

NEW MEXICO DEPARTMENT OF HEALTH,
OFFICE OF SUBSTANCE ABUSE PREVENTION

EVALUATION OF SUBSTANCE ABUSE PREVENTION
PROGRAMMING IN NEW MEXICO: DIRECT SERVICES

SUBMITTED TO:

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List of Abbreviations

| | |
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| ATOD | Alcohol, Tobacco, and Other Drugs |
| LST | Botvin's Life Skills Training |
| CBP | Community Based Processes |
| DWI | Driving While Intoxicated |
| FY | Fiscal Year |
| IRB | Institutional Review Board |
| LEA | Law Enforcement Agency |
| OSAP | Office of Substance Abuse Prevention |
| PIMS | Periodic Information Management System? |
| PIRE | Pacific Institute for Research and Evaluation |
| PVMS | Project Venture Middle School |
| SAPT | Substance Abuse Prevention and Treatment Block Grant |
| SEW | State Epidemiological Workgroup |
| SFS | Strategies for Success |
| SID | State Investigations Division |
| SPF SIG | Strategic Prevention Framework State Incentive Grant |
| TGFD | Too Good for Drugs |
| UAD | Underage Drinking |
| YRRS | New Mexico Youth Risk and Resiliency Survey |
| YRBSS | Youth Risk Behavior Surveillance Survey |

Introduction

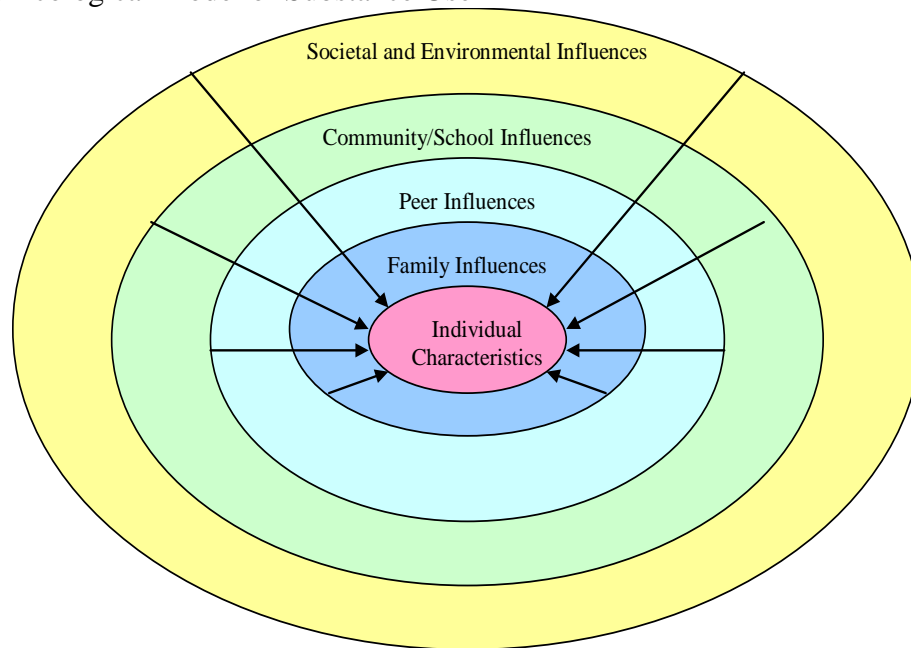
In recent years, progress has been made in reducing some alcohol, tobacco, and other drug (ATOD) use and abuse among adolescents in New Mexico (NM), yet for some substances average use among New Mexico youth is still far higher than the U.S. average. Data from the 2011 NM Youth Risk and Resiliency Survey (YRRS) for example revealed that among high school students in 2011, 19.9% of 9th-12th graders in NM were current smokers, down from 24% in 2009, yet slightly higher than the U.S. rate (18.1%).¹ Furthermore, 27.4% of high school students reported having first drunk alcohol (other than just a few sips) prior to age 13 compared to 20.5% among U.S. high school students as a whole. Marijuana use among NM adolescents is also well above the U.S. average and may well be increasing. In 2011, 18.5% of adolescents reported trying marijuana before the age of 13 compared to 8.1% across the U.S.; 27.6% of high school students in NM reported using marijuana at least once in the past 30 days compared to only 23.1% across the U.S. On the other hand, NM has made considerable strides in reducing current drinking and binge drinking prevalence among high school students. Past 30-day prevalence for both measures in NM has actually decreased over time to averages very close to U.S. averages. In NM, 36.9% reported drinking alcohol at least once in the past 30 days and 22.4% reported current binge drinking compared with 38.7% and 21.9% respectively in the U.S. as a whole. Males and females did not differ significantly on many of the YRRS ATOD use measures in 2011 meaning that females reported as much use as males. Minorities in NM are frequently at greater risk for ATOD use than their non-Hispanic white peers.

Many factors influence whether one engages in high risk behavior such as ATOD use. Research indicates that an ecological model of influence is a comprehensive way to understanding the many levels of influence on an individual. Evidence-based prevention interventions typically target one or more levels of influence in order to reduce the likelihood of ATOD initiation and use. Prevention strategies may focus on parents, on the youth, and some focus on the family as a whole. Others focus on changing the school and community environments in which youth live and interact with peers. Figure 1 shows the multiple levels of influence on an individual's behavior. Individual characteristics such as self-esteem, attitudes, perception of risk, and even genetic predisposition are also influential in whether an individual is at increased risk for ATOD use and abuse. Added to those individual characteristics are the influences of the family including influences from parents or caregivers who may or may not use substances themselves, who may or not monitor their child's behavior or set clear boundaries and expectations. Even older siblings may introduce younger siblings, even inadvertently, to ATOD use. One objective of OSAP funded prevention programming during FY12 was to target prevention programming efforts on these first two levels of influence, where most of the research on the effectiveness of prevention programming has focused. In addition, another OSAP objective for ATOD

¹ Green D, Peñaloza L, and FitzGerald C. 2012. New Mexico Youth Risk & Resiliency Survey: High School Survey Results 2011. Epidemiology and Response Division, New Mexico Department of Health, School and Family Support Bureau, New Mexico Public Education Department, and University of New Mexico Prevention Research Center. Report can be found at:<http://nmhealth.org/erd/HealthData/pdf/ERD-HealthData-YRRS-HighSchoolResults-2011.pdf>.

prevention is for providers to use environmental-level prevention strategies to reduce underage alcohol use. In FY12, OSAP required direct service providers to set aside some prevention funding to implement at least one environmental prevention strategy, such as changing school and/or local policies, discouraging retail access to youth by working with retailers, helping law enforcement to enforce underage drinking law more strenuously, and changing the perception of that underage drinking is normative adolescent behavior.

Figure 1: The Ecological Model of Substance Use



OSAP has designed a comprehensive prevention program to address risk factors and increase protective factors influencing substance use at multiple levels of this model. In the Fiscal Year 2011-2012 (FY12) this included providing direct service prevention programming to 12 to 17 year olds in multiple communities across NM.

OSAP requires local and statewide evaluation be conducted for the purpose of learning about and improving the effectiveness of prevention programming across the state and reducing ATOD initiation and use. All local prevention programs must have independent evaluators to assist with the design, collection, analysis, and interpretation of data.

Direct Service prevention programming involves implementing evidence-based curricula with target populations. These programs typically focus on increasing knowledge and awareness of the dangers involved in ATOD use, changing social norms around ATOD use, and increasing the ability of participants to resist pressure to engage in harmful behaviors by encouraging pro-social relationships and self-efficacy.

Prevention strategies that directly affect access to alcohol and tobacco are often implemented at an environmental level rather than the individual. These types of strategies might include changes in local policies, training retailers on how to check for age identification before selling

alcohol or tobacco products, or increasing law enforcement efforts to patrol for parties that may involve underage drinking. These strategies were assessed through the 2012 New Mexico Community Survey (2012 NMCS) and reported on in the Strategic Prevention Enhancement grant final report.

State Evaluation Team

The Pacific Institute for Research and Evaluation (PIRE) has served as the state level evaluation contractor for FY12. The evaluation team includes Martha W. Waller, Ph.D., Elizabeth Lilliot, Ph.D., and Lei Zhang, Ph.D. The evaluators have been involved with OSAP during the planning process, the design of the evaluation plan and data collection instruments, the State Epidemiological Outcomes Workgroup (SEOW), monitoring and oversight of data collection, and providing training and feedback to OSAP staff, local consultants, and local evaluators and program providers.

State-Level Evaluation Plan

Programs are implemented in school settings, out-of school or after-school settings, and community settings. For direct services prevention programming, programs collect data early on in the program and then again at the end of the program. This is analogous to pre and post-testing of participants. The evaluation then examines differences between the two data points. However, in a true experimental design there would also exist pre- and post-test data for a comparison group that did not receive prevention programming. The collection of comparison data is extremely challenging and prohibitively expensive for NM. At this point most youth receive some form of prevention programming in school. Therefore, data from the NM middle school and high school Youth Risk and Resiliency Survey (YRRS) (also known as the Youth Risk Behavior Surveillance Survey or YRBSS) are used to compare to middle school and high school youth data from the Strategies for Success (SFS) instrument. This is done through graphing pre- and post-test data against comparable YRRS data. YRRS data are weighted to reflect the NM student population and therefore, are representative of the “typical” or average student in NM. More detail on how this was done is discussed in the Strategies for Success section.

PIRE continues to explore with OSAP alternatives to improving the current evaluation design. PIRE strives to work in collaboration with state and local prevention specialists and evaluators to create data collection instruments that are valid and reliable, while meeting the evaluation needs of all parties involved. In FY12, no new assessments were created.

During FY 12, PIRE focused on several goals related to the evaluation of direct services prevention programming. First was the revision of analysis syntax for the revised Strategies for Success (SFS) to simplify and streamline the evaluation process for communities. Second was to assist programs in planning and executing the best approach to collecting pre & post intervention data. This is extremely important. Changes from pre to post-test may reflect changes in the comfort levels of the participants. At pre-test some respondents may feel less willing to answer truthfully even with the guarantee of confidentiality. In this case, respondents may report less ATOD use at pre-test than has actually taken place. If respondents report more honestly at the

end of the intervention because respondents have developed a relationship with the program providers and trust has been established, this in turn could lead to more accurate reporting of ATOD use. In turn, this would create the perception of increases the in prevalence of use at post-test. Alternatively, at post-test respondents may have learned the socially desirable response and therefore, may provide the responses that reflect what they think the prevention providers want. Creating a test-taking situation in which respondents feel comfortable answering honestly at both pre and post-test is imperative, yet can be difficult to accomplish. PIRE has discussed with program providers and evaluators ways in which they might improve the test taking environments among their programs.

Strategies for Success (SFS) 12-17

Background

In FY 12, there were 5 prevention programs addressing substance use among 12-17 year olds in New Mexico. Prevention programs typically seek to build drug resistance skills which enable young people to recognize and challenge common misperceptions about tobacco, alcohol and other drug use. In addition, they try to improve personal self-management skills by teaching students how to examine their self-image and its effects on behavior, set goals and keep track of personal progress, identify everyday decisions and how they may be influenced by others, analyze problem situations, consider the consequences, reduce stress and anxiety, and look at personal challenges in a positive light. General social skills might also be emphasized, and students are taught the necessary skills to overcome shyness, communicate effectively and avoid misunderstandings, initiate and carry out conversations, handle social requests, utilize both verbal and nonverbal assertiveness skills to make or refuse requests, and recognize that they have choices other than aggression or passivity when faced with tough situations. Curriculums target a variety of risk factors for substance initiation and use (inadequate life skills, poor self-management skills, poor social skills including refusal skills, mental health, early age of initiation of ATOD use, perceptions of use by peers, and perception of harm), as well as protective factors (life skills, especially stress and anger management, media literacy and bonding to school and other adults). The following programs were implemented during FY12.

Dare to Be You

The Dare to Be You program is a curriculum based project that was founded in 1979 and is designed to reduce poor outcomes among children, especially alcohol, tobacco and other drug use, by increasing resiliency factors and reducing risk factors in families with young children. The target population is 3-5 year old children. Program facilitators encourage parent input, support, and participation. Sessions include Family Management Skills and Attitudes, Communication Skills, Positive Disciplining, Self Concept, Showing Love and Affection, Family Planning, and Social Skills.

Botvin's Life Skills Training

The Life Skills Training universal classroom program is a proven, highly effective substance abuse prevention/competency enhancement program designed to focus primarily on the major social and psychological factors promoting substance use/abuse. It is based on 20 years of research concerning the causes of substance abuse and how best to prevent it. The program includes five major components, each of which consists of two to six lessons that are taught in sequence. The LST program increases student' knowledge of the immediate consequences of substance use while providing them with the necessary skills to resist social (peer) pressures to smoke, drink and use drugs. In addition, it helps student develop greater self-esteem, self-mastery, and self-confidence, enabling them to effectively cope with social anxiety. The key

components of the Elementary version of the Life Skills Training Program are Personal Self-Management Skills (provide students with skills for enhancing self-esteem, learning creative problem solving, reducing stress and anxiety, and managing anger), General Social Skills (empower students with skills to meet personal challenges such as overcoming shyness, communicating clearly, building relationships, and avoiding violence), and Drug Resistance Skills (enable students to build defenses against pressures to use tobacco, alcohol, and other drugs). In addition, the key factors addressed by this approach are Cultural Bonding, School Bonding, Perception of Harm, and Social Competence.

Too Good for Drugs

Too Good for Drugs (TGFD) is a school-based prevention program designed to reduce the intention to use alcohol, tobacco, and illegal drugs in middle and high school students. Developed by the Mendez Foundation for use with students in kindergarten through 12th grade (5 to 18 years old), TGFD has a separate, developmentally appropriate curriculum for each grade level, and is designed to develop:

- Personal and interpersonal skills relating to alcohol, tobacco, and illegal drug use
- Appropriate attitudes toward alcohol, tobacco, and illegal drug use
- Knowledge of the negative consequences of alcohol, tobacco, and illegal drug use and benefits of a drug-free lifestyle
- Positive peer norms

The program's highly interactive teaching methods encourage students to bond with pro-social peers, and engages students through role-play, cooperative learning, games, small group activities and class discussions. Students have many opportunities to participate and receive recognition for involvement. TGFD also impacts students through a family component used in each grade level: "Home Workouts" is available for use with families in kindergarten through 8th grade, and "Home Pages" is used in high school.

Project Venture Middle School (PVMS)

Project Venture Middle School (PVMS) is based on the original Project Venture developed by NIYLP and now a CSAP Model Program. PV employs alternative methods (outdoor/experiential education, servant leadership/service learning, reconnecting with traditional culture and the natural world) to help youth develop in healthy and positive ways, to do better in school, to get along better with family and friends, and to avoid using alcohol, tobacco, and other drugs, in addition to promoting cooperation, communication, trust, and problem-solving skills. PVMS includes activities during the school day in classrooms facilitated by Project Venture staff with the help of teachers. After-school activities occur weekly and are led by Project Venture staff and teacher-facilitators. Participants have the opportunity to attend special activities during the summer, such as NIYLP's Sacred Mountain Learning Center camp, field trips, and extended wilderness excursions. Central to the Project Venture program is the philosophy of Service-learning. Service-learning helps young people to develop ideas and attitudes that allow them to lead by giving back to the community. Young people develop service projects that include

community resources and involvement. In addition to community/cultural learning, the projects frequently involve academic and social skills such as math, language arts, research, interpersonal and public communication, and leadership challenges.

Strengthening Families Program

Strengthening Families is a family-focused initiative that increases family management skills, reduces the likelihood for substance abuse and other problems associated with the teen years, and reduces family-related risk factors for adolescent problem behaviors. The curriculum follows an interactive model where parents and youth meet in different sessions for one hour then are united to participate in family activities the second hour. The program is designed to help parents/caregivers learn nurturing skills that support their children. It teaches parents/caregivers how to effectively discipline and guide their youth. The program is also designed to give youth a healthy future orientation and an increased appreciation of their parents/caregivers. It also teaches youth skills for dealing with stress and peer pressure.

A standardized instrument, the Strategies for Success (SFS) survey, which was developed for use with youth in New Mexico, was used to collect self-reported measures of substance use and related behaviors among the 12 to 17 year olds participating in these programs. This questionnaire was revised and piloted in FY 08 and used for the first time across all 12 to 17 prevention programs in FY 09. Slight revisions were made to the 2010 survey instrument based on feedback from local evaluators. The instrument consists of a core survey that asks about ATOD use and was required of all programs receiving funding. Four additional modules were made available with permission to measure outcomes around violence perpetration, violence victimization, internal resiliency, and external resiliency from the California Healthy Kids Survey. Programs that focused particularly on building the resiliency of youth to resist ATOD used the resiliency measures because it was felt that these were possibly more accurate indicators of the program's objectives. Additional programs also addressed social skills and life skills that would affect dealings with others. These programs used the violence modules as part of their evaluation.

The SFS instruments in FY12 remain the same as in FY 11, and only the version of the ATOD Core survey for middle school students (6th through 8th graders) was administered. The survey measures perceptions of harm around substance use, parent approval of alcohol use, peer approval of alcohol use, and experience with cigarettes, smokeless tobacco, alcohol, binge drinking, marijuana and prescription drug use. It also probes students about their future intentions to smoke cigarettes. The substance use questions are identical to ATOD questions used in the NM Youth Risk and Resiliency Survey (YRRS) survey in middle and high school. This was done deliberately so that we could compare the SFS data to YRRS data, which reflects the typical New Mexico student and so serves as our comparison group.

Methods

Local evaluators for the 12-17 programs assessed participants at program entry and at program exit. Concerted effort on the part of local program providers and evaluators produced a large sample size of matching pretest and posttest data. The sample size for middle school students from 5th grade to 8th grade was 813. Among high school students the sample size was 96. The middle school sample consists of adequate subsamples to conduct sub-group analyses by biological sex, Hispanic ethnicity and Native American ethnicity for middle school program participants. Prior to analysis, aggregate datasets were cleaned so that only participants who completed both a pretest and a posttest would be included in the final analyses.

Analyses were conducted in SPSS on youth who have both complete pretest and posttest data except demographic information. Data were cleaned by running frequencies and cross-tabulations to check for missing data and outlier values. Flags were created to identify inconsistent data between pretest and posttest for substance use measures and filters were applied during each step of the analyses to exclude flagged data. The ethnicity data were recoded to ensure consistency across all sites and to correspond to categories used by New Mexico's Department of Health. Other variables were recoded, including reverse-coded when appropriate, so that sum scales and mean scales could be created to measure violence and resiliency constructs. Scale reliability analyses were conducted to examine internal validity before running sample demographics and descriptive statistics. A series of McNemar's tests were conducted on pre and posttest measures to assess significant changes over the course of the program. McNemar's test assesses the significance of the difference between two correlated proportions, such as might be found in the case where the two proportions are based on the same sample of subjects or on matched-pair samples. It is applied to 2×2 contingency tables with a dichotomous outcomes (e.g., yes/no, ever/never) with matched pairs of subjects. The alpha criterion set was .05 ($\alpha = <.05$). T-tests were used in lieu of McNemar's tests during cross-tabulations of frequency variables because they were categorical as opposed to measures of proportions. Finally, to confirm the results of the McNemar tests using a more conservative approach, we used the GLM procedure in SPSS. The pretest and posttest means and frequencies were compared through Repeated Measures MANOVA with one within factor of time (pre and post). Separate analyses were conducted to examine the sample by biological sex, Hispanic ethnicity, and Native American ethnicity. The GLM tests were first run without controlling for covariates and then repeated on the sample by biological sex controlling for grade, ethnicity and English as the primary language spoken in the home. Similarly, covariates for biological sex, grade, and English as the primary language spoken in the home were included for the Hispanic and Native American subgroup analyses. To examine the effect size of the program between pre & posttest a partial Eta squared was calculated (η_p^2). The partial Eta squared is the proportion of the effect + error variance that is attributable to the time.

Comparing SFS findings with YRRS Comparison Data

Finally, we graphed the pre- and posttest frequencies against the equivalent measures in the YRRS to visually examine how the average SFS respondent in each grade compared with the

average YRRS respondent. The YRRS survey is conducted during the fall of odd years. Given that the 2011 YRRS data were not available to PIRE at the time of conducting the analyses and preparing this report, data from 2009² were analyzed using SAS controlling for survey design effects. The total N for middle school respondents was 23,628. When weighted to reflect the population, middle school data reflects almost 57,822 middle school respondents. The YRRS data is considered a representative sample of New Mexico students, and weighted results are reported, meaning they are representative of NM students within the grade and ethnic culture designated. In other words, results reported for each question on the YRRS can be considered to reflect the average New Mexico student's answer for the question, which provides us the opportunity to compare the average SFS participant with the average New Mexico student for each grade level. Although we did not test for significant differences between the two data sets, the YRRS does provide an excellent comparison group for assessing general differences between an average SFS student and the average New Mexico student not involved in SFS activities.

Where graphs with YRRS and SFS data are compared, the YRRS comparison sample reflects the same demographics as in the SFS sample. For example, when examining SFS Hispanic males, the YRRS comparison group includes only Hispanic males. It is important to note that YRRS data are collected only once per grade level (in this case, Fall 2009) whereas SFS data are collected at the beginning and end of each program, on average a span of 9 months which captures the academic year. Therefore, to create an equivalent time frame estimate, YRRS data from the grade level collected was identified as "pretest" comparison data, and a 9 month posttest comparison estimate was created based on the difference between the current year and the following year prevalence estimates, divided by 12 (for 12 month increments) and multiplied by 9 to represent 9 months. For example, 7th grade *pretest* SFS data are compared to 7th grade YRRS data and 7th grade *posttest* SFS data are compared to 8th grade YRRS data less approximately 3 months of increase). Please note that 8th grade *posttest* SFS data are compared to 9th grade YRRS data on questions available in both SFS and YRRS high school survey. In the body of this report we have chosen to include graphs that show significant differences or are of particular interest, however all graphs are available upon request.

Results of Middle School Analyses

Data from the 12-17 programs were collected at 7 sites utilizing the Strategies for Success survey instrument. The distribution of SFS participants by site is captured in Table 1 below. Programs varied as to the number of participants based on the type of program and how students were identified to participate. Some programs were school-based programs whereas others were after school programs. This section includes all of the findings presented in tabular format and selected findings of the SFS and YRRS comparisons.

² 2011 YRRS data were not available in time to include in this report.

Table 1: Distribution of SFS middle school program participants by site

| Site | Curriculum Provided | Number of Participants ^a | Percent of Total Participants ^b |
|--|--------------------------------|-------------------------------------|--|
| Counseling Associates | Botvin's Life Skills Training | 320 | 39.4 |
| Five Sandoval Pueblos | Project Venture | 45 | 5.5 |
| North Central Community Based Services | Too Good for Drugs | 76 | 9.3 |
| Sandoval County SAP | Dare to Be You | 84 | 10.3 |
| Santa Fe Mountain Center | Project Venture | 68 | 8.4 |
| San Juan County Partnership | Botvin's Life Skills Training | 201 | 24.7 |
| Southern New Mexico Human Development | Strengthening Families Program | 19 | 2.3 |
| Total | | 813 | 100.0 |

^aThis is based on the number of pretest participants.

^bDue to rounding, the percentage total is not exactly 100%

The mean age for males was 12.25 and 12.05 for females. The sample was almost evenly distributed between males (48.1%) and females (51.9%). SFS program participants were predominantly Hispanic for both males (62.9%) and females (63.6%), followed by Native American and white. Approximately half of males (50.1%) and females (52.1%) indicated that at home, they most often spoke a language other than English (see Table 2).

Table 2: Demographics for middle school SFS program participants by gender^a (n=813)

| Demographic | % SFS Program Participants Male (n=391) | % SFS Program Participants Female (n=422) |
|---|---|---|
| Grade | | |
| 5 th grade | 2.81 | 3.10 |
| 6 th grade | 31.20 | 38.33 |
| 7 th grade | 42.71 | 38.57 |
| 8 th grade | 23.27 | 20.00 |
| Race/Ethnicity ^b | | |
| White | 16.37 | 17.62 |
| Hispanic | 62.92 | 63.57 |
| Native American | 17.90 | 16.67 |
| Other | 2.30 | 0.95 |
| Language Other than English Spoken Most Often ^{cd} | | |
| Yes | 50.13 | 52.14 |

^aDemographic information is based on the number of pretest participants. Missing data for gender: n=2.

^bMissing data for race/ethnicity by gender : male=2 and female=5.

^c Dichotomous variable (yes or no) capturing the percentage of youth living in homes where English is not the primary language.

^dMissing data for language other than English by gender : male=5 and female=4.

Prevalence of Substance Use among Middle School Respondents

Among female middle schools students, we find that there are no statistically significant changes in any of reported substance use from pre to posttest. The significant changes observed among males are past 30-day use of chewing tobacco and marijuana, and inhalant ever use, which increased from pre to posttest. It is worth noting that male smokeless tobacco users increased from 0.28% at pretest to 2.49 % at posttest even though this increase is rather small. This observed trend is the opposite of the FY11 trend regarding ATOD use prevalence. In FY11, females showed increase use in cigarettes, chewing tobacco and marijuana.

Table 3 captures the reported substance use prevalence at pretest and posttest for males and females. Although prevalence increased from pre- to posttest, when compared to 2009 YRRS respondents, the trends for most of reported past 30-day substance use such as cigarette use and binge drinking are well below corresponding middle school YRRS respondents, yet the prevalence rate of current marijuana use is higher for boys and girls in the SFS program (see 2009 YRRS results at <http://nmhealth.org/erd/HealthData/pdf/ER%20YRRS%20092410.pdf>). Please note that this comparison was made between the 2012 SFS results and the 2009 YRRS results. It is unclear how the 2011 YRRS middle school might have changed. The comparison between the SFS 2011 data and the 2009 YRRS data showed that for most of reported past 30-day substance use in the SFS programs were below the middle school YRRS respondents, which has suggested that participants in prevention programming ATOD use did not increase as much as the average New Mexico student in the same grade. And the slope of increase for SFS program participants was generally less steep than the slope for the average student, indicating that increases were more gradual and of less magnitude among the SFS program participants compared to their peers.

Table 3: Past 30-day ATOD use^a prevalence, differences from pretest to posttest for middle school SFS program participants

| Substance (total sample n) | % Pretest | % Posttest | McNemar Test | % Pretest | % Posttest | McNemar Test | Desired Outcome |
|--------------------------------------|--------------|---------------|-----------------|---------------|---------------|-----------------|--------------------|
| | <i>Male</i> | | | <i>Female</i> | | | |
| Cigarettes (802) | 4.96 | 6.34 | 1.09 | 4.12 | 5.41 | 1.47 | ⓪ |
| Chewing Tobacco (802) | 0.28 | 2.49 | 8.00** | 2.32 | 2.58 | 0.14 | ⓪ |
| Alcohol (802) | 9.92 | 10.74 | 0.18 | 9.07 | 10.36 | 0.76 | ⓪ |
| Binge Drinking (802) | 5.25 | 6.91 | 1.38 | 6.22 | 4.66 | 1.80 | ⓪ |
| Marijuana (802) | 9.44 | 13.89 | 6.4** | 6.99 | 9.33 | 2.79 | ⓪ |
| Inhalant ever use ^b (802) | 4.97 | 7.73 | 3.85* | 6.22 | 8.03 | 1.48 | ⓪ |

^a Dichotomous substance use variable (yes or no).

^b Decreases at posttest may indicate inconsistent reporting from pretest to posttest.

* $p \leq .05$, ** $p \leq .01$.

Reported prescription drug use decreases or increases depending on a given substance; the actual number of respondents reporting use of specific types of prescription drugs at either

pretest or posttests tended to be small. The only significant changes are pain pills for males and any R_x medication for females (see Table 4 below). Over 70.0% of male users of pain pills at posttest were non-users at pretest, signifying a 231.0% increase at posttest and female users of any R_x medication dropped 50.0% from 3.62% to 1.81%. Generally speaking, it appears that prescription drug use declined or remained unchanged from pretest to posttest among females; whereas male respondents tended to increase their use in prescription drugs although such observed increases were not statistically significant.

Table 4: Past 30-day prescription drug use^a prevalence, differences from pretest to posttest for middle school SFS program participants

| Substance (total sample n) | % Pretest | % Posttest | McNemar Test | % Pretest | % Posttest | McNemar Test | Desired Outcome |
|---|--------------|---------------|-----------------|---------------|---------------|-----------------|--------------------|
| | <i>Male</i> | | | <i>Female</i> | | | |
| Any R _x medication not prescribed (802) | 2.75 | 2.48 | 0.09 | 3.62 | 1.81 | 3.77* | ⬇ |
| Any R _x pain pills not prescribed (802) | 0.83 | 2.75 | 7.00** | 1.83 | 2.35 | 0.40 | ⬇ |
| Any Ritalin, Adderal, or Prozac not prescribed (802) | 0.28 | 0.83 | 1.00 | 1.04 | 0.52 | 0.67 | ⬇ |
| Any R _x sleep aids or tranquilizers not prescribed (802) | 0.83 | 1.38 | 0.50 | 1.31 | 1.83 | 0.50 | ⬇ |
| Any other medications not prescribed (802) | 3.86 | 4.41 | 0.18 | 4.19 | 4.97 | 0.39 | ⬇ |

^a Dichotomous substance use variable (yes or no).

* $p \leq .05$, ** $p \leq .01$.

As is frequently the case in reporting substance use among adolescents, floor and ceiling effects are observed. For example, among these young adolescents, most do not report past 30 day substance use at pretest. As a result of maturation over the course of the prevention programming, many adolescents, who at pretest reported no use, may have tried substances by posttest. Because at pretest so few report use, it is frequently possible at posttest for more students to report ATOD use. This is referred to as a floor effect, meaning that if most students do not report use at pretest the posttest estimate is more likely to increase because it cannot decrease. Alternatively, students may report very strong and positive relationships with their parents, a known protective factor against ATOD use. Since the relationships are typically very strong at pretest, over the course of the prevention program, there may be an apparent decrease in this level of closeness. This is called a ceiling affect, essentially implying that the highest level has been reached at pretest and the only room for movement is to decrease. Whether these effects are an artifact of the program or the result of maturation is unclear in the cross-tabulations. In addition, the likelihood of increasing or decreasing from pre-to posttest when most responses are at one extreme or the other is greater in general than if responses are evenly distributed and this is referred to as regression to the mean. When participants report very low substance use at pretest, it is difficult to demonstrate reductions in substance use at posttest. Alternatively, when respondents report high protective factors at pretest, it is difficult to demonstrate increases in these protective factors at posttest.

Table 5 captures the average number of times core drugs were used in the past 30 days at pretest and posttest among middle school SFS program participants who **reported use in each individual drug category at pretest**. Both males and females reported statistically significant decreases in ever using inhalants. Caution should be exercised when interpreting the change of inhalant use because the question of inhalant ever used assesses lifetime inhalant use. Estimates of lifetime inhalant use at posttest should either remain the same as at pretest or increase. Decreases in reported inhalant ever use at posttest may indicate data reporting inconsistency between pretest and posttest or missing data at posttest. Males also decreased alcohol use and binge drinking significantly. The frequency of marijuana use in the past 30 days increased slightly for males, showing a similar trend to FY10 and FY11, yet females had dropped marijuana use significantly, which is a substantial improvement in the FY12 cohort over the FY10 and FY11 cohorts. Finally, t-test is not applicable in the case of male smokeless tobacco users given that there was only one male user in the pretest and posttest, and no changes were observed (see Table 5).

Table 5: Frequency of ATOD use^a, differences from pretest to posttest among middle school SFS program participants reporting use in each individual category at baseline

| Substance (Respondents reporting use at baseline, male n & female n) | Pre- test Mean | Post- test Mean | t-value | Pre- test Mean | Post- test Mean | t-value | Desired Outcome |
|--|----------------------|-----------------------|---------|----------------------|-----------------------|----------|--------------------|
| | Male | | | Female | | | |
| Cigarettes (16/15) | 1.75 | 1.00 | -1.92 | 1.93 | 1.47 | -1.00 | U |
| Chewing tobacco (1/9) | 1.00 | 1.00 | NA | 1.67 | 1.56 | -0.36 | U |
| Alcohol (30/34) | 1.47 | 0.61 | -3.95** | 1.56 | 1.00 | -1.72 | U |
| Binge drinking (30/34) | 1.13 | 0.50 | -2.23* | 1.18 | 0.86 | -0.90 | U |
| Marijuana (27/24) | 1.93 | 2.00 | -0.20 | 2.17 | 1.76 | -2.22* | U |
| Inhalant ever use ^b (20/26) | 1.00 | 0.55 | -3.69** | 1.00 | 0.46 | -5.21*** | U |

^a0=0 times, 1=1 or 2 times, 2=3 to 9 times, 3=10 to 19 times, 4=20 to 39 times, 5=40 or more times.

^bDecreases at posttest may indicate inconsistent reporting from pretest to posttest.

* $p \leq .05$, ** $p \leq .001$, *** $p \leq .0001$.

In order to get around the issue of floor effects, we also examined the self-reported substance use at posttest among *only those program participants reporting any ATOD use at pretest*. Among male program participants who reported any ATOD use at pretest, we found decreases in almost every reported substance use at posttest (from 4.4% to 41.7%) except for chewing tobacco, which displayed a drastic change at posttest (328.0%) (see Table 6). Figure 2 graphs the changes from pretest to posttest for males. The pattern is mixed for female SFS program participants who reported increases in cigarette and chewing tobacco (8.4% and 8.5% respectively) and decreases in alcohol, binge drinking and marijuana uses (12.0% to 43.8%). Figure 3 graphs the changes from pretest to posttest for females.

Table 6: Past 30-day ATOD use^a prevalence at posttest among those program participants reporting any ATOD use at pretest

| Substance (total respondents reporting any use at baseline, male n & female n) | % Pretest | % Posttest | % Change | % Pretest | % Posttest | % Change |
|---|--------------|---------------|-------------|---------------|---------------|-------------|
| | <i>Male</i> | | | <i>Female</i> | | |
| Cigarettes (79/77) | 25.32 | 20.55 | -18.8 | 22.08 | 23.94 | 8.4 |
| Chewing Tobacco (79/77) | 1.28 | 5.48 | 328.0 | 11.69 | 12.68 | 8.5 |
| Alcohol (79/77) | 49.37 | 28.77 | -41.7 | 50.65 | 39.44 | -22.1 |
| Binge Drinking (79/77) | 26.58 | 19.18 | -27.8 | 35.06 | 19.72 | -43.8 |
| Marijuana (79/77) | 48.72 | 46.58 | -4.4 | 38.96 | 34.29 | -12.0 |
| Inhalant ever use ^b (79/77) | 25.32 | 17.61 | -30.5 | 33.77 | 31.43 | -6.9 |

^a Dichotomous substance use variable (yes or no).

^b Decreases at posttest may indicate inconsistent reporting from pretest to posttest or missing data at posttest.

Figure 2: The percentage of male middle school SFS program participants reporting past 30-day substance use at posttest among only program participants reporting substance use at pretest

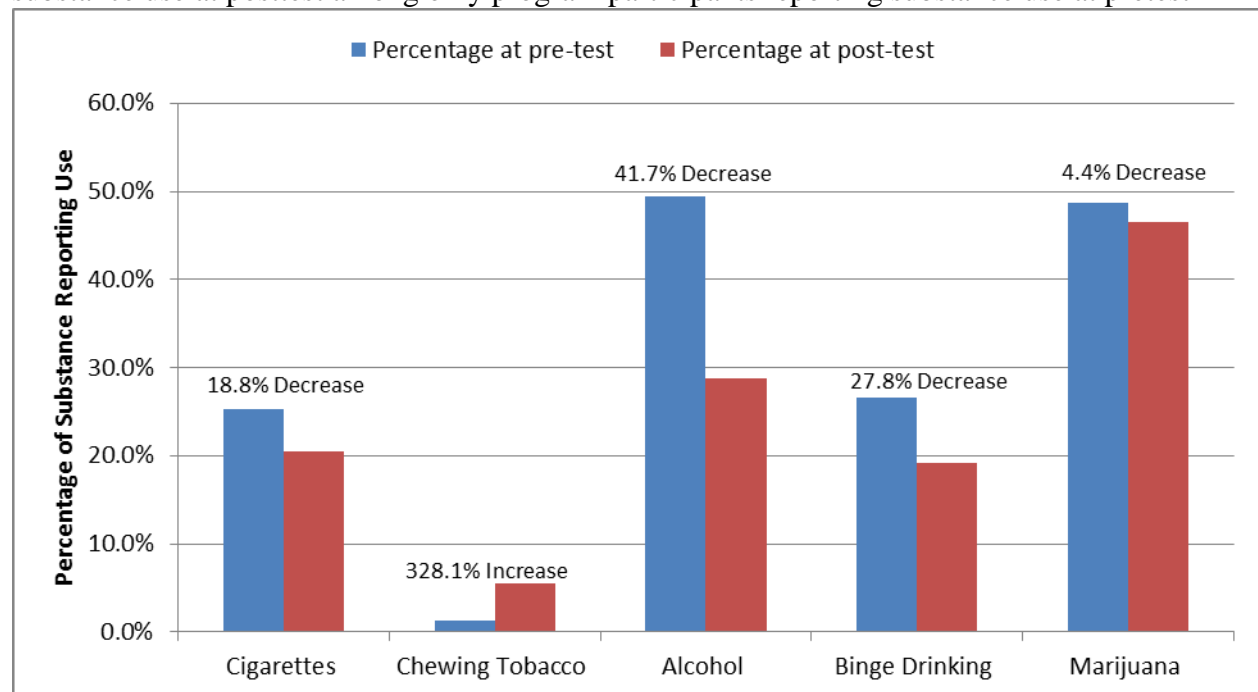
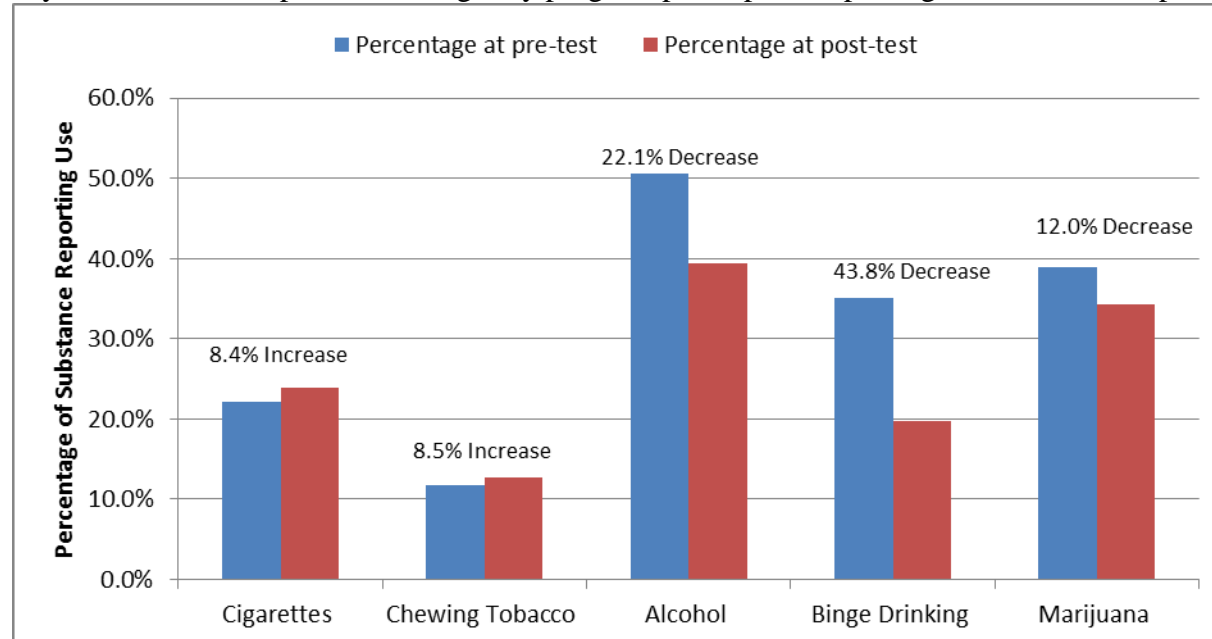


Figure 3: The percentage of female middle school SFS program participants reporting past 30-day substance use at posttest among only program participants reporting substance use at pretest



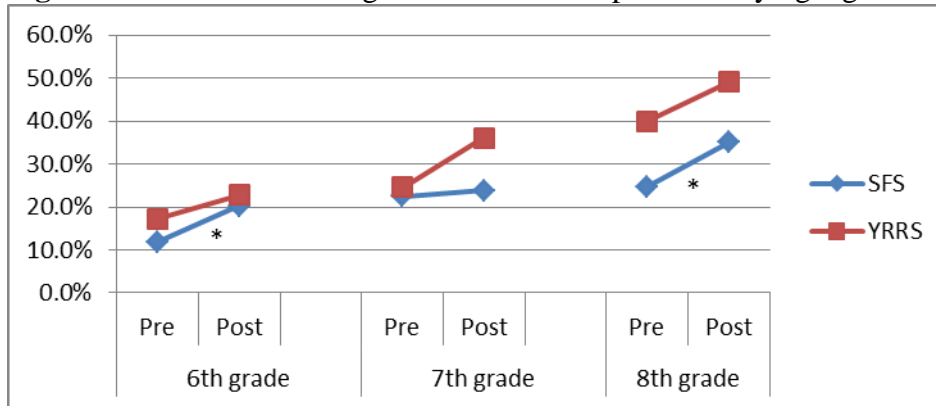
Comparing SFS Respondents to YRRS Respondents³

Tobacco use (all male and female students, grades 6-8)

Overall, SFS students reported a mixed trend in lifetime and past 30-day tobacco use across grades. Sixth and eighth grade male SFS students and seventh grade female students exhibited significant increase in lifetime tobacco use (see Figure 4 & Figure 5). SFS students from other grades remained the same level of lifetime use from pre to posttest or increased non-significantly. Compared with 2009 YRRS students, the prevalence rates of past 30-day tobacco use for 6th graders of male and female SFS students in FY12 are lower than YRRS 6th graders. As grades increase, the SFS prevalence rates show less consistent trend across grades and gender (see Figures 6 & 7). In general, the prevalence of tobacco use (lifetime use and past 30-day use) among male and female 2012 SFS program participants was lower at posttest than the average New Mexico student as reported by the 2009 YRRS.

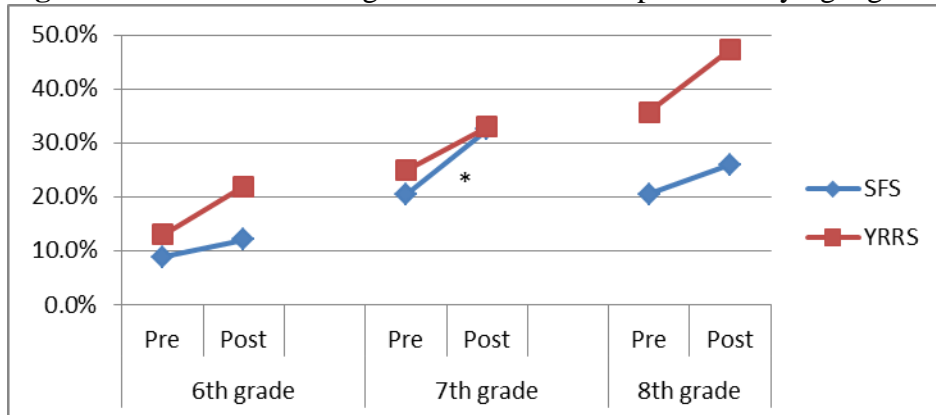
³ Graphs not shown in text are available upon request.

Figure 4: Percent of 6th-8th grade males who report *ever* trying cigarettes



*Change from pre to posttest for SFS is significant ($p < .05$).

Figure 5: Percent of 6th-8th grade females who report *ever* trying cigarettes



*Change from pre to posttest for SFS is significant ($p < .001$).

Figure 6: Percent of 6th-8th grade males who report past 30-day cigarettes use

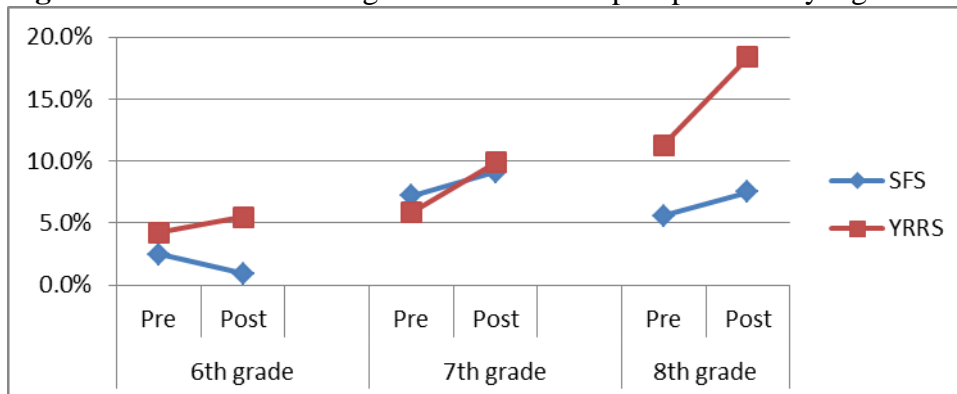
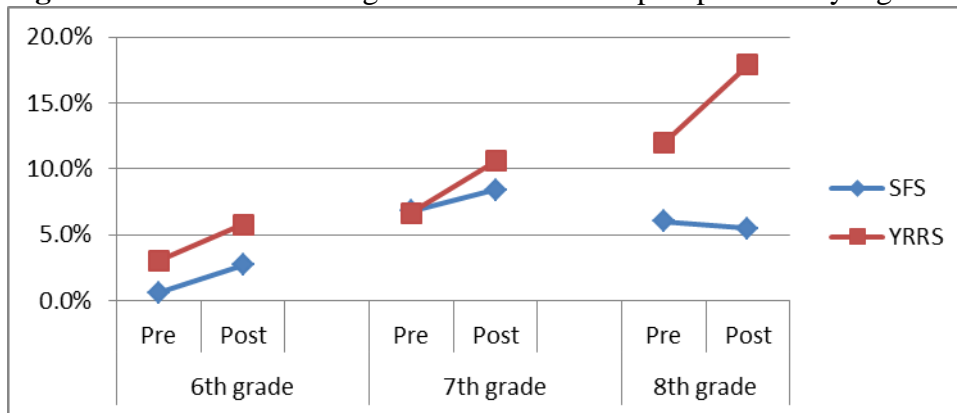


Figure 7: Percent of 6th-8th grade females who report past 30-day cigarettes use



There are higher percentages of male and female SFS program participants than their YRRS peers who reported their intentions not to smoke a cigarette “at any time during the next year,” or “if a best friend offered a cigarette.” Statistically speaking, SFS program participants’ intentions remained unchanged between pretest and posttest in all grades (see Figure 8 to Figure 11).

Figure 8: Percent of 6th-8th grade males who report that they will probably not or definitely not smoke a cigarette at any time during the next year

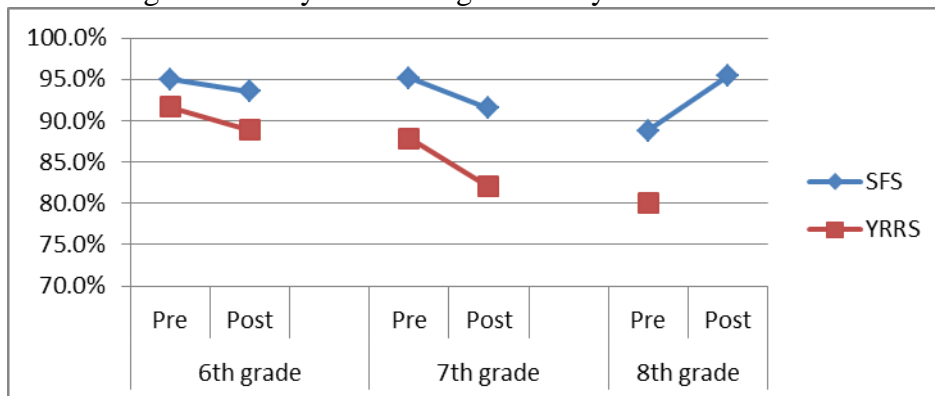


Figure 9: Percent of 6th-8th grade females who report that they will probably not or definitely not smoke a cigarette at any time during the next year

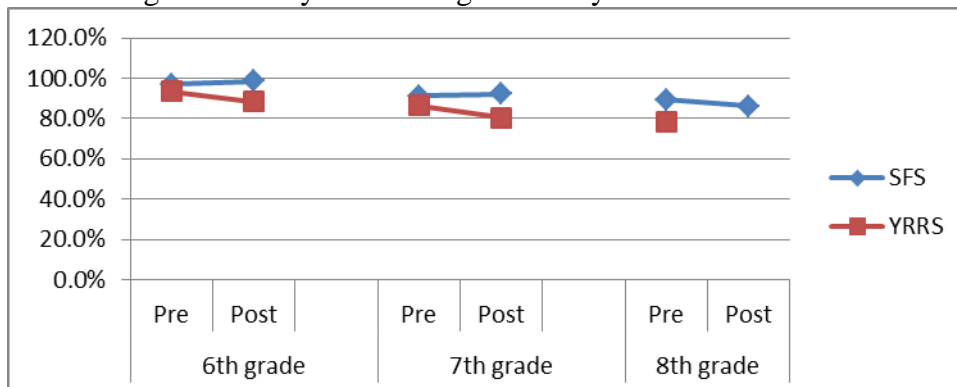


Figure 10: Percent of 6th-8th grade males who report that they would probably not or definitely not smoke a cigarette if one of their best friends offered it

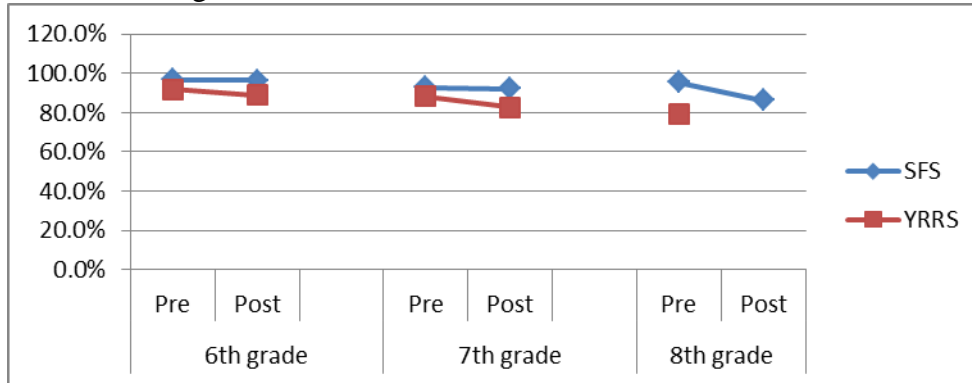
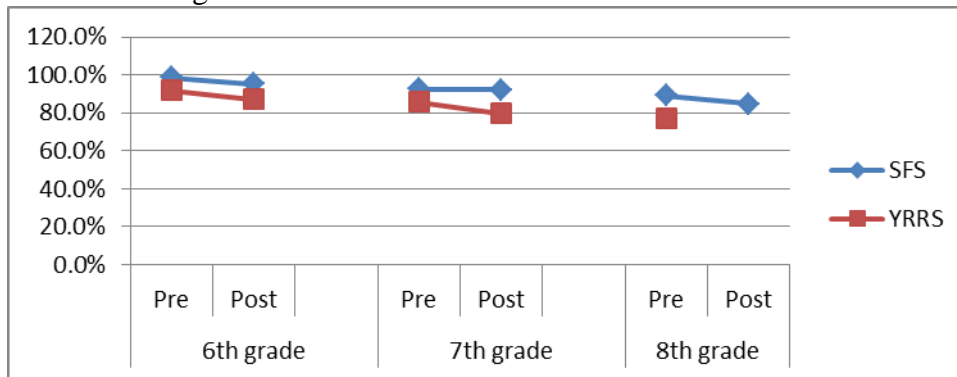


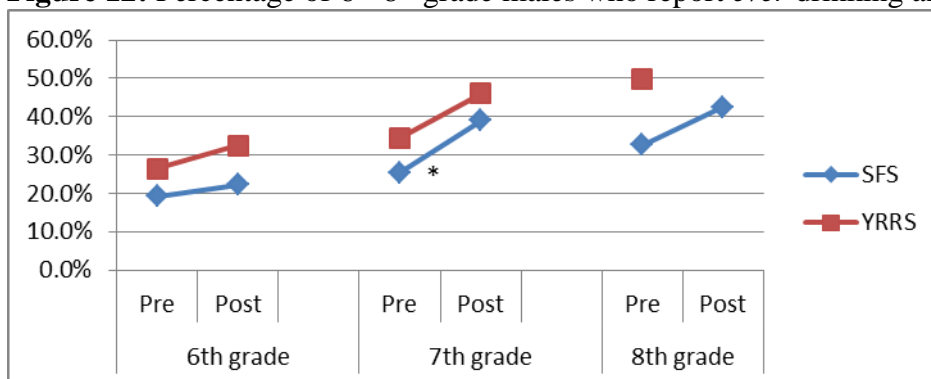
Figure 11: Percent of 6th-8th grade females who report that they would probably not or definitely not smoke a cigarette if one of their best friends offered it



Alcohol use (all male and female students, grades 6-8)

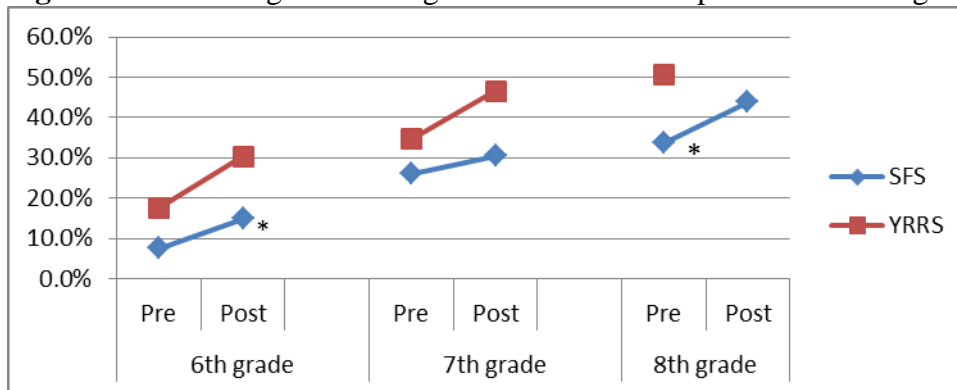
The data show significant increases among 7th grade SFS male students and 6th and 7th grade female students who reported *ever* drinking alcohol (see Figures 12 & 13). Generally, fewer SFS students appear to report ever use alcohol compared to YRRS students.

Figure 12: Percentage of 6th-8th grade males who report *ever* drinking alcohol



*Change from pre to posttest for SFS is significant ($p < .001$).

Figure 13: Percentage of 6th-8th grade females who report *ever* drinking alcohol



*Change from pre to posttest for SFS is significant ($p < .05$).

Both males and females showed inconsistent patterns in past 30-day alcohol use between pretest and post-test across all grades, for example, 6th grade girls slightly increased yet 7th grade girls decreased from pre to posttest. All changes are insignificant. Again, the prevalence rates are lower than YRRS students (see Figures 14 & 15).

Figure 14: Percentage of 6th-8th grade males who report drinking alcohol in the past 30 days

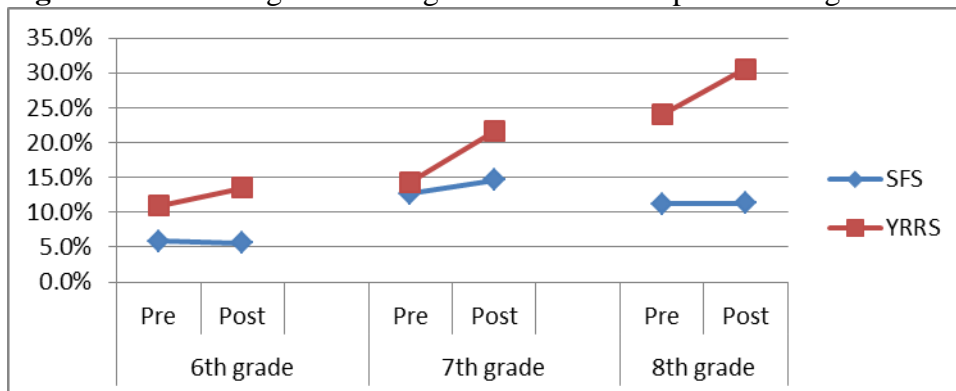
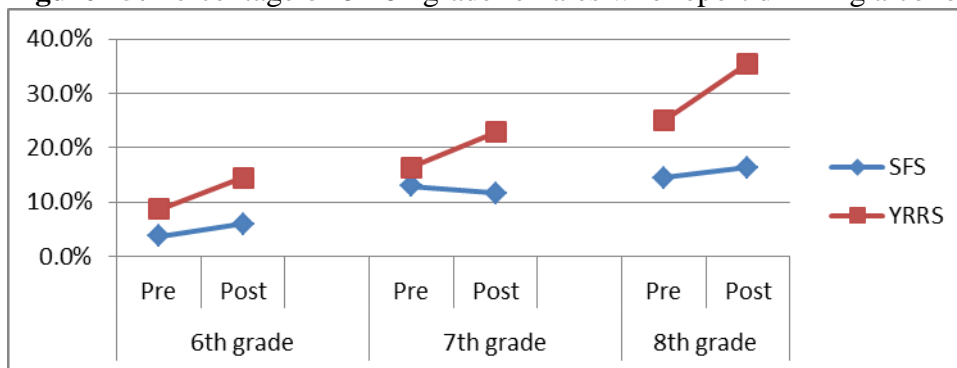


Figure 15: Percentage of 6th-8th grade females who report drinking alcohol in the past 30 days



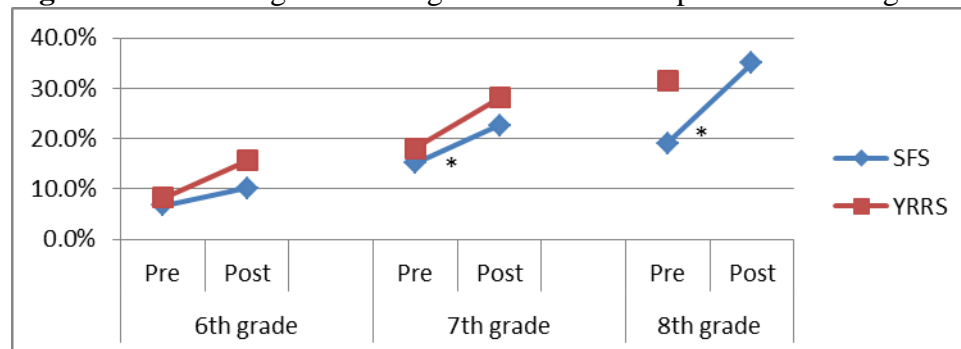
Binge drinking also displays inconsistent patterns across grades and genders such as an increase for boys and a decrease for girls in eighth grade, yet such changes have not reached a significant level. Overall, SFS program participants report lower prevalence rate of binge drinking than YRRS respondents

In sum, SFS students have less current alcohol use than their YRRS counterparts. Depending on which alcohol consumption behavior is in question, the trends are not consistent in the SFS sample.

Other Drug use (all male and female students, grades 6-8)

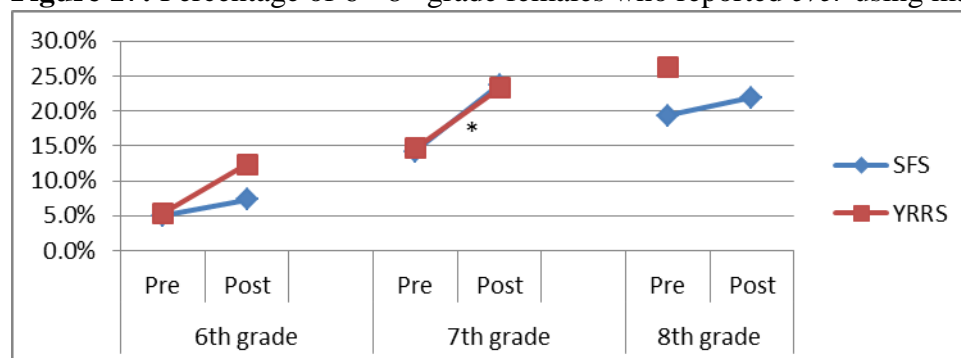
The number of SFS students reporting *ever* using marijuana increased significantly for male 7th and 8th graders and female 8th graders (Figures 16 & 17). And SFS male students showed a relatively steep yet insignificant increase in 7th and 8th grades for past 30-day marijuana use (Figure 18), and female 7th graders increased their use significantly (Figure 19). Furthermore, the observed rates of past 30-day marijuana use in the SFS 7th graders are higher than the reported rates for 2009 YRRS students regardless genders. Finally, similar to the trend of alcohol use between SFS and YRRS students, depending upon which drug consumption behavior is discussed, the behavior patterns are not consistent across grades and genders in the SFS students.

Figure 16: Percentage of 6th-8th grade males who reported *ever* using marijuana



*Change from pre to posttest for SFS is significant ($p < .05$).

Figure 17: Percentage of 6th-8th grade females who reported *ever* using marijuana



*Change from pre to posttest for SFS is significant ($p < .01$).

Figure 18: Percentage of 6th-8th grade males who reported past 30-day marijuana use

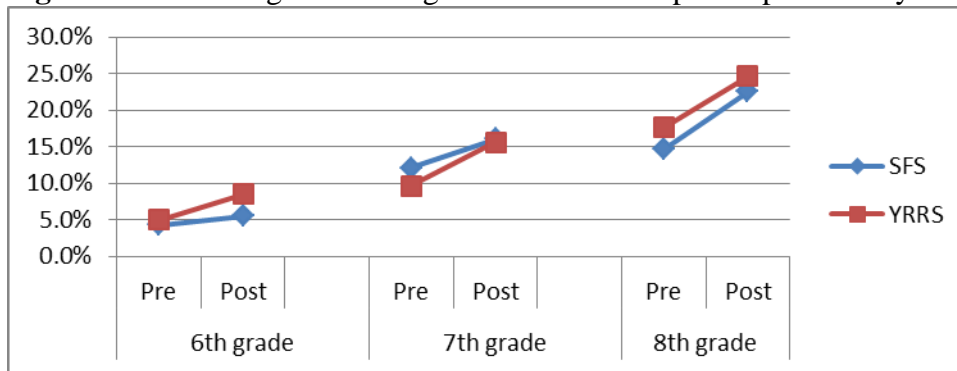
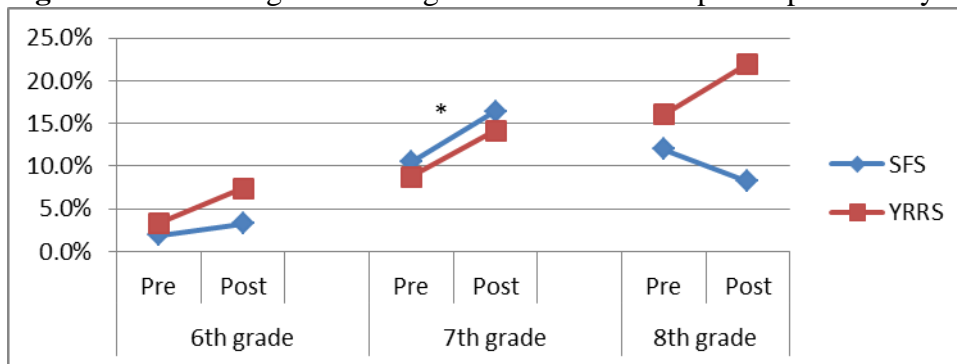


Figure 19: Percentage of 6th-8th grade females who reported past 30-day marijuana use



*Change from pre to posttest for SFS is significant ($p < .04$).

Compared to YRRS students, inhalant use is much lower for males and females across all grades. And both males and females showed inconsistent change patterns across grades.

Results from General Linear Models

The GLM analyses assess the effect of prevention programs over the course of the program between pretest and posttest. Findings from the GLM analyses generally support the results obtained from the McNemar tests for both males and females. Among males, only marijuana achieved statistical significance in both the unadjusted and adjusted models (see Table 7). For females, marijuana and prescription drug use were statistically significant with an unadjusted model. After adjusting the model to control for covariates (i.e., grade, ethnicity, and English as a primary language at home) none of them has achieved statistical significance (see Table 8). It is worth noting that the significant change among males in marijuana use was towards the undesirable direction, increasing from pretest to posttest.

Table 7: Examining the effect of time from pretest substance use to the posttest substance use for middle school males, unadjusted and adjusted^a model results

| Substance (unadjusted n /adjusted n) | Unadjusted | | | | Adjusted | | | | Desired Outcome |
|--|-----------------------|-----------------------|-------------------------------|-----------------------------|-----------------------|-----------------------|-------------------------------|-----------------------------|--------------------|
| | Base- line Mean | Post- Test Mean | F-test & sig. ^b | effect size ^c | Base- line Mean | Post- test Mean | F-test & sig. ^b | effect size ^c | |
| Cigarettes (343/337) | 0.07 | 0.08 | 0.275 | 0.001 | 0.07 | 0.09 | 0.707 | 0.002 | 🕒 |
| Chewing Tobacco (342/336) | 0.00 | 0.04 | 5.911** | 0.017 | 0.00 | 0.04 | 1.438 | 0.004 | 🕒 |
| Alcohol (336/331) | 0.13 | 0.16 | 1.253 | 0.004 | 0.12 | 0.17 | 0.00 | 0.000 | 🕒 |
| Binge Drinking (337/332) | 0.10 | 0.11 | 0.032 | 0.000 | 0.10 | 0.11 | 0.051 | 0.000 | 🕒 |
| Marijuana (345/339) | 0.14 | 0.26 | 14.434*** | 0.04 | 0.13 | 0.26 | 8.919** | 0.026 | 🕒 |
| Any Prescription Medication Not Prescribed (352/346) | 0.03 | 0.02 | 0.399 | 0.001 | 0.03 | 0.02 | 0.225 | 0.001 | 🕒 |

^aModel adjusted for grade, ethnicity, and English as a primary language at home.

^bExact statistic provided

^cPartial eta squared where effects are: small = .01, medium = .06, large = .14 or larger.

** $p \leq .01$, *** $p \leq .0001$.

Table 8: Examining the effect of time from pretest substance use to the posttest substance use for middle school females, unadjusted and adjusted^a model results

| Substance (unadjusted n /adjusted n) | Unadjusted | | | | Adjusted | | | | Desired Outcome |
|---|-----------------------|-----------------------|-------------------------------|-----------------------------|-----------------------|-----------------------|-------------------------------|-----------------------------|--------------------|
| | Base- line Mean | Post- test Mean | F-test & sig. ^b | effect size ^c | Base- line Mean | Post- test Mean | F-test & sig. ^b | effect size ^c | |
| Cigarettes (375/368) | 0.08 | 0.08 | 0.067 | 0.000 | 0.08 | 0.08 | 0.219 | 0.001 | 🕒 |
| Chewing Tobacco (375/368) | 0.04 | 0.06 | 1.693 | 0.005 | 0.04 | 0.06 | 0.140 | 0.000 | 🕒 |
| Alcohol (369/363) | 0.13 | 0.15 | 0.385 | 0.001 | 0.13 | 0.15 | 0.173 | 0.000 | 🕒 |
| Binge Drinking (370/364) | 0.09 | 0.10 | 0.010 | 0.000 | 0.10 | 0.10 | 0.839 | 0.002 | 🕒 |
| Marijuana(374/367) | 0.13 | 0.18 | 4.589* | 0.012 | 0.13 | 0.17 | 0.000 | 0.000 | 🕒 |
| Any Prescription Medication Not Prescribed (373/) | 0.04 | 0.02 | 3.797* | 0.010 | 0.04 | 0.02 | 0.040 | 0.000 | 🕒 |

^aModel adjusted for grade, ethnicity, and English as a primary language at home.

^bExact statistic provided

^cPartial eta squared where effects are: small = .01, medium = .06, large = .14 or larger.

* $p \leq .05$.

There were slight increases in perceptions of risk and intentions to smoke next year, decreases in respondents' attitudes about substance use between pretest and posttest for both males and females. Some changes move towards a desirable direction, some towards a undesirable direction, though none of these changes have achieved statistical significance in the adjusted models. There were small program effect sizes on respondents' attitudes towards alcohol use for males, but these effect sizes disappeared with the adjusted model (see Tables 9 and 10). Similarly, small to medium program effect sizes were observed among female respondents' disapproval of alcohol use and intention to smoke soon, but the effects again disappeared under the adjusted models.

Table 9: Examining the effect of time from pretest scores for perception of harm, parental approval, respondent approval and intentions to smoke to posttest scores for middle school males, unadjusted and adjusted^a model results

| Measure (unadjusted n/ adjusted n) | Unadjusted | | | | Adjusted | | | | Desired Outcome |
|--|----------------|----------------|----------------------------|--------------------------|----------------|----------------|----------------------------|--------------------------|-----------------|
| | Base-line Mean | Post-Test Mean | F-test & sig. ^b | effect size ^b | Base-line Mean | Post-Test Mean | F-test & sig. ^b | effect size ^c | |
| Risk of Harm Scale (356/350) | 1.89 | 1.82 | 0.458 | 0.001 | 1.88 | 1.91 | 0.089 | 0.000 | ➡ |
| Parental Attitudes toward Alcohol Use (358/352) | 2.77 | 2.77 | 0.009 | 0.000 | 2.76 | 2.77 | 0.290 | 0.001 | ➡ |
| Respondent Attitudes toward Alcohol Use (359/353) | 2.73 | 2.62 | 9.095** | 0.025 | 2.73 | 2.62 | 0.205 | 0.001 | ➡ |
| Intention to smoke a cigarette soon (281/276) | 0.03 | 0.03 | 0.091 | 0.000 | 0.03 | 0.03 | 0.100 | 0.000 | ➡ |
| Intention to smoke a cigarette during the next year (329/323) | 0.28 | 0.35 | 3.641 | 0.011 | 0.28 | 0.35 | 0.144 | 0.000 | ➡ |
| Intention to smoke a cigarette if offered by best friend (327/321) | 0.29 | 0.34 | 0.104 | 0.008 | 0.29 | 0.34 | 1.298 | 0.004 | ➡ |

^aModel adjusted for grade, ethnicity, and English as a primary language at home.

^bExact statistic provided

^cPartial eta squared where effects are: small = .01, medium = .06, large = .14 or larger.

** $p \leq .01$.

Table 10: Examining the effect of time from pretest scores for perception of harm, parental approval, respondent approval and intentions to smoke to posttest scores for middle school females, unadjusted and adjusted^a model results

| Measure (unadjusted n/ adjusted n) | Unadjusted | | | | Adjusted | | | | Desired Outcome |
|--|----------------|----------------|----------------------------|--------------------------|----------------|----------------|----------------------------|--------------------------|-----------------|
| | Base-line Mean | Post-test Mean | F-test & sig. ^b | effect size ^c | Base-line Mean | Post-test Mean | F-test & sig. ^b | effect size ^c | |
| Risk of Harm Scale (379/373) | 1.89 | 2.05 | 9.972** | 0.026 | 1.89 | 2.06 | 0.320 | 0.001 | 🕒 |
| Parental Attitudes toward Alcohol Use (387/379) | 2.83 | 2.79 | 1.723 | 0.004 | 2.83 | 2.80 | 0.838 | 0.002 | 🕒 |
| Respondent Attitudes toward Alcohol Use (386/378) | 2.79 | 2.65 | 22.728*** | 0.056 | 2.80 | 2.65 | 1.583 | 0.004 | 🕒 |
| Intention to smoke a cigarette soon (307/301) | 0.01 | 0.03 | 6.515** | 0.021 | 0.01 | 0.03 | 1.248 | 0.004 | 🕒 |
| Intention to smoke a cigarette during the next year (357/350) | 0.21 | 0.29 | 6.419** | 0.018 | 0.21 | 0.29 | 0.002 | 0.000 | 🕒 |
| Intention to smoke a cigarette if offered by best friend (356/348) | 0.22 | 0.31 | 8.333** | 0.023 | 0.22 | 0.30 | 0.297 | 0.001 | 🕒 |

^aModel adjusted for grade, ethnicity, and English as a primary language at home.

^bExact statistic provided

^cPartial eta squared where effects are: small = .01, medium = .06, large = .14 or larger.

** $p \leq .01$, *** $p \leq .001$.

Discussion

In the middle school sample, students were in 5th, 6th, 7th, or 8th grade. Over 60% of the sample identified as Hispanic and approximately 50% indicating predominantly speaking a language other than English at home. In the unadjusted GLM models, middle school males reported non-significant increases in past 30 day cigarette use, alcohol use, and binge drinking, but statistically significant increases in past 30 day chewing tobacco and marijuana use. After controlling for the influences of grade, ethnicity, and language spoken at home, past 30 day marijuana use remained significantly increased among these young males. There was only a slight, non-significant decrease in past 30 day marijuana use at post-test among those male respondents who reported any ATOD use at pre-test (Table 6) but oddly, not among those who specifically reported marijuana use at pre-test (Table 5). Among middle school females there were no significant increases observed in any of the substances assessed including tobacco, alcohol, marijuana, prescription drugs. This is an encouraging finding for FY12 since in FY11, middle school females reported significant increases in their past 30 day cigarette and marijuana use. Changes in prescription drug use was relatively minimal among males however, there was a noticeable increase in Rx pain pill use. Alternatively, females decreased their Rx medication use significantly. Middle school students continue to report using prescription medications that are not identifiable, as they did in FY10 and FY11. It would make sense for prevention programs to collect information from participants about what “other” prescription drugs they may be taking.

When looking only at those respondents who reported substance specific ATOD use at pretest (Table 5), there were some noticeable decreases for both males and females. Boys dropped significantly in the frequency of alcohol use and binge drinking, and girls significantly decreased their marijuana use (Table 5). Both male and female inhalant users at pre-test significantly decreased their use at post-test. In FY 11, girls who reported any ATOD use at pretest reported increases in their cigarette and marijuana use at posttest, however, in FY12, only minor increases in tobacco use was found and decreased were seen in all other substances (Table 6). Interestingly, males were more likely to increase their marijuana use in FY12. This change from FY11 to FY12 may be attributed to unique characteristics of each cohort and thus presents challenges to prevention programs in identifying complementary and targeted prevention strategies and setting prevention goals for the next fiscal year to respond emerging prevention needs. Programs ideally share these findings with the participating schools so as to further the discussion on whether there are environmental changes that could be made to decrease exposure and/or if additional attention needs to be given to addressing marijuana use.

GLM adjusted model results showed there was only one significant increase from pre- to post-test among males and past 30-day marijuana use. The lack of any additional increases in ATOD use in our most conservative models may signal that the prevention programs delayed the generally observed trend of increasing substance use over time among middle school students. This is certainly an improvement in FY12 over FY11 in that female students in FY11 significantly increased their binge drinking even after controlling demographic background information. In addition, in the adjusted models, perceptions of risks about substance use, parental and respondents' attitudes towards substance use at post-test did not differ significantly from pre-test estimates. In the unadjusted models, however, there were significant changes in both desirable and undesirable directions, more often among females. Prevention strategies to influence people's perceptions and attitudes toward substance may need to take into consideration, the race/ethnicity and grade level of the students to counter balance the potential influences of maturation and/or environment.

Although SFS respondents generally report less use ATOD use than 2009 YRRS youth, it is the slopes between the two samples that are most important to compare. Comparison of SFS estimates with YRRS data indicates relatively similar patterns across grades between the two different samples. This suggests that these increases are developmentally normal for middle school youth in N.M. More often the slopes are less steep for the SFS sample indicating that they are increasing at a slower rate than the average NM student, which is desirable.

It is well documented that middle school is a prime time for youth to begin experimenting in ATOD use. There are likely many reasons for this only some of which can be addressed through a prevention program. However, delaying the age of onset leads to long term benefits, such as lower lifetime use and lower likelihood of addiction. As previously mentioned, it makes a lot of sense for local prevention providers to begin to examine the environment in which middle school students live, work and play. Access to substances at this age indicates that there are either people selling or giving youth (intentionally or unintentionally) cigarettes, alcohol, and marijuana. Even with prevention programming, if there is relatively widespread use and easy access, it becomes difficult to say no over time. Social access remains an intervening variable that communities need to address, despite recognizing that this is one factor for which there are

few evidence based strategies to address. NM can play an important role in finding effective strategies to reduce social access to alcohol, tobacco, and other drugs.

Results of High School Analyses

Three prevention programs across the state provided ATOD prevention programming to 96 youth in grades 9 through 12. The number of participants varied depending on whether the programs were school based or indicated, as well as the type of program⁴ (see Table 11 below). This section includes all of the findings presented in tabular. Given the small sample size of the high school data, GLM analyses were not conducted.

Table 11: Distribution of high school SFS program participants by site^a

| Site | Curriculum Provided | Number of Participants | Percent of Total Participants* |
|---------------------------------------|--------------------------------|------------------------|--------------------------------|
| Five Sandoval Pueblos | Project Venture | 7 | 7.3 |
| Southern New Mexico Human Development | Strengthening Families Program | 3 | 3.1 |
| Sandoval County SAP | Dare to Be You | 86 | 89.6 |
| Total | | 96 | 100.00 |

^aThis is based on the number of pretest participants.

There were almost twice as many females (63.5%) as males (34.4%) in the total sample (see Table 12). The mean age was slightly higher for males (14.76 years) than females (14.51 years). The majority of respondents were in 9th grade (87.88% of males and 96.72% of females), followed by 12th grade (9.09% of males and 1.64% of females). High school SFS program participants were predominantly Hispanic (54.55% for males and 54.10% for females) and Native American (males 39.39% and females 39.34%). Two thirds of males (63.64%) and half of females (54.10%) reported speaking a language other than English at home most of the time.

⁴ Please note that these high school students took the SFS middle school ATOD core survey at pre and posttest rather than the SFS high school ATOD core survey.

Table 12: Demographics for high school SFS program participants at pretest (N=96)^a

| Demographic | % SFS Program Participants Male (n=33) | % SFS Program Participants Female (n=61) |
|--|---|---|
| Grade | | |
| 9 th grade | 87.88 | 96.72 |
| 10 th grade | 3.03 | 1.64 |
| 12 th grade | 9.09 | 1.64 |
| Race/Ethnicity ^b | | |
| White | 3.03 | 6.56 |
| Hispanic | 54.55 | 54.10 |
| Native American | 39.39 | 39.34 |
| Other | 3.03 | -- |
| Language Other than English Spoken Most Often ^{cd} | | |
| Yes | 63.64 | 54.10 |

^aThis is based on the number of pretest participants. Missing data for gender : n=2.

^bMissing data for race/ethnicity by gender : male=1 and female=4.

^c Dichotomous variable (yes or no) capturing the percentage of youth living in homes where English is not the primary language.

^dMissing data for language other than English by gender : male=2.

Prevalence of Substance Use

Among high school males, increases in substance use prevalence between pretest and posttest were observed for cigarette and alcohol although not statistically significant (see Table 13). Male past 30 day binge drinking marijuana use and inhalant use remained unchanged. Similar non-significant increases among females were found on every substance except inhalant use.

Table 13: Past 30-day ATOD use^a differences from pretest to posttest for high school SFS program participants

| Substances (total sample n) | % Pretest | % Posttest | McNemar Test | % Pretest | % Posttest | McNemar Test |
|--------------------------------|--------------|---------------|-----------------|---------------|---------------|-----------------|
| | <i>Male</i> | | | <i>Female</i> | | |
| Cigarettes (84) | 0.00 | 3.00 | 3.00 | 18.00 | 22.00 | 1.00 |
| Chewing Tobacco (84) | 0.00 | 0.00 | NA | 0.00 | 2.00 | NA |
| Alcohol (84) | 11.11 | 14.81 | 0.33 | 32.00 | 34.00 | 0.14 |
| Binge Drinking (84) | 7.41 | 7.41 | 0.00 | 14.00 | 20.00 | 1.80 |
| Marijuana (84) | 18.52 | 18.52 | 0.00 | 28.00 | 34.00 | 1.29 |
| Inhalants ^b (84) | 7.41 | 7.41 | NA | 16.00 | 16.00 | 0.00 |

^a Dichotomous substance use variable (yes or no).

^b Decreases at posttest may indicate inconsistent reporting from pretest to posttest.

Reported prescription drug use showed inconsistent change pattern between pretest and posttest for males and females, and none of them achieved statistical significance (see Table 14 below). Compared to the middle school students, the number of respondents reporting use of specific types of prescription drugs was fewer at pretest, for example, there were no males using R_x medication, Ritalin or sleep aids at pretest, and no females students used Ritalin at pretest either. It is likely that the low prevalence of prescription drug use reported at baseline contributes to the fluctuations observed between pretest and posttest.

Table 14: Past 30-day prescription drug-use^a, differences from pretest to posttest for high school SFS program participants

| Substances (total sample n) | % Pretest | % Posttest | McNemar Test | % Pretest | % Posttest | McNemar Test |
|--|--------------|---------------|-----------------|---------------|---------------|-----------------|
| | <i>Male</i> | | | <i>Female</i> | | |
| Any R _x medication not prescribed (84) | 0.00 | 7.41 | 2.00 | 8.00 | 8.00 | 0.00 |
| Any R _x pain pills not prescribed (84) | 3.70 | 3.70 | 0.00 | 2.00 | 10.00 | 2.67 |
| Any Ritalin, Adderal, or Prozac not prescribed (84) | 0.00 | 3.70 | NA | 0.00 | 2.00 | NA |
| Any R _x sleep aids or tranquilizers not prescribed (84) | 3.70 | 3.70 | 0.00 | 4.00 | 2.00 | 0.33 |
| Any other medications not prescribed (84) | 0.00 | 3.70 | 1.00 | 14.00 | 14.00 | 0.00 |

^a Dichotomous substance use variable (yes or no).

Table 15 captures the average number of times the core substances were used in the past 30 days by high school SFS program participants who reported substance specific use at baseline. Alcohol, binge drinking and marijuana were the most commonly reported drugs for males and females. Reported use of chewing tobacco and inhalants was very limited among males or females. There is a significant decreasing trend from pretest to posttest in most of drug categories for males who had used ATOD at baseline. Although not significant, the pattern among high school females is not consistent and the frequency of past 30 day alcohol, binge drinking and marijuana use increased at posttest. To a greater degree, it appears that the trend directions depended upon gender and which drug category is in question.

Table 15: The average number of times in the past 30 days of substance use^a, at pretest and posttest among high school SFS program participants reporting use in each individual category at baseline

| Substance (baseline, male n & female n) | Pretest Mean | Posttest Mean | t-value | Pretest Mean | Posttest Mean | t-value |
|--|-----------------|------------------|-----------------|-----------------|------------------|---------|
| | <i>Male</i> | | | <i>Female</i> | | |
| Cigarettes (2/9) | 3.50 | NA | NA | 2.22 | 1.78 | -1.51 |
| Chewing tobacco (1/0) | 1.00 | NA | NA | NA | NA | NA |
| Alcohol (5/14) | 1.80 | 0.67 | -1.00 | 1.43 | 1.64 | 0.64 |
| Binge drinking (5/14) | 0.80 | 0.33 | -1.00 | 0.71 | 1.00 | 0.94 |
| Marijuana (6/14) | 1.83 | 1.00 | -1.37 | 2.07 | 2.38 | 0.41 |
| Inhalant ever use ^c (2/9) | 1.00 | 1.00 | NA ^b | 1.00 | 0.63 | -2.05 |

^a0=0 times, 1=1 or 2 times, 2=3 to 9 times, 3=10 to 19 times, 4=20 to 39 times, 5=40 or more times.

^bT-test was not conducted because the standard error of the mean difference is zero.

^cDecreases at posttest may indicate inconsistent reporting from pretest to posttest.

Floor effects are a common issue for most substance use prevention programs and have been described previously. In order to account for their impact, we again examined self-reported substance use at posttest among only those program participants reporting any ATOD use at pretest. For males, the percentage of program participants reporting substance use at posttest decreased except for cigarette and inhalant use (see Table 16 and Figures 20 and 21). For females, the opposite is true that the prevalence rates increased except for alcohol and inhalant use.

Table 16: Past 30-day ATOD use^a prevalence at posttest among high school SFS program participants reporting any ATOD use at pretest

| Substance (total respondents reporting any use at baseline, male n & female n) | % Pretest | % Posttest | % Change | % Pretest | % Posttest | % Change |
|--|--------------|---------------|-------------|---------------|---------------|-------------|
| | <i>Male</i> | | | <i>Female</i> | | |
| Cigarettes (9/27) | 22.22 | 28.57 | 28.6 | 33.33 | 40.00 | 20.0 |
| Chewing Tobacco (9/27) | 11.11 | 0.00 | -100.0 | 0.00 | 4.00 | NA |
| Alcohol (9/27) | 55.56 | 42.86 | -22.9 | 62.96 | 60.00 | -4.7 |
| Binge Drinking (9/27) | 33.33 | 28.57 | -14.3 | 29.63 | 36.00 | 21.5 |
| Marijuana (9/27) | 66.67 | 57.14 | -14.3 | 59.26 | 60.00 | 1.2 |
| Inhalant ever use ^b (9/27) | 22.22 | 28.57 | 28.6 | 33.33 | 32.00 | -4.0 |

^aDichotomous substance use variable (yes or no).

^bDecreases at posttest may indicate inconsistent reporting from pretest to posttest or missing data at posttest.

Figure 20: The percentage of male high school SFS program participants reporting substance use at posttest among only program participants reporting substance use at pretest

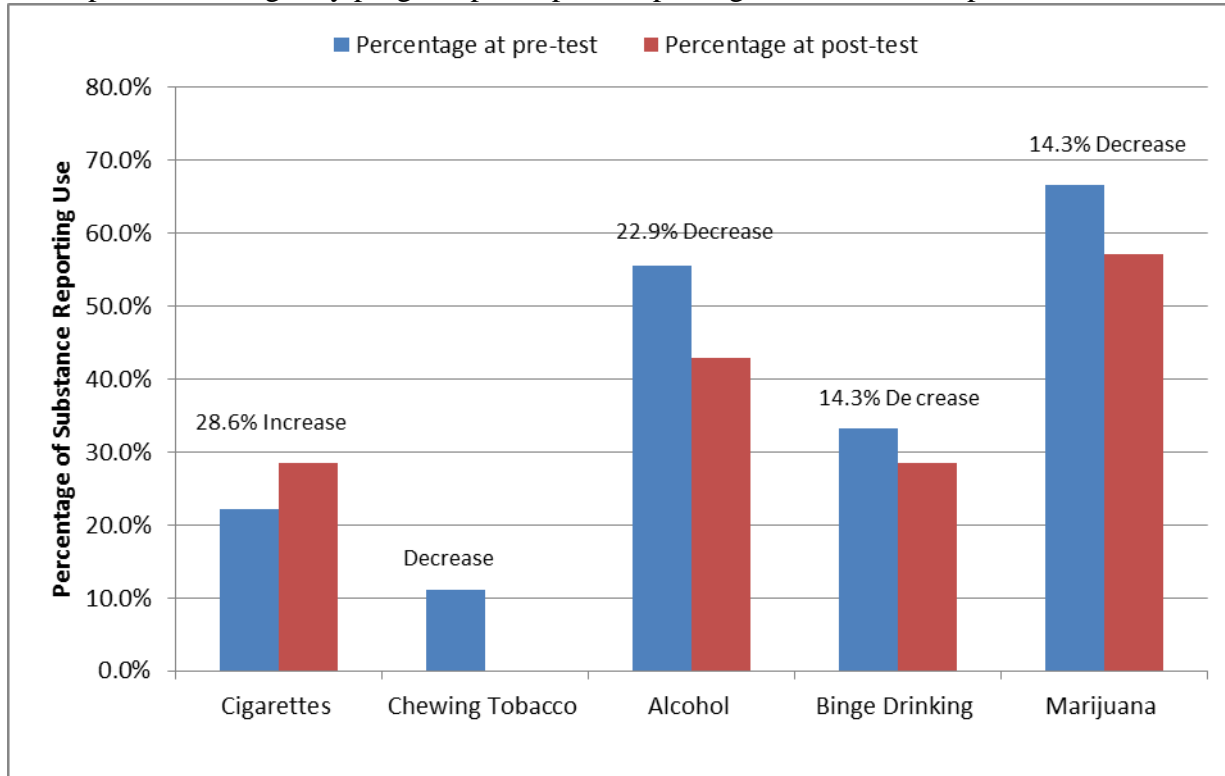
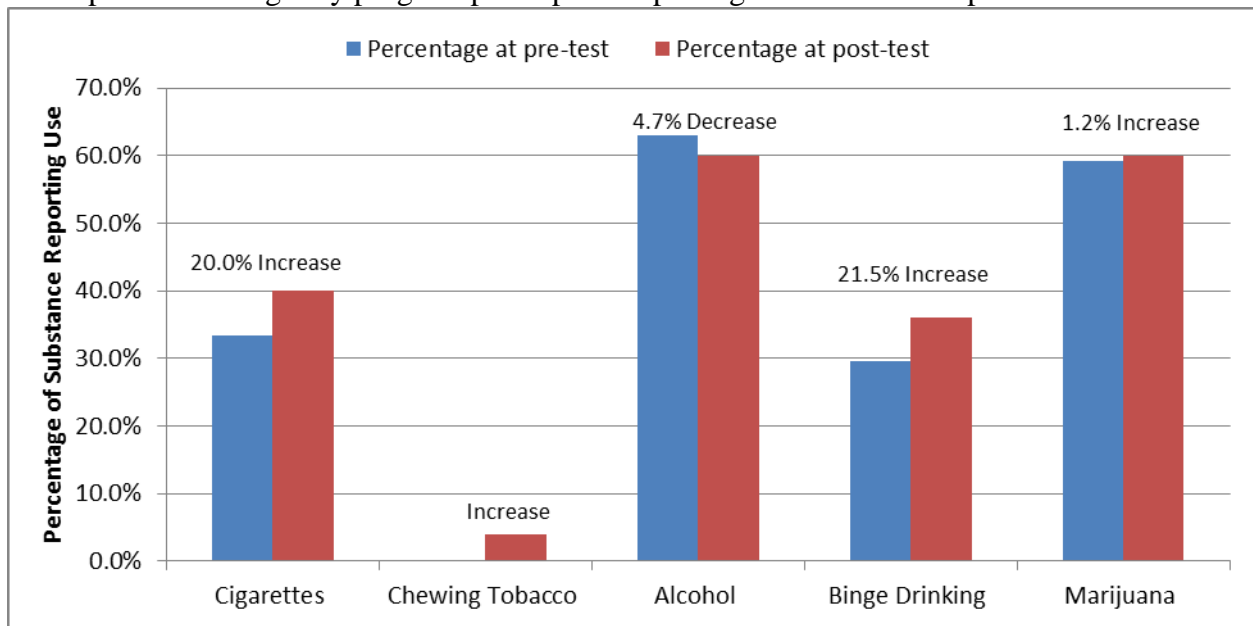


Figure 21: The percentage of female high school SFS program participants reporting substance use at posttest among only program participants reporting substance use at pretest



Discussion

No significant increases or decreases in substance use were found among the high school sample. High school boys showed an increasing trend in cigarette and alcohol use though neither reaches statistical significance. High school females reported slight increases of cigarettes, chewing tobacco, and alcohol and relatively large increases in marijuana and prescription pain medication use, as well as binge drinking. However none reached statistical significance. When examining these results, it is important to keep in mind that the overall actual number of respondents in 10th, 11th and 12 grades was very small, which means that findings are less representative of high school students in general and estimates are very unstable.

Hispanic & Native American Middle School Participants

Background

The diverse population of New Mexico is reflected in the demographics of the SFS program participants. At the local level, there is a particular interest in examining the outcomes of two subgroups: Native American and Hispanic adolescents. These separate analyses are important since there are few studies focusing on drug prevention for minority and rural youth.

Methods

The middle school SFS dataset was sufficiently large enough to examine unique differences in two subgroups: Hispanic and Native American youth. Demographic information was collected as part of the SFS survey instrument; respondents were allowed to choose more than one race/ethnicity when completing the survey, although PIRE ultimately developed a hierarchy to code the race/ethnicity data so that it would be meaningful at the state and local level. First, a filter was applied to the dataset to pull out all respondents coded as Hispanic (subcategories included Mexican/Mexican American/Chicano, Spanish, Central American, South American, Puerto Rican, Cuban, and Other) and analyses were run on that subgroup. The analyses were analogous to the total sample analyses and included univariate statistics, demographic frequencies, descriptive statistics, paired t-test analysis, and GLM. Similarly, a filter was applied to pull out all respondents coded as Native American (subcategories included Pueblo, Navajo, Apache, and Other) and the analyses were replicated.

Results for Hispanic Middle School Students

Surveys were completed by 515 middle school program participants who self-identified as Hispanic, including the subcategories of Mexican/Mexican American/Chicano, Spanish, Central American, South American, Puerto Rican, Cuban, and Other. Of the Hispanic participants, 48.0% were male and 52.0% were female. The average age for male participants was 12.2 years old and the average age for female participants was 12.0 years old. About three quarters of both males (61.8%) and females (63.3%) lived in homes where a language other than English was spoken. Table 17 provides the breakdown of the sample by demographics.

Table 17: Demographics for middle school Hispanic SFS program participants (n=515)^a

| Demographic | % SFS Program Participants Male (n=246) | % SFS Program Participants Female (n=267) |
|--|--|--|
| Grade | | |
| 5 th grade | 2.85 | 3.00 |
| 6 th grade | 35.77 | 46.82 |
| 7 th grade | 34.96 | 26.59 |
| 8 th grade | 26.42 | 23.60 |
| Language Other than English Spoken Most Often ^{bc} | 61.79 | 63.30 |

^aMissing data for gender : n=2.

^b Dichotomous variable (yes or no) capturing the percentage of youth living in homes where English is not the primary language.

^cMissing data for language other than English by gender : male=2 and female=3.

Overall, substance use among both male and female Middle School Hispanic SFS Program participants increased from pretest to posttest. The largest increases were observed among males. Past 30 day chewing tobacco increased from 0.44% to 3.49%, and past 30 day marijuana use increased from 5.68% to 13.54%, both prevalence rates doubled at posttest and the increases have reached statistical significance. For females, a trend of non-significant increase was found for cigarette and alcohol. (See Table 18 for details.) Generally very few Hispanic middle school youth reported abusing prescription medications and no significant increase in use were found prescribed medication for boys and girls at posttest (see Table 19).

Table 18: Past 30-day ATOD use^a differences from pretest to posttest for middle school Hispanic SFS program participants

| Substance (total sample n) | % Pretest | % Posttest | McNemar Test | % Pretest | % Posttest | McNemar Test |
|--------------------------------------|--------------|---------------|-----------------|---------------|---------------|-----------------|
| | <i>Male</i> | | | <i>Female</i> | | |
| Cigarettes (508) | 4.33 | 6.06 | 1.33 | 3.60 | 4.80 | 1.00 |
| Chewing Tobacco (508) | 0.44 | 3.49 | 7.00** | 2.41 | 2.00 | 0.20 |
| Alcohol (508) | 11.26 | 12.99 | 0.44 | 9.68 | 10.48 | 0.20 |
| Binge Drinking (508) | 5.65 | 9.13 | 3.56 | 7.23 | 4.82 | 2.57 |
| Marijuana (508) | 5.68 | 13.54 | 12.46*** | 5.65 | 5.24 | 0.09 |
| Inhalant ever use ^b (508) | 6.06 | 9.52 | 3.20 | 7.23 | 7.63 | 0.05 |

^a Dichotomous substance use variable (yes or no).

^b Decreases at posttest may indicate inconsistent reporting from pretest to posttest or missing data at posttest.

** $p \leq .01$, *** $p \leq .000$.

Table 19: Past 30-day prescription drug use^a, differences from pretest to posttest for middle school Hispanic SFS program participants

| Substance (total sample n) | % Pretest | % Posttest | McNemar Test | % Pretest | % Posttest | McNemar Test |
|---|--------------|---------------|-----------------|--------------|---------------|-----------------|
| | Male | | | Female | | |
| Any prescription medication not prescribed (508) | 2.13 | 1.73 | 0.14 | 3.61 | 2.01 | 2.00 |
| Any prescription pain pills not prescribed (508) | 0.43 | 1.30 | 2.00 | 1.62 | 2.02 | 0.20 |
| Any Ritalin, Adderal, or Prozac not prescribed (508) | 0.43 | 0.43 | 0.00 | 0.40 | 0.40 | 0.00 |
| Any pres sleep aids or tranquilizers not prescribed (508) | 1.30 | 0.87 | 0.20 | 1.21 | 2.43 | 1.80 |
| Any other medications not prescribed (508) | 2.16 | 3.90 | 1.33 | 4.07 | 5.28 | 0.69 |

^a Dichotomous substance use variable (yes or no).

When only those participants who report baseline substance specific ATOD use are examined, we find some significant decreases in the frequency of use. Among middle school Hispanic males who reported use at baseline, the frequency of alcohol use and ever using inhalants decreased significantly. Among females, the reported frequency of past 30-day marijuana and inhalant ever use decreased significantly. Again care should be taken about the change in inhalant ever use. Non-significant decreases were found for males in the frequency of cigarette use and binge drinking, and there was a non-significant increase in the frequency of past 30 day marijuana use. Among females, there were non-significant decreases in the frequency of past 30 day smoking, chewing tobacco, drinking, and binge drinking. (see Table 20 for details.)

Table 20: The average number of times in the past 30 days of substance use^a, at pretest and posttest among middle school Hispanic SFS program participants who reported substance specific use at baseline

| Substance (Respondents reporting use at baseline, male n & female n) | Pre-test Mean | Post-test Mean | t-value | Pre-test Mean | Post-test Mean | t-value | Desired Outcome |
|---|------------------|-------------------|---------|------------------|-------------------|----------|-----------------|
| | Male | | | Female | | | |
| Cigarettes (8/8) | 2.00 | 1.43 | -0.79 | 2.25 | 1.25 | -2.00 | 0 |
| Chewing tobacco (1/6) | 1.00 | 1.00 | NA | 1.17 | 0.67 | -1.46 | 0 |
| Alcohol (22/22) | 1.45 | 0.67 | -2.72** | 1.55 | 1.21 | -1.09 | 0 |
| Binge drinking (22/22) | 0.95 | 0.52 | -1.40 | 1.45 | 1.11 | -0.61 | 0 |
| Marijuana (10/13) | 2.20 | 2.56 | 2.00 | 2.23 | 1.72 | -2.61* | 0 |
| Inhalant ever use ^b (15/18) | 1.00 | 0.57 | -3.12** | 1.00 | 0.50 | -4.12*** | 0 |

^a0=0 times, 1=1 or 2 times, 2=3 to 9 times, 3=10 to 19 times, 4=20 to 39 times, 5=40 or more times.

^b Decreases at posttest may indicate inconsistent reporting from pretest to posttest or missing data at posttest.

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Table 21 presents the change in the prevalence of ATOD use among those who report any ATOD use at pretest. We find that Hispanic males in middle school who reported any ATOD use a baseline decreased their prevalence of use in almost every substance except for past 30 day chewing tobacco and marijuana use. In addition, female ATOD users at pretest only increased their past 30 day cigarette, but decreased in all other substances. Figures 22 and 23 below visually represent the data in Table 21.

Table 21: Past 30-day ATOD use^a at posttest among those middle school Hispanic SFS program participants reporting any ATOD use at pretest

| Substance (total respondents reporting any use at baseline, male n & female n) | % Pretest | % Posttest | % Change | % Pretest | % Posttest | % Change |
|--|--------------|---------------|-------------|---------------|---------------|-------------|
| | <i>Male</i> | | | <i>Female</i> | | |
| Cigarettes (44/48) | 25.00 | 21.43 | -14.28 | 20.83 | 25.00 | 20.02 |
| Chewing Tobacco (44/48) | 2.27 | 7.14 | 214.54 | 12.50 | 9.09 | -27.28 |
| Alcohol (44/48) | 61.36 | 35.71 | -41.80 | 56.25 | 43.18 | -23.24 |
| Binge Drinking (44/48) | 34.09 | 26.19 | -23.17 | 43.75 | 22.73 | -48.05 |
| Marijuana (44/48) | 31.82 | 45.24 | 42.17 | 33.33 | 27.91 | -16.26 |
| Inhalant lifetime use ^b (44/48) | 34.09 | 21.43 | -37.14 | 37.50 | 36.36 | -3.04 |

^a Dichotomous substance use variable (yes or no).

^b Decreases at posttest may indicate inconsistent reporting from pretest to posttest or missing data at posttest.

Figure 22: Percent of male middle school Hispanic SFS program participants reporting substance use at posttest among only program participants reporting substance use at pretest

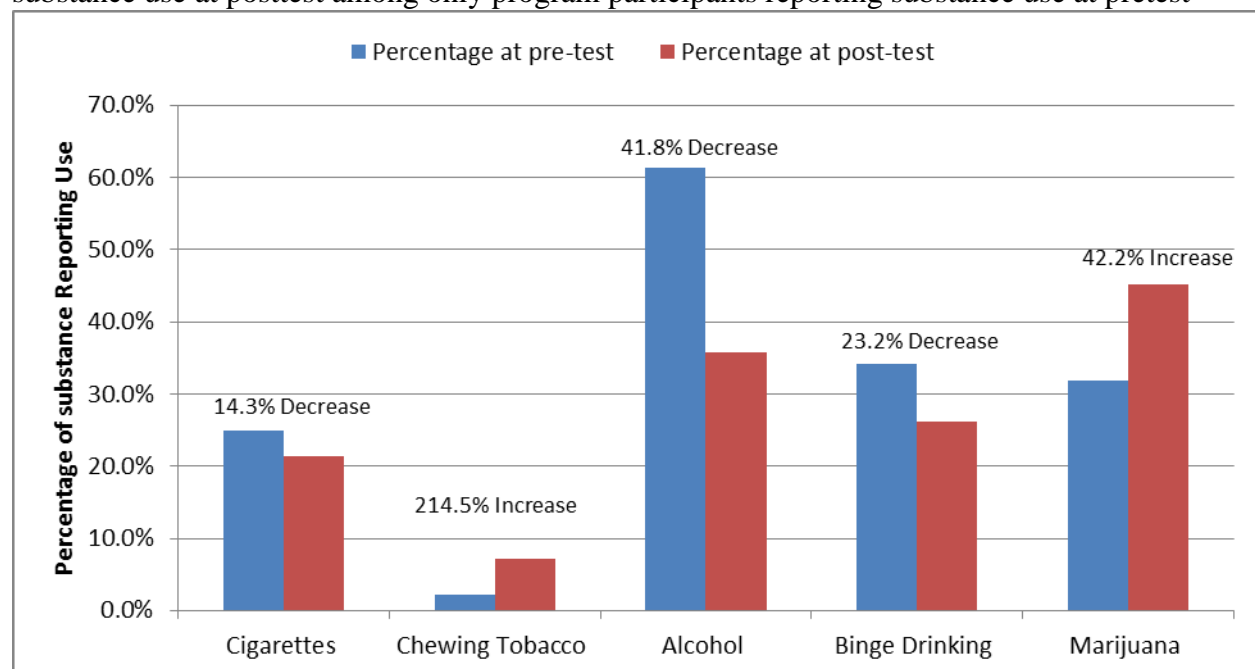
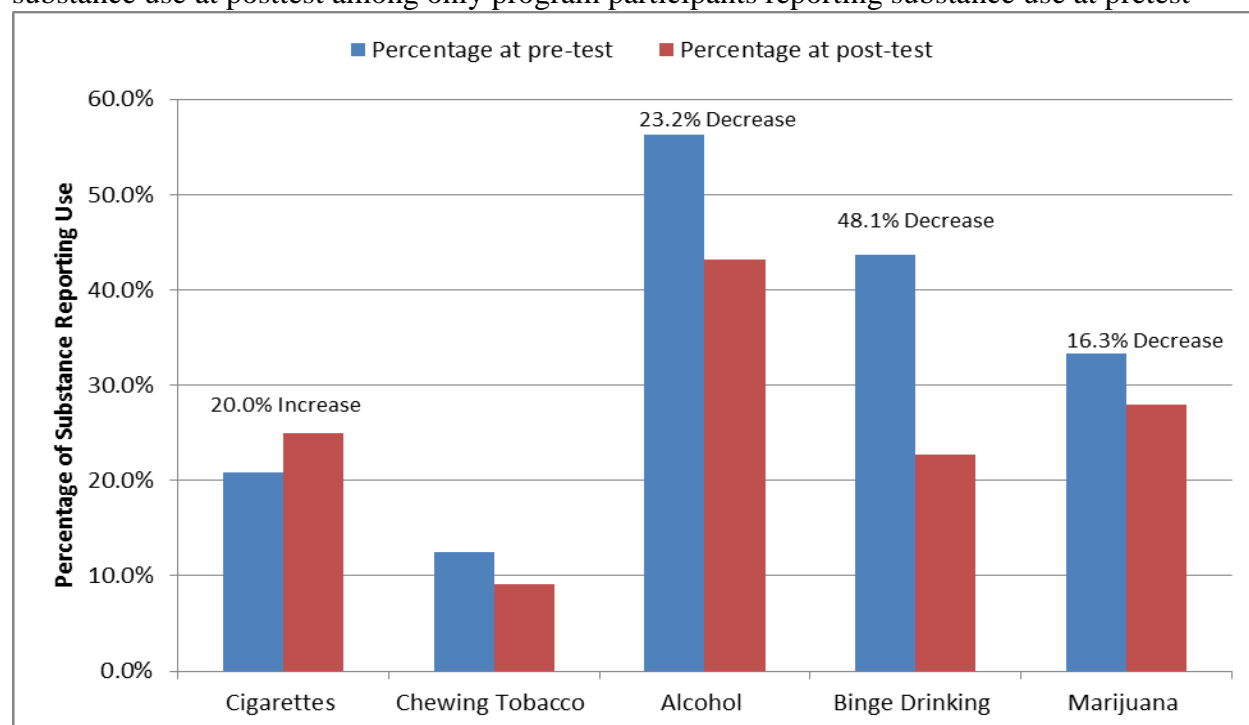


Figure 23: Percent of female middle school Hispanic SFS program participants reporting substance use at posttest among only program participants reporting substance use at pretest



Middle School SFS Hispanic Subpopulation Compared with Middle School YRRS Hispanic Subpopulation

Tobacco use (Hispanic students, grades 6th-8th)

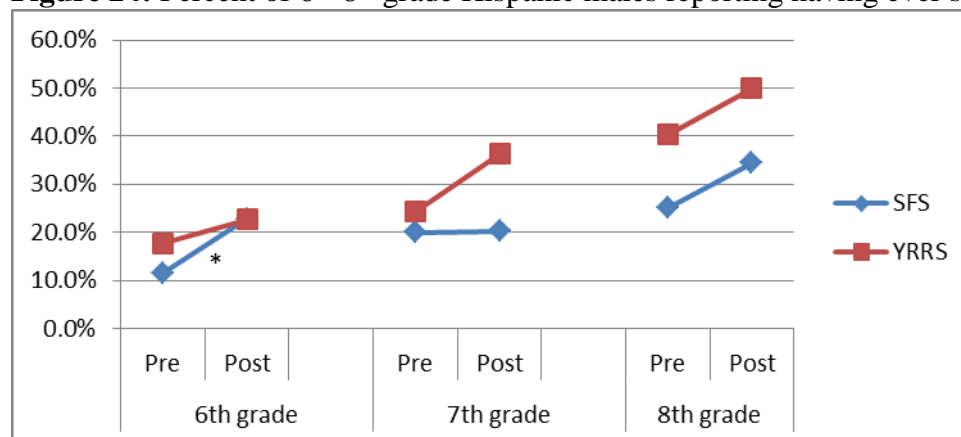
In this section, we compare the prevalence of ATOD use among male and female Hispanic Middle school students in OSAP funded prevention programming and male and female Hispanic middle school students in the NM 2009 YRRS sample, which is weighted to reflect the typical student Hispanic middle school student. As we know from the results presented above, both males and females generally increased their ATOD use. Yet, it helps to see if these increases are also occurring among a representative sample of Hispanic middle school students and if the increases are relatively similar or differ in how steep the increase is.⁵

In Figure 24 and 25 below we can see that males in sixth grade and females in seventh grade reported a significant increase in having ever smoked from pre to posttest. Compared to the YRRS sample, it appears that the prevalence rates for SFS sixth graders (males and females) are generally lower. And SFS seventh and eighth graders followed a different path in life time cigarette use across genders, that is, boys remained almost unchanged at seventh grade then increased at eighth grade, and girls continued to increase from seventh to eighth grade (Figure 24 & 25), although the prevalence rates for these two grades were similar. The patterns in past 30-

⁵ Graphs not shown in text are available upon request.

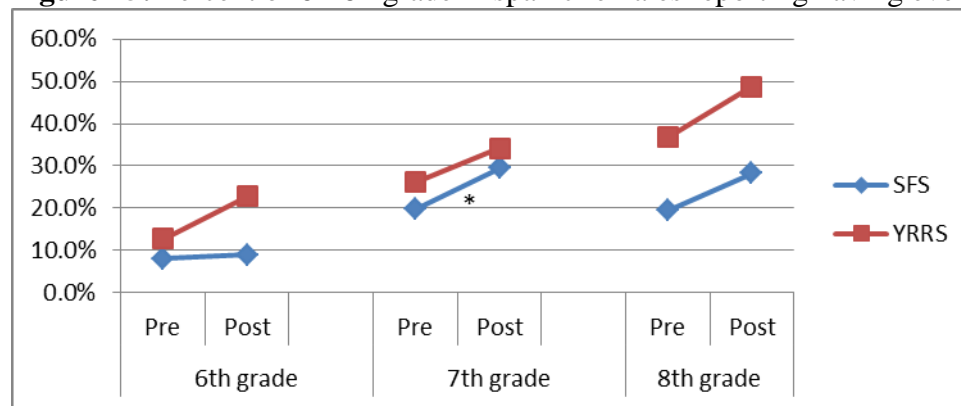
day cigarette use are similar to life time cigarette use in the SFS and YRRS samples increasing across grades.

Figure 24: Percent of 6th-8th grade Hispanic males reporting having ever smoked cigarettes



*Change from pre to posttest for SFS is significant ($p < .02$).

Figure 25: Percent of 6th-8th grade Hispanic females reporting having ever smoked cigarettes

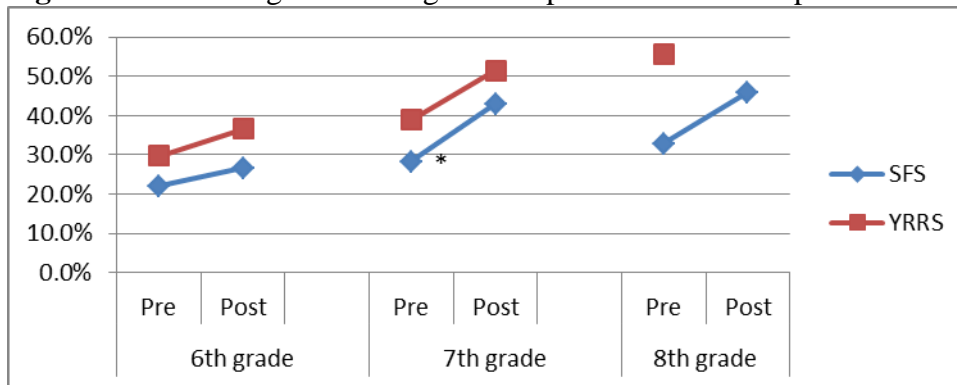


*Change from pre to posttest for SFS is significant ($p < .02$).

Alcohol use (Hispanic students, grades 6th-8th)

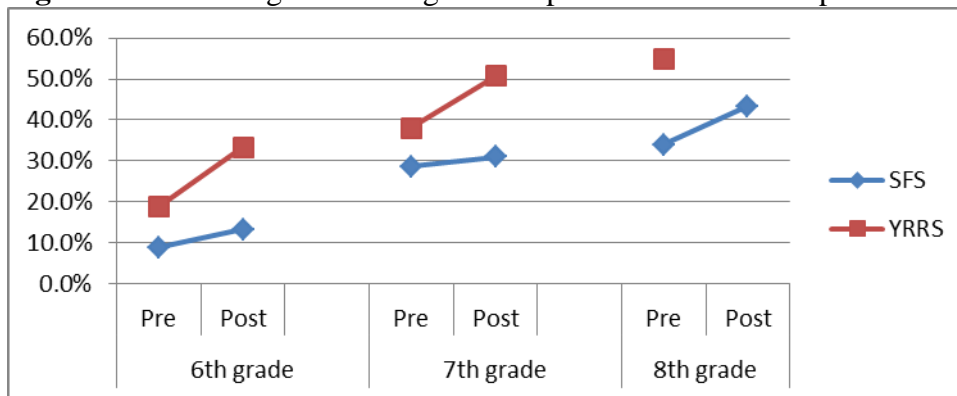
When we compare the SFS sample to the YRRS sample on ever having drunk alcohol, we can see that the prevalence of ever having drunk alcohol increases rapidly among the male Hispanic SFS samples at seventh grade (see Figures 26 & 27). In FY11, it was female seventh graders who showed such pattern.

Figure 26: Percentage of 6th-8th grade Hispanic males who report ever drinking alcohol



*Change from pre to posttest for SFS is significant ($p < .04$).

Figure 27: Percentage of 6th-8th grade Hispanic females who report ever drinking alcohol



The patterns of past 30-day binge drinking are different for SFS Hispanic males and females. Among females, there is slight decrease from pre to posttest within each grade, whereas males tended to quickly increase in eighth grade (Figures 28 & 29), but none of changes are significant. It is observed that the YRRS sample of Hispanic Middle School students increased faster in both genders.

Figure 28: Percentage of 6th-8th grade Hispanic males who report binge drinking in the past 30 days

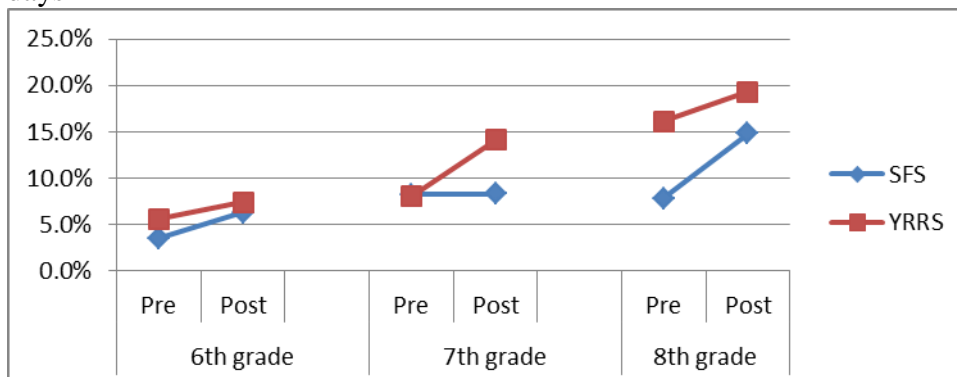
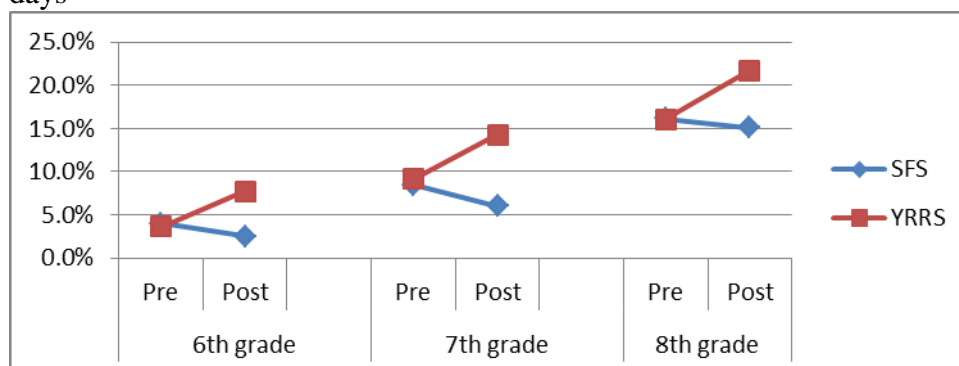


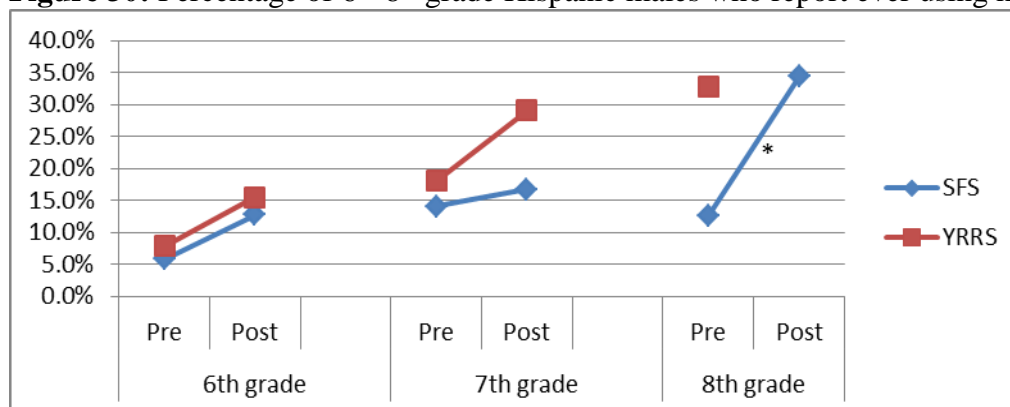
Figure 29: Percentage of 6th-8th grade Hispanic females who report binge drinking in the past 30 days



Drug use (Hispanic students, grades 6th-8th)

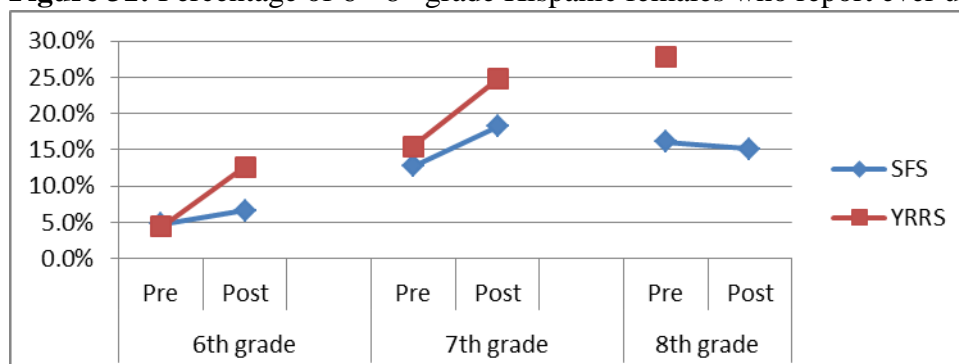
Among Hispanic Middle School males there is a sharp increase among 8th graders in self-reporting lifetime marijuana use (Figure 30). The prevalence rate of lifetime marijuana use in the Hispanic SFS females slightly increase in 6th and 7th grade, whereas the YRRS sample increases over time (Figure 31).

Figure 30: Percentage of 6th-8th grade Hispanic males who report ever using marijuana



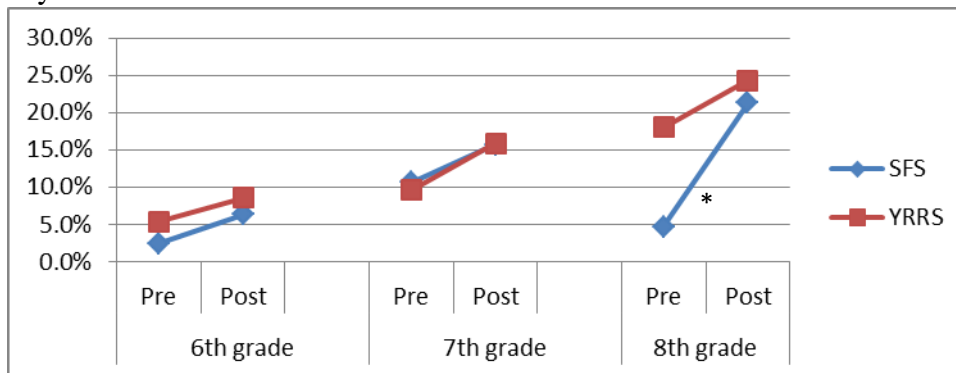
*Change from pre to posttest for SFS is significant ($p < .03$).

Figure 31: Percentage of 6th-8th grade Hispanic females who report ever using marijuana



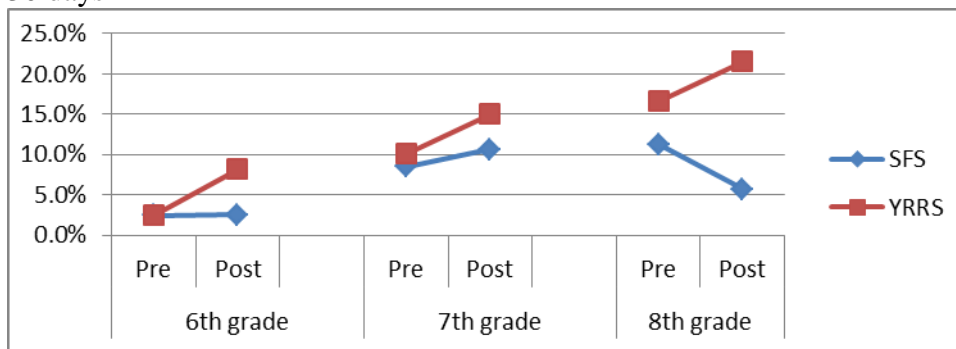
There are again increases in self-reported past 30 day marijuana use in 8th grade for males (Figure 32) and in 6th and 7th grades for females (Figure 33). However, not all these increases are statistically significant nor are they generally as steep as increases among the YRRS sample. The significant increase in marijuana use was found among male 8th grade students.

Figure 32: Percentage of 6th-8th grade Hispanic males who report using marijuana in the past 30 days



*Change from pre to posttest for SFS is significant ($p < .03$).

Figure 33: Percentage of 6th-8th grade Hispanic females who report using marijuana in the past 30 days



General Linear Models

The unadjusted GLMs on Hispanic males support results obtained from the McNemar tests and the paired t-test analysis. Significant changes were found in the unadjusted model for past 30 day chewing tobacco and marijuana use. Effect sizes were small or medium, which indicates the magnitude of association between outcome variables and predictors. However, in the model adjusted for the influences of grade and language spoken at home, only marijuana use retained its significance and effect size was small. (See Table 22.)

Table 22: Examining the effect of time from pretest substance use to the posttest substance use for male middle school Hispanic students, unadjusted and adjusted^a model results

| Substance (unadjusted n /adjusted n) | Unadjusted | | | | Adjusted | | | | Desired Outcome |
|---|-----------------------|-----------------------|-------------------------------|-----------------------------|-----------------------|-----------------------|-------------------------------|-----------------------------|--------------------|
| | Base- line Mean | Post- Test Mean | F-test & sig. ^b | effect size ^c | Base- line Mean | Post- test Mean | F-test & sig. ^b | effect size ^c | |
| Cigarettes (218/216) | 0.06 | 0.09 | 0.947 | 0.004 | 0.06 | 0.09 | 0.498 | 0.002 | ⬇ |
| Chewing Tobacco (217/215) | 0.00 | 0.06 | 5.243* | 0.024 | 0.00 | 0.06 | 1.099 | 0.005 | ⬇ |
| Alcohol (213/212) | 0.15 | 0.21 | 1.695 | 0.008 | 0.15 | 0.21 | 0.278 | 0.001 | ⬇ |
| Binge Drinking (214/213) | 0.10 | 0.14 | 1.025 | 0.005 | 0.10 | 0.14 | 0.041 | 0.000 | ⬇ |
| Marijuana (222/220) | 0.09 | 0.25 | 16.506*** | 0.069 | 0.09 | 0.25 | 4.856* | 0.022 | ⬇ |
| Any Prescription Medication Not Prescribed(226/224) | 0.02 | 0.02 | 0.142 | 0.001 | 0.02 | 0.02 | 0.136 | 0.001 | ⬇ |

^a Adjusted for grade and language spoken at home.

^b Exact statistic provided.

^c Partial eta squared where effects are: small = .01, medium = .06, large = .14 or larger.

* $p \leq .05$, *** $p \leq .000$.

Among Hispanic females in middle school, there were no significant increased or decreased found between pre- and post-test in the unadjusted model or the adjusted model (see Table 23). Indeed estimates moved very little between pre- and post-test in either direction.

Table 23: Examining the effect of time from pretest substance use to the posttest substance use for female middle school Hispanic students, unadjusted and adjusted^a model results

| Substance (unadjusted n /adjusted n) | Unadjusted | | | | Adjusted | | | | Desired Outcome |
|--|-----------------------|-----------------------|-------------------------------|-----------------------------|-----------------------|-----------------------|-------------------------------|-----------------------------|--------------------|
| | Base- line Mean | Post- Test Mean | F-test & sig. ^b | effect size ^c | Base- line Mean | Post- test Mean | F-test & sig. ^b | effect size ^c | |
| Cigarettes (243/241) | 0.07 | 0.06 | 0.614 | 0.003 | 0.07 | 0.06 | 0.254 | 0.001 | 🕒 |
| Chewing Tobacco (243/241) | 0.03 | 0.03 | 0.000 | 0.000 | 0.03 | 0.03 | 0.066 | 0.000 | 🕒 |
| Alcohol (235/233) | 0.13 | 0.16 | 0.604 | 0.003 | 0.13 | 0.16 | 0.002 | 0.000 | 🕒 |
| Binge Drinking (237/235) | 0.11 | 0.11 | 0.000 | 0.000 | 0.11 | 0.11 | 0.017 | 0.000 | 🕒 |
| Marijuana (242/240) | 0.11 | 0.11 | 0.000 | 0.000 | 0.11 | 0.11 | 0.252 | 0.001 | 🕒 |
| Any Prescription Medication Not Prescribed (241/239) | 0.04 | 0.02 | 2.008 | 0.008 | 0.04 | 0.02 | 0.127 | 0.001 | 🕒 |

^a Adjusted for grade and language spoken at home.

^b Exact statistic provided.

^c Partial eta squared where effects are: small = .01, medium = .06, large = .14 or larger.

Among Hispanic males, most measures of perceptions of risk and attitudes towards substance in the core module showed little significant change from pretest to posttest. In the unadjusted model, male respondents' attitudes toward alcohol use worsened and became more tolerant over time (see Table 24) but this was no longer a significant change in the model adjusted for grade and language spoken at home.

Table 24: : Examining the effect of time from pretest scores for perception of harm, parental approval, respondent approval and intentions to smoke to posttest scores for male middle school Hispanic students, unadjusted and adjusted^a model results

| Measure (unadjusted n/ adjusted n) | Unadjusted | | | | Adjusted | | | | Desired Outcome |
|--|----------------|----------------|----------------------------|--------------------------|----------------|----------------|----------------------------|--------------------------|-----------------|
| | Base-line Mean | Post-Test Mean | F-test & sig. ^b | effect size ^c | Base-line Mean | Post-Test Mean | F-test & sig. ^b | effect size ^c | |
| Risk of Harm Scale (225/223) | 1.90 | 1.88 | 0.097 | 0.000 | 1.89 | 1.87 | 0.328 | 0.001 | ↻ |
| Parental Attitudes toward Alcohol Use (227/225) | 2.74 | 2.75 | 0.059 | 0.00 | 2.74 | 2.75 | 0.072 | 0.000 | ↻ |
| Respondent Attitudes toward Alcohol Use (228/226) | 2.68 | 2.57 | 5.262* | 0.023 | 2.68 | 2.57 | 0.623 | 0.003 | ↻ |
| Intention to smoke a cigarette soon(182/180) | 0.04 | 0.04 | 0.000 | 0.000 | 0.04 | 0.04 | 0.249 | 0.001 | ↻ |
| Intention to smoke a cigarette during the next year (211/209) | 0.31 | 0.36 | 1.9555 | 0.009 | 0.31 | 0.36 | 0.037 | 0.000 | ↻ |
| Intention to smoke a cigarette if offered by best friend (209/207) | 0.33 | 0.38 | 1.760 | 0.008 | 0.32 | 0.38 | 1.058 | 0.005 | ↻ |

^a Adjusted for grade and language spoken at home.

^b Exact statistic provided.

^c η^2_{Partial} where effects are: small = .01, medium = .06, large = .14 or larger.

* $p \leq .05$.

Interestingly, in the unadjusted model, Hispanic middle school females showed significant changes in undesired directions for their own attitudes towards alcohol use and their intention to smoke cigarettes. This is in contrast to their increase perceived risk of harm associated with ATOD use which significantly increased. In the GLM model adjusting for the effects of grade and language spoken at home on the measures, no changed remained statistically significant (See Table 25).

Table 25: Examining the effect of time from pretest scores for perception of harm, parental approval, respondent approval and intentions to smoke to posttest scores for female middle school Hispanic students, unadjusted and adjusted^a model results

| Measure (unadjusted n/ adjusted n) | Unadjusted | | | | Adjusted | | | | Desired Outcome |
|--|----------------|----------------|----------------------------|--------------------------|----------------|----------------|----------------------------|--------------------------|-----------------|
| | Base-line Mean | Post-Test Mean | F-test & sig. ^b | effect size ^c | Base-line Mean | Post-Test Mean | F-test & sig. ^b | effect size ^c | |
| Risk of Harm Scale (242/242) | 1.90 | 2.08 | 6.850** | 0.028 | 1.90 | 2.08 | 0.314 | 0.001 | ☞ |
| Parental Attitudes toward Alcohol Use (249/247) | 2.84 | 2.82 | 0.449 | 0.002 | 2.84 | 2.81 | 0.945 | 0.004 | ☞ |
| Respondent Attitudes toward Alcohol Use (248/246) | 2.78 | 2.64 | 11.828*** | 0.046 | 2.78 | 2.64 | 1.105 | 0.005 | ☞ |
| Intention to smoke a cigarette soon (203/201) | 0.00 | 0.02 | 4.060* | 0.020 | 0.00 | 0.02 | 0.369 | 0.002 | ☞ |
| Intention to smoke a cigarette during the next year (231/230) | 0.19 | 0.27 | 4.962* | 0.021 | 0.19 | 0.27 | 0.461 | 0.002 | ☞ |
| Intention to smoke a cigarette if offered by best friend (231/229) | 0.19 | 0.26 | 3.928 | 0.017 | 0.19 | 0.26 | 1.268 | 0.006 | ☞ |

^aAdjusted for grade and language spoken at home.

^bExact statistic provided.

^cPartial eta squared where effects are: small = .01, medium = .06, large = .14 or larger.

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Discussion

In FY12, there were some significant increases for 6th grade boys and 7th grade girls in lifetime cigarette use. In addition, 7th grade boys reported significant increases in lifetime alcohol use but not current binge drinking. Finally, 8th grade boys reported significant increases in life time and past 30-day marijuana use. These patterns are somewhat different from those in FY11. In FY11, Hispanic 7th grade girls showed significant increases in lifetime cigarette, alcohol, and marijuana use. In FY12, Hispanic SFS middle school students, regardless of gender, generally reported lower prevalence rates of ATOD use than their counterparts in the YRRS sample. Furthermore, the slopes of change lines overtime are generally less steep among the SFS sample when compared with the YRRS sample. Indeed, Hispanic females even decreased past 30 day use in some cases. It appears that the prevention message is reaching Hispanic females in FY12 effectively. This strong outcome may reflect efforts on the part of programs to target Hispanic females because in FY11, they were reporting worrisome increases in ATOD use and specifically marijuana use. If so, it would indicate that prevention programs were able to reach these young women more effectively than in previous years.

It is always important to keep in mind that ATOD use still occurs only among a minority of students. So while significant changes did occur at least among males, these changes were very minor. For example, in the GLM results for past 30 day ATOD use (Tables 22 & 23), keep in mind that the means should range only between 0 and 1, 0 representing those who did not report use, and 1 for those who did. A value of .5 would indicate half of the sample responded positively to using the substance. The highest mean however, was only .25 at post-test and most were far lower. Marijuana use among young Hispanic males would appear to be the group to focus additional efforts for prevention next year. For the models examining the protective factors such as perception of risk of harm, parental attitudes and youth attitudes toward alcohol use, average responses also fall very near to the most desired response direction, which is towards the higher end of response range (0-3). Although it has been discussed before in this report, it is important to acknowledge once again that we are most likely seeing the result of floor and ceiling effects. Certainly that is not always the case, but it should be kept in mind. When so few respondent report use, it leaves little room for decreasing use and a lot of room for increasing use.

Thought should be given as to why the males showed such strong increases in the prevalence of marijuana use in FY 12. In FY11, it was the prevalence of cigarette and marijuana use in Hispanic female students who drew special attention. We must ask ourselves what other factors in the lives of these boys and girls are influencing their substance use behaviors and are these factors that we can influence positively through direct prevention services and/or changes in the environment. As in the past, we would recommend that if local evaluators have the time and/or inclination, conducting focus groups with the young people might yield some important insights as to why we are seeing these increases and could inform prevention efforts.

Results for Native American Middle School Students

Surveys were completed by 140 middle school Native American program participants. There were equal number of female (50.0%) and male (50.0%) respondents and the average age was 12.5 years old for males and 12.3 years old for females. Most of students are in 7th grade (62.9% of males and 62.3% of females). Similar to their Hispanic peers, more than half of Native American students (52.7% of males and 56.5% of females) lived in homes where a language other than English was spoken (see Table 26). It should be pointed out that when looking at the results of the analysis of this subgroup, that the small number of respondents, in some analyses, make the estimates very unstable and not reliable.

Table 26: Demographics for Native American middle school SFS program participants (n=140)

| Demographic | % SFS Program Participants Male (n=70) | % SFS Program Participants Female (n=70) |
|---|---|---|
| Grade | | |
| 5 th grade | 4.29 | 5.80 |
| 6 th grade | 15.71 | 13.04 |
| 7 th grade | 62.86 | 62.32 |
| 8 th grade | 17.14 | 18.84 |
| Language Other than English Spoken Most Often ^a | | |
| | 52.86 | 56.52 |

^a Dichotomous variable (yes or no) capturing the percentage of youth living in homes where English is not the primary language.

There were no significant changes from pre- to posttest for any of substances among Native American middle school boys and girls (see Table 27), though observed trends were generally in undesirable direction including increase cigarette, alcohol, and inhalant use among boys and cigarette, marijuana, and inhalant use among girls. On the other hand, current binge drinking did not change among boys and actually decreased among girls.

Table 27: Past 30-day ATOD use^a differences^b from pretest to posttest for middle school Native American SFS program participants

| Substance (Total sample n) | % Pretest | % Posttest | McNemar Test | % Pretest | % Posttest | McNemar Test |
|--------------------------------------|--------------|---------------|-----------------|--------------|---------------|-----------------|
| | Male | | | Female | | |
| Cigarettes (138) | 11.29 | 14.52 | 0.40 | 6.25 | 7.81 | 0.20 |
| Chewing Tobacco (138) | 0.00 | 1.61 | NA | 3.13 | 3.13 | NA |
| Alcohol (138) | 6.45 | 12.90 | 1.60 | 14.06 | 14.06 | 0.00 |
| Binge Drinking (138) | 6.45 | 6.45 | 0.00 | 7.94 | 6.35 | 0.33 |
| Marijuana (138) | 29.51 | 27.87 | 0.09 | 15.63 | 25.00 | 2.57 |
| Inhalant ever use ^b (138) | 3.23 | 6.45 | 1.00 | 6.25 | 10.94 | 1.00 |

^a Dichotomous substance use variable (yes or no).

^b Decreases at posttest may indicate inconsistent reporting from pretest to posttest or missing data at posttest.

Similarly, there were no significant increases or decreases observed in use of prescription medications although there are both positive and negative trends. Increases in the use of prescription pain medications was seen for both male and female Native American respondents. On the other hand, females decreased their use of medications such as Ritalin or Prozac and males decreased general use of prescription medications (see Table 28). Prescription drug use is a growing issue among youth and young adults in NM and across the US. However, it appears that at least among these middle school students, there is relatively little use of prescription medications that are not specifically prescribed for them.

Table 28: Past 30-day prescription drug use^a differences^b from pretest to posttest for middle school Native American SFS program participants

| Substance (total sample n) | % Pretest | % Posttest | McNemar Test | % Pretest | % Posttest | McNemar Test |
|---|--------------|---------------|-----------------|---------------|---------------|-----------------|
| | <i>Male</i> | | | <i>Female</i> | | |
| Any prescription medication not prescribed (138) | 6.45 | 8.06 | 0.33 | 3.13 | 3.13 | 0.00 |
| Any prescription pain pills not prescribed (138) | 3.23 | 11.29 | 5.00 | 3.17 | 4.76 | 0.33 |
| Any Ritalin, Adderal, or Prozac not prescribed (138) | 0.00 | 3.23 | NA | 3.17 | 1.59 | 0.33 |
| Any pres sleep aids or tranquilizers not prescribed (138) | 0.00 | 4.92 | NA | 0.00 | 1.59 | NA |
| Any other medications not prescribed (138) | 11.29 | 9.68 | 0.14 | 4.76 | 6.35 | 0.20 |

^a Dichotomous substance use variable (yes or no).

When examining current ATOD use at post-test among the subsample of Native American youth who reported use at pre-test, we find that prevalence generally decreases. However, the overall number of respondents in this comparison is quite small and these results should be interpreted with great caution. Interestingly if we look to see which substances males and females are most represented, we see that more males are reporting cigarette and marijuana use whereas, females are more heavily represented in the alcohol measures and inhalant use. Again, given the overall small numbers, this may or may not be informative but bears further consideration by prevention providers in Native American communities (see Table 29).

Table 29: The average number of times in the past 30 days of substance use^a, at pretest and posttest among middle school Native American SFS program participants who reported substance specific use at baseline

| Substance (Respondents reporting use at baseline, male n & female n) | Pre-test Mean | Post-test Mean | t-value | Pre-test Mean | Post-test Mean | t-value | Desired Outcome |
|---|---------------|----------------|-----------------|---------------|----------------|-----------------|-----------------|
| | Male | | | Female | | | |
| Cigarettes(7/4) | 1.43 | 0.67 | -1.75 | 1.00 | 1.00 | 0.00 | ⬇️ |
| Chewing tobacco (0/2) | 0.00 | 0.00 | NA ^b | 1.00 | 2.00 | NA ^b | ⬇️ |
| Alcohol (4/10) | 2.00 | 1.00 | -4.00 | 1.30 | 0.89 | -0.84 | ⬇️ |
| Binge drinking (4/10) | 2.75 | 1.00 | -1.60 | 0.70 | 0.56 | -0.55 | ⬇️ |
| Marijuana (15/8) | 1.67 | 1.67 | -0.48 | 1.63 | 1.57 | 0.00 | ⬇️ |
| Inhalant ever use ^c (3/6) | 1.00 | 0.50 | -1.00 | 1.00 | 0.25 | -3.00 | ⬇️ |

^a0=0 times, 1=1 or 2 times, 2=3 to 9 times, 3=10 to 19 times, 4=20 to 39 times, 5=40 or more times.

^bUnable to perform t-test due to zero standard error.

^cDecreases at posttest may indicate inconsistent reporting from pretest to posttest or missing data at posttest.

Substance use among youth reporting any current use at baseline decreased for both Native American males and females with relatively sharp decreases in the prevalence of almost every core substance (see Table 30) except for chewing tobacco (for boys and girls) and inhalant ever use (for boys only).

Table 30: Past 30-day ATOD use^a at posttest among middle school Native American SFS program participants reporting ATOD use at pretest

| Substance (total respondents reporting any use at baseline, male n & female n) | % Pretest | % Posttest | % Change | % Pretest | % Posttest | % Change |
|---|-----------|------------|----------|-----------|------------|----------|
| | Male | | | Female | | |
| Cigarettes (26/21) | 30.77 | 27.27 | -11.4 | 19.05 | 15.79 | -17.1 |
| Chewing Tobacco (26/21) | 0.00 | 4.55 | NA | 9.52 | 10.53 | 10.6 |
| Alcohol (26/21) | 23.08 | 22.73 | -1.5 | 47.62 | 31.58 | -33.7 |
| Binge Drinking (26/21) | 15.38 | 13.64 | -11.3 | 23.81 | 15.79 | -33.7 |
| Marijuana (26/21) | 84.00 | 63.64 | -24.2 | 52.38 | 36.84 | -29.7 |
| Inhalant ever use ^b (26/21) | 11.54 | 13.64 | 18.2 | 28.57 | 15.79 | -44.7 |

^a Dichotomous substance use variable (yes or no).

^b Decreases at posttest may indicate inconsistent reporting from pretest to posttest or missing data at posttest.

Figures 34 & 35 that follow, graphically display the changes in prevalence from pretest to posttest for males and then females based on the data reported in Table 30. As previously mentioned, boys and girls who reported any ATOD use at baseline decreased in their self-reported use except for chewing tobacco. Keep in mind as well, that the total male respondents was 26 and female respondents equaled 21, so the percent change is very sensitive and estimates are not reliable.

Figure 34: Percent of male middle school Native American SFS program participants reporting substance use at posttest among only program participants reporting substance use at pretest

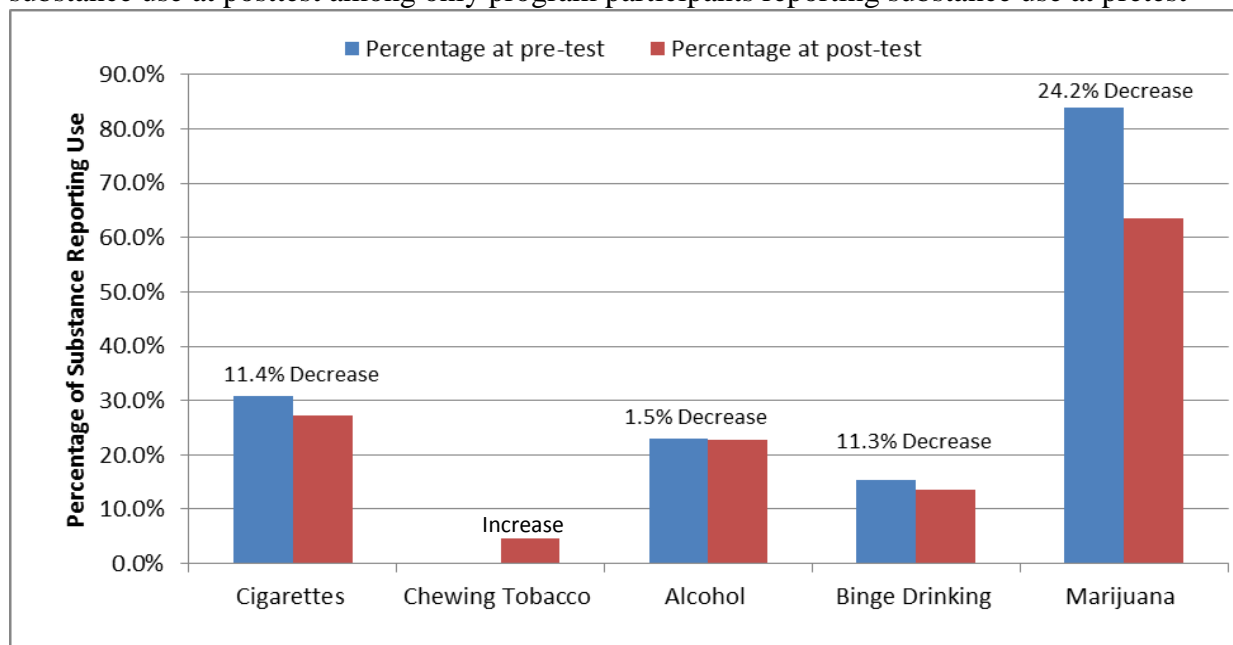
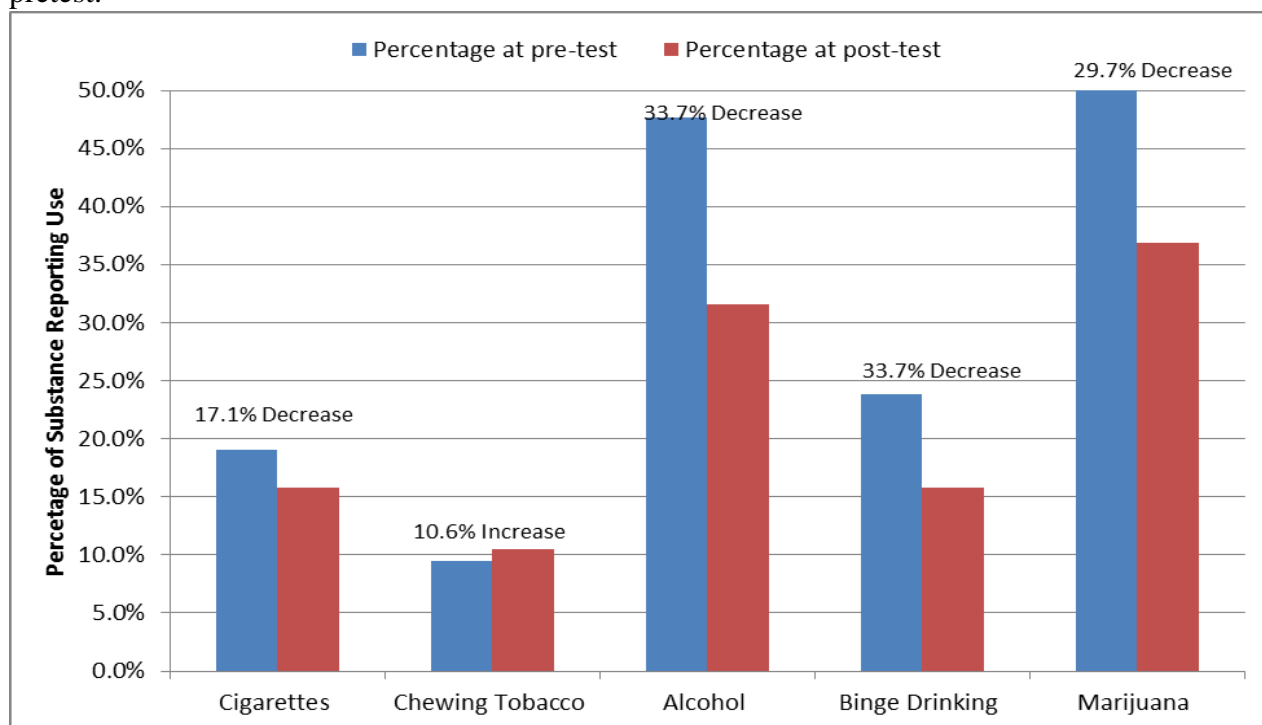


Figure 35: Percent of female middle school Native American SFS program participants reporting substance use at posttest among only program participants reporting substance use at pretest.



Middle School SFS Native American Subpopulation Compared with Middle School YRRS Native American Subpopulation

Tobacco use (Native American students, grades 6th-8th)

The baseline prevalence rates of lifetime cigarette use and past 30-day cigarette use were equal or greater for SFS students compared to their counterparts in 2009 YRRS sample. Generally speaking, Native American middle school boys showed a steady increase in these two measures except for the 6th grade boys in past 30-day cigarette use (see Figure 36 and Figure 38). For Native American girls, the patterns were inconsistent across the two measures and grades (see Figure 37 and Figure 39), yet their prevalence rates in generally were lower than their YRRS peers.

Figure 36: Percent of 6th-8th grade Native American males reporting having ever smoked cigarettes

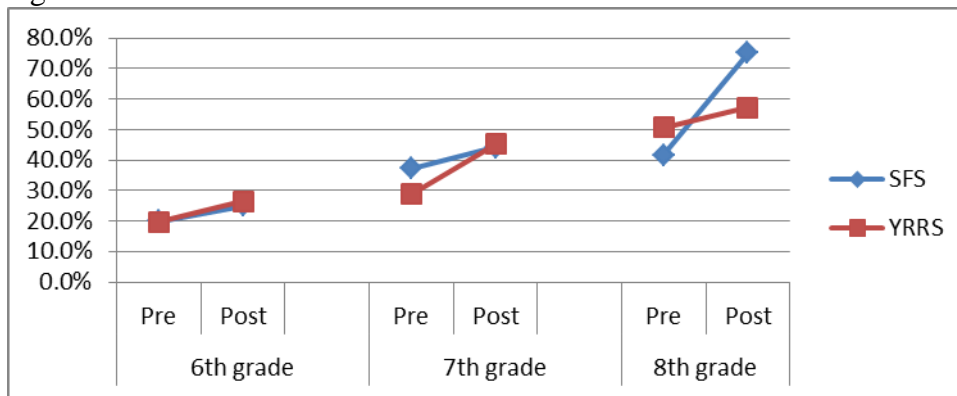


Figure 37: Percent of 6th-8th grade Native American females reporting having ever smoked cigarettes

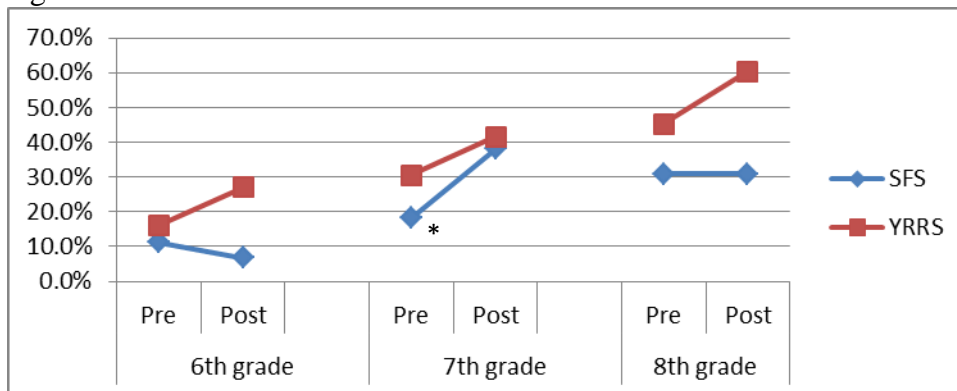


Figure 38: Percent of 6th-8th grade Native American males reporting having smoked cigarettes in the last 30 days

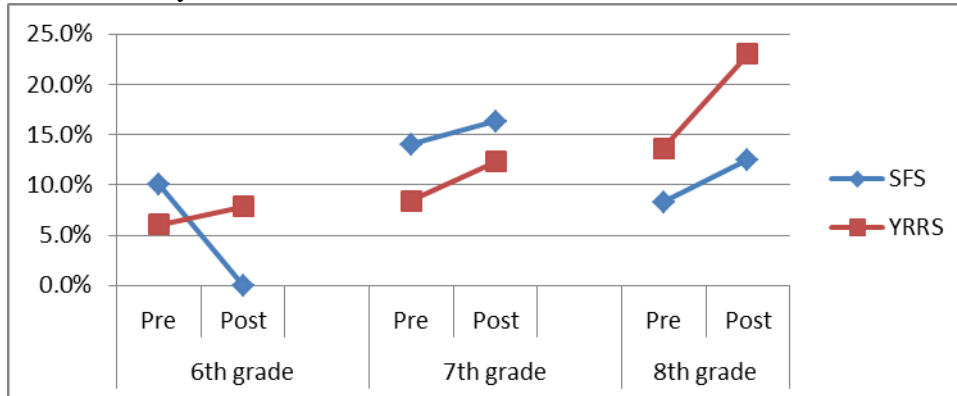
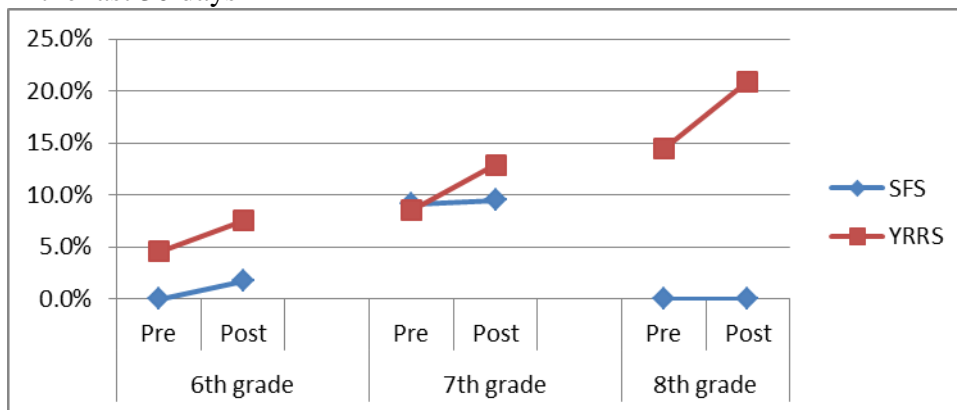


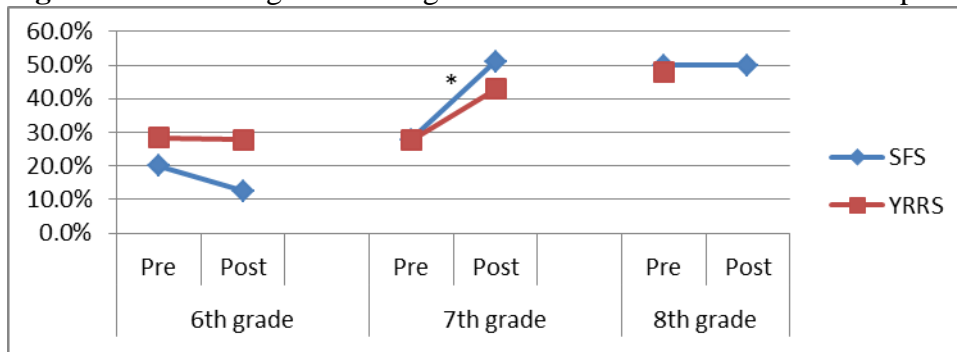
Figure 39: Percent of 6th-8th grade Native American females reporting having smoked cigarettes in the last 30 days



Alcohol use (Native American students, grades 6th-8th)

SFS Native American males reported a faster increase in the prevalence of lifetime alcohol use in 7th grade compared with their YRRS peers, and girls reported steady yet non-significant increases across all three grades (see Figures 40 & 41). In addition, SFS students reported inconsistent patterns of binge drinking behaviors from pretest to posttest (see Figures 42 & 43). By contrast, the YRRS Native American male and female samples steadily increased binge drinking from 6th grade through 8th grade.

Figure 40: Percentage of 6th-8th grade Native American males who report ever drinking alcohol



* Change from pre to posttest for SFS is significant ($p < .01$)

Figure 41: Percentage of 6th-8th grade Native American females who report ever drinking alcohol

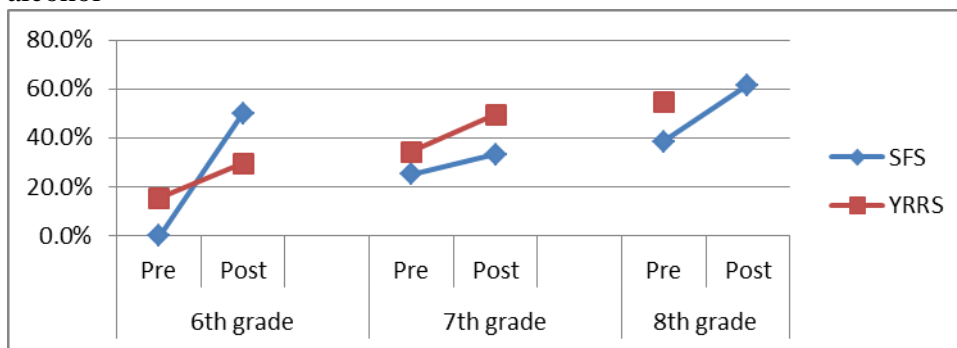


Figure 42: Percentage of 6th-8th grade Native American males who report binge drinking in the past 30 days

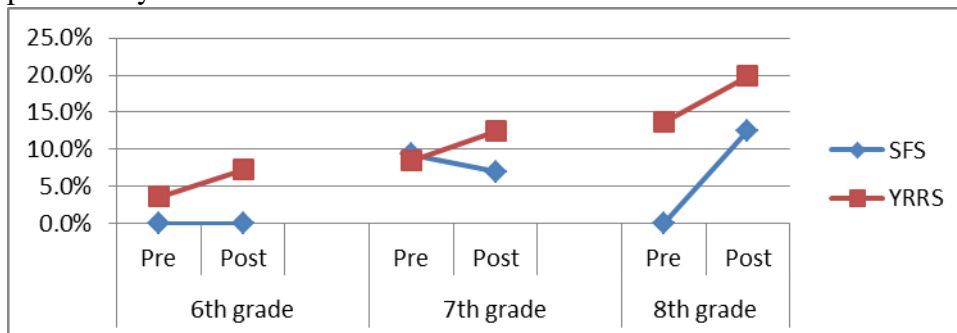
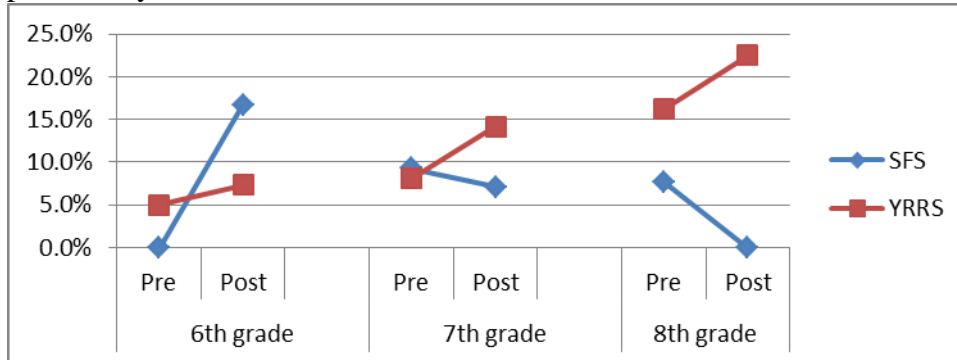


Figure 43: Percentage of 6th-8th grade Native American females who report binge drinking in the past 30 days



Drug use (Native American students, grades 6th-8th)

The prevalence of lifetime marijuana use among the SFS Native American students is equal to or higher than the equivalent 2009 YRRS sample (see Figures 44 & 45). When looking at past 30 day marijuana use, the rate of the SFS sample is also generally higher than the YRRS sample (Figures 46 & 47), and the rates of change (slope) of the 6th and 7th grade girls are faster (i.e., steeper) than their YRRS peers (see Figure 47).

Figure 44: Percentage of 6th-8th grade Native American males who report ever using marijuana

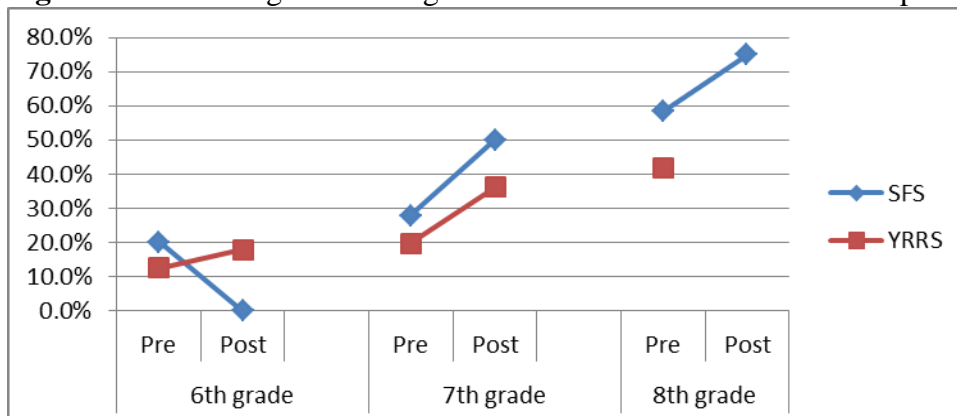


Figure 45: Percentage of 6th-8th grade Native American females who report ever using marijuana

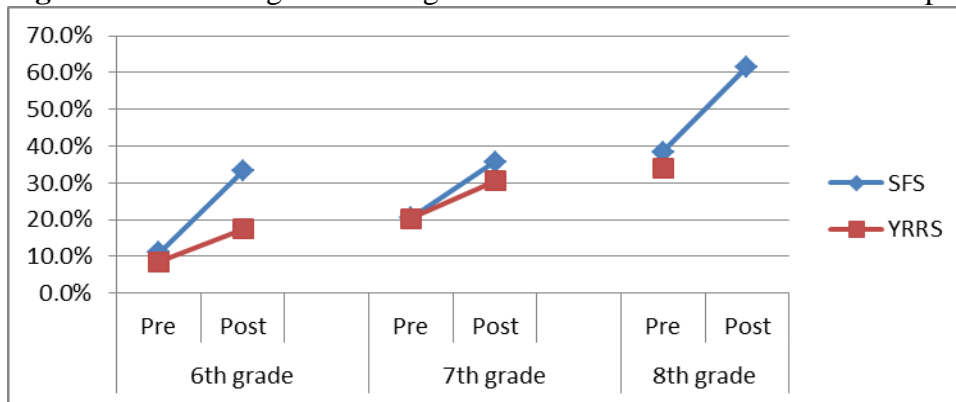


Figure 46: Percentage of 6th-8th grade Native American males who report using marijuana in the past 30 days

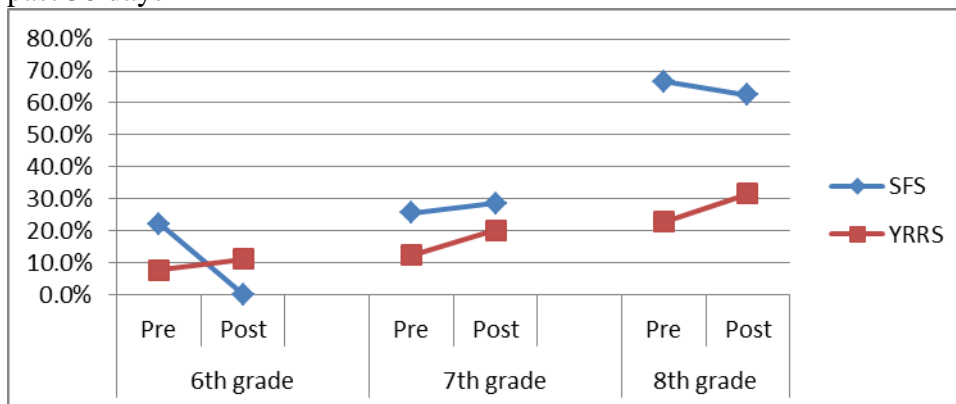
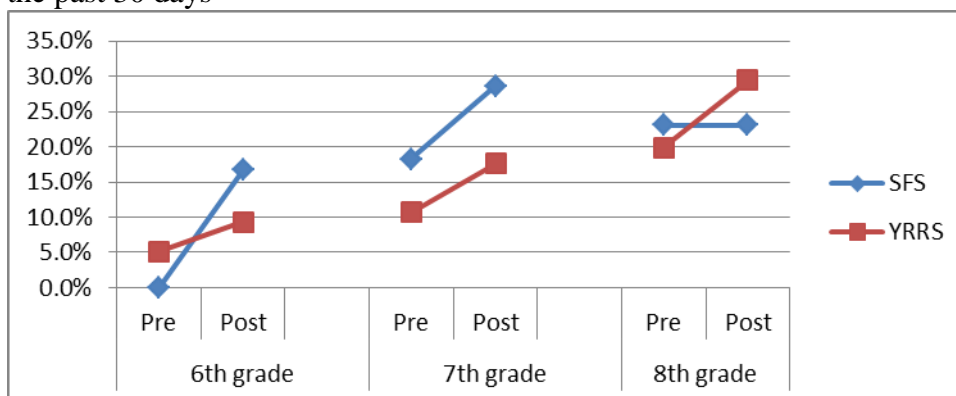


Figure 47: Percentage of 6th-8th grade Native American females who report using marijuana in the past 30 days



General Linear Models

The GLM Models were run to examine the effect of prevention programs between pre and posttest on the outcome. We controlled for pretest estimates on the outcome because we assumed that use at pretest will predict at least in part use at posttest. In the adjusted models, we also controlled for the grade in which a student is and the language spoken at home. Among the Native American middle school male SFS sample, there were no significant changes in ATOD use, perception of risks or attitudes towards alcohol use in the unadjusted and adjusted models. For this age group, no significant increases in use and no significant changes in attitudes are generally positive findings since this is a time when youth begin experimenting in general and attitudes become more lenient (see Tables 31 & 32).

Table 31: Examining the effect of pretest substance use on the posttest substance use for middle school Native American male students, unadjusted and adjusted^a model results

| Substance (unadjusted n/adjusted n) | Unadjusted | | | | Adjusted | | | | Desired Outcome |
|---|-----------------------|-----------------------|----------------------------------|-----------------------------|-----------------------|-----------------------|----------------------------------|-----------------------------|--------------------|
| | Base- line Mean | Post- Test Mean | F-test & sig. ^b | effect size ^c | Base- line Mean | Post- test Mean | F-test & sig. ^b | effect size ^c | |
| Cigarettes (57/57) | 0.16 | 0.16 | 0.000 | 0.000 | 0.16 | 0.16 | 0.640 | 0.012 | ⬇ |
| Chewing Tobacco (57/57) | 0.00 | 0.02 | 1.000 | 0.018 | 0.00 | 0.02 | 0.003 | 0.000 | ⬇ |
| Alcohol (57/58) | 0.12 | 0.17 | 0.596 | 0.010 | 0.12 | 0.17 | 0.191 | 0.003 | ⬇ |
| Binge Drinking (57/58) | 0.21 | 0.12 | 0.551 | 0.010 | 0.21 | 0.12 | 0.161 | 0.003 | ⬇ |
| Marijuana (57/54) | 0.41 | 0.52 | 1.128 | 0.021 | 0.41 | 0.52 | 2.349 | 0.044 | ⬇ |
| Inhalant ever use (57/57) | 0.07 | 0.07 | 0.000 | 0.000 | 0.07 | 0.07 | 0.000 | 0.000 | ⬇ |

^aAdjusted for grade and language spoken at home.

^bExact statistic provided.

^cPartial eta squared where effects are: small = .01, medium = .06, large = .14 or larger.

Table 32: Examining the effect of pretest scores for perception of harm, parental approval, respondent approval and intentions to smoke on posttest scores for middle school male Native American students, unadjusted and adjusted^a model results

| Measure (unadjusted n/ adjusted n) | Unadjusted | | | | Adjusted | | | | Desired Outcome |
|---|-----------------------|-----------------------|-------------------------------|-----------------------------|-----------------------|-----------------------|-------------------------------|-----------------------------|--------------------|
| | Base- line Mean | Post- Test Mean | F-test & sig. ^b | effect size ^c | Base- line Mean | Post- Test Mean | F-test & sig. ^b | effect size ^c | |
| Risk of Harm Scale (62/62) | 1.51 | 1.63 | 1.069 | 0.017 | 1.51 | 1.63 | 0.852 | 0.014 | ➊ |
| Parental Attitudes toward Alcohol Use (62/62) | 2.79 | 2.69 | 1.292 | 0.021 | 2.79 | 2.69 | 1.202 | 0.020 | ➊ |
| Respondent Attitudes toward Alcohol Use (62/62) | 2.79 | 2.61 | 3.834 | 0.059 | 2.79 | 2.61 | 0.866 | 0.014 | ➊ |
| Intention to smoke a cigarette soon (38/38) | 0.00 | 0.03 | 1.000 | 0.026 | 0.00 | 0.03 | 0.042 | 0.001 | ➋ |
| Intention to smoke a cigarette during the next year (49/49) | 0.29 | 0.49 | 3.504 | 0.068 | 0.29 | 0.49 | 2.701 | 0.055 | ➋ |
| Intention to smoke a cigarette if offered by best friend (49/49) | 0.35 | 0.47 | 1.293 | 0.026 | 0.35 | 0.47 | 0.092 | 0.002 | ➋ |

^a Adjusted for grade and language spoken at home.

^b Exact statistic provided.

^c Partial eta squared where effects are: small = .01, medium = .06, large = .14 or larger.

Among the female Native American middle school sample, there was a significant effect of time on past 30 day marijuana use in the unadjusted model, however, once the model adjusted for grade and language spoken at home, the effect of time was no longer significant (see Table 33). When examining the middle school Native American females on measures associated with ATOD use, in the unadjusted models there were significant time effects on perceptions of harm and respondents' attitudes towards alcohol use (see Table 34).

Table 33: Examining the effect of pretest substance use on the posttest substance use for middle school Native American female students, unadjusted and adjusted^a model results

| Substance (unadjusted n /adjusted n) | Unadjusted | | | | Adjusted | | | | Desired Outcome |
|--|-----------------------|-----------------------|-------------------------------|-----------------------------|-----------------------|-----------------------|-------------------------------|-----------------------------|--------------------|
| | Base- line Mean | Post- Test Mean | F-test & sig. ^b | effect size ^c | Base- line Mean | Post- test Mean | F-test & sig. ^b | effect size ^c | |
| Cigarettes (60/59) | 0.07 | 0.12 | 1.000 | 0.017 | 0.07 | 0.12 | 0.400 | 0.007 | ⬇ |
| Chewing Tobacco (60/59) | 0.03 | 0.07 | 2.034 | 0.033 | 0.03 | 0.07 | 0.207 | 0.004 | ⬇ |
| Alcohol (63/62) | 0.19 | 0.21 | 0.036 | 0.001 | 0.19 | 0.19 | 0.656 | 0.011 | ⬇ |
| Binge Drinking (62/61) | 0.11 | 0.10 | 0.076 | 0.001 | 0.11 | 0.10 | 2.400 | 0.040 | ⬇ |
| Marijuana (60/59) | 0.18 | 0.45 | 8.466** | 0.125 | 0.19 | 0.41 | 0.042 | 0.001 | ⬇ |
| Inhalant ever use (60/59) | 0.03 | 0.03 | 0.000 | 0.000 | 0.03 | 0.03 | 0.000 | 0.000 | ⬇ |

^aAdjusted for grade and language spoken at home.

^bExact statistic provided.

^cPartial eta squared where effects are: small = .01, medium = .06, large = .14 or larger.

** $p \leq .01$.

Table 34: Examining the effect of pretest scores for perception of harm, parental approval, respondent approval and intentions to smoke on posttest scores for middle school female Native American students, unadjusted and adjusted^a model results

| Measure (unadjusted n/ adjusted n) | Unadjusted | | | | Adjusted | | | | Desired Outcome |
|--|----------------|----------------|----------------------------|--------------------------|----------------|----------------|----------------------------|--------------------------|-----------------|
| | Base-line Mean | Post-Test Mean | F-test & sig. ^b | effect size ^c | Base-line Mean | Post-Test Mean | F-test & sig. ^b | effect size ^c | |
| Risk of Harm Scale (63/62) | 1.56 | 1.83 | 4.622* | 0.069 | 1.54 | 1.85 | 1.910 | 0.031 | ☐ |
| Parental Attitudes toward Alcohol Use (64/63) | 2.78 | 2.70 | 1.482 | 0.023 | 2.78 | 2.73 | 0.018 | 0.000 | ☐ |
| Respondent Attitudes toward Alcohol Use (64/63) | 2.80 | 2.59 | 8.171** | 0.115 | 2.81 | 2.62 | 0.002 | 0.000 | ☐ |
| Intention to smoke a cigarette soon (46/46) | 0.04 | 0.13 | 2.769 | 0.058 | 0.04 | 0.13 | 0.078 | 0.002 | ☐ |
| Intention to smoke a cigarette during the next year (57/56) | 0.42 | 0.53 | 1.060 | 0.019 | 0.41 | 0.54 | 0.089 | 0.002 | ☐ |
| Intention to smoke a cigarette if offered by best friend (57/56) | 0.53 | 0.61 | 0.925 | 0.016 | 0.52 | 0.59 | 0.348 | 0.007 | ☐ |

^aAdjusted for grade and language spoken at home.

^bExact statistic provided.

^cPartial eta squared where effects are: small = .01, medium = .06, large = .14 or larger.

** $p \leq .01$.

Discussion

Unlike the Hispanic middle school students, there are no significant changes in every ATOD use among Native American students regardless of gender. However, some undesirable increases were observed in female past 30-day cigarette and marijuana use and inhalant ever use, and in male past 30-day cigarette and alcohol use and inhalant ever use. Additionally, Native American students tended to have equal or higher prevalence than their 2009 YRRS peers in alcohol and marijuana use, especially among male students. In some cases, the slopes of changes are rather steep, such as past 30-day binge drinking for 8th grade males and 6th grade females. Girls appear to be initiating alcohol and marijuana use in 6th grade. By comparison, 6th grade boys have already tried tobacco, alcohol and marijuana and among these boys we see decreases over time. Marijuana use among this population remains a considerable cause for concern for both males and females.

SFS Supplemental Modules

Modules B through E of the SFS are optional measurements that programs can choose to use if they feel that the constructs measured in the modules are relevant to the objectives in the prevention program. Although optional, many programs choose to administer them because it is felt they measure important changes occurring that are not measured in the CORE module. The measures in modules B-E are from the California Health Kids Survey (CHKS)⁶ and have moderate to high reliability and validity. The analyses on the supplemental modules were only performed on the whole middle school sample and not among the high school sample or among gender or race/ethnicity subgroups. Permission to use these supplemental models was granted from the CHKS developers.

Middle School Findings for the SFS Supplemental Modules

Cronbach alphas at pre and posttest for middle school students are provided for each subscale in Table 35. All scales at pre and posttest show adequate to good reliability.

Table 35: Reliability statistics for scales in the middle school SFS supplemental modules

| Scale/measure | Pretest Cronbach's α | Posttest Cronbach's α |
|--|--------------------------------|---------------------------------|
| Violence Perpetration | 0.778 | 0.773 |
| Violence Victimization | 0.756 | 0.781 |
| Cooperation and Communication | 0.597 | 0.675 |
| Self-efficacy | 0.708 | 0.758 |
| Empathy | 0.814 | 0.826 |
| Problem solving | 0.722 | 0.758 |
| Self-awareness | 0.698 | 0.796 |
| Goals and Aspirations | 0.700 | 0.767 |
| Caring Relationships: Adults in School | 0.778 | 0.829 |
| High Expectations: Adults in School | 0.814 | 0.861 |
| Meaningful Participation: In the School | 0.743 | 0.817 |
| Caring Relationships: Adults in Home | 0.855 | 0.862 |
| High Expectations: Adults in Home | 0.868 | 0.872 |
| Meaningful Participation: In the Home | 0.813 | 0.819 |
| Caring Relationships: Adults in Community | 0.829 | 0.835 |
| High Expectations: Adults in Community | 0.888 | 0.896 |
| Meaningful Participation: In the Community | 0.628 | 0.657 |
| Caring Relationships: Peers | 0.875 | 0.874 |
| High Expectations: Pro-social peers | 0.642 | 0.634 |

⁶ Permission to use measures was obtained from WestEd prior to administering them.

Not all sites chose to use modules B & C but for those that did, the breakdown of their contribution to the overall sample can be found in Table 36.

Table 36: Data for Modules B and C by site

| Site | Percent |
|--|---------|
| Counseling Associates | 72.6 |
| Five Sandoval Indian Pueblos Council | 10.2 |
| North Central Community Based Services | 17.2 |
| Total | 100.0 |

Modules B and C measure a student’s perpetration of violence and their experiences with being victimized by others. The GLM results table (Table 37) presents the average scores from the perpetration scale and the victimization scale. The range for responses was 0 to 4, where 4 equaled high frequency, i.e., “almost every day”, and 0 equaled “never”. There is, in general, no change from pre- to post-test on all of four measures in the unadjusted and adjusted models. And the means for these measures are well below .50, in other words closer to 0, or “never”, than 1, which is “once in a while.”

Table 37: Examining the effect of Module B and Module C pretest scores on posttest scores for selected middle school SFS program participants, unadjusted and adjusted^a model results

| | Unadjusted | | | | Adjusted | | | | |
|--|-----------------------|-----------------------|--------------------------------|-----------------------------|-----------------------|-----------------------|--------------------------------|-----------------------------|--------------------|
| Measure (unadjusted n/adjusted n) | Base- line Mean | Post- test Mean | F-test & sig ^b . | effect size ^c | Base- line Mean | Post- test Mean | F-test & sig ^b . | effect size ^c | Desired Outcome |
| Violence Perpetration (393/382) | 0.35 | 0.36 | 0.040 | 0.000 | 0.36 | 0.36 | 0.643 | 0.002 | ⓪ |
| Violence Victimization (393/382) | 0.36 | 0.38 | 1.558 | 0.004 | 0.36 | 0.38 | 0.014 | 0.000 | ⓪ |
| Felt unsafe at or on way to school (371/360) | 0.10 | 0.11 | 0.210 | 0.001 | 0.09 | 0.10 | 0.277 | 0.001 | ⓪ |

^aModel adjusted for biological sex, grade, ethnicity, and English as a primary language at home.

^bExact statistic provided.

^cPartial eta squared where effects are: small = .01, medium = .06, large = .14 or larger.

Two additional measures from the NM YRRS are included in module C (see Tables 37 & 38). These ask about feeling unsafe at or on the way to school and the number of days absent from school in the past 30 days because of feeling unsafe. For these measures, there are essentially no differences from pre- to post-test. About 94% of students indicated they did not miss school because they felt unsafe.

Table 38: The percentage of respondents who did not go to school at least once during the past 30 days because they felt unsafe at or on their way to school by frequency category, selected middle school SFS program participants

| | 0 days | 1 day | 2 or 3 days | 4 or 5 days | 6 or more days |
|-------------------------|---------------|--------------|--------------------|--------------------|-----------------------|
| Baseline (%) (n=428) | 93.5 | 3.7 | 2.1 | 0.5 | 0.2 |
| Posttest (%) (n=380) | 94.2 | 3.2 | 1.3 | 0.3 | 1.1 |

Modules D & E measure internal and external resiliency respectively. Resiliency is a construct consisting of many factors that have been shown to be associated with ATOD use. Increased resiliency, measured as a whole or as subscales, decreases the likelihood of use. Many prevention programs focus a lot of time and effort on increasing resiliency among youth to resist drugs and alcohol and peer pressure, etc. This is often particularly true of programs working with younger children who may not yet be using drugs.

Again, not all sites chose to use modules D & E. Those programs that used Module D are listed in Table 39 and a breakdown of the contribution to the entire sample is provided.

Table 39: Data for Module D by site

| Site | Percent |
|--|----------------|
| Counseling Associates | 44.1 |
| Five Sandoval Indian Pueblo | 6.2 |
| North Central Community Based Services | 10.5 |
| Sandoval County SAP | 11.6 |
| San Juan County Partnership | 27.7 |
| Total | 100.0 |

Internal resiliency is measured in Module D. Internal resiliency includes concepts such as self-efficacy, problem solving skills, self-awareness, having goals and aspirations and the ability to communicate and work with others productively. In the unadjusted GLM, significant improvement from pre- to post-test was found for empathy but it was no longer significant in the adjusted model. Yet increases in goals and aspirations became significant after adjusting for the influences of biological sex, grade, race/ethnicity, and language spoken at home (see Table 40).

Table 40: Examining the effect of Module D pretest scores on posttest scores for selected middle school SFS program participants, unadjusted and adjusted^a model results

| Measure (unadjusted n/adjusted n) | Unadjusted | | | | Adjusted | | | | Desired Outcome |
|---|-----------------------|-----------------------|-------------------------------|-----------------------------|-----------------------|-----------------------|-------------------------------|-----------------------------|--------------------|
| | Base- line Mean | Post- test Mean | F-test & sig. ^b | effect size ^c | Base- line Mean | Post- test Mean | F-test & sig. ^b | effect size ^c | |
| Cooperation and Communication (682/666) | 2.12 | 2.14 | 0.624 | 0.001 | 2.13 | 2.14 | 0.003 | 0.000 | 🔍 |
| Self-efficacy (682/666) | 2.21 | 2.25 | 2.380 | 0.003 | 2.22 | 2.25 | 0.942 | 0.001 | 🔍 |
| Empathy (682/666) | 1.98 | 2.08 | 4.254*** | 0.021 | 1.98 | 2.07 | 0.213 | 0.000 | 🔍 |
| Problem solving (683/667) | 1.89 | 1.94 | 2.133 | 0.003 | 1.90 | 1.94 | 0.180 | 0.000 | 🔍 |
| Self-awareness (676/660) | 2.29 | 2.30 | 0.072 | 0.000 | 2.30 | 2.30 | 2.439 | 0.004 | 🔍 |
| Goals and Aspirations (683/667) | 2.64 | 2.67 | 3.064 | 0.004 | 2.65 | 2.67 | 3.795* | 0.006 | 🔍 |

^aModel adjusted for biological sex, grade, ethnicity, and English as a primary language at home.

^bExact statistic provided

^cPartial eta squared where effects are: small = .01, medium = .06, large = .14 or larger.

* $p \leq .05$.

Those programs that chose to use Module E are listed in Table 41 and a breakdown of each program's contribution to the overall sample is provided.

Table 41: Data for module E by site

| Site | Percent |
|--|---------|
| Counseling Associates | 45.1 |
| Five Sandoval Indian Pueblo | 6.3 |
| North Central Community Based Services | 10.7 |
| Santa Fe Mountain Center | 9.6 |
| San Juan County Partnership | 28.3 |
| Total | 100.0 |

The measures of external resiliency in Module E reflect changes in relationships and expectations from caring peers and adults and meaningful participation in the community. Among the middle school respondents, there was a significant increase on meaningful participation in the school in both the unadjusted model and adjusted model (See Table 42.)

The scales for items on both resiliency modules were from 0 to 3 where 3 indicates having high resiliency and 0 indicating having very little. Examination of pre-test and post-test means of these measures indicates that most of the mean scores are greater than 2 at pretest, which leaves a little room for improvement. This may contribute to few significant improvements observed in the average scores for these scales even though most are trending in the desired direction.

Table 42: Examining the effect of Module E pretest scores on posttest scores for selected middle school SFS program participants, unadjusted and adjusted^a model results

| | Unadjusted | | | | Adjusted | | | | |
|--|----------------|----------------|----------------------------|--------------------------|----------------|----------------|----------------------------|--------------------------|-----------------|
| Measure (unadjusted n/adjusted n) | Base-line Mean | Post-test Mean | F-test & sig. ^b | effect size ^c | Base-line Mean | Post-test Mean | F-test & sig. ^b | effect size ^c | Desired Outcome |
| Caring Relationships: Adults in School (653/640) | 2.11 | 2.15 | 1.019 | 0.002 | 2.12 | 2.14 | 1.674 | 0.003 | 🕒 |
| High Expectations: Adults in School (653/640) | 2.42 | 2.43 | 0.016 | 0.000 | 2.43 | 2.42 | 0.063 | 0.000 | 🕒 |
| Meaningful Participation: In the School (650/637) | 1.87 | 1.95 | 6.907* * | 0.011 | 1.87 | 1.95 | 6.779** | 0.011 | 🕒 |
| Caring Relationships: Adults in Home (651/638) | 2.32 | 2.34 | 0.848 | 0.001 | 2.32 | 2.34 | 0.831 | 0.001 | 🕒 |
| High Expectations: Adults in Home (651/638) | 2.65 | 2.66 | 0.027 | 0.000 | 2.66 | 2.66 | 2.599 | 0.004 | 🕒 |
| Meaningful Participation: In the Home (648/635) | 2.19 | 2.26 | 6.022* * | 0.009 | 2.19 | 2.26 | 0.538 | 0.001 | 🕒 |
| Caring Relationships: Adults in Community (649/636) | 2.42 | 2.44 | 0.249 | 0.000 | 2.42 | 2.43 | 1.426 | 0.002 | 🕒 |
| High Expectations: Adults in Community (649/636) | 2.50 | 2.49 | 0.174 | 0.000 | 2.50 | 2.49 | 0.918 | 0.001 | 🕒 |
| Meaningful Participation: In the Community (648/635) | 1.76 | 1.81 | 2.046 | 0.003 | 1.76 | 1.81 | 0.073 | 0.000 | 🕒 |
| Caring Relationships: Peers (648/635) | 2.16 | 2.24 | 6.135 | 0.009 | 2.16 | 2.23 | 0.038 | 0.000 | 🕒 |
| High Expectations: Pro-social peers (647/634) | 2.11 | 2.06 | 3.286 | 0.005 | 2.11 | 2.06 | 0.296 | 0.000 | 🕒 |

^aModel adjusted for biological sex, grade, ethnicity, and English as a primary language at home.

^bExact statistic provided

^cPartial eta squared where effects are: small = .01, medium = .06, large = .14 or larger.

** $p \leq .01$.

High School Findings for the SFS Supplemental Modules

The high school sample comes from 3 sites. The common module that all sites chose to implement is Module D, or the internal resiliency scale. Table 43 presents the distribution of samples by sites.

Table 43: Data for Module D by site

| Site | Percent |
|---------------------------------------|---------|
| Five Sandoval Indian Pueblo | 7.3 |
| Sandoval County SAP | 89.6 |
| Southern New Mexico Human Development | 3.1 |
| Total | 100.0 |

Cronbach alpha at pre and posttest for high school students are provided for each subscale in Module D in Table 44. All scales at pre and posttest show adequate to good reliability.

Table 44: Reliability statistics for scales in the high school SFS supplemental modules

| Scale/measure | Pretest Cronbach's α | Posttest Cronbach's α |
|-------------------------------|--------------------------------|---------------------------------|
| Cooperation and Communication | 0.707 | 0.690 |
| Self-efficacy | 0.642 | 0.743 |
| Empathy | 0.818 | 0.795 |
| Problem solving | 0.755 | 0.730 |
| Self-awareness | 0.701 | 0.823 |
| Goals and Aspirations | 0.769 | 0.735 |

Internal resiliency is measured in Module D. Table 45 shows the unadjusted results from the GLM models. There were insufficient degrees of freedom in the adjusted models to conduct F tests. Measures essentially remained unchanged from pretest to posttest in the unadjusted models (see Table 45). No significant differences were found between pre- and post-test estimates in the unadjusted models.

Table 45: Examining the effect of Module D pretest scores on posttest scores for selected high school SFS program participants, unadjusted model results

| Measure (unadjusted n/adjusted n) | Unadjusted | | | | Desired Outcome |
|---|-----------------------|-----------------------|-------------------------------|-----------------------------|--------------------|
| | Base- line Mean | Post- test Mean | F-test & sig. ^b | effect size ^c | |
| Cooperation and Communication (79/76) | 2.22 | 2.21 | 0.051 | 0.001 | ☐ |
| Self-efficacy (79/76) | 2.31 | 2.38 | 1.592 | 0.020 | ☐ |
| Empathy (79/76) | 2.18 | 2.16 | 0.092 | 0.001 | ☐ |
| Problem solving (79/76) | 2.03 | 2.04 | 0.026 | 0.000 | ☐ |
| Self-awareness (79/76) | 2.46 | 2.47 | 0.067 | 0.001 | ☐ |
| Goals and Aspirations (79/76) | 2.78 | 2.72 | 2.017 | 0.025 | ☐ |

^aModel adjusted for biological sex, grade, ethnicity, and English as a primary language at home.

^bExact statistic provided

^cPartial eta squared where effects are: small = .01, medium = .06, large = .14 or larger.

Summary of SFS Supplemental Modules

As in FY11, the FY12 substance use among middle school students remained virtually unchanged between pre- and post-test. However, unlike FY11, in FY12 there are some improvements on participation in school among measures of external resiliency. Middle school and high school students alike reported relatively high levels of resiliency. Ceiling effects at pretest might contribute to non-significant changes observed among internal and external resilience measures.

Summary of SFS Survey Findings

In FY12, the middle school findings indicate significant increases among males in the use of chewing tobacco, marijuana, inhalants, and prescription painkillers. In contrast, significant increases among girls were only seen in the reported use of prescription medications (not prescribed for them) in general. Hispanic males, in particular, report increasing their marijuana use significantly over the course of the program. Native American females are also at increased risk for marijuana use.

Regardless of race/ethnicity, respondents' attitudes toward alcohol use generally became more accepting over time. These changes were significant yet were relatively small overall. Middle school females on the whole report greater intentions to smoke cigarettes at post-test. Ironically, females also reported significantly greater perception of risk of harm from substance use.

We found no significant increases or decreases in substance use among high school students. Males generally showed slight increases in use if any, whereas females reported larger increases in binge drinking, marijuana and prescription pain killer use. It is probably that the overall size of the sample was inadequate to actually detect significant differences.

Across the board, when we only examined those middle school and high school students who reported actual use at pre-test, we found that their reported use at post-test decreased. This at least speaks to the effectiveness of the prevention program in reducing use. However, without a strong comparison group, we are unable to say that it was solely the effect of the program. As in most surveys of this nature, there is a strong tendency for respondents to give the socially desirable response. This tendency may be even strong among youth. Attachment to the prevention providers by post-test may well influence how students respond.

The use of the YRRS data are helpful in seeing how a convenience sample of SFS students compare to a representative sample of their peers. That said, it does not allow for pre- and post-intervention comparisons in the same way. We have attempted to replicate the equivalent of a pre- & post-intervention scenario with the YRRS data but it is only a proxy. Funding in substance use prevention is such that there are insufficient funds to allow for the collection of real comparison data. Ideally, in the future we will see the current budget crises resolve but even so, the state and federal governments must see prevention as a priority and furthermore, evaluation of prevention efforts as a critical component of prevention.