School Youth Outcomes of AOD Treatment

School Enrollment, School Retention, and Grades Improve Among Youth Who Complete and|or Stay Longer in Alcohol and Other Drug (AOD) Treatment

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This report contains findings on 3,850 youth, age 15 to 17 who participated in publicly funded alcohol and other drug (AOD) treatment from July 1999 through June 2001. These youth, if in high school, were sophomores or juniors. If not in school, they would have been sophomores or juniors. We obtained statewide public school information for these youth one year before and after treatment and examined whether youth completing and|or staying longer in treatment had better school outcomes the year after treatment than non-completers and youth with short stays.[1]

Summary of Initial Findings

Better school outcomes occurred in spite of many other troubles and service needs the youth were experiencing: criminal involvement, conflict with their families, failure in school, mental health problems, poverty, and medical needs.

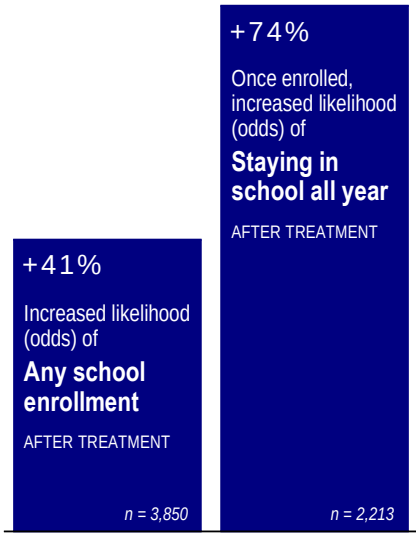
TREATMENT COMPLETION

- Youth who completed treatment were 41 percent more likely to be enrolled, and – once enrolled – were 74 percent more likely to stay all year compared to non-completers. *See chart at right.*
- Completers' grade point averages improved more after AOD treatment: 35 percent for completers versus 25 percent for non-completers.

LENGTH OF STAY

- Longer stays in AOD treatment were associated with better school outcomes among youth who had dropped out of school the year before treatment.

Likelihood of being in school improves after AOD treatment completion



Statistically adjusted results, significant at .05 level. See full statistical models in Technical Attachment 4.54b.

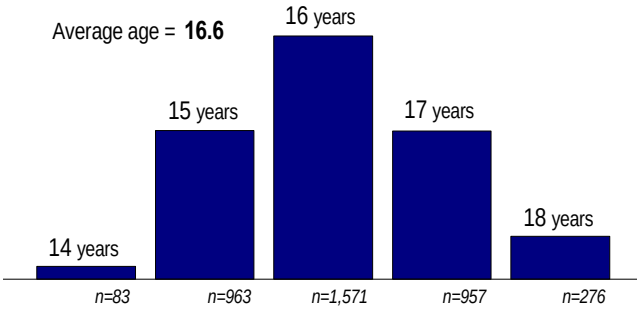
[1] This study was possible due to the recently available database created by the Washington State Office of Superintendent of Public Instruction of 1998-2002 public high school students. AOD treatment information from DSHS was cross-matched with high school student records through a mutual research agreement with Washington State University. Only aggregate outcomes were provided to DSHS to assure student confidentiality. Results were statistically adjusted for group differences in type of treatment received, in substance use, demographics, living situation, criminal involvement, mental health status, and schooling prior to treatment.

PART 1 | Youth with troubled, complicated lives

This study focuses on youth who had participated in AOD treatment and were sophomore and juniors if in school. In addition to abusing alcohol and other drugs, these youth had many other issues in their lives at the time they were admitted to treatment. Most were in poverty. Many were in trouble with the law, had mental health issues, or were suffering academically. We begin with demographics.

Age, gender, and race

A disproportionate number of youth in this study were 17 and 18 years of age. If students had progressed normally through the grades, we would expect to see more 15 and 16 year olds.



Minorities were overrepresented. Compared to the general population of students attending grades 10 and 11, the study population of treated youth was:

- 42 percent more likely to be Hispanic.
- 80 percent more likely to be African American.
- Three times as likely to be American Indian.

Living situation upon admission to treatment

- One in ten resided with another family.
- One in ten were in foster or group care.
- Almost one in ten (8 percent) were on their own, in a shelter or on the street.

Economically deprived

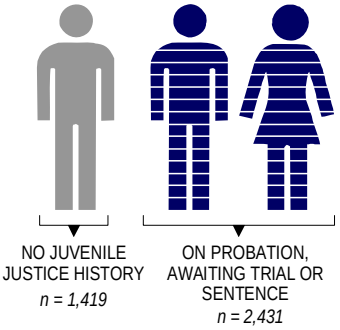
We found the majority of these youth were poor – 60 percent more likely to be living in poverty than the general population of high school sophomores and juniors:

- Most were receiving publicly funded medical services in the form of Medicaid.
- Almost three out of ten were receiving economic assistance.
- One in four were receiving children's services from the state Department of Social and Health Services (DSHS); these are funds typically directed to child protection issues or family conflict resolution.

Committing violent crimes

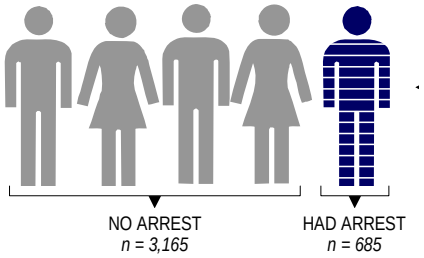
Two out of three youth were on probation or awaiting a trial or sentence

Self-reported upon admission into treatment



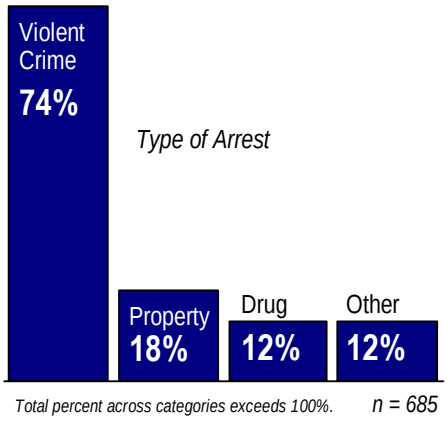
One in five reported at least one arrest in the past year

Self-reported upon admission into treatment



Three fourths of the arrests involved violent crimes

SOURCE: DSHS Treatment Assessment Report Generation Tool (TARGET)[2]



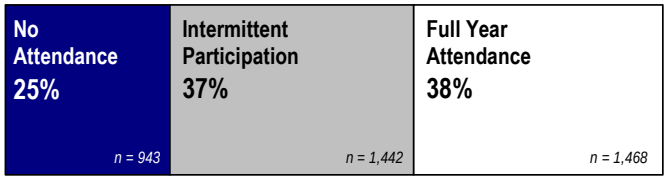
[2] This database is maintained by the DSHS Division of Alcohol and Substance Abuse. Violent crimes were defined as murder and manslaughter, kidnapping; rape and other sexual assault; robbery; aggravated and simple assault; intimidation; extortion; coercion; illegal abortion; cruelty towards child or spouse; hit-and-run with bodily injury; miscellaneous crimes against persons.

Failing or dropping out of school

School findings are of particular concern and receive more discussion in Part 2 of this study. Here it is sufficient to say academic performance upon entry into treatment was very poor.

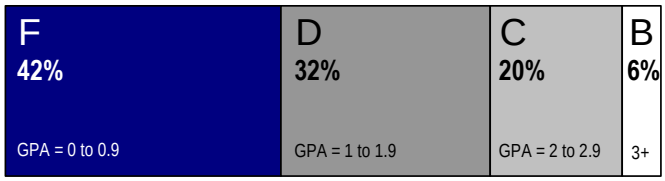
School attendance was poor the year prior to treatment

Among entire study population



Below average grades or failing school

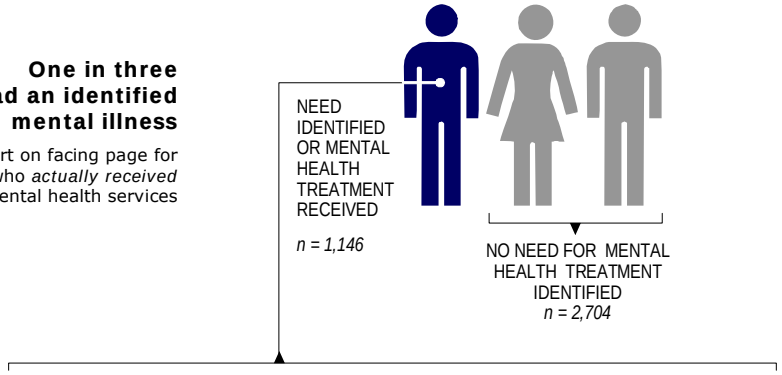
Cumulative grade point, based on average of 1,727 students[3]



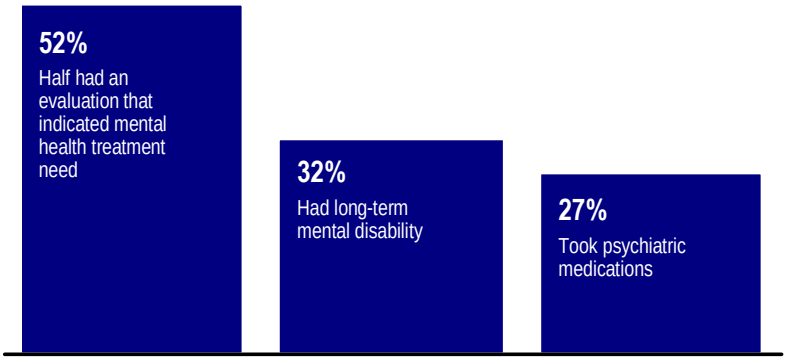
Needing or receiving mental health services

One in three youth had an identified mental illness

See chart on facing page for percent who *actually received* mental health services



For those with identified need:

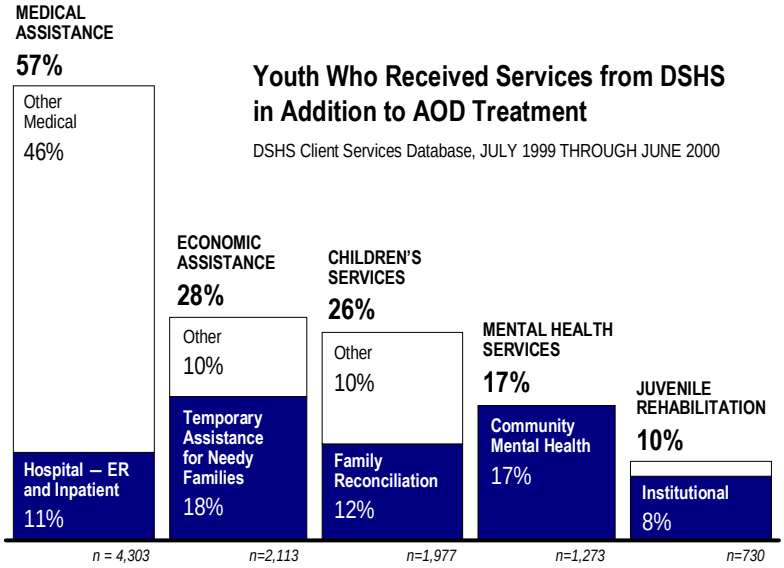


SOURCE: DSHS Treatment Assessment Report Generation Tool (TARGET)

[3] We obtained cumulative grade point averages for about half the youth who had attended school for at least one full academic year before treatment (1,727 out of 3,850 attending grade 9 or 10).

Receiving services across DSHS in addition to AOD treatment

Below we show the use of other DSHS services for all youth 15 to 17 in the same year they received substance abuse-related services (n= 7,543).



SOURCE: DSHS Client Services Data Base. Note percentages may exceed 100 because many youth received multiple services.

Medical and financial assistance

- Most youths' medical services, 57 percent, were covered by publicly funded medical assistance. One in ten was sick enough to be hospitalized during that year.
- One in four youth were also receiving economic assistance, mainly through family grants under the Temporary Assistance to Needy Families (TANF) program.

Children and family services

- One in four were also involved with services aimed at child safety – Children Protective Services, In-Home programs, or Foster Care – or aimed at resolving family conflict issues through the Family Reconciliation program.

Mental health

- One in six youth were treated by DSHS providers in the Community Mental Health system.

Detention in juvenile rehabilitation institutions

- One in ten youth had committed a serious enough criminal offense, or series of offenses to be sentenced to a DSHS juvenile rehabilitation institution.

Multiple use of DSHS services

Many youth had more than one of the above DSHS provided services the same year they obtained substance abuse services. The most common two DSHS service combinations, in addition to substance abuse ones, were:

Clients	Services
2,093	Medical and economic
1,631	Medical and children's
1,126	Medical and mental health
686	Children's and mental health

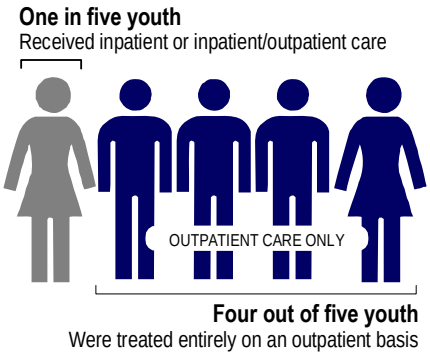
The most common three DSHS service combinations in addition to substance abuse were:

861	Medical, economic and children's
556	Medical, economic and mental health

The combinations listed above involved medical, economic, children's and mental health services, reflecting the frequent co-occurrence of health, poverty, family problems, and mental health needs, along with substance abuse.

PART 2 | Type and Length of Treatment, Length of Stays and Completion Rates

Type: Residential, Outpatient or Inpatient|Outpatient Treatment



Length of Treatment

- A minority of youth, one out of five, attended one of the few residential programs that treat youth from different parts of Washington State. These can last from one to three months, the median length being one month. Half of these youth subsequently attended an outpatient program as well, their total treatment lasting as long as one whole year. Their median length was the longest: about four months.
- Most youth, four out of five, attended one of the outpatient treatment programs provided in all counties of Washington State. These are designed to last up to six months, but may be shorter or longer depending on need. Their median length was three months.

Youths' Lengths of Stay and Completion

Past studies of treatment have shown that completion and an 'adequate' length of stay have separate and independent impacts on treatment outcomes. In this preliminary study of school outcomes we have used the same definition of completion and length of stay as that used in a journal paper currently in press. *See journal reference on next page.*

Completion is defined by discharge codes provided by treatment providers. Length of stay is measured by the number of days from admission to last discharge or last treatment activity. *See detailed definitions in Technical Notes.*

The chart below shows the distribution of youth both by treatment completion and length of stay.

Distribution of youth by treatment completion and length of stay

	Completed Treatment?		
	No	Yes	TOTAL
Short Stay *Less than 90 days*	**32%** *n = 1,221*	**18%** *n = 688*	**50%** *n = 1,909*
Long Stay *90 days or more*	**28%** *n = 1,088*	**22%** *n = 853*	**50%** *n = 1,941*
TOTAL	**60%** *n = 2,309*	**40%** *n = 1,541*	**100%** *n = 3,850*

- Overall 40 percent of the youth completed treatment; 60 percent did not.
- Half of the youth stayed in treatment 90 days or longer, and half stayed less than 90 days.
- Completion and length of stay was weakly correlated – slightly more youth completed treatment if they stayed in treatment longer (22 percent versus 18 percent).

PART 3 | What are the school outcomes of AOD treatment?

General Findings on School Enrollment and Retention

We found that treatment completion was significantly associated with better school outcomes.

- Youth who completed AOD treatment were, on average, 41 percent more likely to be enrolled and, once enrolled, 74 percent more likely to stay in school. *See table below.*

The average, overall impact of length of stay on schooling was not significant or weak because it differed for various groups of youth, depending on their prior school experiences.

- Length of stay was important mainly for youth who had dropped out of school the year before. For these school dropouts treatment completion was not as important a factor as a longer length of stay or a longer continuum of care comprised of both inpatient and outpatient treatment. *See results and notes in table below and the following page.*

Likelihood of going and staying in school after treatment

Statistically adjusted results, significant at p<.05		**Any Enrollment After Treatment** *Among all youth*	**Enrolled All Year After Treatment** *Among youth in school after treatment*
Increase in likelihood (odds) of enrollment after treatment	**Completers**	**+ 41%**	**+ 74%**
	90+ Day Stay	**n.s.**	**+ 23%**
		n = 3,850	*n = 2,213*

Findings for Youth with Different Prior School Experiences

We tested whether completion and length stay in treatment, had different school outcomes – low or high likelihood of being enrolled afterwards- depending on prior school enrollment. We found that both varied depending on youth's school experiences the year before treatment.

- The effect of completion increased, starting from a low effect for school dropouts.
- The effect of length of stay decreased, starting from a high effect for school dropouts.[4]

In a previous section describing youth in trouble with school attendance before treatment we saw that 25 percent were not enrolled at all, 37 percent were enrolled intermittently, and only 38 percent were enrolled all year. Here we examine in detail these three groups of youth.

Likelihood of any school enrollment and of staying in school all year after treatment by completion and length of stay among youth with different prior school experiences

	Not Enrolled at All Year Before Tx		**Intermittently Enrollment Year Before Tx**		**Enrolled All Year Before Tx**	
Statistically adjusted results, significant at p<.05	Any Enrollment After Treatment	Enrolled All Year After Treatment	Any Enrollment After Treatment	Enrolled All Year after Treatment	Any Enrollment After Treatment	Enrolled All Year after Treatment
Completers	**+ 37%**	n.s.	n.s.	**+ 96%**	**+ 87%**	**+ 85%**
90+ Day Stay	**+ 160%***	**+ 122%**	**+ 26%**	**+ 72%**	**– 27%**	n.s.
	n = 943	*n = 238*	*n = 1,442*	*n = 809*	*n = 1,465*	*n =1,165*

* This is the likelihood of enrolling back in school among youth who had an inpatient/outpatient continuum of care, almost always longer than 90 days.

[4] We statistically tested for interactive effects of completion, length of stay and prior schooling on school outcomes of treatment using analysis of co-variance. We found a significant positive interaction between completion and prior schooling, a negative interaction between length of stay and prior schooling, no interaction between completion and length of stay. See technical attachments.

Youth who had dropped out of school altogether

Length of stay in treatment was more important than completion in getting youth who had dropped out to re-enroll back in school and to stay in school all year after treatment.

- School dropouts who had longer stays in treatment – due to an inpatient/outpatient continuum of care – were 160 percent more likely to re-enroll. Those who stayed 90 or more days were also 122 percent more likely to stay in school all year.
- Completion was relatively unimportant: completers were only 37 percent more likely to re-enroll and *not* more likely to stay in school.

Youth who had been intermittently enrolled in school

Both completion and length of stay were important for further schooling among these youth.

- Youth intermittently enrolled who stayed in treatment 90 days or more were 26 percent more likely to re-enroll and 72 percent more likely to stay in school all year.
- Treatment completers were *not* more likely to re-enroll, but 96 percent more likely to stay in school all year if enrolled.

Youth already in school all year before treatment

Completion was the only positive factor related to further schooling among these youth.

- Completers were 87 percent more likely to re-enroll and 85 percent more likely to stay in school all year.
- Length of stay in treatment was either negatively related or not related to further schooling.

Reasons for the differential impacts of length of stay and completion are not immediately obvious. More investigation is needed. It is possible youth who have dropped out of school need longer continued support in treatment to encourage them to re-enroll and stay in school. It also takes time to make the necessary arrangements with school authorities to re-enroll; thus, if youth are able to continue in treatment until re-enrollment arrangements are complete, we may see higher success rates. Support for these hypotheses comes from our finding that a longer inpatient/outpatient "continuum of care" sequence of treatment had a very strong impact on re-enrollment among some of the dropouts.

These findings on school outcomes are consistent with ones being published in a recent paper:

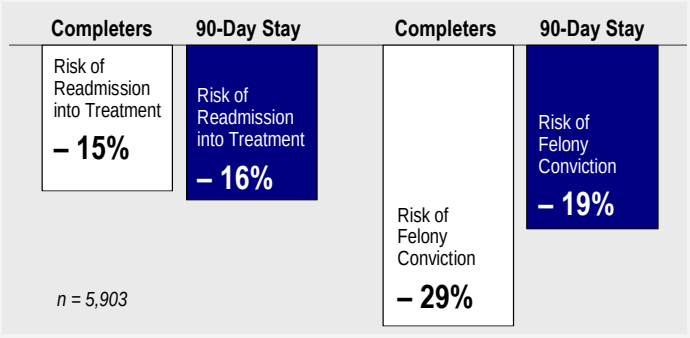
- Youth who complete and/or stay longer in treatment had less risk of treatment readmission and criminal convictions. *See box below.*

RECENT LITERATURE FINDINGS

Risk reduction for youth treated for alcohol and substance abuse 18 months following the end of treatment episode

Risks were estimated by proportional hazards regression models (a type of survival analysis)

Risk of Readmission to Treatment and Felony Convictions Are Lower After Treatment Completion and Longer Stays



SOURCE: Luchansky, He, Longhi, Krupski, Stark, "Treatment Readmissions and Criminal Recidivism in Youth Following Participation in Chemical Dependency Treatment" *(in press), Journal of Addictive Diseases*

Preliminary Findings on School Grades after Treatment Participation

School records provided us with cumulative Grade Point Averages (GPA, based on 0 to 4, F to A grades) at the end of each year in high school. So improvement in grades after treatment could only be measured by comparing changes in cumulative GPA for the appropriate full academic years before and after treatment.

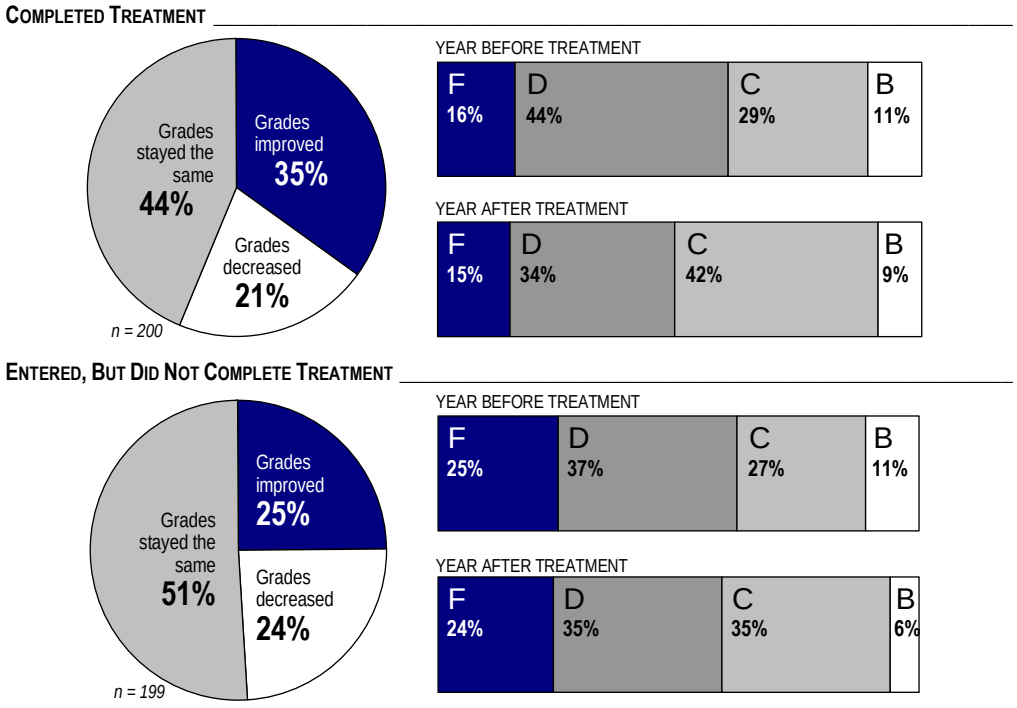
We identified a subset of youth (n= 399) who had been in school full time both before and after treatment, for a full academic year. We calculated the percentage of youth whose grades improved, got worse, and stayed the same, from before to after treatment. Since we wanted to assess substantial improvements in GPAs – not random fluctuations in GPAs from year to year, we chose to measure GPA changes of at least a half point.

Grades improved for youth who completed treatment

Findings show that:

- 35 percent of treatment completers improved their grades by a half a point or more, compared to 25 percent among non-completers.
- Most of the grade changes occurred in shifts from D averages to C averages:
  - 51 percent of treatment completers averaged a C or better the year after treatment compared to only 40 percent doing that well before treatment.
  - Among non-completers there was less improvement: 41 percent averaged a C or better in the year after treatment compared to 39 percent in the year before treatment.

Change in Cumulative GPA – From Before to After Treatment



SHOWS: Change of GPA by 0.5 categories the school year after the treatment year compared to the school year before the treatment year among those in school the whole year both before and after treatment.

What are the limitations to this study?

Since no random assignment was made to 'treatment' and 'comparison' groups, we had to statistically adjust school outcome results for all known differences in composition and experiences between completers and non-completers, those staying longer or a shorter length of time in treatment. The validity of the results depends on whether the most important differences were actually measured and statistically controlled for. For these preliminary analyses we lacked information on periods of criminal detention and experiences with other DSHS services.

Analyses on changes in grades adopt a before | after comparison, controlling for schooling performance before treatment. These results need to be statistically adjusted for differences in other youth characteristics. We also need to distinguish between youth with one or two years of high school before treatment since changing cumulative GPA is harder for the latter group.

We presented outcomes of length of stay in treatment using 90 days as a threshold for 'adequate amount' of treatment. This is consistent with the published literature, but we need to test whether the actual threshold is 90 days. Exploratory analyses indicate that 180 days may be a better threshold for some youth. Initial analyses showed that the impact of length of stay may not be 'linear' - outcomes improving the same amount with each increase in stay. They may be curvilinear for some youth – outcomes improving at increasing rates as length of stay increases.

Our analyses presume that all youth in the study population had the same opportunity of going to school after treatment. This assumption permitted us to measure the presumed impact of treatment. However, some youth may have left the state and some youth may be in court ordered detention after treatment as planned before treatment. Future analyses need to exclude youth who could not attend public schools for these reasons.

Concluding Statements

We stress that the reported findings of this study, though statistically valid and providing evidence of strong school outcomes, need further testing. We report them, as planned, for the purpose of determining what additional research is warranted and advisable.

- Preliminary school outcomes are *statistically significant* controlling for the strongest predictor of post treatment enrollment – school enrollment patterns before treatment and recorded differences of youth backgrounds and experiences at the time of treatment admission.
- *The outcomes are sufficiently strong and consistent to warrant further testing.*

Outcome estimates may change as a result of further statistical modeling, the use of different lengths of treatment (other than 90 days), controlling for more differences in youth backgrounds and for the effect of other services received. Arguments in favor of a causal attribution of better school outcomes to treatment depend on the role of other, still unmeasured factors. Of particular importance will be:

- The separate analysis of those youth in detention or not in detention during the study period.
- The testing of school outcomes for various lengths of stay in treatment.
- The testing of whether youth not matched with school records are actually still resident in Washington and constitute school dropouts.

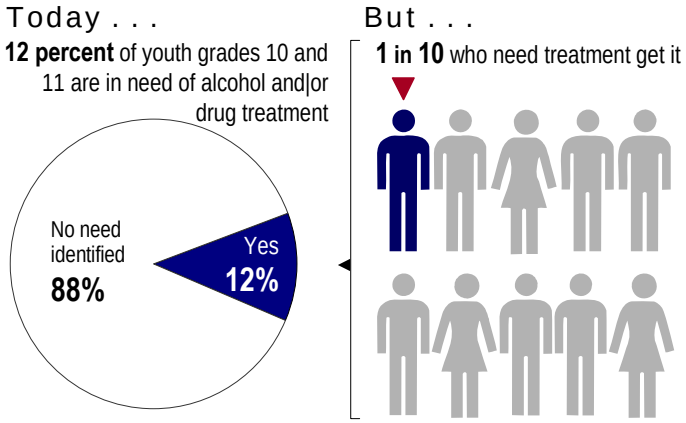
These further analyses require matching the current study population with other databases: DSHS Client Services Database (CSDB) and juvenile justice records. Additional analyses of these matched data may also answer further policy relevant questions.

PART 4 | Questions for Further Research

Question 1: What are the cost benefits of treatment?

Specifically, what are the costs and benefits of expanding treatment to non-treated youth: *for schools, for DSHS, some other state agencies and for society as a whole?*

To start answering this question we need to identify another comparison group of non-treated youth who need treatment. This may be possible using existing medical diagnostic, arrest and court records. Also important would be information on General Education Diplomas (GEDs), vocational courses, and part-time employment while in school to better estimate foregone earnings. These data exist now, but have yet to be matched and examined.



Question 2: What are the treatment outcomes for poor and minority youth?

We know that some minority youth drop out of high school in larger numbers than whites. Further analysis could begin to answer the following:

- *Do the overall findings on positive school outcomes also hold for poor students and minority students and for poorer school districts with large minority populations?*

Question 4: Is our exclusive focus on school enrollment as the 'educational outcome' of treatment justified?

- *Do vocational courses and part time employment improve educational outcomes, like GED, and later earnings for treatment completers?*

Question 5: What are the treatment outcomes for the more troubled youth: Those involved in the criminal system? And those who receive other DSHS services?

- *Do school outcomes of treatment differ for youth on probation or those who have been detained in Juvenile Rehabilitation institutions?*
- *Do school outcomes of treatment improve if combined with other services – medical, economic, children and mental health services?*

TECHNICAL NOTES

The study population is *conceptually* defined as AOD treated youth who were sophomore or juniors in high school or would have been in such grades if they had been in school. The *operational* definition is youth who both started treatment and finished AOD treatment in the two-year period: July 1999 to June 2001 and were also:

- Enrolled as returning freshman, sophomores or juniors *at the start of treatment*; or
- In school as freshman or sophomores *the year before treatment*; or
- In school as Juniors or seniors *the year after treatment*; or
- Age 15 or 16 at the start of the treatment episode but *never enrolled in high school* (11.5 percent of the study population). These youth were presumed to have dropped out earlier, in 7th and 8th grade, and never re-enrolled.

Further work is needed to verify that those never enrolled in high school actually resided in Washington State, in school districts reporting data to OSPI, in the four years of the study: July 1998 to June 2002. For this purpose we have obtained data on each youth's place of residence and geo-coded the addresses.

School enrollment – We constructed two 12-month arrays, one before and one after each youth's specific treatment episode, indicating whether the youth was enrolled or not in school each month. These monthly arrays were obtained from three variables: 1) dates of enrollment; 2) dates of discharge; and 3) attendance during a given school year – based on end of year reports from each school district attended.

Length of stay in treatment – Length of stay was measured by the actual number of days youth spent in a treatment episode. A treatment episode covers one or multiple, linked treatments, if the time between treatments was less than 30 days. To calculate actual number of days we took the difference in days between the date of first admission and the date of last discharge or last activity, whichever came first, and subtracted the number of days between discharge from one and the admission to another treatment.

Treatment completion – We defined three categories from discharge codes reported by the AOD treatment provider. In the case of multiple, linked treatments, we used the discharge codes for the last treatment.

- 'Completers' = Completed treatment
- 'Non-Completers' = Withdrew against program advice, No contact, Rule violation, Not amenable to treatment.
- 'Others' = Inappropriate admission, Transferred to a different facility, Withdrew with program advice, Moved, Funds exhausted, Client died, Incarcerated, Other and Data non collected.

NOTE: 'Others' comprised about one in five youth (1,025 of 4,875) and were not too dissimilar from completers and non-completers on reported characteristics (see Technical Report). "Others' were excluded from the analyses since this study focused on the school outcomes of treatment completion and length of stay (n=3,850). Further research is needed into further treatment experiences and school outcomes of this "other" group of treated youth, particularly if focusing on the cost benefits of treatment.

Note on selection biases which may affect the results – The analyses were not based on youth randomly assigned to a treatment or 'non-treatment' group. All the youth in this study shared the fact of having entered treatment. We compared the schooling experiences of groups of youth who had completed treatment and/or stayed longer in treatment with a group of youth who did not.

We controlled statistically for any differences in the composition of these groups that we could measure and that may have effected their further schooling experiences - other than completion or length of stay. We found that many factors were involved: prior schooling, age, race, gender, living situation, criminal involvement, mental health condition and type of drug used. The strongest predictors of post-treatment school enrollment were prior school enrollment and age, since the risk of dropping out of high school increases with age. However, unmeasured background or motivational factors may still be different between the groups studied.

The separate analysis of youth with different prior schooling experiences (school dropouts versus those always enrolled before treatment) may have controlled for some of these unmeasured factors. Early dropouts may be more discouraged, have lower self-concepts, more learning handicaps and confront more obstacles due to family/community/school discrimination factors. We found that a treatment factor, length of stay, was related to better school outcomes after treatment among these early dropouts.

Detailed tables of findings and statistical tests are contained in a Technical Report, available from DSHS Research and Data Analysis Division.

Additional copies of this fact sheet and accompanying Technical Attachment may be obtained from the following websites:
http://www1.dshs.wa.gov/RDA/ or http://www1.dshs.wa.gov/dasa/

or through the Washington State Alcohol|Drug Clearinghouse by calling **1-800-662-9111** or **206-725-9696** (within Seattle or outside Washington State), by e-mailing clearinghouse@adhl.org, or by writing to 6535 Fifth Place South, Seattle, Washington 98108-0243.

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Research and Data Analysis Division
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