = .1058
FIN1: F = 0.471, df = 2/1557, p = .6246
SOC1: F = 2.567, df = 2/1557, p = .0771
SOC2: F = 0.033, df = 2/1557, p = .9672
MAR1: F - 1.695, df = 2/716, p = .1843
TRT1: F = 0.782, df = 2/1555, p = .4579
IMP1: F = 1.743, df = 2/1555, p = .1753

Critical F = 3.00 for α = .05

characteristics was to examine changes on the improbability-lie scale scores over time. The change in lie scale scores from initial to 10-month interviews was not statistically significant between treatment groups (F = 0.273, df = 2/1232, p = .7608). The analysis of changes in lie scale scores between initial, 10-month, and 20-month interviews also provided no evidence of a between group difference in client response bias (Group X Time: F = 0.471, df = 4/2106, p = .757). These results suggested that the treatment groups were generally comparable within the two client subsamples used to examine life status changes over time.

Analysis of Life Status Changes

For all first offender clients who completed the initial and 10-month interviews, the 10-month scale (or factor) scores were subtracted from the initial scale scores to obtain the life status change scores. Table 24 summarizes the mean change scores and the results of the statistical analyses comparing the mean change scores between treatment groups. Of the seven scales examined, none indicated a statistically significant treatment effect.

The mean life status scale scores for clients who completed all three interviews are presented in Table 25, and the results of the multivariate analysis of variance (MANOVA) for each scale are summarized in Table 26. The mean scale scores are plotted across time in Figures 12 through 18. These figures are presented in the order in which the scale scores appear in Table 25. The results of the MANOVA trend analyses indicated that two scales had a significant treatment group by time interaction, PHL1 (p = .041) and SOC1 (p = .052). Inspection of the SOC1 (family status/living situation) trends in Figure 16 revealed a wide spread in the initial interview scores. An analysis of the SOC1 initial interview scores indicated significant differences between treatment groups (F = 3.150, df = 2/1056, p = .0433). Because there was evidence of a pretreatment group bias on this scale the results were dismissed.

The PHL1 (physical health problems) scale scores are plotted in Figure 14. An analysis of the initial interview scores indicated that the observed group differences were not statistically significant (F = 1.205, df = 2/1055, p = .3002). Given the significant group by

Table 24

Changes in Life Status Scale Scores Between Initial and
Ten-Month Interviews For First Offender Treatment Groups

Scale	High Scale Score	N	Initial Mean Scores			10-Month Mean Scores			Mean Change Scores		
			Control	Home Study	In-Class	Control	Home Study	In-Class	Control	Home Study	In-Class
ALC1	High Alcohol Consumption	1,222	504.62	503.60	503.73	488.27	485.07	491.33	16.36	18.53	12.40
ALC2	Many Alcohol Problems	1,233	483.19	478.54	482.61	476.79	470.90	472.43	6.40	7.64	10.18
PHL1	Many Health Problems	1,237	491.33	481.23	490.65	484.56	482.55	485.84	6.77	-1.33	4.81
FIN1	Sound Financial Status	1,237	500.89	506.03	509.17	514.02	515.07	519.36	-13.13	-9.04	-10.19
SOC1	Married, Living with Family, Others	1,237	493.99	504.50	508.19	498.17	499.95	508.38	-4.18	4.55	-0.19
SOC2	Socially Active	1,237	512.19	504.20	512.26	527.50	527.28	531.86	-15.31	-23.08	-19.60
MAR1	Good Marital Relationship	492	500.43	509.04	499.99	512.62	513.99	509.29	-12.19	-4.95	-9.31

Overall Comparisons Between Groups (on change scores)

ALC1: F = 0.442, df = 2/1219, p = .6427
ALC2: F = 0.244, df = 2/1230, p = .7835
PHL1: F = 0.934, df = 2/1234, p = .3932   Critical F = 2.30 for α = .10
FIN1: F = 0.363, df = 2/1234, p = .6959
SOC1: F = 1.392, df = 2/1234, p = .2489
SOC2: F = 0.837, df = 2/1234, p = .4333
MAR1: F = 0.274, df = 2/489, p = .7608

Table 25

Summary of Initial, Ten-Month, and Twenty-Month Interview
Life Status Scale Scores For First Offender Treatment Groups

Scale	High Scale Score	N	Initial Mean Scores			10-Month Mean Scores			20-Month Mean Scores		
			Control	Home Study	In-Class	Control	Home Study	In-Class	Control	Home Study	In-Class
ALC1	High Alcohol Consumption	1040	510.31	508.09	506.71	492.19	489.03	493.66	486.92	488.87	486.19
ALC2	Many Alcohol Problems	1050	484.81	478.52	485.29	479.41	471.47	474.16	473.16	475.32	478.97
PHL1	Many Health Problems	1058	489.05	480.23	490.29	483.64	482.83	487.95	476.25	472.77	494.32
FIN1	Sound Financial Status	1059	503.38	510.72	513.49	515.76	519.86	523.11	516.92	524.33	525.92
SOC1	Married, Living with Family, others	1059	492.91	504.18	511.75	499.89	500.69	509.67	505.40	502.41	506.63
SOC2	Socially Active	1059	509.53	505.42	511.38	526.02	529.69	532.44	524.40	521.26	525.36
MAR1	Good Marital Relationship	382	511.38	514.91	507.68	523.77	522.14	513.54	515.02	513.82	520.71

Table 26

Summary of MANOVA on Initial, Ten-Month, and Twenty-Month Interview
Life Status Scale Scores for First Offender Treatment Groups

Scale		Group X Time Interaction/ Test of Parallel Profiles			Group Main Effect/ Test of Equal Levels				Time Main Effect/ Test of Slope		
		df	F	p	df	F	p		df	F	p
ALC1		4/2072	0.429	.788	2/1037	0.017	.983		2/1036	26.762	<.001*
								Lin:	1/1037	49.275	<.001
								Quad:	1/1037	7.276	.007
ALC2		4/2092	1.166	.324	2/1047	0.486	.615		2/1046	5.523	.004*
								Lin:	1/1047	7.384	.007
								Quad:	1/1047	4.326	.038
PHL1		4/2108	2.499	.041*	2/1055	2.393	.092*		2/1054	2.129	.120
	Lin:	2/1055	2.924	.054							
	Quad:	2/1055	1.920	.147							
FIN1		4/2110	0.171	.953	2/1056	0.954	.386		2/1055	17.195	<.001*
								Lin:	1/1056	29.782	<.001
								Quad:	1/1056	4.854	.028
SOC1		4/2110	2.349	.052*	2/1056	1.138	.321		2/1055	0.387	.679
	Lin:	2/1056	4.410	.012							
	Quad:	2/1056	0.344	.709							
SOC2		4/2110	0.486	.746	2/1056	0.233	.792		2/1055	29.362	<.001*
								Lin:	1/1056	27.505	<.001
								Quad:	1/1056	33.900	<.001
MAR1		4/756	0.954	.432	2/379	0.064	.938		2/378	2.120	.121

*Statistically significant, $\alpha = .10$

Figure 12

Plot of Initial, Ten-Month, and Twenty Month Mean Life Status
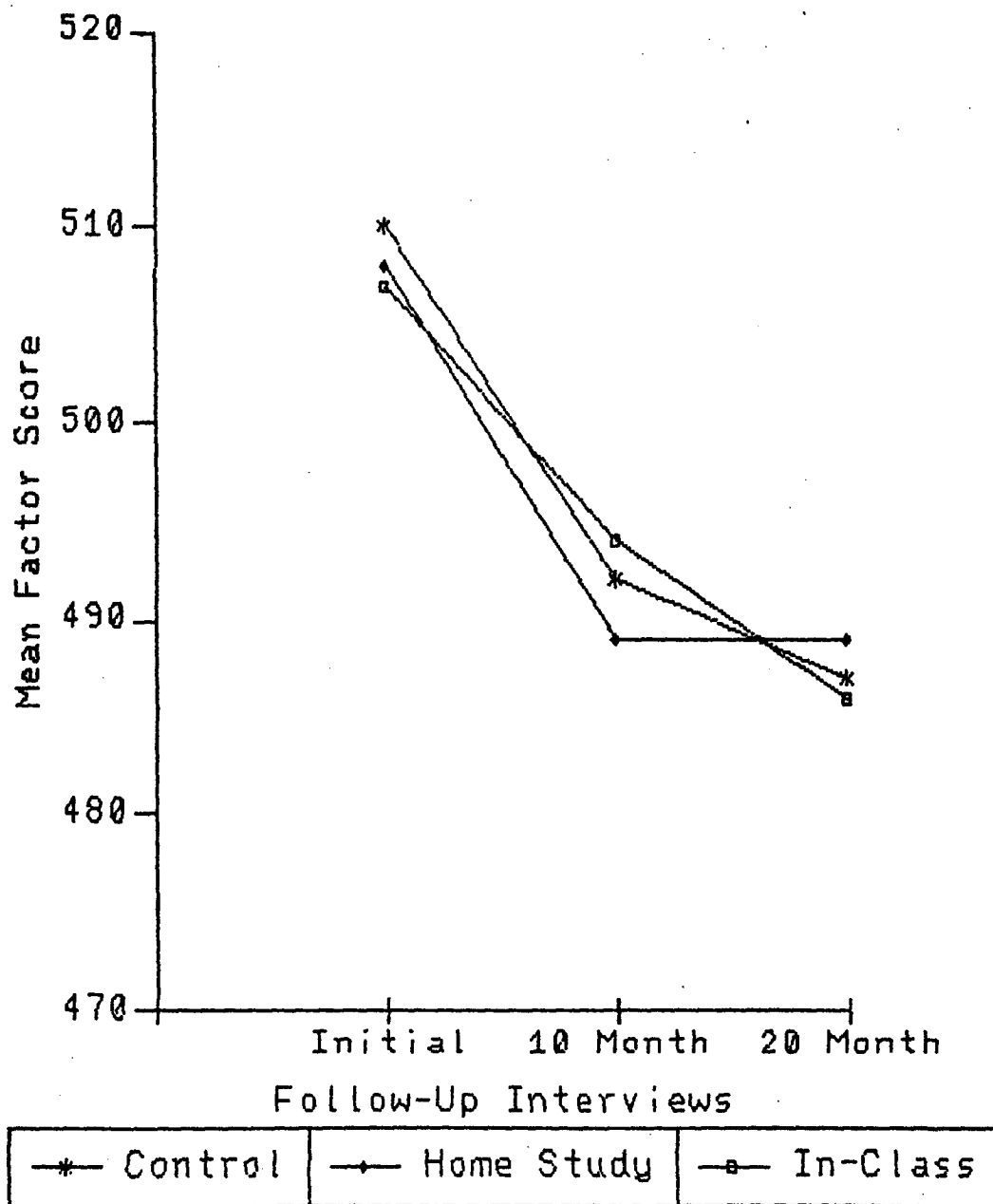Factor Scores for First Offender Treatment Groups: Scale ALC1

Figure 13

Plot of Initial, Ten-Month, and Twenty Month Mean Life Status
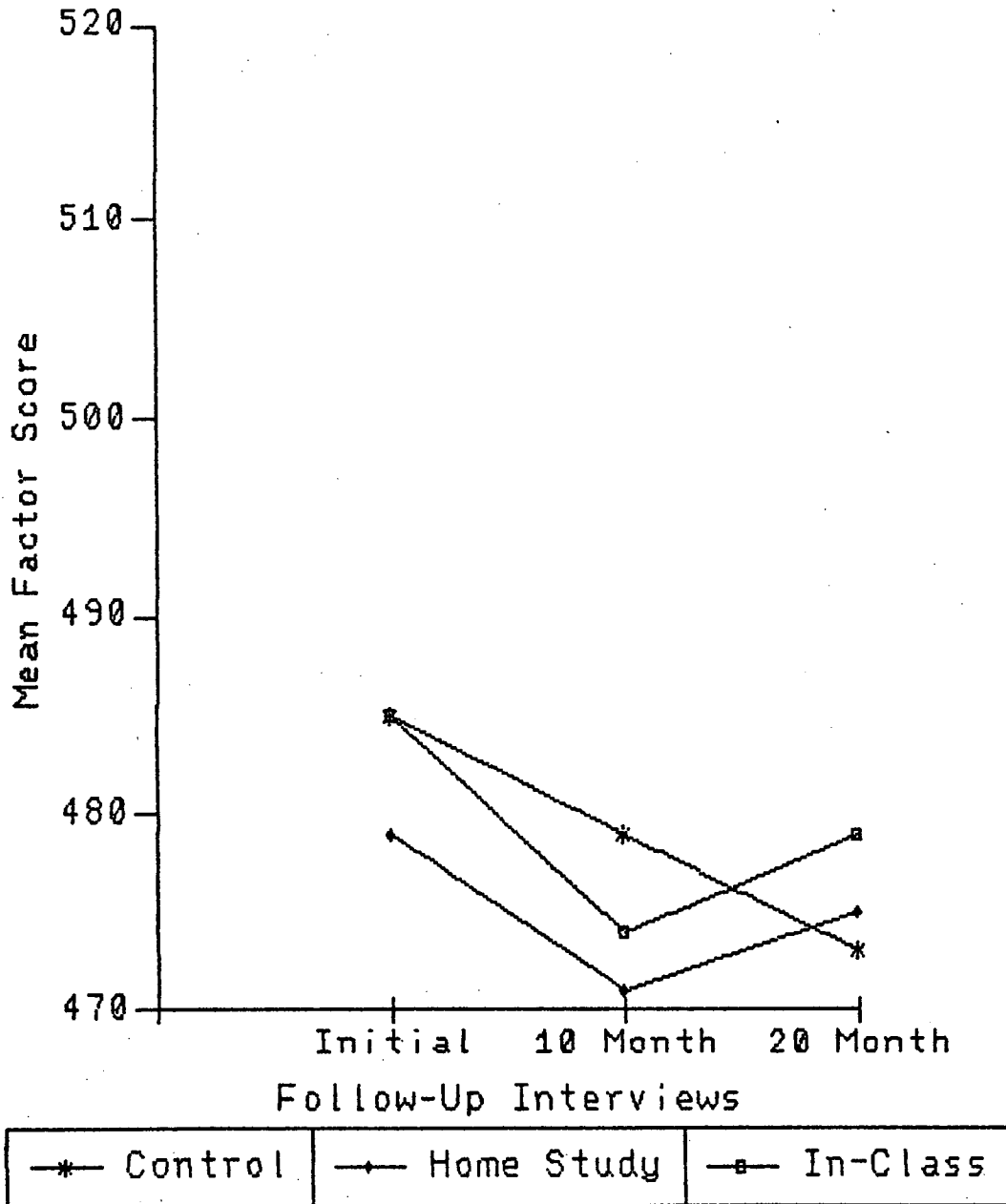Factor Scores for First Offender Treatment Groups: Scale ALC2

Figure 14

Plot of Initial, Ten-Month, and Twenty Month Mean Life Status
Factor Scores for First Offender Treatment Groups: Scale PHL1

Figure 15

Plot of Initial, Ten-Month, and Twenty Month Mean Life Status
Factor Scores for First Offender Treatment Groups: Scale FIN1

Figure 16

Plot of Initial, Ten-Month, and Twenty Month Mean Life Status
Factor Scores for First Offender Treatment Groups: Scale SOCl
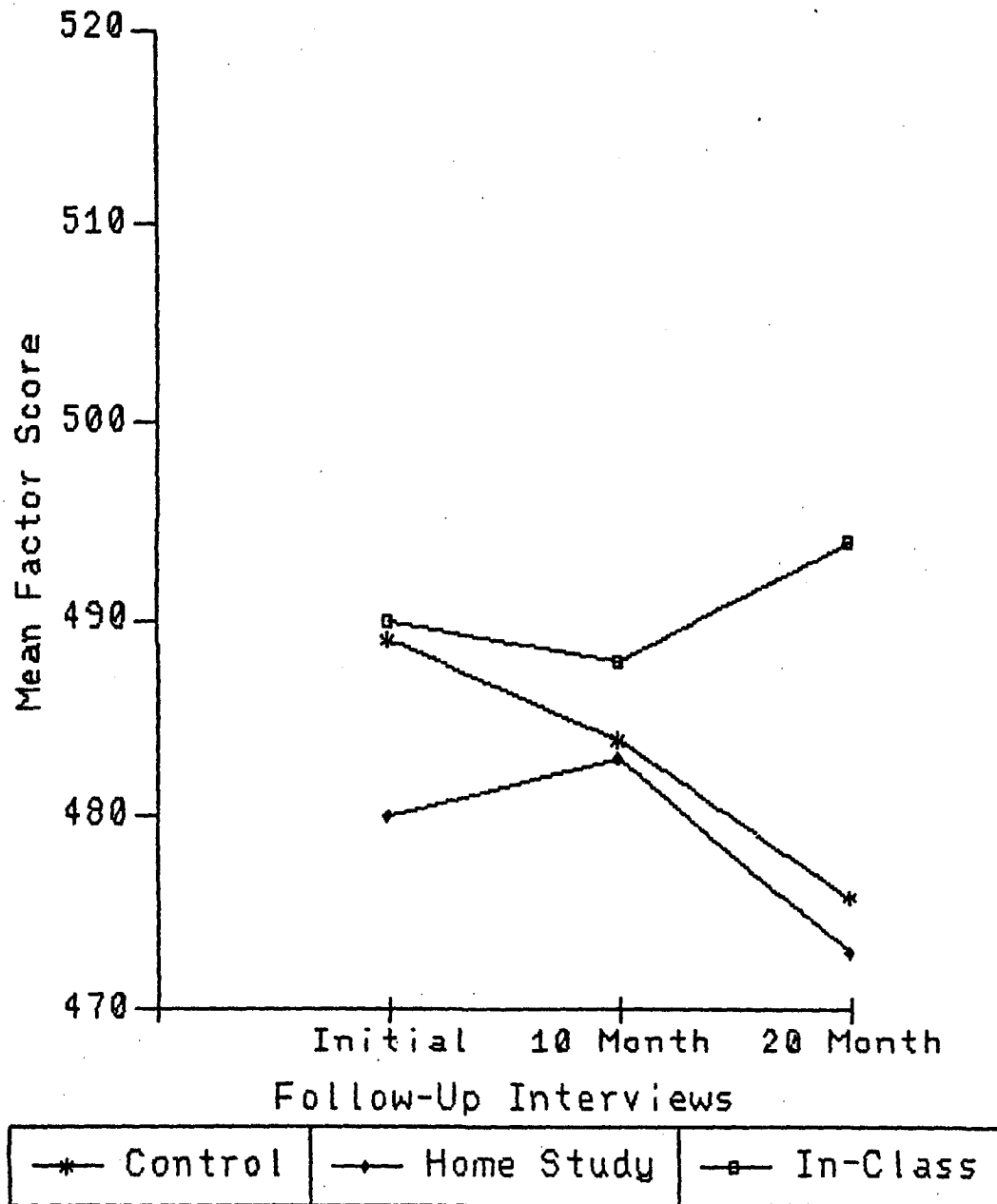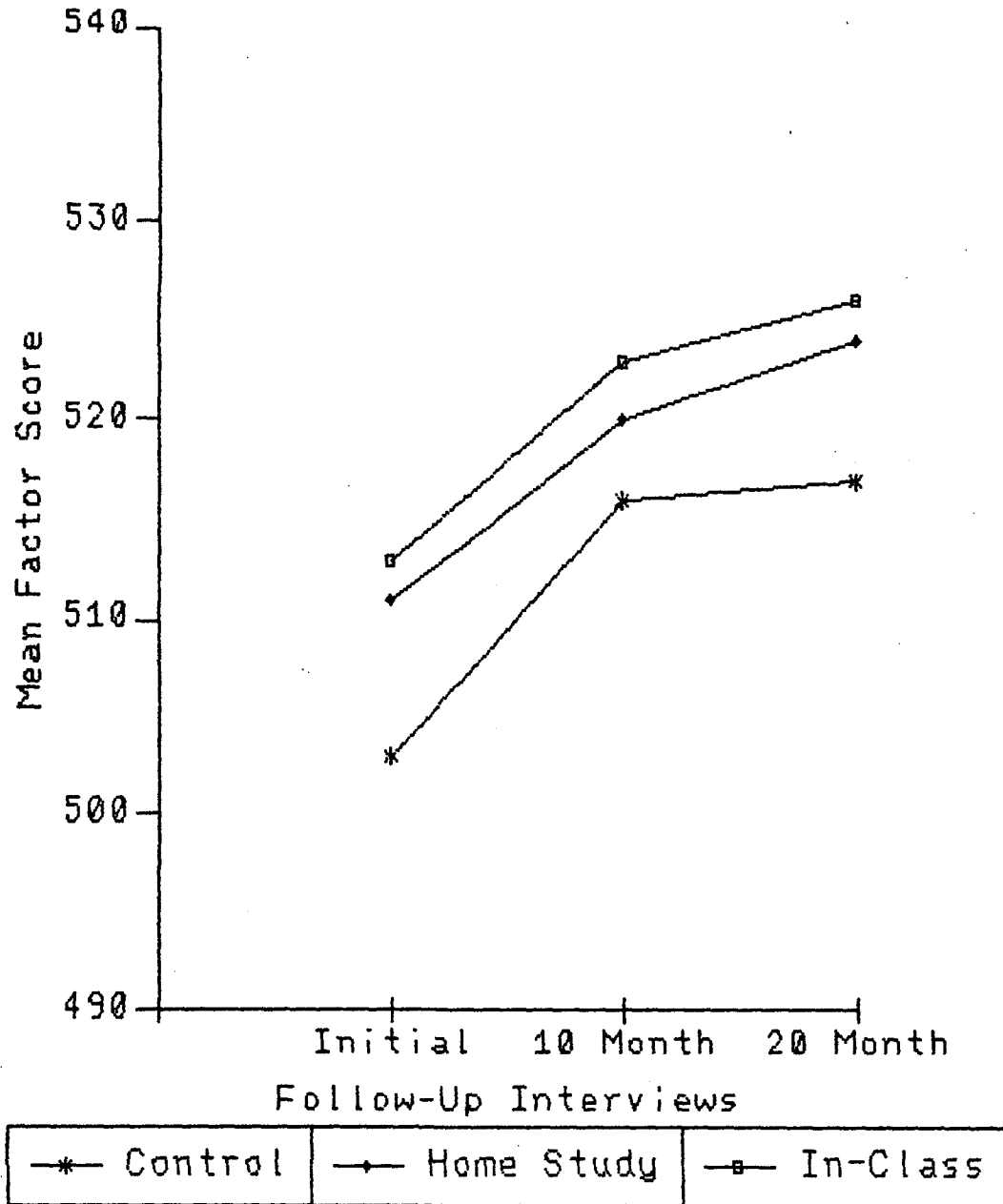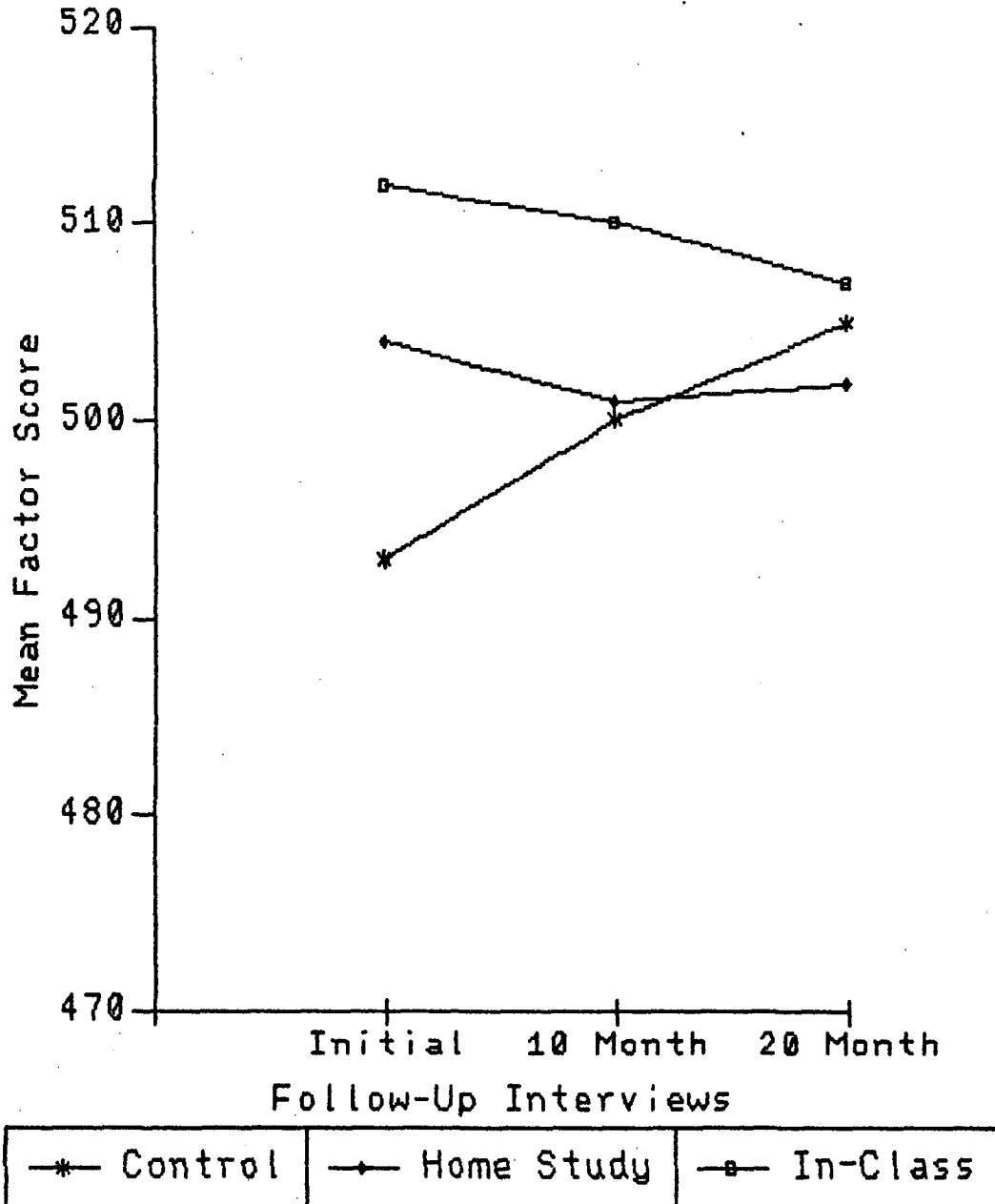
Figure 17

Plot of Initial, Ten-Month, and Twenty Month Mean Life Status
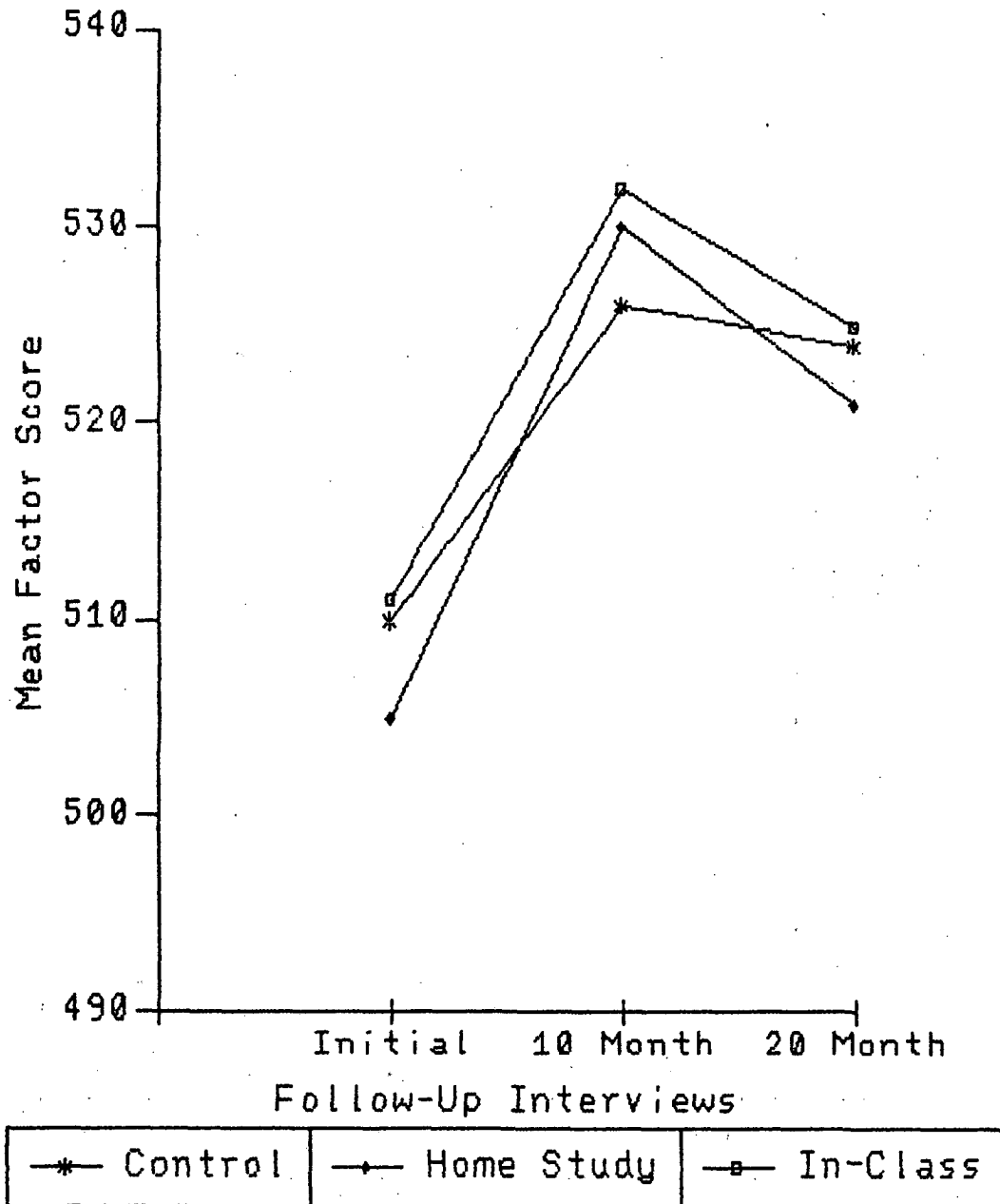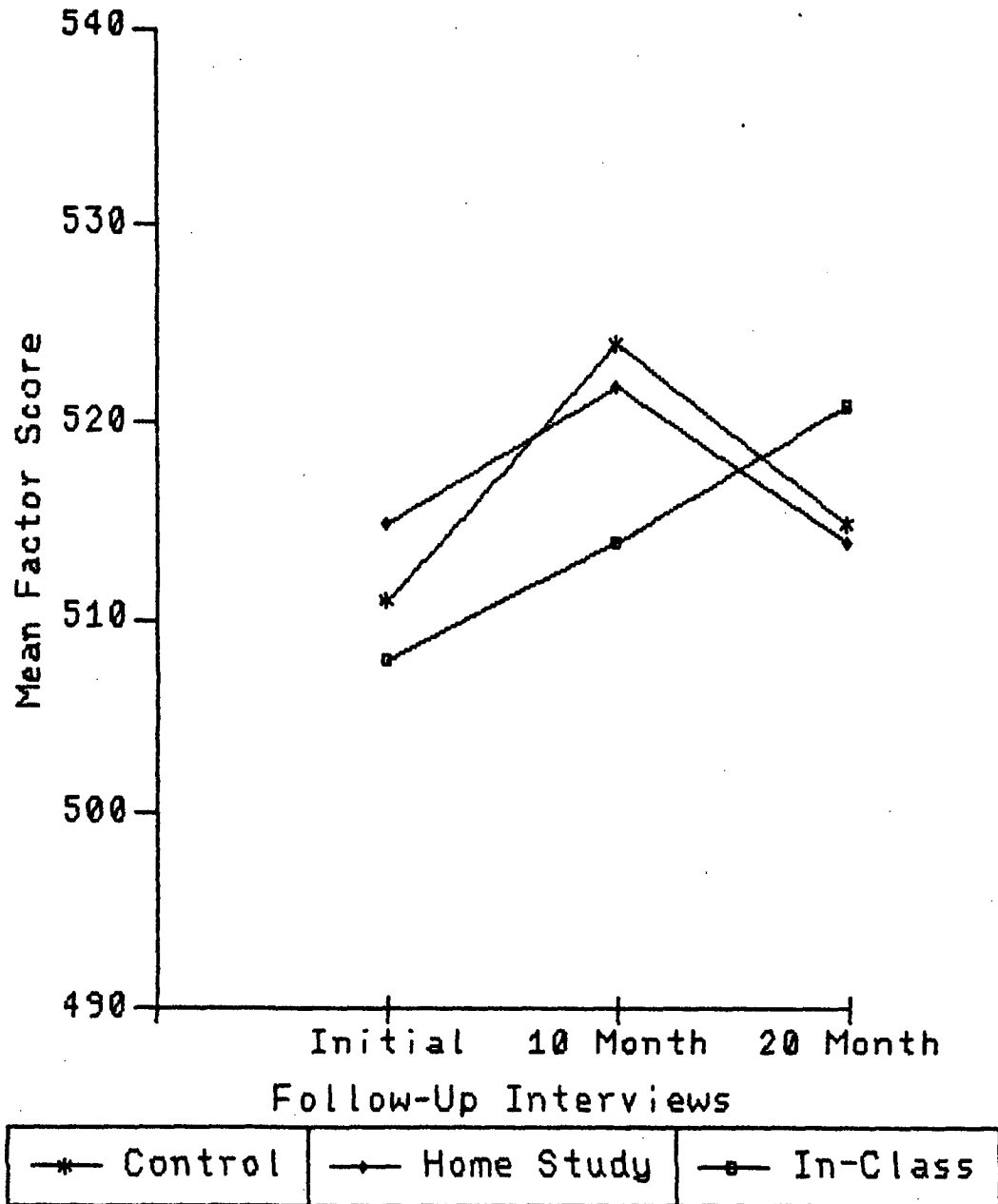Factor Scores for First Offender Treatment Groups: Scale SOC2

Figure 18

Plot of Initial, Ten-Month, and Twenty Month Mean Life Status
Factor Scores for First Offender Treatment Groups: Scale MAR1

time interaction and no significant difference in pretreatment scores, the group differences in life status were compared at the 10-month and 20-month interviews. The probability estimates for the pairwise comparison F-statistics were as follows.

	10-Month	20-Month
Control vs. Home Study	p = .902	p = .518
Control vs. In-Class Education	p = .532	p = .007
Home Study vs. In-Class Education	p = .447	p = .002

The results of the pairwise group comparisons and the mean scores in Table 25 indicated that the in-class education clients reported significantly more health problems than the home study and control group clients at the 20-month interview. Figure 14 shows that between the initial and 10-month interviews the in-class education and home study groups showed relatively little change. However, between the 10-month and 20-month interviews the health of the home study clients improved markedly, while the health of the in-class education clients deteriorated. The control group clients got steadily healthier over time. These findings lack credibility. Considering that little change occurred in other life areas, the results of the PHL1 analysis should be dismissed as spurious.

Overall, there was no evidence that the CDUI Project's education programs had an effect on client life status. But to be fair, major client life changes were a lot to expect from brief education programs.

Client Participation in Additional Treatment

The CDUI Project's education programs did not perform a treatment referral counseling function, there was no systematic attempt to direct individual clients to alcohol counseling programs. The clients were, however, provided with information about local alcohol treatment programs. Further, the course content was designed to increase awareness of personal drinking problems.

At the 20-month follow-up interview clients were asked if they had participated in any other alcohol education or treatment programs since their initial interview (other than the treatment they were assigned to by the Project). If they responded that they had participated in other

treatment, they were asked if their entry into these programs was the result of court action. The number of additional treatment program entries/admissions, which were not the result of court action, are shown below.

Additional Program Entries	Control #	Control %	Home Study #	Home Study %	In-Class Education #	In-Class Education %	Total #	Total %
None	343	93.0	331	93.0	309	92.5	983	92.8
One or More	26	7.0	25	7.0	25	7.5	76	7.2
Total	369	100.0	356	100.0	334	100.0	1059	100.0

$$(\chi^2 = 0.070, df = 2, p = .9657)$$

The data clearly indicated that neither the home study nor in-class education programs encouraged clients to seek additional treatment for their drinking problems. The CDUI Project's diagnostic intake counselors determined that over 80% of the first offender clients would have benefited from an alcohol counseling program. Overall, only 7.2% of the first offender clients entered additional treatment programs for reasons other than a court action.

CONCLUSION

The primary purpose of the present study was to evaluate the traffic safety impact of alcohol traffic safety education programs. The CDUI Project's first offender clients were randomly assigned to a four-session in-class education program, a home study program, or a no-treatment control group.

The analysis of driving offense data indicated that both the home study and in-class education programs resulted in significantly higher DUI survival rates (lower rearrest/recidivism rates) relative to the control group. There was no significant difference in the DUI survival experience of the home study and in-class education clients. By the end of the first year following assignment to the treatment conditions the proportion of clients rearrested for DUI was .12 for the education programs (home study and in-class education combined), compared to .14 for the control group. This represented a 14% reduction in DUI recidivism. After the first year the magnitude of the impact gradually decreased. By the end of the second year following treatment assignment the recidivism rate was .20 for the education programs and .23 for the control group (a 13% reduction in recidivism), and by the end of the third year the DUI recidivism rate had increased to .25 for the education programs and .28 for the control group (an 11% reduction in recidivism). Further, analysis indicated that the education programs had no significant impact on non-alcohol related moving violations, which suggested that the programs had a specific effect on drunk driving behavior.

The above results were obtained using the total first offender research sample. The analysis of client subsamples suggested that the more experienced drinkers with BACs of .20 or higher, and ethnic minority clients appeared to benefit more from an in-class education program. Nevertheless, the majority of clients had an equivalent DUI recidivism rate in either a home study or in-class education program.

In contrast to the education programs' positive effect on recidivism, there was no significant program effect on client accident involvement. However, the low frequency of alcohol related accidents, relative to DUI convictions, makes them an insensitive measure for detecting program effects.

The first offender research design included two secondary interventions: quarterly letter monitoring (periodic reminders of informal probation status) and follow-up interviews (three interviews to collect life activities data for treatment outcome analyses). Neither of these procedures had any traffic safety impact.

Analysis of the data obtained in the follow-up interviews provided no evidence of program-induced changes in client life status. The Project's education programs, however, were not intended to make broad changes in client life status, the primary intent was to separate drinking and driving activity.

The CDUI Project findings support the conclusions reached in the evaluation of the Phoenix Alcohol Safety Action Project. For the majority of clients there was no difference between the home study and in-class education methods in their ability to reduce DUI recidivism. Thus, it appeared that the only clients who were affected by the in-class education program were those who entered the program with the motivation to learn and use the information presented. Within the confines of a four-session, largely didactic school the instructors were unable to change the behavior of enough of the unmotivated, un-receptive clients to increase the traffic safety effectiveness of the school beyond the level produced by a self-instruction process.

One procedure which might enhance the behavior modifying poten-tial of an alcohol safety school would be to continue program contact beyond the four class sessions with a series of individual interviews or small discussion groups. Spacing these small group sessions every other week for two or three months would give the clients the opportunity to test their personal DUI avoidance plans which were developed during the four class sessions. The clients' DUI avoidance plans could be re-fined through group discussions and the group leader could use specific client experiences to stress the importance of having a plan in mind before drinking begins.

Further, the group leader could provide information about local treatment services, encourage clients to voluntarily participate in these services, and assist the clients in making their first contact with the treatment agency. Information obtained from the Project's follow-up interviews suggested that without a systematic attempt to

direct individual clients to appropriate treatment services, very few
clients entered needed treatment after completing their education
program.

The findings of this study should be interpreted in the proper con-
text. Alcohol safety education programs are only one countermeasure in
the post-detection portion of a drinking-driver control system. The
CDUI Project's research design did not provide for a direct comparison
of education programs with other post-detection countermeasures such
as licensing action. Moreover, the existence of education programs
certainly has no deterrent effect on the majority of drunk drivers who
are not detected through law enforcement efforts. But when considered
as a single component in a system of countermeasures, the findings of
this study provided evidence that education programs can make a positive
contribution to alcohol traffic safety by reducing the DUI recidivism
of first offense drunk drivers.

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APPENDIX A

Education Program Objectives

Note: The specific knowledge and attitude
change objectives were identical for both
home study and in-class education programs.
This Appendix lists the objectives accord-
ing to their order or presentation in the
in-class education program. In the home
study program the same objectives were pre-
sented in approximately the same order but
the material was divided into seven chapters.

EDUCATION PROGRAM OBJECTIVES

SESSION 1:

Knowledge -- Students will be able to identify:

1. And define host liability.

2. Aspects of California law which relate to driving under the influence (e.g. legal penalties; Implied Consent Law; presumed blood alcohol limits; concept of "impairment" tests available for measuring BAC).

3. The relationship between alcohol consumption and traffic accidents.

4. Specific facts about alcohol--role in society; metabolism; food value; being a drug.

5. Factors which will affect blood alcohol level.

Attitude -- Students will feel that:

6. They were not driving safely at the time of their DUI arrest.

7. Their arrest for DUI was fair.

8. California drinking driving laws are fair and necessary.

SESSION 2:

Knowledge -- Students will be able to identify:

1. Physiological effects of alcohol as these relate to the driving task.

2. Psychological effects of alcohol as these relate to the driving task.

3. Factors which influence the effects of a given BAC on an individual (e.g. stress; experience; fatigue).

4. DUI alternatives.

Attitude -- Students will:

5. Feel the responsibility for their DUI behavior.

6. Feel that DUI is undesirable behavior.

Behavior --

7. Students will decide that they do not want to be arrested again for DUI.

SESSION 3:

Knowledge -- Students will be able to identify:

1. Alcoholism as a disease, using the Jellinek model.

2. Facts about problem drinkers and alcoholics (e.g. heredity; withdrawal and D.T.'s; blackouts).

3. Steps in the recovery process from alcoholism, including detoxification and AA.

Attitude -- Students will feel:

*4. That they have a problem with alcohol, in their own life, with reference to problem drinking.

**5. Feel the extent to which their drinking behavior is affected by their family and associates.

6. Decide what positive and negative outcomes are associated with their drinking.

7. Begin to consider alternatives that can lead to a personal action plan to avoid future DUI behavior.

SESSION 4:

Knowledge --

1. Students will be able to identify the five areas of personal change relating to drinking-driving behavior.

Attitude -- Students will:

2. Feel that planning ahead to avoid a DUI incident is a good idea.

3. Feel that avoidance of future DUI is under their control.

Behavior --

4. Students will develop an individual action plan to avoid future incidences of drinking driving.

*Specific for Problem Drinkers.
**Not Directional.

APPENDIX B

Quarterly Monitoring Letter
and Content Analysis

COUNTY OF SACRAMENTO

HEALTH DEPARTMENT
RONALD L. USHER, DIRECTOR

OFFICE OF ALCOHOLISM

LAURENCE R. VALTERZA
ALCOHOLISM PROGRAM ADMINISTRATOR
EARL D. JACK
DEPUTY FOR ADMINISTRATION
901 G STREET, ROOM 131
SACRAMENTO, CALIFORNIA 95814
(916) 440-6510

CDUI PROJECT
(COMPREHENSIVE DRIVING UNDER THE
INFLUENCE OF ALCOHOL TREATMENT
DEMONSTRATION PROJECT)
LEWIS A. DAVIS, DIRECTOR
708 - 10th STREET, SUITES 240 & 250
SACRAMENTO, CALIFORNIA 95814
TELEPHONE: (916) 446-5048

Dear Client:

Because of your arrest for driving under the influence of alcohol, you have
become a CDUI (Comprehensive Driving Under the Influence) Project client and
your case will be under our observation during your two year probationary
period. We will review your case periodically and remind you of the
conditions of your probation, with the hope that you will successfully
avoid any further trouble.

You may have been assigned to participate in three personal interviews
conducted by the CDUI follow-up counselors. If you were assigned, your
participation is required. You are also required to drive safely and soberly
at all times.

Please understand that the Court will not be as lenient if you are arrested
again, particularly if you are still on probation. Take a moment and think
about your past arrest and court experience. Is another DUI worth the time,
the money, and the possible loss of your driving privilege?

Remember that half of all traffic fatalities are directly related to alcohol.
Be careful and be aware of how much you drink when you drive. Won't you help
make our highways safer? We don't want to read about you in the newspapers!

Sincerely,

Supervisor
Monitoring and Compliance Unit
440-5958

Subject Content and Phraseology	Purpose
1. Statement of conditions resulting from index arrest: a) recipient became a CDUI Project client b) recipient was placed on probation for two years c) recipient will remain under our observation for the duration of the probationary period	. Reinforce the causal relationship between client's drinking-driving activities and participation in the CDUI Project. (Arrest was used instead of conviction because of reductions to Reckless Driving.) . Remind the client that a two-year probationary period was imposed by the Court. . Indicate that CDUI Project participation is a condition of probation and suggest that the CDUI Project is responsible for client's behavior throughout the probationary period. Thus establishing a logical and legitimate basis for periodic case reviews and follow-up interviews after successful completion of education/treatment programs.
2. Statement of intention to review client's case periodically.	. Reinforce the idea that the client is being monitored (albeit indirectly) at regular intervals. Someone is giving his/her case individual attention the client has not been lost in the system.
3. Explanation of reason for sending a letter: Remind client of conditions of probation (done in conjunction with the periodic case reviews), with the hope that client will successfully avoid any further trouble.	. Associate the receipt of a monitoring letter with a review of the client's case. . Establish the fact that the client will be receiving several letters, one with each periodic case review. . Indicate that the purpose for sending letters is a periodic reminder of the conditions of probation. . Imply how the Project expects the client to use the information - by being aware of the probationary conditions the client will be better able to avoid violating those conditions and thus further trouble.

Subject Content and Phraseology	Purpose
4. Statement of probationary conditions: a) Participation in follow-up interviews (three personal interviews with counselors) is required b) Driving safely and soberly at all times is required.	. Indicate that if the client was assigned to follow-up interviews, his/her participation is mandatory. Emphasis on personal interviews conducted by counselors to connote individual attention and concern for the client's progress. Specification of three interviews to define the extent of client's involvement and obligation.
5. Warning of possible consequences of another arrest (Court will not be as lenient next time).	. Reinforce the idea that another offense will result in the imposition of more severe sanctions. A low threat warning of possible consequences also suggests our quasi-probationary function and our concern that the client not experience additional legal problems.
6. Ask client to think about past arrest and court experience (is another DUI worth the loss of time, money, and possibly driving privilege).	. Urge the client to recall the unpleasant aspects of his/her prior arrest and conviction, with the intention of increasing the client's motivation to avoid another similarly unpleasant experience.
7. Statement of proportion of all traffic fatalities related to alcohol.	. Reinforce the relationship between drinking-driving and fatal traffic accidents.
8. Statements of concern for client's personal safety and well-being, and client's responsibility for the safety of others: a) Be careful and be aware of how much you drink when you drive b) Help make our highways safer c) Don't become a fatality statistic (we don't want to read about you in the newspapers)	. Reinforce the idea that the client is responsible for his/her own drinking and driving behavior, and that the client can control this behavior (and it's consequences) but this control requires as a prerequisite an awareness of the amount of alcohol consumed. . Reinforce the idea that the client is responsible for the safety of others on the highways. . Close letter with an expression of our concern for the client's life which is being endangered by drinking and driving.

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