SUBSTANCE USE, DELINQUENT BEHAVIOR, AND RISK AND PROTECTIVE FACTORS AMONG STUDENTS IN THE STATE OF MISSOURI: 2000

Prepared for

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Division of Alcohol and Drug Abuse

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EXECUTIVE SUMMARY

The Missouri 2000 Student Survey was conducted for the State of Missouri's Department of Mental Health, Division of Alcohol and Drug Abuse Programs (DADA), by the Research Triangle Institute (RTI) of North Carolina between February and April of 2000. The survey was administered to over 10,000 Missouri students enrolled in grades 6, 8, 10, and12 in both public and private schools. It is anticipated that the results from this survey will be useful for school planning and will result in greater participation in subsequent administrations of the survey.

This report presents findings designed to provide data on the prevalence of alcohol, tobacco, and other drug use among Missouri students in grades 6, 8, 10, and 12 and to identify potentially "modifiable" risk and protective factors that may be useful to consider in planning and targeting prevention programs and services. This report presents the statewide results from this survey.[1]

Key findings from the Missouri 2000 Student Survey analyses are as follows.

Prevalence of Alcohol, Tobacco, and Other Drugs

- Among students in both public and private schools, alcohol, cigarettes, and marijuana were the most commonly used substances. The majority (60% of public school students and 58% of private school students) used at least some alcohol in their lifetime, and 34% and 33%, respectively, used it in the month before the survey. In addition, approximately 18% of students in both samples exhibited binge drinking behavior in the 2 weeks before the survey. Recent tobacco use was reported by 19% of students in both samples, and recent marijuana use was reported by 13% and 10%, respectively.

- There were few differences in substance use by gender among public school students. However, in private schools, males were generally more likely to report use of the various substances.

- White public school students were more likely to report recent tobacco and alcohol use than those in the other racial/ethnic category. Analysis of use by race/ethnicity could not be conducted for private school students because of the small number of surveys completed among students in the other racial/ethnic category.

[1]Separate reports have been generated for each county and are available on request from the DADA.

- The rate of substance use generally increased steadily between grades 6 and 12 among both public and private school students. For example, among public school students, prevalence of recent alcohol use was 11% among 6th graders, 30% among 8th graders, 45% among 10th graders, and 55% among 12th graders. Similarly, among private school students, prevalence of recent alcohol use was 7% among 6th graders, 26% among 8th graders, 43% among 10th graders, and 61% among 12th graders.

- Rates of substance use also varied by substance across region among public school students. Regional analysis could not be conducted for private school students because of the small sample size.

Prevalence of Violent and Delinquent Behaviors

- Approximately 1 in 10 Missouri public and private school students reported attacking others during the year prior to the survey with the intention of seriously hurting them.

- Reports of carrying a handgun other than for the purpose of hunting were relatively rare. About 3% of public school students and 1% of private school students reported this behavior.

- Of the delinquent behaviors asked about on the questionnaire, the most frequently reported behavior was being high or drunk at school. Slightly more than 1 out of 10 students reported this behavior.

Risk and Protective Factors

- In general, as students became older, they were at increasing risk on the various risk factors and less resilient on the protective factors.

- All risk factors within each domain (i.e., community, school, family, and peer-individual) were shown to be positively related to substance use. Some of the strongest relationships between substance use were for the factors of "early initiation of substance use," "attitudes favorable toward drug use," "friends' substance use," "perceived risks of substance use," "sensation seeking," "perceived availability of substances," and "parental attitudes favorable toward substance use." For each of these risk factors, students with that risk factor were at least *six times* more likely to report recent alcohol or drug use than students without that risk factor.

- Protective factors from all domains were shown to be positively related to substance use. Students who were resilient on these factors were 2 to 10

times more likely *not* to report substance use than students who were not resilient.

- The cumulative effect of risk and protection on alcohol and drug use was evident among Missouri public and private school students. Students at high risk on a larger number of risk factors were increasingly more likely to use alcohol and other drugs, while students possessing a larger number of protective factors were increasingly less likely to use alcohol and other drugs.

Strengths and Limitations

This study provides valuable information on alcohol, tobacco, and other drug use; violent and prohibited behaviors; and risk and protective factors that will enable the State to

- *monitor* trends in the substance (e.g., alcohol, tobacco, and other drug) use of Missouri students,
- *compare* students in each service area with students in the State as a whole, and
- *plan, evaluate, and improve* community programs that prevent health problems and promote healthy behaviors.

However, several limitations of this study should be noted. First, this study exclusively focuses on adolescents in public and private schools and does not take into consideration school dropouts, students absent on the day that data were collected, homeless and runaway students, and students who have been institutionalized. Second, the questionnaire implemented in this study measures self-reported behavior. Caution should be taken in interpreting these data because of respondents= tendencies to underreport undesirable behaviors and to have difficulty remembering complicated information, such as age at first use.

Implications and Recommendations

These findings suggest that all four domains (community, school, family, and peers) must be addressed together to have an impact on the issue of alcohol, tobacco, and other drug use. A comprehensive systemic approach to this issue using science-based programming and multiple strategies in multiple domains has been proven to be the most effective method of prevention. Concentrating efforts solely on school-based programs or just targeting certain age groups will only yield minimal success. The data do suggest that transitional years for students seem to be a time when alcohol, tobacco, and other drug use increases, and strategies need to address this

issue. Data also suggest that prevention programs target the issue of access to alcohol, tobacco, and other drugs in that use seems to increase as access increases. Therefore, the concept of environmental strategies should be addressed in order to decrease access, increase consequences, or change perceptions regarding alcohol, tobacco, and other drug use.

Section I

Introduction and Methodology

1. INTRODUCTION AND LITERATURE REVIEW

In an effort to obtain baseline information on substance use and risk and protective factors among various populations, including adolescents, the State of Missouri's Department of Mental Health, Division of Alcohol and Drug Abuse Programs (DADA), contracted with the Center for Substance Abuse Prevention (CSAP) to conduct a family of prevention demand and needs assessment studies. The Research Triangle Institute (RTI) of North Carolina collaborated with the DADA in conducting the studies.

One of the studies conducted in the Missouri Prevention Needs Assessment Project was the Prevention Needs of the Student Population Study. This study was designed to

- provide epidemiological data on the prevalence of alcohol, tobacco, and illicit drug use among Missouri public and private school students in grades 6, 8, 10, and 12, and
- identify potentially "modifiable" risk and protective factors that may be useful to consider in planning and targeting prevention programs and services.

The Missouri 2000 Student Survey was administered to over 10,000 Missouri students enrolled in grades 6, 8, 10, and 12.

To present the data and information from this study in a meaningful manner, this report is divided into four sections and eight chapters. Section I contains two chapters that provide information on the study background. The remaining sections of this chapter provide information on the purpose and rationale for this study and background literature. The second chapter presents the methodology (including a discussion of the questionnaire, sampling, data collection, and data processing), key definitions and measures, procedures for analysis, and strengths and limitations of the data. Section II, which is comprised of Chapters 3 through 5, presents data on the public school students in Missouri. Specifically, Chapter 3 provides prevalence estimates of Missouri public school students' use of tobacco, alcohol, and other drugs; Chapter 4 provides prevalence estimates of violent and delinquent behavior among Missouri public school students; and Chapter 5 provides findings about community, school, family, and peer-individual risk factors associated with students' substance use. Section III is comprised of Chapters 6 and 7 and presents data on private school students. Section IV is comprised of Chapter 8, which summarizes the key study findings and the implications of these findings for prevention planning and resource allocation, policy, and services. In addition, the report includes three appendices, which provide supplementary tables (Appendix A), the

suppression rule for prevalence estimates (Appendix B), and the instrument and data collection materials (Appendix C).

1.1 Purpose and Rationale

Substance abuse has been called the Nation's number one health problem. Numerous studies have documented the negative consequences associated with substance abuse among adolescents, including the following:

- *suicidal behavior* (Burge, Felts, Chenier, & Parrillo, 1995; Crumley, 1990; DuRant, Smith, Kreiter, & Krowchuk, 1999b; Garrison, McKeown, Valois, & Vincent, 1993; Harrison & Luxenberg, 1995; Lester, 1999; Windle & Windle, 1997; Woods et al., 1997),

- *delinquency and violence* (Donovan & Jessor, 1985; DuKarm, Byrd, Auinger, & Weitzman, 1996; DuRant et al., 1999b; Ellickson, Saner, & McGuigan, 1997; Grunbaum, Basen-Engquist, & Pandey, 1998; Osgood, Johnston, O'Malley, & Bachman, 1988), and

- *high-risk sexual behaviors* (Donovan, Jessor, & Costa, 1988; Duncan, Strycker, & Duncan, 1999; Fortenberry, 1997; Hundleby, 1987; Ketterlinus, Henderson, & Lamb, 1990; Orr, Beiter, & Ingersoll, 1991; Valois, Oeltmann, Waller, & Hussey, 1999).

Clearly, substance use can create both acute and long-term problems for students and their families.

Given the high prevalence and devastating impact of substance abuse, drug and alcohol use and abuse are high priorities for Federal, State, and local governments. At the Federal level, the focus is shifting, with increased emphasis being placed on efforts targeted at adolescents. The number one priority in the 1999 national drug control strategy is to "educate and enable America's youths to reject illegal drugs as well as alcohol and tobacco" (ONDCP, 1999).

At the State and local levels, developing and targeting effective prevention and intervention strategies and evaluating their impact requires solid information on the extent of alcohol and drug use among adolescents. The Missouri 2000 Student Survey was instituted by the State of Missouri to obtain such information about the nature, severity, and range of substance use and abuse among adolescents and to better plan its primary and secondary prevention efforts.

The overall goal of the survey is to estimate the number and characteristics of middle and high school students in Missouri who are at elevated risk of alcohol, tobacco, and other drug use

and related problems or who are already substance users. A fundamental premise of prevention science is that in order to prevent the future occurrence of a behavior, risk factors for that behavior must be decreased and/or protective factors must be enhanced. Therefore, this survey was also designed to identify risk and protective factors for substance use among the Missouri student population. This report on the results from the recently administered survey will begin the process of distinguishing various population subgroups with respect to their risk and protective factor profiles. It is important to note that this study focuses exclusively on in-school students. Therefore, the results are representative of the student population, but not of youth in general.

1.2 Background Literature

1.2.1 Epidemiology of Alcohol, Tobacco, and Other Drug Use in Adolescence

The epidemiology and developmental course of alcohol, tobacco, and other drug use among youths have been well documented empirically from epidemiological surveys such as the Monitoring the Future (MTF) project (Johnston, O'Malley, & Bachman, 1999) and from multiple longitudinal studies (e.g., Jessor & Jessor, 1977; Kandel, Kessler, & Marguilies, 1978; Newcomb & Bentler, 1988). These data reveal relatively consistent age-specific developmental patterns of experimentation and regular use, particularly associated with alcohol and cigarettes, with the prevalence of consumption increasing with age. For example, according to the 1999 MTF project, approximately one quarter of 8th graders, 40% of 10th graders, and one half of high school seniors reported use of alcohol in the past month (Johnston et al., 1999). Approximately 17% of 8th graders, 26% of 10th graders, and 35% of high school seniors reported cigarette smoking in the past month. In addition, the sequencing of use of multiple substances has been well documented. Adolescents tend to initiate substance use in particular stages, with beer or wine generally used first, followed by hard liquor and/or smoking, then marijuana use, followed last by use of other illicit drugs (Ellickson, Hays, & Bell, 1992; Kandel, Yamaguchi, & Chen, 1992).

Findings on the epidemiology and developmental sequencing of alcohol, tobacco, and other drug use among adolescents have prompted focus on adolescence as an optimal time to target prevention and intervention programs. It is during this period, when youngsters are not yet commonly using alcohol, tobacco, and other drugs, that the potential to alter the typical course of development and to influence future outcomes has been thought to be greatest. Estimation of the size of the population potentially in need of prevention programming is indicated by data measuring age-specific patterns of alcohol, tobacco, and other drug use. Typical indicators of use are the prevalence of substance use (e.g., lifetime and current use of tobacco, alcohol, marijuana, and cocaine), levels of use (e.g., quantities of cigarette and alcohol use), and age at first use of various substances.

1.2.2 Risk and Protective Factors for Alcohol, Tobacco, and Other Drug Use in Adolescence

Risk factors, especially in the absence of protective factors, can predicate subsequent substance use and thus are particularly relevant to prevention programming. Identification of specific populations in which risk factors are high and protective factors are low allows identification of prevention needs and facilitates targeting programming toward the reduction of risk factors and the enhancement of protective factors (Hawkins, Arthur, & Catalano, 1997).

Social research has identified numerous and interrelated factors that increase or decrease the probability of alcohol, tobacco, and other drug use and related problems among youths. These risk and protective factors are found at multiple levels, including the individual, the family, the peer group, the school, and the community (Hawkins, Catalano, & Miller, 1992; Kandel, Simcha-Fagan, & Davies, 1986; Newcomb & Felix-Ortiz, 1992). Activities and programs intended to prevent adolescent use of alcohol, tobacco, and other drugs typically have been implemented in schools, have targeted risk factors, and have been aimed at single levels (e.g., individual-level factors). There is increasing recognition, however, of the need for and potential effectiveness of broad-based efforts focused on multiple levels, as well as on both risk and protective factors (Hawkins et al., 1992, 1997; Linney & Wandersman, 1991; McLeroy, Bibeau, Steckler, & Glanz, 1988). The rationale underlying the broad-based approach is that no single factor has been identified that largely accounts for drug use; instead, the complex interaction of risk and protective factors requires a multipronged approach.

Etiological research on adolescent use of alcohol, tobacco, and other drugs, as well as related problems, over the past three decades has focused almost exclusively on identifying risk factors that promote use. A wide array of risk factors has been identified both within the individual and within the social context in which individuals live. Hawkins et al. (1992, 1997) cataloged key risk factors identified in the literature, including individual and interpersonal factors and contextual factors. Individual and interpersonal risk factors included physiological factors (i.e., biochemical and genetic factors), family drug use, family management practices, family conflict, low bonding to family, early and persistent problem behaviors, academic failure, low commitment to school, peer rejection in early grades, association with drug-using peers, alienation and rebelliousness, attitudes favorable to drug use, and early onset of drug use. Contextual factors included community laws and norms favorable to drug use, availability, economic deprivation, and neighborhood disorganization. Similar inventories of risk factors have been identified in multicausal studies of adolescent use of alcohol, tobacco, and other drugs (e.g., Bailey, Flewelling, & Rachal, 1992a; Castro, Maddahian, Newcomb, & Bentler, 1987; Kandel et al., 1986; McAlister, Krosnick, & Milburn, 1984; Newcomb & Felix-Ortiz, 1992).

The findings indicate that the greater the number of risk factors present, the greater the risk of drug abuse.

Considerably less research attention has been devoted to factors that protect adolescents from involvement with alcohol, tobacco, and other drugs, although there is increasing recognition of the potential importance and relevance to prevention policy and programming of protective factors (Hawkins et al., 1992, 1997; Newcomb & Felix-Ortiz, 1992). Protective factors are believed to work by moderating or completely blocking the effect of factors that increase the risk for drug involvement. Among the protective factors for which there is some empirical support are individual resilience, strong family relationships, a supportive family environment, problem-solving skills, and self-efficacy beliefs (Hawkins et al., 1992, 1997; Kandel et al., 1986; Newcomb & Felix-Ortiz, 1992). Hawkins et al. (1992) suggested that such factors are consistent with a social development model that emphasizes the role of bonding to prosocial family, school, and peers as a protection against drug abuse. In particular, these authors identified four elements of social bonding that are inversely related to drug abuse: strong attachments to parents; commitment to schooling; regular involvement in church activities; and belief in the generalized expectations, norms, and values of society. Protective factors are believed to function in a similar manner to risk factors. That is, protective factors exist across multiple domains. The more numerous the factors, the greater the protective effect.

2. METHODOLOGY

This study was designed to provide the State of Missouri with baseline information about the nature and severity of substance use among various student subgroups, as well as information on risk and protective factors for substance use. Students in grades 6, 8, 10, and 12 in Missouri public and private schools comprised the population for this study. The data used in this study were collected in early 2000 by the Research Triangle Institute (RTI). In this section, we describe the methods used to collect the data for the survey.

2.1 Instrumentation

The Missouri 2000 Student Survey was adapted from the Student Survey of Risk and Protective Factors and Prevalence of Alcohol, Tobacco, and Other Drug Use, which was developed by the Social Development Research Group (SDRG) at the University of Washington (Hawkins et al., 1997). The SDRG questionnaire was originally developed for use in the six-state consortium for substance abuse prevention needs assessment studies sponsored by the Center for Substance Abuse Prevention (CSAP). The instrument was printed on an electronically scannable form prepared by RTI. A copy of the instrument is included in Appendix C.

2.2 Sample Design

The universe for the sample was all Missouri public and private school students enrolled in grades 6, 8, 10, and 12 (approximately 297,893 students total, 264,228 students enrolled in public schools, and 33,665 enrolled in private schools). In the sample frame, there were 1,323 public schools and 476 private schools with one or more of the eligible grades.[1]

Because we wanted to ensure that private school students were surveyed at the correct proportion, we allocated approximately 12% of our sample to the private school strata, since approximately 12% of all Missouri students were enrolled in private schools.

A State-representative sample of 342 schools (283 public and 59 private) was randomly selected. The sample was stratified by region and grade to ensure adequate representation on each of these variables.

The explicit stratification variables for the public school sample were four grade levels (6, 8, 10, and 12) in combination with the six levels of geographic region. To further control the

[1] The sampling frame utilized was the Quality Education Data, Inc. (QED) school database for the 1998-1999 academic year.

distribution of the sample, the public school sampling frame was sorted serpentinely by the 20 levels of service area and county, and a continuous sort on Orshansky percentage. The sample of public schools was then selected probability proportional to size (PPS) from within each of the 24 levels of explicit strata. The size measure was based on an estimate of the number of students included in the eligible grades at the school.

The stratification variables for the private school sample were equally allocated to the four grades and proportionally allocated explicitly to Catholic schools and to other private schools. Non-public schools were further stratified implicitly via serpentinely sorting the sampling frame by geographic region, service area, county, and three levels of urbanicity classification.

The second stage of sampling involved the selection of classrooms with sampled schools. First, we selected the grade level(s) to be sampled within each sampled school. We then asked school staff to complete a form indicating the name of each English teacher for the selected grades and the number of students in each class. We then systematically selected one to three classes within the selected grade(s). The sampling rate was approximately 1 to 3; in other words, we selected one out of every three classes within selected grade(s). We used English classes because they were generally the most grade-specific classes. In some schools, however, school staff informed us that English classes would not cover all eligible students in the school. In these cases, we worked with the school to select classes that would provide appropriate coverage.

All students within selected classrooms were asked to participate in the survey.

2.3 Recruitment Procedures

2.3.1 School Recruitment

Soliciting school participation in the survey was a multi-tiered task. The first step in gaining school cooperation was getting the endorsement of the Missouri Department of Elementary and Secondary Education (MDESE). Initial endorsement was obtained during the proposal development process. We renewed this endorsement and asked for active support from the MDESE (Appendix C).

The second step in gaining school cooperation was gaining school-district approval to proceed with the survey. District and school recruitment procedures were conducted by staff of the State of Missouri's 12 Community 2000 Support Centers (hereafter referred to as survey coordinators), with assistance from RTI. The district recruitment process began with a mailing

of recruitment letters to all superintendents of sampled schools asking them to allow their schools to participate in the survey (Appendix C). The letter introduced the project, conveyed its purpose and importance, and encouraged participation. The letter also contained a draft of the questionnaire and parental consent form. The letters and accompanying materials were prepared by RTI and mailed by DADA. Approximately 1 week after the mailing, survey coordinators began making followup calls to the superintendents to seek permission to contact school principals.

As soon as approval was received from a superintendent, a recruitment package containing all of the above-mentioned materials, plus a school agreement form (a fax-back form), was mailed to the principal of each sampled school within the superintendent's jurisdiction. The letter and accompanying materials were prepared by RTI and mailed by survey coordinators. Approximately 1 week after mailing the school recruitment letters, survey coordinators began making followup calls to schools to solicit participation. The survey coordinator made every effort to elicit cooperation. When making the calls, coordinators answered questions, addressed concerns, and encouraged participation.

Principals who wanted their schools to participate in the survey were asked to complete the school agreement form and fax it to RTI. The school agreement form gathered information necessary for study planning and sampling (a study contact name, enrollment information on sampled grades, and a primary and alternate survey date).

Once an agreement form was received from a school, RTI sent a verification letter to the participating school (Appendix C). The purpose of this letter was to confirm that the agreement form had been received and to welcome the school to the project. This letter also provided a brief overview of the survey administration time line and activities. The survey coordinators then recontacted each school to coordinate administration of the survey.

RTI also included a packet of information for each participating teacher with the school verification letter. This packet informed the teacher that (1) the school had agreed to participate in the survey, (2) the survey would take place in the teacher's class, (3) the teacher would be responsible for administering the survey, and (4) the survey would be administered on a specified date. A protocol for survey administration was also included with the teacher letter.

2.3.2 Student Recruitment

The MDESE and RTI's Internal Review Board required passive parental consent for participation in the school survey. RTI developed a letter that informed parents that their

child was selected to participate in the study and that their child's participation was anonymous and voluntary. The letter asked the parent to return a denial of permission form in a postage-paid envelope if they wished to decline the survey for their child (Appendix C). RTI also prepared a set of matching active consent materials that could be used if a school requested active consent. However, none of the 229 participating schools requested active consent.

RTI sent a supply of passive consent letters to each survey coordinator, and the coordinator worked with each school to ensure that letters were mailed to the parents of students in sampled classrooms. In some schools, coordinators obtained a mailing list of parents and mailed the passive consent letters; in other schools, coordinators delivered the letters to the schools, who attached mailing labels and mailed the letters. The passive consent letters were mailed locally approximately 2 weeks before the date of survey administration. Students whose parents returned forms were not asked to participate in the survey.

Student consent was obtained at the beginning of the survey administration period. Survey administrators (i.e., classroom teachers) read a consent form that explained the purpose of the study, assured the students of the anonymity of their responses, and asked them for their participation (Appendix C). Students who did not wish to participate were asked not to take a survey when the materials were passed out, but rather to work quietly at their desks.

2.4 Data Collection

RTI prepared materials for each participating school and mailed materials to survey coordinators. Survey coordinators then prepared one box of materials for each school. Each box contained one packet for each class to be surveyed. The class packet contained the following material:

- one survey booklet for each student in the class,
- a second copy of survey administration instructions for the teacher,
- blank cover paper,
- an individual envelope for each student, and
- two classroom envelopes.

Approximately 1 to 2 days before the survey administration, the survey coordinator delivered the survey materials to participating schools. The classroom teachers administered the survey during a designated class period. Considerable precautions were taken to protect the anonymity of individual students to increase the likelihood of valid responses. First, instructions to students explained that data from their class would not be reported and that no one would be

able to associate them with their surveys. Second, students were seated so that other students could not observe their responses. Third, students were provided with a blank piece of paper to cover their responses. Finally, students were instructed to seal their completed questionnaires in an individual envelope and then place their individual envelopes in a larger classroom envelope. The classroom envelope was then sealed and given directly to study staff without anyone from the school seeing students' responses.

On the day of the survey administration, the survey coordinator went to the school and collected the classroom envelopes with completed questionnaires and any other used or unused survey materials from each classroom teacher promptly after the survey administration period. The survey coordinator reviewed the contents of the retrieved materials to ensure that all necessary materials were present. The coordinator also reviewed the summary form that teachers were asked to complete while students completed the survey. The summary form collected information on the number of students who completed the survey, the number who refused to participate, and the number who were absent.

Survey coordinators packaged all survey materials into shipping cartons and returned them to RTI. Approximately 1 to 2 weeks after the student survey was administered, DADA mailed a thank-you letter to the participating school superintendents, principals, and participating teachers (Appendix C). The letter expressed appreciation to all of the individuals involved in the survey and thanked them for their efforts and cooperation.

All data collection was conducted from February through April 2000. Altogether, it was possible to collect data from 254 of the 338 sampled schools who were eligible; this resulted in a school response rate of 75.1% (Exhibit 2.1). School response rates varied across region ranging from a high of 92% to a low of 63%. The response rate for public schools was considerably higher than for private schools. Approximately 82% of the 281 eligible public schools sampled participated, while approximately 44% of the 57 eligible private schools did so (Exhibits 2.2 and 2.3).

Altogether, 11,833 students were asked to participate in the survey, and 10,247 students completed questionnaires. However, a total of 276 questionnaires were discarded because the

Exhibit 2.1 School and Student Response Rates for the Missouri School Survey (All Schools): 2000

	Western	Southwest	Northern	Central	Eastern	Southeast	Total
School:							
No. Schools Sampled	65	45	31	36	130	35	342
No. Schools Eligible	64	45	31	36	128	34	338
No. Schools Participating	44	39	26	33	81	31	254
Response Rate	**68.8**	**86.7**	**83.9**	**91.7**	**63.3**	**91.2**	**75.1**
Student:							
No. Students Sampled	2,638	1,447	970	1,609	4,561	1,351	12,604
No. Valid Surveys	2,252	1,258	877	1,383	3,958	1,181	10,934
No. Parental Refusals	37	24	6	35	62	21	185
No. Student Refusals	58	24	15	66	70	7	240
No. Absent	214	103	51	91	377	117	956
No. Discarded Surveys	77	38	21	34	94	25	289
Response Rate	**85.4**	**86.9**	**90.4**	**86.0**	**86.8**	**87.4**	**86.8**
Overall Response Rate:	**58.8**	**75.3**	**75.8**	**78.9**	**54.9**	**79.7**	**65.2**

Source: Missouri 2000 Student Survey.

Exhibit 2.2 School and Student Response Rates for the Missouri School Survey (Public Schools): 2000

	Western	Southwest	Northern	Central	Eastern	Southeast	Total
School:							
No. Schools Sampled	52	43	29	33	93	33	283
No. Schools Eligible	52	43	29	33	91	33	281
No. Schools Participating	39	39	26	31	64	30	229
Response Rate	**75.0**	**90.7**	**90.0**	**94.1**	**70.3**	**90.9**	**81.5**
Student:							
No. Students Sampled	2,438	1,475	970	1,527	4,100	1,323	11,833
No. Valid Surveys	2,066	1,283	877	1,320	3,548	1,153	10,247
No. Parental Refusals	37	24	6	35	54	21	177
No. Student Refusals	58	24	15	48	60	7	212
No. Absent	205	106	51	90	352	117	921
No. Discarded Surveys	72	38	21	34	86	25	276
Response Rate	**85.7**	**87.0**	**90.4**	**86.4**	**86.5**	**87.2**	**86.6**
Overall Response Rate:	**64.3**	**78.9**	**81.4**	**81.3**	**60.8**	**79.3**	**70.6**

Source: Missouri 2000 Student Survey.

Exhibit 2.3 School and Student Response Rates for the Missouri School Survey (Private Schools): 2000

	Western	Southwest	Northern	Central	Eastern	Southeast	Total
School:							
No. Schools Sampled	13	2	2	3	37	2	59
No. Schools Eligible	12	2	2	3	37	1	57
No. Schools Participating	5	0	0	2	17	1	25
Response Rate	**41.7**	**0.0**	**0.0**	**66.7**	**45.9**	**100.0**	**43.9**
Student:							
No. Students Sampled	200	NA	NA	82	461	28	771
No. Valid Surveys	186	NA	NA	63	410	28	687
No. Parental Refusals	0	NA	NA	0	8	0	8
No. Student Refusals	0	NA	NA	18	10	0	28
No. Absent	9	NA	NA	1	25	0	35
No. Discarded Surveys	5	NA	NA	0	8	0	13
Response Rate	**93.0**	**NA**	**NA**	**76.8**	**88.9**	**100.0**	**89.1**
Overall							
Response Rate:	**38.8**	**0.0**	**0.0**	**51.2**	**40.8**	**100.0**	**39.1**

Source: Missouri 2000 Student Survey.

respondents were in the incorrect grade (i.e., a grade other than 6, 8, 10, or 12), because they admitted to being dishonest on most of their answers, or because they consistently completed questions in an inconsistent manner (see Section 2.5.1 below). Therefore, the overall student response rate was 87% (Exhibit 2.1). Student response rates were fairly consistent across region, but ranged from a high of 90% to a low of 86%. Student response rates were fairly comparable between public and private school students (Exhibits 2.2 and 2.3).

The overall response rate for the Missouri 2000 Student Survey, taking into consideration both the school and student response rates, was 65% **[school response rate * student response rate/100]**. Exhibit 2.1 also displays overall response rates by region, which ranged from 64% to 81%. The overall response rate for the public school sample was considerably higher than that of the private school sample (71% compared to 39%).

2.5 Data Processing and Weighting

2.5.1 Data Processing

Completed questionnaires were scanned, and a SAS dataset was then generated. Next, RTI ran consistency checks on the data to exclude careless, invalid, or logically inconsistent responses. Surveys were excluded from the final analytic file if they met any of the following exclusions:

- Students were asked to indicate their honesty level in completing the survey. Students who reported that they were not at all honest were deleted from the analytic file.

- Students were asked about their use of a fake drug to help determine if students were answering affirmatively without carefully reading the questions. Students who answered that they had used the fake drug "derbisol" in both the lifetime and the past month were deleted from the analytic file.

- Students who reported using four or more drugs 40 or more times in the past 30 days were deleted from the analytic file.

- Students who reported they were in any grades other than 6, 8, 10, or 12 were deleted from the analytic file

2.5.2 Weighting

We calculated weights to adjust for sampling error and to account for school and student nonresponse. For this survey, the weights assigned to each questionnaire reflect the likelihood of sampling each student and compensate for differing patterns of response. The weight used for estimation is given by:

$$W = W_1 * W_2 * f_1 * f_2 * f_3,$$

where

W_1 = inverse of the probability of school selection,

W_2 = inverse of the probability of class selection,

f_1 = a school-level nonresponse adjustment factor calculated by grade and geographic region,

f_2 = a student-level nonresponse adjustment factor calculated by grade and geographic region, and

f_3 = a poststratification adjustment factor based on 1998 Common Core Data calculated by grade.

2.6 Survey Demographic Characteristics

Exhibit 2.4 presents selected demographic characteristics of the survey respondents. Because of the relatively small numbers of African Americans, Hispanics, Asian or Pacific Islanders, American Indians, and youth in other racial/ethnic groups, these racial/ethnic categories were collapsed into one category in the remaining tables in this report.

Comparison of the unweighted and weighted percentages of students indicates that among public school students, 10th graders were slightly overrepresented in the study relative to their proportion in the population, whereas 12th graders were slightly underrepresented. In the private school sample, 8th graders were slightly underrepresented and 12th graders were somewhat overrepresented.

2.7 Data Analysis

This study focuses on several key areas designed to provide a comprehensive picture of prevention need. A complete profile of the characteristics of students in need of substance abuse prevention will allow the State to plan and target services more effectively.

Exhibit 2.4 Demographic Characteristics of the Missouri School Survey Respondents: 2000

Demographic Characteristic	Public School Students			Private School Students		
	Unweighted Number	Unweighted Percentage	Weighted Percentage	Unweighted Number	Unweighted Percentage	Weighted Percentage
Total Missouri	10,247	100.0	100.0	687	100.0	100.0
Region						
Western	2,066	20.2	19.5	186	27.1	21.4
Southwest	1,283	12.5	14.5	–	–	–
Northern	877	8.6	10.9	–	–	–
Central	1,320	12.9	12.4	63	9.2	12.7
Eastern	3,548	34.6	31.6	410	59.7	63.1
Southeast	1,153	11.3	11.1	28	4.1	2.8
Race/Ethnicity						
White	8,126	79.3	81.0	603	87.5	91.1
Black or African American	1,378	13.4	11.5	46	6.9	4.2
Hispanic	382	3.7	3.8	21	3.0	2.6
American Indian/Alaskan Native	116	1.1	0.9	6	0.9	0.6
Asian	78	0.8	1.1	–	–	–
Native Hawaiian/Other Pacific Islander	44	0.4	0.4	2	0.3	0.2
Missing	123	1.2	1.2	9	1.3	1.3
Gender						
Male	4,807	46.9	47.2	323	47.0	49.4
Female	5,230	51.1	50.8	346	50.4	48.6
Missing	210	2.0	2.0	18	2.6	++
Grade in School						
6	2,313	22.6	26.7	169	24.6	28.1
8	2,783	27.2	26.2	115	16.7	26.8
10	3,348	32.7	25.7	133	19.4	22.9
12	1,803	17.6	21.4	270	39.3	22.3

– No students surveyed in these categories.
++ Estimate suppressed because of small prevalence (i.e., less than 0.1).

Source: Missouri 2000 Student Survey.

2.7.1 Research Questions

We pursued three basic research questions in this study:

- What is the prevalence of alcohol and other drug use (including tobacco) among Missouri's student population?
- What is the prevalence of violent and delinquent behaviors among Missouri's student population?
- What risk and protective factors are associated with substance use among Missouri's student population?

Prevalence Estimates. Our analytic approach to answering these research questions was primarily descriptive and involved the computation and presentation of prevalence estimates (i.e., percentages and estimated numbers).

We produced separate prevalence estimates for use of the following substances:

- alcohol (including binge use),
- marijuana,
- inhalants,
- other drugs (e.g., cocaine, LSD or other psychedelics, and speed or amphetamines), and
- tobacco (including cigarettes and smokeless tobacco).

Data were used to develop prevalence estimates for the lifetime and past-month periods (as available).

In addition, prevalence estimates of various violent and delinquent behaviors in the year prior to the survey were also developed. Estimates were produced for the following behaviors:

- attacking someone with the intention of hurting them,
- carrying a handgun,
- getting drunk or high at school,
- getting suspended from school,
- stealing or trying to steal a motor vehicle,
- selling illegal drugs, and
- being arrested.

Because of the differences in the response rates for public and private school samples, we conducted analysis separately for both samples. Prevalence estimates for public school students are presented in Chapters 3 and 4, and prevalence estimates for private school students are presented in Chapter 6. For the public school sample, prevalence estimates were calculated for the State as a whole, by region, and by demographic subgroups (i.e., gender, race/ethnicity, grade level). Because of the small size of the private school sample, we were unable to develop estimates for some of these variables for that sample. For the private school sample, prevalence estimates were calculated for the State as a whole, and by gender and grade level. In both samples, Chi-squared tests were used to test for significant differences between groups ($p<.05$). Such comparisons indicate which groups were more likely than others to use alcohol and other drugs.

Risk and Protective Factors. Results on risk and protective factor analysis are presented in Chapter 5 for public school students and Chapter 7 for private school students. Again, however, we had to conduct a smaller set of analyses on the private school sample.

Where possible, risk and protective factor scale construction followed guidelines provided by the University of Washington's Social Development Research Group (SDRG) staff; a list of the scales and variables used to create the scales can be found in Exhibit 2.5. Risk and protective factor scales were constructed using Likert scaling practices. The response options of some items were recoded or reordered to provide a continuum from high to low appropriate for the scale. For risk scale items, a high value reflects an undesirable attitude or behavior. For protective scale items, a high value reflects a desirable attitude or behavior. Missing data were handled by computing the average response to those items on the scale to which the student responded. A scale score was computed only if a student responded to a minimum of two thirds of the items on that scale. Valid (i.e., nonmissing) data were generally available for 85% to 99% of all respondents (see Appendix A).

For both the public and private school samples, we present tables displaying the percentage of students considered at risk or resilient on each scale. Each risk and protective factor scale is calculated as the average of responses to questions in that scale, or the response if the scale included only one item. Students whose scores placed them above the numerical midpoint of the scale were considered "at risk" on a given risk factor or "resilient" on a given protective factor. For example, "low neighborhood attachment" is based on the average response to two statements ("I like my neighborhood" and "If I had to move, I would miss the neighborhood I now live in"), and each of these questions was answered on a scale of 1 to 4.

Exhibit 2.5 Risk and Protective Factor Scales and Variables Used to Create the Scales for the Missouri 2000 Student Survey

Scale Name/Description	Questionnaire Items
Community	
• **Low neighborhood attachment.** This scale describes the extent to which students feel a part of their neighborhood (whether they feel that what they do makes a difference).	85, 87
• **Community disorganization**. This scale describes students' perceptions of the extent to which people in the community take part in decisions or processes that affect their lives.	89a-d, 95
• **Personal transitions and mobility**. This scale describes the extent to which students have changed homes or schools.	90, 94, 96, 98
• **Community transitions and mobility**. This scale describes the extent to which students feel that people move in and out of their neighborhood.	90
• **Norms favorable toward drug use**. This scale describes students' perceptions of community norms regarding substance use.	83[a-c], 84[a-d]
• **Laws favorable toward drug use**. This scale describes students' perceptions of community policies regarding substance use and other problem behaviors.	76, 78, 82
• **Perceived availability of drugs**. This scale describes students' perceptions of availability or access to alcohol, drugs, or firearms.	74, 75, 77, 81
• **Opportunities for conventional involvement**. This scale describes students' perceptions of the extent of opportunities to participate in community activities.	93[a-e]
• **Rewards for conventional involvement**. This scale describes students' perceptions of the extent of rewards for positive participation in community activities.	86, 92, 99
School	
• **Academic failure**. This scale describes students' academic achievement (i.e., grades in school, perception of their own grades compared to those of others).	13, 23
• **Little commitment to school**. This scale describes the extent to which students felt that school was important and meaningful.	25, 26, 27, 28[a-c]
• **School absenteeism**. This scale describes the extent to which students reported being absent from school.	14[a-c]
• **Opportunities for positive involvement**. This scale describes students' perceptions of the extent to which they had opportunities to participate in school activities.	15, 16, 18, 19, 24
• **Rewards for conventional involvement**. This scale describes students' perceptions of the extent to which they were rewarded for positive participation in school activities.	17, 21, 22
Family	
• **Poor family management**. This scale describes students' perceptions of the extent of parental oversight and rulemaking.	102, 105, 107, 109, 123, 125
• **Poor Discipline**. This scale describes students' perceptions of whether they would be caught by parents if they behaved inappropriately.	108, 110, 111
• **Conflict.** This scale describes students' perceptions of conflict within the family.	103, 106, 124
• **History of antisocial behavior**. This scale describes students' perceptions of substance use and antisocial behavior among siblings and other family members.	101[a-c, e], 103
	(continued)
• **Parental attitudes favorable toward drug use**. This scale describes students' perceptions of the extent to which parents approve of their children's substance use.	100[a-c]
• **Parental attitudes favorable toward antisocial behavior**. This scale describes	100[d-f]

Scale Name/Description	Questionnaire Items
students' perceptions of the extent to which parents approve of their children's antisocial behaviors.	
• **Opportunities for positive involvement**. This scale describes students' perceptions of the extent to which they have opportunities to participate in family activities.	115, 120, 122
• **Rewards for conventional involvement**. This scale describes students' perceptions of the extent to which they are rewarded by their family for positive activities.	112, 116
Peer-Individual	
• **Rebelliousness**. This scale describes the extent of rebelliousness (e.g., ignoring rules).	32, 35, 47
• **Early initiation of substance use**. This scale describes the extent to which students began using substances at an early age.	30[a-d]
• **Early initiation of antisocial behavior**. This scale describes the extent to which students began participating in problem behaviors at an early age.	30[e-i]
• **Impulsiveness**. This scale describes the extent of impulsiveness (e.g., not thinking before acting, switching from one activity to another).	48, 49, 50, 51
• **Antisocial behavior**. This scale describes the extent to which students have been involved in antisocial behaviors, such as being suspended from school, stealing, or fighting.	40[a-d, f-h]
• **Attitudes favorable toward antisocial behavior**. This scale describes the extent to which students believed that participating in antisocial behaviors was acceptable.	31[b-e]
• **Attitudes favorable toward drug use**. This scale describes the extent to which students believed that using substances was acceptable.	31[f-i]
• **Perceived risks of drug use**. This scale describes students' perceptions of the risks associated with substance use.	52[a-d]
• **Interaction with antisocial peers**. This scale describes students' perceptions of the extent to which their friends participated in antisocial behaviors.	29[e-k]
• **Friends' substance use**. This scale describes students' perceptions of the extent to which their friends used alcohol or drugs.	29[a-d]
• **Sensation seeking**. This scale describes the extent to which students did things on a dare or did things that were dangerous.	37[a-c]
• **Rewards for antisocial involvement**. This scale describes students' perceptions of the extent to which they were rewarded by their peers for participating in antisocial behaviors.	41[a-c]
• **Social skills**. This scale describes the extent to which students displayed social skills (e.g., being able to say "no" to friends, listening to parents).	42, 43, 44, 45
• **Belief in the moral order**. This scale describes the extent to which students believed in moral order (e.g., telling the truth even if it got them in trouble, thinking that cheating is acceptable).	33, 34, 36, 46

Source: Missouri 2000 Student Survey.

Thus, a student who scored above 2.5 (i.e., the midpoint) on this scale was considered "at risk." In both samples, we present the percentages of students at risk or resilient for the total and by gender. We display these percentages by race/ethnicity, grade, and region for the public school sample only.

For the public school sample, we also present tables displaying the relationship between the risk and protective factors and the measures of substance use (i.e., alcohol and illicit drug use) using logistical regression.[2] All variables are entered into the models as dichotomous variables (i.e., yes/no). The substance use variables were dichotomized to indicate whether a youth reported recent substance use (i.e., in the past month). The risk and protective factor scales were dichotomized to indicate whether a student was above or below the midpoint of the scale.

The statistic produced from logistic regression analysis is an odds ratio (OR), which reflects the likelihood of a positive response relative to that for a defined reference group. ORs greater than 1.0 indicate an increased likelihood relative to the reference group, and ORs less than 1.0 indicate a decreased likelihood. For example, in the public school sample, the OR for the relationship between "norms favorable to drug use" and alcohol use in the past month was 5.6. This indicates that students who were at risk on the factor of community disorganization were approximately six times as likely to indicate past-month alcohol use than students who were not at risk on this factor. Because all analyses are based on cross-sectional correlations, however, it is important to bear in mind that causal linkages between the health risk behaviors and the risk and protective factors cannot be established and should not be inferred. In other words, it cannot be determined if students use substances because they perceive them as being available, or if they perceive substances as being available because they use them.

In addition, research has shown that the greater the number of risk factors present, the greater the risk of drug abuse (e.g., Bergeson, Kelly, Fitch, & Mueller, 1998; Bry, McKeon, & Pandina, 1982; Newcomb, Maddahian, Skager, & Bentler, 1987; Werner & Smith, 1992). The opposite is true for protective factors; the greater the number of protective factors, the lower the risk of drug abuse.

To assess this relationship, we created measures to indicate the number of risk factors reported by each student as well as the number of protective factors. The cumulative measures were created by simply counting the number of risk factor scales and the number of protective factor scales on which students were above the midpoint. The possible number of risk factors ranged from 0 to 26, and the possible number of protective factors ranged from 0 to 9.

[2] This analysis could not be conducted on the private school sample because of the small sample size.

2.7.2 Analysis Software and Estimation Procedures

The appropriate analysis of the Missouri 2000 Student Survey data required special software programs that account for the complexities of the survey design. Most software packages, including SAS and SPSS, assume that the individuals have been selected by simple random sampling. Moreover, most software packages do not contain procedures for properly estimating the variance of survey statistics (e.g., means, totals, proportions, regression coefficients) obtained from a complex sample survey. Contrary to common belief, the use of SAS, SPSS, or most other weighting procedures does not adequately compensate for either the sample design factors or for means, proportions, or more sophisticated analyses, such as multiple regression.

The SUrvey DAta ANalysis (SUDAAN) software system, which was designed and developed by RTI, is one of the most powerful and efficient systems of its kind (Shah, Barnwell, & Bieler, 1997). For this study, SUDAAN was used to analyze the school survey data. SUDAAN is unique in its ability to handle many different complex sample designs, and all SUDAAN procedures allow users to save output files for efficient computer production of report tables.

In this report, estimates that were considered to be unreliable are not presented. More specifically, estimates were suppressed that could not be reported with confidence because they either were based on small sample sizes ($n<30$) or had large sampling errors. The rules for classifying estimates as unreliable are explained in Appendix B. Unreliable estimates that were omitted are noted by a single plus sign (+) in the tables. Very small estimates (e.g., <0.05%) that were not suppressed by the rules, but that rounded to zero, also were omitted from the tables and are shown as two plus signs (++).

2.8 Limitations of the Data

The Missouri 2000 Student Survey is a large and extremely useful survey for the people of Missouri. It is an excellent source of data appropriate for assessing substance abuse and prevention needs among Missouri students. However, some limitations with this data source should be noted.

One limitation of this study is the exclusive focus on adolescents in school. With such a focus, adolescent subpopulations with concentrated numbers of problem users may be missed. These subpopulations include school dropouts, homeless and runaway youths, and youths who

have been incarcerated or institutionalized—all of whom are likely to be undercounted by school surveys.

The subpopulation of most concern not captured by school-based surveys is school dropouts. An estimated 5.2% of Missouri high school-aged youths are dropouts. However, dropout rates vary significantly across the State, ranging from a low of 1.1% to a high of 12.1% (Missouri Department of Mental Health, 2000). There has been some controversy surrounding the belief that dropouts have the greatest drug problems, but most of the research to date has shown that dropouts are more likely to be substance users than those who remain in school. Mensch and Kandel (1988) found that dropouts were more likely than graduates to use cigarettes and illicit drugs. An unpublished analysis of the adolescent subsample of the 1991 National Household Survey on Drug Abuse (NHSDA) also showed that 16- and 17-year-old dropouts were significantly more likely than those currently enrolled to use alcohol, cigarettes, marijuana, cocaine, and other illicit drugs. Published studies also have shown that drug use often precedes dropping out of school (Friedman, Glickman, & Utada, 1985; Mensch & Kandel, 1988), but drug use has not been proven to be a definitive cause of dropping out of school. Nevertheless, it is reasonable to assume that some of the problem users who are *at risk* for dropping out but have not yet done so will be captured in this survey; results, however, can only be generalized to the population of adolescents who are attending school.

Finally, it should be noted that the questionnaire measures self-reported behavior. Caution should be exercised in interpreting these data because of respondents' tendencies to underreport undesirable behaviors and to have difficulty remembering complicated information such as age at first use (Bailey, Flewelling, & Rachal, 1992b). However, several researchers have concluded that adolescents' self-reports of substance use are reliable and valid (Akers, Massey, Clarke, & Lauer, 1983; Martin & Newman, 1988; Nurco, 1985; Single, Kandel, & Johnson, 1975; Smart, 1975; Whitehead & Smart, 1972).

Section II

Findings for Public School Students

3.0 PREVALENCE OF TOBACCO, ALCOHOL, AND ILLICIT DRUG USE AMONG MISSOURI PUBLIC SCHOOL STUDENTS

This chapter presents data about the use of tobacco, alcohol, and illegal substances among 6th, 8th, 10th, and 12th grade public school students in Missouri. To determine the characteristics of students who were using alcohol, tobacco, and other drugs, this report looks at each of the prevalence categories separately by gender, race/ethnicity, age, and grade in school. We note that additional tables displaying prevalence rates by grade within gender categories can be found in Appendix A.

3.1 Tobacco

3.1.1 Lifetime Tobacco Use

As shown in Exhibit 3.1, about 50% of Missouri public school students had ever used tobacco (i.e., either cigarettes or smokeless tobacco); this estimate translates to 126,600 tobacco users in the lifetime. The highest rates of lifetime tobacco use were reported in the Southeast region (59%) and the lowest in the Western region (45%). There was little difference in rates of lifetime use by gender; however, lifetime use was slightly higher among white students than those in the other racial/ethnic category. Prevalence rates increased noticeably by grade categories. The largest difference in use occurred between the 6th and 8th grades, where twice as many 8th graders reported lifetime use (48% compared to 23%). The higher rates of lifetime use among older students may reflect a longer opportunity to have tried cigarettes. In addition, readers are cautioned that any cigarette use qualified as lifetime use, even if the student only took one or two puffs. Consequently, the 50% of Missouri public school students who had ever tried tobacco includes students who tried cigarettes but did not progress to regular cigarette smoking, as well as those who do smoke regularly. Nevertheless, this rate of lifetime tobacco use suggests that many Missouri public school students have had access to tobacco products, despite the illegality of tobacco sales to students under the age of 18 years.

3.1.2 Past-Month Tobacco Use

Nearly one quarter (23%) of Missouri's public school students used tobacco in the 30 days prior to the survey (i.e., they were current tobacco users) (Exhibit 3.1). This estimate of 58,200 past-month users constitutes nearly one half of the 126,600 lifetime users (i.e., [58,200/126,600] x 100 = 46%); therefore, nearly one half of those who had ever used tobacco were current users. The highest rates of past-month tobacco use were reported in the Southeast

Exhibit 3.1 Prevalence of Use and Estimated Numbers of Tobacco Users (to the Nearest Hundred) in the Lifetime and Past Month Among Missouri Public School Students, by Selected Demographic Characteristics: 2000

	Lifetime				Past Month			
Demographic Characteristic	**Percentage**	**Number**	**95% CI**		**Percentage**	**Number**	**95% CI**	
Total Missouri	50.2	126,600	123,300	129,800	23.1	58,200	55,200	61,300
Region								
Western	44.7	22,200	21,000	23,500	18.9	9,300	8,400	10,400
Southwest	48.1	17,800	16,600	19,000	21.1	7,800	6,900	8,900
Northern	53.6	14,900	13,700	16,100	27.8	7,800	6,700	9,000
Central	53.8	16,500	15,300	17,800	29.2	9,000	7,600	10,400
Eastern	49.1	39,300	37,400	41,200	20.4	16,300	14,600	18,100
Southeast	58.8	15,800	14,900	16,700	29.8	8,000	7,100	8,900
Gender								
Male	51.4	60,700	58,300	63,200	24.5	29,000	26,700	31,500
Female	49.4	63,800	61,600	66,100	21.9	28,200	26,400	30,200
Race/Ethnicity								
White	51.5	106,100	103,200	109,000	24.4	50,200	47,700	52,800
All other races[1]	45.4	19,700	18,200	21,300	17.6	7,600	6,000	9,600
Grade in School								
6	23.0	15,100	13,800	16,600	6.0	3,900	3,200	4,800
8	48.0	31,800	29,900	33,600	20.0	13,200	11,600	15,000
10	64.5	41,700	40,300	43,100	32.3	20,900	19,400	22,500
12	68.6	38,000	36,400	39,500	36.3	20,100	18,500	21,800

Note: Estimated number rounded to the nearest hundred. The 95% CI = 95% confidence interval (to the nearest hundred) of the estimated number of users. Unweighted numbers of respondents are shown in Table 2.4.

[1]Includes blacks or African Americans, Hispanics, American Indians or Alaskan Natives, Asians, or Native Hawaiians or other Pacific Islanders.

Source: Missouri 2000 Student Survey.

(30%) and Central (29%) regions, and the lowest rates were reported in the Western (19%) and Eastern (20%) regions. Again, there was little difference in current use between the genders, but whites were more likely to report past-month tobacco use than students in the other racial/ethnic category. As with lifetime use, rates of current tobacco use increased by grade categories. For example, 6% of the students in the 6th grade, 20% of the students in the 8th grade, 32% of those in the 10th grade, and 36% of those in 12th grade had used tobacco in the past month.

Exhibit 3.2 shows the prevalence of past-month tobacco use broken down by type of tobacco (i.e., cigarettes or smokeless tobacco). Approximately 21% of students reported smoking cigarettes in the past month and 6% reported using smokeless tobacco. For both types of tobacco, use increased with grade. Although there was little difference in past-month cigarette use between the two genders, past-month use of smokeless tobacco was significantly higher among males (11%) than females (2%).

3.1.3 Heavy Smoking

Exhibit 3.3 displays the prevalence of smoking more than five cigarettes per day, by grade and gender. A total of 7% of Missouri public school students reported heavy smoking. As with lifetime and past-month smoking, the rate of smoking more than five cigarettes per day increased by grade category. Less than 1% of 6th graders were heavy smokers, while 5% of 8th graders, 11% of 10th graders, and 13% of 12th graders reported heavy use. Overall, males and females reported comparable rates of heavy smoking (8% and 7%, respectively).

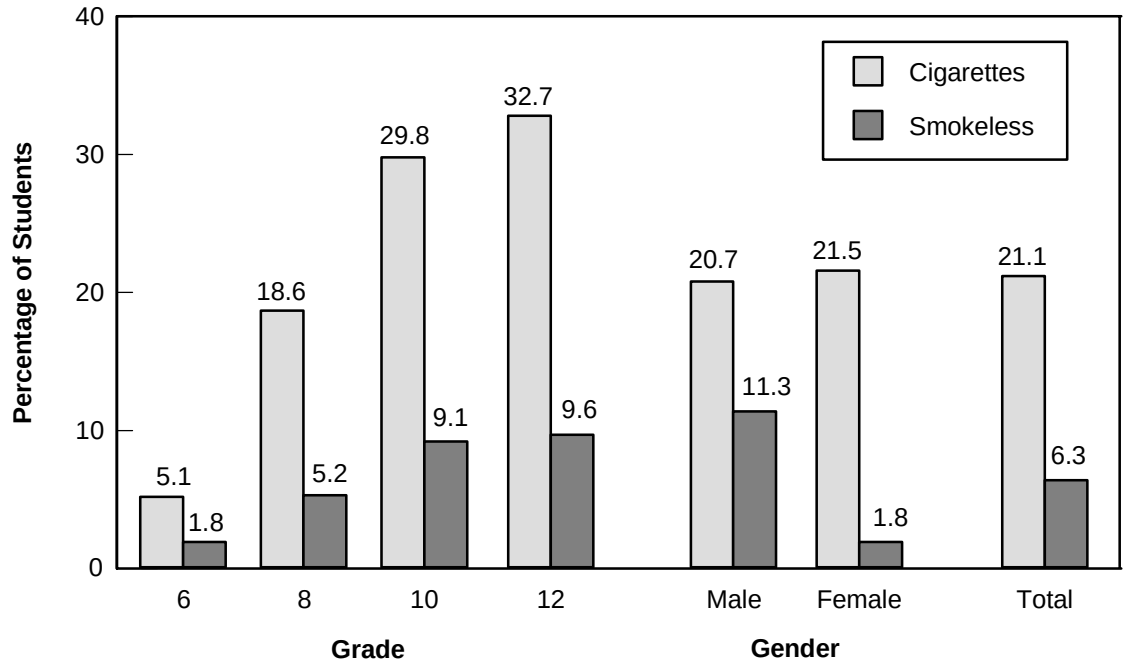
3.2 Alcohol

3.2.1 Lifetime Alcohol Use

Exhibit 3.4 shows that approximately 6 out of 10 Missouri public school students had ever had a drink of alcohol in their life (lifetime use), beyond just a few sips of alcohol; this estimate translates to about 150,400 alcohol users among the Missouri public school student population up to this point in their lifetime. The highest rates of lifetime alcohol use were reported in the Southeast region (64%) and the lowest in the Southwest region (55%). Males (62%) were more likely to report lifetime alcohol use than females (59%), and whites (61%) were more likely to report such use than students in the other racial/ethnic category (57%).

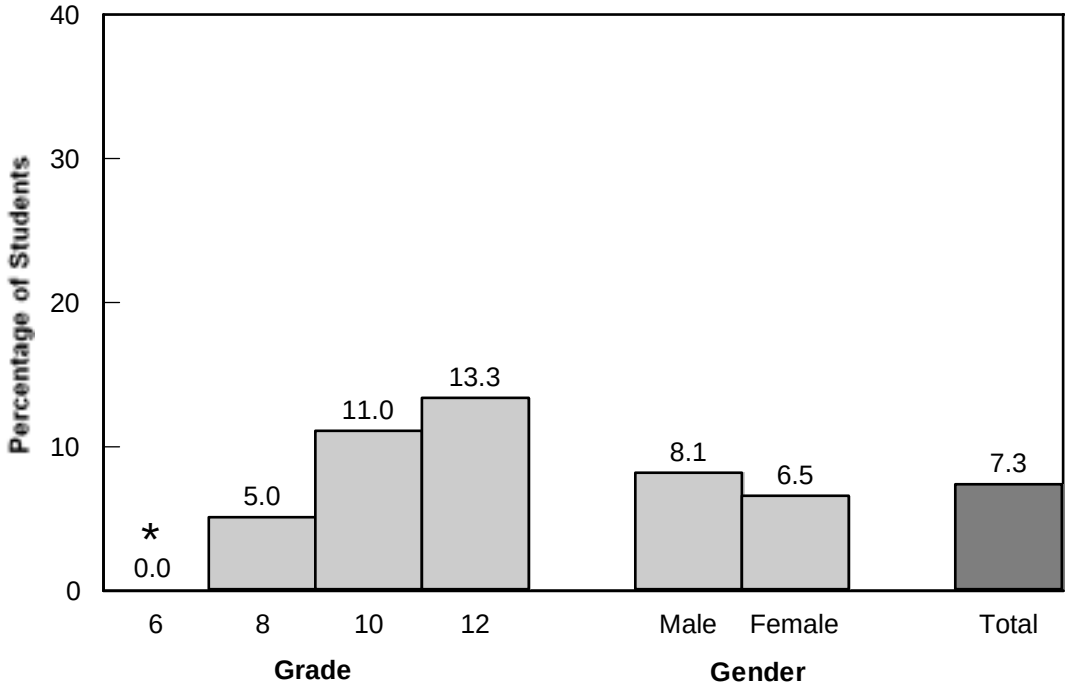
As would be expected, prevalence of lifetime alcohol use increased by grade categories. The largest increase was use levels between the 6th and 8th grades (31% and 56%, respectively), which then increased nearly as much between 8th and 10th grades (56% and 75%). The higher

Exhibit 3.2 Prevalence of Using Cigarettes and Smokeless Tobacco in the Past 30 Days Among Missouri Public School Students, by Grade and Gender: 2000



Source: Missouri 2000 Student Survey.

Exhibit 3.3 Prevalence of Smoking More than Five Cigarettes Per Day Among Missouri Public School Students, by Grade and Gender: 2000



Source: Missouri 2000 Student Survey.

Exhibit 3.4 Prevalence of Use and Estimated Numbers of Alcohol Users (to the Nearest Hundred) in the Lifetime and Past Month Among Missouri Public School Students, by Selected Demographic Characteristics: 2000

	Lifetime				Past Month			
Demographic Characteristic	**Percentage**	**Number**	**95% CI**		**Percentage**	**Number**	**95% CI**	
Total Missouri	60.3	150,400	147,300	153,500	34.4	86,000	82,800	89,200
Region								
Western	59.3	29,100	27,900	30,300	33.2	16,300	15,200	17,500
Southwest	54.7	20,200	19,000	21,400	29.7	11,000	10,000	12,100
Northern	60.8	16,800	15,700	17,900	36.7	10,200	9,100	11,400
Central	60.1	18,200	17,000	19,300	37.4	11,300	10,000	12,700
Eastern	62.2	49,300	47,400	51,200	34.4	27,300	25,500	29,200
Southeast	63.5	16,800	15,900	17,600	37.0	9,800	8,900	10,700
Gender								
Male	61.9	72,400	70,100	74,700	36.1	42,300	39,900	44,700
Female	59.1	75,700	73,500	77,900	33.0	42,400	40,400	44,600
Race/Ethnicity								
White	61.1	124,900	122,100	127,700	35.9	73,700	70,900	76,500
All other races[1]	57.0	24,400	22,900	25,800	27.6	11,800	10,100	13,500
Grade in School								
6	30.7	19,800	18,300	21,400	11.0	7,100	6,200	8,200
8	56.0	36,500	34,700	38,400	30.0	19,600	17,900	21,400
10	74.6	48,200	46,900	49,400	45.2	29,200	27,600	30,700
12	83.3	45,800	44,600	47,000	54.6	30,000	28,300	31,700

Note: Estimated number rounded to the nearest hundred. The 95% CI = 95% confidence interval (to the nearest hundred) of the estimated number of users. Unweighted numbers of respondents are shown in Table 2.4.

[1]Includes blacks or African Americans, Hispanics, American Indians or Alaskan Natives, Asians, or Native Hawaiians or other Pacific Islanders.

Source: Missouri 2000 Student Survey.

rates of lifetime alcohol use with increased age may reflect increased opportunities for older students to try alcohol. Nevertheless, the rates by grade level suggest that over 80% of Missouri students will have tried alcohol by the time they finish the 12th grade.

3.2.2 Past-Month Alcohol Use

As shown in Exhibit 3.4, over one third (or 86,000) of public school students had consumed at least one drink in the month prior to the 2000 survey (i.e., currently used alcohol). This estimated number of past-month alcohol users comprises about 57% of the 150,400 lifetime alcohol users; stated another way, approximately 57% of the lifetime alcohol users reported use in the past month. Males were more likely to report past-month alcohol use than females (36% compared to 33%), and white students were more likely to report such use than those in the other racial/ethnic category (36% compared to 28%). As in lifetime use, rates for current use also increased progressively by grade. Notably, about half the students in the 11th and 12th grades reported drinking alcohol in the past month.

3.2.3 Binge Drinking

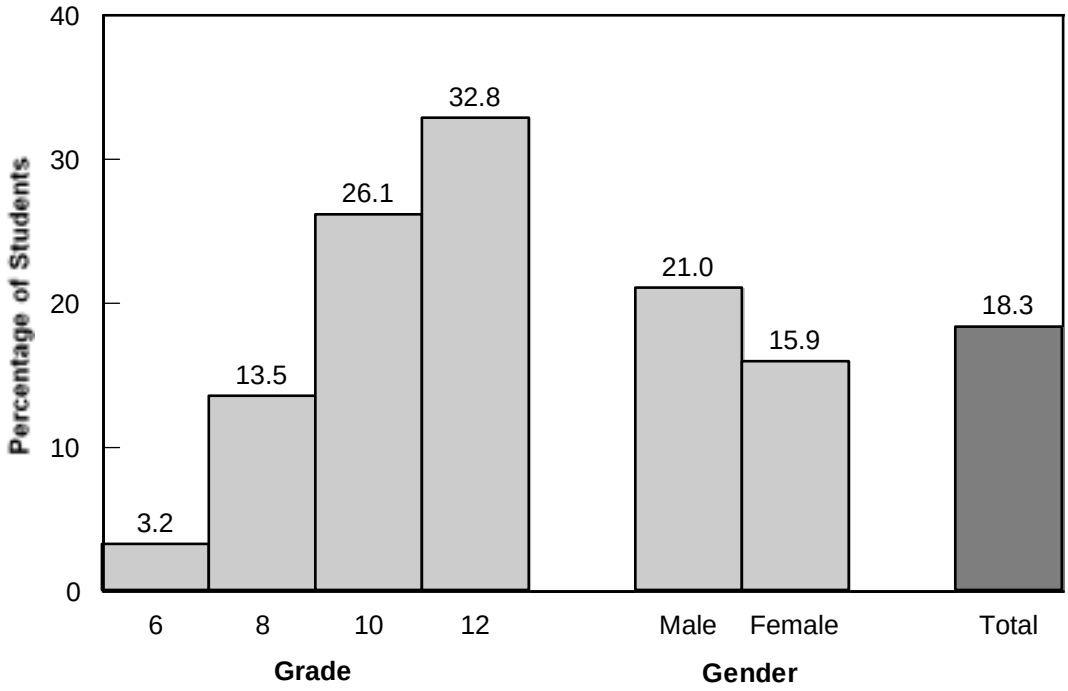
Exhibit 3.5 presents the prevalence of binge drinking (i.e., consuming five or more drinks of alcohol in a row) among Missouri public school students during the 2-week period before the survey. As shown, an estimated 18% of students met the definition of binge drinking in the preceding 2 weeks. Males were more likely than females to report binge alcohol use (21% and 16%, respectively). As students' grade increased, so did their rates of binge drinking. Around 3% of 6th graders, 14% of 8th graders, 26% of 10th graders, and 33% of 12th graders, respectively, reported binge drinking in the past 2 weeks.

3.3 Other Drugs

3.3.1 Lifetime Other Drug Use

Approximately 33% of Missouri public school students reported having used at least one illicit drug at least once in their lifetime (Exhibit 3.6); this estimate translates to approximately 82,200 students. The highest rates of lifetime illicit drug use were reported in the Eastern region (38%), and the lowest were reported in the Southwest and Northern regions (30%). Males were more likely to report lifetime illicit drug use than females (36% vs. 31%), and students in the other racial/ethnic category were more likely to report such use than white students (37% vs. 33%, respectively). Percentages of students reporting use increased with grade. Lifetime use of illicit drug use doubled between grades 6 and 8 (14% and 29%), and

Exhibit 3.5 Prevalence of Binge Drinking in the Past 2 Weeks Among Missouri Public School Students, by Grade and Gender: 2000



Note: Binge drinking is defined as consuming five or more drinks in a row in the past 2 weeks.

Source: Missouri 2000 Student Survey.

almost doubled between grades 8 and 10 (29% and 46%). Notably, nearly half of those in grades 10 (46%) and 12 (47%) reported having used an illicit drug in their lifetime.

The most frequently used illicit drug was marijuana (26%), followed by inhalants (13%), other unspecified illegal drugs (11%), speed or amphetamines (6%), LSD or other psychedelics (5%), and cocaine (4%) (Exhibit 3.7).

3.3.2 Past-Month Other Drug Use

Approximately 16% of Missouri's public school students reported using an illicit drug in the 30 days prior to the survey (Exhibit 3.6). This represents approximately 39,600 students with past-month illicit drug use. Again the highest rates were reported in the Eastern region (20%) and the lowest in the Northern and Southwest regions (14%). Males were more likely to report past-month use than females (19% vs. 14%, respectively). Whites and students in the other racial/ethnic category reported similar rates (16% and 17%, respectively). Again, percentages of students reporting use increased with grade. Approximately 6% of 6th graders, 15% of 8th graders, 23% of 10th graders, and 21% of 12th graders using an illicit drug in the month preceding the survey.

In the 30 days prior to the 2000 survey, 13% of the Missouri public school students reported using marijuana, 4% reported using inhalants, 1% reported using cocaine, 2% reported using LSD or other psychedelics, 2% reported using speed or amphetamines, and 5% reported using some other unspecified illegal drug (Exhibit 3.7).

3.3.3 Frequent Illicit Drug Use

Exhibit 3.8 presents the prevalence of frequent illicit drug use (i.e., using cocaine 3 or more times in the past month and/or using other illicit drugs 10 or more times in the past month among Missouri public school students. As shown, an estimated 6% of students met the definition of frequent illicit drug use. Males were more likely than females to report frequent illicit drug use (8% vs. 4%, respectively). As students' grade increased, so did their rates of frequent illicit drug use. Less than 1% of 6th graders, 4% of 8th graders, 9% of 10th graders, and 10% of 12th graders reported frequent illicit drug use in the past month.

3.4 Summary

The most commonly used substances among Missouri public school students in grades 6, 8, 10, and 12 were alcohol, cigarettes, and marijuana. The majority (60%) used at least some

Exhibit 3.6 Prevalence of Use and Estimated Numbers of Other Illicit Drug Users (to the Nearest Hundred) in the Lifetime and Past Month Among Missouri Public School Students, by Selected Demographic Characteristics: 2000

	Lifetime				Past Month			
Demographic Characteristic	**Percentage**	**Number**	**95% CI**		**Percentage**	**Number**	**95% CI**	
Total Missouri	33.4	82,200	79,100	85,300	16.2	39,600	37,100	42,200
Region								
Western	32.0	15,600	14,400	16,700	15.1	7,300	6,500	8,200
Southwest	29.7	10,900	9,900	12,000	14.0	5,100	4,400	5,900
Northern	29.6	8,100	7,100	9,200	13.7	3,700	3,000	4,600
Central	34.6	10,300	9,000	11,700	14.5	4,200	3,500	5,100
Eastern	37.6	29,200	27,300	31,100	20.1	15,500	13,800	17,300
Southeast	31.4	8,100	7,200	9,000	14.6	3,700	3,100	4,500
Gender								
Male	36.2	41,300	39,000	43,800	18.8	21,300	19,400	23,400
Female	31.3	39,800	37,800	41,900	14.1	17,800	16,300	19,400
Race/Ethnicity								
White	32.8	66,200	63,500	68,900	16.1	32,200	30,200	34,300
All other races[1]	37.1	15,400	13,900	17,000	17.4	7,200	5,800	8,700
Grade in School								
6	14.2	8,800	7,800	10,000	6.1	3,800	3,100	4,500
8	28.8	18,500	16,800	20,300	15.1	9,600	8,100	11,400
10	45.5	29,200	27,700	30,700	23.1	14,700	13,600	15,900
12	46.6	25,600	23,900	27,300	21.0	11,500	10,200	12,900

Note 1: Other illicit drug use includes use of marijuana, inhalants, cocaine, LSD or other psychedelics, speed or amphetamines, or other illegal drugs.
Note 2: Estimated number rounded to the nearest hundred. The 95% CI = 95% confidence interval (to the nearest hundred) of the estimated number of users. Unweighted numbers of respondents are shown in Table 2.4.

[1]Includes blacks or African Americans, Hispanics, American Indians or Alaskan Natives, Asians, or Native Hawaiians or other Pacific Islanders.

Source: Missouri 2000 Student Survey.

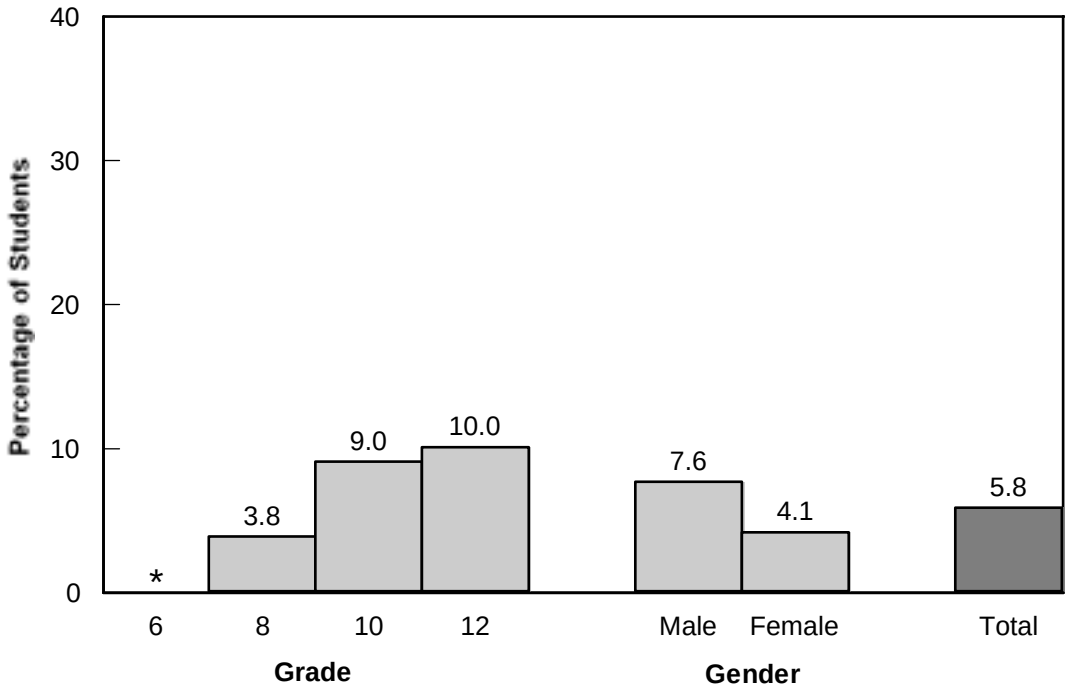
Exhibit 3.7 Prevalence of Use and Estimated Numbers of Other Illicit Drug Users (to the Nearest Hundred) in the Lifetime and Past Month Among Missouri Public School Students: 2000

	Lifetime				Past Month			
Substance Used	**Percentage**	**Number**	**95% CI**		**Percentage**	**Number**	**95% CI**	
Marijuana	26.1	65,000	62,100	67,900	12.5	31,100	28,900	33,500
Inhalants	12.9	32,000	29,900	34,200	4.2	10,400	9,200	11,700
Cocaine	3.9	9,800	8,600	11,100	1.3	3,300	2,600	4,200
LSD or Other Psychedelics	4.9	12,200	10,900	13,600	1.7	4,200	3,500	5,000
Speed or Amphetamines	6.2	15,400	13,900	17,000	2.2	5,300	4,400	6,500
Other Illegal Drugs	11.3	27,900	25,700	30,100	4.8	11,900	10,600	13,300

Note: Estimated number rounded to the nearest hundred. The 95% CI = 95% confidence interval (to the nearest hundred) of the estimated number of users. Unweighted numbers of respondents are shown in Table 2.4.

Source: Missouri 2000 Student Survey

Exhibit 3.8 Prevalence of Frequent Illicit Drug Use in the Past Month Among Missouri Public School Students, by Grade and Gender: 2000



Note: Frequent illicit drug use is defined as using cocaine 3 or more times in the past month, or using other illicit drugs (including marijuana, inhalants, LSD or other psychedelics, speed or amphetamines, or other illegal drugs) 10 or more times in the past month.

Source: Missouri 2000 Student Survey.

alcohol in their lifetime, and 34% used it in the month before the survey. In addition, approximately 18% exhibited binge drinking behavior in the 2 weeks before the survey. Recent cigarette use was reported by 50% of students and recent marijuana use by 13%. Relatively large numbers of students reported having used inhalants. Over 13% of students reported having ever used inhalants.

There were few differences in substance use by gender. However, recent tobacco and alcohol use was more likely among white students than those in the other racial/ethnic category. Additionally, grade was an important factor in prevalence of use. The rate of substance use increased steadily between grades 6 and 12 for tobacco, alcohol, and illicit drugs. For example, prevalence of recent alcohol use was 11% among 6^{th} graders, 30% among 8^{th} graders, 45% among 10^{th} graders, and 55% among 12^{th} graders. Rates of use also varied across region.

Overall, the data presented in this chapter provide basic prevalence information about alcohol and other drug use for Missouri public school students and offer insights into the groups most likely to experience substance use problems. However, it is important to note that because these data were collected from a school setting, and students problematically involved with substance use have often dropped out of school, data estimates for these latter drugs are likely to be somewhat conservative.

4. PREVALENCE OF VIOLENT AND DELINQUENT BEHAVIORS AMONG PUBLIC SCHOOL STUDENTS

This chapter presents data about violent and delinquent behaviors among Missouri's 6th, 8th, 10th, and 12th grade public school student population. Violent behaviors include attacking others with the intent of seriously hurting them and carrying a handgun. Delinquent behaviors include being drunk or high at school, being suspended from school, stealing or attempting to steal a motor vehicle, selling illegal drugs, and having been arrested. The prevalence of each of these behaviors is reported by grade and gender.

4.1 Violent Behavior

4.1.1 Prevalence of Attacking Others with the Idea of Seriously Hurting Them

Exhibit 4.1 shows that more than 1 out of 10 Missouri public school students (14%) had attacked others in the past year with the idea of seriously hurting them. This prevalence of attacking someone peaked in grade 8 (18%) and then decreased among students in the higher grades. Males were about twice as likely to report this behavior compared to females (18% and 10%, respectively).

4.1.2 Prevalence of Carrying a Handgun

Approximately 3% of Missouri public school students reported carrying a handgun other than for hunting in the past year (Exhibit 4.2). The prevalence of carrying a handgun in the past year varied little across grades. However, it did vary by gender. Approximately four times as many males (4%) as females (1%) reported carrying a handgun in the past year.

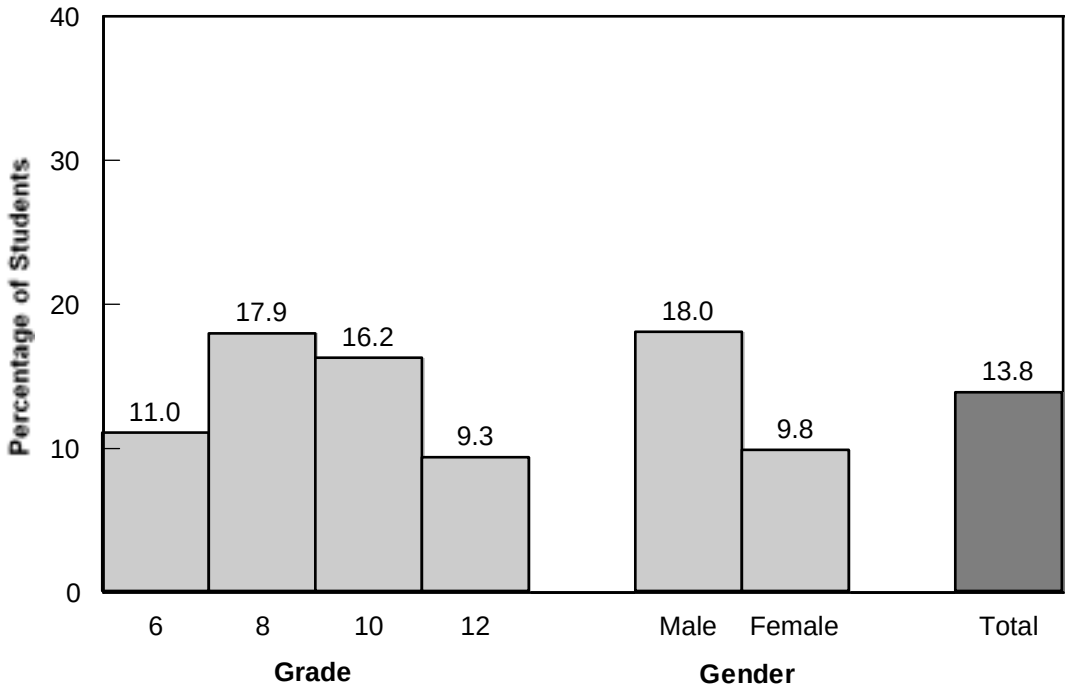
4.2 Delinquent Behavior

4.2.1 Prevalence of Delinquent Behavior

Exhibit 4.3 shows the prevalence by grade of five delinquent behaviors: being drunk or high at school, being suspended from school, stealing or attempting to steal a motor vehicle, selling illegal drugs, and having been arrested.

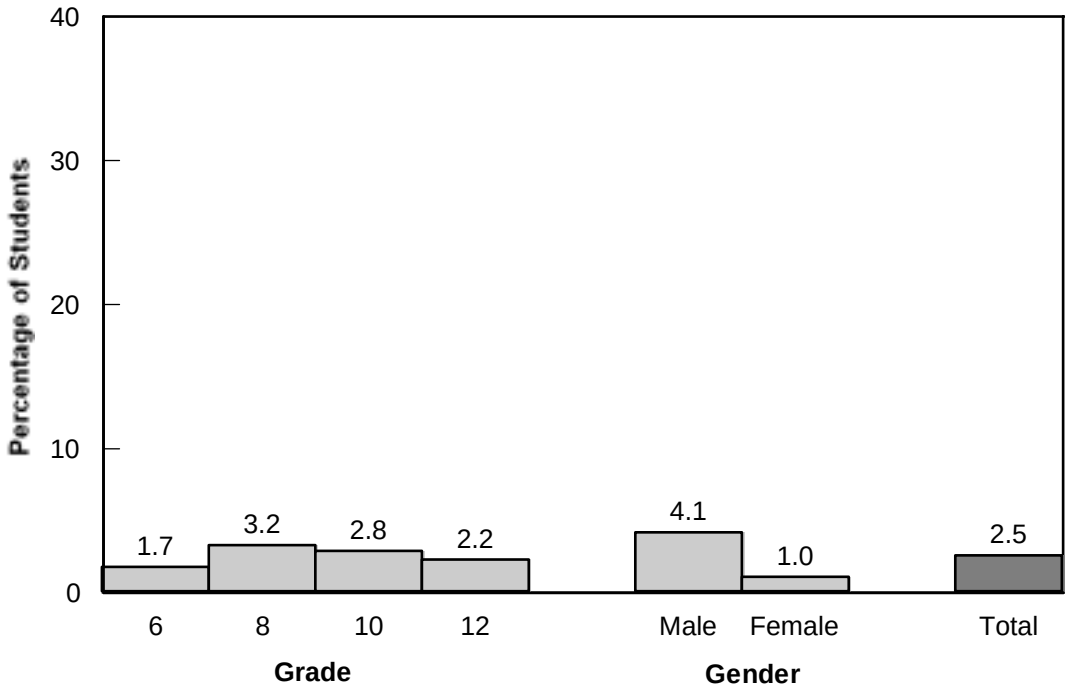
Drunk or High at School. Overall, 13% of Missouri public school students reported having been drunk or high at school in the year prior to the survey. The prevalence of this

Exhibit 4.1 Prevalence of Attacking Someone in the Past 12 Months with the Idea of Seriously Hurting Them Among Missouri Public School Students, by Grade and Gender: 2000



Source: Missouri 2000 Student Survey.

Exhibit 4.2 Prevalence of Carrying a Handgun in the Past 12 Months Among Missouri Public School Students, by Grade and Gender: 2000



Source: Missouri 2000 Student Survey.

Exhibit 4.3 Prevalence of Delinquent Behavior in the Past Year Among Missouri Public School Students: 2000

	Gender		Race/Ethnicity		Grade				
	Male	Female	White	All Other Races[1]	6	8	10	12	Total
Drunk or High at School	15.0	11.2	12.5	15.0	1.9	11.4	20.4	19.6	13.0
Suspended from School	15.3	7.7	8.4	25.2	7.7	13.7	14.3	9.8	11.4
Stole or Tried to Steal a Motor Vehicle	3.3	1.4	1.9	4.3	++	3.7	3.3	++	2.3
Sold Illegal Drugs	7.5	3.0	4.9	6.5	++	3.7	8.9	8.3	5.1
Been Arrested	14.0	8.9	10.2	17.1	10.4	13.5	13.1	7.8	11.4

Note: Unweighted numbers of respondents are shown in Table 2.4.

[1]Includes blacks or African Americans, Hispanics, American Indians or Alaskan Natives, Asians, or Native Hawaiians or other Pacific Islanders.

[++]Data suppressed due to low prevalence.

Source: Missouri 2000 Student Survey.

behavior was higher among males than females (15% vs. 11%) and generally increased as grade increased. Little difference was found between racial/ethnic categories.

Suspended from School. Overall, approximately 11% of Missouri public school students reported having been suspended from school in the year prior to the survey. The prevalence of this behavior was higher among males than females (15% vs. 8%), among students in the other racial/ethnic category than whites (25% vs. 8%), and among 8th and 10th graders.

Stole or Tried to Steal a Motor Vehicle. Approximately 2% of the public school students reported that they either stole or tried to steal a motor vehicle in the past year. Estimates for grades 6 and 12 were suppressed because of the small number of students reporting this behavior.

Sold Illegal Drugs. Overall, 5% of Missouri public school students reported that they sold illegal drugs in the year prior to the survey. The prevalence of this behavior was higher among males than females (8% vs. 3%) and among 10th and 12th graders. Little difference was found by race/ethnicity.

Been Arrested. Overall, 11% of Missouri public school students reported that they had been arrested in the year prior to the survey. Again, this behavior was more prevalent among males than females (14% vs. 9%) and among students in the other racial/ethnic category (17%) than whites (10%). The arrest rate was highest among 8th and 10th graders (13% each) and lowest among 12th graders (8%).

4.3 Summary

Overall, the data presented in this chapter provide prevalence information about violent and delinquent behavior among Missouri public school students and the grade level of students most likely to perform these behaviors. As in Chapter 3, it is important to note that because these data were collected from a school setting, and violent or delinquent students may be more likely to have dropped out of school, data estimates for these behaviors may be somewhat conservative.

Violent behavior included attacking others in the 12 months prior to the survey with the intent to seriously hurt them and carrying a handgun. Approximately 14% of Missouri public school students reported attacking someone. About twice as many males as females reported this behavior. Attacking someone peaked in the middle grades of 8 and 10. About 3% of Missouri public school students had carried a handgun in the year prior to the study. Again, males were

much more likely to report this behavior than females. This behavior peaked in 8th grade, but the prevalence was between 2% and 3% for all grades.

Delinquent behaviors included on the survey were being drunk or high at school, being suspended from school, stealing or trying to steal a motor vehicle, selling illegal drugs, and having been arrested. Of these, the most common was being drunk or high at school (13%), followed by being suspended from school (11%) and being arrested (11%). Reports of selling illegal drugs (5%) and stealing or trying to steal a motor vehicle (2%) were lower.

5. RISK AND PROTECTIVE FACTORS FOR ADOLESCENT HEALTH BEHAVIORS

Social research has identified numerous and interrelated factors that increase or decrease the probability of alcohol, tobacco, and other drug use and related problems among students. These risk and protective factors are found at multiple levels, including the individual, the family, the peer group, the school, and the community (Hawkins et al., 1992; Kandel et al., 1986; Newcomb & Felix-Ortiz, 1992). Identification of specific populations in which risk factors are high and protective factors are low permits identification of prevention needs and facilitates targeting programming toward the reduction of risk factors and the enhancement of protective factors (Hawkins et al., 1997). For a more complete description of the literature on adolescent risk and protective factors, see Section 1.2, and for more information on scale creation and analysis, see Section 2.7.1.

5.1 Community Factors

Exhibit 5.1 displays the percentage of students "at risk" and "resilient" on each of the community scales. This exhibit shows, for example, that 20% of Missouri public school students' scale scores for "low neighborhood attachment" were above the midpoint of the scale. Thus, we would consider 20% of Missouri's public school students at risk on this factor. With regard to the protective factors, we would consider 69% of Missouri's public school students "resilient" on the factor of "opportunities for conventional involvement."

Exhibit 5.1 shows that the most important community risk factor for Missouri public school students at the time of the survey was "laws favorable toward drug use"; over two thirds of all students were at risk on this factor. The second most important community risk factor was "perceived availability of drugs"; nearly half of all students were at risk on this factor. This exhibit also shows the following:

- Males and females were generally equally at risk and resilient on each of the community risk factors.

- Students in the other racial/ethnic category were nearly twice as likely to be at risk on the factors of "low neighborhood attachment," "community disorganization," and "personal transitions and mobility" than white students. Additionally, white students were more likely to be resilient on the protective factor of "opportunities for conventional involvement" (72% vs. 54%, respectively).

Exhibit 5.1 Profile of Community Risk and Protective Factors Among Missouri Public School Students, by Demographic Characteristics: 2000

	Gender		Race/Ethnicity		Grade				
Community Factor	**Male**	**Female**	**White**	**All Other Races[1]**	**6**	**8**	**10**	**12**	**Total**
Risk Factors									
Low neighborhood attachment	18.9	20.4	18.0	28.0	14.6	19.9	22.4	22.1	19.7
Community disorganization	7.8	7.8	6.4	14.8	7.5	9.1	8.4	6.2	7.9
Personal transitions and mobility	14.1	13.7	11.9	23.4	14.8	15.4	15.3	9.2	13.8
Community transitions and mobility	18.2	19.2	17.1	26.3	15.8	18.3	20.3	20.1	18.6
Norms favorable toward drug use	20.6	22.3	20.3	26.6	6.0	18.5	28.1	34.1	21.4
Laws favorable toward drug use	70.7	68.5	69.4	70.1	43.7	68.2	81.8	85.0	69.3
Perceived availability of drugs	47.6	46.8	47.7	44.3	9.5	33.1	67.1	80.9	47.0
Protective Factors									
Opportunities for conventional involvement	67.8	70.1	72.1	53.5	68.8	68.0	68.0	71.3	69.0
Rewards for conventional involvement	45.2	46.2	46.7	41.7	55.1	44.6	39.0	44.8	45.8

Note: Each risk and protective factor scale was calculated as the average of one or more questions. Students whose scores placed them above the midpoint of the scale were considered "at risk" or "resilient" for a given factor. Figures in this table indicate percentage "at risk" or "resilient."

[1]Includes blacks or African Americans, Hispanics, American Indians or Alaskan Natives, Asians, or Native Hawaiians or Other Pacific Islanders.

Source: Missouri 2000 Student Survey.

- As students got older, they were generally at increasing risk on the risk factors, particularly for "laws favorable toward substance use" and "perceived availability of drugs."

Exhibit 5.2 displays the percentage of students within each region who were at risk or resilient on each of the community factors. There was considerable variability across regions; however, for all regions, the two most important risk factors were "laws favorable toward drug use" and "perceived availability of drugs."

All community risk factors were shown to be positively related to past-month alcohol and drug use; that is, students who were at risk on the risk factor scales (i.e., above the midpoint) were more likely to have used substances in the past month (Exhibit 5.3). The strongest relationships between substance use and risk behaviors were for the risk factors of "perceived availability of drugs and handguns" and "norms favorable toward drug use." Students who were at risk on each of these factors were six to eight times more likely to have used alcohol or illicit drugs in the past month than students who were not at risk on these factors.

All community protective factors were shown to be positively related to substance use.

5.2 School Factors

Exhibit 5.4 displays the percentage of students "at risk" and "resilient" on each of the school scales. This exhibit shows the following:

- Males were more likely to be at risk on the factors of "academic failure" and "little commitment to school" than were females; additionally, females were more likely to be resilient than males on both of the protective factors.

- Students in the other racial/ethnic category were more likely than white students to be at risk on the factors of "academic failure" and "school absenteeism," but white students were more likely to be at risk on the factor of "little commitment to school." There was little difference in the protective factors by race/ethnicity.

- As Missouri public school students got older, they were generally at increasing risk on the factor of "little commitment to school," from 16% of 6^{th} graders to 35% of 12^{th} graders.

Exhibit 5.2 Profile of Community Risk and Protective Factors Among Missouri Public School Students, by Region: 2000

Community Factor	Region						Total
	Western	Southwest	Northern	Central	Eastern	Southeast	
Risk Factors							
Low neighborhood attachment	19.8	20.7	19.8	18.6	19.8	19.0	19.7
Community disorganization	7.2	6.1	8.8	6.9	9.7	6.2	7.9
Personal transitions and mobility	14.5	16.4	11.8	12.2	13.8	12.9	13.8
Community transitions and mobility	18.0	21.3	16.9	18.2	17.3	22.5	18.6
Norms favorable toward drug use	19.3	19.0	22.2	17.5	24.5	23.0	21.4
Laws favorable toward drug use	68.5	69.9	65.3	72.6	69.7	69.6	69.3
Perceived availability of drugs	46.5	43.7	45.1	44.3	49.6	50.2	47.0
Protective Factors							
Opportunities for conventional involvement	70.0	67.0	75.0	73.8	62.8	76.3	69.0
Rewards for conventional involvement	44.1	43.5	50.2	51.9	42.3	51.4	45.8

Note: Each risk and protective factor scale was calculated as the average of one or more questions. Students whose scores placed them above the midpoint of the scale were considered "at risk" or "resilient" for a given factor. Figures in this table indicate percentage "at risk" or "resilient."

Source: Missouri 2000 Student Survey.

Exhibit 5.3 Odds Ratios of Community Risk and Protective Factors with Substance Use Among Missouri Public School Students: 2000

	Past-Month Use	
Community Factors	**Alcohol**	**Other Illicit Drugs**
Risk Factors		
Low neighborhood attachment	1.2	1.4
Community disorganization	1.5	2.5
Personal transitions and mobility	1.2	1.8
Community transitions and mobility	1.2	1.8
Norms favorable toward drug use	5.6	7.5
Laws favorable toward drug use	3.1	3.7
Perceived availability	6.2	7.8
Protective Factors		
Opportunities for conventional involvement	1.2	1.4
Rewards for conventional involvement	1.3	1.8

Source: Missouri 2000 Student Survey.

Exhibit 5.4 Profile of School Risk and Protective Factors Among Missouri Public School Students, by Demographic Characteristics: 2000

	Gender		Race/Ethnicity		Grade				
School Factor	**Male**	**Female**	**White**	**All Other Races[1]**	**6**	**8**	**10**	**12**	**Total**
Risk Factors									
Academic failure	27.0	19.0	21.2	30.0	17.9	25.2	27.9	19.5	22.8
Little commitment to school	35.4	21.7	29.0	25.5	16.2	27.5	35.7	35.4	28.3
School absenteeism	2.6	2.2	2.1	4.0	+	2.4	2.6	3.6	2.4
Protective Factors									
Opportunities for positive involvement	81.6	84.7	83.4	81.8	86.9	84.0	79.2	82.2	83.1
Rewards for conventional involvement	49.6	55.6	52.9	51.9	68.7	51.7	41.8	47.2	52.7

Note: Each risk and protective factor scale was calculated as the average of one or more questions. Students whose scores placed them above the midpoint of the scale were considered "at risk" or "resilient" for a given factor. Figures in this table indicate percentage "at risk" or "resilient."

[+]Data suppressed due to low precision.

[1]Includes blacks or African Americans, Hispanics, American Indians or Alaskan Natives, Asians, or Native Hawaiians or other Pacific Islanders.

Source: Missouri 2000 Student Survey.

Exhibit 5.5 displays the percentage of students within each region who were at risk or resilient on each of the school factors. There was considerable variability across regions.

All school risk factors were shown to be positively related to substance use (Exhibit 5.6). Students who were at risk on each of these factors were two to three times more likely to have used alcohol or illicit drugs in the past month than students who were not at risk. Similarly, all school protective factors were shown to be positively related to substance use. Students who were resilient on each of these protective factors were approximately two times more likely *not* to have used substances than students who were not resilient.

5.3 Family Factors

Exhibit 5.7 displays the percentage of students "at risk" and "resilient" on each of the family scales. The most common family risk factors for Missouri public school students were "history of antisocial behavior," "conflict," and "poor discipline"; approximately one third of all students were at risk on each of these factors. The exhibit also shows the following:

- Males were more likely than females to be at risk on the factor of "poor discipline," while females were more likely than males to be at risk on the factors of "conflict" and "history of antisocial behavior." Males were slightly more likely to report resiliency on the factor of "attachment" than females.

- Students in the other racial/ethnic category were more likely than whites to be at risk on the factors of "poor discipline" and "history of antisocial behavior." White students were more likely to be resilient on the factors of "attachment" and "rewards for conventional involvement."

- As students got older, they were at increasing risk on the factors of "poor family management," "poor discipline," and "parental attitudes favorable toward substance use." For example, only 12% of 6th graders were at risk on the factor of "poor discipline" compared to 48% of 12th graders.

Exhibit 5.8 displays the percentage of students within each region who were at risk or resilient on each of the family factors. There was considerable variability across regions.

All family risk factors were shown to be positively related to substance use (Exhibit 5.9). The strongest relationships between substance use and risk behaviors were for the risk factor of "parental attitudes favorable toward drug use." Students who were at risk on this factor were

Exhibit 5.5 Profile of School Risk and Protective Factors Among Missouri Public School Students, by Region: 2000

School Factor	Region						Total
	Western	Southwest	Northern	Central	Eastern	Southeast	
Risk Factors							
Academic failure	20.0	21.5	21.5	26.0	23.7	24.4	22.8
Little commitment to school	26.6	30.2	27.4	30.6	28.0	27.7	28.3
School absenteeism	2.5	+	+	+	2.9	+	2.4
Protective Factors							
Opportunities for positive involvement	84.7	81.5	84.6	83.3	82.6	82.3	83.1
Rewards for conventional involvement	49.8	52.1	56.9	50.8	54.6	51.1	52.7

Note: Each risk and protective factor scale was calculated as the average of one or more questions. Students whose scores placed them above the midpoint of the scale were considered "at risk" or "resilient" for a given factor. Figures in this table indicate percentage "at risk" or "resilient."

[+]Data suppressed due to low precision.

Source: Missouri 2000 Student Survey.

Exhibit 5.6 Odds Ratios of School Risk and Protective Factors with Substance Use Among Missouri Public School Students: 2000

	Past-Month Use	
School Factors	**Alcohol**	**Other Illicit Drugs**
Risk Factors		
Academic failure	1.9	3.0
Little commitment to school	2.9	3.3
School absenteeism	2.8	3.0
Protective Factors		
Opportunities for positive involvement	1.9	2.2
Rewards for conventional involvement	2.1	2.3

Source: Missouri 2000 Student Survey.

Exhibit 5.7 Profile of Family Risk and Protective Factors Among Missouri Public School Students, by Demographic Characteristics: 2000

	Gender		Race/Ethnicity		Grade				
Family Factor	**Male**	**Female**	**White**	**All Other Races[1]**	**6**	**8**	**10**	**12**	**Total**
Risk Factors									
Poor family management	7.4	6.3	6.6	8.3	3.6	5.4	6.5	12.2	6.9
Poor discipline	36.2	25.6	29.0	39.2	12.2	24.4	37.4	48.4	30.6
Conflict	31.2	35.6	32.9	36.1	25.9	33.3	38.3	35.7	33.4
History of antisocial behavior	33.1	38.1	34.5	41.7	16.6	33.6	46.5	45.4	35.6
Parental attitudes favorable toward drug use	5.5	6.3	6.4	4.3	+	4.4	8.5	10.8	5.9
Parental attitudes favorable to antisocial behavior	4.1	2.3	2.9	4.4	+	3.5	3.2	4.2	3.2
Protective Factors									
Attachment	76.9	72.0	76.1	65.1	84.6	73.5	69.8	69.6	74.3
Opportunities for positive involvement	76.8	74.9	75.8	75.3	85.1	77.0	70.1	71.7	75.8
Rewards for conventional involvement	62.9	62.4	63.3	59.0	73.9	63.8	56.7	56.8	62.6

Note: Each risk and protective factor scale was calculated as the average of one or more questions. Students whose scores placed them above the midpoint of the scale were considered "at risk" or "resilient" for a given factor. Figures in this table indicate percentage "at risk" or "resilient."

[+]Data suppressed due to low precision.

[1]Includes blacks or African Americans, Hispanics, American Indians or Alaskan Natives, Asians, or Native Hawaiians or other Pacific Islanders.

Source: Missouri 2000 Student Survey.

Exhibit 5.8 Profile of Family Risk and Protective Factors Among Missouri Public School Students, by Region: 2000

	Region						
Family Factor	**Western**	**Southwest**	**Northern**	**Central**	**Eastern**	**Southeast**	**Total**
Risk Factors							
Poor family management	6.4	6.4	6.2	5.9	7.9	7.4	6.9
Poor discipline	29.0	26.5	25.6	27.3	36.7	29.8	30.6
Conflict	32.4	33.3	31.7	30.9	36.5	30.9	33.4
History of antisocial behavior	30.2	33.3	35.0	34.2	39.9	38.0	35.6
Parental attitudes favorable toward drug use	5.4	6.3	6.8	4.6	6.4	5.7	5.9
Parental attitudes favorable to antisocial behavior	3.2	3.0	+	+	4.3	+	3.2
Protective Factors							
Attachment	75.4	75.3	74.8	77.5	71.5	74.9	74.3
Opportunities for positive involvement	76.5	79.3	76.5	75.6	74.5	72.8	75.8
Rewards for conventional involvement	65.4	62.9	63.7	63.3	61.2	58.6	62.6

Note: Each risk and protective factor scale was calculated as the average of one or more questions. Students whose scores placed them above the midpoint of the scale were considered "at risk" or "resilient" for a given factor. Figures in this table indicate percentage "at risk" or "resilient."

[+]Data suppressed due to low precision.

Source: Missouri 2000 Student Survey.

Exhibit 5.9 Odds Ratios of Family Risk and Protective Factors with Health Behavior Scales Among Missouri Public School Students: 2000

	Past-Month Use	
Family Factors	**Alcohol**	**Other Illicit Drugs**
Risk Factors		
Poor family management	2.9	2.9
Poor discipline	4.1	4.2
Conflict	1.9	2.1
History of antisocial behavior	4.1	5.0
Parental attitudes favorable toward drug use	8.5	8.2
Parental attitudes favorable to antisocial behavior	3.9	5.5
Protective Factors		
Attachment	1.9	2.4
Opportunities for positive involvement	2.0	2.1
Rewards for conventional involvement	1.8	2.3

Source: Missouri 2000 Student Survey.

eight times more likely to have used alcohol and illicit drugs in the past month than students who were not at risk on this factor. For all other risk factors, at-risk students were two to five times more likely to report substance use than students not at risk. Similarly, all protective factors were shown to be positively related to substance use. Students who were resilient on each of these protective factors were approximately two times more likely *not* to have used substances than students who were not resilient.

5.4 Peer-Individual Factors

Exhibit 5.10 displays the percentage of students "at risk" and "resilient" on each of the peer-individual scales. This exhibit shows that the most important peer-individual risk factors for Missouri public school students were "sensation seeking," "rebelliousness," and "friends' substance use"; approximately 20% to 25% of all students were at risk on each of these factors. The exhibit also shows the following:

- Males were more likely than females to be at risk on the factors of "rebelliousness," "early initiation of substance use," "attitudes favorable toward antisocial behavior," "perceived risks of substance use," and "sensation seeking." Females were more likely to be resilient on both protective factors.

- White students were more likely than students in the other racial/ethnic category to be at risk on the factor of "attitudes favorable toward substance use" and "sensation seeking." Students in the other racial/ethnic category were more likely than white students to be at risk on the factor of "perceived risks of substance use." White students were more likely to be resilient on the factor of "belief in the moral order."

- As students got older, they were at increasing risk on the factors of "rebelliousness," "attitudes favorable toward substance use," "friends' substance use," and "sensation seeking."

Exhibit 5.11 displays the percentage of students within each region who were at risk or resilient on each of the family factors. There was considerable variability across regions.

All peer-individual risk factors were shown to be positively related to substance use (Exhibit 5.12). The strongest relationships between substance use and risk behaviors were for the risk factors of "early initiation of substance use," "attitudes favorable toward substance use," and "friends' substance use." Students who were at risk on each of these factors were 11 to 15 times more likely to have used alcohol or illicit drugs in the past month than students who were

Exhibit 5.10 Profile of Peer-Individual Risk and Protective Factors Among Missouri Public School Students, by Demographic Characteristics: 2000

	Gender		Race/Ethnicity		Grade				
Peer-Individual Factor	**Male**	**Female**	**White**	**All Other Races[1]**	**6**	**8**	**10**	**12**	**Total**
Risk Factors									
Rebelliousness	23.8	16.9	19.7	23.3	10.8	22.6	24.0	24.2	20.2
Early initiation of substance use	18.9	14.6	16.4	17.5	4.8	19.9	24.1	18.0	16.5
Early initiation of antisocial behavior	2.7	+	1.3	4.1	+	2.8	1.6	+	1.8
Impulsiveness	13.8	10.8	12.0	13.5	10.9	14.3	12.8	10.7	12.2
Antisocial behavior	+	+	+	+	+	+	+	+	+
Attitudes favorable toward antisocial behavior	12.9	7.7	10.0	11.5	3.5	13.2	13.1	11.3	10.2
Attitudes favorable toward substance use	14.4	12.3	14.0	10.4	1.8	9.6	20.6	23.2	13.3
Perceived risks of substance use	15.9	10.1	12.3	16.0	8.0	13.0	15.6	15.4	12.9
Interaction with antisocial peers	1.9	1.4	1.1	4.2	+	2.4	2.6	+	1.7
Friends' substance use	21.2	18.5	19.8	19.2	+	15.6	31.6	32.2	19.6
Sensation seeking	34.8	18.4	27.2	22.1	14.4	26.9	32.3	32.8	26.3
Rewards for antisocial involvement	9.7	10.3	10.0	9.8	4.3	11.3	14.1	10.3	10.0
Protective Factors									
Social skills	66.2	80.8	73.8	73.4	89.4	72.0	65.0	67.7	73.8
Belief in the moral order	66.3	80.1	74.1	70.3	90.5	71.2	63.7	66.8	73.5

Note: Each risk and protective factor scale was calculated as the average of one or more questions. Students whose scores placed them above the midpoint of the scale were considered "at risk" or "resilient" for a given factor. Figures in this table indicate percentage "at risk" or "resilient."

[+]Data suppressed due to low precision.

[1]Includes blacks or African Americans, Hispanics, American Indians or Alaskan Natives, Asians, or Native Hawaiians or other Pacific Islanders.

Source: Missouri 2000 Student Survey.

Exhibit 5.11 Profile of Peer-Individual Risk and Protective Factors Among Missouri Public School Students, by Region: 2000

Peer-Individual Factor	Region						Total
	Western	Southwest	Northern	Central	Eastern	Southeast	
Risk Factors							
Rebelliousness	21.0	18.6	18.9	19.3	21.8	18.4	20.2
Early initiation of substance use	14.5	15.4	15.7	17.3	17.5	18.8	16.5
Early initiation of antisocial behavior	+	+	+	+	1.9	+	1.8
Impulsiveness	13.3	10.2	10.9	10.6	13.0	13.9	12.2
Antisocial behavior	+	+	+	+	+	+	+
Attitudes favorable toward antisocial behavior	10.6	10.2	8.3	9.9	11.3	8.5	10.2
Attitudes favorable toward substance use	13.5	11.3	12.5	9.9	15.4	13.8	13.3
Perceived risks of substance use	13.8	12.4	9.5	12.8	13.8	12.8	12.9
Interaction with antisocial peers	2.2	+	+	+	1.8	+	1.7
Friends' substance use	19.1	16.2	18.4	18.9	21.9	20.2	19.6
Sensation seeking	26.1	26.4	25.3	29.1	25.9	25.1	26.3
Rewards for antisocial involvement	9.7	10.2	10.1	9.3	10.2	10.0	10.0
Protective Factors							
Social skills	73.1	76.0	72.8	78.2	71.3	75.6	73.8
Belief in the moral order	70.0	76.7	74.9	77.2	70.8	77.5	73.5

Note: Each risk and protective factor scale was calculated as the average of one or more questions. Students whose scores placed them above the midpoint of the scale were considered "at risk" or "resilient" for a given factor. Figures in this table indicate percentage "at risk" or "resilient."

[+]Data suppressed due to low precision.

Source: Missouri 2000 Student Survey.

Exhibit 5.12 Odds Ratios of Peer-Individual Risk and Protective Factors with Substance Use Among Missouri Public School Students: 2000

	Past-Month Use	
Peer-Individual Factors	**Alcohol**	**Other Illicit Drugs**
Risk Factors		
Rebelliousness	3.3	3.4
Early initiation of substance use	11.0	13.0
Early initiation of problem behavior	3.6	6.6
Impulsiveness	1.8	2.1
Antisocial behavior	+	+
Attitudes favorable toward antisocial behavior	5.7	6.7
Attitudes favorable toward substance use	13.0	15.0
Perceived risks of substance use	4.3	7.9
Interaction with antisocial peers	6.1	10.0
Friends' substance use	11.0	15.0
Sensation seeking	5.0	4.6
Rewards for antisocial involvement	2.5	3.4
Protective Factors		
Social skills	7.5	7.9
Belief in the moral order	4.2	4.7

[+]Data suppressed due to low precision.

Source: Missouri 2000 Student Survey.

not at risk on these factors. Similarly, peer-individual protective factors were shown to be positively related to substance use. Students who were resilient on these factors were four to eight times more likely *not* to report substance use than students who were not resilient.

5.5 Effect of the Number of Risk and Protective Factors

Overall, about 10% of Missouri public school students reported none of the risk factors asked about in this survey. Approximately 25% reported 1 or 2 risk factors, 29% reported 3 to 5 risk factors, 25% reported 6 to 10 risk factors, 11% reported 11 to 19 risk factors, and less than 1% reported more than 20 risk factors.

Analyses to assess the cumulative effects of risk factors on four types of past-month substance use (i.e., tobacco, alcohol, marijuana, and any illicit drug) clearly show that the greater the number of risk factors, the more likely students were to report substance use (Exhibit 5.13). For example, although only 5% of the students with no risk factors reported use of alcohol, 14% of those with 2 risk factors, 28% of those with 4 risk factors, 46% of those with 6 risk factors, 55% of those with 8 risk factors, 72% of those with 10 risk factors, and 98% of those with 15 or more risk factors reported such use.

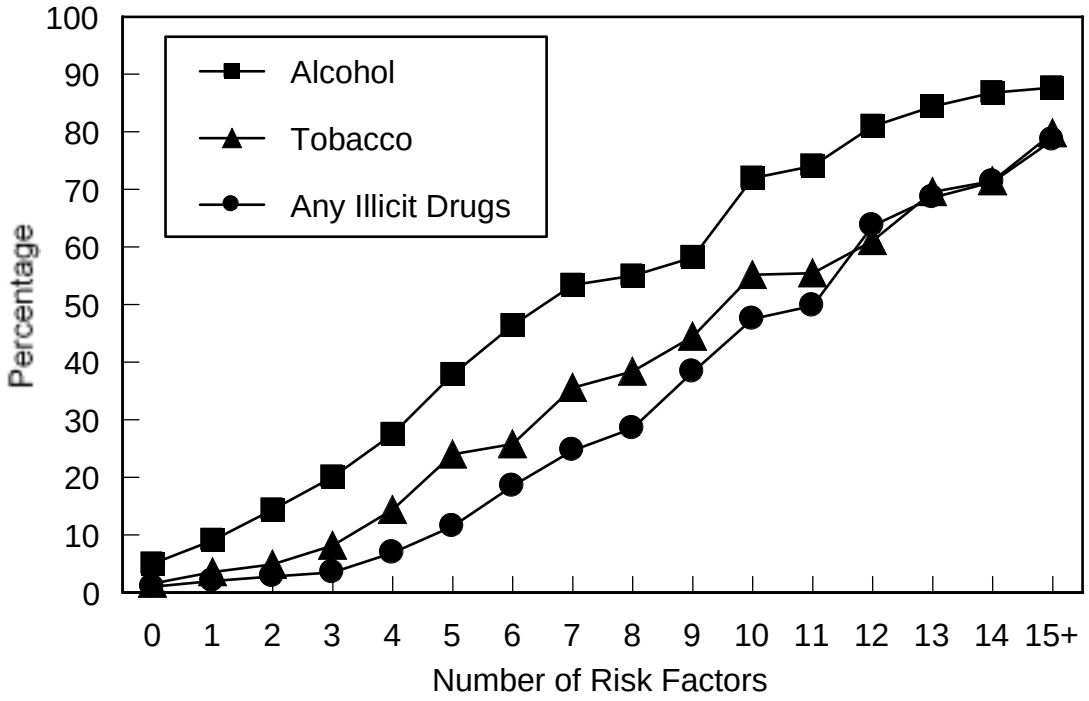
Overall, 11% of Missouri public school students reported all 9 of the protective factors asked about in this survey. Approximately 14% reported 8 protective factors, 15% reported 7 protective factors, 14% reported 6 protective factors, 12% reported 5 protective factors, 12% reported 4 protective factors, 10% reported 3 protective factors, 7% reported 2 protective factors, and 6% reported only 1 or no protective factors.

Analyses to assess the cumulative effects of protective factors on substance use show that the greater the number of protective factors, the less likely students were to report substance use (Exhibit 5.14). For example, only 14% of the students with 9 protective factors reported use of alcohol, 28% of those with 7 protective factors, 41% of those with 5 protective factors, 48% of those with 3 protective factors, 68% of those with 1 protective factor, and 76% of those with no protective factors reported such use.

5.6 Summary

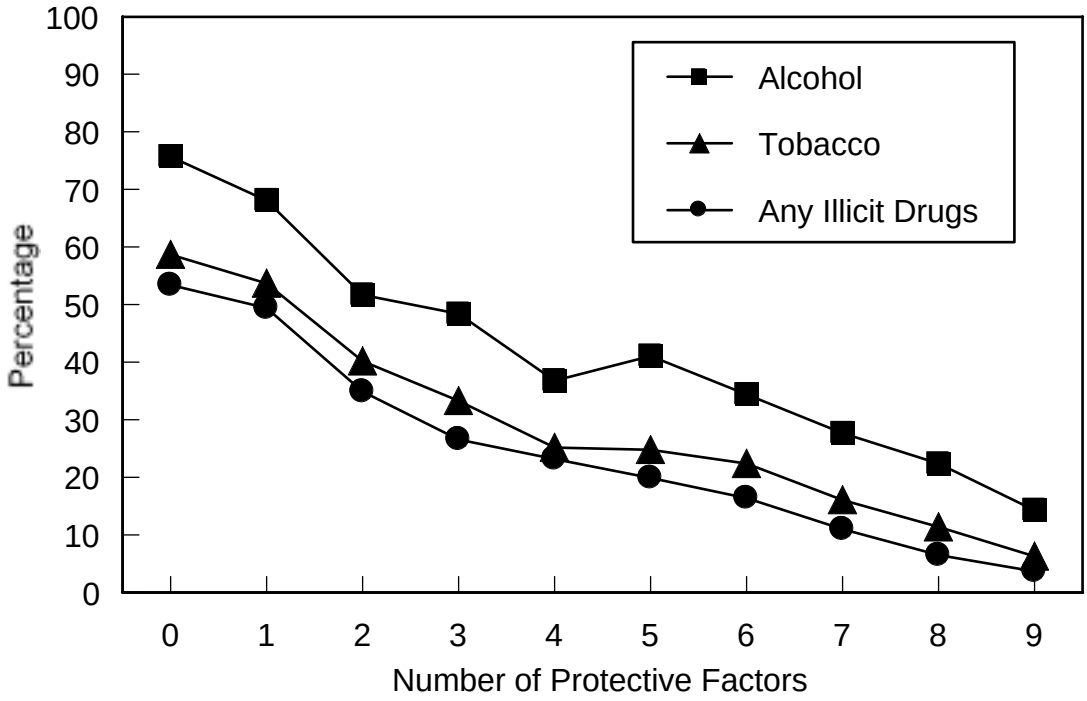
In general, as students got older, they were at increased risk on the various risk factors and were less resilient on the protective factors. For example, only 7% of 6th graders were at risk on the factor of "perceived availability of drugs" compared with 33% of 8th graders, 66% of 10th graders, and 80% of 12th graders.

Exhibit 5.13 Cumulative Effects of Risk Factors on Substance Use Among Missouri Public School Students: 2000



Source: Missouri 2000 Student Survey.

Exhibit 5.14 Cumulative Effects of Protective Factors on Substance Use Among Missouri Public School Students: 2000



Source: Missouri 2000 Student Survey.

Nearly half of all public school students in Missouri were at risk on the factor of "perceived availability of drugs," and over one quarter were at risk on the factors of "poor family discipline," "family conflict," and "family history of antisocial behavior." Less than half of all public school students in Missouri were resilient on the protective factors of "community opportunities for positive interaction" and "community rewards for conventional involvement."

All risk factors within each domain were shown to be positively related to substance use. Some of the strongest relationships between substance use were for the peer-individual risk factors of "early initiation of substance use," "attitudes favorable toward drug use," "friends' substance use," and "antisocial behavior." Students who were at risk on each of these factors were 10 to 17 times more likely to have used alcohol or illicit drugs in the past month than students who were not at risk on these factors.

Protective factors from all domains were shown to be positively related to substance use. Students who were resilient on these factors were 2 to 10 times more likely *not* to report substance use than students who were not resilient.

The cumulative effect of risk and protection factors on alcohol and drug use was evident among Missouri public school students. Students at high risk on a larger number of risk factors were increasingly more likely to use alcohol and other drugs, whereas students possessing a larger number of protective factors were increasingly less likely to use alcohol and other drugs.

Section III

Findings for Private School Students

6. PREVALENCE OF TOBACCO, ALCOHOL, AND ILLICIT DRUG USE AMONG MISSOURI PRIVATE SCHOOL STUDENTS

This chapter presents data about use of tobacco, alcohol, and illegal substances among 6th, 8th, 10th, and 12th grade private school students in Missouri. To determine the characteristics of students who were using alcohol, tobacco, and other illicit drugs, this report looks at each of the prevalence categories separately by gender and grade in school.

6.1 Tobacco

6.1.1 Lifetime Tobacco Use

As shown in Exhibit 6.1, about 39% of Missouri private school students had ever used tobacco (i.e., either cigarettes or smokeless tobacco). Males were more likely to have reported lifetime tobacco use than females (42% vs. 35%). Prevalence rates increased noticeably by grade categories. The largest difference in use occurred between the 6th and 8th grades, where nearly four times as many 8th graders reported lifetime use (9% vs. 35%). The higher rates of lifetime use among older students may reflect a longer opportunity to have tried cigarettes. In addition, readers are cautioned that any cigarette use qualified as lifetime use, even if the student only took one or two puffs. Consequently, the 39% of Missouri private school students who had ever tried tobacco includes students who tried cigarettes but did not progress to regular cigarette smoking, as well as those who do smoke regularly. Nevertheless, this rate of lifetime tobacco use suggests that many Missouri private school students have had access to tobacco products, despite the illegality of tobacco sales to students under the age of 18 years.

6.1.2 Past-Month Tobacco Use

Nearly one fifth (19%) of Missouri's private school students used tobacco in the 30 days prior to the survey (i.e., they were current tobacco users) (Exhibit 6.2). There was little difference in current use between gender. As with lifetime use, rates of current tobacco use increased by grade categories. For example, 3% of students in the 6th grade, 12% of those in the 8th grade, 29% of those in the 10th grade, and 36% of those in the 12th grade had used tobacco in the past month.

Exhibit 6.2 also shows the prevalence of past-month tobacco use broken down by type of tobacco (i.e., cigarettes or smokeless tobacco). Approximately 17% of students reported smoking cigarettes in the past month, and 4% reported using smokeless tobacco. For both types of tobacco, use increased with grade. Although there was no difference in past-month cigarette

Exhibit 6.1 Prevalence of Lifetime Use of Alcohol, Tobacco, and Other Drugs Among Missouri Private School Students, by Selected Demographic Characteristics

	Gender		Grade				
	Male	**Female**	**6**	**8**	**10**	**12**	**Total**
Tobacco[1]	42.1	35.2	9.2	35.2	55.1	62.8	38.6
Alcohol	60.7	55.8	26.5	57.9	69.3	86.1	58.0
Other drugs	32.6	26.4	7.6	26.1	40.5	48.6	29.4
Marijuana	23.6	17.6	0.4	8.4	35.3	45.3	20.5
Inhalants	13.0	13.5	7.1	21.5	13.4	10.8	13.2
Cocaine	5.1	3.2	++	3.8	4.4	9.3	4.1
LSD or other psychedelics	9.3	4.1	++	2.7	6.8	19.4	6.6
Speed or amphetamines	7.1	3.6	++	1.1	7.6	15.1	5.4
Other illegal drugs	10.3	8.0	0.6	6.7	15.8	15.5	9.0

Note: Unweighted numbers of respondents are shown in Table 2.4.

[1]Includes cigarettes and smokeless tobacco.

[++]Data suppressed due to low prevalence.

Source: Missouri 2000 Student Survey.

Exhibit 6.2 Prevalence of Past-Month Use of Alcohol, Tobacco, and Other Drugs Among Missouri Private School Students, by Selected Demographic Characteristics

	Gender		Grade				
	Male	**Female**	**6**	**8**	**10**	**12**	**Total**
Tobacco[1]	20.2	17.6	3.4	12.2	29.2	35.7	18.8
Cigarettes	17.4	17.4	3.1	12.2	26.1	32.5	17.4
Smokeless tobacco	6.7	1.5	0.3	1.3	7.9	8.1	4.0
Smoking five or more cigarettes per day	3.8	3.1	++	2.2	3.4	9.2	3.4
Alcohol	35.9	29.4	7.1	26.1	43.4	60.7	32.5
Binge alcohol[2]	21.6	13.4	0.5	10.3	25.3	39.9	17.6
Other Drugs	18.4	12.9	3.9	12.6	21.4	27.5	15.6
Marijuana	10.8	8.6	0.4	4.9	15.6	20.8	9.7
Inhalants	5.9	5.6	3.4	8.2	7.8	3.6	5.8
Cocaine	1.8	1.2	++	1.1	1.7	3.4	1.5
LSD or other psychedelics	6.7	1.1	++	1.6	1.7	13.7	3.9
Speed or amphetamines	4.2	1.7	++	1.1	4.4	7.7	3.0
Other illegal drugs	5.7	3.5	0.3	3.1	9.7	6.3	4.5

[1]Includes cigarettes and smokeless tobacco.
[2]Drinking five or more drinks of alcohol in a row in the past 2 weeks.

Note: Unweighted numbers of respondents are shown in Table 2.4.

[++]Data suppressed due to low prevalence.

Source: Missouri 2000 Student Survey.

use between the two genders, past-month use of smokeless tobacco was significantly higher among males (7%) than females (2%).

6.1.3 Heavy Smoking

Exhibit 6.2 also displays the prevalence of smoking more than five cigarettes per day, by grade and gender. A total of 3% of Missouri private school students reported heavy smoking. As with lifetime and past-month smoking, the rate of smoking more than five cigarettes per day increased by grade category. Less than 1% of 6th grade students were heavy smokers, while 2% of 8th graders, 3% of 10th graders, and 9% of 12th graders reported heavy use. Overall, males and females reported comparable rates of heavy smoking (4% and 3%, respectively).

6.2 Alcohol

6.2.1 Lifetime Alcohol Use

Exhibit 6.1 shows that approximately 6 out of 10 Missouri private school students had ever had a drink of alcohol in their life (lifetime use), beyond just a few sips of alcohol. Males (61%) were more likely to report lifetime alcohol use than females (56%). As would be expected, prevalence of lifetime alcohol use increased by grade categories. The largest increase was between the 6th and 8th graders' use levels (27% and 58%, respectively). The higher rates of lifetime alcohol use with increased age may reflect increased opportunities for older students to try alcohol. Nevertheless, the rates by grade level suggest that over 86% of Missouri students will have tried alcohol by the time they finish the 12th grade.

6.2.2 Past-Month Alcohol Use

As shown in Exhibit 6.2, nearly one third of private school students had consumed at least one drink in the month prior to the 2000 survey (i.e., currently used alcohol). Males were more likely to report past-month alcohol use than females (36% compared to 29%). As in lifetime use, rates for current use also increased progressively by grade. Notably, over half the students in the 12th grade reported drinking alcohol in the past month.

6.2.3 Binge Drinking

Exhibit 6.2 also presents the prevalence of binge drinking (i.e., consuming five or more drinks of alcohol in a row) among Missouri private school students during the 2-week period before the survey. As shown, an estimated 18% of students met the definition of binge drinking in the preceding 2 weeks. Males were more likely than females to report binge alcohol

use (22% vs. 13%, respectively). As students' grade increased, so did their rates of binge drinking. Less than 1% of 6th graders reported binge drinking compared to 10% of 8th graders, 25% of 10th graders, and 40% of 12th graders.

6.3 Other Drugs

6.3.1 Lifetime Other Drug Use

Approximately 29% of Missouri private school students reported having used at least one illicit drug at least once in their lifetime (Exhibit 6.1). Males were more likely to report lifetime illicit drug use than females (33% vs. 26%). Percentages of students reporting use increased with grade. Lifetime use of illicit drugs tripled between grades 6 and 8 (8% and 26%), and then almost doubled by grade 12 (49%).

The most frequently used illicit drug was marijuana (21%), followed by inhalants (13%), other unspecified illegal drugs (9%), speed or amphetamines (7%), LSD or other psychedelics (5%), and cocaine (4%).

6.3.2 Past-Month Other Drug Use

Approximately 16% of Missouri's private school students reported using an illicit drug in the 30 days prior to the survey (Exhibit 6.2). Males were more likely to report past-month use than females (19% vs. 13%, respectively). Again, percentages of students reporting use increased with grade. Approximately 4% of 6th graders, 13% of 8th graders, 21% of 10th graders, and 28% of 12th graders reported using an illicit drug in the month preceding the survey.

In the 30 days prior to the 2000 survey, 10% of the Missouri private school students reported using marijuana, 6% reported using inhalants, 2% reported using cocaine, 4% reported using LSD or other psychedelics, 3% reported using speed or amphetamines, and 5% reported using some other unspecified illegal drug.

6.4 Violent and Delinquent Behaviors

6.4.1 Prevalence of Attacking Others with the Idea of Seriously Hurting Them

Exhibit 6.3 shows that more than 9% of Missouri private school students had attacked others in the past year with the idea of seriously hurting them. This prevalence of attacking someone peaked in grade 8 (13%) and then decreased slightly among students in the higher grades. Males were more than twice as likely to report this behavior compared to females (14% and 6%, respectively).

Exhibit 6.3 Prevalence of Past-Month Violent and Delinquent Behaviors Among Missouri Private School Students, by Demographic Characteristics: 2000

	Gender		Grade				
	Male	**Female**	**6**	**8**	**10**	**12**	**Total**
Attacked someone with the idea of seriously hurting them	13.5	5.5	5.0	12.5	10.9	9.6	9.4
Carried a handgun	1.7	1.1	0.4	2.3	1.8	1.3	1.4
Drunk or high at school	12.0	9.0	0.6	6.7	14.4	23.5	10.5
Suspended from school	11.6	1.9	0.8	4.0	8.9	15.0	6.7
Stole or tried to steal a motor vehicle	3.4	1.6	1.2	2.9	4.0	2.1	2.5
Sold illegal drugs	7.8	3.4	++	3.8	6.0	14.1	5.5
Been arrested	8.5	3.8	6.1	7.2	5.7	5.6	6.2

Note: Unweighted numbers of respondents are shown in Table 2.4.

++Data suppressed due to low prevalence.

Source: Missouri 2000 Student Survey.

6.4.2 Prevalence of Carrying a Handgun

Approximately 1% of Missouri private school students reported carrying a handgun other than for hunting in the past year (Exhibit 6.3). The prevalence of carrying a handgun in the past year varied little across grade or gender.

6.4.3 Delinquent Behavior

Exhibit 6.3 shows the prevalence by grade of five delinquent behaviors: being drunk or high at school, being suspended from school, stealing or attempting to steal a motor vehicle, selling illegal drugs, and having been arrested.

Drunk or High at School. Overall, 11% of Missouri private school students reported having been drunk or high at school in the year prior to the survey. The prevalence of this behavior increased as grade increased, ranging from less than 1% among 6th graders to 24% among 12th graders. There was little difference by gender.

Suspended from School. Overall, approximately 7% of Missouri private school students reported having been suspended from school in the year prior to the survey. The prevalence of having been suspended increased from 6th grade (1%) to the peak level of reporting in 12th grade (15%). Males were much more likely to report having been suspended than females (12% vs. 2%).

Stole or Tried to Steal a Motor Vehicle. Approximately 3% of Missouri private school students reported that they either stole or tried to steal a motor vehicle in the past year. This behavior varied little by grade or gender.

Sold Illegal Drugs. Overall, 6% of Missouri private school students reported that they sold illegal drugs in the year prior to the survey. The prevalence of this behavior increased as grade increased, ranging from less than 1% among 6th graders to 14% among 12th graders. Males were more likely to report this behavior than females (8% vs. 3%).

Been Arrested. Overall, 6% of Missouri private school students reported that they had been arrested in the year prior to the survey. This behavior varied little by grade, but was twice as common among males as females (9% vs. 4%).

6.5 Summary

Overall, the data presented in this chapter provide prevalence information about substance use and violent and delinquent behaviors among Missouri private school students. It is important to note that because these data were collected from a school setting, and students exhibiting these behaviors may be more likely to have dropped out of school, data estimates for these behaviors may be somewhat conservative.

The most commonly used substances among Missouri private school students in grades 6, 8, 10, and 12 were alcohol, cigarettes, and marijuana. The majority (58%) used at least some alcohol in their lifetime, and 33% used it in the month before the survey. In addition, approximately 18% exhibited binge drinking behavior in the 2 weeks before the survey. Recent cigarette use was reported by 19% of students and recent marijuana use by 10%. In general males were more likely to use more substances than females, and the rate of substance use increased steadily between grades 6 and 12. For example, prevalence of recent alcohol use was 7% among 6^{th} graders, 26% among 8^{th} graders, 43% among 10^{th} graders, and 61% among 12^{th} graders.

Violent behavior included attacking others in the 12 months prior to the survey with the intent to seriously hurt them and carrying a handgun. Over 9% of Missouri private school students reported attacking someone, and 1% had carried a handgun in the year prior to the study.

Delinquent behaviors included on the survey were being drunk or high at school, being suspended from school, stealing or trying to steal a motor vehicle, selling illegal drugs, and having been arrested. Of these, the most common was being drunk or high at school (11%), followed by being suspended from school (7%), being arrested (6%), selling illegal drugs (6%), and stealing or trying to steal a motor vehicle (3%).

Both violent and delinquent behaviors were generally more common among males than females, and the rates increased with grade.

7. RISK AND PROTECTIVE FACTORS FOR ADOLESCENT SUBSTANCE USE AMONG PRIVATE SCHOOL STUDENTS

In this chapter, we present data on risk and protective factors for substance use among Missouri private school students. For a detailed explanation of scale construction, see Chapter 5. The first four sections of this chapter focus on four risk and protective factor domains (community, school, family, and peer-individual). Each section's data are presented in a table, displaying the percentage of students considered at risk or resilient on each scale by gender. Note that additional exhibits were presented for public school students. We were unable to conduct these additional analyses because of the small number of private school students completing the survey.

7.1 Community Factors

Exhibit 7.1 displays the percentage of private school students "at risk" and "resilient" on each of the community scales. This exhibit shows, for example, that 18% of Missouri private school students' scale scores for "low neighborhood attachment" were above the midpoint of the scale. Thus, we would consider 18% of Missouri's private school students at risk on this factor. With regard to the protective factors, we would consider 67% of Missouri's private school students "resilient" on the factor of "opportunities for conventional involvement."

Exhibit 7.1 shows that the most important community risk factor for Missouri private school students at the time of the survey was "laws favorable toward drug use"; nearly two thirds of all students were at risk on this factor. The second most important community risk factor was "perceived availability of drugs"; over one third were at risk on this factor. This exhibit also shows that males were more likely to be at risk on the factors of low neighborhood attachment, laws favorable toward drug use, and perceived availability of drugs. Females were more likely to be resilient on both community protective factors.

7.2 School Factors

Exhibit 7.2 displays the percentage of private school students "at risk" and "resilient" on each of the school scales. This exhibit shows that males were more likely to be at risk on the factors of "academic failure" and "little commitment to school" than were females; additionally, females were more likely to be resilient than males on both of the protective factors.

Exhibit 7.1 Profile of Community Risk and Protective Factors Among Missouri Private School Students, by Gender: 2000

	Gender		
Community Factor	**Male**	**Female**	**Total**
Risk Factors			
Low neighborhood attachment	22.9	13.9	18.2
Community disorganization	+	+	6.0
Personal transitions and mobility	+	+	4.8
Community transitions and mobility	+	+	6.3
Norms favorable toward drug use	10.8	8.5	9.5
Laws favorable toward drug use	67.3	56.9	62.1
Perceived availability of drugs	38.5	34.8	36.5
Protective Factors			
Opportunities for conventional involvement	59.1	74.8	67.1
Rewards for conventional involvement	40.7	51.8	46.4

Note: Each risk and protective factor scale was calculated as the average of one or more questions. Students whose scores placed them above the midpoint of the scale were considered "at risk" or "resilient" for a given factor. Figures in this table indicate percentage "at risk" or "resilient."

[+]Data suppressed due to low precision.

Source: Missouri 2000 Student Survey.

Exhibit 7.2 Profile of School Risk and Protective Factors Among Missouri Private School Students, by Gender: 2000

School Factor	Gender		Total
	Male	Female	
Risk Factors			
Academic failure	23.1	10.4	16.7
Little commitment to school	38.8	24.4	31.9
School absenteeism	+	+	+
Protective Factors			
Opportunities for positive involvement	85.0	88.8	86.9
Rewards for conventional involvement	55.1	61.4	58.5

Note: Each risk and protective factor scale was calculated as the average of one or more questions. Students whose scores placed them above the midpoint of the scale were considered "at risk" or "resilient" for a given factor. Figures in this table indicate percentage "at risk" or "resilient."

[+]Data suppressed due to low precision.

Source: Missouri 2000 Student Survey.

7.3 Family Factors

Exhibit 7.3 displays the percentage of private school students "at risk" and "resilient" on each of the family scales. The most common family risk factors for Missouri private school students were "conflict," "history of antisocial behavior," and "poor discipline"; approximately one quarter of all students were at risk on each of these factors. The exhibit also shows that males were more likely than females to be at risk on the factors of "poor discipline" and "conflict." Males were slightly more likely to report resiliency on the factor of "rewards for conventional involvement" than females.

7.4 Peer-Individual Factors

Exhibit 7.4 displays the percentage of private school students "at risk" and "resilient" on each of the peer-individual scales. This exhibit shows that the most important peer-individual risk factors for Missouri private school students were "sensation seeking," "rebelliousness," and "friends' substance use"; approximately 17% to 24% of all private school students were at risk on each of these factors. The exhibit also shows that males were more likely than females to be at risk on the factors of "rebelliousness," "perceived risks of substance use," and "sensation seeking." Females were more likely to be resilient on both protective factors.

7.5 Effect of the Number of Risk and Protective Factors

Overall, about 13% of Missouri private school students reported none of the risk factors asked about in this survey. Approximately 24% reported 1 or 2 risk factors, 32% reported 3 to 5 risk factors, 22% reported 6 to 10 risk factors, 9% reported 11 to 19 risk factors, and less than 1% reported more than 20 risk factors.

Analyses to assess the cumulative effects of risk factors on four types of past-month substance use (tobacco, alcohol, marijuana, and any illicit drug) clearly show that the greater the number of risk factors, the more likely students were to report substance use (Exhibit 7.5). For example, although only 6% of the students with no risk factors reported use of alcohol, 22% of those with 2 risk factors, 42% of those with 4 risk factors, 57% of those with 6 risk factors, 68% of those with 8 risk factors, and 92% of those with 10 or more risk factors reported such use.

Overall, 15% of Missouri private school students reported all 9 of the protective factors asked about in this survey. Approximately 18% reported 8 protective factors, 17% reported 7 protective factors, 13% reported 6 protective factors, 11% reported 5 protective factors, 10%

Exhibit 7.3 Profile of Family Risk and Protective Factors Among Missouri Private School Students, by Gender: 2000

Family Factor	Gender		Total
	Male	Female	
Risk Factors			
Poor family management	+	+	4.7
Poor discipline	25.1	17.7	21.1
Conflict	30.5	27.7	28.8
History of antisocial behavior	23.9	21.8	22.9
Parental attitudes favorable toward drug use	+	+	3.9
Parental attitudes favorable to antisocial behavior	+	+	+
Protective Factors			
Attachment	78.3	76.3	77.5
Opportunities for positive involvement	78.2	77.6	78.0
Rewards for conventional involvement	74.9	70.3	72.8

Note: Each risk and protective factor scale was calculated as the average of one or more questions. Students whose scores placed them above the midpoint of the scale were considered "at risk" or "resilient" for a given factor. Figures in this table indicate percent "at risk" or "resilient."

[+]Data suppressed due to low precision.

Source: Missouri 2000 Student Survey.

Exhibit 7.4 Profile of Peer-Individual Risk and Protective Factors Among the Missouri Student Population, by Gender: 2000

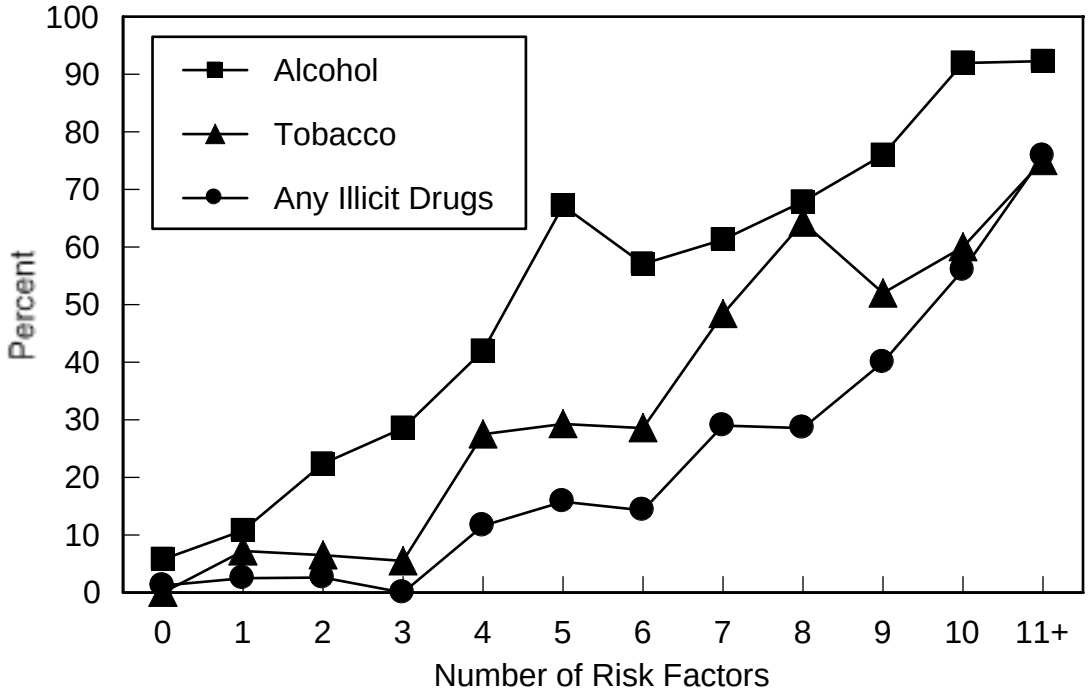
Peer-Individual Factor	Gender		Total
	Male	Female	
Risk Factors			
Rebelliousness	24.3	17.3	20.9
Early initiation of substance use	10.8	8.0	9.2
Early initiation of antisocial behavior	+	+	+
Impulsiveness	11.2	12.2	11.8
Antisocial behavior	+	+	+
Attitudes favorable toward antisocial behavior	8.1	+	6.8
Attitudes favorable toward substance use	15.3	12.9	14.0
Perceived risks of substance use	13.8	7.3	10.6
Interaction with antisocial peers	+	+	+
Friends' substance use	17.4	16.1	16.7
Sensation seeking	30.8	17.8	24.2
Rewards for antisocial involvement	8.0	9.0	8.3
Protective Factors			
Social skills	74.3	85.7	80.1
Belief in the moral order	72.6	84.2	78.4

Note: Each risk and protective factor scale was calculated as the average of one or more questions. Students whose scores placed them above the midpoint of the scale were considered "at risk" or "resilient" for a given factor. Figures in this table indicate percent "at risk" or "resilient."

[+]Data suppressed due to low precision.

Source: Missouri 2000 Student Survey.

Exhibit 7.5 Cumulative Effects of Risk Factors on Substance Use Among Missouri Private School Students: 2000



Source: Missouri 2000 Student Survey.

reported 4 protective factors, 7% reported 3 protective factors, 4% reported 2 protective factors, and 5% reported only 1 or no protective factors.

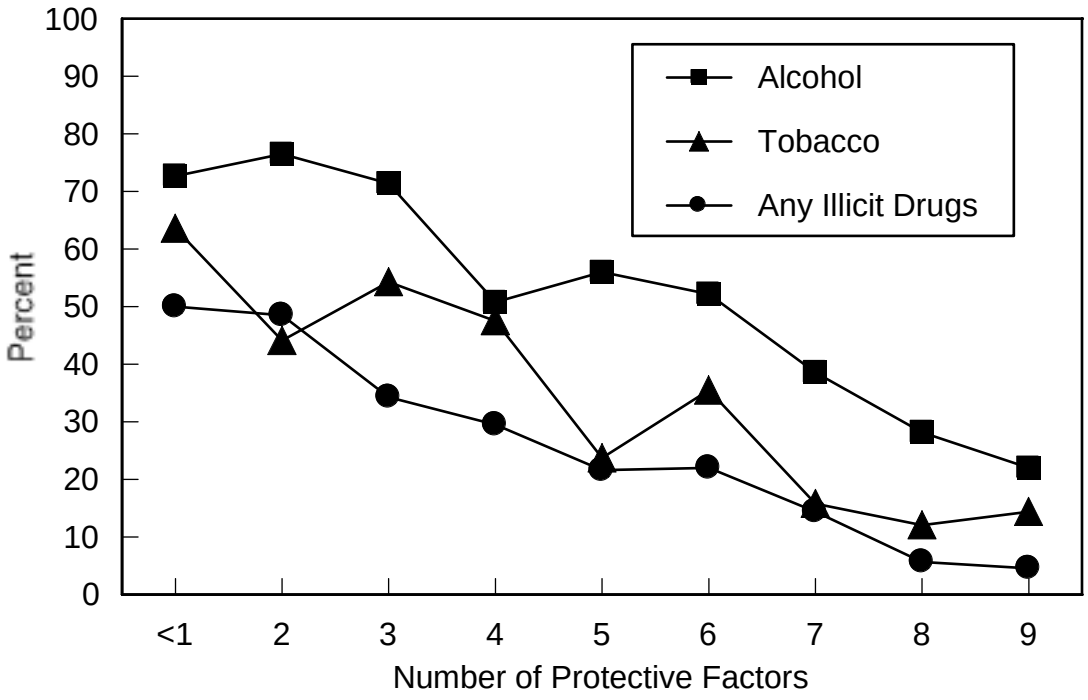
Analyses to assess the cumulative effects of protective factors on substance use show that the greater the number of protective factors, the less likely students generally were to report substance use (Exhibit 7.6). For example, 22% of the students with 9 protective factors reported use of alcohol, 39% of those with 7 protective factors, 56% of those with 5 protective factors, 71% of those with 3 protective factors, and 73% of those with none or only 1 protective factor reported such use.

7.6 Summary

Over half of all Missouri private school students were at risk on the factor of "laws favorable toward drug use," and over one quarter were at risk on the factors of "perceived availability of drugs," "little commitment to school," and "conflict." Less than half of all Missouri private school students were resilient on the protective factors of "community rewards for conventional involvement."

The cumulative effect of risk and protection factors on alcohol and drug use was evident among Missouri private school students. Students at high risk on a larger number of risk factors were increasingly more likely to use alcohol and other drugs, whereas students possessing a larger number of protective factors were increasingly less likely to use alcohol and other drugs.

Exhibit 7.6 Cumulative Effects of Protective Factors on Substance Use Among Missouri Private School Students: 2000



Source: Missouri 2000 Student Survey.

8. SUMMARY AND IMPLICATIONS

Findings from this study have implications for substance abuse prevention policy, planning, and program development in the State of Missouri. This study was designed to assist the Missouri Division of Alcohol and Drug Abuse (MDADA) in identifying adolescent populations in greatest need of substance abuse prevention and in developing prevention programs and services that target risk and protective factors for substance abuse. Even though some of the risk factors examined in this study (e.g., grade in school, gender, and race/ethnicity) are impossible to alter, they do serve to identify those with elevated risk for substance use. Other risk factors can be modified, such as academic performance; antisocial behaviors; student perceptions; and availability of alcohol, tobacco, and other drugs. The same is true for protective factors. Highlights of findings and implications regarding programming are provided in the following sections.

8.1 Summary

8.1.1 Substance Use

The most commonly used substances by Missouri students were alcohol, tobacco, and marijuana.

- Approximately one third of Missouri's public and private school students reported recent alcohol use.
- Approximately one fourth of all public school students and one fifth of private school students reported recent tobacco use.
- Approximately one tenth of both public and private school students reported recent marijuana use.

Substance use varied across some demographic characteristics.

- There were few differences in substance use by gender among public school students. However, in private schools, males were generally more likely to report substance use.
- White public school students were more likely to report recent tobacco and alcohol use than those in the other racial/ethnic category. Analysis of use by race/ethnicity could not be conducted for private school students

because of the small number of surveys completed among students in the other racial/ethnic category.

- The rate of substance use generally increased steadily between grades 6 and 12 among both public and private school students. For example, among public school students, prevalence of recent alcohol use was 11% among 6th graders, 30% among 8th graders, 45% among 10th graders, and 55% among 12th graders. Similarly, among private school students, prevalence of recent alcohol use was 7% among 6th graders, 26% among 8th graders, 43% among 10th graders, and 61% among 12th graders.

- Rates of substance use also varied by substance across region among public school students. Regional analysis could not be conducted for private school students because of the small sample size.

8.1.2 Violent and Delinquent Behaviors

Approximately 1 in 10 Missouri public and private school students reported attacking others during the year prior to the survey with the intention of seriously hurting them.

- Among both public and private school students, about twice as many males as females reported attacking someone.

- Among both public and private school students, rates for attacking someone were highest in grades 8 and 10.

Reports of carrying a handgun other than for the purpose of hunting were relatively rare. About 3% of public school students and 1% of private school students reported this behavior.

Of the delinquent behaviors asked about on the questionnaire, the most frequently reported behavior was being high or drunk at school. Slightly more than 1 out of 10 students reported this behavior.

8.1.3 Risk and Protective Factors

One way to reduce students' substance use and violent or prohibited behavior is to identify those factors that make students more or less likely to participate in such behaviors and then work to reduce the risk factors while increasing protective factors. National research has identified a set of risk and protective factors that have been shown to be related to these prohibited behaviors (Hawkins et al., 1992, 1997). The results of this student survey indicate

that these risk and protective factors are related to the same behaviors in Missouri as well. Caution must be taken to interpret the data as a correlation and not necessarily as a cause and effect. For example, we cannot tell from these data whether students are more likely to use substances because they perceive them to be available, whether students perceive substances to be more available because they use them, or whether both their use and their perception of availability might be caused by a third factor, such as laws and norms favorable to substance use.

The following findings suggest some potential targets for prevention efforts. Note that most of these findings are applicable for public school students only. Much of this analysis could not be conducted for private school students because of the small sample size.

- In general, older students tend to demonstrate more risk factors and fewer protective factors than younger students.

- All risk factors in the community, school, family, and peer-individual domains were shown to be related to both recent substance use (in the past month). The risk factors most strongly associated with these behaviors were as follows:

  - early initiation of substance use,
  - attitudes favorable toward substance use,
  - perceived risks of substance use,
  - friends' use of substances,
  - sensation seeking,
  - perceived availability of substances, and
  - parental attitudes favorable toward substance use.

  For each of these risk factors, students with that risk factor were at least *six times* more likely to report recent alcohol or drug use than students without that risk factor.

- All protective factors in the community, school, family, and peer-individual domains were shown to be related to recent substance use (in the past month), meaning that students with any particular protective factor were less likely to use substances than those without it. The protective factors most strongly associated were as follows:

  - social skills and
  - belief in the moral order.

> For each of these factors, students without that protective factor were at least *four times* more likely to report substance use than students with that protective factor.

In addition to the relationships between risk and protective factors and substance use, there is a very strong linear relationship when multiple risk or protective factors are present. The more risk factors a student has, the more likely that student is to have used substances in the past month. The more protective factors that are present, the less likely that student is to have used substances in the past month.

8.1.4 Limitations of the Data

It is important to note again the limitations of the data gathered in the Missouri 2000 Student Survey. The primary limitation is the exclusive focus on adolescents in school. With such a focus, adolescent subpopulations with concentrated numbers of problem users may be missed. These subpopulations include school dropouts, homeless and runaway students, and students who have been incarcerated or institutionalized—all of whom are likely to be undercounted by school surveys.

The subpopulation of most concern that was not captured is school dropouts. An estimated 5.2% of Missouri high school-aged students are dropouts. However, dropout rates vary significantly across the State, ranging from a low of 1.1% to a high of 12.1% (Missouri Department of Mental Health, 2000). Most research to date has shown that dropouts are more likely to be substance users than those students who remain in school. The estimates provided in this study, therefore, are representative only of the student population and not for adolescents in general (Mensch & Kandel, 1988).

The second important limitation is that the questionnaire measures self-reported behavior. Caution should be exercised in interpreting these data because of respondents' tendencies to underreport undesirable behaviors and to have difficulty remembering complicated information, such as age at first use (Bailey, Flewelling, & Rachal, 1992b).

8.2 Implications

When considering program development and implementation, Missouri needs to move in the following directions for expanding the existing prevention system.

8.2.1 Environmental Strategies

Environmental strategies, which have been used with increasing frequency in the past 10 years, are a powerful tool in our society=s effort to reduce the toll of alcohol, tobacco, and other drug problems. Although they build on and complement traditional prevention efforts, environmental strategies involve a fundamental shift in perspective. In an environmental or systems approach, alcohol, tobacco, and other drug use are seen as community issues and a reflection of the community=s norms or practices. Individual behavior is seen as being influenced by a complex interaction of many factors. These factors include such immediate influences to the individual as family norms and behavior and peer pressure. They also include broader areas, such as school, workplace, neighborhood, religious institutions, and communities. Further influences include such issues as the media, economics, pricing, and availability of substances. Environmental strategies target overarching factors that affect the community as a whole, changing the environment in order to reduce substance abuse.

8.2.2 Bonding and Meaningful Involvement

A second area for expansion of prevention programs in Missouri centers on increasing the bonding and involvement of Missouri=s students with their families, schools, communities, or a significant positive role model or mentor. Current research in the prevention field has identified opportunities for bonding and involvement as one of the most salient protective factors in terms of preventing substance use and other problematic behaviors by students. Increasingly, the importance of multiple bonds is being recognizedCstudents need these opportunities in all the major arenas in their lives: family, school, and community. Although the importance of the parent-child bond has always been acknowledged and was strongly documented by the National Longitudinal Study of Adolescent Health (Resnick et al., 1997), the prevention field is paying increasing attention to the importance of the bonds between students and their peers, their teachers, and other adults in their communities. Students frequently cite a lack of opportunities for involvement in their communities as one of their primary concerns, and they express a desire for additional opportunities to build meaningful relationships with adults. Programs that increase these opportunities should be solicited in future prevention initiatives.

Systemic change on multiple levels is the most effective way to have an impact on the current and future issue of substance abuse and prohibited behaviors. Adoption of environmental strategies and programs that provide and foster opportunities for bonding and meaningful involvement holds much promise. This programmatic expansion would complement the existing prevention efforts in the State of Missouri.

8.3 Missouri=s Strategic Student Prevention Initiatives

By 2005, Missouri=s Student Prevention Initiative Objectives and Strategies (Division of Alcohol and Drug Abuse, 2000) hopes to accomplish the following:

1. Reduce binge drinking among Missouri=s students and young adults by 5 percentage points from FY2000 baselines.

2. Reduce use of alcohol among students in the past 30 days from FY2000 baselines.

3. Delay onset of first use of alcohol among students by an additional year from FY2000 baseline.

4. Reduce the onset of first use of marijuana and other drugs by 1 year from FY2000 baselines.

5. Reduce use of marijuana in past 30 days among students by 5 percentage points from FY2000 baselines.

6. Increase the number of students who perceive risk/harm of marijuana and other drug use by 5 percentage points from FY2000.

In addition, by FY2002, Missouri hopes to reduce smoking and other tobacco use among Missouri=s students.

Some of the community-based, school-based, family-focused, and individual-focused strategies Missouri plans to use to achieve the above objectives are described below.

8.3.1 Community-Based Strategies

X Sponsor community education and awareness campaigns to alert the public to the dangers of alcohol and substance use in high-risk situations.

X Encourage community agencies to develop peer-leadership programs.

X Identify effective model mentoring programs and promote their adoption.

X Continue to support community development and mobilization efforts.

8.3.2 School-Based Strategies

X Promote the use of the Life Skills Training Curriculum in Missouri classrooms.

X Encourage schools to develop substance abuse resistance education programs.

8.3.3 Family-Focused Strategies

X Encourage community agencies to offer family-based early intervention programs.

X Support family strengthening services and programs.

X Develop and implement family-based prevention/intervention programs in targeted areas.

8.3.4 Individual-Focused Strategies

X Disseminate early identification and intervention program models to community agencies.

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APPENDIX A

Supplemental Tables

Exhibit A.1 Prevalence of Substance Use in the Lifetime Among Missouri Public School Students, by Gender and Grade: 2000

	Male				Female			
Substance	**6**	**8**	**10**	**12**	**6**	**8**	**10**	**12**
Tobacco	23.7	51.6	63.7	70.1	22.8	44.4	65.1	67.1
Cigarettes	21.9	48.5	60.7	64.4	22.2	44.1	64.9	66.9
Smokeless tobacco	11.9	25.5	36.0	46.1	4.0	7.2	10.2	11.4
Alcohol	34.2	59.2	74.8	83.0	27.8	52.9	74.7	83.3
Other Illicit Drugs	16.7	30.8	48.4	50.5	12.3	26.8	43.2	43.6
Marijuana	4.7	21.9	44.1	45.3	2.7	17.0	38.2	41.1
Inhalants	12.7	13.6	13.9	14.3	9.7	15.1	13.7	10.5
Cocaine	1.7	2.5	5.1	7.2	0.9	3.4	5.0	6.7
LSD or other psychedelics	1.3	2.1	8.9	12.8	0.3	2.5	5.6	8.0
Speed or amphetamines	1.6	4.3	9.0	11.1	0.6	4.7	9.0	10.9

Note: Unweighted numbers of respondents are shown in Table 2.4.

Source: Missouri 2000 Student Survey.

Exhibit A.2 Prevalence of Substance Use in the Past Month Among Missouri Public School Students, by Gender and Grade: 2000

	Male				Female			
Substance	**6**	**8**	**10**	**12**	**6**	**8**	**10**	**12**
Tobacco	6.9	20.4	33.9	40.0	4.8	19.6	30.7	33.5
Cigarettes	5.5	17.9	29.3	32.6	4.6	19.3	30.4	32.8
Smokeless tobacco	2.9	8.8	16.1	18.9	0.7	2.0	2.5	1.8
Alcohol	11.0	31.9	48.5	57.0	11.1	28.0	42.5	52.5
Other Illicit Drugs	7.1	16.1	27.9	24.7	5.2	14.2	18.9	18.2
Marijuana	1.6	11.8	24.3	22.6	1.0	8.6	16.6	16.8
Inhalants	5.2	4.9	5.4	2.3	4.2	7.0	2.4	1.5
Cocaine	0.4	1.0	2.0	2.6	0.3	1.6	1.1	2.0
LSD or other psychedelics	0.4	0.8	3.0	3.7	0.1	1.4	2.3	2.3
Speed or amphetamines	0.2	1.9	3.3	3.8	0.2	1.9	2.6	3.8

Note: Unweighted numbers of respondents are shown in Table 2.4.

Source: Missouri 2000 Student Survey.

Exhibit A.3 Prevalence of Violent and Delinquent Behavior in the Past 12 Months Among Missouri Public School Students, by Gender and Grade: 2000

	Male				Female			
Behavior	**6**	**8**	**10**	**12**	**6**	**8**	**10**	**12**
Attacking someone with idea of hurting them	15.7	22.8	19.7	12.2	6.6	12.8	12.9	6.8
Carrying a handgun, other than for hunting or sport	2.7	5.5	4.3	4.0	0.8	1.0	1.5	0.6
Got drunk or high at school	1.9	12.1	24.0	24.1	1.9	10.5	17.3	16.0
Suspended from school	11.6	17.8	18.3	13.2	3.9	9.2	10.7	7.1
Stole or tried to steal a motor vehicle	1.5	5.5	4.1	1.7	0.9	1.6	2.6	0.4
Sold illegal drugs	0.5	5.4	13.0	12.3	0.3	1.9	5.0	4.9
Been arrested	13.0	15.9	16.2	9.9	8.5	11.0	9.9	5.8

Note: Unweighted numbers of respondents are shown in Table 2.4.

Source: Missouri 2000 Student Survey.

Exhibit A.4 Profile of Community Risk and Protective Factors Among Missouri Public School Students, by Gender and Grade: 2000

	Male				Female			
Community Factor	**6**	**8**	**10**	**12**	**6**	**8**	**10**	**12**
Risk Factors								
Low neighborhood attachment	13.2	18.4	22.1	22.2	15.9	20.8	22.8	22.0
Community disorganization	7.0	9.6	8.4	5.9	7.6	8.7	8.4	6.4
Personal transitions and mobility	14.5	16.2	15.5	9.6	15.3	14.8	15.3	8.9
Community transitions and mobility	14.1	19.5	19.3	19.8	17.3	17.5	21.3	20.6
Norms favorable toward drug use	4.4	17.4	27.6	34.4	7.6	19.4	28.8	34.0
Laws favorable toward drug use	47.3	68.0	82.9	86.1	40.6	68.7	80.9	84.2
Perceived availability of drugs	11.2	31.1	68.5	84.0	8.1	35.0	66.0	78.5
Protective Factors								
Opportunities for conventional involvement	68.3	67.2	66.2	69.9	69.4	69.1	69.7	72.5
Rewards for conventional involvement	52.5	42.9	39.1	47.0	57.7	46.2	38.6	42.6

Note: Each risk and protective factor scale was calculated as the average of one or more questions. Students whose scores placed them above the midpoint of the scale were considered "at risk" or "resilient" for a given factor. Figures in this table indicate percentage "at risk" or "resilient."

Source: Missouri 2000 Student Survey.

Exhibit A.5 Profile of School Risk and Protective Factors Among Missouri Public School Students, by Gender and Grade: 2000

	Male				Female			
School Factor	**6**	**8**	**10**	**12**	**6**	**8**	**10**	**12**
Risk Factors								
Academic failure	20.5	28.6	32.7	25.5	15.6	21.6	23.5	14.6
Little commitment to school	23.2	34.3	43.1	43.0	10.4	20.5	28.0	29.0
School absenteeism	+	+	+	+	+	+	+	+
Protective Factors								
Opportunities for positive involvement	85.3	84.6	77.3	78.2	88.6	83.5	81.3	85.5
Rewards for conventional involvement	65.7	49.7	38.1	42.9	71.5	54.0	45.5	50.4

Note: Each risk and protective factor scale was calculated as the average of one or more questions. Students whose scores placed them above the midpoint of the scale were considered "at risk" or "resilient" for a given factor. Figures in this table indicate percentage "at risk" or "resilient."

[+]Data suppressed due to low precision.

Source: Missouri 2000 Student Survey.

Exhibit A.6 Prevalence of Family Risk and Protective Factors Among Missouri Public School Students, by Gender and Grade: 2000

	Male				Female			
Family Factor	**6**	**8**	**10**	**12**	**6**	**8**	**10**	**12**
Risk Factors								
Poor family management	4.8	5.2	7.6	12.3	+	5.4	5.4	12.1
Poor discipline	15.7	29.6	43.9	56.0	9.1	19.3	31.3	42.2
Conflict	25.2	32.4	33.2	33.6	27.0	34.0	42.8	37.7
History of antisocial behavior	12.8	33.2	43.6	42.5	19.9	33.4	49.4	48.7
Parental attitudes favorable toward drug use	+	3.4	9.1	10.0	+	5.4	7.9	11.5
Parental attitudes favorable to antisocial behavior	+	3.9	4.8	+	+	+	+	+
Protective Factors								
Attachment	86.6	76.1	74.2	71.1	83.2	71.0	66.1	68.5
Opportunities for positive involvement	86.2	77.6	72.7	70.9	84.1	76.5	67.9	72.1
Rewards for conventional involvement	72.5	63.6	58.8	57.3	75.8	64.0	54.7	56.3

Note: Each risk and protective factor scale was calculated as the average of one or more questions. Students whose scores placed them above the midpoint of the scale were considered "at risk" or "resilient" for a given factor. Figures in this table indicate percentage "at risk" or "resilient."

[+]Data suppressed due to low precision.

Source: Missouri 2000 Student Survey.

Exhibit A.7 Profile of Peer-Individual Risk and Protective Factors Among Missouri Public School Students, by Gender and Grade: 2000

Peer-Individual Factor	Male				Female			
	6	8	10	12	6	8	10	12
Risk Factors								
Rebelliousness	15.1	24.8	26.1	30.5	6.8	20.1	22.0	18.9
Early initiation of substance use	5.4	21.9	28.0	21.1	4.1	18.1	20.8	15.8
Early initiation of antisocial behaviors	+	3.8	2.4	+	+	+	+	+
Impulsiveness	13.7	15.6	13.2	12.5	8.5	12.9	12.4	9.4
Antisocial behavior	+	+	+	+	+	+	+	+
Attitudes favorable toward antisocial behavior	4.8	16.3	15.4	15.6	+	9.9	10.9	7.8
Attitudes favorable toward substance use	+	9.5	22.6	26.4	+	9.7	18.9	20.5
Perceived risks of substance use	8.5	15.3	20.1	20.6	7.6	10.3	11.3	11.3
Interaction with antisocial peers	+	+	3.3	+	+	+	+	+
Friends' substance use	+	16.7	34.2	35.8	+	14.8	29.7	29.7
Sensation seeking	22.3	33.7	39.3	46.2	6.9	20.1	25.4	21.9
Rewards for antisocial involvement	4.5	10.8	12.8	10.8	4.4	11.8	15.0	9.7
Alcohol								
Social skills	84.8	64.9	55.8	57.3	93.3	79.5	73.8	76.3
Belief in the moral order	86.8	67.0	54.9	53.5	94.0	75.9	71.7	78.2

Note: Each risk and protective factor scale was calculated as the average of one or more questions. Students whose scores placed them above the midpoint of the scale were considered "at risk" or "resilient" for a given factor. Figures in this table indicate percentage "at risk" or "resilient."

+Data suppressed due to low precision.

Source: Missouri 2000 Student Survey.

Exhibit A.8 Factor Analysis of Community Risk and Protective Factors Among the Missouri Student Population: 2000

Community Factor	No. of Items	Scale Midpoint	Non-missing Data (%)	Alpha	Mean
Risk Factors					
Low neighborhood attachment	2	2.5	92.2	.84	2.0
Community disorganization	5	2.5	92.2	.80	1.6
Personal transitions and mobility	4	2.5	91.5	.71	1.7
Community transitions and mobility	1	2.5	92.2	NA	2.0
Norms favorable toward drug use	7	2.5	93.2	.83	2.0
Laws favorable toward drug use	3	2.5	93.8	.83	2.8
Perceived availability of drugs	4	2.5	91.7	.84	2.5
Protective Factors					
Opportunities for conventional involvement	5	2.5	86.6	.78	3.0
Rewards for conventional involvement	3	2.5	92.0	.83	2.3

NA: Not applicable.

Source: Missouri 2000 Student Survey.

Exhibit A.9 Factor Analysis of School Risk and Protective Factors Among the Missouri Student Population: 2000

School Factor	No. of Items	Scale Midpoint	Non-missing Data (%)	Alpha	Mean
Risk Factors					
Academic failure	2	2.5	95.1	.72	2.0
Little commitment to school	6	3.0	99.0	.75	2.7
School absenteeism	3	3.0	95.6	.57	1.4
Protective Factors					
Opportunities for positive involvement	5	2.5	98.7	.63	3.0
Rewards for conventional involvement	3	2.5	98.9	.69	2.5

Source: Missouri 2000 Student Survey.

Exhibit A.10 Factor Analysis of Family Risk and Protective Factors Among the Missouri Student Population: 2000

Family Factor	No. of Items	Scale Midpoint	Non-missing Data (%)	Alpha	Mean
Risk Factors					
Poor family management	6	2.5	88.2	.77	1.7
Poor discipline	3	2.5	87.5	.76	2.1
Conflict	3	2.5	88.4	.76	2.3
History of antisocial behavior	5	1.5	84.9	.75	1.4
Parental attitudes favorable toward drug use	3	2.5	90.8	.76	1.4
Parental attitudes favorable to antisocial behavior	3	2.5	90.8	.70	1.3
Protective Factors					
Attachment	6	2.5	88.1	.82	3.0
Opportunities for positive involvement	3	2.5	87.1	.77	3.0
Rewards for conventional involvement	2	2.5	85.3	.89	3.0

Source: Missouri 2000 Student Survey.

Exhibit A.11 Factor Analysis of Peer-Individual Risk and Protective Factors Among the Missouri Student Population: 2000

Peer-Individual Factor	No. of Items	Scale Midpoint	Non-missing Data (%)	Alpha	Mean
Risk Factors					
Rebelliousness	3	2.5	98.5	.69	1.9
Early initiation of substance use	4	4.5	98.7	.76	2.1
Early initiation of antisocial behaviors	5	4.5	98.4	.62	0.5
Impulsiveness	4	2.5	96.8	.44	2.1
Antisocial behavior	7	4.5	98.3	.73	1.2
Attitudes favorable toward antisocial behavior	4	2.5	98.7	.77	1.8
Attitudes favorable toward substance use	4	2.5	98.7	.84	1.7
Perceived risks of substance use	4	2.5	96.3	.76	1.8
Interaction with antisocial peers	7	3.0	98.0	.81	1.3
Friends' substance use	4	3.0	98.2	.83	2.1
Sensation seeking	3	3.5	97.4	.75	2.7
Rewards for antisocial involvement	3	3.0	97.0	.85	1.8
Protective Factors					
Social skills	4	2.5	96.7	.60	3.0
Belief in the moral order	4	2.5	98.5	.67	3.0

Source: Missouri 2000 Student Survey.

APPENDIX B

Suppression Rule for Prevalence Estimates

Appendix B

Suppression Rule for Prevalence Estimates

This appendix describes the rule used in this report to suppress unreliable prevalence estimates (i.e., rates that cannot be reported with confidence because they are based on small sample sizes or have large sampling errors). In defining a rule for deciding not to publish unreliable estimates, important goals are to be able to identify unreliable estimates easily and to have a rule that can be incorporated easily into software for producing tables.

One rule that has been used in national surveys (e.g., the National Household Survey on Drug Abuse [NHSDA] prior to 1990) is to suppress estimates if they have a relative standard error (RSE) greater than or equal to 50% of the prevalence estimate. The RSE is computed by dividing the standard error (SE) of the estimate by the estimate itself. That is,

RSE = SE(p)/p, where p is the estimated proportion and SE(p) denotes the standard error of the proportion p.

Although the 50% RSE rule is easy to implement and understand, it has some undesirable properties, particularly for small estimates. Specifically, the rule imposes a very stringent suppression requirement on small prevalence estimates, but a very lax requirement on large rates. That is, small prevalence rates must have relatively large sample sizes to avoid being suppressed, but large rates require much smaller sample sizes. Given that most drug use and most risk factors are likely to be small, a rule that imposes stringent sample size requirements on small estimates would be less desirable.

Because of the limitation of the 50% RSE rule, a different suppression rule was used for the report on risk and protective factors among Missouri's student population. The rule used in this report is based on (a) a sample size requirement, and (b) the RSE of the natural log of the estimate. Specifically, estimates were suppressed and shown as a single plus sign (+) in exhibits when

(a) the number of cases in the *denominator* was less than 30; or

(b) if an estimate was based on 30 or more cases in the denominator, it failed to pass the rule below, using the RSE of the natural log of the estimate p, where p is a proportion.

Specifically, estimates that were based on 30 or more cases in the denominator were suppressed if

$$\text{RSE}\,[-ln(p)] > .275 \quad \text{for } p <= .5$$
$$\text{RSE}\,[-ln\,(1-p)] > .275 \quad \text{for } p > .5$$

For computational purposes, note that RSE[$-ln(p)$] = RSE(p)/[$-ln(p)$] = SE(p)/[$-p\ ln(p)$], where SE(p) denotes the standard error of p, the estimated proportion.

Note that the sample size requirement for publishing estimates applied to the number of cases in the *denominator*, not the number of cases in the *numerator*. For example, if fewer than 30 respondents in the entire sample reported a particular behavior (e.g., use of cocaine in the month prior to the survey), the estimate could still be considered reliable if it passed the requirement based on the RSE of the natural log of the estimate.

Statisticians at the Research Triangle Institute (RTI) developed the rule based on the RSE of the natural log of the estimate through their work on the NHSDA and the Washington, DC, Metropolitan Area Drug Study (DC*MADS), a comprehensive study of drug use and related issues in that metropolitan area.

The rule based on the RSE of the natural log is more liberal with regard to reporting smaller estimates but is more stringent with regard to larger estimates. Under the rule based on the natural log of the RSE, for example, prevalence estimates of 1% would require a sample size of 61 to be presented. In comparison, a suppression rule based on RSE(p) > .50 would require an effective sample size of 400 respondents to publish percentages of approximately 1%.

As noted earlier, estimated percentages that failed to pass the suppression criteria were shown as a single plus sign (+) in the exhibits. In situations where a population *count* was shown (i.e., estimated number of students in Missouri showing a characteristic of interest), the estimated number was suppressed if the corresponding proportion of the population showing this characteristic did not pass the suppression criteria.

An additional convention was implemented for *very small* percentages (i.e., < 0.05%) that passed the suppression criteria but would round to zero if shown to only one decimal place in the prevalence tables. These estimates were shown as two plus signs (++).

In addition, if an estimated percentage was less than 0.05%, any accompanying estimate of the number of people showing this characteristic was shown with two plus signs. This was

done in order to minimize any confusion or misunderstanding that could occur if an estimated percentage was reported as rounding to zero, but an estimated number of people had been shown.

APPENDIX C

Data Collection Materials