Empirical Evaluation of the Progressively Increasing Consequences Act Program

Final Report Prepared for the
Arizona Supreme Court
Administrative Office of the Courts
Juvenile Justice Services Division

by

Don M. Gottfredson and Stephen D. Gottfredson

Justice Policy Research Corporation

September, 1995

Supreme Court

Stanley G. Feldman
Chief Justice

STATE OF ARIZONA
ADMINISTRATIVE OFFICE OF THE COURTS

David K. Byers
Administrative Director
of the Courts

In accordance with A.R.S. § 8-230.02(E), an empirical evaluation of the Progressively Increasing Consequences Act (PIC-Act) was completed in September 1995. The evaluation was conducted by Don M. Gottfredson and Stephen D. Gottfredson of the Justice Policy Research Corporation. The evaluation studied 24,677 youth referred to the juvenile courts between July 1993 and March 1994 and followed these youth for at least 13 months and, in some cases, up to 21 months.

The following is a general summary outlining the major points of the evaluation.

Findings

CHARACTERISTICS OF JUVENILES ON PIC-ACT

PIC-Act youth are more likely than other juveniles referred to be Anglo with an average age of 14 and enrolled in school (junior high school).

PIC-Act youth are typically referred by law enforcement agencies for theft or a peace offense (e.g., disorderly conduct, trespassing) and have had no previous offenses.

CONSEQUENCES

PIC-Act youth are most likely to be assigned consequences consisting of community work service or a delinquency education program.

PIC-Act consequences most frequently complied with are non-residential (mainly day and evening support) treatment and drug and alcohol education programs.

PIC-Act consequences most frequently not complied with are restitution and general counseling.

FINDINGS ON SUBSEQUENT RE-OFFENDING

There is a relationship between type of consequence assigned and subsequent reoffending.

- Youth participating in drug and alcohol education and non-residential treatment are less likely to be referred for a new offense.

- Youth assigned restitution/monetary assessment only are more likely to be referred for a new offense.

Compliance with consequences decreases the likelihood of new offenses.

Compliance with consequences decreases the seriousness classification of new offenses, if there is a new offense.

For those completing PIC-Act, if a new offense is committed, it is more likely to be a status offense.

The type of consequence assigned has no effect on the seriousness classification of new offenses, if there is a new offense.

Some youth although not currently eligible for PIC-Act, such as first time felony or third misdemeanor offenders who are not adjudicated, could possibly benefit from a diversion program.

Any questions regarding this evaluation can be addressed by calling the Juvenile Justice Services Division of the Administrative Office of the Courts at (602) 542-9443.

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The opinions expressed in this report are those of the authors and do not necessarily reflect the views or endorsement of the Supreme Court of Arizona, the Administrative Office of the Courts, the Juvenile Courts in the various Arizona Counties, or any other agency or person.

Acknowledgment

The data used in this study were extracted from the data file of the Juvenile Services Division, Administrative Office of the Courts, by Steve Stilwell of Stilwell Software Products, Tempe, Arizona. Appreciation is expressed to Donna Noriega, Program Manager, Bobbie Chinsky, Program Manager, and Dr. Betsie McNulty, of the Juvenile Justice Services Division of the Administrative Office of the Courts, for their valued advice.

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Empirical Evaluation of the Progressively Increasing Consequences Act

Summary

Purpose

The Arizona legislature established the statewide Progressively Increasing Consequences Program in 1984. The legislation required "... a periodic evaluation to determine if the provisions of this article reduce the number of repetitive juvenile offenders." * This is a report of such an evaluation.

The act requires actions by juvenile probation officers when youths are referred to the juvenile courts. If a felony is alleged, the complaint must be submitted to the county attorney with the request that a petition be filed. If a misdemeanor or alcohol offense is alleged, the referral is not ordinarily required. An exception is that misdemeanor complaints must be referred to the county attorney when allegations of delinquent acts have been "adjusted" twice before. "Adjustment" means that the complaint is disposed of without filing a petition. For other cases, and if the county attorney does not file a petition, an interview may be conducted that can ultimately result in adjusting the complaint. The complaint must be adjusted if and only if the youth (a) accepts responsibility for the act, and (b) has complied with specific conditions.

The youth is expected to comply with one or more of several program requirements, called "consequences," before the complaint is adjusted. If the conditions required for adjustment are not met, then the complaint may be submitted to the county attorney with a request that a petition be filed. The consequences are: community service; counseling; education for delinquency

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* A.R.S. 8-230.02,E.

reduction or for alcohol or drug abuse; non-residential treatment; restitution; and fines.

Methods

Data from the Administrative Office of the Courts were used to study youths referred to the juvenile courts of the 15 Arizona counties between July 1993 and March 1994. Their records were followed for at least 13 months and up to about 21 months to obtain measures of subsequent offending. "Subsequent offending" was measured by new referrals to the juvenile courts and by a classification of "seriousness" of alleged new offenses.

Samples Used for the Statistical Design

Youths transferred to the adult courts, those committed to the Department of Youth Treatment and Rehabilitation, and status offenders were excluded. The remaining 24,677 youths were classified into three groups for comparison, as follows:

- **The PIC-ACT Sample** includes youths eligible for PIC-ACT under A.R.S. 8-230, as revised, and assigned consequences listed in the Act. Inclusion in this sample means **"Legally Eligible for PIC-ACT and Assigned-PIC ACT Consequences."** "PIC-ACT Consequences" means only those specific consequences that were specified by the legislature. There were 10,499 youths in this sample.

- **The Not Eligible Sample** includes youths referred to the county attorneys in accordance with the PIC-ACT requirements of A.R.S. 8-230, as revised, against whom the county attorneys filed petitions. "Not Eligible" means **"Not Eligible for PIC-ACT."** Because of differences in county reporting, these youths could not be identified for all counties. There were 1,733 youths in this sample.

- **The Other Court Program Sample** includes all other youths except transfers to the adult courts, adjudication dispositions to the Department of Youth

Treatment and Rehabilitation, status offenders, and youths in administrative classifications. Inclusion in this Sample means **"non-PIC-ACT processing by the courts, including any court programs other than the assignment of PIC-ACT consequences."** These youths were not assigned PIC-ACT consequences but of course were assigned to many other programs or treatments --- that is, to "consequences" in the usual sense of that term. **This is not a "no treatment" group, but it is a differently treated group.** There were 12,445 youths in this sample.

Comparisons of different treatments are most rigorously done as experiments arranged so that the groups being compared are equivalent at the start. Since in this case an experiment was not feasible, "statistical" and "quasi-experimental" designs were used. It was necessary to take into account, in each analysis of program outcomes, measures of (a) the selection factors associated with placement decisions, (b) the risk of delinquent behavior presented by youths at the time of referral, and (c) the amount of time "at risk" for each youth (since a variable length of follow up period was used). Otherwise, the apparent results may have been misleading. The comparisons made were based on a statistical study of the whole sample and also on a quasi experimental design based on sub-samples.

Youths placed in the PIC-ACT program differ from youth not so assigned in two important ways. The first is due to the selection and assignment process, which is partly prescribed by the law but mainly a discretionary decision. Compared with those otherwise processed through the court system, the youths assigned to PIC-ACT are, for example, a little younger. They more often have been accused of theft. They have fewer prior referrals and probation violations. ***These are only general tendencies, however, and there is substantial overlap of characteristics of youths assigned to PIC-ACT consequences and other court programs***. The second is also a by-product of the assignment process. Youths in PIC-ACT programs and those not affected by the PIC-ACT differ in their risks of future involvement with the juvenile courts. They are better risks, that is, less prone to future offending. This can be shown by their differing

background characteristics. ***Again, there is substantial overlap between the groups of youths assigned to PIC-ACT programs and those who go to other court programs***. There are high and low risk youths in both categories; but, in general, the PIC-ACT youths are better risks. In this study, this risk is called "*a priori* risk."

Similarly, youths assigned to different consequence programs within PIC-ACT differ. The assignment is at the discretion of the probation staff. Therefore, fair comparisons of outcomes of assignment to different consequences require that the factors associated with their selection, as well as *a priori* risk, be taken into account.

There is another possible bias in comparisons that must be considered. The youths in samples to be compared may not have equivalent exposures to the risk of new referrals. They may be followed for different lengths of time, and they may be differentially detained. Since they are different ages, some will reach their 18th birthdays sooner after their referrals to the juvenile courts. If the youths in groups compared are in the community free to commit offenses for different lengths of time before age 18, these differences also must be considered.

Each of these factors was taken into account in the analyses that form the basis for the conclusions presented. This was done by methods for controlling statistically those variables that cannot be manipulated physically. The analyses are complex, but the principle is simple. **The differences in outcomes are analyzed in such a way that the variability due to the potentially biasing factors is subtracted before identifying the differences that remain to be attributed to the factor we wish to study.** That is what is meant by "statistical control."

Samples Used for the Quasi-Experimental Design

Since a true experiment is not feasible for the present study, an approximation was sought. That is what is meant by a "quasi-experimental design." The objective was to compare similar youths (where "similar" means alike in terms of characteristics typically affecting assignment to PIC-ACT) given PIC-ACT consequences or other court programs. Youths typically assigned to PIC-ACT with consequences were identified by a statistical analysis. Most were indeed placed in PIC-ACT, but some were actually placed in other court programs. Similarly, youths typically assigned to other court programs were identified. The majority were actually placed in other court programs; but some were placed in the PIC-ACT program instead. A comparison of the outcomes for these groups (again taking account statistically for remaining selection factors, *a priori* risk, and time at risk) provided an additional assessment of the effect of PIC-ACT programs.

When youths were identified as most likely, on the basis of their characteristics, to be placed either in PIC-ACT or Other Court Programs, and then the actual placement was seen, four groups of youths were identified, as follows:

1. **PIC-ACT 'Experimental' Group** [1]
2. **PIC-ACT 'Control' Group**
3. **Other Court Program 'Experimental' Group and**
4. **Other Court Program 'Control' Group.**

These groups were defined on the basis of the most probable assignment by the decisions of the probation and county attorney staff. First, the most likely placement was determined, according to the characteristics of youths usually

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[1] The single quotes around the words "experimental" and "control" are reminders that these are quasi experimental and control groups, and this is only an approximation to a true experiment.

placed in PIC-ACT. Second, it was determined, for each youth, whether the actual placement was that found to be most likely. When the most likely placement was PIC-ACT, and so was the actual placement, the youth was assigned to the PIC-ACT 'Experimental' Group. When the expected placement was PIC-ACT but the youth was actually placed in other court programs, the youth was assigned to the PIC-ACT 'Control' Group. Similarly, the youths expected to be placed in the Other Court Program were divided into two groups. Those actually placed in the expected Other Court Program were assigned to the Other Court Program 'Experimental' Group, and those placed instead in the PIC-ACT program were assigned to the Other Court Program 'Control' Group. Thus, four groups were defined for the study, as follows:

> **The PIC-ACT 'Experimental' Group** is comprised of youths typically assigned to PIC-ACT programs with consequences and actually assigned to PIC-ACT consequences;
>
> **The PIC-ACT 'Control' Group** is made up of youths typically assigned to PIC-ACT programs with consequences but actually assigned to Other Court Programs;
>
> **The Other Court Program 'Experimental' Group** is comprised of youths typically assigned to other court programs and actually assigned to them; and
>
> **The Other Court Program 'Control' Group** is made up of youths typically assigned to other court programs but actually assigned to PIC-ACT consequences.

Questions for this Study

The questions derived from the legislative mandate to evaluate the Act to determine whether it reduces the number of repetitive juvenile offenders were called "central questions" for the study. Other questions required to be investigated in order to answer the main questions were called "secondary."

Central questions to be answered were whether it makes any difference, for later offending or the seriousness of new offenses, if youths are included in PIC-ACT programs, or types of PIC-ACT programs, or comply with the conditions required of them. These questions were examined for the State as a whole and, so far as data and resources available permitted, for the various counties.

Secondary questions concerned the characteristics of youths affecting different decisions by probation staff and county attorneys. These questions had to be addressed in order to conduct the analyses done to answer the central questions.

Results

The answers to the "secondary" questions will be summarized first. Then the answers to the "central" questions will be reported.

"Secondary" Questions

- **What youth characteristics (known at the time of referral) are related to the likelihood of new referrals, and how are they weighted?**

The *a priori* risk measure developed for this study included items typically found to be predictive of later delinquency. Examples are indices of age, prior record, and type of offense. The best predictors are the age at referral (older youths are better risks), race, the number of prior counts, and the number of prior referrals to the juvenile courts. The *a priori* risk levels vary among the counties and among the three study groups considered. The "not eligible" sample youths were, on average, the best risks. The worst risks were in the "other court programs" sample, and in between were the PIC-ACT sample youths.

- **What are the factors considered in the selection process for the three study groups, and how are they weighted?**

The variables most helpful in understanding which youths are assigned to PIC -ACT, other court programs, or required exclusion are measures of age and "commitment to delinquency." They are similar to the items measuring risk, but they are weighted differently. Examples are the number of prior referrals to the juvenile courts, the total number of prior counts of offenses alleged, and the youth's age. The classifications into the three study groups are explained further by the number of times the youth previously has been referred to the court with dispositions made without the formal court process of adjudication, and whether the youth was detained immediately upon referral. Other variables that help to differentiate the three groups are whether the first referral involved drug abuse, the number of prior adjudications, the number of days ever detained, and race. The mixtures of cases in terms of offenses, prior records, age, and prior history in the juvenile court differ from county to county, as well as among the study groups.

Although youth characteristics such as those listed help to differentiate the samples of youths in PIC-ACT and other court programs, the two groups are similar in many ways. No single characteristic differentiates the two groups completely; it can be said only that they differ in general, or on the average, on such characteristics as age, number of prior referrals, or other prior record or offense variables.

- **What are the factors considered in assignment of PIC-ACT cases to the different consequences, and how are they weighted?**

Probation staff decided, among PIC-ACT cases, which consequences to assign. The consequence selected for a youth depends on the offense alleged,

the history of drug abuse, the prior record (numbers of prior counts and petitions) and other case characteristics. The consequences assigned are explained further by the following: the numbers of accomplices; prior drug allegations; whether detained immediately upon referral; the number of days then detained; age; race; and gender. The mixtures differ among the counties, and so do the types and frequencies of consequences used.

- **What are the rates of compliance with the requirements of the different consequences assigned?"**

Some youths comply with the conditions set by the probation staff; others do not. Compliance ranged from 59 percent for restitution to 91 percent for non-residential treatment. The rates observed were as follows: community service, 82 %; counseling, 72%; education for delinquency prevention, 85%; education for alcohol or drug abuse, 90%; non-residential treatment, 91%; restitution, 59%; fines, 80%; other consequences, 78%; and combinations, 83%.

Central Questions

The analyses so far summarized were done mainly to get ready to answer the "central" questions by measuring the *a priori* risk, selection, placement, and compliance. Here are the three main questions, with the answers provided by the analyses:

- **Does it makes any difference, for later juvenile offending, if the youth is selected as a PIC-ACT case, with consequences assigned?**

  The answer is "Yes."

This answer was given by the two different procedures for making the comparison: the statistical study of all three groups in the total sample and the "quasi-experimental" study.

The actual percents of youths with new referrals, not corrected for differences among the PIC-ACT, Other Court Program, and Not Eligible groups, were not different. When, however, these were adjusted for *a priori* risk, selection, and time at risk, the corrected rates did differ. The adjusted percents with new referrals, for the "PIC-ACT sample" of youths assigned consequences, the "other court program sample" of youths, and the "not eligible sample" of youths referred to county attorneys when required by the PIC-ACT legislation (with petitions filed) were different. The adjusted new referral rates were highest for the "not eligible sample" with PIC-ACT-required referral with petitions filed, lowest for the "other court program sample," and in between for the "PIC-ACT sample" of youths with consequences assigned.

Whether youths are assigned to PIC-ACT with consequences, processed otherwise through programs of the juvenile court system, or filed upon after the referral to the county attorneys as required by the Act does make a difference in new referral rates. The probability of new referral, when relevant risk, selection factors, and time at risk are considered equivalent, is greatest for the "not eligible" youths and lowest for those in programs other than PIC-ACT. These differences cannot be explained by the variables known to be related to risk, selection, or time in the community.

The effects of the PIC-ACT programs were studied also using the "quasi-experiment" previously described. The outcomes for the youths who, on the basis of their characteristics, would be expected to be considered PIC-ACT cases and were actually placed in PIC-ACT programs were compared with similar youths not assigned PIC-ACT consequences (the PIC-ACT "quasi-experimental" and PIC-ACT "quasi-control" samples). Both groups were made up of youths typically placed in PIC-ACT. The comparisons took account of differences in selection, time at risk, risk of new referrals, and counties. Consistently with the statistical study already described, the members of the

"Quasi-Experimental" sample had, over all, a higher percentage of new referrals than did the members of the "Quasi-Control" group.

No differences were found in the seriousness of new offenses alleged when new referrals occurred. This was true for the overall statistical analysis and also for the comparison of the PIC-ACT "quasi-experimental" groups. Though the three study groups of the total sample differ in actual average seriousness scores before any statistical control for risk, selection, and time at risk, these differences, when adjusted for the statistically controlled factors, disappear. There was no significant difference in the adjusted mean seriousness scores; the differences observed would be expected by chance about six percent of the time. The observed differences are accounted for by *a priori* risk, selection, and time exposed to the risk of new referrals. Similarly, the two groups compared in the "quasi-experimental" design did not differ in the average new offense seriousness scores after the adjustments.

- **Does the particular PIC-ACT consequence selected make any difference for later juvenile offending?**

  The answer is "Yes."

There were marked differences in actual new referral rates according to the type of consequence assigned. After adjustment of these for time at risk, *a priori* risk of new referrals, and selection for the particular consequence program, these differences remained. Although smaller than before the adjustment, the differences were still significant. The actual percents with new referrals ranged from 37 percent for education for drug or alcohol abuse and non-residential treatment to 62 percent for restitution. After the adjustment for the known potentially biasing factors, these ranged from 41 percent for each of the first two

programs to 54 percent for restitution. The type of consequence assigned does make a difference in new referrals.

There was no effect of type of consequence on the seriousness of new offenses --- that is, the particular consequence program selected by the probation officers had no effect on the level of seriousness of new offenses alleged.

- **Does compliance by the youth with the conditions of the consequences make any difference for later juvenile offending?**

  The answer is "Yes."

Compliance, which is most frequent for education for alcohol or drug abuse and non-residential treatment, affects the new referrals outcome. Within the PIC-ACT study group and independently of county, percents with new referrals were examined after adjustment for time at risk, *a priori* risk, and selection for different consequences. The adjusted percents with new referrals were 46 percent for the youths who complied but 54 percent for those who did not. The probability of new referrals is decreased by compliance.

Compliance with the assigned consequences also affects the seriousness classification of new offenses. Those youths who failed to comply had more serious offenses alleged with new referrals than did their counterparts who complied with PIC-ACT program requirements.

Recommendations

Five recommendations are suggested by the results of the study described in this report. They may be summarized as follows:

- **Consider diversion options for mandatory referrals of specific cases to county attorneys;**
- **Investigate and extend the most promising PIC-ACT programs to additional counties;**
- **Improve monitoring procedures to increase compliance;**
- **Clarify recommended procedures for assignment to PIC-ACT, and**
- **Establish a research file including needed additional follow up information.**

The recommendations, explained with comments providing their justifications, are as follows:

- **Change the PIC-ACT requirement that felony complaints and misdemeanant complaints with two prior adjustments be referred to the county attorney with a request that a petition be filed (A.R.S. 8-230.01, as revised, paragraph A). Amend to allow diversion.**

Comment:

Referral of these cases, with a request for petition, is now mandatory rather than permissive. In the sample studied, 1,310 youths out of 14,939 otherwise eligible for PIC-ACT programs (nine percent) were identified as referred forthwith to the county attorneys, as required for felony and third time misdemeanor complaints. (The data available did not permit the identification of these cases for many counties.) Another 1,673 youths, or 11 percent, were referred to the county attorneys after cite-in for a PIC-ACT interview, not as required but as discretionary acts of the court personnel. These youths did not admit responsibility or they did not comply with PIC-ACT consequences. Of all

youths included for study, seven percent resulted in filings after these referrals and were no longer eligible for PIC-ACT consequence programs. Some of these youths were referred as discretionary acts. It is only that portion of referrals and requests *required* that is the subject of this recommendation.

The subsequent delinquent behavior of the Not Eligible group, measured by new complaint referrals, was compared with that of youths who were assigned PIC-ACT consequences and also with those in other court programs. The group required to be referred to the prosecutors, and for whom petitions were filed, are better risks, on the average, than the youths in either of the other two groups. Nevertheless, this group (otherwise eligible for PIC-ACT programs) has a higher percentage of new referrals than either of the other groups. This is true after considering the risk levels of the youths, the time at risk, and the selection factors associated with the law and the exercise of discretion. The probability of new referrals is greatest for this group, lower for PIC-ACT cases with consequences assigned, and lowest for youths in other court programs.

The effect of the law as it stands is to transfer a specific area of discretion from the court system to the county attorneys, with an apparent increase in repetitive delinquency, rather than the reduction to which the Act adverted.

The classification of youths referred to the courts with delinquency complaints on the basis of the simple legal classification of the alleged act only, or on an arbitrary classification based on the number of prior adjustments, ignores much information about the youth and the circumstances of the alleged delinquency. This information can be taken into account in arriving at the decision whether to petition or divert. The evidence of this study suggests that this area of discretionary decision making should be considered, where informed judgments can be made on the basis of additional information. The mandated referral process does not appear to work as intended.

- **The more successful types of consequence programs identified in this report --- education for drug or alcohol abuse and non-residential treatment --- should be examined further to determine why they appear to be successful and should be extended to additional counties.**

Comment:

These programs reduce the likelihood of new referrals. They are not used as commonly as community service or education for delinquency prevention, and they are used extensively only in Maricopa and Pima Counties. A more thorough analysis and evaluation of these programs is suggested to determine the program features that appear to be successful and that can be "exported" to other counties. Although placement in these two programs is related to (fewer) new referrals, this may be due to either or both (a) additional but yet unknown characteristics of youths selected for these programs, or (b) the effectiveness of the programs. The most desirable further program would use a research design to more rigorously test effectiveness and a systematic program for development of these programs in other counties.

- **Procedures to improve compliance with consequences are needed, particularly for some types of consequences programs. Restitution as a consequence is notable for a relative non-compliance by the youth assigned it. Counseling also has a low rate of compliance.**

Comment:

Compliance with consequences assigned in the PIC-ACT program decreases the probability of new referrals. When new referrals do occur, compliance is predictive of less serious new offense allegations. Those youths in

the PIC-ACT program who complied with the consequence assignments had lower rates of new referrals and less serious new offense complaints.

Careful monitoring systems in each county are needed to increase compliance with all consequence programs. Special efforts are needed to improve compliance with assigned community service and counseling.

Although compliance is substantially related to (fewer) new referrals, this may be due to either or both (a) additional but yet unknown characteristics of youth who comply or (b) the *act* of compliance. This question warrants further study, but the available evidence suggests the recommended efforts to increase compliance.

- **Clarify recommended procedures for assignment to PIC-ACT**

There do not appear to be any clear guides or policy statements governing the selection of eligible youths (that is, those not now precluded by law) for the PIC-ACT program. There is substantial consistency in this discretionary selection process, as may be seen from the differences between PIC-ACT and non-PIC-ACT youths reported in this document. Moreover, there is evidence that youths *typically* selected for PIC-ACT, compared with those more often *not* selected for PIC-ACT (when both groups actually are assigned PIC-ACT consequences) have fewer new subsequent referrals. This suggests a need for greater consistency in the assignment process, which appears to be, more often than not, but not invariably, appropriate. At the same time, there is a substantial overlap among the two groups when offense, prior record, age, and other attributes of youth in the two groups are considered. Also, there is substantial variation among the counties in the kinds of youths selected for PIC-ACT programs. It is recommended that a greater degree of consensus be sought

and articulated to describe the types of youths believed to be suitably assigned to PIC-ACT. The specification of a policy describing the kinds of youth for whom PIC-ACT programs are believed to be appropriate and desirable could help to provide a greater consistency in selection and result in more effective PIC-ACT programs.

- **Establishment of a research file, associated with the Administrative Office of the Courts data file assembled from the various county systems, is needed for a more efficient, reliable, and informative research and management system within the Administrative Office of the Courts.**

Comment:

A file with recoded data elements suitable for analyses required by program development, evaluation, and information dissemination programs should be developed and maintained as a routine activity of the AOC. This would markedly reduce costs of program evaluations, which now require repeated, extensive reconstruction of the file for specific analyses. Associated with it should be a program of "data audits," comprised of periodic sample tests of the reliability of data elements included in the file. Although audits of financial accounts are routinely expected, the auditing of the reliability of data to inform major decisions, with potentially costly consequences, rarely is done.

In preparation for further evaluations of the PIC-ACT programs specifically, data should be collected to permit the identification of youths eligible for PIC-ACT, ineligible youths (with identification of the reason or reasons), youths selected for PIC-ACT, all PIC-ACT consequences assigned, [2] and the

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[2] Some counties have indicated that only one consequence is reported in the data collection system even though more than one actually was required of the youth. It is recommended that all consequences assigned be reported.

dates of PIC-ACT interviews. These data are needed for assessments of the fidelity of the program with legislative requirements and for the evaluation of the effectiveness of the programs.

Systems for follow up data collection for youths with adjudicated dispositions to the Department of Youth Treatment and Rehabilitation, youths transferred to the adult courts, and youths after age 18 are needed for more complete evaluations of the PIC-ACT and other court programs.

Empirical Evaluation of the Progressively Increasing Consequences Act Program

Introduction

The Arizona legislature, in establishing the Progressively Increasing Consequences Program [3] initiated a statewide program that began in 1984. The general purpose of the program is implied in the act, since the legislation required "... a periodic evaluation to determine if the provisions of this article reduce the number of repetitive juvenile offenders." [4] This is a report of such an evaluation.

The act requires several actions by juvenile probation officers when youths are referred with complaints or citations (and permits others). A delinquency complaint is defined in the Act as " ... a report prepared by a law enforcement agency and submitted to the court, alleging that a juvenile has violated the criminal law." If the referral is for a delinquency complaint alleging the commission of a felony offense, it **must** be submitted to the county attorney with the request that a petition be filed. If the allegation is that of a misdemeanor offense or an alcohol offense, then the complaint or citation **may** be submitted to the county attorney, except that if the allegation is for a misdemeanor offense and allegations of delinquent acts have been "adjusted" on two prior separate occasions, then the complaint or citation **must** be referred to the county attorney. If the county attorney does not file a petition, or if the allegation does not fall within the category that must be referred to the prosecutor, then the probation officer **may** interview the youth and at least one parent or guardian; if so, the probation officer then **must** adjust the complaint, conditionally upon (a) acknowledgment by the juvenile of responsibility for the act; and (b) compliance by the juvenile with specific conditions specified in the act. "Adjustment" means

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3 A.R.S 8-230, as revised.
4 A.R.S. 8-230.02, E.

that the complaint or citation is disposed of in a manner that obviates the filing of a petition.

If the youth does not acknowledge responsibility for the delinquent act or alcohol offense alleged, or fails to comply with the conditions set by the juvenile probation officer, then the complaint or citation **may** be submitted to the county attorney with a request that a petition be filed.

Before adjusting a complaint or citation, the juvenile must comply with one or more of several specified conditions, as follows:

1. Participation in unpaid community service work;
2. Participation in a counseling program ... designed to strengthen family relationships and to prevent repetitive juvenile delinquency;
3. Participation in an educational program ... which has as its goal the prevention of further delinquency;
4. Participation in an education program ... designed to deal with ... alcohol or drug abuse;
5. Participation in a nonresidential program of rehabilitation of supervision offered by the court, or offered by a community youth serving agency ... ;
6. Payment of restitution to the victim of the delinquent act;
7. Payment of a monetary assessment. [5]

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[5] These are the consequences prescribed in the Act. In practice some counties use additional or alternative sanctions, as described in Juvenile Justice Services Division, Administrative Office of the Courts, Arizona Supreme Court, *PIC-ACT Reviews by County*, Phoenix, Arizona: Administrative Office of the Courts, February, 1995. Examples are the use of (1) an Outdoor Education Program by Apache County; (2) informal probation supervision, tutoring, and assigned essays in Cochise County; (3) written reports, apology letters, and Teen Court in Coconino County; (4) informal probation, tutoring, and Teen Court in Gila County; (5) Teen Court and tutoring in Graham County; (6) curfew imposition, detention, informal probation, graffiti patrol, psychologist interviews, apology letters, essays, summer program activities, and day support in Greenlee County; (7) Teen Court, essays and apology letters in La Paz County; (8) a Graffiti Abatement Program, the Renewing Arizona Family Traditions Program, a Victim

Whether this act "reduces the number of repetitive juvenile offenders" is the subject of the study proposed. Before explaining the procedures designed to investigate this question, some problems in answering such questions, and potential solutions to them, will be discussed briefly. Next, the central questions to be answered by the study proposed, and also some secondary ones, will be listed. The specific methods, including the sample to be studied, sources of data to be used, methods of definition and measurement, and the analytic methods proposed will be described. Then the results of the study can be reported and discussed, and recommendations toward program improvement can be considered.

Attempted reforms aimed at reduction of delinquency are rarely informed by rigorous analyses of the effectiveness of the policies and practices thereby changed. Expected consequences of legislative changes, guidelines policies, or mechanisms limiting judicial discretion are announced and argued about; but rarely are the underlying expectations based on evidence that can come only from careful examination of the results of the new practices. Arguments for and against the use of various alternative ways of dealing with delinquent youth typically are made in the absence of information about the probable results of choices --- whether made legislatively or judicially.

This lack is partly due to the fact that experiments designed to test central sanctioning questions usually are not feasible. The term "experiments" implies that groups treated differently can be considered equivalent in all respects except for that differential treatment. Then observed differences in outcomes can

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Offender Reconciliation Program, and Teen Court in Maricopa County; (9) Teen Court and essays in Mohave County; (10) informal probation and Teen Court in Navajo County; (11) a monetary donation to a charity, informal probation, random drug testing, and a Stop Assaultive Children program in Pima County; (12) informal probation in Pinal County; (13) admonishment, informal probation including curfews, urinalysis, tutoring, and apology letters in Santa Cruz County; (14) a Court Obligated Program, a Volunteers in Probation Program, detention tours, and tutoring in Yavapai County; and (15) in-home detention, tutoring, and Teen Court in Yuma County.

be said (with a known probability of error) to be due to the treatment. The equivalence of the groups compared usually is sought by random assignments to the treatment conditions. Since that is rarely possible when actions to be taken to dispose of complaints or citations must be selected, groups given different consequences cannot be considered equivalent at the outset, and the delinquency reduction effects of sanctioning therefore cannot be compared fairly.

Since experimental designs for study of the impact of the assignments of consequences on the subsequent delinquent behavior of juveniles referred are not feasible, the next most rigorous designs should be used. Rarely, however, are the data available to permit that, since data demonstrably relevant to selection biases due to factors associated with the decisions ordinarily are absent. As a result, little is known about the consequences for later delinquency behavior of choices concerning consequences assigned or other means of case disposition. Sanctioning policies are therefore usually developed without sound information about how sanctioning modifies, controls, or enhances the likelihood of future delinquency behavior by the juveniles sanctioned. [6]

The research reported here was advantaged by a unique opportunity for application of rigorous statistical and quasi-experimental designs for the assessment of the effects of sanctioning choices made by probation personnel (and county attorneys) consistent with the provisions of the PIC-ACT. This opportunity was given by the foresight of the Administrative Office of the Courts and the juvenile courts in the various counties that led to the availability of a comprehensive data file that includes data on all referrals during the period July 1, 1993 through mid - May, 1995, including the results of major decisions in the juvenile justice system process and subsequent outcomes in terms of delinquency behavior. [7] The opportunity was thus available to answer some

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6 Possible effects on others, i.e., general deterrence effects, are ignored in this report as beyond its scope.

7 Analyses of time series of events such as delinquent referrals are sometimes used for evaluations such as this one, and sophisticated methods are available to assist in ruling

central questions about the effects of sanctions through designs that corrected for the non-equivalency of differently sanctioned groups.

The subsequent delinquency referrals of youth referred to the courts in the 15 Arizona counties were examined, with analyses of the effects of sanctions (consequences) using statistical methods and quasi-experimental designs based on multivariate models of selection factors that would affect the validity of comparisons. These are determined partly by the law but mainly by discretionary decisions made by probation staff and by county attorneys. The designs were based also on a model of "*a priori*" risk, that is of the probability of a new referral later, based on youth characteristics known at the time of the instant referral. This enabled comparisons of the effects of PIC-ACT classification, assignments to consequences, and compliance with consequences assigned on the nature of subsequent offending. The statistical design, based on the entire sample of youths studied, was supplemented by a quasi-experimental design. "Subsequent delinquency" was measured by new referrals to the juvenile courts and, for new referrals, a classification of the "seriousness" of the next (most serious) offense alleged.

Questions for this Study

This research was intended to answer three central questions through the use of statistical and quasi-experimental designs. Answering these questions first requires examining secondary questions (discussed subsequently) about selection and risk. Answering the latter questions (important in their own right) can contribute to the strength of the research designed to answer the central questions. They will be discussed after considering the central questions and the designation of samples of youths available for comparisons.

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out rival hypotheses to explanations that changes over time are due to the policy intervention. In the case of the present problem, data that would permit such analyses are not available; and in any case it is believed that the methods used permitted a more rigorous analysis.

Central Questions

- **The first general question is whether it makes any difference, for later juvenile offending, if the youth is selected as a PIC-ACT case, with consequences assigned.**

- **The second question is whether the particular PIC-ACT consequence selected makes any difference for later juvenile offending.**

- **The third question is whether compliance by the youth with the conditions of the consequences makes any difference for later juvenile offending.**

For each of these questions, "subsequent juvenile offending" means new referrals; and, when these occurred, the seriousness classification of the (most serious) alleged new offense.

Classification of Youths into PIC-ACT, Other Court Program, and Not Eligible Samples

The probation staff may, within the constraints specified in the act, adjust cases or refer them. Referred cases not filed upon by the county attorney also may be adjusted. Thus there may be three groups of youth whose later delinquency may be compared: those selected for PIC-ACT programs and assigned the consequences listed in the Act; those legally eligible for PIC-ACT programs but assigned to other court programs, and those youth who were not only referred to the county attorneys in accordance with PIC-ACT requirements but for whom delinquency petitions were filed. These groups were called the PIC-ACT Study Sample, the Other Court Program Sample, and the Not Eligible Sample.

A youth's classification in either of the two samples other than the PIC-ACT Study Sample does not mean that no "consequences" in the *usual* sense of that term were assigned. Subjects in the Other Court Program Sample were not assigned PIC-ACT consequences according to the PIC-ACT procedures. If consequences ***(in any sense)*** were assigned, these may have included many other types of programs not specified in the Act. This could include various probation programs and other diversion programs, so it is clear that classification for this study into the Other Court Program Sample does not imply that the youths in that group were subjected to "no treatment." Subjects in any of these samples could be expected to proceed through stages of an Advisory Hearing, an Adjudication Hearing, and a Disposition Hearing. At any stage, "consequences" in the *usual* meaning of that term, could ensue. [8] Data are not available to describe or assess the treatments and program assignments of the Other Court Program and Not Eligible Samples.

The definition of the three groups of youths to be compared first may be seen in Figure 1. As the chart shows, youths who were, as a result of the sample referral event, transferred to the adult court or to the Department of Youth Treatment and Rehabilitation, excluded from the study. The reason for exclusion was that in both cases the required follow up data to determine subsequent delinquency are not available. Status offenders, and those youths classified as in an administrative category only, were excluded also, since the PIC-ACT legislation addresses only delinquency complaints. [9] It was then determined whether the initial PIC-ACT criteria (specified in the Act) were met. If not, and the case was submitted to the County Attorney forthwith (before the "cite in" date for

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8 For a detailed discussion of the decision process in one county from referral through adjudication, see Gottfredson, Don M., Gottfredson, Michael R., Gottfredson, Stephen D., Etten, Tamryn J. and Petrone, Robert F., *Needs for System Development in the Maricopa County Juvenile Justice System.* Sacramento, California: Justice Policy Research Corporation, May, 1994.

9 Some counties, notably Maricopa, may include youths with status offenses (who are not on probation) in PIC-ACT programs; see, Research and Information Specialists, Inc., *An Evaluation of the PIC-ACT Program in Maricopa, Pima, and Coconino Counties.* Mesa, Arizona: Research and Information Specialists, Inc., February, 1988, p.22.

the interview), then it was determined whether a petition was filed. If so, the youth was classified into the Not Eligible sample. If not, the youth was considered a candidate for PIC-ACT. If, however, any case initially eligible for PIC-ACT was submitted thereafter to the County Attorney (which could be the case if the youth does not admit to responsibility for the alleged act or acts or does not agree to comply with assigned consequences) then it was also determined whether the County Attorney decided to file a petition. If so, the youth was classified into the Not Eligible category. If not, the youth was again considered to be eligible for PIC-ACT. From the pool of youth thereby determined to be eligible for PIC-ACT, those for whom the assignment of consequences was recorded were placed into the PIC-ACT Study sample. The remaining youth were assigned to the Other Court Program sample.

"Not Eligible" as used in this study means "not legally eligible according to the procedures specified in the PIC-Act legislation." In order to understand the meaning of the Not Eligible sample, however, it should be noted that legally ineligible cases could not be determined for all counties. Eight counties had no cases classified by our procedure into the "Not Eligible" group, and two others had only one or two. At least part of the reason is that not all counties reported the "cite in" date which was used to determine whether the youth was referred "forthwith" to the county attorney. This means that some youth ineligible for PIC-ACT are included in the Other Court Program group. It is clear that the "Not Eligible" sample should not be taken as including *all* youths not legally eligible, but only those not eligible by the PIC-Act rules specified by the legislature and who could be identified by the available data.

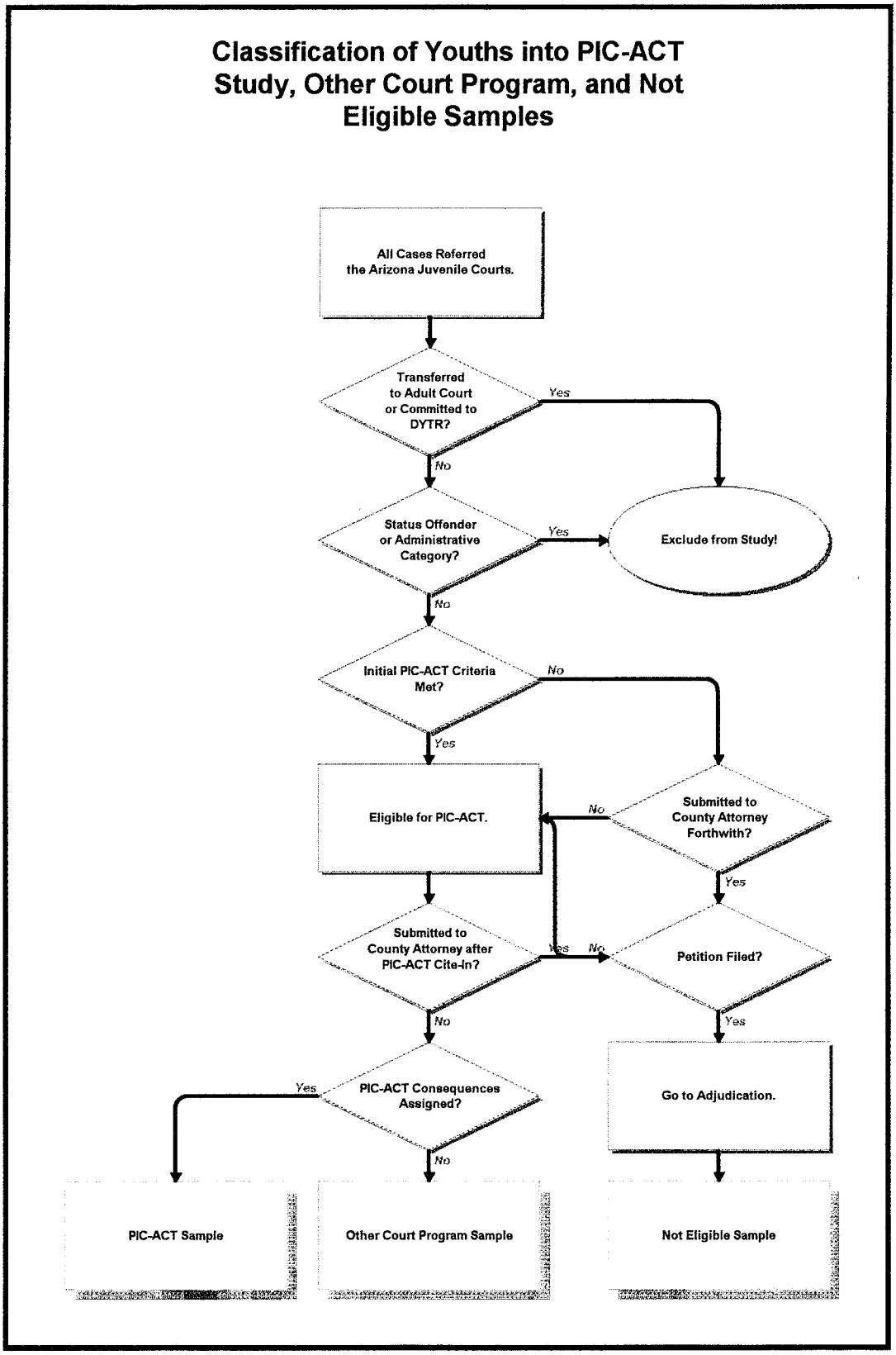

Figure 1: Classification of Youths into Samples for Study

Meanings of the Group Classifications

The meanings of classification into the three study groups may be summarized as follows:

- **The PIC-ACT Sample** includes youths eligible for PIC-ACT under A.R.S. 8-230, as revised, and assigned consequences listed in the Act. Inclusion in the PIC-ACT Sample thus means "Legally Eligible for PIC-ACT and Assigned Consequences."

- **The Not Eligible Sample** includes Youths known to be referred to the county attorneys in accordance with the PIC-ACT requirements of A.R.S. 8-230, as revised, against whom the county attorneys filed petitions. "Not Eligible" thus means "Not Legally Eligible for PIC-ACT."

- **The Other Court Program Sample** includes all other youths except transfers to the adult courts , adjudication dispositions to the Department of Youth Treatment and Rehabilitation, status offenders, and youths in administrative classifications. Inclusion in this sample thus means "non-PIC-ACT processing by the courts, including any court programs other than the assignment of PIC-ACT consequences." These youths were of course assigned to many other programs or treatments. It is not a "no treatment" group, but it is a differently treated group.

Secondary Questions

The secondary questions concern, first, the possibly different kinds of "risks" presented by the youths assigned to the various classifications, and, second, the characteristics of youths that affect the decisions taken by probation

staff and the county attorneys. In both cases, the question is whether the characteristics of youth, at the time of referral, differ in groups to be compared. The secondary questions may be listed as follows:

- **What youth characteristics (known at the time of referral and before placements) are related to the likelihood of new referrals, and how are they weighted?** This will be referred to as the *a priori* risk. If groups differ in a priori risks, those differences must be taken into account in any comparisons.

- **What are the factors considered in the selection process for the three study groups, and how are they weighted?** Probation staff (and in the cases referred to them, the County Attorneys) made discretionary decisions affecting the classification of youths into the three groups. If there are different case characteristics for these three sets of cases, these are important selection factors that must be taken into account in any fair comparison of outcomes for the three groups.

- **What are the factors considered in assignment of PIC-ACT cases to the different consequences, and how are they weighted?** Probation staff made discretionary decisions, among PIC-ACT cases, as to the particular consequences to be assigned. Also, not all consequence programs are used in all counties. As a result, differences in the youth assigned the different programs must be considered in the comparison of results of the different programs.

- **What are the rates of use, among counties, of the various PIC-ACT consequences?" If counties differ in this respect, then the comparisons made of the effects of consequences should be made independently of any county effects.**

These "secondary" questions are essential to answering the "central questions." Consider, for example, the selection by the probation officer from among the alternative consequence assignments available. There are seven basic choices of consequences for the child (although there may be also combinations of these). The general problem of assessment of this decision is one that typically is found at each step in the decision tree of juvenile justice decisions. This is the problem of taking account appropriately of bias in the comparison of outcomes from the different placements. By this we do not refer to any supposed bias on the part of the probation staff or county attorneys; rather, we are concerned about circumstances in the decision process that may, if not properly recognized, result in misleading comparisons. The observed differences in outcomes may be mistakenly attributed to the treatment, when actually they were due to the selection for treatment or to the *a priori* risk.

That is, a direct comparison of outcomes of these seven programs may be unfair, since the characteristics of youth differentially assigned to them may differ (as reasonably to be expected). As a result, the groups assigned to the different placements cannot be regarded as equivalent; and therefore the outcomes cannot be compared fairly without taking these differences into account in the comparison.

This merely points out that the data considered in making the decisions, and also the differences, if any, in the *a priori* "risk" classifications of youth assigned different treatments, must be taken into account so far as possible in order that the comparison of outcomes of different treatments is fair. In the analyses that follow, we sought to control statistically for observable differences in the youths associated the decisions and those differences in *a priori* risks. [10]

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10 For a concise but more technical and detailed discussion of the problems as issue here, see Berk, Richard A., "Causal Inference as a Prediction Problem," in Don M. Gottfredson and Michael Tonry (Eds.), *Prediction and Classification: Criminal Justice Decision Making,* Chicago and London: The University of Chicago Press, 1987, 183-200. For early, less technical discussions of the same topic, see Wilkins, Leslie T., "What is Prediction and is

As will be seen, it is necessary to control also for "time at risk," that is, for the length of time the youths were in the community before age 18 and thus subject to the risk of being referred to the juvenile courts.

Methods

Sample

Included in the total sample were all youths (except specified transfers and certain youth committed to the Department of Youth Treatment and Rehabilitation) for whom referrals were received by the courts during the nine month period July 1, 1993 through March, 1994. The sample was defined by first referrals during this time period, regardless of any prior referrals. Note that persons in the sample may have had prior referrals and that persons in the sample may have subsequent referrals during the time period. Both males and females of any age were included. Data concerning these youths were collected and recorded through mid May, 1995 to determine outcomes of the referrals of the youths sampled. [11]

This means that all cases in the cohort of youth referred during the eight month period were followed for at least 13 months (and up to about 21 months)

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it Necessary in Evaluating Treatment?" in *Research and Practical Application of Research in Probation, Parole, and Delinquency Prevention*, New York: Columbia University, New School of Social Work, Citizen's Committee for Children of New York, 1961; and Gottfredson, Don M., "The Practical Application of Research," *Canadian Journal of Corrections*, 1963, 5:212-228.

11 All cases were followed at least until the end of March, 1995. As a result of the specific methods required to abstract the data from the various counties, some data were collected up to May 12, 1995. This minor variation in length of follow up for some counties was ignored.

after the date of referral (complaint), or until the 18th birthday [12] to determine whether there were new referrals.

The sampling of an eight month cohort, selected for reasons of availability of data for both referral and follow up data, may introduce a seasonal bias into the sample. It was believed that this potential bias could be ignored safely, however, since the months with marked differences in typical numbers of youth received are included. [13]

Excluded from the sample were all youths transferred to the adult court or committed to the Department of Youth Treatment and Rehabilitation as a consequence of an offense or offenses for which the youth was first referred during the time period. Note that this does not necessarily exclude all youth transferred or committed during the time period.

After excluding also youths who were classified as status offenders and those categorized as in an administrative class only, the remaining youths were classified into the three comparison groups described previously.[14]

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12 Since the juvenile court jurisdiction in Arizona expires at age 18, no new referrals to the juvenile court can occur thereafter.

13 In order to examine the potential seasonal bias in the sample selection, the numbers of referrals to the juvenile courts in Arizona during the calendar year 1993 (a full year overlapping the selected sample) was analyzed by month. The average number for the 12 months was 5,814, while the average for the three months not included in the cohort was 5,867. Months in which there may be obvious biases, such as truancy not expected during summer months, are partly included, as well as the months with the highest (October) and lowest (January) numbers of 1993 referrals. In order to follow a cohort of youth referred to the courts for a full year or more after referral, the eight month period for sample selection was used. It is assumed that youth referred during this period are reasonably representative of youth referred during a full year period.

14 A very small number of cases were excluded from the sample either because their instant referral actually occurred before the intended date of the data initiation, or because the date of their "next" referral occurred before the date of the instant referral.

Data Sources

The Administrative Office of the Courts' data file was the source of data for the analyses. A listing of the data elements in the file created for this study, together with codes for the variables included, has been provided to the AOC. It shows the codes for the data elements actually available and used for the analyses described. The meanings of codes and abbreviations shown are provided in order that replications of the analyses presented, or additional analyses, can be completed using the data file, also provided to the Administrative Office of the Courts, and the system file created to permit statistical analyses by the SPSS (Statistical Package for the Social Sciences) program. [15]

Measurement

The Administrative Office of the Courts' file provided an unusually complete record of background characteristics of the juveniles referred, placements, compliance, county attorney filings, and outcomes. Measurement issues will be discussed in terms of the dependent variables (outcomes) included, the independent variables for the quasi-experimental designs, and other data availability for descriptive purposes.

Dependent Variables

The outcome measures studied were derived from the apparent legislative intent of reducing repetitive delinquent offenses. Only the criteria "new referral(s) during the follow up period," the offense alleged if new referrals occurred, and the seriousness rating of the latter were studied. That is, cases were classified as to outcomes as to whether there was a new referral to the juvenile courts during the time frame of the study, if so, the offense alleged, and its seriousness rating.

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15 Most of the statistical analyses presented in this report were completed using this program (Norusis, Marija A., *SPSS for Windows, Release 6.0.* Chicago: SPSS, Inc., 1993.

Among the most critical variables in research such as reported here are those defining the outcomes used to measure new delinquent behavior. Reviews of problems are available. [16] These include: the validity of available data as a measure of outcome; the inability of dichotomous success/failure criteria to capture the full range of post-release or post-sentencing adjustment (and statistical difficulties inherent in the use of a dichotomous criterion); the possibly confounding effect of "time at risk" when comparing experiences of offenders who have been in the community for varying lengths of time; and differing error rates depending upon the nature of the criterion chosen (e.g., new referrals, petitions filed, or adjudications). Other concerns include frequent failures to observe a long enough follow-up period, which typically is too short to measure subsequent offending adequately; use of fixed follow up periods with a failure to examine failure rates over time; and the use of narrow definitions without recognizing the complexities of the concept of "recidivism."

In this project, outcomes were measured by new referrals and charges. (Data on filings by the County Attorneys and on court adjudications of delinquency or incorrigibility, when they occurred, also were collected.) The referral data were assumed to be more reliable indicators of new delinquent acts than were adjudications or new complaints or citations adjusted in the follow-up records to be used. Referrals and charges record dates that are nearest in time to offense behaviors. The direction of errors expected (accepting as failure a referral for an offense not committed versus excluding offense events as a result

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16 See, e.g., Blumstein, A., and Larson, R.C., "Problems in Modeling and Measuring Recidivism," *Journal of Research in Crime and Delinquency*, 8, 1971, 124-132; Waldo, G. and Griswold, D., "Issues in the Measurement of Recidivism, "in National Research Council, *The Rehabilitation of Criminal Offenders*, Washington, DC.: National Academy of Sciences, 1979, 225-250; Gottfredson, D.M. and Gottfredson, M.R., "Data for Criminal Justice Evaluation: Some Resources and Pitfalls," in *Handbook of Criminal Justice Evaluation*, edited by M.W. Klein and K.S. Teilman, Beverly Hills: Sage, 1980; Maltz, M., *Recidivism* Orlando: Academic Press, 1984; Schmidt P and Wittee, A.D. *Predicting Recidivism Using Survival Models*, New York: Springer Verlag, 1988; Blumstein, A., Cohen, J., Roth, J.A., and Visher, C.A., (Eds) *Criminal Careers and "Career Criminals,"* Washington, D.C.: National Academy Press, 1968.

of attrition in the juvenile justice processing from referral to adjudication) was assumed to be the better choice.

The measures used included a classification of the seriousness of new offense behaviors. A major development in the measurement of delinquency and crime has been the effort to improve upon behavioral representations by assessing the seriousness of offense acts. Measurement of the seriousness of crimes dates from Thurstone; [17] replications suggest that these judgments remain remarkably stable over time. [18] Others, using similar methods, have developed more comprehensive measures. [19] For this study, we used the "severity index" developed by the juvenile courts in Arizona and included in the AOC file.

The dependent variables to be used in the study proposed (according to the purposes of the various analyses) were as follows:

1. Any subsequent referral (0=No, 1=Yes)

2. Seriousness score, Most Serious Charge, Next Referral Episode [20]

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17 Thurstone, L.L., "The Method of Paired Comparisons for Social Values," *Journal of Abnormal and Social Psychology*, 21, 1927, 384-400.

18 Coombs, C.H., "Thurstone's Measurement of Social Values Revisited, Forty Years Later," *Journal of Personality and Social Psychology*, 6, 1967, 91-92; Krus, J. Sherman, J.L., and Krus, P.H., "Changing Values Over the Last Half Century: The Story of Thurstone's Crime Scales," Psychological Reports, 40, 1977, 207-211.

19 Rossi, P.H., Waite, E., Bose, C.E., and Berk, R., "The Seriousness of Crime: Normative Structure and Individual Differences," *American Sociological Review*, 39, 1974, 224-237; Sellin, T., and Wolfgang, M.E., *The Measurement of Delinquency*, New York: Wiley, 1964. Gottfredson, S.D., *Measuring Offense Seriousness: A Dimensional Approach*, Baltimore: Center for Metropolitan Planning and Research, The Johns Hopkins University, 1981; Gottfredson, S.D., Young, K. and Laufer, W., "Interaction and Additivity in Offense Seriousness Scales," *Journal of Research in Crime and Delinquency*, 17, 1980, 26-41; Gottfredson, S.D., and Taylor, R. B., "Community Context and Criminal Offenders, in *Communities and Crime Prevention*, edited by T. Hope and M. Shaw, London: Her Majesty's Stationery Office, 1988..

20 The data abstracted from the Administrative Office of the Courts file include data that may be used to define other outcomes of interest, such as new filings by the County Attorneys, new Adjudications, new Dispositions, and detailed data on subsequent offenses alleged, including multiple offenses for the next referral.

Time at Risk

It was necessary, for all analyses, to control for time at risk of offending. The exposure to this risk varies among youth according to the dates of initial referral in the sample studied and also with sanctions imposed and as actually implemented; it varies as a result of further detention due to repeated offending during the follow-up period, and with age due to the upper limit of age 18. This variable was calculated by determining the maximum number of possible days of exposure to the risk of new referrals in the community after the instant referral, taking into account the number of days before the youth would reach his or her 18th birthday and the number of days in detention. [21]

Independent variables

For each of the research designs intended to answer the "central questions" posed above, the independent variable is a classification of youths according to the outcome of a decision by either the probation staff or the county attorney. These decision outcomes, however, result in groups of youths that may be classified in several ways and depend also on the subsample of offenders that are the subjects of study.[22] A first analysis was based on the classification "PIC-ACT vs. Other Court Program Sample vs. Not Eligible Sample." [23] A

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21 It should be noted that new offense rates for youths nearing their 18th birthdays, when the juvenile jurisdiction ends, may be underestimated, since only new referrals to the juvenile courts are counted.

22 Youth in this sample of course may have prior referrals to the juvenile court. They may have been referred more than once during the period of data collection, however, and therefore were included in the sample on the basis of the first referral during the period July 1, 1993 through September 30, 1994.

23 The Administrative Office of the Courts data file did not include these classifications, so it was necessary to identify the cases to be included for the purposes of the study as "PIC-ACT study sample cases." The procedure described above, depicted in Figure 1, was followed for this purpose. It should be noted that not all cases initially treated as PIC-ACT cases would necessarily be included as PIC-ACT study sample cases by this procedure. That is, the study group is more accurately defined as "PIC-ACT cases Assigned Consequences." Considering these cases as including all PIC-ACT cases would be subject to several possible sources of error. If a youth, considered to be a potential PIC-ACT case, was instructed to appear for an interview (the "cite-in" interview) but failed to appear and no action was taken, then the case would not be included as a PIC-ACT

second classified the youths included in the PIC-ACT program according to the consequence programs listed previously. After examination of the numbers of cases in each of these categories, however, this classification was modified to include nine classes, as follows: (a) community service; (b) counseling, (c) education for delinquency prevention; (d) education for alcohol or drug abuse; (e) non-residential program of rehabilitation; (f) restitution; (g) fine; (e)other, and (f) combination. The "other" classification was used because some data on consequences was recorded without designation of any program otherwise listed. The "combination" category was used when more than one of the PIC-ACT designated consequences were used. Other classifications of consequences, based on multiple assignments, were too small to permit statistically powerful analyses.

For the various "secondary questions" listed previously, the independent variables were selected according to the nature of the questions. For the analysis of decisions by probation (and county attorney) staff as to inclusion in the PIC-ACT, Other Court Program, and Non Eligible groups and, for the selection of consequences, selected background variables (i.e., case characteristics of the youth and of the alleged offense) were the independent variables. These were combined according to methods described subsequently,

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case. If the youth met the PIC-ACT criteria but nevertheless was referred to the County Attorney with either a petition filed or no subsequent PIC-ACT consequences assigned, then that youth would not be included as a PIC-ACT case. If the youth, considered to be PIC-ACT eligible appeared for the interview but was not assigned consequences, then the youth would not be considered to be a PIC-ACT case. The latter circumstance could occur if the youth (a) admitted the offense but no consequence was assigned or (b) denied the offense with the complaint referred to the County Attorney. Very young children with first time minor misdemeanor complaints may be adjusted as a discretionary act of the probation officer in some counties; these children would not be included. It should be noted that cases not recorded in the AOC file used as PIC-ACT cases even though they meet the legal definition for PIC-ACT eligibility would not be identified in the AOC file as PIC-ACT cases. Our procedure was intended to identify all the PIC-ACT cases by the legal definition. In the PIC-ACT sample used for the present study, there are 1,389 or 13.2 percent of cases not designated in the AOC file as PIC-ACT cases. The Other Court Program group used in this study includes 16 youths designated in the file as PIC-ACT cases, but if our procedure is correct, these are cases not eligible for PIC-ACT.

in order to reduce various sets of variables to weighted linear composites. These composite variables were used in the analyses of covariance to be described.

Descriptive Variables and Other Data Availability

The juvenile, consequence, and juvenile justice system process variables available for this study, and for other studies based on the data set prepared, are extensive. As noted previously, a list has been provided to the Administrative Office of the Courts, along with the reconstructed data file and codes used. This report does not contain descriptions of the consequence programs operated by the various counties, but these are available from the Administrative Office of the Courts. [24]

Analysis Plan

A variety of analytical methods were used to address the variety of questions posed. Some were addressed by statistical designs intended to provide tests in which the expected bias due to lack of a true experiment were removed so far as possible, with the goal that these may be ignored. [25] Others required methods commonly used in prediction studies. In order to clarify the nature of the analyses, these will be described in some detail for a few of the questions; other analyses were similar. [26] The typical problem is one of comparison of outcomes of different treatments while controlling for selection

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24 Juvenile Justice Services Division, *PIC-ACT Reviews by County.* Phoenix: Arizona Supreme Court, Administrative Office of the Courts, February, 1995.

25 For a detailed discussion of the issues involved, see Berk, R. A., "Causal Inference as a Prediction Problem," in Gottfredson, D.M., and Tonry, M., (Eds.), *Prediction and Classification: Criminal Justice Decision Making, Volume 9 of Crime and Justice: A Review of Research,* Chicago: University of Chicago Press, 1987, 183-248.

26 Gottfredson, S.D., Gottfredson, D.M., and Gottfredson, M.R., "Turning Data Into Information," Sacramento: Justice Policy Research Corporation, May, 1994; Gottfredson, S.D., Gottfredson, D.M., and Gottfredson, M.R., "Risk Measures for Operational Use: Removing Invidious Predictors," Sacramento: Justice Policy Research Corporation, May, 1994.

biases due to the (a) factors associated with the decision, and (b) factors associated with *a priori* risk. The latter is an estimate of probability of a given outcome (e.g., new referrals during a specified period) that may be made on the basis of information about the alleged offender before the placement is made. The former can be estimated directly from the data about youth in the various classifications. These are the two main sources of bias that must be considered in the analysis if the non-equivalence of the groups in different treatments is to be ignored safely. When the analysis of the effects of different consequences is to be done, then it is necessary to consider also the selection of consequences for different types of youths.

Results of the Statistical Design

Sample Differences in Youths' Characteristics and Counties

Before describing the analyses and results, some description of the youths in the sample, and in the three groups to be compared for the total sample, may be helpful. After the exclusions indicated previously (cases transferred to adult court or the Department of Youth Treatment and Rehabilitation, status offenders, and youth in administrative categories) from the total sample, it consisted of 14,939 youths who met the initial legal criteria for PIC-ACT. There were 1,310 youths whose complaints were known to be referred forthwith to the County Attorneys. There were 1,673 youths whose complaints were submitted to the County Attorneys after the cite-in (a notice to appear for an interview) for PIC-ACT. Of these, 645 were submitted to the County Attorneys after they failed to admit responsibility for the alleged offense or offenses; and 1,028 cases were referred to the County Attorneys for failure to comply with PIC-ACT consequences. After completing the classification procedure depicted by Figure 1, there were 24,677 youths in the total sample to be studied.

When the total sample was sorted into the three groups to be studied, there were 10,499 in the PIC-ACT Study Sample, 12,445 in the Other Court Program Sample, and 1,733 in the Not Eligible Sample (Figure 2). These were distributed by counties as shown in Table 1 and Figure 3.

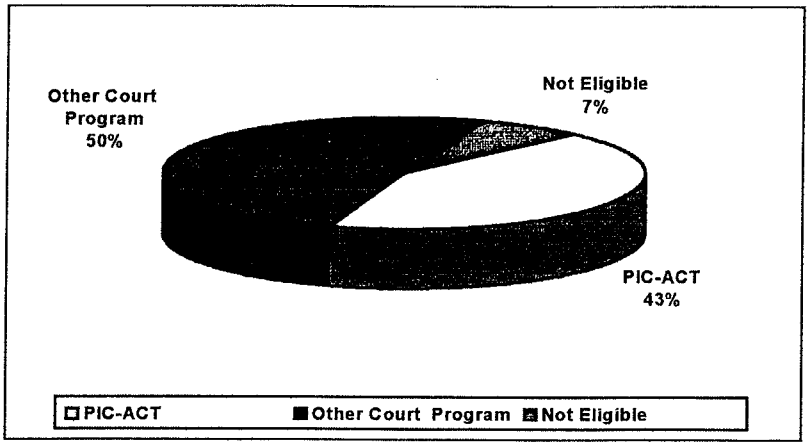

Figure 2: Percent of Youths in PIC-ACT Study Sample, Other Court Program Sample, and Not Eligible Sample

Table 1: Study Sample Analyzed by County

County	Number	Percent
Apache	175	.7
Cochise	936	3.8
Coconino	1,129	4.6
Gila	460	1.9
Graham	202	.8
Greenlee	57	.2
La Paz	70	.3
Maricopa	11,218	45.5
Mohave	994	4.0
Navajo	642	2.6
Pima	5,505	22.3
Pinal	1,013	4.1
Santa Cruz	362	1.5
Yavapai	841	3.4
Yuma	1,073	4.3
Total	**24,677**	**100.0**

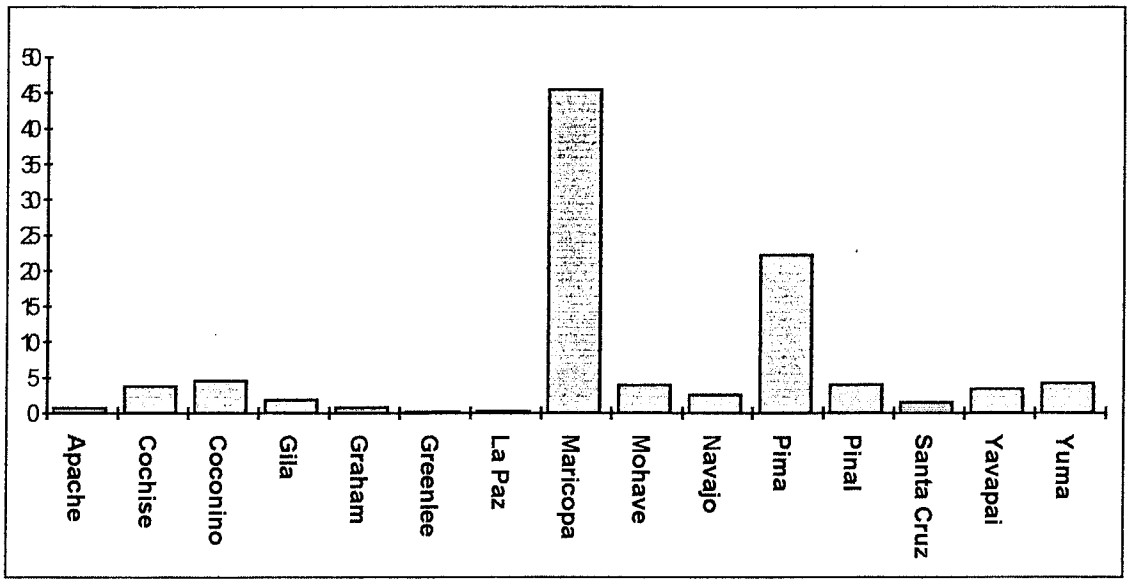

Figure 3: Percent of Youths Included for Study from Each Arizona County

There was a rather marked variation in the proportions included in the total sample according to the county examined. Moreover, there was considerable variation in the percents assigned, in the various counties, to the three study sample groups (Figure 4). As noted previously, the data available did not permit identification of the Not Eligible group from all counties.

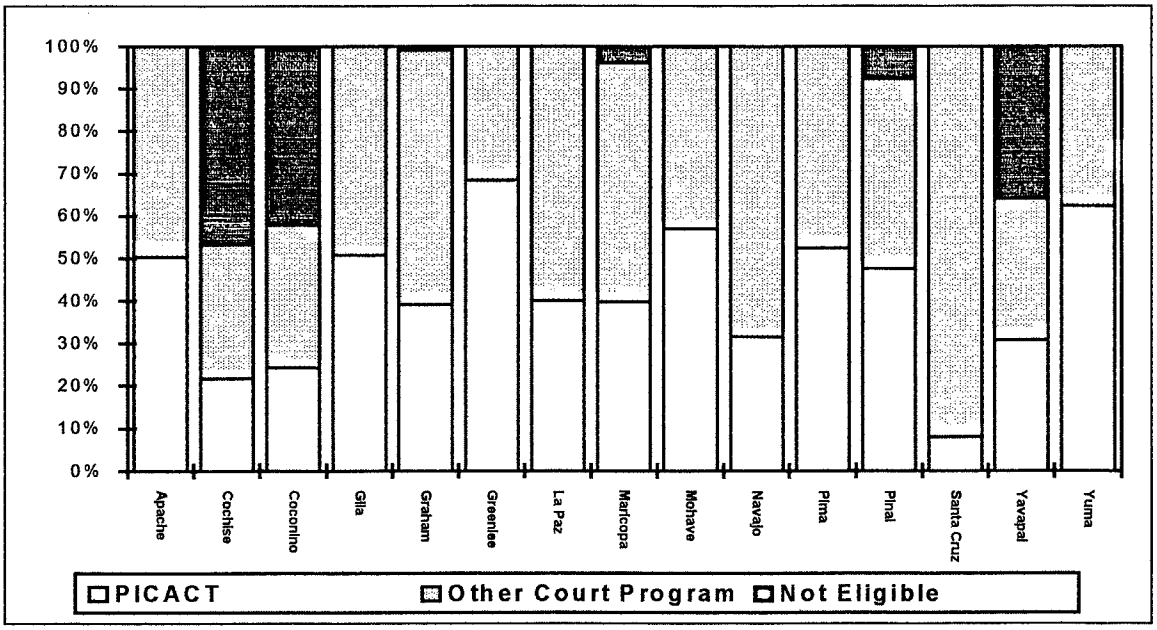

Figure 4: Percent of County Sample Youths in the PIC-ACT Study Sample, Other Court Program Sample, and Not Eligible Sample

The youths in the three groups vary in terms of characteristics that might be expected to be related to selection for the groups or to the *a priori* risk of new referrals. [27] Most youths in any group are referred by law enforcement agencies (Figure 5).The average ages are different for the three samples (Figure 6). The generally younger PIC-ACT youths are more apt to be enrolled in school (Figure 7). Those in the Other Court Program sample have, on the average, more prior drug complaints (Figure 8). Females are more likely to be placed in PIC-ACT (Figure 9).

The samples differ according to complaints (Figure 10), grade in school, and ethnic classification (Figures 11 and 12). They differ on various measures of prior record; generally, the more prior record the less likely the placement in PIC-ACT (Figure 13).

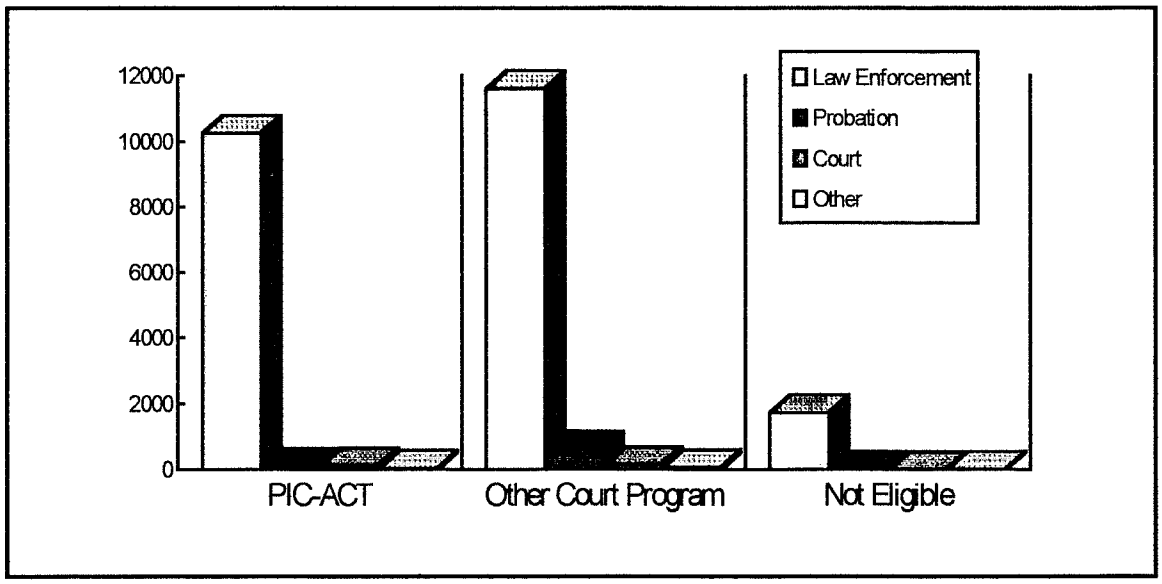

Figure 5: Numbers of Youths in Three Samples, Analyzed by Source of Referral

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27 Differences reported in this report all are statistically significant by relevant tests at the one percent level of confidence.

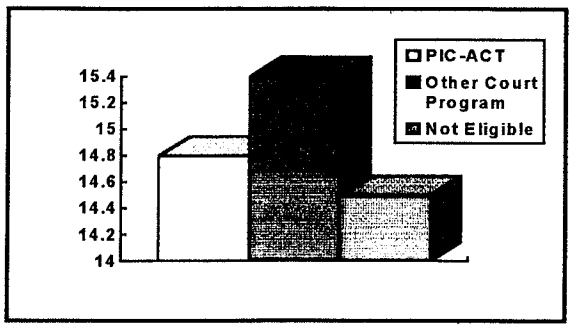


Figure 6: Average Age of Youths in Three Groups

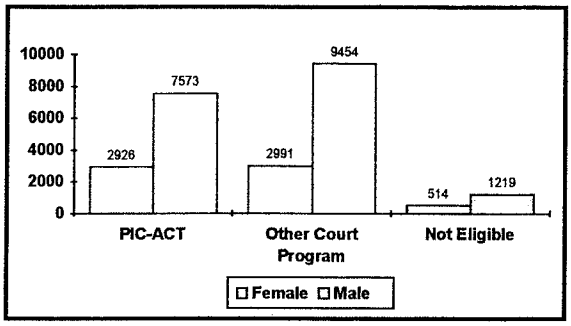


Figure 9: Numbers of Males and Females in Three Samples

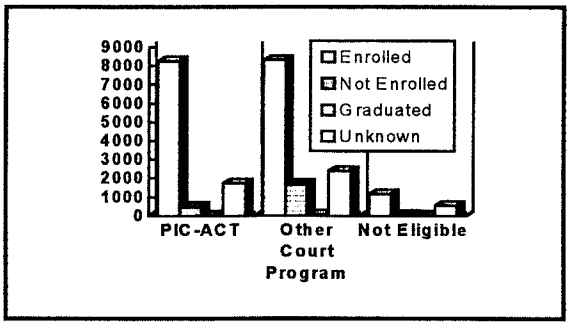


Figure 7: Numbers of Youths in Three Samples, Analyzed According to School Status

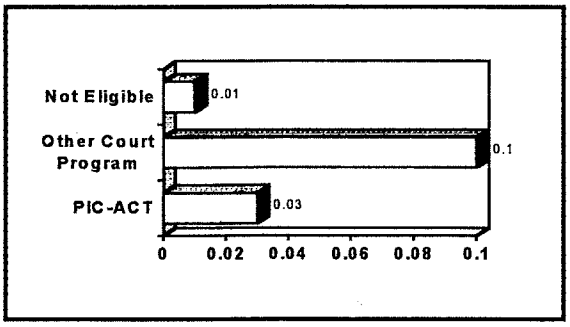


Figure 8: Average Number of Prior Drug Complaints in Three Groups

Although the three groups differ according to youths' characteristics as illustrated by these figures, it should be borne in mind that there is a substantial overlap among the groups on any characteristic selected. For examples: youths with felony offenses often are found in both the PIC-ACT and Other Court Program samples, which include both young men and young women; youths with thefts are more often placed in PIC-ACT, but many are found in the Other Court Program group. Similarly, group distributions of age, numbers of prior drug allegations, prior adjudications, prior petitions, prior PIC-ACT placements, prior offenses, and prior probation violations overlap. There is no single youth characteristic that distinguishes between the PIC-ACT and Other Court Program samples.

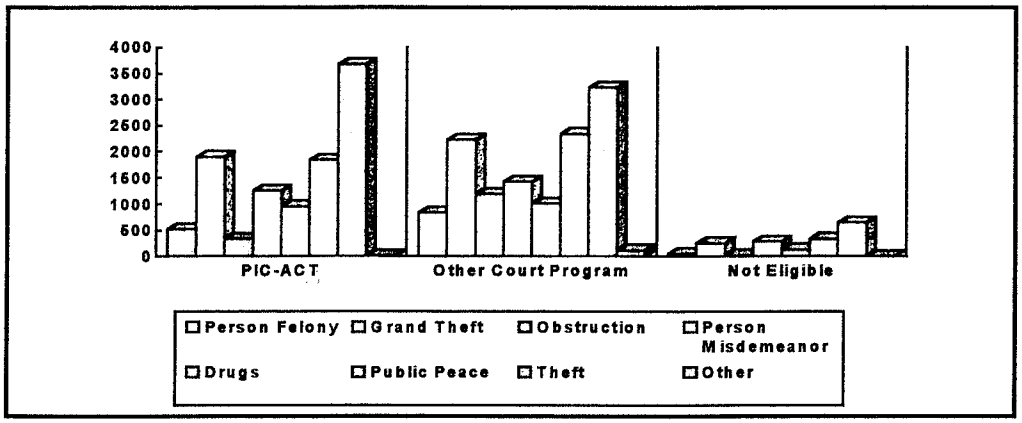


Figure 10: Numbers of Youths in Three Groups, Analyzed by Most Serious Complaint

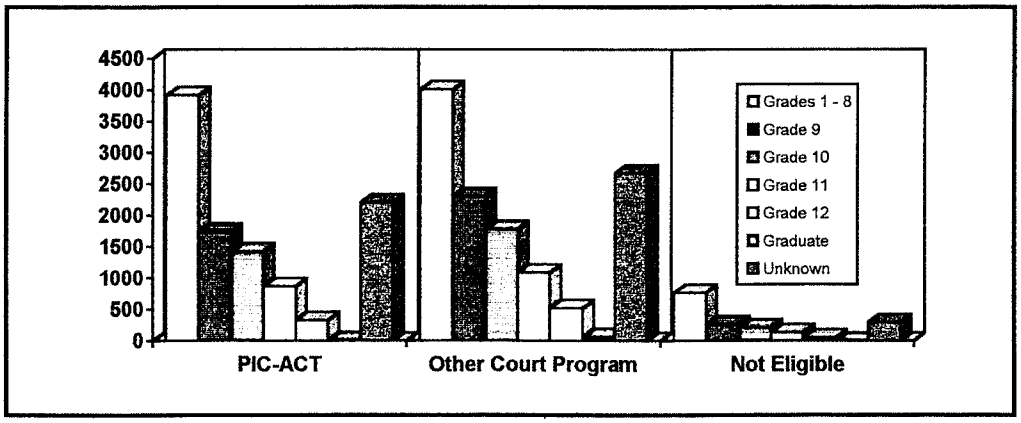


Figure 11: Numbers of Youths in Three Samples, Analyzed by Grade in School

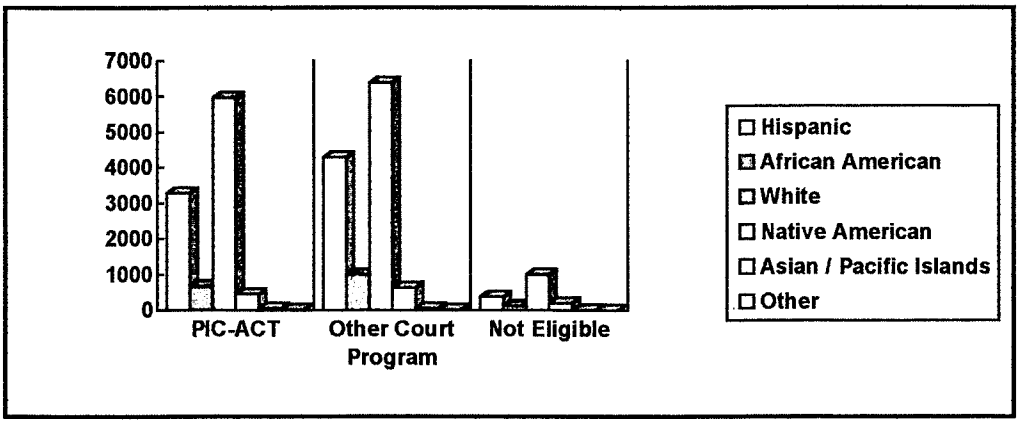
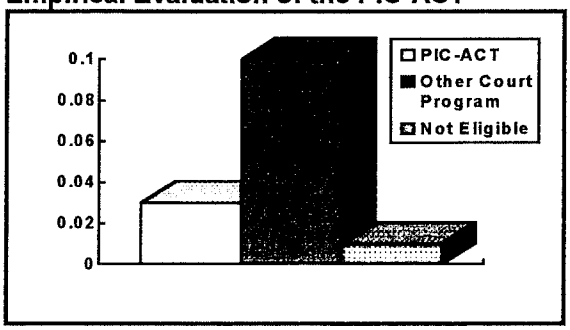
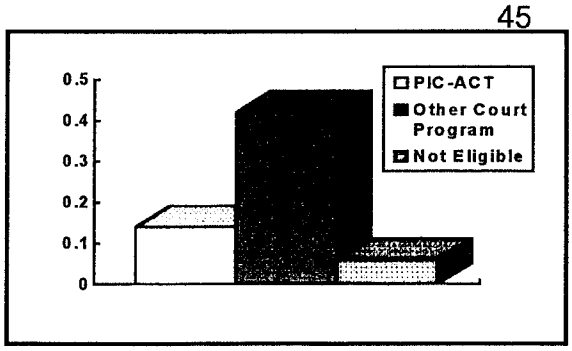


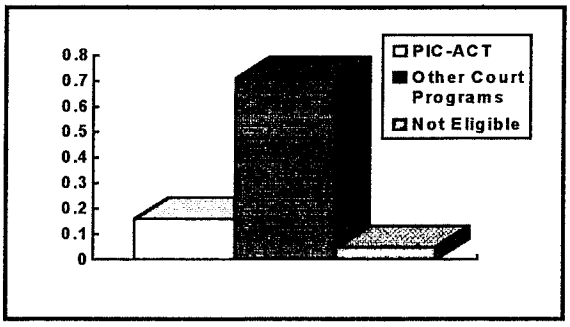
Figure 12: Numbers of Youths in Three Samples, Analyzed by Ethnic Classification



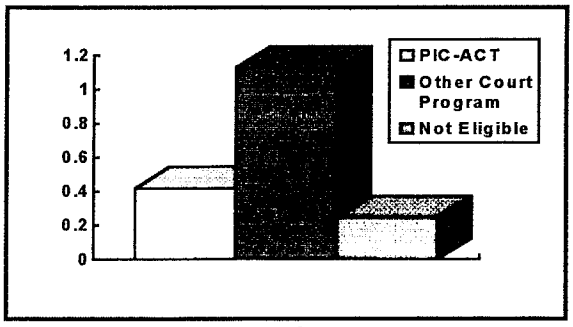
Average Number of Prior Drug Allegations in Three Groups



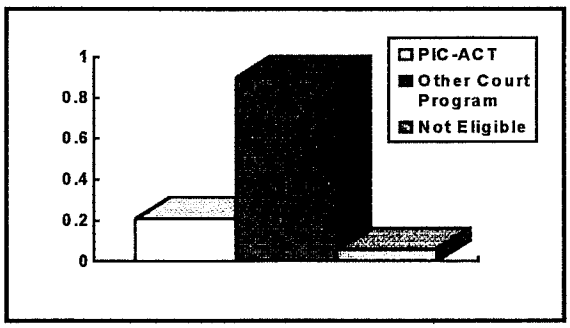
Average Number of Prior Person Offenses in Three Groups



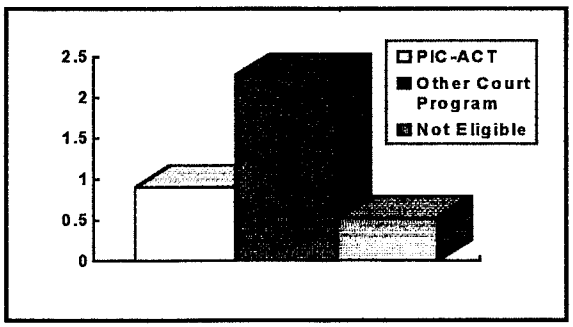
Average Number of Prior Adjudications in Three Groups



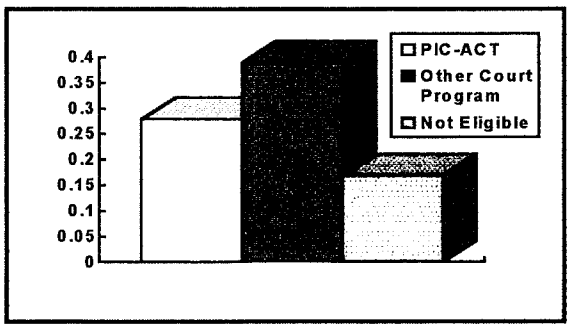
Average Number of Prior Property Offenses in Three Groups



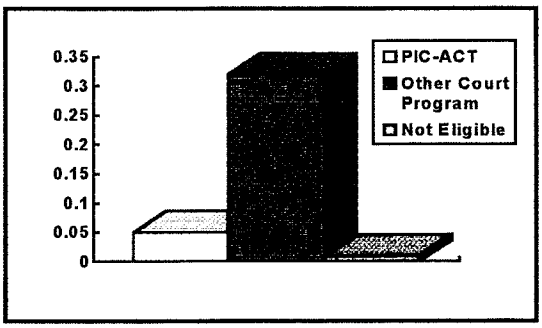
Average Number of Prior Petitions in Three Groups



Average Number of Prior Counts in Three Groups



Average Number of Prior PIC-ACT Consequences in Three Groups



Average Number of Prior Probation Violations in Three Groups

Figure 13: Comparisons of Youths' Characteristics in Three Samples

Does classification as a PIC-ACT case, with consequences assigned, affect outcomes? This first "central question" was the question for the first statistical design. The dependent variable was the dichotomous attribute "new referral or not." The independent variable is a classification variable: the PIC-ACT Study Sample, the Other Court Program Sample, and the Not Eligible Sample. Thus, we wish to compare the youths in the three samples in terms of whether or not they had new referrals to the juvenile courts during the period of follow up study. Two different procedures were used to control for selection in order that fair comparisons of the new referral (and subsequently, the offense seriousness) outcomes can be made.

Before considering those analyses, we may examine the observed --- that is, the actual --- differences in new referrals, with no adjustment for bias due to *a priori* risk or to selection.

A Naive Answer to Question 1

A naive answer to Question 1, whether it makes any difference, for later offending, if the juvenile is selected as a PIC-ACT case, with consequences assigned, is provided by Figure 14. This Figure (along with Figure 15) summarizes the occurrence of the new referral criterion by the group classification (PIC-ACT, Other Court Program, and Not Eligible Samples).

The overall proportion of New Referrals (the percent "failures"), regardless of the group classification, was .46, which also was the percent observed for the PIC-ACT sample. There were 47 percent "failures" (new referrals) for the Other Court Program sample and 45 percent for the Not Eligible sample. The differences were not statistically significant, and it must be concluded on the basis of these data alone that the groups do not differ in "failure," defined by new referrals.

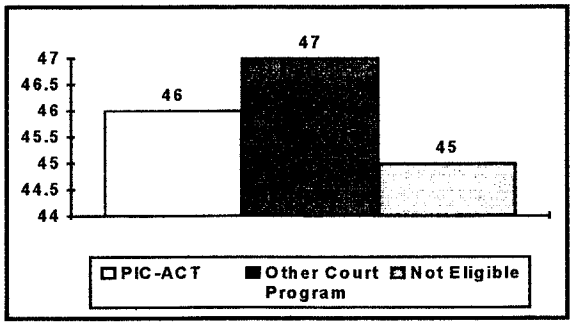


Figure 14: Percents with New Referrals, by Study Sample

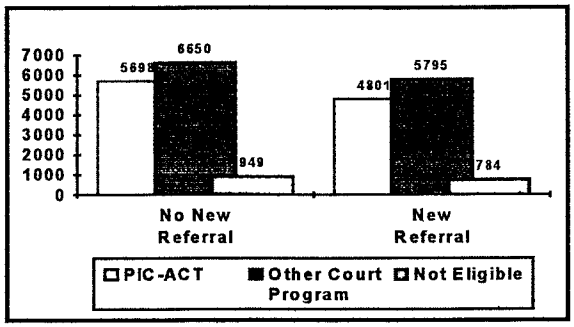


Figure 15: Numbers of Youths with and without New Referrals

The Need for Statistical Controls

It has been seen, from figures presented previously, that the three sample groups differ quite markedly in various youth characteristics plausibly related to the *a priori* risk of new referrals --- that is, in the risk of new referrals that is presented by the youth at the time of referral. **The differences shown can not be regarded as providing evidence of PIC-ACT effectiveness.**

The naive interpretations of observed differences in new referral rates by the study groups may well be biased by (a) factors associated with the decisions that result in placement of youths in the three different groups and (b) factors associated with *a priori* characteristics of the youths that also are associated with the outcome measures. In the present study, the latter are most likely to be represented by *a priori* differences in at-risk characteristics that are not randomly distributed across the three groups. The former can be estimated directly from the placement decisions.

A Priori Risk

Risk, as measured by the juvenile courts in Arizona, often is measured by an instrument for the assessment of the probability of new referrals within a six or twelve month period. The risk assessment device used requires an assessment of such variables as the total number of prior referrals; the total number of petitions; parental concern; parental cooperation; parental supervision; adults in the home who have a drinking or drug problem; whether there are children in the home who have a drinking or drug problem; and the child's age. Unfortunately, neither the risk score nor most of the items needed for its calculation are available for the vast majority of cases represented in the Administrative Office of the Courts' data file. Thus, the risk scores used by the various counties could not be used for the present purposes. And, the calculation of a new risk measure on the basis of the present sample, including youths from

all counties, could be expected to provide a better measure for the statistical control needed in this study.

Development of a Risk Measure for the Present Study

Since the risk measures used by the various counties were not available for most cases, it was necessary to develop one for the present study. The ordinary least squares regression method was used, even though the outcome criterion (new referrals) is dichotomous. This was done for three reasons. First, the outcome distribution is not extreme, and ordinary least squares models are remarkably robust under this condition. Second, the theoretically more appropriate logistic models are interpreted only with considerable difficulty by most decision makers, and the ready communication of results of the study is of much concern. Third, our analyses using logistic models with closely comparable problems has indicated no substantive difference from those developed using ordinary least squares regression. [28]

The *a priori* risk model developed for the new referral outcome criterion is summarized in Table 2. It contains predictor variables typically observed in such models, such as indices of age, prior record, and type of offense. The observed value of the multiple correlation coefficient is well within the range of power typically observed for risk instruments; its square shows that about 11.5 percent of the variation in new referrals is accounted for by the variables listed, in combination.

In the context of the variables listed in the table, the best predictor of new referrals are the number of prior counts, the age at the instant referral, and the number of prior referrals. Age is inversely related to new referrals; that is, as typically is found, older youth tend to have fewer new referrals. More prior record, measured by prior counts and petitions, is associated with new referrals.

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28 Note 26, *supra*.

Table 2: Regression of New Referral Criterion on Various Predictors

Predictor	B	Beta	t	p
Number of Counts, Instant Referral	.015	.031	5.00	.0001
Seriousness, Most Ser. Inst. Offense	-.013	-.053	-7.85	.0001
Class (Felony, Misdemeanor)	.009	.014	2.00	.0460
Number of Prior Referrals	.026	.116	4.70	.0001
Seriousness, Most Ser. Prior Offense	.029	.145	20.18	.0001
Number of Prior Drug Allegations	-.024	-.017	-2.69	.0076
Number of Prior Probation Violations	-.018	-.033	-3.86	.0001
Number of Prior Person Offenses	.013	.023	2.94	.0033
Number of Prior Counts	.032	.168	7.63	.0001
Number of Prior Petitions	.012	.034	2.35	.0189
Number of Prior Detentions	-.019	-.041	-3.96	.0001
Age at Instant Referral (Years)	-.041	-.164	-13.76	.0001
Age at First Referral (Years)	.016	.070	5.78	.0001
Race (White vs. Non-White)	.036	.036	5.97	.0001
Sex (Male vs. Female)	-.077	-.067	-11.00	.0001
Constant	.761		29.86	.0001

Note: $R = .338$; $F_{(15, 24441)} = 210.95$, $p < .0001$

As illustration of the variability in risk presented when different groups are compared, consider the average risk scores, calculated according to the equation described by Table 2, for the three study samples. Figure 16 shows that the youths in the study samples differed on the average, in terms of their risk scores. The "worst" risks are found in the Other Court Program sample, the "best" risks are those youths in the Not Eligible sample, and the cases in the

PIC-ACT sample are in between. In examining Figure 16, it may be remembered that the overall percent of new referrals was 46.

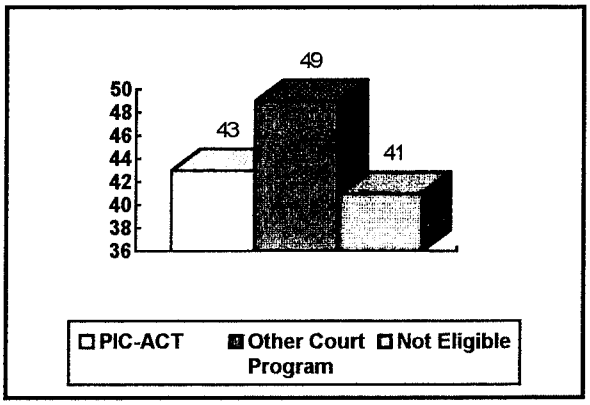

Figure 16: Average *A Priori* Risk Scores, by PIC-ACT, Other Court Program, and Not Eligible Samples

A Model for Selection for PIC-ACT, Other Court Program, and Not-Eligible Samples

Since probation officers and County Attorneys do not make decisions at random, and since it may be presumed that they attempt to take likely outcomes into account as they make placement decisions, it is important that these selection factors also be controlled if the comparisons we seek are to be made without systematic bias. To model these decisions, we used Fisher's multiple discriminant function analysis. Given a nominal classification as a dependent variable, the discriminant function seeks that linear combination of independent variables that maximizes the between to within groups variance ratio. It is possible to extract one less function than the number of groups to be predicted (or independent variables, whichever is fewer), subject only to the constraint that each be orthogonal to (uncorrelated with) the rest. This means that we wish to identify the linear equations using these variables, and their weights, that best separate the distributions of scores for these equations for the sample groups.

The definition of "best" is that the distributions are separated as much as possible, in relation to their variabilities.

For the present problem the task is to define the expected two functions (equations) that best indicate the variables that distinguish the groups PIC-ACT, Other Court Program, and Not Eligible, and their weights. The analysis proceeded under an assumption of equal *a priori* group sizes (a very conservative assumption), and two functions were extracted. Each is significantly associated with the group classifications: The canonical correlations summarizing these associations are .32 for the first function and .04 for the second. The variables important for the classification into the three study groups are indicated in Table 3, which summarizes the standardized discriminant function coefficients. These coefficients are the weights to be applied to the variables (in standardized form, that is, with equal means and variances) in order to obtain the most efficient classification.

Table 3: Standardized Discriminant Function Coefficients, Sample Group Assignments

Independent Variable	Function 1	Function 2
Seriousness, Most Serious Instant Offense	-.131	-.489
Number of Prior Referrals	.588	-.795
Seriousness of most serious prior offense	-.229	.598
Drug Abuse at First Referral?	-.082	.279
Number of Prior Adjudications	-.154	.214
Number of Prior Counts	.495	.452
Prior Non-Court Dispositions	-.321	.328
Detained on Date of Instant Referral?	.237	-.460
Total Days Prior Detentions	.112	-.312
Days Detained, Instant Referral	.088	.163
Age at Instant Referral (Years)	.339	.182
Race (White vs. Non-White	.130	.119

Function 1 accounts for 98 percent of the accounted for variance, but both functions nevertheless were used in the analyses to be described. The youths'

characteristics most helpful in understanding the classification into the PIC-ACT and other groups are the numbers of prior referrals and counts, age, prior non-court dispositions, whether detained on the day of the instant referral, and the seriousness of the most serious prior offense. The two functions correctly classify youth into the three study groups in 42 percent of the cases (with no assumptions about the prior probabilities of the classifications, that is, about group sizes, which approach provides a quite conservative measure of the correct classifications).

In order to examine whether counties differ in terms of the average scores on these functions, the mean scores on the first and second selection functions were calculated for each county. The counties do differ in terms of the kinds of youth received, in terms of the variables included in each equation. That is, the mixtures of cases in terms of offenses, prior records, age, and prior history in the juvenile court, variables that help explain the assignments to the PIC-ACT and other groups, differ from county to county.

Overview of Analyses with Statistical Controls

In the previous sections of this report we have identified first, the best predictors of the outcome "New Referrals," and second, the best predictors of the classification decisions placing the youths in the total sample into one of the three groups to be compared. We have observed also that there is no difference in the percents with new referrals for the three study groups. We now are in a position to examine the new referral criterion for the three study samples while controlling simultaneously for the factors identified in these first steps.

The statistical method used is the analysis of covariance. Analyses were conducted separately for the two dependent variables of interest --- new referrals and the seriousness rating of offenses alleged when new referrals occurred. For each analysis, the independent variables of interest are the classification (PIC-ACT, Other Court Program, Not Eligible) and the county of origin. In some cases,

the interaction of these (that is, case classification within county) also is of interest. For convenience, we will first report the results with the new referral criterion, then results concerning the seriousness of new referrals. Each youth in the total sample was assigned predicted risk scores and also scores on the two discriminant functions developed to model the classification decisions. These, plus the time at risk, now may be used as covariates in the analyses.

A conservative hierarchical approach was taken, with covariates entered first. Essentially, this leaves only residual variation in the outcome criteria to be explained by the type of classification. That is, for example, it enables us to estimate the effect of the classification into PIC-ACT on the other classifications of the behavioral criteria of interest --- new referrals or seriousness of new offense allegations --- independent of the effects of *a priori* risk, of classification selection, and of time at risk (or, indeed of county) factors.

Effects of the Study Sample Classifications on New Referrals

A summary of the analysis of covariance in the New Referral criterion is given in Appendix A. The purpose of this analysis is to determine whether there is an effect on new referrals of the group classifications (PIC-ACT, Other Court Program, or Not Eligible samples), of counties, and of the interaction of the group classification by county. The analysis controls for (takes into account) the variables time at risk, selection functions 1 and 2, and *a priori* risk and tests for the effects of study group, county, and the interaction of study group by county. In making these tests, the effects of the variables controlled is first subtracted out.

The nature of the analysis may be summarized as follows:

- **Dependent Variable**: New Referrals

- **Classification Variables (Independent Variables):**
  - Classification of Youths as PIC-ACT, Other Court Program and Not-Eligible Samples
  - County
  - Interaction of classification and county

- **Variables Controlled (Covariates)**:
  - Time at Risk
  - Selection for Youth Classification (two linear combinations of independent variables explaining selection)
  - *A Priori* Risk (a linear combination of independent variables explaining the probability of new referrals on the basis of information known at the time of referral)

The results show that there are statistically significant effects on new referrals of: (1) classification as a PIC-ACT, Other Court Program, or Not Eligible youth; (2) County; and the interaction of study group by county. The latter effect means that in addition to the effects of study group and county there is an independent effect of the combination of county and classification group.

Recall that there were no differences in the new referral percentages when these were examined for the three groups compared (Figure 14) and that the observed (actual) percent of new referrals for the total sample was 46 percent. We now can examine adjusted outcomes for the three groups, with that adjustment, based on the analysis just described, taking account of the effects of risk, selection, and time at risk. The adjusted percents are depicted in Figure 17.

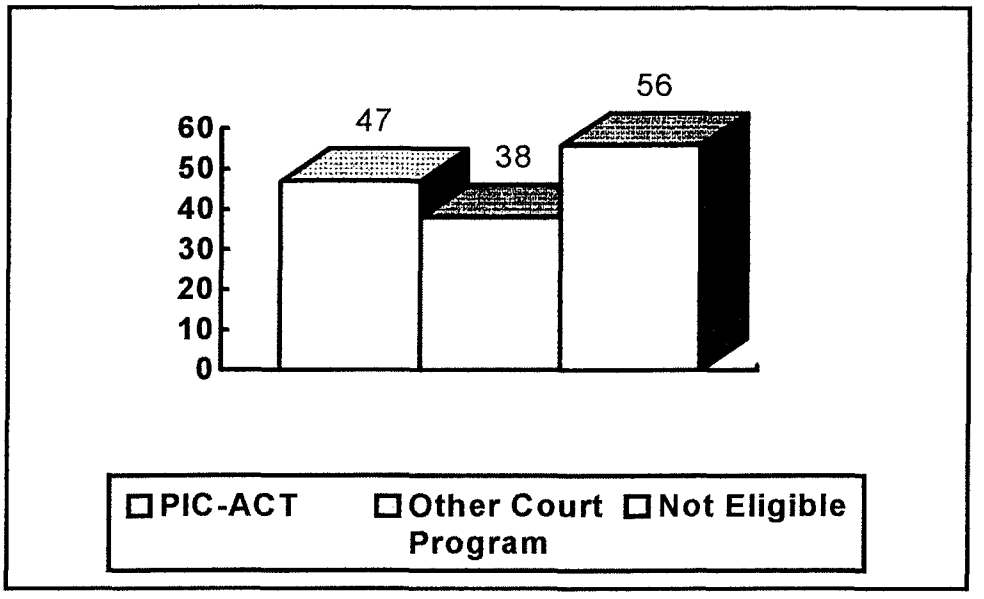

Figure 17: Percents with New Referrals, Adjusted for Risk, Selection, and Time at Risk

If the new referrals for the three groups are to be compared, Figure 17 should be used rather than the unadjusted data of Figure 14. It may be concluded that the three groups differ as shown on the new referral criterion, when known effects of time at risk, risk of new referrals known at the outset, and selection are taken into account for the comparison. The adjusted new referral rates are highest for the Not Eligible sample, lowest for the Other Court Program sample, and in between for the PIC-ACT sample.

Effects of Consequences on New Referrals

For the analysis of the effects of the various consequences, it is necessary to control not only for time at risk and *a priori* risk, but also for the selection for the specific consequence assigned. Accordingly, a discriminant function analysis was completed to define measures to be used for the required statistical controls for selection. The results are summarized in Table 4 and , more completely, in Appendix B.

Table 4: Standardized Discriminant Function Coefficients, Consequence Assignments, Functions 1 and 2

Independent Variable	Function 1	Function 2
Number of accomplices	-.136	-.004
Number of counts	-.134	-.065
Offense seriousness	.602	.118
Felony or misdemeanor	.093	.324
Drug abuse at first referral	.371	-.772
Number of prior drugs	-.073	.215
Number of prior adjudications	.182	.003
Number of prior counts	-.274	-.046
Number of prior petitions	-.225	-.092
Detained at first referral?	-.187	.054
Days detained, instant referral	-.092	-.045
Age at instant referral	.144	-.103
White vs. non-white	.011	.313
Male vs. female	.154	.130

The first two discriminant functions do most of the work of classifying the youths into the consequences categories --- that is, of modeling the decisions of the probation officers. The first four (shown in Appendix B) nevertheless were used in the analysis of covariance. As can be seen from the variables included in these functions, the selection for type of consequence seems to be related to the seriousness of the offense, the history of drug abuse (whether the youth was first referred to the court with an allegation of drug abuse), the number of prior counts and petitions, and other case characteristics.

The analysis of covariance is summarized in Appendix C. Within the PIC-ACT study sample, consequences were coded according to nine categories: community service; counseling; education for delinquency prevention; education for alcohol and drug abuse; non-residential programs for rehabilitation, restitution, fines, "others" and combinations. The observed and adjusted percents with new referrals (from the adjusted means) by category of consequence, are shown in Figure 18.

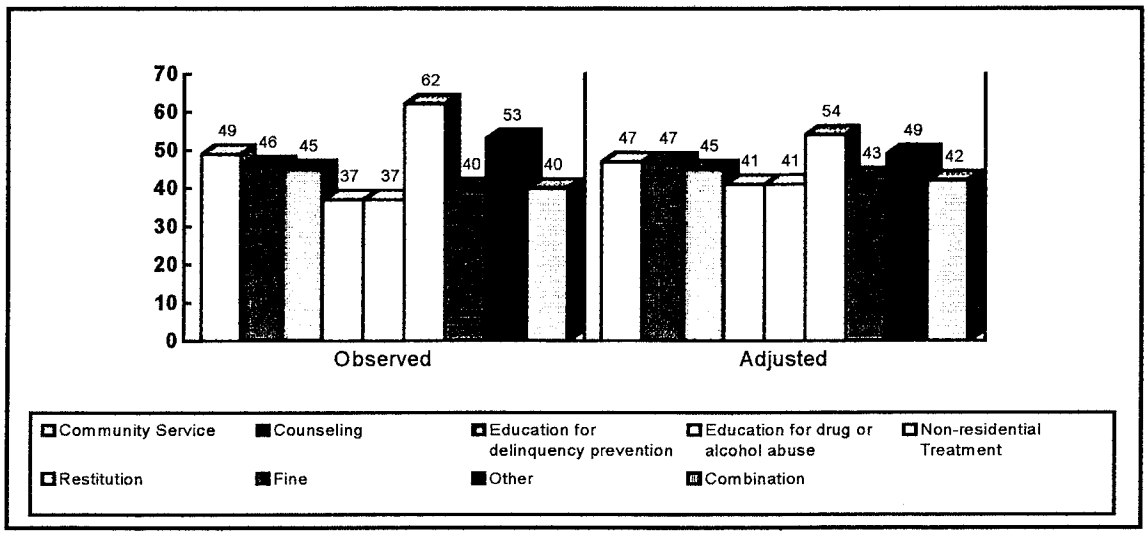

Figure 18: Actual and Adjusted Percents with New Referrals for Consequence Groups, with Adjustments for Time at Risk, *A Priori* Risk, and Selection

When the adjustments were made for the covariates, the variability in rates of new referrals was less marked than that for the actual (observed) rates. Nevertheless, the data show that the type of consequence does make a difference, with education for drug or alcohol abuse, non-residential treatment, fines, and the "combination" category faring best. There is no support in the figure for restitution, which has the highest rate of new referrals.

The Administrative Office of the Courts provided these summary program descriptions of the education for drug or alcohol use and the non-residential treatment programs:

> **Delinquency Prevention (PIC-ACT Programs)**
>
> This service is for juveniles who have a specific educational need pertaining directly to the reason for their referral. This service is usually provided as an educational program in either singular or multiple episodes which build upon one another. It may include other outpatient counseling services. The service intent is to educate the client by providing necessary skills, tools, and knowledge which can be utilized to make responsible choices and to

discontinue behaviors that instigated court involvement.

Evening Support Service

This service provides a minimum of 3 hours (excluding meals and transportation) of supplemental services to youth who may attend daytime school. Services often include supplemental education, tutoring, GED study, pre-vocational and/or vocational instruction, individual living skills developments, general counseling activities, substance abuse counseling, social and/or recreational activities. Structure and supervision may be moderate to intensive with flexibility to accommodate changes in individual needs. Programming may take placer at a provider location, and/or in various community locales.

Variation in Types of Consequences Used and in Compliance

There is substantial variation in the frequency of use of the various consequence types reported for each youth in the Administrative Office of the Courts data file. For the State as a whole, Community Service is most often assigned (Figure 19). Education for Delinquency Prevention programs often are reported also, as is non-residential treatment. Restitution is not often used, and reported combinations (multiple consequence assignments) are rare. Not all consequence types are used by all counties (Figure 20).

These data, which rely on the reporting on each case to the Administrative Office of the Courts, may not adequately portray the use of the various consequences. For more detail, the reader should consult the AOC report for counties cited earlier. [29] For example, Santa Cruz County, with consequences reported only as "other," includes community service as mandatory within an informal probation program. Similarly, Pinal County includes community service in a work service program.

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29 Note 5, *supra.*

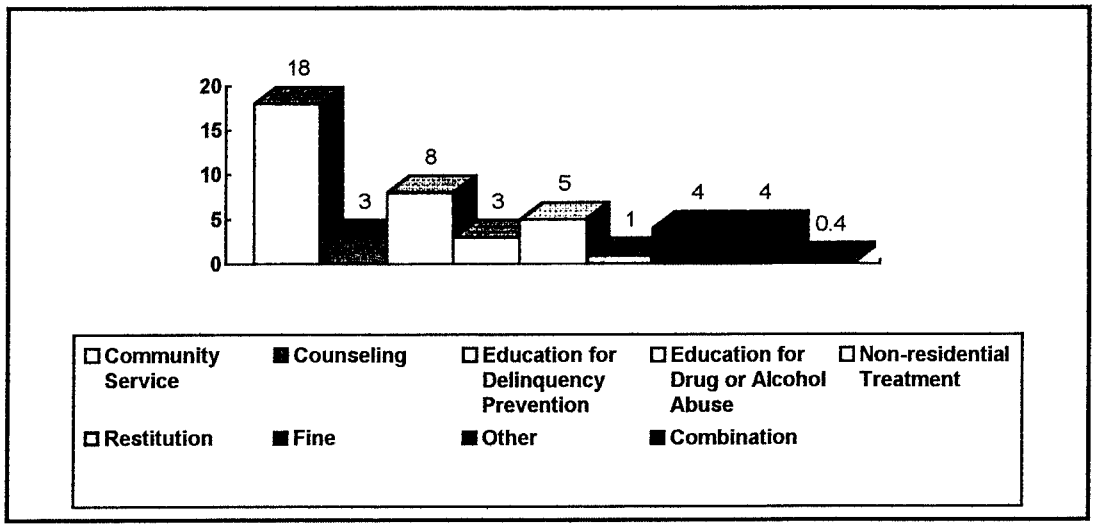

Figure 19: Percents Assigned to Consequence Groups (Combined Samples)

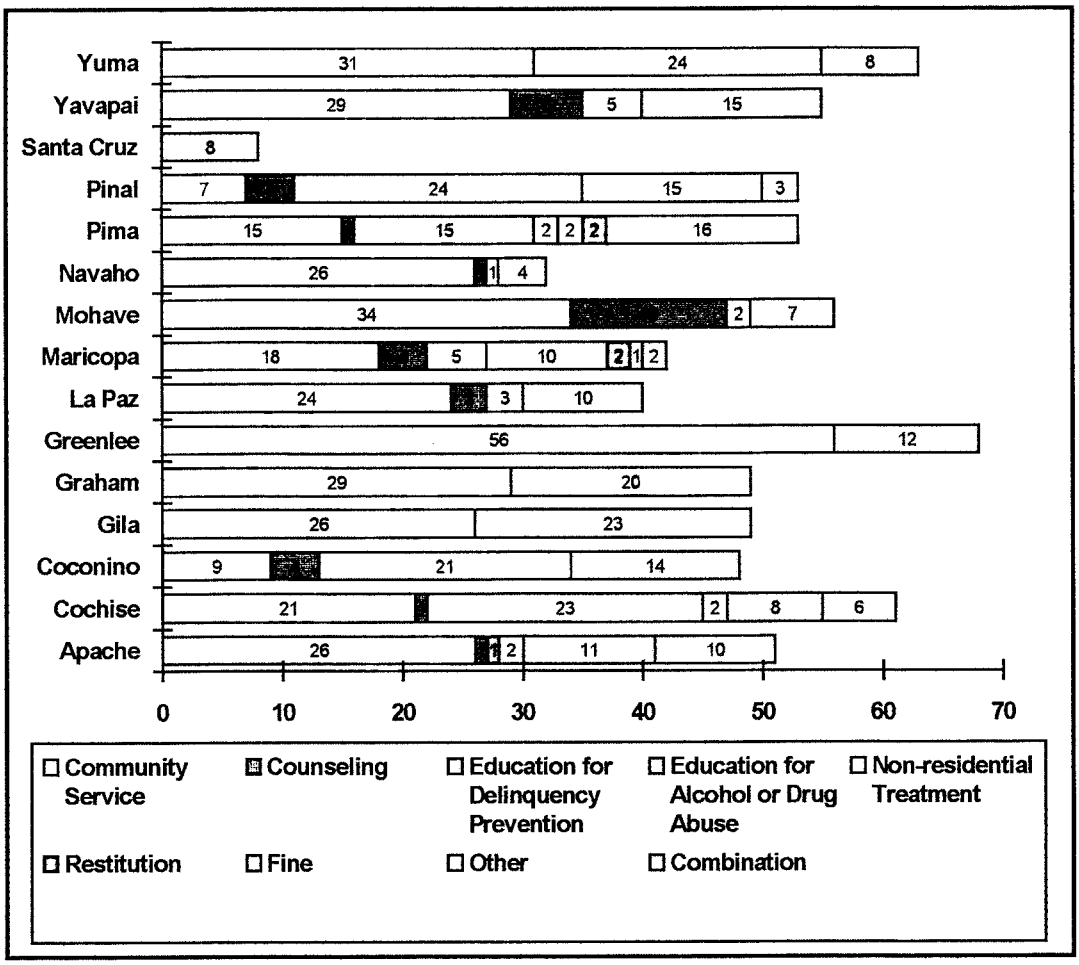

Figure 20: Percents Assigned Consequences of Various Types, by County

There is substantial variation also in compliance with consequences according to the type of consequence. This is illustrated by Figure 21, which shows the percent compliance with each of the types of consequence.

Compliance was most frequent for education for alcohol or drug abuse and non-residential treatment; it was lower for restitution and counseling.

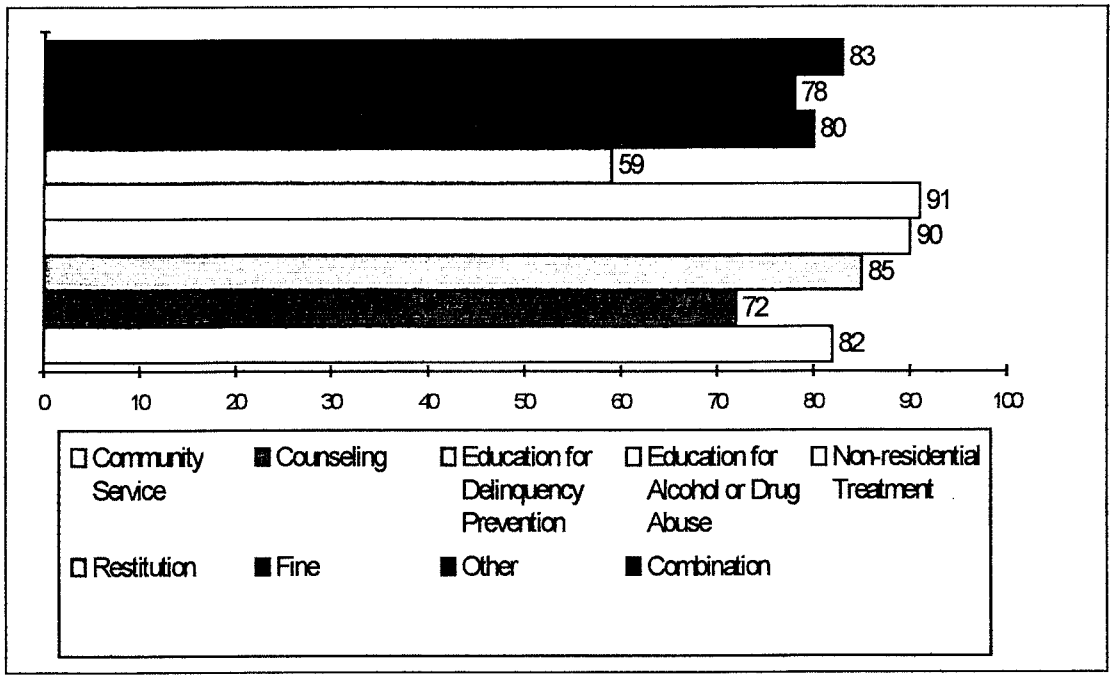

Figure 21: Percent Compliance for Types of Consequences

Effect of Compliance with Consequences on New Referrals

Within the PIC-ACT study group, we may ask whether compliance with assigned consequences makes any difference with respect to the new referrals outcome. At the same time, we may ask whether this effect, if any, varies according to the county reporting. The analysis summarized in Appendix D answers those questions after controlling for time at risk, *a priori* risk, and selection. It shows that there is a county effect, but, independently of county, compliance affects the percents with new referrals, adjusted for differences in the variables controlled. Appendix D shows also that the interaction of

compliance by county was not statistically significant (at the one percent level of confidence), indicating that the effect of compliance does not depend upon the county considered. The effect of compliance is illustrated in Figure 22.

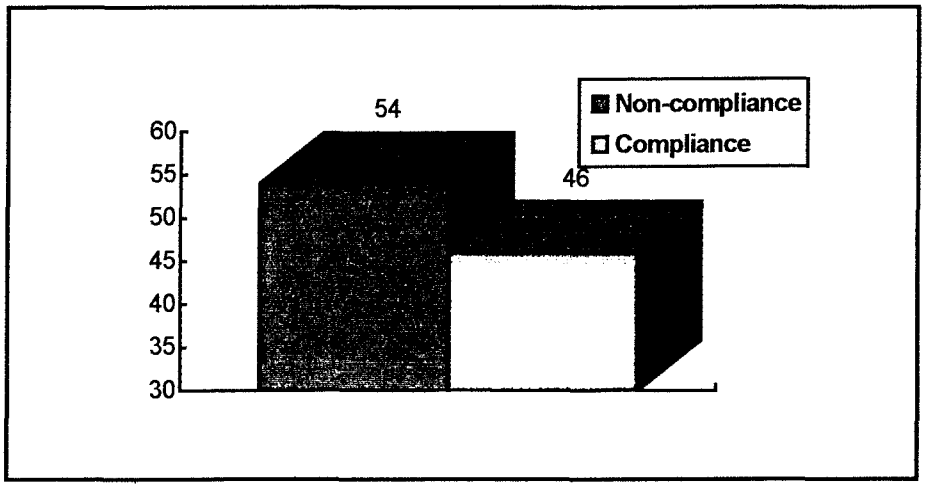

Figure 22: Adjusted Percents of PIC-ACT Youths with New Referrals After Compliance or Non-compliance with Assigned Consequences (Adjusted for Time at Risk, *A Priori* Risk, Selection of Consequences, and Independent of County)

It may be concluded that within the PIC-ACT sample compliance affects the new referral outcomes: the adjusted percents with new referrals are notably higher for youths who did not comply with PIC-ACT consequence requirements.

Effects of PIC-ACT, Other Court Program, and Not Eligible Classifications on Seriousness of New Offenses

Similar analyses were completed for the outcome measure of the seriousness of new offenses alleged, given a new referral. The types of offenses scored variously in this classification procedure are illustrated in Table 5, which shows the score categories, the abbreviated label used by the Administrative Office of the Courts, and examples of offenses included. (The complete listing is

available from the Administrative Office of the Courts.) For this analysis, of course, only the youths with new referrals were included for the study.

Table 5: Examples of Seriousness Offense Scoring

Value	Label	Examples of Offenses
1	**Violent** (Felony Against Person)	Aggravated assault, arson (occupied structure) Murder, manslaughter, kidnapping, robbery, sexual assault
2	**Grand Theft** (Felony Against Property)	Forgery, burglary, fraud, car theft, purse snatching (no force), arson
3	**Obstruction** (Hindering Justice)	Escape, attempts and conspiracies to commit crimes, obstructing justice, solicitation, tampering, resisting arrest
4	**Fight** (Misdemeanor Against Person)	Assault, endangerment, threat, domestic violence, unlawful imprisonment
5	**Drugs** (Possession or sale)	Possession, use, sale, manufacture of Narcotic drugs, controlled substances
6	**Peace** (Disturbing the Peace)	Attempted carrying concealed weapon, disorderly conduct, reckless driving, trespassing, contributing to delinquency, cruelty to animals, driving under the influence of drugs or liquor, speeding, failure to appear, gambling, loitering, pandering, pimping, illegal weapon use
7	**Theft** (Misdemeanor Against Property)	Attempted theft or fraud or criminal damage, petty criminal damage, fraudulent use of credit card, shoplifting, malicious mischief

This provides an ordinal scale, with higher numbers indicating generally less serious offenses. The numbers of youths in each of the three groups of the total sample are reported in Table 6. The percents with a given offense allegation at the next referral are depicted in Figure 23.

Table 6: Numbers of Youths in Offense Seriousness Outcome Categories (Most Serious Offense at Next Referral) for Total Sample, by Three Study Samples

Category	PIC-ACT	Other Court Program	Not Eligible	Total for Category
No new referral	5,734	6,720	964	1,3418
Violent	220	353	37	610
Grand Theft	613	899	104	1616
Obstruction	420	677	27	1,124
Fight	480	599	90	1,169
Drugs	384	405	63	852
Peace	608	755	115	1478
Theft	830	745	150	1,725
Status	1,197	1,259	182	2,638
Hold	13	33	1	47
Total	10,499	12,445	17,33	24,677

The distributions of the three samples are significantly different. [30]

[30] Each study sample distribution was compared with each other study sample distribution by the (non-parametric) Kolmogorov-Smirnov two sample test, which provides a test of the hypothesis that two cumulative step distributions are drawn from a common population. In each case, the differences are statistically significant.

Before describing the results of the analyses of variance and covariance of the seriousness criterion, some indicants of other outcomes often used by the courts, according to the group classifications, may be described. It should be noted that none of these comparisons include statistical controls such as used for the analyses of new referrals and the seriousness criterion. Thus, these comparisons are "naive" in the sense used in this report. Nevertheless, it may be of some interest for administrative purposes to note the actual (unadjusted) percents of cases, for the study groups, for these other outcomes.

The youths in the three study samples differ in their outcomes when the latter are defined by the seriousness of offense categories or by felony or misdemeanor class. Figure 23 shows the percents in each of the offense seriousness categories, according to the study group classification. The most common new offense classification according to the seriousness ranking, for any study sample, is that of status offense. Theft is the most popular misdemeanor or felony offense. Cases classed as violent (felonies against persons) are fortunately the most uncommon. When new offenses at the next referral are classified according to legal and administrative classifications rather than the seriousness groups, misdemeanor offenses are the most common (Figure 24).

The percents of each of the three study groups whose cases were adjusted are shown in Figure 25. Adjustments are much more common in the PIC-ACT sample, with 71 percent of youth eventually having their cases adjusted within the time frame of this study.

The percents with new referrals resulting in the filing of a petition is a criterion sometimes considered a measure of "new serious offenses," since this requires an examination of the offense alleged and its circumstances not only by the court staff but also by the county attorneys. The PIC-ACT cases had the lowest percent (15 percent) with new filings (Figure 26).

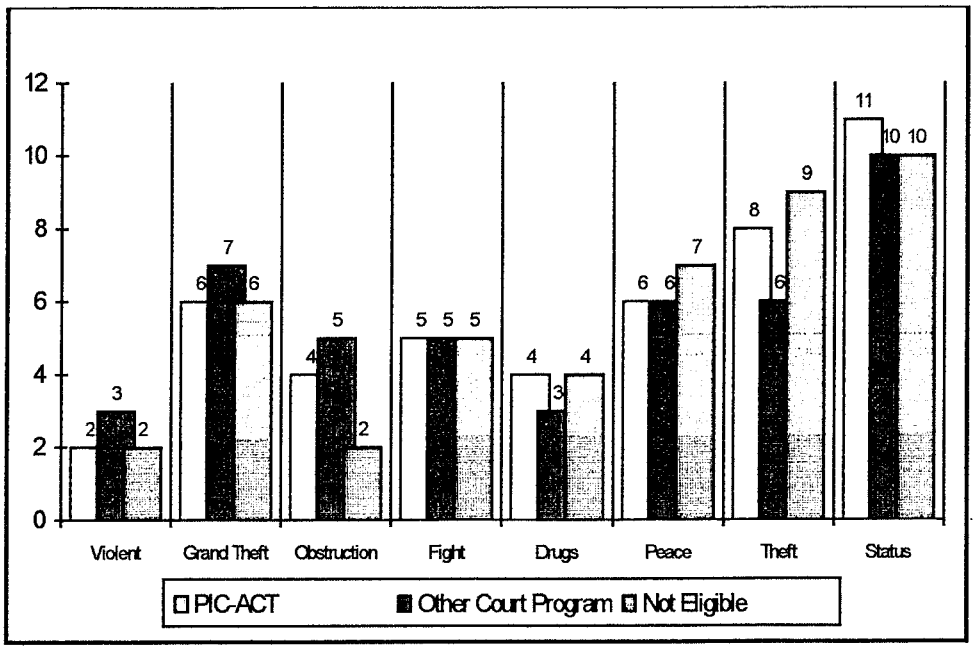

Figure 23: Percents with New Offenses Alleged at New Referral, PIC-ACT, Other Court Program, and Not Eligible Samples

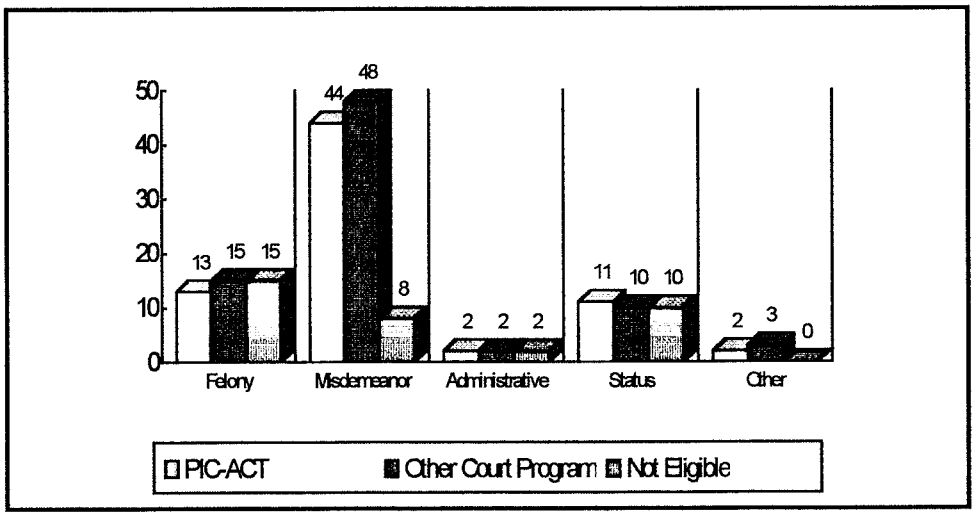

Figure 24: Percents with Felony and Misdemeanor Complaints at New Referral, PIC-ACT, Other Court Program and Not Eligible Samples

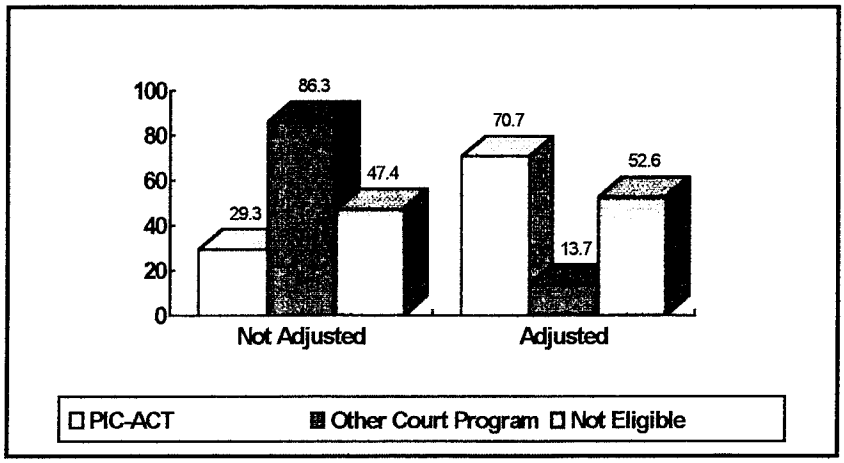

Figure 25: Percents of Youths in Three Study Groups with Cases Adjusted and Not Adjusted

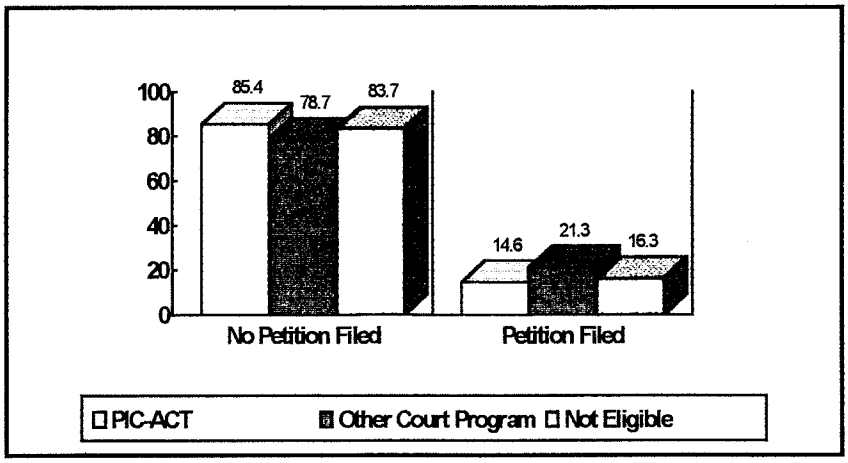

Figure 26: Percents of Youths in Three Study Samples Who Had Petitions Filed as a Result of the New Referral

An analysis of covariance analogous to those reported previously [31] was done. Figure 27 shows the actual and adjusted average seriousness scores for the PIC-ACT, Other Court Program, and Not Eligible samples for those

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31 See the discussion of limitations in a subsequent section; improved scaling of this measure is desirable. Although the analysis of variance methods used are generally appropriate only for interval scales --- i.e., those for which the distances between numbers may be considered equal --- the method is relatively robust with scales such as this. That the distributions cannot be considered to have been drawn from a common population has been determined by a non-parametric test, as previously noted.

individuals who had new referrals. In examining the figure, remember that a higher score means "less serious." The observed (actual) seriousness scores are statistically significantly different among the three groups, suggesting the naive interpretation that the PIC-ACT, Other Court Program, and Not Eligible classifications affects the seriousness of new offenses when they occur. The effect of the sample group classifications, however, is not statistically significant after the inclusion of the variables controlled in the analysis of covariance. [32] The adjusted means, after controlling for time at risk, selection functions 1 and 2, and *a priori* risk, are shown at the right, but the differences shown for the actual and adjusted means should be considered as expected by chance about six percent of the time in repetitions of this study with new samples. The county effect was significant, but the interaction of study group by county was not. The analysis summary table is Appendix D.

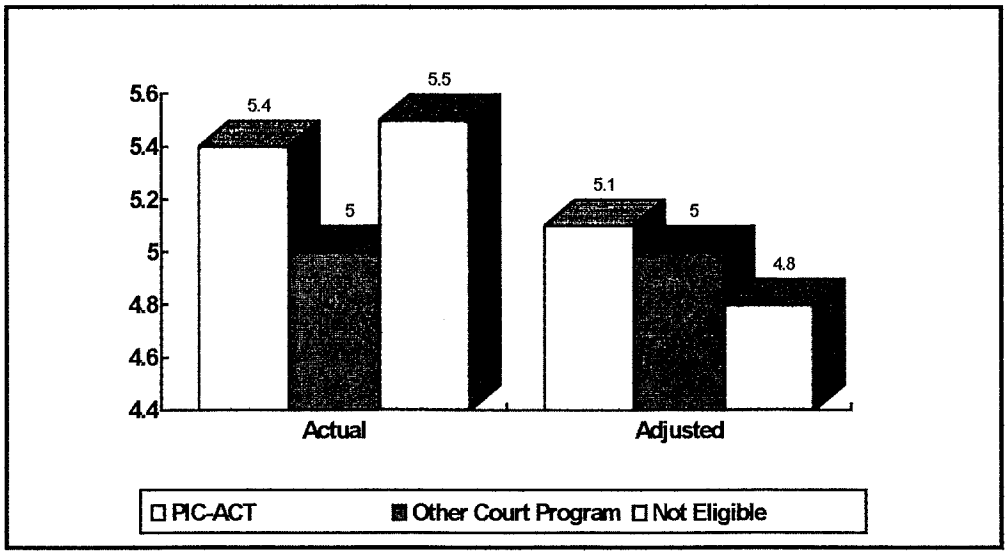

Figure 27: Actual (Observed) and Adjusted Mean Seriousness Scores for PIC-ACT, Other Court Program, and Not Eligible Samples, with Means Adjusted for Time at Risk, Selection, and Risk (Showing Adjusted Means Not Statistically Significant)

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32 The one percent level of confidence was assumed for all analyses reported. In this case, the value of F for study group, with 2 degrees of freedom, is 2.85 (P = .06).

Effects of Consequences on Seriousness of New Offenses

The results of a similar analysis of the variation in the seriousness scores associated with consequences are shown in Appendix E, and a comparison of observed and adjusted means is given in Figure 28. The effect of type of consequence assigned, after controlling for time at risk, *a priori* risk, and the selection functions (only selection function 4 is significant) is not statistically significant at the one percent level of confidence, so it is concluded that the type of consequence assigned makes no difference to this outcome as measured. The differences observed would be expected by chance about two percent of the time in replications of the study.

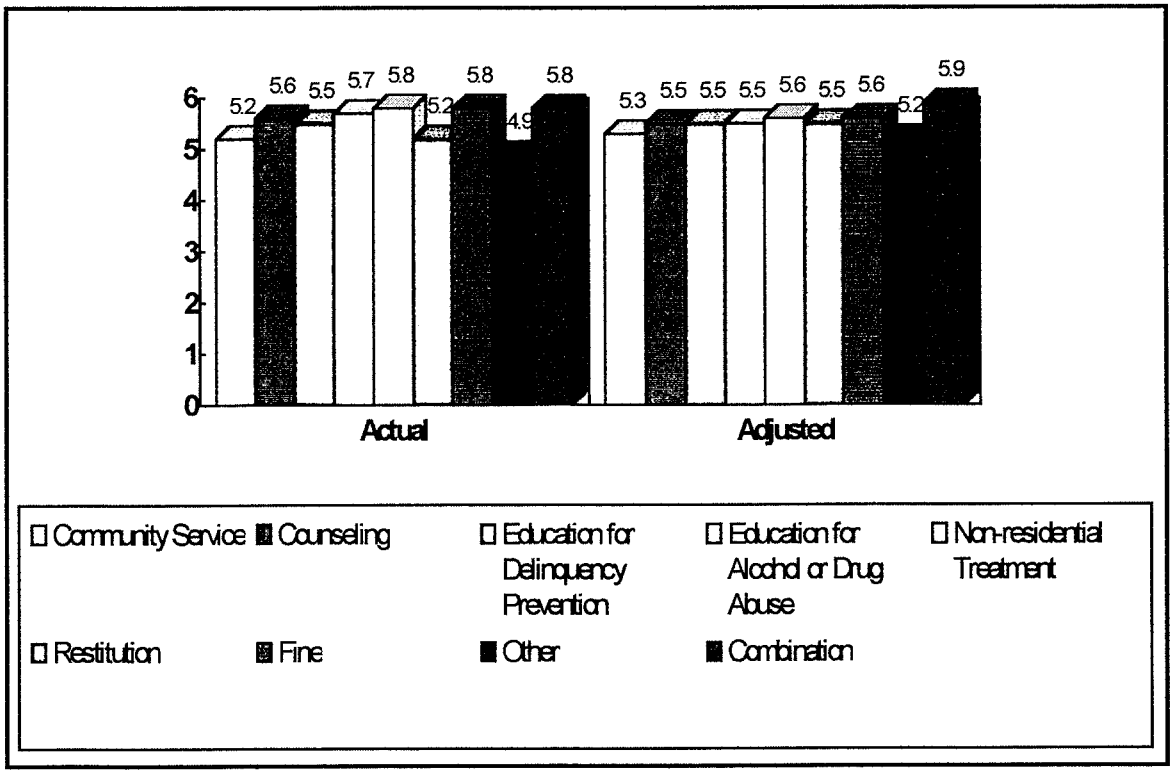

Figure 28: Actual and Adjusted Mean Scores for Seriousness Criterion for Consequence Assignment Groups, with Adjustments for Time at Risk, *A Priori* Risk, and Selection, Showing No Significant Effect of Type of Consequence

Effects of Compliance with Consequences on Seriousness of New Offenses

Whether the youth complies with the consequences assigned, however, does affect the level of seriousness of new offenses alleged when new referrals occur. The analysis of covariance summarized in Appendix G shows that, after controlling for time at risk, a priori risk, the four selection functions describing variables explaining the selection for specific consequence programs, there is a significant effect for compliance. There also is a significant effect for county, but not for the interaction of compliance by county. The effect of compliance, after taking the covariates into account, is independent of the county effect. The adjusted means for compliance, by consequence program, are depicted in Figure 29.

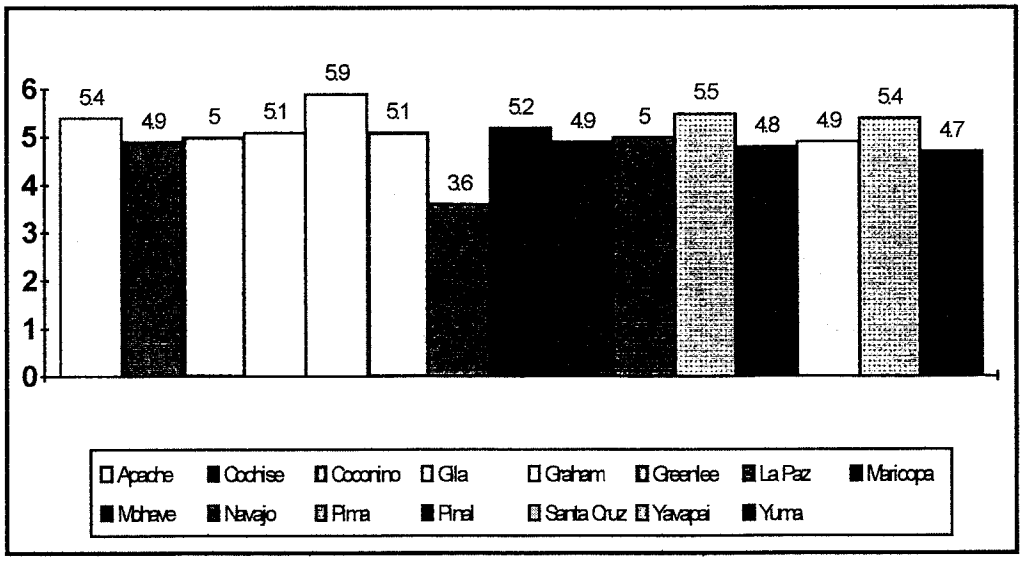

Figure 29: Average Seriousness Scores for Youths with New Referrals, by County, Adjusted for Compliance, Controlling for Time at Risk, *A Priori* Risk, and Selection

Results of the Quasi Experimental Design

As a second general way of examining the questions of effects of PIC-ACT on subsequent new referrals and the seriousness of offenses alleged when

new referrals do occur, a quasi-experimental study was completed. In many ways, this merely provides a second method for examining the data, and similar results are to be expected. Nevertheless, it was believed that this analysis might provide useful supplementary information about the process of classification of youths for PIC-ACT assignment. Also, it was thought that the results might be more easily interpreted.

The results so far presented have compared the outcomes for all youths with PIC-ACT consequence assignments with all those in the "Other Court Program" classification. Since it is recognized that youths in the PIC-Act sample tend to differ from those in the Other Court Program in various ways (as described previously) it is natural to want to compare the outcomes for PIC-ACT youths with those of *similar* youths placed in other court programs. This is consistent with the idea of a true experimental design, in which steps are taken, such as the random assignment of youths, to ensure that groups to be compared are *equivalent* before assignment to experimental and control groups.

Since a true experiment is not feasible for the present study, an approximation was sought. That is what is meant by a "quasi-experimental design." The objective was to compare similar youths (where "similar" means alike in terms of characteristics typically affecting assignment to PIC-ACT) given PIC-ACT consequences or other court programs. Youths typically assigned to PIC-ACT with consequences were identified by the discriminant function described previously. Most were indeed placed in PIC-ACT, but some were actually placed in other court programs. Similarly, youths typically assigned to other court programs were identified. The majority were actually placed in other court programs; but some were placed in the PIC-ACT program instead. A comparison of the outcomes for these groups (again taking account statistically for remaining selection factors, *a priori* risk, and time at risk) provides an additional assessment of the effect of PIC-ACT programs.

When youths were identified as most likely, on the basis of their characteristics, to be placed either in PIC-ACT or Other Court Programs, and then the actual placement was seen, four groups of youths were identified, as follows:

1. PIC-ACT 'Experimental' Group [33]
2. PIC-ACT 'Control' Group
3. Other Court Program 'Experimental' Group and
4. Other Court Program 'Control' Group.

These groups were defined on the basis of the most probable assignment by the decisions of the probation and county attorney staff. First, the most likely placement was determined by means of the discriminant functions, described previously, for measuring the selection factors for actual placements into the three groups of the study already discussed. The most probable assignment was determined for each youth in the total sample. (This included the Not Eligible Group, with an assumption that there were three equal groups. This assumption was maintained in order that the youths selected for the PIC-ACT and Other Court Program groups would be as similar as possible.) Second, it was determined, for each youth, whether the actual placement was that found to be most likely. When the most likely placement was PIC-ACT, and so was the actual placement, the youth was assigned to the PIC-ACT 'Experimental' Group. When the expected placement was PIC-ACT but the youth was actually placed in other court programs, the youth was assigned to the PIC-ACT 'Control' Group. Similarly, the youths expected to be placed in the Other Court Program were divided into two groups. Those actually placed in the expected Other Court Program were assigned to the Other Court Program 'Experimental' Group, and those placed instead in the PIC-ACT program were assigned to the Other Court Program 'Control' Group.

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33 The single quotes around the words "experimental" and "control" are reminders that these are quasi experimental and control groups, and this is only an approximation to a true experiment.

Selection of Groups for the Quasi-Experiment

The process of selection of groups for the study is depicted in Figure 30.

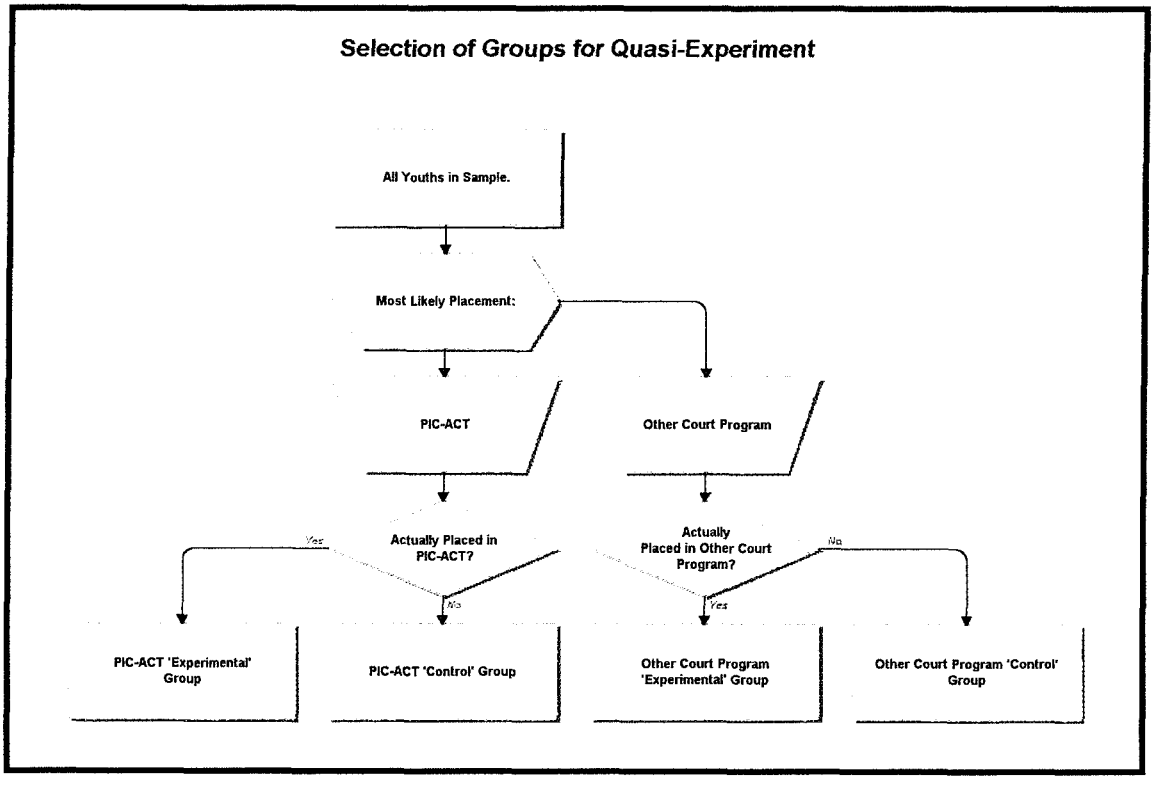

Figure 30: Classification of Youths into Quasi-Experimental Groups

The PIC-ACT 'Experimental' Group is comprised of youths typically assigned to PIC-ACT programs with consequences and actually assigned to PIC-ACT consequences;

The PIC-ACT 'Control' Group is made up of youths typically assigned to PIC-ACT programs with consequences but actually assigned to Other Court Programs;

The Other Court Program 'Experimental' Group is comprised of youths typically assigned to other court programs and actually assigned to them; and

The Other Court Program 'Control' Group is made up of youths typically assigned to other court programs but actually assigned to PIC-ACT consequences.

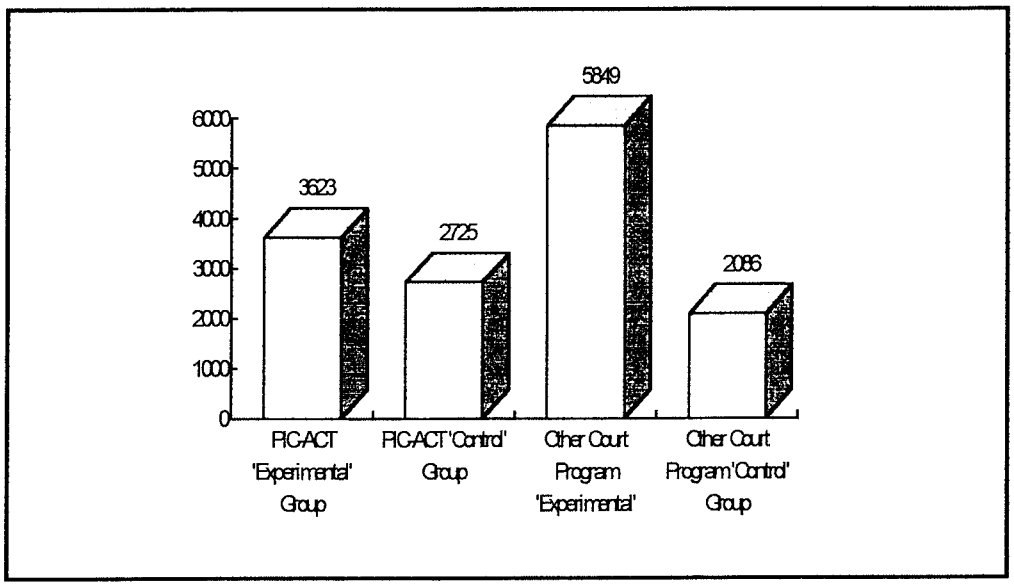

Figure 31: Numbers of Youths in Quasi-Experimental Groups

In this way, 14,283 youths were selected for study. They were divided into the four groups with the resulting numbers of youths in each shown in Figure 31. The first two groups provide a quasi experiment for assessment of PIC-ACT outcomes. The 'Experimental' and 'Control' PIC-ACT Groups are similar in terms of characteristics found to discriminate between PIC-ACT and non-PIC-ACT cases but differ in respect to the actual program assignments. Similarly, the two Other Court Program groups provide a quasi-experiment. It should be noted that the Other Court Program 'Control' group is comprised of youths less typically assigned to PIC-ACT but nevertheless placed in PIC-ACT.

Naive Comparisons of New Referrals and New Offense Seriousness

Although the new referral and offense seriousness outcomes of youths in these groups may be observed, it is again necessary to control statistically for (1) additional selection factors; (2) *a priori* risk; and (3) exposure to the risk of new

referrals (that is, time in the community before age 18). Before examining the results that include those statistical controls, the "naive" comparison of outcomes may be presented. The observed new referral outcomes are shown in Figure 32, and the average seriousness scores for alleged offenses at next referrals are depicted in Figure 33.

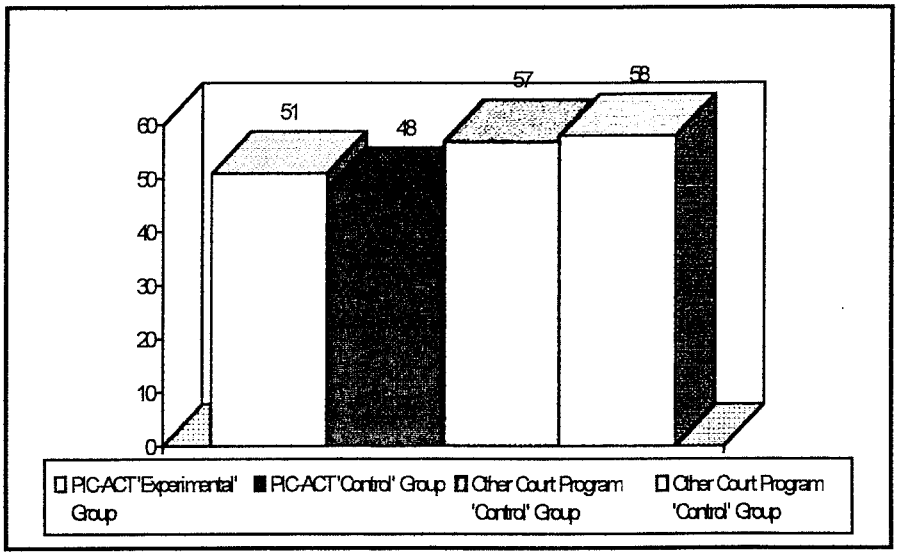

Figure 32: Percents with New Referrals in Four Quasi-Experimental Groups (Unadjusted)

The results shown in these two figures are described as providing "naive" comparisons since the potentially biasing factors described previously have not been taken into account. That is, the percents with new referrals shown for each of the four groups in Figure 32 are the actual percentages observed, but they do not take account of additional known selection factors, differences in the *a priori* risks presented at referral for youths in the different samples, or in the time that the youths in the 'experimental' and 'control' groups have been free in the community (before age 18) to commit acts that could result in new referrals.

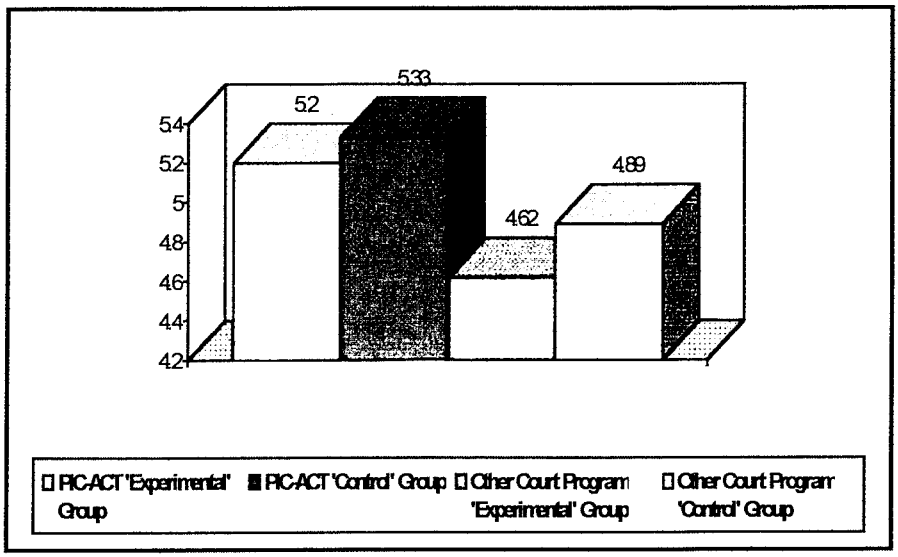

Figure 33: Average Offense Seriousness Scores for Youths with New Referrals (Unadjusted)

Effects of PIC-ACT on New Referrals

The summary of the analysis of covariance of new referrals is shown in Appendix H. The result shows that, after taking account of the measures of selection, *a priori* risk, and time at risk, each of which is significant, there are independent effects of county and of the quasi-experimental design group. There also is an independent effect of the combination of county and quasi-experimental group. The main interest is in the adjusted percents with new referrals for the various groups. These are shown in Figure 34.

It is the adjusted percents that should be compared, rather than the percents (shown in Figure 32) actually observed.

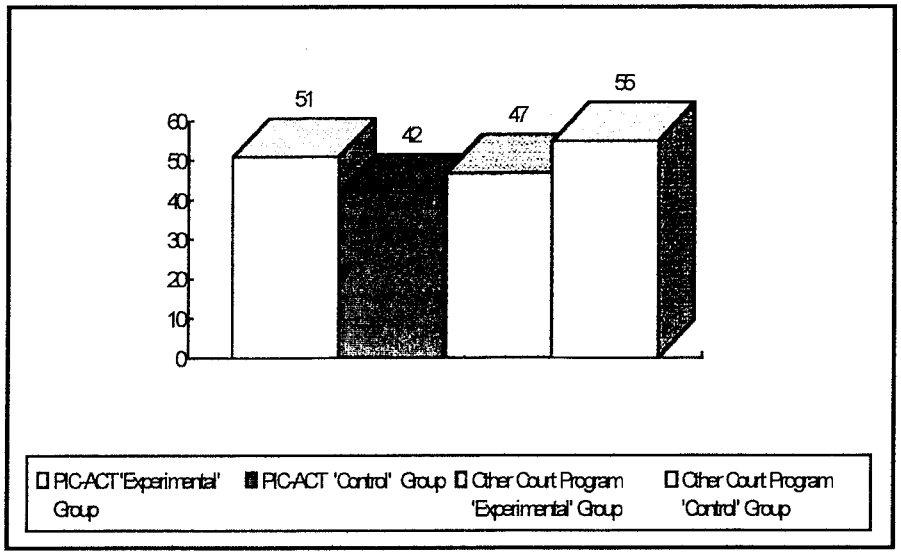

Figure 34: Adjusted Percents with New Referrals in Quasi-Experimental Groups

The first two groups compared, at the left of the figure, are the PIC-ACT 'Experimental' and 'Control' groups. The youths in these two groups are similar in terms of characteristics typically associated with the discretionary decision to classify a youth as a PIC-ACT case. In addition, the adjustment takes account of other differences in selection, in counties, in *a priori* risk, and time in the community before age 18. The percent of youth in the PIC-ACT 'Experimental' group who had new referrals is higher than that of the PIC-ACT 'Control' group (and of the Other Court Program 'Experimental' group). This is consistent with the results reported previously.

The group with the highest percentage of new referrals is the Other Court Program 'Control' Group. These are youths similar to those typically assigned to other court programs but actually placed in PIC-ACT. This also is consistent with the result previously reported. Also, however, this means that the youths assigned to PIC-ACT who are like those more usually assigned did better, in terms of new referrals, than did those youths in PIC-ACT who were more like those typically assigned to other court programs.

Effects of PIC-ACT on Seriousness of New Alleged Offenses

A summary of the results of the analysis of covariance of the new offense seriousness outcome is provided as Appendix I, and the adjusted average seriousness scores are shown in Figure 35. The effect of the Quasi-Experimental classifications is significant, after adjustment for the effects of the covariates and of county. The effects of none of the covariates, other than the first selection function, are significant, and neither is the effect of the interaction of county by Quasi-Experimental Group classifications.

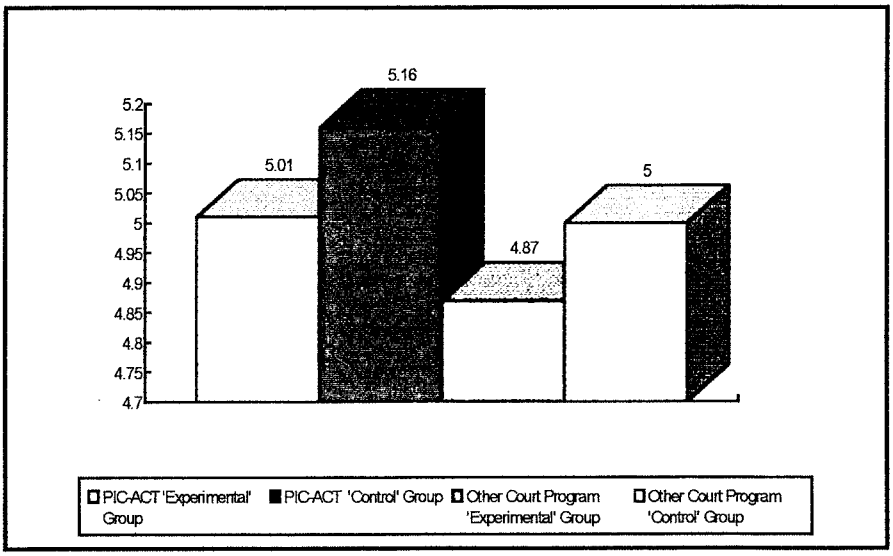

Figure 35: Adjusted Average Offense Seriousness Scores for Youths with New Referrals in Quasi-Experimental Groups

It may be recalled that the observed differences in the adjusted average offense seriousness scores were found, in the first analysis, not significant. The differences would be expected by chance about six percent of the time. In the present analysis comparing the four Quasi-Experimental groups, the differences are statistically significant. The group with the most favorable scores (that is, with the highest scores, indicating less serious offenses) is the PIC-ACT 'Control' group. In a separate analysis of the PIC-ACT 'Experimental' and 'Control' groups only (using the same method but limiting it to the two groups), the group effect

was not statistically significant (P = .61). Therefore, the small observed differences in average adjusted scores between the PIC-ACT 'Experimental' and 'Control' groups should not be regarded as different. The average adjusted scores for the PIC-ACT 'Experimental' and the Other Court Program 'Control' groups (5.01 and 5.00) are obviously not different. The youths in both these groups actually were placed in PIC-ACT programs with consequences. The differences appear to be mainly those between the PIC-ACT 'Control' group and the Other Court Program 'Experimental' group. The youths in both these programs actually experienced the Other Court Programs. Thus, youths similar to typical PIC-ACT cases placed in other court programs had slightly more favorable new offense seriousness scores upon new referrals, when they occurred.

Limitations

The main limitations of this study can best be understood in terms of the data available for it, the definitions of the dependent variables, the logic of the research designs used, and the current state of knowledge enabling explanations of the outcomes studied. We wish for additional data, there is more to "repeated juvenile offending" than is covered by the outcome variables studied, the research design solves some but not all problems, and our general ability to predict outcomes is quite limited by the current state of knowledge in this area.

The data file on which this study is based is a product of an extraordinary, perhaps unique system of collection and recording of important variables at a substantial number of important steps in the processing of youths through the juvenile court system in Arizona. Although there is some variation among counties, substantial progress has been made toward compatible systems allowing common definitions and procedures enabling a study such as reported

here. The JOLTS (Juvenile On Line Tracking System) system on which the state-wide system now is based, pioneered in Maricopa County, is without question among the best juvenile court management systems in the country. Nevertheless, it has been designed as a management system that does not, without considerable manipulation, provide data needed for statistical analyses such as those providing the basis for this report. Some potentially helpful data are not available; and when the data file is reconstituted for the research purpose, it is likely that some errors will occur.

Some of the data for which provision has been made in the system are rarely included in it. These may be quite important elements for a study such as this one. Notable examples are the "risk and needs" items developed by various counties for classification of youth for assignment purposes. It was necessary to exclude those data elements from the present study because they were not available in most of the individual records. Another problem for the present study was a lack of clear designation in the data file of legal eligibility for PIC-ACT, which, as described previously, may change over time as a result of decisions by county attorneys. Other aids to further studies of the PIC-ACT program would be the specific inclusion of decisions to classify PIC-ACT cases as such and the entry of data on all PIC-ACT consequences assigned.

Another serious limitation of the present system is a lack of inclusion of follow up data on two sets of offenders. First, there is no systematic record keeping on the outcomes for youths transferred to the adult system or those with adjudicated dispositions to the Department of Youth Treatment and Rehabilitation. This required the exclusion of these cases from the present study. Second, the system is not linked to sources of follow up data for youths subsequent to their 18th birthdays. These shortcomings of the record keeping system markedly decrease the opportunity to study the outcomes of decisions throughout the juvenile justice system process. Not all relevant outcomes, for

critical decisions in the juvenile justice system process, can be measured to better inform those decisions.

As is common with studies relying on data from management systems, the reliability of the individual data elements is unknown. Reliability studies are rarely reported.

An improved measure of the seriousness criterion is needed, particularly in order that distances between categories can be estimated. This would improve the State's ability to compare groups in terms of the seriousness of new offenses, in any study such as this one.

The data file contains no information on important issues, for evaluation, concerning the implementation and actual operation in the various counties of the various "consequences" programs studied. A more thorough evaluation would require a much more detailed description of elements of such programs than are thus far available in the file providing the basis for this study. The main issues that should be considered are those of the strength and integrity of the treatment programs. Examples of "strength" or "dosage" of a program might be the number of hours of community service required, or the number of counseling sessions, or the number of sessions for "education for alcohol or drug abuse." The integrity of the program refers to the fidelity with which the program is implemented in terms of its theory or program plan. When it comes to "counseling," for example, it must be remembered that such programs may vary widely on such issues as the theoretical basis for the program or the training and experience of counselors. Educational programs may vary widely in content and methods as well as in frequency or number of sessions. These are but examples: the point is that no such considerations could be included in the results reported here.

One must be wary of considering only one or two outcome variables, such as new referrals or the seriousness of alleged offenses at new referrals, as wholly adequate for an evaluation or assessment of the program that may affect policy decisions about its continuation, reduction, or expansion. The programs discussed in this report may have many goals, of which the reduction of new referrals or of seriousness of offenses may be only two. For example, a 1988 evaluation of the PIC-ACT program, after completing interviews in three counties, listed the following potential benefits of the PIC-ACT program:

- meeting public expectations that 'something was being done' to hold youth accountable for their delinquent actions.
- reinforcing what parents teach their children - that if you violate the law you must pay the consequence.
- providing funds so that meaningful services could be provided first and second time offenders.
- standardizing the way juvenile probation departments process youth referred to the court a first or second time, and
- reducing the number of youth formally processed through the court system. [34]

These, or other such general aims, have not been addressed in the present study.

The nature of the research designs used is such that the conclusions are limited by the nature of the data available, particularly concerning the characteristics of the youths studied. If, in statistical designs such as used for this report, no differences are found after control of the known differences in relevant variables affecting the observed outcomes, that is strong evidence that there is indeed no effect. The observed differences in outcome have been explained by factors other than the classification or treatment of interest. If, however, differences are found after such correction, then the differences in adjusted outcomes must be due to the treatment or classification, or to unknown

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34 Research and Information Specialists, note 7, *supra*, p. 19-20.

factors not considered in the analysis (or to chance, which is considered to be ruled out by the statistical tests). Hypotheses about such unknown factors, however, can be tested by further collection of the required data and continued study. Meanwhile, the observed effect after adjustment is the best available evidence for the formulation of policy. The conclusion that there is an effect could be wrong; but if so the relevant factors are not known. A large number of variables have been shown to have importance and have been taken into account. A healthy skepticism is desirable; but it now may be required of the skeptic that the factors resulting in the effect be specified and demonstrated to be responsible for the observed differences. This will be the situation unless the more rigorous method of true experimental designs, with random allocation to treatments in order to assure equivalence of the groups compared, can be done.

Although the differences reported are statistically significant, they provide only a very small proportion of the variability in outcomes, most of which remains unexplained. We have, for example, described the effects on new referrals "explained" by the time the youth is at risk of new referrals, by factors related to selection and to *a priori* risk, by differences among the counties, and by the interaction of counties and study group, as well as by the study group classification. But all these factors together "explain" only about 16 percent of the total variation in new referrals, as illustrated by Figure 36. The chart, which provides another illustration of the importance of taking into account the effects of risk, selection, and time at risk before comparisons are made, suggests modesty in interpretation of the differences in adjusted new referral proportions among the PIC-ACT, Other Court Program, and Not Eligible Samples.

A similar chart is shown as Figure 37, this time showing the percent of variation in the seriousness of new offenses that is "explained" by the various factors considered in this study. An even greater modesty is suggested.

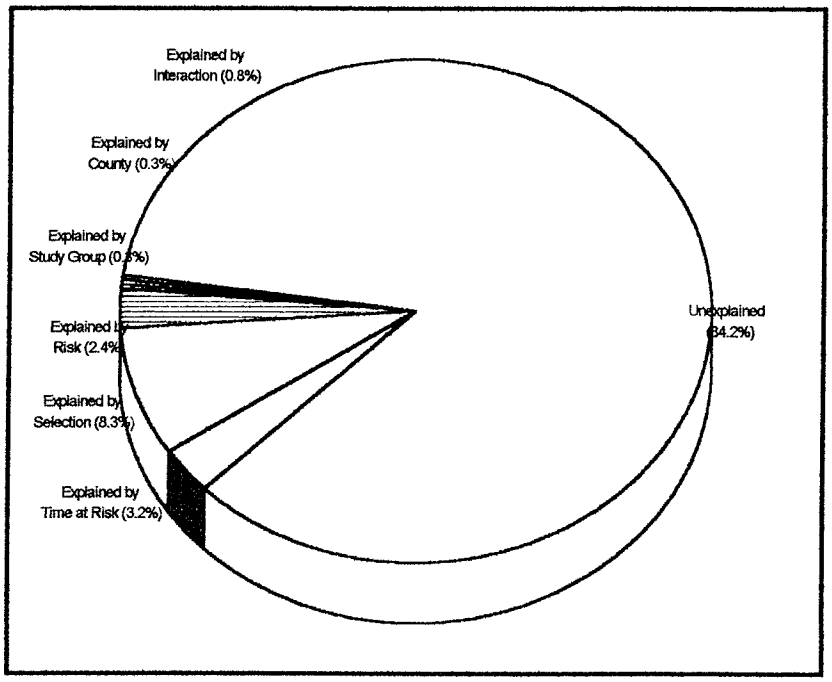

Figure 36: Explanation of Variance, New Referral Outcome (Statistical Controls Employed)

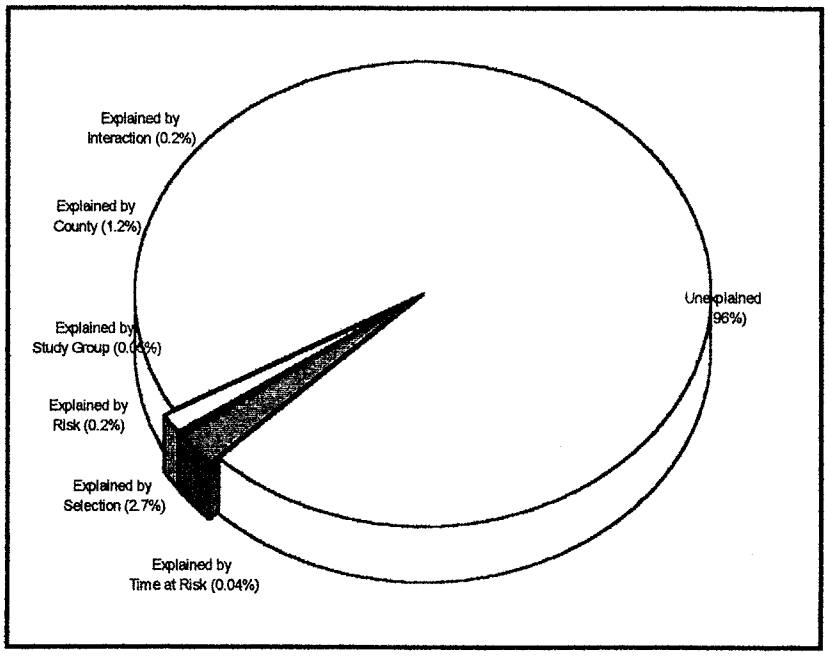

Figure 37: Explanation of Variance, Seriousness Outcome (Statistical Controls Employed) (New Referrals Only)

Conclusions

Since the "secondary" questions posed at the outset were formulated because answering them was required in order to appropriately answer the "central" questions, their answers will be summarized first. Then the answers to the "central" questions will be summarized.

"Secondary" Questions

- **What youth characteristics (known at the time of referral and before placements) are related to the likelihood of new referrals, and how are they weighted?**

This was referred to as the *a priori* risk, a variable to be controlled in the statistical designs for comparisons. The risk measure developed for the purpose of this study included items typically found to be predictive of later delinquency, such as indices of age, prior record, and type of offense. In the context of the variables used, the best predictors were found to be the age at referral (older youth are better risks), race (white vs. non-white, those classed as white being better risks) the number of prior counts, and the number of prior referrals to the juvenile courts. [35] The *a priori* risk levels vary among the counties and among the study groups considered. Youths in the Not Eligible sample were, on average, most at risk of new referrals, the best risks were in the PIC-ACT sample, and the Other Court Program sample youths were in between.

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35 This risk measure was developed only for the purposes of the present study, and it was necessary to include all relevant predictor items. It may have the possible advantage, for other uses, that it is based on data for youths in all Arizona counties. If the measure were to be considered for operational uses affecting placement decisions, it is recommended that the effects of race and sex be removed. See Gottfredson, Don M. Gottfredson, Stephen D., and Gottfredson, Michael R., *Risk Measures for Operational Use: Removing Invidious Predictors.* Sacramento, California: Justice Policy Research Corporation, May, 1994 for illustration of a method for doing this.

- **What are the factors considered in the selection process for the three study groups, and how are they weighted?**

The classification of youths into the samples to be compared in this study is dependent partly on requirements of the PIC-ACT legislation but mainly on discretionary decisions by probation staff (and in the cases referred to them, the county attorneys). The variables most helpful in understanding which youths are assigned, by the legally defined procedures and the exercise of discretion, might be considered to be measures of age and "commitment to delinquency." They are the number of prior referrals to the juvenile courts, the total number of prior counts of offenses alleged, and the youth's age at the time of the referral The classifications are explained further by the number of times the youth previously has been referred to the court with dispositions of complaints made without proceeding through the formal court process of adjudication, and whether the youth was detained immediately upon referral. In the context of these factors, other variables that help to differentiate the three groups are whether the first referral involved drug abuse, the number of prior adjudications, the number of days detained previously and on the instant referral, and race (white vs. non-white). The mixtures of cases --- i.e., of risks --- in terms of offenses, prior records, age, and prior history in the juvenile court differ from county to county, as well as among the study groups.

- **What are the factors considered in assignment of PIC-ACT cases to the different consequences, and how are they weighted?**.

Probation staff made discretionary decisions, among PIC-ACT cases, as to the particular consequences to be assigned. As a result, differences in the youth assigned the different programs had to be considered in the comparison of results of the different programs.

The specific consequence (multiple consequences are rarely reported) selected for a youth seem to depend on the offense alleged, the history of drug abuse (whether the youth was first referred to the court with an allegation of drug abuse), the numbers of prior counts and petitions, and other case characteristics. The consequences assigned are explained further (in the context of all the factors found to be related to the classification) by the following variables: the numbers of accomplices, counts, prior drug allegations, and petitions; whether detained immediately upon referral; the number of days then detained; age; race (white vs. non-white); age; and gender. The mixtures differ among the counties; and so do the types and frequencies of consequences used.

- **What are the rates of compliance with the requirements of the different consequences assigned?"**

Some youths comply with the conditions set by the probation staff; others do not. The compliance percents ranged from 59 percent for restitution to 91 percent for non-residential treatment. The rates observed were as follows: community service, 82; counseling, 72; education for delinquency prevention, 85; education for alcohol or Drug Abuse, 90; non-residential treatment, 91; restitution, 59; fines, 80; other consequences, 78; and combinations, 83.

Central Questions

- **The first central question is whether it makes any difference, for later juvenile offending, if the youth is selected as a PIC-ACT case, with consequences assigned.**

The percents of youths with new referrals, not corrected for differences among these groups due to selection and risk, were not different. When, however, these were adjusted for *a priori* risk, selection, and time at risk, the corrected rates did differ. The percents with new referrals, for the PIC-ACT

sample of youths assigned consequences, the Other Court Program sample of youths, and the Not Eligible sample of youths referred to county attorneys when required by the PIC-ACT legislation (with petitions filed) were different. **The adjusted new referral rates were highest for the sample required by the PIC-ACT process to be referred to county attorneys which were filed upon by the prosecutors, lowest for the Other Court Program Sample of cases processed by the usual juvenile court procedures, and in between for the PIC-ACT sample of cases legally eligible, with consequences assigned.**

Whether the youth is assigned to PIC-ACT with consequences, processed otherwise through the juvenile court system, or filed upon after the referral to the county attorneys as required by the Act does make a difference in new referral rates. **The probability of new referral, when relevant risk, selection factors, and time at risk are considered equivalent, is greater for the Not Eligible youths and lowest for those in Other Court Programs.**

Although the groups differ in actual average seriousness scores before any statistical control for risk, selection, and time at risk, these averages, when adjusted for the statistically controlled factors, disappeared. There was no significant difference in the adjusted mean scores.

- **The second central question is whether the particular PIC-ACT consequence selected makes any difference for later juvenile offending.**

There were marked differences in new referral rates according to the type of consequences assigned. After adjustment of these for time at risk, *a priori* risk of new referrals, and selection for the particular consequence program, these differences remained, although they were less notable. In the first case the

percents with new referrals ranged from 37 percent for education for drug or alcohol abuse and non-residential treatment to 62 percent for restitution. After the adjustment for the known potentially biasing factors, they ranged from 41 percent for the first two programs and 54 percent for restitution. **The type of consequence assigned does make a difference in respect to the new referrals criterion**.

There was no effect on the seriousness criterion of the type of consequence assigned --- that is, the particular consequence program selected by the probation officer had no effect on the level of seriousness of new recorded offense allegations. This was true despite the fact that the selection did affect the rates of new referrals.

- **The third question is whether compliance by the youth with the conditions of the consequences makes any difference for later juvenile offending.**

Compliance, which is most frequent for education for alcohol or drug abuse and non-residential treatment, affects the new referrals outcome. Within the PIC-ACT study group and independently of county, percents with new referrals were examined after adjustment for time at risk, *a priori* risk, and selection. The adjusted percents with new referrals were 46 percent for the youths who complied but 54 percent for those who did not. **Known biasing factors considered equivalent, the probability of new referrals is decreased by compliance.**

Compliance with the assigned consequences did affect the seriousness level. **Those youths who failed to comply had more serious offenses alleged with new referrals than did their counterparts who complied with PIC-ACT program requirements.**

Recommendations

Five recommendations are suggested by the results of the study described in this report. They include the following: a modification to the Act which has been the subject of the research; the further investigation and expansion of the most promising programs identified within the PIC-ACT procedures; needs to increase compliance by youth when specific consequences are assigned; needs for clarification of policy concerning selection for PIC-ACT programs, and a program of improvement of the information for decisions in the juvenile court system. The recommendations are listed on the next few pages, with comments providing the rationale for them.

- **Change the requirement of the PIC-ACT that felony complaints and alcohol or misdemeanant complaints with two prior adjustments be referred to the county attorney with a request that a petition be filed (A.R.S. 8-230.01, as revised, paragraph A). Amend to allow diversion.**

Comment:

Referral of these cases, with a request for petition, is now mandatory rather than permissive. In the sample studied, 1,310 youths out of 14,939 (nine percent) were referred forthwith upon referral to the county attorneys, as required in the case of the two groups cited. Another 1,673 youths (11 percent) were referred to the county attorneys after cite-in for a PIC-ACT interview, not required but as discretionary acts of the court personnel (for failure to admit responsibility or failure to comply with PIC-ACT consequences). Thus there were seven percent of all delinquency referrals against whom petitions were filed consistently with the provisions of the Act. (Such cases could not be identified for all counties, due to county variation in reporting practices.) It is that portion of referrals and requests *required* that is the subject of this recommendation.

The subsequent delinquent behavior of this group, measured by new complaint referrals, was compared with that of youths who were assigned PIC-ACT consequences and also with those processed otherwise, with other court programs. The group required to be referred to the prosecutors, and for whom petitions were filed, are better risks, on the average, than the youths in either of the other two groups. Nevertheless, this group (otherwise eligible for PIC-ACT programs) has a higher percentage of new referrals than either of the other groups. This is true after considering the risk levels of the youths, the time at risk, and the selection factors associated with the law and the exercise of discretion. The probability of new referrals is greatest for this group, lower for PIC-ACT cases with consequences assigned, and lowest for youths in other court programs.

The effect of the law as it stands is to remove a specific area of discretion from the court system, with an apparent increase of repetitive delinquency, rather than the reduction to which the Act adverted.

The classification of youths referred to the courts with delinquency complaints on the basis of the simple legal classification of the alleged act only or on an arbitrary classification based on the of the number of prior adjustments ignores much information about the youth and the circumstances of the alleged delinquency that can be taken into account in arriving at the decision whether to petition. The evidence of this study indicates that this area of discretionary decision making should be considered, where informed judgments can be made on the basis of additional information.

- **The more successful types of consequence programs identified in this report --- notably education for drug or alcohol abuse and non-**

residential treatment --- should be examined further to determine why they appear to be successful and whether an expanded use is warranted.

Comment:

These programs appear to reduce the likelihood of new referrals. They are not used as commonly as community service or education for delinquency prevention, and they are used extensively only in Maricopa and Pima Counties. A more thorough analysis and evaluation of those programs is suggested to determine the features of the program that appear to be successful and that can be "exported" to other counties. These may include selection factors not yet specified and included in the data file or elements of the treatment provided. The most desirable further program would use a design to more rigorously test effectiveness and a systematic program for development of these programs in other counties.

- **Procedures to improve compliance with consequences are needed, particularly for some types of consequences programs. Restitution as a consequence is notable for a relative non-compliance by the youth assigned it. Counseling also has a low rate of compliance.**

Comment:

Compliance with consequences assigned in the PIC-ACT program decreases the probability of new referrals. When new referrals do occur, compliance is predictive of less serious new offense allegations. Those youths in the PIC-ACT program who complied with the consequence assignments had lower rates of new referrals and less serious new offense complaints.

Careful monitoring systems in each county are needed to increase compliance with all consequence programs. Special efforts are needed to improve compliance with assigned community service and counseling.

Although compliance is substantially related to (fewer) new referrals, this may be due to either or both (a) additional but yet unknown characteristics of youth who comply or (b) the *act* of compliance. This question warrants further study, but the available evidence suggests the recommended efforts to increase compliance.

- **Clarify recommended procedures for assignment to PIC-ACT**

There do not appear to be any clear guides or policy statements governing the selection of eligible youths (that is, those not now precluded by law) for the PIC-ACT program. There is substantial consistency in this discretionary selection process, as may be seen from the differences between PIC-ACT and non-PIC-ACT youths reported in this document. Moreover, there is evidence that youths *typically* selected for PIC-ACT, compared with those more often *not* selected for PIC-ACT (when both groups actually are assigned PIC-ACT consequences) have fewer new subsequent referrals. This suggests a need for greater consistency in the assignment process, which appears to be, more often than not, but not invariably, appropriate. At the same time, there is a substantial overlap among the two groups when offense, prior record, age, and other attributes of youth in the two groups are considered. Also, there is substantial variation among the counties in the kinds of youths selected for PIC-ACT programs. It is recommended that a greater degree of consensus be sought and articulated to describe the types of youths believed to be suitably assigned to PIC-ACT. The specification of a policy describing the kinds of youth for whom

PIC-ACT programs are believed to be desirable could help to provide a greater consistency in selection without removing the discretion necessary.

- **Establishment of a research file, associated with the Administrative Office of the Courts data file assembled from the various county systems, is needed for a more efficient, reliable, and informative research and management system within the Administrative Office of the Courts.**

Comment:

A file with recoded data elements suitable for analyses required by program development, evaluation, and information dissemination programs should be developed and maintained as a routine activity of the AOC. This would markedly reduce costs of program evaluations, which now require repeated, extensive reconstruction of the file for specific analyses. Associated with it should be a program of "data audits," comprised of periodic sample tests of the reliability of data elements included in the file. Although audits of financial accounts are routinely expected, the auditing of the reliability of data to inform major decisions, with potentially costly consequences, are rarely performed.

Systems for follow up data collection for youths with adjudicated dispositions to the Department of Youth Treatment and Rehabilitation, youths transferred to the adult courts, and youths after age 18 are needed for complete evaluations of court programs.

Appendix A: Analysis of Covariance Summary Table, New Referral Outcome

Source of Variation	Sum of Squares	DF	Mean Square	F	Prob of F
Covariates	877.030	4	219.258	1046.017	<.001
Time at Risk	193.707	1	193.707	924.122	<.001
Selection Function 1	374.617	1	374.617	1787.193	<.001
Selection Function 2	160.287	1	160.287	764.686	<.001
A Priori Risk	148.419	1	148.419	708.067	<.001
Main Effects	37.522	16	2.345	11.188	<.001
Study Group	18.073	2	9.037	43.111	<.001
County	19.448	14	1.389	6.627	<.001
2-Way Interactions	46.030	20	2.301	10.980	<.001
Study Group X County	46.030	20	2.301	10.980	<.001
Explained	960.582	40	24.015	114.567	<.001
Residual	5117.885	24416	.210		
Total	6078.466	24456	.249		

Appendix B: Discriminant Function Summary, Classification for Consequences

Func 1	Func 2	Func 3	Func 4	Predictor Variable
-.13618	-.00396	.16634	.34487	Number of accomplices
-.13442	-.06532	.04054	.20119	Number of counts
.60158	.11798	-.10720	.26349	Offense seriousness
.09308	.32425	.81626	-.14083	Felony or misdemeanor
.37134	-.77163	.46776	-.17663	Drug abuse @ 1st referral
-.07261	.21463	-.09526	.16330	Number prior drugs
.18174	.00305	.13037	-.41413	Number prior adjudications
-.27375	-.04618	.27650	.09034	Number prior counts
-.22497	-.09169	-.06104	.26646	Number prior petitions
-.18672	.05422	.37076	-.41209	Detained @ referral?
-.09211	-.04464	-.01003	.37639	Days detained, inst. ref.
.14355	-.10304	.10677	.71183	Age @ instant referral
.01135	.31262	.03698	.20897	White vs. non-white
.15381	.12967	-.06198	-.14360	Male vs. female

Notes:

Fcn	Eigenvalue	Pct of Variance	Cum Pct	Canonical Corr		After Fcn	Wilks' Lambda	Chi-square	df	Sig
					:	0	.774956	2661.280	112	<.0001
1*	.1283	48.36	48.36	.3373	:	1	.874420	1400.784	91	<.0001
2*	.0657	24.74	73.09	.2482	:	2	.931831	737.001	72	<.0001
3*	.0303	11.43	84.52	.1716	:	3	.960102	425.016	55	<.0001
4*	.0255	9.60	94.12	.1576	:	4	.984558	162.450	40	<.0001
5	.0079	2.98	97.10	.0885	:	5	.992335	80.321	27	<.0001
6	.0038	1.42	98.52	.0613	:	6	.996078	41.018	16	.0006
7	.0023	.88	99.40	.0482	:	7	.998401	16.703	7	.0194
8	.0016	.60	100.00	.0400	:					

* Marks the 4 canonical discriminant functions used in the analysis.

Appendix C: Analysis of Covariance Summary Table, Type of Consequence, for New Referral Outcome

Source of Variation	Sum of Squares	DF	Mean Square	F	Prob of F
Covariates	242.745	6	40.457	180.080	<.001
Time at Risk	47.040	1	47.040	209.381	<.001
A Priori Risk	170.120	1	170.120	757.220	<.001
Selection Function 1	3.632	1	3.632	16.166	<.001
Selection Function 2	1.877	1	1.877	8.355	.004
Selection Function 3	10.237	1	10.237	45.565	<.001
Selection Function 4	9.839	1	9.839	43.793	<.001
Main Effects	7.266	8	.908	4.043	<.001
Type of Consequence Assigned	7.266	8	.908	4.043	<.001
Explained	250.011	14	17.858	79.487	<.001
Residual	2344.592	10436	.225		
Total	2594.602	10450	.248		

Appendix D: Analysis of Covariance Summary Table, Compliance and County, for New Referral Outcome

Table 12: Analysis of Covariance Summary Table, Compliance and County for New Referral Outcome

Source of Variation	Sum of Squares	df	Mean Square	F	Prob of F
Covariates	242.745	6	40.457	182.382	<.001
Time at Risk	47.040	1	47.040	212.057	<.001
A Priori Risk	170.120	1	170.120	766.900	<.001
Selection Function 1	3.632	1	3.632	16.373	<.001
Selection Function 2	1.877	1	1.877	8.461	.004
Selection Function 3	10.237	1	10.237	46.148	<.001
Selection Function 4	9.839	1	9.839	44.353	<.001
Main Effects	36.526	15	2.435	10.977	<.001
Compliance	19.763	1	19.763	89.091	<.001
County	16.763	14	1.197	5.398	<.001
Interactions	4.990	14	.356	1.607	.069
Compliance by County	4.990	14	.356	1.607	.069
Explained	284.260	35	8.122	36.613	<.001
Residual	2310.342	10415	.222		
Total	2594.602	10450	.248		

Appendix E: Analysis of Covariance Summary Table, Seriousness Criterion

Source of Variation	Sum of Squares	DF	Mean Square	F	Prob of F
Covariates	1827.757	4	456.939	86.657	<.001
Time at Risk	21.931	1	21.931	4.159	.041
Selection Function 1	1542.318	1	1542.318	292.496	<.001
Selection Function 2	134.184	1	134.184	25.448	<.001
A Priori Risk	129.323	1	129.323	24.526	<.001
Main Effects	741.644	16	46.353	8.791	<.001
Study Group	30.045	2	15.022	2.849	.058
County	711.599	14	50.829	9.639	<.001
2-Way Interactions	119.537	20	5.977	1.133	.306
Study Group X County	119.537	20	5.977	1.133	.306
Explained	2688.938	40	67.223	12.749	<.001
Residual	58514.008	11097	5.273		
Total	61202.945	11137	5.495		

Appendix F: Analysis of Covariance Summary Table, Type of Consequence, for Seriousness Criterion (New Referrals Only)

Source of Variation	Sum of Squares	DF	Mean Square	F	Prob of F
Covariates	1306.679	6	217.780	43.340	.000
Time at Risk	4.819	1	4.819	.959	.327
A Priori Risk	667.625	1	667.625	132.862	.000
Selection Function 1	433.847	1	433.847	86.338	.000
Selection Function 2	26.507	1	26.507	5.275	.022
Selection Function 3	171.293	1	171.293	34.088	.000
Selection Function 4	2.587	1	2.587	.515	.473
Main Effects	94.410	8	11.801	2.349	.016
Type of Consequence Assigned	94.410	8	11.801	2.349	.016
Explained	1401.089	14	100.078	19.916	.000
Residual	23748.008	4726	5.025		
Total	25149.096	4740	5.306		

Appendix G: Analysis of Covariance, Compliance and County, for Seriousness Criterion (New Referrals Only

Source of Variation	Sum of Squares	DF	Mean Square	F	Prob of F
Covariates	1306.679	6	217.780	43.588	<.001
Time at Risk	4.819	1	4.819	.965	.326
A Priori Risk	667.625	1	667.625	133.625	<.001
Selection Function 1	433.847	1	433.847	86.834	<.001
Selection Function 2	26.507	1	26.507	5.305	.021
Selection Function 3	171.293	1	171.293	34.284	<.001
Selection Function 4	2.587	1	2.587	.518	.472
Main Effects	296.416	15	19.761	3.955	<.001
Compliance	39.874	1	39.874	7.981	.005
County	256.542	14	18.324	3.668	<.001
2-Way Interactions	38.532	14	2.752	.551	.904
Compliance X County	38.532	14	2.752	.551	.904
Explained	1641.627	35	46.904	9.388	<.001
Residual	23507.470	4705	4.996		
Total	25149.096	4740	5.306		

Appendix H: Analysis of Covariance Summary Table, County and Quasi-Experimental Groups, for New Referral Outcome

Source of Variation	Sum of Squares	DF	Mean Square	F	Prob of F
Covariates	659.457	4	164.864	824.814	.001
Selection Function 1	88.484	1	88.484	442.685	.001
Selection Function 2	24.987	1	24.987	125.010	.001
Time at Risk	384.458	1	384.458	1923.440	.001
A Priori Risk	161.527	1	161.527	808.120	.001
Main Effects	15.541	17	.914	4.574	.001
County	9.086	14	.649	3.247	.001
Quasi Experimental Group	6.456	3	2.152	10.766	.001
Interaction	26.646	42	.634	3.174	.001
County by Quasi Group	26.646	42	.634	3.174	.001
Explained	701.644	63	11.137	55.719	.001
Residual	2816.117	14089	.200		
Total	3517.761	14152	.249		

Appendix I: Analysis of Covariance Summary Table, County and Quasi-Experimental Groups, for New Offense Seriousness Outcome

Source of Variation	Sum of Squares	DF	Mean Square	F	Prob of F
Covariates	900.079	4	225.020	41.862	.001
Selection Function 1	887.908	1	887.908	165.184	.001
Selection Function 2	9.624	1	9.624	1.790	.181
Time at Risk	2.387	1	2.387	.444	.505
A Priori Risk	.160	1	.160	.030	.863
Main Effects	557.446	17	32.791	6.100	.001
County	486.976	14	34.784	6.471	.001
Quasi Experimental Group	70.469	3	23.490	4.370	.004
Interaction	255.437	42	6.082	1.131	.259
County by Quasi Group	255.437	42	6.082	1.131	.259
Explained	1712.962	63	27.190	5.058	.001
Residual	39949.038	7432	5.375		
Total	41662.000	7495	5.559		