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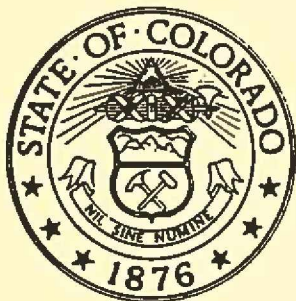
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**Analysis  
of**

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**Youths  
Discharged**

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**Department of Institutions**

**Division of Youth Services**

**December 1992**

**RECIDIVISM ANALYSIS OF YOUTHS DISCHARGED**  
**FY 1989-90**  
**Filings After Discharge**

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# ONE YEAR RECIDIVISM ANALYSIS OF YOUTHS DISCHARGED FROM THE DIVISION OF YOUTH SERVICES

## SUMMARY OF FINDINGS

- Follow-up of 394 committed youths discharged from the Department of Institutions in FY 1989-90 indicated that ten percent were discharged to adult court authority, 26 percent were discharged but received another filing within one year of discharge, and 64 percent were discharged with no evidence of an additional filing during the year following discharge.
- Thirty-eight percent of males and 13 percent of females discharged in FY 1989-90 were either discharged to adult court authority or received an additional filing within one year.
- Sixty-nine percent of hispanic youths were neither discharged to adult court authority nor filed on within one year of discharge compared with 65 percent of anglo youths, 58 percent of black youths and 38 percent of youths of 'other' ethnic backgrounds.
- Higher proportions of youths in this study who were classified as recidivists were younger at first adjudication and commitment, were living in a group home, RCCF, shelter care facility or with friends or independently, had one or more out-of-home placements prior to commitment, had run from home or placement within the year prior to commitment, had one or more prior adjudications, had one or more recommitments prior to discharge, and were not working or in school at the time of discharge. However, many of the differences between recidivists and non-recidivists were small; some were not statistically significant.
- There was little difference in the discharge outcomes (as measured in this study) of youths who spend the majority of their residential time in community programs, medium secure programs, or intensive programs.

- Results of discriminant function analysis suggested that of all variables studied, the number of out-of-home placements prior to commitment, the number of prior adjudications, and the age at commitment contribute most to classifying recidivists versus non-recidivists.
- The overall accuracy of classifying recidivists versus non-recidivists using the variables studied ranged from 62 percent to 64 percent (depending on the measure of recidivism used).
- Failure to obtain more accurate classification of groups (recidivism vs non-recidivism) is probably due to 1) an absence of treatment measures included in the analysis, such as substance abuse treatment, family counseling, etc., 2) inadequate measures of some variables, such as involvement in drugs and/or alcohol, and/or 3) absence of other potential risk indicators, such as the stability of the youth's support system at discharge.

## ONE-YEAR RECIDIVISM ANALYSIS OF YOUTHS DISCHARGED FROM THE DIVISION OF YOUTH SERVICES

### INTRODUCTION

Counselors, teachers, youth workers, and other staff in juvenile correctional facilities attempt to deliver services which will enhance the skills of juvenile offenders and reduce the likelihood that these youths will continue in a criminal career. Measures of progress such as post-test scores, GED attainment, social skills development, and job/school placements, are often analyzed to monitor the short-term success of programs. The expectation is that long-term success should be somewhat evident in short-term mediating factors such as education and vocational skills. The question of interest to many decision makers and the public sector is 'How many of the youths that you serve recidivate?'

Recidivism is a construct which denotes repeated offending. For purposes of evaluation, the construct must be operationally defined (self-reported offenses, arrests, filings, entry in the adult correctional system, etc.) The Division of Youth Services Research and Evaluation Office has conducted periodic studies looking at adult incarceration outcomes of youths served. Few studies have been done to date involving filings as a recidivism outcome measure. The Center for Action Research did use filings within 16 months of release to the community as an outcome measure to validate the DYS Commitment Classification Instrument.

The current study is designed to analyze characteristics of youths discharged from DYS who 1) were discharged to adult court authority, 2) were discharged and had a subsequent filing (either juvenile or adult) for a criminal offense within one year of discharge from DYS or 3) were discharged and did not have another filing within one year of discharge. It is important to understand that the sample for this study is composed of youths discharged (i.e., no longer in DYS custody) as opposed to those released (such as on parole) but still in DYS custody, and that the one-year follow up begins at the point of discharge even though the youth may have been in the community for a period of time.

The study was conducted on all youths discharged from DYS in FY 1989-90. Filing data was obtained through the Colorado Judicial Department's automated data system. According to Judicial Department staff, approximately 90 percent of all adult and juvenile filings are entered into this database.

While DYS has fairly recently begun to collect some data on services rendered (e.g., vocational programs attended) as well as some intermediate program effectiveness measures (e.g., pre- and post-test scores on math, reading and written language), these data were not collected in a quantifiable measure appropriate for statistical analyses on the cohort of youths included in this study. Efforts continue at DYS to collect information on programs, client progress, and outcomes to allow better evaluation of programs for youths served.

The current study is intended to provide information which begins to address differences between youths who recidivate and those who do not once their sentence with DYS is completed. In addition, some global measures of program participation (e.g. length of stay in intensive, medium and community programs) are investigated by filing outcomes. It is hoped that future studies can build on the information derived here to better understand the relative contributions of youth/family characteristics, programs administered and intervening factors on recidivism outcomes.

## DESCRIPTIVE COMPARISONS

### I. Demographic Comparisons by Outcomes

#### A. Gender Breakdowns

Table 1 shows recidivism breakdowns by gender for the DYS 1989-90 discharge cohort.

TABLE 1  
DISCHARGE OUTCOMES BY GENDER

	Discharged to Adult Court Authority		Discharged Filing w/in one year		Discharged No Filing w/in one year		TOTAL	
	n	%	n	%	n	%	n	%
Males	35	10%	101	28%	228	63%	364	92%
Females	3	10%	1	3%	26	87%	30	8%
	<u>38</u>	<u>10%</u>	<u>102</u>	<u>26%</u>	<u>254</u>	<u>64%</u>	<u>394</u>	<u>100%</u>

(Chi-square=8.9, p < .05)

Of the 394 youths discharged in FY 1989-90, 10 percent were under adult court authority at the time of discharge, 26 percent received a filing within one year of discharge, and there was no evidence of another filing for 64 percent of the youths. Females were as likely as males to be discharged to adult court, but much less likely to receive an additional filing within one year of discharge. Twenty-eight percent of males received a filing within a year, compared with only one of the 30 females discharged. It is possible that some females married and changed their names negating the possibility of detecting any new filings.

### B. Ethnic Breakdowns

Table 2 shows discharge outcomes by ethnicity for the 1989-90 discharge cohort.

TABLE 2  
DISCHARGE OUTCOMES BY ETHNICITY

	Discharged to Adult Court Authority		Discharged Filing w/in one year		Discharged No Filing w/in one year		TOTAL	
	n	%	n	%	n	%	n	%
Anglos	25	12%	47	23%	136	65%	208	53%
Blacks	4	8%	17	34%	29	58%	50	13%
Hispanics	5	4%	32	27%	83	69%	120	31%
Other	4	25%	6	38%	6	38%	16	4%
TOTALS	<u>38</u>	<u>10%</u>	<u>102</u>	<u>26%</u>	<u>254</u>	<u>64%</u>	<u>394</u>	<u>100%</u>

(Chi-square = 14.6,  $p < .05$ )

A higher proportion of anglo youths than black or hispanic youths were discharged to adult court authority. When youths who were discharged to the adult court and youths who received an additional filing within one year are combined, 35 percent of anglo youths fall into this undesirable outcome group compared with 42 percent of black youths and only 31 percent of hispanic youths. Expressed conversely, the hispanic youths fared best with 69 percent neither released to adult court nor filed on within one year of discharge. Fifty-eight percent of black youths and 65 percent of anglo youths were neither released to adult court authority nor filed on within one year of discharge.

The disproportionate representation of minorities in juvenile correctional facilities is a serious problem. This problem is exacerbated for black youths as evidenced in the outcomes reported here. If the disproportionate representation were to remain static, the proportion of youths within each ethnic group in the discharge sample who were either released to adult court or filed on within one year of discharge would be equal across groups. However, as shown, a higher percent of black youths than anglo or hispanic youths fell into the combined category (discharge to adult court or filing within one year). Filings within one year of discharge is responsible for this further disproportionate representation of black youths, as the percent released to adult court authority is actually lower for black youths than for anglo youths. As mentioned, the extent of over-representation of hispanic youths has appeared to slightly decrease at this stage according to the results reported here.

The 'Other' ethnic group requires discussion since, although the actual number of youths in this category is small, their outcomes appear to be worse than that of any of the other ethnic groups. This category consists of American Indians, Asians, and youths whose ethnic heritage is mixed.

Among this 'Other' group, there were four American Indians. One was discharged under adult court authority, one had another filing within one year of discharge, and two fell into the successful discharge category. There were only two Asian youths discharged in FY 1989-90, one of whom was discharged to adult court authority, and the other for whom no additional filings were found. There were ten youths still classified as 'Other', which generally represents a mixed heritage. Of these, two were discharged to adult court authority, five had additional filings, and three had no additional filings during the first year after discharge.

### C. Age Breakdowns

The age at which a youth begins to commit crimes is often cited as a risk factor for recidivism. Data were collected on age at first adjudication and age at commitment on the youths included in this study. (Age at adjudication was available on only 73 percent of youths discharged in FY 1989-90.) Youths who received another filing within one year of discharge tended to be younger at their first adjudication and younger at commitment than youths in the other two groups. The comparisons are shown in Table 3.



TABLE 3  
DISCHARGE OUTCOMES BY AGE FACTORS

	Discharged to Adult Court Authority	Discharged Filing w/in one year	Discharged No Filing w/in one year	TOTAL
Age at 1st Adjud.	14.6 yrs	14.4 yrs	14.9 yrs	14.7 yrs
Age at Commitment	16.3 yrs	15.7 yrs	16.0 yrs	16.0 yrs

## II. Background Variables by Outcomes

### A. Prior Living Arrangement Breakdowns

Information on the youths' living situation prior to commitment were compared against the discharge outcomes. Table 4 shows results of these comparisons.

TABLE 4  
DISCHARGE OUTCOMES BY PRIOR LIVING ARRANGEMENTS

	Discharged to Adult Court Authority		Discharged Filing w/in one year		Discharged No Filing w/in one year		TOTAL	
	n	%	n	%	n	%	n	%
Both Parents	4	7%	16	28%	38	65%	58	15%
One Parent	10	8%	34	27%	80	65%	124	32%
Parent/Step	8	13%	10	16%	44	71%	62	16%
Relative	2	7%	5	19%	20	74%	27	7%
Adoptive Fam.	2	50%	1	25%	1	25%	4	1%
Foster Home	0	0%	0	0%	5	100%	5	1%
RCCF/Group Home/Shelter	10	12%	27	31%	49	57%	86	22%
Friends or Indep. Liv.	2	10%	7	33%	12	57%	21	5%
Other Instit	0	0%	2	33%	4	67%	6	2%
TOTALS	38	10%	102	26%	253	64%	393	100%

(Note: Information was missing on one youth.)

Only 15 percent (58) of the youths discharged in FY 1989-90 had been living with both parents at the time of commitment. An additional 31 percent and 16 percent were living with one parent or a parent and stepparent respectively. Eighty-six youths (22%) had been living in a Social Services type placement such as shelter care, group home or RCCF. Youths who were living with a parent, relative or in a foster home appeared to be somewhat more likely to be discharged and avoid another filing within one year than youths who had been living in an out-of-home placement or living independently. Unfortunately, information on the stability of the homes either prior to commitment or at the point of discharge was unavailable, and may be an important missing factor.

#### B. Prior Out-of-Home Placement Breakdowns

Table 5 shows outcome breakdowns for youths who had no out-of-home placements prior to commitment compared with those who had one, two or three or more.

TABLE 5  
DISCHARGE OUTCOMES BY PRIOR OUT-OF-HOME PLACEMENT

	Discharged to Adult Court Authority		Discharged Filing w/in one year		Discharged No Filing w/in one year		TOTAL	
	n	%	n	%	n	%	n	%
None	9	10%	21	22%	64	68%	94	24%
One	5	7%	12	16%	57	77%	74	19%
Two	3	5%	15	25%	41	70%	59	15%
Three or More	21	13%	54	33%	91	55%	166	42%
TOTALS	<u>38</u>	<u>10%</u>	<u>102</u>	<u>26%</u>	<u>253</u>	<u>64%</u>	<u>394</u>	<u>100%</u>

(Chi-square= 14.0, p < .05)

(Note: Information was missing on one youth.)

While there was little difference in discharge outcomes of youths who had no prior out-of-home placements and those who had only one or two prior out-of-home placements, youths who had three or more placements prior to commitment were more likely to be discharged to

adult court authority or receive another filing within one year of discharge. It is possible that youths with one or two prior placements are primarily youths who received some residential treatment whereas youths with three or more prior placements are primarily youths from dysfunctional homes. Reasons for the findings can only be speculative without further research. However, it is important to note that 42 percent of the youths discharged had three or more out-of-home placements prior to commitment.

### C. Runaway History Breakdowns

Table 6 shows outcome breakdowns for youths who had run from home or placement during the year prior to commitment.

TABLE 6  
DISCHARGE OUTCOMES BY RUNAWAY HISTORY

	Discharged to Adult Court Authority		Discharged Filing w/in one year		Discharged No Filing w/in one year		TOTAL	
	n	%	n	%	n	%	n	%
None	13	8%	39	24%	108	67%	160	44%
One or More	20	10%	60	29%	127	61%	207	56%
TOTALS	<u>33</u>	<u>9%</u>	<u>99</u>	<u>27%</u>	<u>235</u>	<u>64%</u>	<u>367</u>	<u>100%</u>

(Note: Information was missing on twenty-seven youths.)

One-half of the youths discharged in FY 1989-90 had run from a placement or from home during the 12 months preceding commitment. A slightly higher proportion of these youths were either discharged to adult court or received an additional filing within one year than youths with no runaways during the year prior to commitment.

### D. Prior Treatment for Substance Use by Outcomes

A recent report submitted to the Criminal Justice Commission by a committee formed to establish uniform criteria for commitment and out-of-home placement of juveniles demonstrated that occasional to frequent substance use was a significant factor in the

commitment of youths to the Department of Institutions. Similarly, Section IV, Chapter 2 of this report demonstrates that a higher proportion of youths assessed as needing treatment level drug/alcohol services reported that they were using controlled substances when they offended.

While the level of involvement in drugs and alcohol at the point of commitment and discharge from DOI would be the most appropriate measure to use in analyzing the effects of substance use on discharge outcomes, these data are not available on the 1989-90 discharge cohort. DYS has recently added to its client data system assessment results concerning the level of treatment indicated for each youth (i.e., prevention, intervention or treatment) at the point of commitment, and this information will be used in future studies as enough youths are discharged on whom this information is available. Substance use information at the point of discharge is not yet collected in a uniform method on clients served, but the possibility of collecting this information is being explored.

Prior drug/alcohol treatment is tracked on all youths committed and comparisons in discharge outcomes were made between youths who had no prior treatment, youths who had prior inpatient treatment, youths who had outpatient treatment, and youths who had both inpatient and outpatient treatment prior to commitment. Table 7 shows the results of these comparisons.

TABLE 7  
DISCHARGE OUTCOMES BY PRIOR DRUG/ALCOHOL TREATMENT

	Discharged to Adult Court Authority		Discharged Filing w/in one year		Discharged No Filing w/in one year		TOTAL	
	n	%	n	%	n	%	n	%
Prior Drug/Alcohol Treat.								
None	14	10%	37	28%	82	62%	133	34%
Outpatient	6	6%	26	26%	70	69%	102	26%
Inpatient	5	10%	15	31%	28	58%	48	12%
Inpatient & Outpatient	13	12%	24	22%	73	66%	110	28%
TOTALS	<u>38</u>	<u>10%</u>	<u>102</u>	<u>26%</u>	<u>253</u>	<u>64%</u>	<u>393</u>	<u>100%</u>

(Note: Information was missing on one youth.)

Differences in discharge outcomes were negligible between groups and not statistically significant. It is notable that 34 percent of youths had not had prior treatment for substance use, yet results of the SB94 survey indicated that client managers felt that drug/alcohol use caused some disruption to the lives of 43 percent of youths committed and serious disruption to another 47 percent of youths committed to the Department of institutions. Thus, prior treatment may not be an adequate measure of the 'need' for treatment for substance use and may not adequately reflect the impact of substance use on recidivism. The study by the Center for Action Research reported somewhat similar findings, although some relationship between prior drug/alcohol treatment and recidivism was found. The authors report that youths who had prior treatment were 'slightly more likely to recidivate than those without such treatment', but this was not one of the strongest predictors of recidivism. Information on actual level of substance use would be a better measure to analyze the relationship between drug/alcohol use and criminal behavior.

### III. Offense and Commitment Variables Breakdowns

#### A. Commitment Offense Breakdowns

In the 1990 Risk Validation Study conducted by the Center for Action Research, offenses were examined in relation to recidivism. Based on this study, offenses were grouped according to this relationship, and weights were assigned accordingly. The present study grouped offenses similarly for purposes of comparison. Table 8 shows the original groupings presented in the Risk Validation Study, and Table 9 shows the recommended groupings for scoring purposes (i.e., as they appear on the current DYS Commitment Classification Instrument).

TABLE 8  
DISCHARGE OUTCOMES BY TYPE OF COMMITMENT OFFENSE

	Discharged to Adult Court Authority		Discharged Filing w/in one year		Discharged No Filing w/in one year		TOTAL	
	n	%	n	%	n	%	n	%
Serious Person or Controlled Subst. I,II,III	2	3%	16	25%	47	72%	65	16%
Lesser Person	3	7	15	35%	25	58%	43	11%
Major Property	12	14%	23	27%	51	59%	86	22%
Other Property	3	19%	2	12%	11	69%	16	4%
Minor Property	16	10%	42	27%	100	63%	158	40%
Other	2	8%	4	15%	20	77%	26	7%
TOTALS	<u>38</u>	<u>10%</u>	<u>102</u>	<u>26%</u>	<u>254</u>	<u>64%</u>	<u>394</u>	<u>100%</u>

Serious drug offenses involving Schedule I, II, and III drugs are grouped with the Serious Person offenses (e.g. murder, felony assaults, etc). The drug offenses represented only nine percent of the offenses in this Serious Person category. Lesser Person offenses include predominantly misdemeanor offenses against persons. The most frequently occurring offenses in the Major Property offense category are burglary and aggravated motor vehicle theft. Criminal trespass, fraud, and forgery are among others included under 'Other Property', while theft, misdemeanor criminal mischief are frequent offenses in the 'Minor Offense' category. The 'Other' offense category includes a mixture of offenses such as obstruction, escape, prostitution, etc.

In Table 9, the offenses are grouped according to the recommendations contained in the Risk Validation report.

TABLE 9  
DISCHARGE OUTCOMES BY TYPE OF COMMITMENT OFFENSE GROUPED

	Discharged to Adult Court Authority		Discharged Filing w/in one year		Discharged No Filing w/in one year		TOTAL	
	n	%	n	%	n	%	n	%
Serious Person or Controlled Subst. I,II,III	2	3%	16	25%	47	72%	65	16%
Lesser Person	3	7	15	35%	25	58%	43	11%
Maj Prop/Other/ Other Prop	17	13%	29	23%	82	64%	128	33%
Minor Property	16	10%	42	27%	100	63%	158	40%
TOTALS	<u>38</u>	<u>10%</u>	<u>102</u>	<u>26%</u>	<u>254</u>	<u>64%</u>	<u>394</u>	<u>100%</u>

Generally, the relationships between offense types and recidivism are similar to those reported in the validation study with one exception. In the present study, a higher proportion of youths committed on lesser person offenses than those in other offense groups were either discharged to adult court authority or received an additional filing within one year of discharge. In the validation study, higher percentages of youths in all of the property and other offense categories had new filings than youths in either of the two person offense categories. Similar to the validation study, the lowest recidivism rate in this study was for youths in the Serious Person offense group. It is important to remember that filing data were collected at different points for the two studies (i.e., at the point of release from a secure facility in the validation study, and at the point of discharge from DYS in the present study). Differences due to treatment in community residential programs, factors related to aftercare parole, and/or other factors associated with differences in study design could affect the results of the two studies.

## B. Prior Adjudications Breakdowns

Prior criminal history is often associated with risk of recidivism. The Risk Validation study reports an association between prior adjudications and additional filings, and this factor is included on the DYS Commitment Classification Instrument. Table 10 shows discharge outcomes for youths who had no prior adjudications, youths who had one prior adjudication, and youths who had two or more prior adjudications prior to commitment.

TABLE 10  
DISCHARGE OUTCOMES BY NUMBER OF PRIOR ADJUDICATIONS

Number of Prior Adjudications	Discharged to Adult Court Authority		Discharged Filing w/in one year		Discharged No Filing w/in one year		TOTAL	
	n	%	n	%	n	%	n	%
None	7	5%	28	21%	97	74%	132	33%
One	18	14%	36	28%	75	58%	129	33%
Two or More	13	10%	38	29%	82	62%	133	34%
TOTALS	<u>38</u>	<u>10%</u>	<u>102</u>	<u>26%</u>	<u>254</u>	<u>64%</u>	<u>394</u>	<u>100%</u>

(Chi-square=9.4, p=.05)

Thirty-three percent of youths discharged in FY 1989-90 had no adjudications prior to commitment, 33 percent had one prior adjudication and 34 percent had two or more adjudications prior to commitment. Youths who had at least one prior adjudication were more likely to be discharged to adult court authority or receive an additional filing within one year of discharge.

## C. Recommitment Breakdowns

Comparisons were made between youths who received additional juvenile commitments to the Department of Institutions prior to discharge and those who did



not receive further commitments. Recommitments refer to additional commitments while the youth is still in the custody of DOI. Table 11 shows these comparisons.

TABLE 11  
DISCHARGE OUTCOMES BY RECOMMITMENTS

	Discharged to Adult Court Authority		Discharged Filing w/in one year		Discharged No Filing w/in one year		TOTAL	
	n	%	n	%	n	%	n	%
Number of Recommitments								
None	19	7%	70	26%	184	67%	273	69%
One	8	10%	26	33%	46	58%	80	20%
Two or more	11	27%	6	15%	24	59%	41	10%
TOTALS	<u>38</u>	<u>10%</u>	<u>102</u>	<u>26%</u>	<u>254</u>	<u>64%</u>	<u>393</u>	<u>100%</u>

(Chi-square=19.2, p < .001)

Youths who were recommitted prior to discharge from DYS were more likely to be discharged to adult court or to receive an additional filing within one year of discharge. This is not a surprising finding since additional commitments suggest that youths are continuing to offend while they are in treatment. It is interesting, however, that approximately 58 percent of youths who did receive additional commitments prior to discharge were subsequently discharged and did not receive another filing within one year.

#### D. Job/School Status Breakdowns

Filing outcomes of youths who were employed or in school at the time of discharge were compared with outcomes of youths who were neither working nor in school at the point of discharge from the Department of Institutions. (Youths discharged to adult court authority were excluded from these comparisons.) Table 12 shows these comparisons.

TABLE 12  
DISCHARGE OUTCOMES BY JOB/SCHOOL STATUS

	Discharged Filing w/in one year		Discharged No Filing w/in one year		TOTAL	
	n	%	n	%	n	%
Employed or in School						
Yes	50	26%	145	74%	195	56%
No	49	32%	103	68%	152	44%
TOTALS	99	29%	248	71%	347	100%

Seventy-four percent of youths who were working or in school at the time of discharge were discharged and had no additional filings within one year, compared with 68 percent of youths who were neither working nor in school. These differences were not statistically significant.

#### E. Type of Residential Placement Breakdowns

The Division of Youth Services runs a dynamic correctional system in which youths move through the system, often spending residential time in various facilities and at various levels of security. Thus, rather than attempting to evaluate recidivism by individual programs, discharge outcomes were compared for youths who spent the majority of their residential time in 1) a longer term or intensive secure facility (i.e., Lookout Mountain School, Mount View Closed Adolescent Treatment Center which has since closed, High Plains Center in Brush, Colorado Boys Ranch, Excelsior, or the Grand Mesa Youth Services Center intensive program), 2) a short-term medium secure facility (i.e., Lathrop Park Youth Camp, Mount View Orientation which has since closed, Grand Mesa Orientation program, or DAYS Reflections), or 3) a community residential program under contract with DYS. Table 13 shows results of these comparisons.

TABLE 13  
DISCHARGE OUTCOMES BY MAJOR PLACEMENT TYPE

	Discharged to Adult Court Authority		Discharged Filing w/in one year		Discharged No Filing w/in one year		TOTAL	
	n	%	n	%	n	%	n	%
Majority of Residential Time								
Community	12	8%	40	26%	105	67%	157	40%
Medium	4	9%	14	30%	28	61%	46	12%
Intensive	22	12%	48	26%	116	62%	186	48%
TOTALS	<u>38</u>	<u>10%</u>	<u>102</u>	<u>26%</u>	<u>249</u>	<u>64%</u>	<u>389</u>	<u>100%</u>

While a higher percent of the 1989-90 discharge cohort who spent most of their residential time in medium or intensive secure programs were either discharged to adult court or had an additional filing within one year of discharge, the differences were not statistically significant. Secure facilities are generally used for youths with more serious offenses. As shown previously, serious commitment offense was not associated with recidivism. Without an experimental design (e.g. random assignment of youths to various program types), it is difficult to draw conclusions about the relationship between types of programs, length of stay, and recidivism, particularly since conscious efforts are made to place youths based on variables which may themselves be associated with recidivism (e.g., prior criminal history). Controlled studies would be needed to better understand the interrelationships between youth characteristics, type of treatment, length of treatment and outcomes. A study which encompasses this type of experimental design in the Colorado Juvenile Boot Camp Project described in Section VIII. For obvious reasons, random assignment to programs is not always feasible necessitating alternate (generally less powerful) research methods and/or special projects on subsets of the juvenile delinquent population (such as those included in the TASC project in Section IV).

## MULTIVARIATE COMPARISONS

The previous section provides some descriptive information using single variable comparisons. Information obtained from these and other analyses (e.g., analysis of variance) suggested variables to include in a multivariate analyses. Discriminant Function Analysis (DFA) was done to determine which of the variables studied best classify the outcome groups, and the extent to which these variables accurately classify youths into recidivism groups as defined in this study.

Some variables were grouped for purposes of analyses. Groupings were done based on previous analyses which suggested appropriate groups. For example, the 'prior living arrangement' variable was grouped according to 1) youths who had been living with both parents, one parent, one parent plus a step parent, an adoptive parent or a foster parent, and 2) youths who had been living in a shelter care facility, RCCF, group home, friends, independently or other institutions. The descriptive breakdowns of this variable in the previous section suggest that these two groups may differ in recidivism outcomes, and the groups represent youths who were living in a 'family' type situation versus those living out-of-home. Whereas studies involving ethnicity generally compare outcomes of minorities versus anglos, the descriptive data reported above suggests that this breakdown is inappropriate in these analyses since the proportion of anglo youths who recidivated falls between that of hispanic and black youths. Preliminary analyses suggest that alternate groupings of ethnicity would cause this variable to be selected through DFA as a contributing factor in explaining recidivism outcomes, but that including ethnicity in the analyses (regardless of how the grouping is done) had little effect on the accuracy of classifying recidivists versus non-recidivists. Therefore, ethnicity was excluded from the discriminant function analysis so that relative contributions of the remaining variables could be examined.

Finally, data on age at first adjudication was missing for 105 of the youths discharged in FY 1989-90. Including this variable in the discriminant function analysis would greatly restrict the sample. Since age at commitment is highly correlated with age at first adjudication ( $r = .56$ ) and commitment age was available on all youths, this variable was included in the analyses.

Two separate DFA analyses were done using different definitions of recidivism: 1) youths discharged to adult court grouped with youths who received a filing within one year as the measure of recidivism, and 2) only youths who were discharged and received another filing within one year as the measure of recidivism (i.e., youths discharged to adult court were excluded from this analysis).

1. Results of Discriminant Function Analysis using Recidivism Measure I (youths discharged to adult court grouped with youths who received an additional filing within one year)

Based on the above descriptive breakdowns and a number of preliminary analyses, the following variables were selected for inclusion in the DFA using the first measure of recidivism: number of recommitments, age at commitment, total residential length of stay (LOS) during commitment, number of prior adjudications, number of prior out-of-home placements, prior living arrangement and runaway within one year of commitment.

Table 14 shows the variables selected through the DFA as contributing most to the classification of recidivists versus non-recidivists, and the standardized coefficients of each variable.

TABLE 14  
VARIABLES SELECTED IN DFA USING RECIDIVISM MEASURE I

Variable	Standardized Coefficients
Number of prior out-of-home placements	.817
Number of prior adjudications	.544
Age at Commitment	-.302

(Note: 1. Assumptions of multivariate normality were not violated. 2. DFA  $p < .001$ )

The standardized coefficients are essentially a measure of the relative contributions of each variable to the discriminant function. Thus, of all of the variables studied in this report,

the number of out-of-home placements prior to commitment contributes most to the classification of recidivists versus non-recidivist. The variables are listed in the order of their relative contribution to the accuracy of classification. Based on the DFA results, youths predicted to recidivate would have higher numbers of out-of-home placements, more prior adjudications and would have been younger at the time of commitment . It is important to explain that DFA looks at the contribution of each variable after all other variables have been considered. Thus, a variable is selected if it significantly increases the strength of the classification. Therefore, if two variables are highly correlated, generally only one will be selected, even if both are related to the outcome measure, since the second variable will not 'significantly' improve the classification beyond that obtained using the first variable. Some moderate correlations exist among variables selected in the DFA and other variables entered. The highest correlation is between the number of prior out-of-home placements and the youth's prior living arrangement grouped as described above ( $r = .38$ ). The DFA produces an equation indicating weights to be used with each variable in determining which 'predicted' outcome group each youth would be placed. An important question, however, is: How accurate would we be if we used the information obtained from the DFA to predict recidivism of the youths discharged in FY 1989-90?

The accuracy of classifying groups using the variables entered in the DFA is shown in Table 15.

TABLE 15  
ACCURACY OF GROUP CLASSIFICATION USING RECIDIVISM MEASURE I

		PREDICTED GROUP MEMBERSHIP	
		Non-Recid	Recid
ACTUAL GROUP	Non-Recid	171 67.6%	82 32.4%
	Recid	60 42.9%	80 57.1%

Applying classification analysis to the variables described earlier, it is possible to correctly classify only 67.6 percent of the youths who did not recidivate and only 57.1 percent of those who did recidivate. The overall percent of grouped cases correctly classified is 63.8 percent.

2. Results of Discriminant Function Analysis using Recidivism Measure II  
(youths who received an additional filing within one year -- excludes youths discharged to adult court)

Using subsequent filings during the first year of discharge from DYS as the measure of recidivism, discriminant function analysis was done to determine whether variables selected would differ from those selected using the first measure of recidivism (in which youths discharged to adult court were included as recidivists). Variables entered were the same as for the first measure of recidivism with the exception that job/school at discharge was included for analysis of the second measure of recidivism. Table 16 shows the variables selected and their standardized coefficients.

TABLE 15  
VARIABLES SELECTED IN DFA USING RECIDIVISM MEASURE II

Variable	Standardized Coefficients
Number of Prior Placements	.669
Age at Commitment	-.597
Number of Prior Adjudications	.527

(Note: 1. Assumptions of multivariate normality were not violated. 2. DFA  $p < .001$ )

The same three variables are selected as significantly improving the classification of recidivists versus non-recidivists in this sample. While the number of prior out-of-home

placements is still selected first, the order of selection of age at commitment and number of prior adjudications is reversed using the second measure of recidivism.

Table 16 shows the accuracy of classification using the second measure of recidivism.

TABLE 16  
ACCURACY OF GROUP CLASSIFICATION USING RECIDIVISM MEASURE II

		PREDICTED GROUP MEMBERSHIP	
		Non-Recid	Recid
ACTUAL GROUP	Non-Recid	159 62.8%	94 37.2%
	Recid	41 40.2%	61 59.8%

Using the second measure of recidivism only 62.8 percent of youths who did not recidivate were accurately classified, and 59.8 percent of those who did recidivate were accurately classified using the variables entered into the DFA. The overall percent of grouped cases correctly classified was 62.0 percent.

## DISCUSSION OF FINDINGS

Descriptive comparisons of a number of demographic, commitment, and background variables generally produced expected breakdowns. Higher proportions of youths who ultimately recidivated were younger at first adjudication and at commitment, had prior adjudications, were living in out-of home placements prior to commitment, had a history of runaway within the year prior to commitment, etc. However, many of the relationships were weak, some were not statistically significant. Even when the variables are considered in combination, the ability to correctly classify recidivism outcomes was limited. Failure to more



accurately classify youths is likely due to a combination of factors. First, treatment measures (drug/alcohol treatment, family counseling, special offender programs, educational programs, etc.) were not included in the analyses at all. It would have been distressing to obtain highly accurate classification results prior to including measures of services provided during commitment. Second, the measures used for some of the variables are probably weak themselves. As already mentioned, while prior drug/alcohol treatment was used as an indicator of substance use problems, a better measure would be an objective assessment of the youth's involvement in drugs and alcohol, not only at the time of commitment, but also at the time of discharge. Third, there are some variables likely to be associated with recidivism for which there were no measures at all (e.g., the environment to which the youth was discharged).

Efforts continue at DYS to develop methods of collecting data on services provided, and to improve measures of potential risk indicators. Specifically, a form is being developed to collect better information on services received in the community and on youths' status at termination including whether or not the youth received his/her GED. A special computer screen has been developed and is currently being used to collect information on vocational training received while in secure facilities, and pre- and post-test educational scores. Results of drug/alcohol assessments administered at the time of commitment are now being entered into the DYS client data system and will be available for research purposes. These and other modifications are underway with the hope that future studies will enhance our ability to evaluate the effectiveness of programs and provide insight into the relative contributions of factors to specific outcomes. In addition, comprehensive research designs are included whenever possible in special projects which focus on treatment of juvenile offenders. Examples include the evaluation of the Senate Bill 94 pilot projects, the evaluation of the Colorado Juvenile Boot Camp, and the evaluation of the Treatment Alternatives to Street Crime (TASC) project. Progress reports of each of these projects are included in separate sections of this document.

