



The YPI Evaluation Newsletter



Central New York Rural Safe Schools/Healthy Students Initiative

A Report from the Independent Evaluator

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The Central NY Rural Safe Schools/Healthy Students Project in Year 3: Substance Use and Abuse

Research has unambiguously established that there are multiple and adverse consequences to substance use among adolescents. Excessive, frequent, or even moderate use of many substances can cause lasting changes in behavior and brain structure and functions, including problems with memory and motor coordination.¹ Chronic drug use among adolescents is strongly associated with emotional disorders, particularly anxiety, mood, and disruptive behavioral disorders.² It is also associated with elevated levels of delinquency, reduced levels of school engagement and academic achievement, and a wide range of other risk-taking behaviors.³

Early onset of substance use is strongly predictive of lifelong problems. For example, a 2006 survey of over 40,000 adults indicated that among those who began drinking before the age of 14, nearly half had become alcohol dependent by the age of 21. By contrast, only 9 percent of people who began drinking after the age of 21 developed alcoholism.⁴

¹ Winters, K.C. and T. Mitchell (2005) Under Construction: Adolescent Brain Development and Its Implications for Preventing Alcohol and Drug Abuse. *Prevention Tactics*. 8:8.

² Kandel, D.B. et al., (1997) Psychiatric Disorders Associated with Substance Use among Children and Adolescents: Findings from the Methods for the Epidemiology of Child and Adolescent Mental Disorders (MECA) Study. *Journal of Abnormal Child Psychology*, 25:2; Brook, J.S., et al., (2000) Consequences of adolescent drug use on psychiatric disorders in early adulthood, *Annals of Medicine*, 32:6.

³ Dembo, R., et al., (1991) A Longitudinal Study of the Relationships among Marijuana/Hashish Use, Cocaine Use, and Delinquency in a Cohort of High Risk Youths, *The Journal of Drug Issues* 21; Commission on Substance Abuse Among America's Adolescents (1997) *Substance Abuse and the American Adolescent*. NY: The National Center on Addiction and Substance Abuse at Columbia University.

⁴ Hingson, R.W., Heeren T., Winter, M.R. (2006) Age at drinking onset and alcohol dependence: age at onset, duration, and severity. *Archives of Pediatric Adolescent Medicine* 160:7.

Age of Onset of Substance Use

From Year 1 to 3, there has been no marked change in the age of first use for any of the substances in the YPI student survey (grades 4-12). For each substance, furthermore, the average age of onset of use among students in the SS/HS schools was quite young, well below the age of 14 (Table SU.1). After significant declines in average age of onset for cigarettes, other tobacco products, and marijuana in Year 2, the age of onset returned to Year 1 levels in Year 3. Over the past year, there were also slight increases in the age students first used alcohol and prescription drugs without medical authorization.

	<i>Cigarettes</i>	<i>Smokeless Tobacco</i>	<i>Alcoholic Beverages</i>	<i>Marijuana</i>	<i>Prescription Drugs</i>
Year 1	12.2	12.7	12.5	13.2	12.4
Year 2	11.8	12.4	12.3	12.8	12.3
Year 3	12.4	13.0	12.4	13.2	12.5

- ❖ *Gender*: Males began to use drugs at a much younger age than females. For example, females in Year 3 reported an average age of onset for marijuana of 13.7, while for males this was 12.7 (Appendix E.1).
- ❖ *Race/Ethnicity*: Students of color reported that they began to use substances considerably before their white peers, typically 1 to 2 years earlier (App. E.2).
- ❖ *Districts*: There were no substantial changes in age of first use in Districts V and X; however, the average age of onset among students increased markedly in District W for all substances except alcohol and in District Z for smokeless tobacco and alcohol. In District Y, students reported a decline in their average age of first use for smokeless tobacco, marijuana, and unauthorized use of prescription drugs. (App. E.3)

KEY FINDING:

From Year 2 to 3, the average age of onset of substance use increased markedly for tobacco products and marijuana, but overall there was little change from Year 1 levels. Throughout the project, male students started using drugs at a younger age than females, and students of color started using drugs before white students.

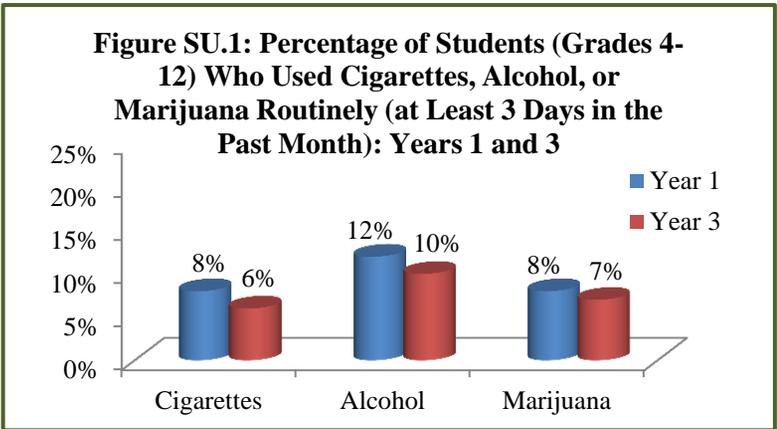
30-Day Use Levels

Students in 4th-12th grade were asked in the YPI survey to report on how many days they had used various substances in the past 30 days.

As **Table SU.2** shows, the percentage of students who used substances at least once in the past month declined from Year 1 to 3 for cigarettes, alcohol, marijuana, prescription drugs, and inhalants. 30-day use levels of smokeless tobacco remained constant in all three years of the Initiative.

	<i>Cigarettes</i>	<i>Smokeless Tobacco</i>	<i>Alcoholic Beverages</i>	<i>Marijuana</i>	<i>Prescription Drugs</i>	<i>Glue or Inhalants</i>
Year 1	11%	7%	12%	11%	7%	6%
Year 2	9%	7%	10%	11%	6%	5%
Year 3	9%	7%	10%	10%	5%	5%

The three most commonly used substances throughout the project were cigarettes, alcohol, and marijuana. Routine use of these substances (on three or more days a month) generally declined from Year 1 to 3 (**Figure SU.1**).



- ❖ *Gender:* From Year 1 to 3, approximately the same percentages of male and female students used various substances at least once in the past 30 days, with one exception: 10-12% of male students used smokeless tobacco at least once in the past month, compared to 2-3% of females (**App. E.4**).

- ❖ *Frequency of Use and Gender.* In all three project years, more males than females used drugs frequently (on six or more days in a month). In Year 3, for example, 8% of male students reported using marijuana frequently in the past month, compared to 3% of females.

Use of substances at least once in the past 30 days declined slightly from Year 1 to 3 for all substances except smokeless tobacco. Routine use of cigarettes, alcohol, and marijuana decreased. In all three years, the same percentages of males and females used most substances at least once in a month, but more males were more frequent users.

KEY FINDING:

Table SU.3: Percentage of Students (grades 6-8 and 9-12) Who Used Cigarettes, Alcohol, or Marijuana at Least Once in the Past 30 Days: Years 1-3

	Cigarettes		Alcohol		Marijuana	
	Grades 6-8	Grades 9-12	Grades 6-8	Grades 9-12	Grades 6-8	Grades 9-12
Year 1	9%	17%	16%	35%	9%	18%
Year 2	7%	16%	14%	33%	8%	19%
Year 3	6%	16%	13%	34%	5%	21%

- ❖ *Grade Levels:* Apart from inhalants, a higher percentage of high school students than middle school students reported using substances at least once in the past month *and* doing so frequently (**App. E.5**). This disparity between grade levels was consistent across the three project years and was particularly marked for cigarettes, alcohol, and marijuana (**Table SU.3**).
- ❖ *Change in Use:* Middle school student use of these three substances at least once in the past 30 days declined from Year 1 to Year 3; by contrast, high school marijuana use increased, while alcohol and cigarette use remained steady (**Table SU.3**).
- ❖ *Routine Use (three or more days in a month):* In all three years, a much higher percentage of high school than middle school students were routine substance users. In Year 3, for example, 19% of students in grades 9-12 used alcohol on at least three of the past 30 days, compared to 4% of students in grades 6-8 (**App. E.5**).
- ❖ *Binge Drinking:*⁵ Like less intensive alcohol consumption, binge drinking was far more common among high school than middle school students. At least one in five high school students abused alcohol in this manner in Year 3, compared to less than one in twenty middle school students. From Year 1 to 3, binge drinking declined among students in grades 6-8 but changed little among high school students (**Table SU.4**).

Table SU.4: Binge Drinking in Last 30 Days by Grade Grouping (6th-12th Grade): Years 1-3

	Middle School (6 th -8 th)	High School (9 th -12 th)	6 th -12 th Grades
Year 1	7%	21%	15%
Year 2	6%	18%	13%
Year 3	4%	20%	13%

KEY FINDING:

More high school than middle school students used cigarettes, alcohol, and marijuana at least once in the past 30 days *and* on a routine basis. From Year 1 to 3, fewer middle school students used these three substances at least once in the past month, while high school marijuana use increased and alcohol and cigarette use did not change appreciably.

⁵ YPI used the standard definition of binge drinking in its student surveys: 5 or more alcoholic drinks within two hours.

- ❖ *Race/Ethnicity:* In Years 1 and 2, the percentage of students of color who reported using substances at least once in the past month was substantially higher than the percentage of white students for all the substances on the YPI survey – tobacco products, alcohol, marijuana, inhalants, and prescription drugs. The disparity in 30-day use levels on the basis of race/ethnicity diminished significantly in Year 3, although it did not disappear entirely. This change was due exclusively to a decline in substance use by students of color (**App. E.6**).
 - ❖ For example, in Years 1 and 2, 20-23% of students of color reported using marijuana at least once in the past 30 days, compared to 9-10% of white students. In Year 3, the 30-day use levels were 13% for students of color and 10% for white students.
 - ❖ The percentage of students of color who used substances frequently (six or more days in the past month) also decreased significantly. Frequent consumption of alcohol by students of color declined from 13% in Year 1 to 6% in Year 3; among white students it declined from 5% to 3%. Similarly, frequent use of marijuana by students of color declined from 15% to 9%, while among white students it remained at 5% (**App. E.6**).

KEY FINDING:

The percentage of students of color who used substances at least once or frequently in the last month declined significantly from Year 1; rates among white students did not change substantially. In Years 1 and 2, substance use rates were much higher among students of color, but by the end of Year 3, they were only slightly higher than white students.

Availability of Substances in High School

The availability of substances at participating high schools did not vary significantly from Year 1 to 3. No one substance was reported as offered more than others. On average, about 10% of high school students were offered, sold, or given tobacco products, alcohol, marijuana, and prescription drugs at least once in the past month (**App. E.7**).

- ❖ *Districts:* Availability of substances varied by high school. In Year 3, high school students in Districts X and Z reported that they were somewhat more frequently offered, sold or given cigarettes, smokeless tobacco products, alcohol, and prescription drugs than their counterparts in other districts (**App. E.7**).

KEY FINDING:

On average, about 10% of high school students reported being offered, sold, or given tobacco products, alcohol, marijuana, and prescription drugs at school at least once time in the past month. In Year 3, tobacco products, alcohol, and prescription drugs were more readily available in high schools in Districts X and Z than in the other three districts.

- ❖ *Race/Ethnicity*: From Year 1 to 3, high school students of color, whose use of substances declined over the course of the SS/HS Initiative, also reported that they were offered, sold, or given substances on campus less frequently (**App. E.8**).
- ❖ *Student Assessment of School Resource Officers (SROs)*: High school students were asked whether SROs reduced the availability of substances at their school. Excluding the district that had no SRO in Year 3, 43% of high school students reported that they either “agreed” or “strongly agreed” that the presence of SROs made alcohol and other drugs less available. There were significant differences by district in the percentages of high school students who “agreed” or “strongly agreed”: 28% in District Y; 44% in District X; 48% in District Z; and 54% in District V.

Availability of Counseling for Alcohol or Drug Problems

During all three project years, it was highly unusual for students to receive counseling for substance use problems. Although substance use levels were considerably higher among high school than middle school students, only 3-4% reported that they received professional help for alcohol or drug abuse (**Table SU.5**).

	6 th -8 th Grades	9 th -12 th Grades
Year 1	4%	3%
Year 2	3%	2%
Year 3	3%	2%

Perceptions of Substance Use among Instructional Staff

From Year 1 to 3, there was a dramatic increase in the percentage of middle school instructional staff who reported that substance use was a “not a problem” at their school. This trend applied to all issues surveyed (student use of alcohol, cigarettes, marijuana, and prescription drugs and sale of drugs on school property). Throughout the project, a higher percentage of middle school staff than high school staff reported that substances were either “not a problem” or were a “mild problem” (**App. E.9**).

- ❖ *Grades 4-5*: Very few elementary school instructional staff reported that drug use constituted a problem in their school, although their concern over substance use among these young students increased from Year 1 to 3. For example, 85% of staff in these grades thought student alcohol, cigarette, and marijuana use was “not a problem” in Year 1, but 77% felt this way in Year 3.
- ❖ *Grades 6-8*: From Year 1 to 3, the percentage of middle school staff who reported that student alcohol, cigarette, and marijuana use was “not a problem” for their students *nearly doubled*. For example, 22% of 6th-8th grade teachers in Year 1 believed alcohol use was not a problem, and this percentage rose to 43% in Year 3. There were also significant increases among staff who believed that student prescription drug use and the sale of drugs on school property were “not a problem” at

their school.

- ❖ *Grades 9-12:* In Years 1 and 3, slightly more than five in ten high school instructional staff reported that alcohol and marijuana use were a “moderate” or “severe problem.” This was more than those who felt the same way about cigarette use (four in ten), unauthorized use of prescription drugs (three in ten), and sale of drugs on school property (two in ten) (**App. E.9**).

KEY FINDING:

From Year 1 to 3, a greater percentage of middle school staff reported that substance use was “not a problem.” Perceptions of high school staff, who saw substance use as a far more significant problem than middle school staff, did not change over time.

Student Perceptions of the Harm of Substance Use and Parental Disapproval

Risk-taking is a common element of the adolescent experience. If there is a widespread perception that substance use is harmful, it can discourage and delay experimentation and thus reduce harm. In Initiative schools, the overwhelming majority of students, regardless of age, view drug use as “harmful” or “very harmful.”

- ❖ *Frequent Use.* In Years 1 and 3, approximately three-quarters of students reported that frequent substance use, particularly daily cigarette smoking and unauthorized use of prescription drugs, would be “very harmful” to their health. There was no noteworthy change in these beliefs over time (**Table SU.6**).

	<i>Percentage Who Viewed The Substance Use as “Very Harmful”</i>	
	Year 1	Year 3
Smoking cigarettes every day	78%	80%
Using smokeless tobacco every day	74%	76%
Drinking alcoholic beverages nearly every day	70%	72%
Using marijuana more than once a week	72%	72%
Using prescription drugs not provided by a doctor	77%	79%
Binge drinking (5+ drinks within a couple of hours)	71%	72%

- ❖ *Grade Levels.* As students in the participating districts proceeded from elementary through secondary school, there was a clear trend toward viewing substances as less harmful – a trend that parallels increased usage. This was particularly true for marijuana, where, in Years 1 to 3, 14-17% of high schoolers believed that using marijuana more than once per week was “not harmful,” compared to 2% of elementary school students (**App. E.10**).

- ❖ *Frequency of Use and Gender.* During all three project years, 7-12% more female than male students reported that frequent drug use was “very harmful.”⁶ As noted above, fewer female students reported using substances frequently and their age of onset was later.

In all three years of the SS/HS Initiative, over 85% of students reported that their caregivers would strongly oppose their use of substances. Students in high school were somewhat less likely than students in lower grades to report that their caregivers would disapprove of their substance use. For example, 6-8% of high school students in Years 2 and 3 believed their caregivers would not care if they used a particular substance, while only 1-2% of elementary school students held this belief. This difference by grade grouping did not change notably over time (**App. E.11**), nor did it vary markedly by gender or district.

KEY FINDING:

In all three project years, approximately three-quarters of students in grades 4-12 thought that frequent substance use would be “very harmful” to their health and over 85% reported that their caregivers would “strongly oppose” such behavior. Fewer high school students than younger students viewed frequent substance use as harmful or believed their caregivers would disapprove of such use.

Aggregate Substance Use Variable, Implementation Quality, and Program Effect

Substance use rates, just as violence and bullying rates, varied across the SS/HS Initiative school buildings. As noted in prior editions of the *YPI Evaluation Newsletter*, variation in indicators of school climate, bullying, mental health, and violence is affected by the Implementation Quality (IQ) at each school. This edition of the *Newsletter* revisits this question, asking whether schools with higher levels of implementation of SS/HS Initiative programs have lower levels of substance use.

As in prior editions of the *Newsletter*, this analysis of the relationship between IQ and program effects at the building level uses only student data; there are too few responses from instructional staff to permit statistical analysis at the building level. YPI developed an aggregate indicator, a **Substance Use** composite variable, which combines survey data about the number of days in which students engaged in the following substance use behaviors during the past 30 days: had at least one drink of alcohol; had five or more drinks within a couple of hours; used marijuana; used inhalants; or used prescription drugs not provided by a doctor.

⁶ In Year 3, 84% of female students felt that smoking cigarettes daily was “very harmful” to their health, compared to 77% of males. 77-78% of female students in Year 3 reported that alcohol consumption “nearly every day,” marijuana use more than once a week, and binge drinking were “very harmful” to their health, compared to 66-68% of males.

The **Substance Use** composite variable was correlated with IQ levels for the participating buildings during Year 3 of the Initiative (the 2011-12 school year). Spearman's rank correlation coefficient was $-.314$, indicating a *moderate, negative relationship* that is *not statistically significant* between the level of implementation of SS/HS programs in a building and the extent of student substance use (statistical significance of $p < .137$). In other words, greater IQs are associated with lower levels of substance use among students, but to a limited extent that is not statistically significant.

KEY FINDING:

During Year 3 of the SS/HS Initiative, higher levels of implementation of the project's evidence-based programs were associated with lower levels of overall student substance use, although the correlation was not statistically significant.

This finding is not altogether surprising. To date, the great majority of students served by MOST counseling services have not had substance use problems. In addition, implementation of the Initiative's primary substance use prevention program, Life Skills Training, just began in earnest in Year 3, and thus has had too little time to have a substantial impact. Moreover, as of the Spring of Year 3, Life Skills Training was implemented in only six of the fifteen buildings in a manner likely to produce substantial, positive impacts. Finally, while most high school students (the age group most likely to use substances) believed that SROs reduced availability of drugs in schools, the impact of SROs on alcohol and drug use is quite limited. This is in part because SROs are rarely active outside of school and because these officers have additional obligations to serve younger students.

It is essential for schools and community service organizations to address the problem of substance use. It is a problem that is clearly linked with other dysfunctions. Buildings with higher levels of substance use are also buildings where students report lower levels of safety and orderliness (Spearman rank correlation coefficient of $-.788$, $p < .001$).⁷

Furthermore, there are strong and positive correlations at the building level between the **Substance Use** composite variable and:

- ❖ The **Mental Health**⁸ composite variable (Spearman coefficient of $.785$, $p < .001$);
- ❖ The average number of days students were truant (Spearman coefficient of $.948$, $p < .001$);
- ❖ The average number of days that students received In-School Suspensions (Spearman coefficient of $.905$, $p < .001$); and
- ❖ The average number of times that students participated in fights (Spearman coefficient of $.779$, $p < .001$).

⁷ A correlation of the Substance Use composite variable and the Safe and Orderly Environment composite variable, which includes the following variables: student perceptions of how discipline is maintained in their school, student perceptions of school safety, and the extent to which students in a building report engaging in disruptive behavior.

⁸ The Mental Health composite variable combines student reports about the extent to which they experienced acute sadness, irritability, hopelessness, disrupted eating and sleeping patterns, and difficulty concentrating on their schoolwork.