# Evaluation of the In-School Tobacco Use Prevention Education Program, 2005-2006:

## Technical Findings and Documentation

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# CHAPTER 1

## INTRODUCTION AND METHODS

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# CHAPTER 1: INTRODUCTION AND METHODS

**CHAPTER HIGHLIGHTS**

- **Twenty percent of the revenues from the Tobacco Tax and Health Protection Act of 1988 (Prop 99) were appropriated to the Health Education Account (HEA) to support a comprehensive tobacco use prevention education and media campaign. Approximately one-third of the overall HEA budget was allocated to the California Department of Education (CDE). Ninety percent of these funds are used for school-based, TUPE programs in school districts.**

- **This sixth biennial In-School Evaluation of TUPE Programs (IETP) report covers extensive information on adolescent tobacco use and its correlates (e.g., attitudes, exposure to media, social norms) through the in-school administration of the 2005-2006 California Student Tobacco Survey (CSTS).**

- **The evaluation collected data on beliefs and knowledge about tobacco education program implementation and prevention efforts from teachers, school administrators, school TUPE/health coordinators, and district TUPE/health coordinators to examine TUPE program implementation and program effectiveness.**

- **The evaluation used a multi-level design with a school-longitudinal component that encompassed cross-sectional data from students, teachers, and administrators at schools at two points in time: data from the current collection effort (2005) and data from the 2003 WestEd evaluation.**

- **The IETP provides an excellent opportunity to understand tobacco use patterns and to assess tobacco use prevention activities directed at youth in California.**

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## Introduction

The 2005-2006 In-School Evaluation of TUPE Programs (IETP) was conducted to fulfill the enabling legislation requirements for Proposition (Prop) 99 (Assembly Bills 75, 99, and 816; and Senate Bill 391). Current pertinent legislative language requires that the California Department of Health Services, Tobacco Control Section evaluate the effectiveness of the school-based Tobacco Use Prevention Education (TUPE) programs in California. This particular evaluation focused on school-based tobacco use prevention activities in 167 randomly sampled schools (135 high schools; 32 middle schools). The guidelines for evaluating the programs outlined in California Health and Safety Code Section 104375 call for an assessment of school-based tobacco use prevention activities and measurement of student responses to these activities. The evaluation is intended to measure the extent to which programs funded under Prop 99 promote two major goals: protection of nonsmokers and children from secondhand smoke, and reduction of tobacco usage by adults and youth.

This report is the sixth biennial report, following up on results presented in the 2001-2002 report (report #4), 2003-2004 IETP report (report #5) and three previous Independent Evaluation Student Survey (IESS) reports (Independent Evaluation Consortium, 1998a, 1998b, and 2003) (reports #1, #2, and #3). Most of the questions included in the 2005-2006 IETP were taken from the previous evaluations to permit comparability of findings across reports. The newest IETP collected extensive information on adolescent tobacco use and its correlates (e.g., attitudes, exposure to media, social norms) through the in-school administration of the 2005-2006 California Student Tobacco Survey (CSTS). The evaluation also collected data on beliefs and knowledge about tobacco education program implementation and prevention efforts from teachers, school administrators, school TUPE/health coordinators, and district TUPE/health coordinators. The current report uses data from all of these sources to examine TUPE program implementation and program effectiveness. This first chapter provides a summary of the design and methodology used in the 2005-2006 IETP.

The IETP provides an excellent opportunity to understand tobacco use patterns and to assess tobacco use prevention activities directed at youth in California. Studies show that 80 percent of United States (U.S.) adult smokers between the ages of 30 and 39 began to smoke during their adolescent years (CDC, 1994, Anda et al., 1999). These findings suggest that if youth smoking can be prevented, most youth will never start smoking when they become adults [USDHSS, 1994]. On the other hand, recent success at reducing younger adolescent tobacco use has been associated with offsetting increases in initiation by older adolescents and young adults (Glied, 2003).

## Background

In November 1988, California voters approved the Tobacco Tax and Health Protection Act of 1988 (Prop 99), which added a 25-cent tax to each pack of cigarettes and a proportional amount to other tobacco products sold in the state. The additional revenues resulting from this increase in the tobacco excise tax were earmarked for

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tobacco-related research, health education, health care, and environmental conservation. Twenty percent of the Prop 99 revenues were appropriated to the Health Education Account (HEA) to support a comprehensive tobacco use prevention education and media campaign.

Approximately one-third of the overall HEA budget was allocated to the California Department of Education (CDE). Ninety percent of these funds are used for school-based, TUPE programs in school districts. The remaining ten percent of local assistance funds are used for innovative and promising projects, programs for Indian Education Centers, research, curricular support, dissemination, and accountability. Prior to 1994, the CDE allocated school-based TUPE funds on an entitlement basis to all schools that served students in grades K through 12. Since 1994, CDE has allocated school-based TUPE funds to school districts using two different mechanisms. First, funds for TUPE programs in grades four through eight have been allocated to districts on an "entitlement basis" – all schools in tobacco-free school districts serving students in grades four through eight received funding for tobacco use prevention services based on average daily attendance. Second, a "competitive grant" process was used to allocate funds for programs in grades 9 through 12; and, more recently, for innovative programs in grades 6 through 8.

Districts with multifaceted programs with measurable objectives, strong rationales for interventions, high levels of community and school involvement, high quality monitoring and evaluation activities, and highly qualified personnel are more likely to receive competitive grants than other districts. Both entitlement and competitive program funds are required to support tobacco-specific instruction, reinforcement activities, special events, and cessation programs for students. The IETP provides information from data collected in districts supported by both of these mechanisms, with particular attention paid to schools with competitive grants because their additional TUPE resources, compared to non TUPE award schools, were expected to yield measurable improvement in TUPE outcomes. Because TUPE funds were allocated more evenly among middle schools, there was less expectation of finding differences between schools in relation to TUPE funding.

## Evaluation Design

As discussed above, the IETP relied on data collected from a variety of sources to examine school-based tobacco prevention and intervention activities and student responses to these activities in California public schools. Each of the instruments is discussed in more detail below.

### Analytic Plan

An analytic plan is inextricably linked to both the evaluation design (sampling and collection strategy) and the evaluation questions to be addressed. Before addressing the specific evaluation questions in detail below, the investigators outlined two overarching models that were used to guide this plan: a logic model of the

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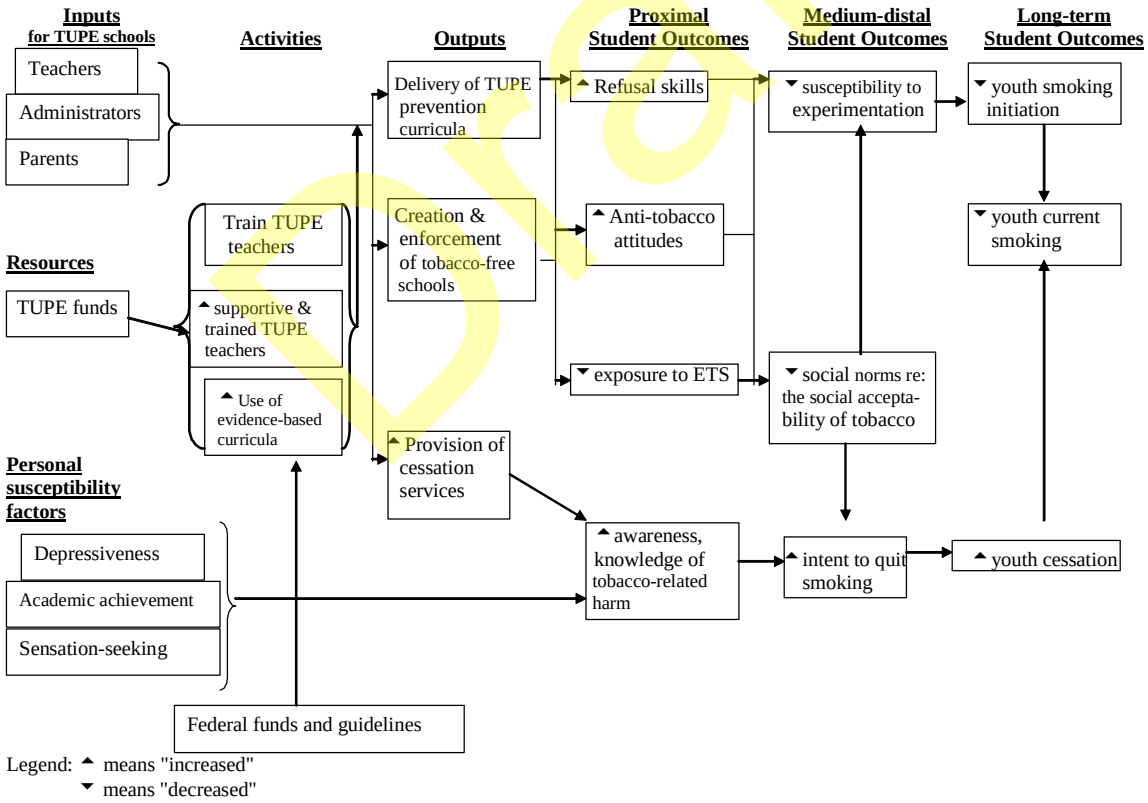
programmatic and natural history processes thought to influence in-school adolescent tobacco use from input to outcomes (logic model); and a statistical model that incorporates the multi-level structure of the data to be collected (the hierarchical linear model).

## Logic Model

**Figure 1** displays the basic in-school evaluation logic model to be used in this plan. Primary inputs were funding and guidelines provided to the schools by state and national sources. Activities were measured at the school level, which is the presumed level of the TUPE program intervention. Outputs were measured at both the school level and the individual level, to permit modeling school-level and individual-level influences on in-school student tobacco use. Measurements of outputs were gathered primarily from vertically integrated surveys of adult school staff and were used as indices of program implementation, and of compliance with CDC and CDE guidelines Measurements of tobacco use outcomes were obtained from student surveys.

**Figure 1: In-School Evaluation of Tobacco Use Education Programs (IETP) Logic Model diagram**

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Outcomes were logically ordered to reflect mediating constructs along the hypothesized program impact continuum. Measures of these constructs were gathered primarily from students within the schools and were used to form indices, where appropriate, of specific Proximal (tobacco use-related knowledge, attitudes, and skills), Medium-distal (tobacco use-related norms and intentions), and Long term (tobacco use initiation, consumption, and cessation) outcomes. Although the relationships among these various outcomes is perhaps best described at the individual student level, their relationship to program inputs, activities and outputs are more meaningfully described at the school level. That is, with regard to evaluating TUPE program impact, outcomes are best conceptualized and analyzed at levels and rates of the outcome constructs at each unit of intervention (the school) as opposed to individual responses. This type of conceptualization reflects the population-based approach of the TUPE program.

Other contextual demographic factors such as school size, region, area income indicators, and other comprehensive tobacco control program components external to TUPE program inputs such as anti-tobacco mass media exposure and tobacco access restrictions, are potentially competing or confounding influences but are not shown in the logic model (figure 1) for simplicity. However, these contextual influences are implicitly acknowledged at the school and student level and were measured and controlled for.

**Statistical Model**

The evaluation used a multi-level design that encompassed cross-sectional data from students, teachers, and administrators at schools at two points in time: data from the current collection effort (2005) and data from the 2003 WestEd evaluation. The design also included a school-longitudinal component, re-assessing a subset of high schools and birth cohorts within those schools from the 2003 evaluation sample. This was NOT a student-longitudinal component inasmuch as a new random sample of students drawn in the schools at each time point. Therefore most of the students will have participated in the CSTS at only one of these time points.

The first eight chapters of this report focus on the information obtainable from the cross-sectional data collected in 2005-2006 exclusively. The statistical methodology and results of the longitudinal analysis involving school-level data collected in 2003-2004 and 2005-2006 are not discussed here but are instead addressed in Chapter 9 of this report.

**Evaluation Questions**

This section outlines the analysis plan associated with each of the six evaluation questions outlined in the Request for Proposals.

***(1a) How do current California students compare to past California students on tobacco use, knowledge and attitude?***

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**Trend Analysis:** To examine trends in student tobacco use and its precursors, the investigators compared the estimates of these variables from the 2005-2006 CSTS to those collected two years earlier in the 2002-2003 CSTS surveys. Overall population estimates and their standard errors were computed for each key outcome measure at each grade level and each time point using STATA 9 software appropriate for complex survey designs. These estimates incorporated appropriate design weights and design structure (reflecting regional stratification and clustering of respondents in schools). Cross-sectional trends are reported in Chapter 2. Tests of trends over the recent two-year period are reported in Chapter 9.

**Sub-Group Analysis:** The investigators' trend analysis also examines the results for various demographic sub-groups, as sample sizes permit. At a minimum, the investigators examine and present California student time trends by the major race/ethnic groups and gender, which are individual level variables, and geographic regions and school type (middle and high), which are school level variables.

***(1b) How do the current California students compare to students in the rest of the U.S. on these measures?***

**National Comparisons:** To examine how California students compare to students in the rest of the country with regard to tobacco use and its precursors the investigators compared the 2005-2006 CSTS estimates to those of the 2004 National Youth Tobacco Survey (NYTS, at http://www.cdc.gov/tobacco/NYTS/nyts2004.htm) estimates for measures that the two surveys had in common. NYTS estimates are reported in Chapter 2. Similarly, results from the 2005-2006 CSTS are compared to the recent nationally representative tobacco use estimates from in-school youth obtained as part of the Monitoring the Future Survey [Johnston et al., 2007-in press].

The investigators hypothesized that California students would continue in 2005-2006 to show values in tobacco related behaviors, knowledge and attitudes suggesting greater antipathy to tobacco use than those of students in the nation at large. Both the CSTS and NYTS estimates were adjusted for sample weighting and the sampling design.

***(2) Are the relationships between inputs, such as TUPE funding and administrative support, related to the proximal outcomes?***

**Models of Inputs, Practices, and Outcomes**. The investigators hypothesized that there would be considerable variability in the Inputs (TUPE funding), Practices (class instruction), and Outcomes (smoking behaviors). Chapter 7 reports cross-sectional information about Inputs and Practices; Chapter 8 reports cross-sectional information about Inputs and Outcomes. Chapter 9 reports the results of longitudinal analyses examining a sequence of models. The initial models, of course, examined Inputs as predictors of Practices and Proximal outcome variables. For example, school level measures of administrative support (AS), as measured by the school administrative staff surveys, were used to predict mean levels of effective curriculum delivery (ECD) as reported by the teachers in their schools. Similarly, the investigators evaluated different

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models of relationships along the hypothesized causal chains in the logic model. For example, the investigators tested parameters in a model of teacher "effective curriculum delivery" practices to predict mean levels of anti-tobacco attitudes (ATA) among the students at their schools.

***(3) Are the Medium-distal- and Long-term outcomes related to each other?***

**Individual level Outcome Models:** The analysis plan used to answer this set of questions was the same in sequential form as that used to address the impact of Inputs on Practices. The investigators examined each hypothesized link between short-, medium-distal-, and longer-term outcomes. These analyses were all conceived as being at the individual student level, although the models included school-level information as well.

***(4) How do schools in the state compare to the federal CDC and USDE guidelines?***

**Compliance Indices:** Previous IETP reports have assessed the comprehensiveness of TUPE programming in relationship to CDC guidelines. The CDC guidelines focus on a wide range of activities, including; policy, curriculum content, grade coverage, teacher training to conduct TUPE classes, parent and community involvement, cessation services, and assessments. The U.S. Department of Education focuses on the use of evidence-based curricula and utilization of needs assessments. The investigators therefore assessed multiple items for each guideline across a number of sources (e.g., teachers, administrators, TUPE coordinators) of information about compliance with these various guideline elements.

Prior analyses of these types of data have focused on the examination of each item and/or source for specifics of each guideline element. The hope was that this newest IETP report would focus on the creation of a small set of guideline component indices and an overall index of compliance to the guidelines to be used throughout the report. The psychometric requirements of such an index were not fully realized with the data collected for this report. Nonetheless, the investigators report candidate indicators of each of CDC's 6 guidelines examined to comprise a summary index (Chapter 9). Part of the challenge was the different perspectives and experiences that TUPE-experienced teachers brought to the issue of school-based tobacco use prevention as compared to district staff and school administrative staff. Reports from TUPE-experienced teachers were more frequently predictive of student tobacco use than reports from other district staff, but reports from school administrators and from school TUPE coordinators were also frequently predictive, as described in Chapters 7 and 8.

***(5) Is a school implementation related to students' tobacco use, knowledge, and attitudes over the two year period?***

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Measures relating to hypothesized elements of tobacco use prevention guidelines could be grouped and evaluated for impact on student tobacco use outcomes and precursors of these outcomes over time, using the longitudinal sample of 57 high schools.

**Measurement of Outcomes:** The investigators examined models for each of the major outcome domains corresponding to proximal short-term outcomes such as attitudes and knowledge, medium-distal-outcomes such as intentions and social norms, and long-term outcomes such as tobacco use uptake, current use and cessation.

**Implementation Index:** The measures of program implementation were those component indices derived in response to question 5 above. This step provided information as to potential "key" sub-components of a comprehensive program, that is, those sub-components that seemed to have the most utility in predicting the outcomes. These component indices were examined for their relative and combined influence on outcomes.

***(6) What is the relative strength of measured inputs compared to external factors?***

**Two step models:** In the longitudinal analyses reported in Chapter 9, all of the models presented above were further expanded to include a number of external factors as predictors. These external factors include school level information such as school enrollment size or measures of community activity such as enforcement of sales restrictions. By comparing the fit of models with and without these external factors, the investigators can statistically test whether or not the TUPE inputs and practices were contributing to the student tobacco use outcomes

**Measures of Context:** External or contextual factors were added to the models evaluating implementation indices both to test for the relative strength of the implementation factors compared to the external factors and to control for external differences in schools' compositions in the final models. Receipt of competitive grant funds was considered to be a contextual factor. Other important contextual factors that were included were student reports of non-school program exposures such as anti-tobacco mass media and community activities and school administrator reports of the number of tobacco retailers located near the school. In addition to the quantitative information described above, the Analytic Plan also included provision for collecting in-depth qualitative data from interviews with key stakeholders.

**Key Stakeholder Interviews:** Using the key stakeholder interviews: Do the appropriate personnel at the school know how TUPE is implemented at their school and are they satisfied with the programs? Is there good compliance with CDE recommendations with respect to using science-based school tobacco prevention programs? What is the level of community involvement?

Telephone interviews were conducted with selected personnel from a subset of participating schools chosen at random from the study sample. Key stakeholder

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interviews were conducted with: (a) the district administrator in charge of coordinating the district's TUPE program; (b) the school administrator and teacher most knowledgeable about the TUPE program; and (c) classroom teachers. A sub-sample of these stakeholders were interviewed via telephone to obtain more in depth information about program implementation and use of funding to support the district tobacco control program. Surveyors asked these stakeholders the following questions:

*(1) Which teaching/prevention strategies did their TUPE program appear to be using?*

*(2) How coordinated/infused did the tobacco prevention appear to be with other elements of school programming and curricula?*

More specifically, these stakeholders were asked about the history and enforcement of their district's and/or school's tobacco use policies. They were asked to describe the frequency and perceived effectiveness of TUPE training for teachers. They were also asked to describe their district's and/or school's provision of cessation services for students and staff who wanted assistance to quit their tobacco use habit.

## Sample Design

The sample design included data collection from students, teachers and administrators at the school level, and administrators at the district level. Analytical weights that took into account the complex survey design and that corrected for student and school non-response were applied in such a way that the sum of the weights was equal to the total number of respondents. The specific weights are described below.

### The 2005-2006 California Student Tobacco Survey (CSTS)

The 2005-2006 CSTS was a school-based, two-stage cluster sample designed to produce representative estimates of tobacco use and attitudes for public school students in grades 6 through 12 in California. The first-stage of the sampling frame consisted of 2,880 public middle and high schools (primary sampling units). This sampling frame came from the 2004-2005 California Basic Educational Data System (CBEDS) maintained by CDE. From the 2,880 primary sampling units, 191 schools were selected as the sample for CSTS administration. Among the 191 schools selected, 91 high schools and 35 middle schools were randomly selected with a probability proportionate to the school enrollment size. An additional sixty-five high schools that had participated in the 2003-2004 IETP were deliberately re-invited to participate in the 2005-2006 IETP for the purpose of conducting a school-level longitudinal analysis. Because they were randomly selected in 2003-2004, they were treated as if they had been randomly selected in the current sample for prevalence estimation purposes. Of the sampled 191 schools, 167 participated in the survey. Of the 65 high schools that participated in the 2003-2004 IETP, fifty-seven schools agreed to participate in 2005-2006. There were a variety of reasons for school non-participation. The most common reason was because administrators felt that their students were already subjected to too many other surveys, such as the California

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Healthy Kids Survey, that were perceived to address more pressing school-related issues (e.g., drug use and violence) compared to tobacco use. Some of the other more common reasons for non-participation included scheduling changes and administrator disinterest in compliance with the requirement to participate if receiving TUPE funding.

At the second stage of sampling, 2 classes per grade were randomly selected from each of the 191 schools with the exception of one middle school, where whole grades were sampled (grades 6-8, 9 total classes). All students within a selected class were eligible to participate. Two-thirds of schools employed a passive informed consent procedure, which facilitated recruitment of respondents. The CSTS's complex sampling design required the calculation of sample weights to derive accurate point estimates and adjustments for clustering and stratification in order to compute sampling variances and standard errors. A weight was applied to each student record to account for varying probabilities of selection at each sampling stage, non-response, and disproportionate population sampling. These weights were necessary in order for the results to be generalized to all students attending public middle and high schools in grades 6 through 12 in California. The weight used for estimation is given by:

$$W_S = W_{S1} * W_{S2} * F_{S1} * F_{S2} * F_{S3}$$

Where $W_{S1}$ represents the inverse of the probability of selecting a school, $W_{S2}$ is the inverse of the probability of selecting a classroom within each school for each grade, $F_{S1}$ is a school-level non-response adjustment factor, $F_{S2}$ is a student-level non-response adjustment factor, and $F_{S3}$ is a post-stratification adjustment factor calculated by gender, grade (grades 6 through 12), and ethnicity (seven ethnic groups). The weights were also scaled so that the sum of the weights was equal to the number of respondents.

**Teacher/Administrator Surveys**

The sampling frame for the teacher, school administrator, and school TUPE coordinator surveys (described below) consisted of all schools/classrooms that administered the CSTS. Thus, the school teacher/administrator samples represent teachers and administrators who serve students in the CSTS sample. Similarly, the district coordinator sample represents district TUPE/Title IV[1] coordinators who serve CSTS students. As was done for the CSTS, a weight was applied to each record in the teacher/administrator surveys to account for differences in student enrollment across regions, districts, and schools.[2]

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[1] In this context Title IV refers to that section of the U.S. Education Code that governs the use of federal resources for combating student substance abuse and addressing student violence, notably through the Safe and Drug-Free Schools Program of the U.S. Department of Education.

[2] The teacher/administrator weights were calculated using an algorithm patterned after the weighting algorithm used to weight the student data. The weights were given by: $W_A = W_{A1} * F_{A1} * F_{A2}$ where $W_{A1}$ represents the inverse of the number of respondents within a school (district), $F_{A1}$ is the ratio of region enrollment to state enrollment, and $F_{A2}$ is the ratio of school/district enrollment to the total enrollment of responding schools/districts within a region. The teacher/administrator weights were scaled so that the sum of the weights was equal to the number of respondents.

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## Survey Participation Rates and Sample Characteristics

The response rates for schools and students were good, especially in light of the recent emphasis on high stakes academic performance testing that has made school administrators less willing to use class time for the administration of social surveys. Moreover, schools are increasingly asked to participate in surveys conducted by outside agencies in addition to the accountability measures required by funding agencies from which schools receive grants.

### California Student Tobacco Survey

Of the 191 schools eligible to participate in the IETP, student data were received from 167 schools – yielding a school response rate of 87.4 percent. The student response rate was 79.4 percent. Thus, the school- and student-level response rates resulted in an overall response rate of 69.4 percent (0.874*0.794). As noted above, weights were calculated to account for non-response.

School level participation rates were 91.4 percent and 86.5 percent for middle schools and high schools, respectively. Student level participation rates were 79.1 percent for middle schools, and 79.5 percent for high schools. No differences in terms of school level and student level participation rates were found between middle schools and high schools. The overall response rate for middle schools and high schools were 72.3 percent and 68.8 percent, respectively. **Table 1.1** presents school participation rates by TUPE grantee status in high schools. The numbers indicate that school participation rates were significantly higher in high schools with competitive TUPE grants than in other schools (94.0 percent for current grantees vs. 83.9 percent for current non-grantees). These patterns were expected; schools that do not have a TUPE grant have less incentive to participate than schools receiving a grant.

**Table 1.1 High School Participation Rates by Various Characteristics**

| | Non-Participants | Participants |
|---|---|---|
| Overall Percent | 12.6% | 87.4% |
| Current TUPE Grantee Status | | |
| Non-TUPE | 16.1% | 83.9% |
| TUPE | 6.0% | 94.0% |
| Ever TUPE Grantee Status | | |
| Never-TUPE | 15.4% | 84.6% |
| Ever TUPE | 11.1% | 88.9% |
| Number of Schools | 24 | 167 |

Notes: Source: 2003-2004 CSTS sample definition database and CDE/SHKPO TUPE competitive Grantee Database.

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A Percentage of participating schools were statistically different across groups ($p \leq 0.05$). **Table 1.2** shows various demographic characteristics by school participation. Overall, the numbers provided no evidence that participating schools differed from those that did not participate with regards to enrollment, ethnic composition, the percentage of students who received subsidized meals or were English language learners, or academic test scores. There is little indication of any sample selectivity with regards to CSTS participation – at least at the school level.

**Table 1.2 School Characteristics by CSTS School Participation**

| | **All Schools** | | **Middle Schools** | | **High Schools** | |
|---|---|---|---|---|---|---|
| | Non-Participants | Participants | Non-Participants | Participants | Non-Participants | Participants |
| School Enrollment | 1855.0.4 | 2033.9 | 764.3 | 1131.9 | 2010.9 | 2247.7 |
| Ethnicity | | | | | | |
| Asian | 12.0% | 10.1% | 24.1% | 9.2% | 10.2% | 10.3% |
| Hispanic/Latino(a) | 31.2% | 36.2% | 34.9% | 41.8% | 30.7% | 34.9% |
| African American | 5.4% | 6.2% | 2.4% | 5.8% | 5.9% | 6.3% |
| Caucasian | 44.3% | 40.7% | 36.0% | 38.5% | 45.4% | 41.2% |
| Reduce/Free meals | 31.2% | 31.7% | 52.9% | 46.6% | 28.1% | 28.2% |
| English Language | 12.0% | 14.7% | 21.4% | 20.3% | 10.7% | 13.4% |
| Academic Performance Index Scores | 718.1 | 717.1 | 765.0 | 729.4 | 710.7 | 714.1 |

Notes: Source: 2005-2006 CSTS sample definition database and CBEDS.

**Table 1.3** presents demographic characteristics based on the CSTS and CBEDS data. A comparison of CSTS and CBEDS results showed few substantial differences – although CSTS student data appeared to over-represent 6th graders. The CSTS sample weights were adjusted to account for the exclusion of elementary schools from the sampling frame, while the CBEDS results do not adjust for this. In addition, the CSTS data appear to slightly over-represent American Indian students and under-represent Hispanic/Latino(a) students compared to CBEDS data. These ethnic differences, however, should be interpreted with caution because the CSTS and CBEDS use different methodologies to assess ethnicity. The population estimates presented in the last few rows of the table are quite similar across the two data sources. Overall, the estimates derived from the two data sources appeared to be similar.

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**Table 1.3 Sample School/Student Characteristics**

| | CSTS | CBEDS |
|---|---|---|
| Urbanicity A- | | |
| Large City | 12.9% | 17.6% |
| Urban Fringe – Large City | 43.8 | 32.8 |
| Midsize City | 25.9 | 19.4 |
| Urban Fringe – Midsize City | 8.7 | 11.9 |
| Large Town | 0.0 | 0.1 |
| Small Town | 0.2 | 2.8 |
| Rural | 8.6 | 15.5 |
| School Grade | | |
| 6th | 3.6% | 16.0% |
| 7th | 5.7 | 23.0 |
| 8th | 5.7 | 22.7 |
| 9th | 23.9 | 11.7 |
| 10th | 22.8 | 10.2 |
| 11th | 20.3 | 8.8 |
| 12th | 18.0 | 7.6 |
| Gender | | |
| Female | 49.3% | 49.1% |
| Male | 50.7 | 50.9 |
| Ethnicity B | | |
| American Indian | 1.2% | 1.4% |
| Asian | 10.7 | 7.6 |
| African American | 7.2 | 8.0 |
| Hispanic/Latino(a) | 41.6 | 40.0 |
| Pacific Islander/Filipino | 2.6 | 2.9 |
| Caucasian | 36.8 | 38.3 |
| Population Size | | |
| Total | 3,086,530 | 3,026,927 |
| Number of observations | 29,279 | – |

Notes: Source: 2005-2006 CSTS and CBEDS.
[A] Population areas as defined by U.S. Census Bureau.
[B] CSTS estimates are based on a question asking respondents to identify one ethnic category that best describes her/himself.

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## Adult Participants

**Table 1.4** presents survey response rates for the teacher/administrator surveys. The school teacher/administrator response rates ranged from 85% to 95%, rates higher than reported in other studies involving teacher surveys (e.g., Buston et al., 2002). Teachers exhibited the highest response rates, followed respectively by school coordinators, school administrators, and district coordinators. No substantial participant/non-participant differences in school characteristics were found. However, district coordinator participation was higher among TUPE grantee districts than non-grantee districts (91.5 percent vs. 71.9 percent). No other compositional differences between schools in districts where the district coordinator returned the survey were found.

**Table 1.4 Adult Survey Participation Rates**

| Survey Participants | Number participating | Participation Rate |
|---|---|---|
| Teacher | 915 | 94.1% |
| School Administrator | 148 | 88.6% |
| School Coordinator | 146 | 87.4% |
| District Coordinator | 103 | 85.8% |

## Data Collection Instruments

This next section presents details of each of the survey instruments for students, teachers, site administrators, site coordinators and district coordinators.

### California Student Tobacco Survey

The 2005-2006 California Student Tobacco Survey (CSTS) included 99 multiple-choice questions, with item content based largely on the questions found in the National Youth Tobacco Survey (NYTS-U.S.).[3] On most items, respondents were asked to select only one response that best represented their behaviors, attitudes, knowledge and awareness about tobacco and tobacco use prevention. The majority of students were able to complete the entire survey during the allotted class period. All student responses were recorded on a separate 99-item scannable answer sheet, where students bubbled-in their responses. The survey was typed in large, boldface, and easy-to-read type, and contained user-friendly graphics to encourage student participation. Surveys were bound in a paperback booklet with directions printed on the front. Student surveys were routinely collected after survey administration and checked for stray marks or writing. Spanish translations were made available to all schools. Almost all students chose to complete the survey in English. The purpose of providing a Spanish version to the schools was primarily to make it easy for Spanish-speaking parents to review the survey if they wanted to, before consenting to their child's participation. The Spanish language version was generated by a professional translation agency, which back-translated the first translation and then made additional modifications to the first translation in the few instances where the meaning of the back-translation diverged from the original.

The CSTS covered the following areas of content:

1. *Student Demographics. Five questions ascertained students' age, gender, grade level, and ethnicity.*

2. *Tobacco Use Prevalence and Patterns. The items on tobacco use covered lifetime, six month, and 30-day use of tobacco. These are standard items comparable to*

[3] See http://www.cdc.gov/tobacco/NYTS/nyts2004.htm

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*those found in major national surveys such as the NYTS. Items also addressed quit attempts, brand preference, intent to use, and acquisition of the tobacco use habit.*

3. *Attitudes and Beliefs about Tobacco Use. These items asked about friends' use, perceived prevalence of friends' use, perceived harm from using tobacco, and perceived social consequences of tobacco use.*

4. *Media and Social Marketing Influences. The media influence items were intended to elicit information about exposure to various anti-tobacco media campaigns. They also assessed pro-tobacco and anti-tobacco social marketing campaigns and respondents' attitudes and beliefs about the effectiveness of these campaigns.*

5. *Exposure to Educational Programs at School.*

These items asked respondents about the types of tobacco-related programs and policies at their school, the frequency with which they were exposed to educational messages about the harmful effects of tobacco, and how to counter peer and media influences to use tobacco. These were included to assess how, and the extent to which, tobacco prevention and intervention programs were being implemented in the school.

**Teacher Surveys**

Teachers in each classroom of surveyed students were asked to complete a 63-item questionnaire while their students were completing the CSTS. The teacher survey was based largely on that used by the IESS (1998a, 1998b, 2003). The adult surveys asked about attitudes toward school-based tobacco use prevention activities, tobacco use prevention programs and policies at their school, and their own personal tobacco-related attitudes and behaviors. With the exception of one open-ended question, the survey was comprised of close-ended questions, with some opportunities to write in additional information (curricula titles, activities, topics, etc.) in blank spaces. On occasion, teachers were asked to "mark all responses that apply." However, most teachers circled or checked-off the most accurate single response in the spaces provided on the survey. For instance, on a question about ten possible barriers to teaching TUPE lessons and an eleventh "other" barrier that they could specify themselves, the average number of barriers selected was 2.2 (range = 0 to 9) where half the respondents (50.9%) selected just one barrier.

At the end of the survey, there was a "comments" section, where teachers could voluntarily share any personal comments about the tobacco use prevention program. This comments section permitted teachers to mention challenges or benefits of the TUPE program that had not been covered by the preceding questions. Only 89 teachers (7.9%) took this opportunity, suggesting that most respondents believed that the questionnaire had been sufficiently exhaustive in its probing for evaluative comments about content and procedures used to implement TUPE activities at the teachers' school.

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### School Administrator Survey

A school site administrator (e.g., principal, assistant principal, or vice principal) from each school was asked to fill out a 39-item questionnaire regarding the administration of tobacco programs at their school. The survey asked about the relative priority given to tobacco use prevention education at their site compared to other priorities, about school-level tobacco use policies and practices, and the administrator's personal experience with smoking. As with the teacher survey, the school administrator survey was based on the IESS (1998a, 1998b, 2003).

### School TUPE/Health Coordinator Survey

A 67-item multiple-choice and free-response (blank spaces, one open-ended question and comments section) questionnaire was given to TUPE site coordinators or health teachers at each school site. The person in this position at the school was asked about their experience with tobacco use prevention and intervention programs, their role in tobacco use prevention and education, barriers to prevention, their perceptions about student tobacco use, and the school's policies and procedures for addressing tobacco use on school property.

### District TUPE/Title IV/Health Coordinator Survey

After school site administration of the evaluation was complete, district level TUPE or Title IV Coordinators were mailed a 42-item questionnaire. Many of the questions paralleled those asked of the school administrators. However, the primary aim of the District Coordinator Survey was to elicit responses about the district-level approach to tobacco use prevention and intervention programming. Coordinators were asked about staffing for TUPE, professional development and training, experience with and exposure to CDC's Guidelines for School Health Programs to Prevent Tobacco Use and Addiction, as well as their perceptions/knowledge about commonly implemented approaches to tobacco use prevention at their schools.

## Data Collection and Processing

WestEd staff coordinated outreach and school recruitment, trained proctors and scheduled survey administration dates for surveyors, provided survey administration, secured parental consent, provided incentives and took a variety of steps to assure confidentiality for all respondents. The study instruments and study protocol were approved for use by the Committee for the Protection of Human Subjects for the California Department of Health Services in August, 2005.

The data collection phase began October 5, 2003, and ended March 9, 2004 – with 72 percent of the school surveys taking place prior to January 1st. Recruitment was most intensive at the beginning of this period but continued, concurrent with data collection, during the entire five months. Once a site was successfully recruited and agreed to participate in the evaluation, trained WestEd survey proctors administered the student

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surveys at the school sites. A standard class period was necessary for administration of the student survey. Participants were asked not to write their names anywhere on the questionnaire or answer sheet. All students were told of the voluntary and anonymous nature of the survey prior to survey administration. According to informal reports by CSTS proctors, most students completed the survey in 30 to 40 minutes. No student was allowed to take CSTS unless a parent/guardian gave written consent by signing and returning the consent form. The impact of the time of survey administration on student reports of classroom exposure to tobacco education was negligible (OR = 1.00, [95 CI = .99, 1.00].

Classroom teachers completed the surveys while their students completed CSTS. The administrator and TUPE/health coordinator surveys were administered primarily via mail and fax.

## Contents of Remaining Chapters

The contents of the remaining chapters are briefly summarized below:

Chapter 2: Student-level Descriptive Data Regarding Tobacco Use and its Correlates

- Examines trends in tobacco use;
- Examines patterns of use in California compared to elsewhere in the U.S., by grade, by gender and by ethnic affiliation;
- Provides comparisons of 2003/04 CSTS student data with the previous CSTS, IESS, CSS, NYTS-U.S., and the California sample from the National Youth Tobacco Survey (NYTS-U.S.-CA).

Chapter 3: Student-level Descriptives: Attitudes and Beliefs About Tobacco Use

- Examines student attitudes and cognitive precursors of tobacco use;
- Investigates pro- and anti-tobacco media exposure;
- Explores perceptions of exposure to tobacco lessons.

Chapter 4: Descriptives at the Teacher Level

- Examines teachers' history of tobacco use;
- Examines support for TUPE;
- Investigates involvement in student tobacco use prevention.

Chapter 5: School TUPE Competitive Grant Funding, Program Exposure, and Student Tobacco Use

- Examines relationships between middle and high schools that were awarded competitive TUPE grants and schools that did not receive TUPE grants;
- Describes the level of teachers' compliance with CDC recommendations for successful tobacco programs in schools.

Chapter 6: Knowledge of TUPE Program Implementation

- Examines information descriptive of school-level TUPE activities obtained from school TUPE coordinators, including adherence to CDC recommendations.

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Chapter 7: Relationship of School-level Policies and Practices to Student Program Exposure

- Examines how school tobacco policies and practices, such as enforcement of no-use tobacco policies, delivery of tobacco prevention curricula, and sponsorship of school-wide prevention activities are related to students' reported exposure to program services;
- Looks at differences in program delivery in high schools that received competitive TUPE grants relative to those that did not receive grants are also examined.

Chapter 8: Relationship of School-level Policies and Practices to Student Tobacco Use Outcomes

- Examines how school tobacco policies and practices are related to student tobacco use outcomes;
- Investigates competitive grantee and non-grantee differences in the relationships of policies and practices to tobacco use outcomes.

Chapter 9: Examination of Changes over Time in Repeated Survey High Schools

- Re-examines grade trends in smoking and smoking related attitudes over the two-year period;
- Examines summary measures of school program components and their stability over time;
- Investigates how TUPE funding and district support relate to school implementation component summary measures;
- Researches smoking related knowledge, attitudes, and behavioral outcomes as they relate to each other as students mature over time;
- Looks at the relative influence of community level influences on student tobacco use over the two-year period

Chapter 10: Conclusions and Recommendations

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# CHAPTER 2

## STUDENT-LEVEL DESCRIPTIVE DATA REGARDING TOBACCO USE AND CORRELATES

**Chapter 2: Student-level descriptive data regarding tobacco use and correlates . 2**
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# CHAPTER 2: STUDENT-LEVEL DESCRIPTIVE DATA REGARDING TOBACCO USE AND CORRELATES

**CHAPTER HIGHLIGHTS**

- **After years of decline, the prevalence of current tobacco use (cigarettes, smokeless, cigar use) among California youth has begun to increase even as U.S. prevalence continues declining. The result is that the historically lower youth tobacco use rates in California are now converging with corresponding national rates.**

- **Prevalence of youth tobacco use remains generally low in California, but grows with each successive grade. For example, current cigarette use ranges from three percent in 6th grade to 20% in 12th grade.**

- **Youth tobacco use was more prevalent among boys and among Caucasians.**

- **No consistent regional differences in lifetime or current smoking were found, although the San Diego area exhibited the highest lifetime smoking prevalence (have you ever smoked?) at 43% and the highest current smoking prevalence at 18%.**

- **A majority of California youth report that they "definitely would not" smoke in the following year (76% of middle-school students and 58% of high-school students).**

- **Of those who reported current smoking, half expressed a desire to quit for good.**

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## Introduction

Tobacco use experimentation continues to affect a majority of high school students in the United States (U.S.) (MMWR, 2006) and one out of five becomes a regular user despite their general acknowledgment that long-term tobacco use has serious health and social consequences. Tobacco use onset is largely an adolescent phenomenon in the U.S. (Lee et al. 1993). American adults rarely initiate tobacco use after being smoke-free in adolescence. Hence, understanding tobacco use and its correlates among adolescents is important if lifetime tobacco use is to be effectively prevented. This chapter reviews student-level descriptive data on tobacco use and its correlates, and it focuses on the following:

1. Current prevalence estimates for the most common measures of youth tobacco use obtained from the 2005-2006 CSTS.
2. 2005-2006 CSTS tobacco use prevalence estimates in light of trend information reported by the 1995-1996, 1997-1998, 1999-2001 administrations of the Independent Evaluation Student Survey (IESS), and the 2001-2002 and 2003-2004 CSTS.
3. A comparison of 2005-2006 CSTS tobacco use prevalence estimates with the prevalence estimates obtained from the 2004 National Youth Tobacco Survey (NYTS), and the 2005-2006 California Attorney General's California Student Survey (CSS)
4. Prevalence estimates for intent not to use cigarettes, quitting smoking, and use of cessation programs from the 2005-2006 CSTS.

The tobacco use prevalence questions in the CSTS were chosen to ensure comparability with tobacco use questions administered in the past to California students (three previous IESS surveys, two previous CSTS surveys and the CSS survey), and to students nationally (2002 NYTS – Marshall et al., 2006). These surveys used comparable methodology – they all relied on representative data from in-school youth via paper and pencil self-report instruments. The surveys differed however, as to when they were administered. Most of CSTS data was collected in the fall, whereas most of NYTS and CSS data was collected in the spring of their respective years. Higher tobacco use prevalence estimates were observed in the NYTS but not in the CSS. Additionally, the CSS tobacco use questions were embedded in lists of questions about other drug use and alcohol use whereas the CSTS, IESS and NYTS questions were limited to tobacco use behaviors.

### Lifetime Cigarette Use

Lifetime cigarette use was assessed using the question, "Have you ever smoked cigarettes, even one or two puffs?" **Table 2.1** shows the proportion of respondents who responded "yes" to this question. As has been generally true of previous surveys of adolescent tobacco use in the U.S., rates of lifetime use increased monotonically with increasing grade overall and within major ethnic groups. Boys reported higher rates of lifetime smoking than girls (37.6% vs. 35.7%, respectively, $p < .05$) **(Table 2.2)**. When

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sex differences in lifetime rates were compared within grade, boys reported ever smoking at higher rates than girls in all grades except 6th and 11th, where boys' and girls' rates were similar.

The observed rates reported in Table 2.1 are likely to be underestimates of lifetime use for all 16 to18 year-olds because adolescents in most states, including California, are permitted to drop out of school at age 16. Dropouts, obviously, would not have participated in the in-school CSTS survey. Other literature indicates much higher tobacco use rates among dropouts compared to in-school youth of the same age (Pirie et al., 1988). Hence, all prevalence estimates derived from the data reported here only apply to in-school youth.

**Table 2.1 Lifetime Cigarette Use by Grade and Ethnicity**

| Grade | Overall | Asian/PI | African American | Hispanic/ Latino(a) | Caucasian |
|---|---|---|---|---|---|
| 6th | 9.0% | 5.1% | 20.1% | 9.3% | 6.4% |
| | [5.8, 13.6] | [2.1, 12.2] | [12.6, 30.6] | [6.4, 13.3] | [3.3, 12.2] |
| 7th | 14.4% | 6.9% | 19.7% | 18.0% | 10.5% |
| | [11.5, 17.8] | [4.1, 11.5] | [12.0, 30.6] | [14.2, 22.5] | [7.6, 14.5] |
| 8th | 23.4% | 14.3% | 22.8% | 28.4% | 19.3% |
| | [20.4, 26.8] | [7.9, 24.4] | [14.4, 34.1] | [23.9, 33.3] | [15.7, 23.5] |
| 9th | 31.7% | 18.4% | 31.6% | 37.3% | 28.6% |
| | [29.2, 34.2] | [14.7, 22.8] | [26.1, 37.7] | [34.4, 40.4] | [25.6, 31.8] |
| 10th | 41.0% | 31.7% | 36.4% | 45.3% | 39.7% |
| | [39.1, 43.0] | [26.4, 37.5] | [30.3, 42.9] | [42.2, 48.4] | [36.7, 42.8] |
| 11th | 45.1% | 35.3% | 39.6% | 47.9% | 46.5% |
| | [42.8, 47.4] | [30.2, 40.9] | [34.3, 45.2] | [44.7, 51.2] | [43.7, 49.4] |
| 12th | 50.3% | 36.8% | 42.5% | 55.5% | 51.3% |
| | [48.0, 52.5] | [33.0, 40.7] | [35.5, 49.8] | [53.0, 58.0] | [47.7, 54.8] |
| Total | 37.6% | 27.6% | 34.3% | 40.9% | 37.6% |
| | [36.2, 39.0] | [24.5, 30.9] | [31.4, 37.3] | [39.1, 42.6] | [35.5, 39.8] |

Note: Brackets contain the 95% confidence intervals.

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**Table 2.2 Lifetime Cigarette Use by Grade and Gender**

| Grade | Overall | Female | Male |
|---|---|---|---|
| 6th | 9.0% | 8.5% | 9.4% |
| | [5.8, 13.6] | [4.2, 16.2] | [6.9, 12.8] |
| 7th | 14.4% | 12.4% | 16.3% |
| | [11.5, 17.8] | [9.1, 16.7] | [13.0, 20.1] |
| 8th | 23.4% | 19.4% | 27.3% |
| | [20.4, 26.8] | [15.8, 23.6] | [23.7, 31.1] |
| 9th | 31.7% | 29.9% | 33.3% |
| | [29.2, 34.2] | [27.1, 32.8] | [30.2, 36.6] |
| 10th | 41.0% | 39.4% | 42.6% |
| | [39.1, 43.0] | [37.1, 41.7] | [39.7, 45.7] |
| 11th | 45.1% | 45.1% | 45.0% |
| | [42.8, 47.4] | [41.9, 48.3] | [42.6, 47.5] |
| 12th | 50.3% | 45.8% | 54.8% |
| | [48.0, 52.5] | [43.3, 48.3] | [52.1, 57.5] |
| Total | 37.6% | 35.7% | 39.4% |
| | [36.2, 39.0] | [34.2, 37.3] | [37.7, 41.1] |

Note: Brackets contain the 95% confidence intervals.

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## Current Cigarette Use

Current cigarette use is the most commonly used measure of smoking prevalence. National tobacco use estimates (e.g., MMWR, 2006) typically define "current cigarette use" among youth as smoking on one or more days during the past 30-days prior to the survey. The proportion of respondents who reported that they currently smoked increased monotonically from grade 6 through grade 12, ranging from 2.6% to 19.7% **(Table 2.3)**. Observed differences by ethnicity and gender were generally consistent with ethnic and gender differences in prevalence of current adolescent smoking observed elsewhere (e.g., MMWR, 2006) except that Latino respondents (12.9%) and African American respondents (12.3%) reported lower rates of current tobacco use than White respondents (16.7%). Asian/ Pacific Islander respondents reported the lowest rates of current smoking (9.7%). Boys reported a higher rate than girls (10.6% vs. 8.7%) **(Table 2.4)**. Boys reported higher rates of current smoking than girls in all grades except 6$^{th}$ and 10$^{th}$ grades, where their rates were similar.

**Table 2.3 Current Cigarette Use by Grade and Ethnicity**

| Grade | Overall | Asian/PI | African American | Hispanic/ Latino(a) | Caucasian |
|---|---|---|---|---|---|
| 6th | 2.6% | 2.4% | 4.9% | 2.8% | 1.5% |
| | [1.9, 3.8] | [1.1, 4.9] | [2.0, 11.4] | [1.7, 4.4] | [0.7, 3.1] |
| 7th | 5.1% | 2.6% | 9.6% | 5.0% | 5.1% |
| | [4.0, 6.6] | [1.0, 6.7] | [4.0, 21.3] | [3.6, 7.0] | [3.7, 7.8] |
| 8th | 9.3% | 4.7% | 14.6% | 10.2% | 8.1% |
| | [7.5, 11.5] | [2.4, 9.0] | [9.7, 21.4] | [7.7, 13.4] | [5.5, 11.8] |
| 9th | 11.2% | 6.3% | 14.8% | 11.2% | 11.9% |
| | [10.1, 12.5] | [4.6, 8.6] | [9.7, 21.8] | [9.8, 12.8] | [10.1, 13.9] |
| 10th | 14.9% | 11.6% | 12.9% | 14.2% | 16.3% |
| | [13.6, 16.3] | [9.0, 14.7] | [8.9, 18.2] | [12.2, 16.3] | [14.6, 18.2] |
| 11th | 17.2% | 11.8% | 11.5% | 15.3% | 21.6% |
| | [15.7, 18.8] | [9.5, 14.7] | [7.8, 16.5] | [13.1, 17.8] | [19.6, 23.7] |
| 12th | 19.7% | 13.4% | 10.7% | 18.2% | 24.3% |
| | [17.8, 21.7] | [11.3, 15.9] | [7.5, 15.0] | [15.9, 20.7] | [21.3, 27.5] |
| Total | 14.0% | 9.7% | 12.3% | 12.9% | 16.7% |
| | [13.2, 14.9] | [8.6, 11.0] | [9.9, 15.1] | [11.9, 13.9] | [15.5, 18.0] |

Note: Brackets contain the 95% confidence intervals.

**Table 2.4 Current Cigarette Use by Grade and Gender**

| Grade | Overall | Female | Male |
|---|---|---|---|
| 6th | 2.6% | 3.4% | 1.9% |
| | [1.9, 3.8] | [2.0, 5.8] | [1.0, 3.6] |
| 7th | 5.1% | 4.1% | 6.1% |
| | [4.0, 6.6] | [2.9, 5.9] | [4.2, 8.8] |
| 8th | 9.3% | 6.5% | 12.0% |
| | [7.5, 11.5] | [4.4, 9.6] | [9.5, 15.1] |
| 9th | 11.2% | 9.6% | 12.7% |
| | [10.1, 12.5] | [8.1, 11.3] | [11.3, 14.3] |
| 10th | 14.9% | 14.2% | 15.5% |
| | [13.6, 16.3] | [12.5, 16.2] | [13.8, 17.5] |
| 11th | 17.2% | 15.9% | 18.4% |
| | [15.7, 18.8] | [13.9, 18.1] | [16.7, 20.3] |
| 12th | 19.7% | 15.8% | 23.6% |
| | [17.8, 21.7] | [13.8, 18.1] | [21.1, 26.3] |
| Total | 14.0% | 12.4% | 15.6% |
| | [13.2, 14.9] | [11.4, 13.5] | [14.6, 16.7] |

Note: Brackets contain the 95% confidence intervals.

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## Frequent Use of Cigarettes

Frequent use of cigarettes is one of the characteristics of tobacco addiction. Respondents who reported smoking on 20 or more days during the past 30 days were defined as frequent users of cigarettes. **Table 2.5** shows that less than two percent of California adolescents reported frequent smoking prior to high school entry. Increases in frequent smoking were particularly salient in grades 10 (2.9%), 11 (3.9%) and 12 (5.1%), especially for Caucasians (7.7%). Caucasians reported increased prevalence of frequent smoking relative to all other major ethnic groups in grades eleven and twelve except for African Americans, whose rates were similar. In grade 12, for instance, 7.7% of Caucasians and 5.1% of African American students reported frequent smoking. No other ethnic group reported a frequent smoking prevalence rate that exceeded 3.5% in grade 12. Boys reported higher frequent smoking rates than girls did in all grades except 6th, 7th and 10th grades, where boys' rates were similar to those of the girls **(Table 2.6)**.

**Table 2.5 Frequent Cigarette Use (20 Days or More), by Grade and Ethnicity**

| Grade | Overall | Asian/PI | African American | Latino/a | Caucasian |
|---|---|---|---|---|---|
| 6th | 0.3% | 0.6% | 0.0% | 0.2% | 0.3% |
| | [0.1, 0.8] | [0.1, 2.9] | — | [0.0, 1.1] | [0.1, 1.4] |
| 7th | 0.6% | 0.6% | 1.4% | 0.6% | 0.5% |
| | [0.2, 1.6] | [0.1, 4.9] | [0.2, 9.2] | [0.2, 1.8] | [0.2, 1.7] |
| 8th | 1.6% | 0.7% | 4.1% | 1.9% | 0.7% |
| | [1.0, 2.6] | [0.1, 5.0] | [1.4, 11.6] | [1.1, 3.2] | [0.3, 2.0] |
| 9th | 1.6% | 0.8% | 3.1% | 1.2% | 2.2% |
| | [1.3, 2.1] | [0.3, 2.0] | [1.5, 6.05] | [0.8, 1.9] | [1.5, 3.0] |
| 10th | 2.9% | 2.3% | 4.2% | 1.7% | 3.8% |
| | [2.4, 3.4] | [1.4, 3.7] | [2.5, 6.8] | [1.2, 2.4] | [3.1, 4.6] |
| 11th | 3.9% | 3.1% | 4.1% | 2.2% | 5.8% |
| | [3.3, 4.7] | [2.1, 4.5] | [2.2, 7.5] | [1.5, 3.2] | [4.9, 7.0] |
| 12th | 5.1% | 3.5% | 5.1% | 2.8% | 7.7% |
| | [4.3, 6.0] | [2.4, 5.1] | [3.1, 8.2] | [2.2, 3.7] | [6.3, 9.3] |
| Total | 2.9% | 2.2% | 3.7% | 1.7% | 4.2% |
| | [2.6, 3.2] | [1.7, 2.8] | [2.8, 4.9] | [1.4, 2.0] | [3.8, 4.7] |

Note: Brackets contain the 95% confidence intervals.

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**Table 2.6 Frequent cigarette use (20+ days) by Grade and Gender**

| Grade | Overall | Female | Male |
|---|---|---|---|
| 6th | 0.3% | 0.2% | 0.4% |
| | [0.1, 0.8] | [0.1, 1.0] | [0.1, 1.3] |
| 7th | 0.6% | 0.5% | 0.8% |
| | [0.2, 1.6] | [0.1, 1.9] | [0.3, 2.0] |
| 8th | 1.6% | 0.3% | 2.9% |
| | [1.0, 2.6] | [0.1, 1.3] | [1.8, 4.7] |
| 9th | 1.6% | 0.9% | 2.3% |
| | [1.3, 2.1] | [0.6, 1.3] | [1.7, 3.2] |
| 10th | 2.9% | 2.6% | 3.1% |
| | [2.4, 3.4] | [2.0, 3.3] | [2.5, 3.9] |
| 11th | 3.9% | 3.1% | 4.8% |
| | [3.3, 4.7] | [2.4, 4.0] | [3.9, 5.8] |
| 12th | 5.1% | 3.8% | 6.4% |
| | [4.3, 6.0] | [2.9, 4.9] | [5.3, 7.7] |
| Total | 2.9% | 2.2% | 3.6% |
| | [2.6, 3.2] | [1.8, 2.5] | [3.2, 4.0] |

Note: Brackets contain the 95% confidence intervals.

## Lifetime Use of 100 Cigarettes or More

A convention has emerged in the field of youth tobacco use surveillance that a history of having smoked at least 100 cigarettes distinguishes youth who smoke just a few cigarettes, presumably out of curiosity ("experimenters"), from youth who smoke enough cigarettes to become habitual smokers (Delnevo, Lewis, Kaufman & Abatemarco, 2004). **Table 2.7** illustrates that the prevalence of youth smokers who had smoked at least 100 cigarettes remained below two percent among respondents through grade seven, and then accelerated to 10.2% by grade 12. Overall, 5.4% of respondents indicated that they had smoked at least 100 cigarettes, which was a significant increase relative to the overall rate of 3.5% recorded in 2003-2004 ($p < .05$).

The pattern by ethnic group affiliation described in Table 2.7 showed a disturbing tendency for African American 7$^{th}$ graders to report a higher prevalence of having smoked at least 100 cigarettes compared to any other group. This was in contrast to previous surveys, where African American students reported lower-than-average prevalence of having smoked at least 100 cigarettes. In the higher grades, from 10$^{th}$ grade through 12$^{th}$ grade, Caucasian respondents reported a higher prevalence of having smoked at least 100 cigarettes compared to respondents in any other major ethnic group. By grade 12, 14.3% of Caucasian respondents reported having smoked at least 100 cigarettes, compared to a maximum of 8.3% for any other major ethnic group. **Table 2.8** shows that boys and girls did not differ in the proportion who reported having smoked at least 100 cigarettes in grades six and seven. From grade eight through grade 12, however, a higher proportion of boys consistently reported smoking at least 100 cigarettes compared to girls, with boys' rates nearly double (13.6%) those of girls (6.9%) ($p < .05$).

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**Table 2.7 Lifetime Use of 100 Cigarettes or More by Grade and Ethnicity**

| Grade | Overall | Asian/PI | African American | Hispanic/ Latino(a) | Caucasian |
|---|---|---|---|---|---|
| 6th | 0.2% | 0.6% | 0.0% | 0.0% | 0.3% |
| | [0.0, 0.7] | [0.1, 2.9] | — | — | [0.1, 1.4] |
| 7th | 0.8% | 0.6% | 4.5% | 0.4% | 0.7% |
| | [0.4, 2.0] | [0.1, 4.9] | [1.2, 15.2] | [0.1, 1.7] | [0.2, 2.0] |
| 8th | 2.3% | 0.7% | 3.3% | 2.6% | 2.2% |
| | [1.6, 3.3] | [0.1, 5.0] | [1.1, 9.1] | [1.7, 4.1] | [1.2, 4.2] |
| 9th | 2.8% | 1.8% | 4.5% | 2.2% | 3.6% |
| | [2.3, 3.6] | [1.0, 3.3] | [2.4, 8.4] | [1.5, 3.1] | [2.6, 5.0] |
| 10th | 5.0% | 4.4% | 4.8% | 3.1% | 6.9% |
| | [4.4, 5.7] | [2.8, 6.8] | [3.1, 7.4] | [2.4, 4.1] | [5.9, 8.1] |
| 11th | 7.5% | 4.5% | 5.3% | 5.3% | 10.9% |
| | [6.5, 8.7] | [2.9, 6.8] | [3.1, 8.9] | [4.0, 7.1] | [9.3, 12.8] |
| 12th | 10.2% | 7.8% | 8.3% | 7.1% | 14.3% |
| | [8.9, 11.7] | [6.0, 10.3] | [5.5, 12.2] | [5.8, 8.6] | [12.0, 16.9] |
| Total | 5.4% | 4.1% | 5.1% | 3.6% | 7.8% |
| | [4.9, 5.9] | [3.3, 5.0] | [4.0, 6.5] | [3.1, 4.2] | [7.0, 8.6] |

Note: Brackets contain the 95% confidence intervals.

**Table 2.8 Lifetime Use of 100 Cigarettes or More by Grade and by Gender**

| Grade | Overall | Female | Male |
|---|---|---|---|
| 6th | 0.2% | 0.1% | 0.2% |
| | [0.0, 0.7] | [0.0, 0.7] | [0.0, 1.3] |
| 7th | 0.8% | 0.4% | 1.3% |
| | [0.4, 2.0] | [0.1, 1.8] | [0.5, 3.0] |
| 8th | 2.3% | 0.8% | 3.8% |
| | [1.6, 3.3] | [0.4, 1.8] | [2.5, 5.7] |
| 9th | 2.8% | 1.8% | 3.8% |
| | [2.3, 3.6] | [1.2, 2.6] | [2.9, 5.0] |
| 10th | 5.0% | 4.1% | 5.9% |
| | [4.4, 5.7] | [3.4, 5.0] | [5.0, 7.1] |
| 11th | 7.5% | 6.3% | 8.8% |
| | [6.5, 8.7] | [4.9, 8.0] | [7.6, 10.1] |
| 12th | 10.2% | 6.9% | 13.6% |
| | [8.9, 11.7] | [5.4, 8.8] | [11.8, 15.6] |
| Total | 5.4% | 4.0% | 6.7% |
| | [4.9, 5.9] | [3.5, 4.6] | [6.1, 7.4] |

Note: Brackets contain the 95% confidence intervals.

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## Use of Other Tobacco Products

Although cigarette smoking is the primary way that adolescents use tobacco, they gain significant exposure to tobacco through use of smokeless tobacco, cigars and specialty tobacco imports such as bidis or kreteks. Ten percent of respondents reported ever using smokeless tobacco (chewing tobacco, snuff, or dip), and 28.4% reported having ever smoked cigars, both of which represent significant increases from 2003-2004 rates. About 5% of respondents reported that they had tried smoking bidis (5.2%) or kreteks (6.9%). African Americans reported a higher prevalence rate of lifetime bidi use (7.2%), and Caucasians reported a higher rate of lifetime smokeless tobacco (9.6%) and kretek use (9.4%).

Consistent with the patterns observed for current cigarette smoking, current cigar smoking and current smokeless tobacco use had a tendency to increase with increasing grade. The prevalence of current cigar use increased monotonically with increasing age, from 3.4% (6$^{th}$ grade) to 15.6% (12$^{th}$ grade). The prevalence of smokeless tobacco use increased monotonically with increasing age, from 1.5% (6$^{th}$ grade) to 5.0% (12$^{th}$ grade). The highest prevalence of current smokeless tobacco use by girls was 2.3% in grade 10; the range in prevalence rates for high school boys was 4.4% (9$^{th}$ grade) to 8.7% (12$^{th}$ grade). Girls reported a lower prevalence of current cigar use compared to boys for all grades except sixth grade, where rates of use were similar between boys and girls. Consistent with past literature (CDC, 2001), girls were less likely than boys to report current use of smokeless tobacco or cigars, and less likely to report lifetime use of such tobacco products as smokeless tobacco, cigars, bidis, and kreteks.

## Regional Differences in Tobacco Use

There is increasing interest in understanding the geographic variations in prevalence of tobacco use (Brown and Duncan, 2000). Tobacco use has been shown to vary by the urbanicity of a region, with rural areas reporting the highest rates of tobacco use (CDC, 2002). The CSTS survey design included stratification by twelve demographically distinct regions in California, with regions nine (rural Central Valley region of California) and ten (twenty sparsely populated northern counties) being less urban than other regions. Seven of the regions represented single counties (Alameda, Los Angeles, Orange, Riverside, San Bernardino, Santa Clara, and San Diego). The remaining five regions represented from five to twenty counties each. **Table 2.9** shows the prevalence rate for lifetime smoking, current smoking, and current smokeless tobacco use by California region.

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**Table 2.9 Lifetime, Current Cigarette Smoking, and Current Smokeless Tobacco Use by Region**

| Region/County or Area | Lifetime Cigarette Smoking | Current Cigarette Smoking | Current Smokeless Tobacco Use |
|---|---|---|---|
| 1/Los Angeles | 34.4% | 12.0% | 3.1% |
| | [30.3, 38.8] | [10.4, 13.8] | [2.3, 4.1] |
| 2/San Diego | 42.8% | 17.8% | 4.7% |
| | [37.2, 48.6] | [14.0, 22.5] | [3.6, 6.0] |
| 3/Orange | 34.2% | 12.1% | 2.6% |
| | [29.4, 39.3] | [10.0, 14.7] | [1.8, 3.6] |
| 4/Santa Clara | 35.2% | 13.7% | 3.9% |
| | [28.7, 42.4] | [12.0, 15.6] | [1.8, 8.2] |
| 5/San Bernardino | 34.6% | 11.8% | 3.3% |
| | [28.8, 41.0] | [9.2, 14.9] | [2.1, 5.2] |
| 6/Riverside | 40.5% | 15.3% | 3.1% |
| | [35.6, 45.6] | [12.9, 18.0] | [2.3, 4.1] |
| 7/Alameda | 34.5% | 11.7% | 3.4% |
| | [26.4, 43.6] | [8.5, 15.8] | [2.0, 6.0] |
| 8/Bay Area Counties | 42.0% | 16.8% | 4.5% |
| | [36.5, 47.8] | [13.3, 21.1] | [2.7, 7.4] |
| 9/Central Valley Counties | 41.7% | 16.8% | 5.7% |
| | [33.6, 50.3] | [12.7, 21.9] | [4.0, 8.2] |
| 10/Northern Counties | 35.0% | 14.0% | 5.8% |
| | [27.6, 43.2] | [11.4, 17.2] | [3.9, 8.6] |
| 11/Sacramento Area Counties | 38.6% | 13.2% | 5.3% |
| | [33.4, 44.1] | [10.4, 16.6] | [3.1, 8.9] |
| 12/Central Coasts Counties | 40.8% | 16.1% | 5.3% |
| | [35.0, 46.8] | [13.2, 19.5] | [4.0, 7.0] |
| Overall | 37.6% | 14.0% | 4.0% |
| | [36.2, 39.0] | [13.2, 14.9] | [3.6, 4.5] |

Note: Brackets contain the 95% confidence intervals.

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For prevalence of lifetime smoking, no consistent pattern was apparent. Heavily urbanized San Diego County reported the highest rate of lifetime smoking (42.8%) while heavily urbanized Los Angeles County reported the lowest rate (34.4%). A relatively high proportion (41.7%) of the population of region 9 (Central Valley region of California) reported lifetime smoking whereas the sparsely populated northern counties comprising region 10 reported relatively low rates of lifetime smoking (35.0%). For current smoking, an urban/rural contrast was more evident, with the two most urbanized, population-dense counties (Los Angeles and Alameda) showing low prevalence rates of current smoking (12.0% and 11.7%, respectively) in contrast to regions 9 and 10 (Central Valley counties and Northern counties, respectively) showing higher rates of current smoking (16.8% each) (difference: $p < .05$).

Current smokeless tobacco use patterns paralleled the patterns observed for current smoking. The highest rates occurred in the more inland, less urbanized regions, including the Central Valley (5.7%), the more inland northern counties (5.8%) and the Sacramento area (5.3%). By contrast, the lowest rates occurred in the coastal regions, especially the urbanized areas, including Los Angeles (3.1%) and Alameda (3.4%), and

Orange County (2.6%) (difference between Los Angeles and Central Valley/Northern Counties was significant at p< .05).

## Trends in Tobacco Use

**Table 2.10** shows trends in lifetime and current tobacco use, using the IESS 1995-1996, 1997-1998, 1999-2000, CSTS 2001-2002, and CSTS 2003-2004 data. Curiously, lifetime cigarette smoking prevalence continued the decline observed since 1995, even though current smoking rates rose for grades 8, 10 and 12 relative to rates reported in 2003-2004. Current smokeless rates were the highest recorded since 1995 for grades 8, 10 and 12. Current cigar rates were the highest ever for 12th graders, at 15.7% compared to 12.8% in 2003-2004. On the other hand, use of bidis dropped to the lowest levels ever for 10th and 12 graders, now averaging 5.5% - 5.9%. Overall, the generally decreasing trends for all forms of youth tobacco use observed since 1995 appear to have ended. The exception was bidi use, whose continued decline in popularity may simply reflect the end of a fad. Rates of current smoking, smokeless tobacco use and cigar use have all increased since the 2003-2004 CSTS.

**Table 2.10 Trends in Tobacco Use**

| | Cigarette | | Smokeless Tobacco | | Cigar | | Bidi |
|---|---|---|---|---|---|---|---|
| | Lifetime | Current | Lifetime | Current | Lifetime | Current | Lifetime |
| **8th Grade** | | | | | | | |
| IESS 1995 | 45.3% | 16.9% | 5.9% | 3.1% | 27.7% | n/a | n/a |
| IESS 1997 | 47.9% | 17.1% | 8.0% | 4.2% | 29.2% | 10.8% | n/a |
| IESS 1999 | 37.2% | 11.7% | 6.1% | 3.0% | 20.0% | 6.2% | n/a |
| CSTS 2001-02 | 32.5% | 6.4% | 9.6% | 2.4% | 20.5% | 5.4% | 4.2% |
| CSTS 2003-04 | 26.4% | 6.6% | 6.8% | 2.5% | 19.1% | 6.6% | 4.7% |
| CSTS 2005-06 | 23.4%** | 9.3%** | 7.9%* | 3.7% | 21.1%** | 8.7%* | 4.9% |
| **10th Grade** | | | | | | | |
| IESS 1995 | 62.9% | 27.8% | 9.7% | 3.5% | 38.7% | n/a | n/a |
| IESS 1997 | 58.9% | 21.8% | 9.3% | 2.9% | 37.4% | 13.2% | n/a |
| IESS 1999 | 54.1% | 19.5% | 8.3% | 2.9% | 30.6% | 9.0% | 13.9% |
| CSTS 2001-02 | 50.1% | 14.8% | 11.9% | 3.6% | 31.4% | 9.8% | 9.6% |
| CSTS 2003-04 | 43.0% | 13.1% | 10.4% | 3.5% | 29.7% | 11.4% | 7.8% |
| CSTS 2005-06 | 41.0%** | 14.9%** | 10.7% | 4.6%** | 30.0%** | 12.0% | 5.5%** |
| **12th Grade** | | | | | | | |
| IESS 1995 | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| IESS 1997 | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| IESS 1999 | 64.7% | 24.8% | 12.1% | 3.5% | 39.2% | 10.4% | 26.3% |
| CSTS 2001-02 | 62.3% | 22.9% | 15.7% | 3.5% | 45.3% | 13.9% | 17.7% |
| CSTS 2003-04 | 52.0% | 17.1% | 10.7% | 3.4% | 36.7% | 12.8% | 8.2% |
| CSTS 2005-06 | 50.3%** | 19.7%** | 12.0% | 5.0%** | 37.6% | 15.7%** | 5.9%** |

Notes: IESS 1995-1999 refers to the Independent Evaluation conducted by Rohrbach et al. 2002
CSTS 2001-02, 2003-2004, and 2005-2006 refer to the three California Student Tobacco Survey administrations
n/a = question not asked of respondent type
Within each grade group for each outcome variable, significance tests are 1995 vs. 2005; except where 1995-1999 data were unavailable, they are first available year vs. 2005.
* .01 < p < .05; ** p < .01

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**Comparison of Concurrent In-school Surveys**

The National Youth Tobacco Survey (NYTS) is a national random sample survey that was conducted in 2004 by the Centers for Disease Control and Prevention (CDC) and that was specific to youth tobacco surveillance, using many of the same tobacco use items that were used in the CSTS. The CSS is a survey on drug abuse conducted biennially by the California Attorney General in randomly selected California schools with students in grades seven, nine and 11. The tenth administration of the CSS coincided with the administration of the 2005-2006 CSTS. The 2005 CSS included commonly asked questions about tobacco use, including questions about lifetime smoking, lifetime smokeless tobacco use, current cigarette smoking, frequent smoking, and current smokeless tobacco use. This chapter examines prevalence rates of tobacco use obtained in these surveys.

**Table 2.11** shows that the prevalence rate for 9$^{th}$ grade lifetime cigarette use in the 2005-2006 CSTS was nearly identical to that of 9$^{th}$ graders in the 2005 CSS. The 7$^{th}$ grade CSTS rate was lower than that of 7$^{th}$ graders in the 2005 CSS, but their confidence intervals overlapped. By contrast, the 11$^{th}$ grade CSTS rate was significantly higher than the 11$^{th}$ grade rate in the CSS, but only by 2.9% (45.1% vs. 42.2%). In contrast to the generally similar lifetime cigarette use rates on the CSS and CSTS, the CSTS rates for lifetime smokeless tobacco use were significantly higher for 7$^{th,}$ 9$^{th}$, and 11$^{th}$ graders than corresponding rates obtained in the CSS. Prevalence estimates for current cigarette use, cigar use and smokeless tobacco use are presented in **Table 2.12**. The CSTS prevalence for 7$^{th}$ grade current cigarette use was identical to the 7$^{th}$ grade current cigarette use prevalence in the CSS. For 9$^{th}$ and 11$^{th}$ graders, however, the CSTS prevalence estimates were significantly higher than the corresponding rates in the CSS, but in all cases the California rates were more similar to each other than they were to the significantly higher rates of current smoking observed in the most recent national youth tobacco survey (NYTS 2004).

For cigar use, the CSTS prevalence rates were similar to the cigar use rates observed in the NYTS. For smokeless tobacco use, the CSTS rates were similar to the CSS rates and both were significantly lower than corresponding national rates. The only exception was in 11$^{th}$ grade, where the CSTS smokeless rate was higher than the CSS rate and similar to the national rate. Nearly identical prevalence rates were also observed for 11$^{th}$ grade frequent smoking, as presented in **Table 2.13**, but CSTS rates were higher than CSS rates in 7$^{th}$ and 9$^{th}$ grades. Both sets of California prevalence estimates were markedly lower than corresponding national rates. The investigators conclude that the CSTS and CSS surveys yielded generally comparable estimates for each of the tobacco use questions, with a trend towards slightly higher estimates observed in the CSTS compared to the CSS and that the California rates were consistently lower than corresponding national rates.

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**Table 2.11 Comparison of Surveys: Lifetime Tobacco Use**

| | Cigarette | | | Smokeless Tobacco | | |
|---|---|---|---|---|---|---|
| Grade | CSTS[1] 2005-06 | CSS[2] 2005-06 | NYTS 2004 | CSTS[1] 2005-06 | CSS[2] 2005-06 | NYTS 2004 |
| 6th | 9.0% [5.8, 13.6] | — | 16.9% [14.2, 20.0] | 3.9% [2.9, 5.2] | — | 4.7% [3.6, 6.0] |
| 7th | 14.4% [11.5, 17.8] | 17.5% [16.3, 18.7] | 27.2% [24.4, 30.1] | 5.7% [4.2, 7.5] | 2.7% [2.2, 3.2] | 8.3% [6.6, 10.2] |
| 8th | 23.4% [20.4, 26.8] | — | 34.9% [31.7, 38.2] | 7.9% [6.3, 9.9] | — | 8.4% [7.2, 9.8] |
| 9th | 31.7% [29.2, 34.2] | 31.5% [29.9, 33.1] | 42.3% [37.8, 47.0] | 8.1% [7.1, 9.2] | 5.2% [4.4, 6.0] | 9.9% [8.0, 12.2] |
| 10th | 41.0% [39.1, 43.0] | — | 49.0% [45.4, 52.7] | 10.7% [9.5, 12.0] | — | 13.1% [10.9, 15.6] |
| 11th | 45.1% [42.8, 47.4] | 42.2% [40.6, 43.8] | 56.3% [52.2, 60.3] | 10.6% [9.3, 12.1] | 8.3% [7.4, 9.2] | 13.8% [11.2, 16.9] |
| 12th | 50.3% [48.0, 52.5] | — | 63.9% [60.6, 67.2] | 12.0% [10.5, 13.6] | — | 20.1% [16.8, 23.9] |

Notes: Brackets contain the 95% confidence intervals.
[1] California Student Tobacco Survey
[2] California Attorney General's CA Student Survey, designed to measure reported drug use by in-school students, including tobacco.

**Table 2.12 Comparison of Surveys: Current Tobacco Use (any use in last 30 days)**

| | Cigarette | | | Cigar | | | Smokeless Tobacco | | |
|---|---|---|---|---|---|---|---|---|---|
| Grade | CSTS[1] 2005-06 | CSS[2] 2005-06 | NYTS[3] 2004 | CSTS 2005-06 | CSS 2005-06 | NYTS 2004 | CSTS 2005-06 | CSS 2005-06 | NYTS 2004 |
| 6th | 2.6% [1.9, 3.8] | — | 4.7% [3.7, 5.9] | 3.4% [2.4, 4.8] | — | 3.3% [2.6, 4.1 | 1.5% [0.8, 2.7] | — | 2.0% [1.5, 2.8] |
| 7th | 5.1% [4.0, 6.6] | 5.1% [4.4, 5.8] | 8.9% [7.5, 10.5] | 5.1% [3.9, 6.5] | — | 5.7% [4.8, 6.7] | 2.0% [1.3, 3.0] | 1.8% [1.4, 2.2] | 3.5% [2.6, 4.6] |
| 8th | 9.3% [7.5,11.5] | — | 11.7% [9.9, 13.8] | 8.7% [7.0, 10.6] | — | 7.0% [5.9, 8.2] | 3.7% [2.7, 5.1] | — | 3.1% [2.5, 3.8] |
| 9th | 11.2% [10.1, 12.5] | 10.0% [8.9, 11.1] | 16.3% [13.6, 19.3] | 9.3% [8.2, 10.5] | — | 8.7% [7.2, 10.6] | 3.3% [2.7, 4.0] | 2.7% [2.1, 3.3] | 4.1% [3.0, 5.5] |
| 10th | 14.9% [13.6, 16.3] | — | 20.0% [17.2,23.1] | 12.0% [10.8,13.3] | — | 13.1% [11.5, 14.8] | 4.6% [3.9, 5.4] | — | 5.7% [4.5, 7.1] |
| 11th | 17.2% [15.7, 18.8] | 15.2% [14.0, 16.4] | 22.6% [19.6,25.9] | 12.8% [11.7, 4.1] | — | 13.3% [11.5, 15.3] | 4.5% [3.7, 5.5] | 3.2% [2.6, 3.8] | 4.9% [3.8, 6.4] |
| 12th | 19.7% [17.8, 21.7] | — | 30.4% [27.4, 33.5] | 15.7% [14.1, 7.3] | — | 18.2% [16.2, 20.3] | 5.0% [4.2, 5.9] | — | 7.9% [5.9, 10.4] |

Notes: Brackets contain the 95% confidence intervals.
[1] California Student Tobacco Survey
[2] California Attorney General's CA Student Survey, designed to measure reported drug use by in-school students, including tobacco
[3] National Youth Tobacco Survey, funded by the Centers for Disease Control and Prevention

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**Table 2.13 Comparison of Surveys: Frequent Cigarette Use (20+ days)**

| Grade | CSTS[1] 2005-06 | CSS[2] 2005-06 | NYTS 2004 |
|---|---|---|---|
| 6th | 0.3% [0.1, 0.8] | — | 1.3% [0.9, 1.8] |
| 7th | 0.6% [0.2, 1.6] | 0.1% [0.0, 0.2] | 3.2% [2.5, 4.2] |
| 8th | 1.6% [1.0, 2.6] | — | 4.9% [3.8, 6.3] |
| 9th | 1.6% [1.3, 2.1] | 0.9% [0.6, 1.2] | 7.9% [6.4, 9.7] |
| 10th | 2.9% [2.4, 3.4] | — | 11.1% [8.8, 13.8] |
| 11th | 3.9% [3.3, 4.7] | 3.7% [3.1, 4.3] | 13.1% [10.8, 15.8] |
| 12th | 5.1% [4.3, 6.0] | — | 18.4% [15.9, 21.1] |

Notes: Brackets contain the 95% confidence intervals.
[1] California Student Tobacco Survey
[2] California Attorney General's CA Student Survey, designed to measure reported drug use by in-school students, including tobacco

The CSTS prevalence estimates of current cigarette smoking, cigar smoking, and smokeless tobacco use were compared to the corresponding rates observed in the NYTS (Table 2.12). Prevalence rates of current cigarette smoking in the CSTS were 36% lower and 29% lower than the corresponding rates in the NYTS for middle and high school students, respectively. Similar but less pronounced differences were observed for current smokeless tobacco use, where the CSTS prevalence rate was insignificantly lower. Only for cigar use were CSTS and NYTS prevalence rates comparable, in contrast to the previous CSTS versus NYTS comparison in 2003-2004, when the California rates were lower. This suggests that cigar use has increased disproportionately in California relative to other regions in the U.S. in the last two years.

Other more recently reported nationally representative adolescent tobacco use data were reported for the Monitoring the Future Survey (MTFS) (Johnston et al., 2007-in press). Tobacco use prevalence estimates from this nationally representative survey are not exactly comparable to CSTS rates because the MTFS is a drug abuse survey, not a tobacco use survey, and because the data were obtained only from students in grades 8, 10 and 12. It is nonetheless clear when comparing the 2005-2006 CSTS prevalence estimates for lifetime and 30-day use with corresponding prevalence estimates from the 2005 and 2006 MTFS that the California rates and U.S. rates have now converged. California is no longer the national leader in minimizing youth tobacco use. More specifically, California 8$^{th}$ and 12$^{th}$ graders now report lifetime rates that are equal to those reported nationally by the MTFS in 2005 and 2006. The 41.0% (95% CI: 39.1, 43.0) of California 10$^{th}$ graders who reported lifetime cigarette use was significantly higher than the corresponding MTFS rate of 38.9% in 2005 and 36.1% in 2006. California 8$^{th}$ and 10$^{th}$ graders are now reporting current (30-day) rates equal to the corresponding rates for 8$^{th}$ and 10$^{th}$ graders in the MTFS 2005 and 2006 surveys.

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Only among 12th graders was the 19.7% California current (30-day) tobacco use rate significantly lower (95% CI: 17.8, 21.7) than the corresponding MTFS 2005 rate of 23.2% but it was non-significantly different from the corresponding MTFS 2006 rate of 21.6%. The overall impression that these numbers leave the reader with is that while the declines in U.S. rates are leveling off, they have not yet begun to climb back up; whereas the California rates are now increasing significantly. Because California youth tobacco use rates used to be consistently lower than national rates, the result is a convergence of national and U.S. rates.

**Age of Smoking Initiation**

Cigarette smoking during adolescence has been shown to be associated with a greater probability of concurrent and future substance use and abuse compared to adolescents who do not smoke (Kandel et al., 1997; Brown et al., 1996; Kandel & Yamaguchi, 1993). Research has shown that adolescents who start smoking at an earlier age are more likely to persist in smoking and become more dependent on nicotine than other youth populations, and early experimentation increases the likelihood of habitual smoking. (USDHHS, 1998; USDHHS, 1994; Kandel et al., 1997).

Age of cigarette smoking initiation was measured in the CSTS by asking "How old were you when you smoked a whole cigarette for the first time?" Sixty-six percent of lifetime smokers reported that they started smoking a whole cigarette after age 13 **(Table 2.14)**. Seventeen percent of lifetime smokers indicated that they started smoking when they were 10 years old or younger. Boys started smoking at an earlier age than girls did ($p < .05$). Forty percent of boys smoked a whole cigarette before age 13, while 30% of girls in this age group did so. The pattern of smoking initiation differed between African Americans and other ethnic groups when age of smoking initiation was examined across the major ethnic groups. About two-thirds of Asian/Pacific Islander, Hispanic, and Caucasian smokers reported that they started smoking after age 13. By contrast, nearly one third (33.1%) of African American smokers started smoking when they were 10 years old or younger compared to less than 20% for all other ethnic groups. Fifty percent of African American smokers had started before age 13 compared to one-third of smokers from other ethnic groups.

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**Table 2.14 Age of Cigarette Smoking Initiation among Lifetime Smokers**

| | 10 Years old or Younger | 11 or 12 Years Old | 13 or 14 Years Old | 15 Years Old or Older |
|---|---|---|---|---|
| **Overall** | 16.5% [15.1, 17.9] | 17.6% [16.4, 18.9] | 34.0% [32.5, 35.4] | 32.0% [30.1, 33.9] |
| **Gender** | | | | |
| Female | 12.9% [11.2, 14.8] | 16.8% [15.3, 18.4] | 36.1% [34.1, 38.1] | 34.3% [31.8, 36.9] |
| Male | 19.4% [17.8, 21.2] | 18.4% [16.7, 20.1] | 32.2% [30.3, 34.2] | 30.0% [28.1, 32.0] |
| **Ethnicity** | | | | |
| Asian/PI | 18.0% [13.6, 23.3] | 15.7% [12.6, 19.2] | 33.9% [29.6, 38.4] | 32.5% [29.2, 36.1] |
| African American | 33.1% [27.4, 39.4] | 16.7% [12.3, 22.4] | 33.9% [28.1, 40.3] | 16.2% [12.9, 20.2] |
| Hispanic/Latino(a) | 17.8% [15.9, 19.8] | 19.8% [17.7, 22.2] | 34.8% [32.5, 37.1] | 27.6% [25.2, 30.1] |
| Caucasian | 11.9% [10.3, 13.7] | 15.8% [14.2, 17.6] | 33.3% [31.4, 35.3] | 39.0% [36.1, 42.0] |

Note: Brackets contain the 95% confidence intervals.

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## Intent Not to Use Cigarettes

Intent not to use cigarettes in the near future and beliefs about refusing to use tobacco if a friend offered a tobacco product were two protective factors related to future tobacco use (Pierce et al., 1996). The CSTS assessed respondents' intent not to use by asking "Do you think you will smoke a cigarette at any time during the next year?" and "If one of your best friends offered you a cigarette, would you smoke it?" Response options were "Definitely yes", "Probably yes", "Probably not", and "Definitely not". Seventy-six percent of middle school students and 57.9% of high school students responded that they "definitely would not" smoke a cigarette in the next year.

As can be seen in **Table 2.15**, these numbers mirrored the responses to the question asking if they would smoke a cigarette if their best friend offered it (74.1% and 58.2% of middle and high school students, respectively, reported "definitely not"). Girls were slightly more likely to respond that they "definitely would not" smoke a cigarette in the next year compared to boys, both in middle and high school grades. Asian/Pacific Islander students were more likely to respond that they "definitely would not" smoke a cigarette in the next year compared to all other ethnic groups but this difference was apparent only in middle school students. Hispanic/Latino students were less likely to respond that they "definitely would not" smoke a cigarette in the next year compared to all other ethnic groups in both the middle school and high school grades.

For all ethnic/gender groups, the proportion saying that they "definitely would not" smoke a cigarette in the next year declined slightly compared to corresponding

prevalence estimates reported for the 2003-2004 CSTS data. The decline in the proportion of high school age Hispanics/Latinos intending definitely not to smoke was especially steep, from 54.2% to 51.8% (difference p< .05).

**Table 2.15 Intent Not to Smoke**

| | Do you think you will smoke a cigarette at any time during the next year? (% Responding "Definitely Not") | If one of your best friends offered you a cigarette, would you smoke it? (% Responding "Definitely Not") |
|---|---|---|
| **Middle School** | | |
| Overall | 76.1% [73.4, 78.7] | 74.1% [71.3, 76.7] |
| Female | 78.0% [74.9, 80.8] | 76.0% [73.1, 78.6] |
| Male | 74.3% [71.2, 77.2] | 72.3% [69.2, 75.3] |
| Asian/PI | 88.7% [85.2, 91.5] | 86.3% [83.1, 88.9] |
| African American | 78.1% [74.1, 81.7] | 75.5% [66.8, 82.5] |
| Hispanic/Latino(a) | 71.6% [68.8, 74.3] | 69.6% [66.6, 72.5] |
| Caucasian | 77.7% [74.6, 80.5] | 75.9% [72.7, 78.8] |
| **High School** | | |
| Overall | 57.9% [56.5, 59.2] | 58.2% [57.0, 59.5] |
| Female | 59.0% [57.5, 60.6] | 59.6% [58.0, 61.2] |
| Male | 56.7% [55.0, 58.4] | 56.9% [55.3, 58.4] |
| Asian/PI | 68.9% [66.5, 71.1] | 67.6% [65.1, 70.1] |
| African American | 67.1% [63.7, 70.3] | 65.7% [62.4, 68.9] |
| Hispanic/Latino(a) | 54.2% [52.7, 55.6] | 54.6% [53.2, 56.0] |
| Caucasian | 56.4% [54.6, 58.2] | 57.7% [55.9, 59.4] |

Note: Brackets contain the 95% confidence intervals.

## Desire to Quit and Quit Attempts

Previous research has found that adolescent smokers' desire to quit smoking cigarettes and their prior quit attempts are associated with success at quitting cigarette use in the future. Smokers with less desire to quit their habit tend to perceive smoking as providing greater benefits (e.g., believed that smokers had more friends; smoking makes young people look cool) than current smokers with greater desire to quit, and

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thus were found to report more difficulty in quitting later (Friestad & Rise, 1998; Tyc, Hadley, & Allen, 2004). CSTS respondents who smoked were therefore asked if they wanted to quit smoking. Slightly less than a third of current smokers in each grade reported that they wanted to quit smoking **(Table 2.16)**. The exception was 6th grade, where only 22.7% of smokers reported an interest in quitting. The rates were progressively higher with increasing grade, culminating in 34.3% of 12th grade smokers who reported an interest in quitting their habit. No consistent patterns emerged when rates were examined by ethnicity except that African American smokers were less likely to report wanting to quit compared to other ethnic groups.

When asked if they thought they would be able to quit smoking cigarettes if they wanted to, 60.9% of current smokers in grades 6 through 12 responded "yes" **(Table 2.17)**. Curiously, there was a trend toward more smokers in the higher grades reporting confidence that they could quit smoking compared to smokers in the lower grades. Similar to those who wanted to quit smoking, 46.6% of lifetime smokers **(Table 2.18)** and 46.7% of current smokers **(Table 2.19)** had made at least one attempt to quit smoking cigarettes. Current male smokers reported a lower rate of quitting smoking at least once compared to female smokers (43.8% vs. 50.4%, respectively) ($p < .05$). No significant gender difference in previous quit attempts was observed among lifetime smokers.

**Table 2.16 Percent of Current Smokers Reporting Desire to Stop Smoking**

| Grade | Overall | Asian/PI | African American | Hispanic/ Latino(a) | Caucasian |
|---|---|---|---|---|---|
| 6th | 22.7% | 0.0% | 0.0% | 36.2% | 9.8% |
| | [11.8, 39.1] | — | — | [13.6, 67.2] | [1.6, 42.8] |
| 7th | 29.2% | 0.0% | 0.0% | 32.8% | 44.7% |
| | [21.3, 38.5] | — | — | [21.3, 46.7] | [31.9, 58.2] |
| 8th | 28.0% | 16.2% | 22.5% | 31.7% | 24.9% |
| | [18.9, 39.2] | [3.3, 52.5] | [6.9, 53.0] | [20.3, 45.8] | [12.0, 44.8] |
| 9th | 29.6% | 32.3% | 26.5% | 31.2% | 27.5% |
| | [25.7, 33.8] | [21.0, 46.1] | [15.8, 41.0] | [25.4, 37.6] | [20.6, 35.7] |
| 10th | 30.7% | 35.1% | 32.0% | 31.2% | 28.8% |
| | [26.5, 35.2] | [25.4, 46.2] | [19.9, 47.2] | [25.4, 37.6] | [24.0, 34.1] |
| 11th | 32.8% | 27.8% | 25.2% | 33.5% | 34.1% |
| | [29.2, 36.5] | [19.7, 37.7] | [13.3, 42.7] | [27.8, 39.9] | [29.6, 38.9] |
| 12th | 34.3% | 45.3% | 22.3% | 35.9% | 31.6% |
| | [31.1, 37.6] | [36.0, 54.9] | [12.2, 37.3] | [29.8, 42.6] | [26.3, 37.5] |
| Total | 31.7% | 34.5% | 24.9% | 32.9% | 31.0% |
| | [29.8, 33.7] | [29.1, 40.2] | [18.6, 32.5] | [29.6, 36.3] | [28.8, 33.2] |

Note: Brackets contain the 95% confidence intervals.

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**Table 2.17 Percent of Current Smokers Reporting that They Would be Able to Quit Smoking Cigarettes if They Wanted to**

| Grade | Overall | Asian/PI | African American | Hispanic/ Latino(a) | Caucasian |
|---|---|---|---|---|---|
| 6th | 21.8% | 0.0% | 0.0% | 30.9% | 24.1% |
| | [10.9, 39.0] | — | — | [8.7, 67.8] | [6.4, 59.4] |
| 7th | 45.6% | 53.6% | 33.0% | 58.1% | 33.7% |
| | [33.6, 58.2] | [8.9, 93.1] | [7.0, 76.4] | [41.1, 73.5] | [19.5, 51.6] |
| 8th | 45.9% | 26.9% | 35.3% | 51.3% | 43.7% |
| | [34.8, 57.4] | [8.6, 59.0] | [13.4, 65.7] | [35.9, 66.4] | [26.7, 62.4] |
| 9th | 61.0% | 49.2% | 57.6% | 63.5% | 60.7% |
| | [56.2, 65.5] | [32.2, 66.4] | [41.1, 72.5] | [55.9, 70.5] | [52.7, 68.2] |
| 10th | 58.7% | 51.5% | 46.2% | 61.6% | 60.4% |
| | [55.1, 62.1] | [42.1, 60.9] | [29.9, 63.3] | [54.4, 68.3] | [55.4, 65.2] |
| 11th | 63.0% | 46.1% | 44.5% | 61.7% | 67.9% |
| | [59.2, 66.5] | [36.1, 56.4] | [31.3, 58.5] | [53.7, 69.0] | [62.9, 72.6] |
| 12th | 65.5% | 62.9% | 37.4% | 68.3% | 66.0% |
| | [62.2, 68.6] | [53.1, 71.7] | [22.2, 55.6] | [63.8, 72.4] | [60.6, 70.9] |
| Total | 60.9% | 52.1% | 45.7% | 62.6% | 63.3% |
| | [58.9, 62.8] | [46.8, 57.3] | [38.6, 53.0] | [59.3, 65.7] | [60.0, 66.4] |

Note: Brackets contain the 95% confidence intervals.

**Table 2.18 Number of Quit Attempts Among Self-reported Lifetime Smokers, by Gender**

| | Overall | Female | Male |
|---|---|---|---|
| None | 53.4% | 52.7% | 54.0% |
| | [51.7, 55.0] | [50.4, 54.9] | [51.7, 56.2] |
| Once | 27.5% | 26.8% | 28.1% |
| | [26.1, 28.9] | [25.0, 28.7] | [26.1, 30.2] |
| Twice | 9.8% | 11.3% | 8.5% |
| | [9.0, 10.6] | [10.3, 12.4] | [7.3, 9.8] |
| 3-5 times | 6.0% | 6.3% | 5.8% |
| | [5.4, 6.7] | [5.4, 7.2] | [4.9, 6.8] |
| 6-9 times | 1.2% | 1.2% | 1.1% |
| | [0.9, 1.5] | [0.8, 1.8] | [0.8, 1.7] |
| 10 or more times | 2.1% | 1.7% | 2.5% |
| | [1.8, 2.6] | [1.1, 2.4] | [2.0, 3.3] |

Note: Brackets contain the 95% confidence intervals.

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**Table 2.19 Number of Quit Attempts Among Self-reported Current Smokers, by Gender**

| | Overall | Female | Male |
|---|---|---|---|
| None | 53.3% | 49.6% | 56.2% |
| | [51.1, 55.4] | [46.5, 52.8] | [53.3, 59.0] |
| Once | 20.2% | 20.9% | 19.7% |
| | [18.6, 22.0] | [18.5, 23.5] | [17.6, 22.0] |
| Twice | 12.4% | 14.8% | 10.5% |
| | [11.2, 13.7] | [13.2, 16.6] | [8.7, 12.5] |
| 3-5 times | 8.7% | 10.0% | 7.8% |
| | [7.8, 9.8] | [8.5, 11.7] | [6.6, 9.1] |
| 6-9 times | 1.8% | 1.9% | 1.8% |
| | [1.4, 2.5] | [1.2, 3.2] | [1.1, 2.8] |
| 10 or more times | 3.5% | 2.7% | 4.1% |
| | [2.8, 4.3] | [1.7, 4.4] | [3.2, 5.4] |

Note: Brackets contain the 95% confidence intervals.

## Use of Cessation Resources

When asked about participating in cessation programs, 9.8% of lifetime smokers and 10.6% of current smokers responded that they had participated in a program to help them quit using tobacco, either at school or in their community **(Table 2.20)**. Male and female lifetime smokers and current smokers reported similar rates of participation in cessation programs. Lifetime and current smokers in sixth and seventh grades reported higher rates of cessation program participation than smokers in higher grades, despite the fact that if cessation programs are offered in schools, they are offered in high schools, not middle schools. African American lifetime and current smokers reported higher rates of cessation program participation than corresponding smokers from other ethnic groups.

The California Tobacco Quitline (1-800-NO BUTTS) is a non-profit organization that provides free cessation services to California resident tobacco users who want to quit. It is operated by the University of California, San Diego and is funded by the California Department of Health Services through Prop. 99, the 1988 Tobacco Tax Health Protection Act. Use of the quitline by adolescent lifetime smokers was assessed in the CSTS. Overall, 4.1% of lifetime smokers and 4.9% of current smokers responded that they had called the quitline to help them quit using tobacco **(Table 2.21)**. More current male smokers reported having used the helpline than female smokers (6.2% vs. 3.0%, $p < .05$). A significant gender difference was also observed for lifetime smokers. The proportion of smokers calling the statewide quitline tended to decrease with increasing grade, from 13.3% of 7$^{th}$ grade current smokers to 2.9% of 12$^{th}$ grade smokers. African American and Asian/Pacific Islander lifetime and current smokers reported higher rates of having used the quitline than did smokers from other ethnic groups. African American current smokers were particularly likely (16.6%) to report using the California quitline compared to Hispanics/Latinos (3.7%) and Whites (3.6%).

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**Table 2.20 Percent of Students Reporting Having Ever Participated in A Program to Help Them Quit Using Tobacco**

| | Lifetime Smokers (%) | Current Smokers (%) |
|---|---|---|
| **Overall** | 9.8%<br>[8.8, 10.9] | 10.6%<br>[9.3, 12.1] |
| **Gender** | | |
| Female | 9.7%<br>[8.2, 11.4] | 10.5%<br>[8.4, 13.0] |
| Male | 9.9%<br>[8.6, 11.3] | 10.7%<br>[9.1, 12.7] |
| **Grade** | | |
| 6th | 20.2%<br>[9.5, 37.9] | 38.9%<br>[18.2, 64.5] |
| 7th | 16.8%<br>[8.6, 30.3] | 16.6%<br>[6.0, 38.1] |
| 8th | 10.4%<br>[6.4, 16.4] | 11.6%<br>[5.8, 22.1] |
| 9th | 10.8%<br>[8.5, 13.8] | 10.8%<br>[7.2, 15.8] |
| 10th | 10.7%<br>[8.6, 13.1] | 11.9%<br>[9.2, 15.1] |
| 11th | 8.9%<br>[7.2, 10.9] | 9.4%<br>[7.7, 11.5] |
| 12th | 8.4%<br>[7.0, 10.1] | 9.9%<br>[7.8, 12.5] |
| **Ethnicity** | | |
| Asian / PI | 12.4%<br>[9.1, 16.8] | 14.0%<br>[10.2, 19.0] |
| African American | 16.6%<br>[11.9, 22.6] | 21.5%<br>[14.3, 30.8] |
| Hispanic/Latino(a) | 9.9%<br>[8.3, 11.6] | 9.4%<br>[7.5, 11.8] |
| Caucasian | 8.3%<br>[7.1, 9.6] | 9.6%<br>[7.7, 11.8] |

Note: Brackets contain the 95% confidence intervals.

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**Table 2.21 Use of 1-800-NOBUTTS Helpline by Gender, Grade and Ethnicity**

| | Lifetime Smokers (%) | Current Smokers (%) |
|---|---|---|
| **Overall** | 4.1%<br>[3.6, 4.7] | 4.9%<br>[4.0, 5.9] |
| **Gender** | | |
| Female | 3.3%<br>[2.5, 4.3] | 3.0%<br>[2.1, 4.2] |
| Male | 4.7%<br>[4.0, 5.6] | 6.2%<br>[4.9, 7.9] |
| **Grade** | | |
| 6th | 4.4%<br>[1.1, 16.4] | 9.9%<br>[1.3, 48.1] |
| 7th | 6.3%<br>[2.6, 14.4] | 13.3%<br>[5.0, 30.9] |
| 8th | 8.2%<br>[4.9, 13.4] | 9.6%<br>[5.0, 17.5] |
| 9th | 4.4%<br>[2.9, 6.4] | 5.4%<br>[3.2, 8.9] |
| 10th | 4.9%<br>[3.6, 6.6] | 6.3%<br>[4.2, 9.4] |
| 11th | 3.2%<br>[2.4, 4.4] | 3.9%<br>[2.7, 5.7] |
| 12th | 3.4%<br>[2.6, 4.4] | 2.9%<br>[1.9, 4.2] |
| **Ethnicity** | | |
| Asian / PI | 6.2%<br>[4.1, 9.3] | 8.7%<br>[5.3, 13.9] |
| African American | 6.7%<br>[4.3, 10.4] | 16.6%<br>[11.0, 24.4] |
| Hispanic/Latino(a) | 3.7%<br>[2.9, 4.8] | 3.7%<br>[2.5, 5.3] |
| Caucasian | 3.5%<br>[2.7, 4.5] | 3.6%<br>[2.6, 4.9] |

Note: Brackets contain the 95% confidence intervals.

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## Conclusion

After years of decline, the prevalence of current tobacco use (cigarettes, smokeless, cigar use) among California youth has begun to increase even as U.S. prevalence continues declining. The result is that the historically lower youth tobacco use rates in California are now converging with corresponding national rates.

The 2005-2006 CSTS results indicated a continuing trend toward reduced adolescent tobacco use experimentation in California in-school youth but showed a countervailing increase in the prevalence of regular tobacco use, especially in the form of smokeless tobacco use and cigar use by students in the high school grades. All common tobacco use measures observed in the 2005-2006 CSTS were cross-validated in an independent drug abuse survey (CSS) conducted among students in grades seven, nine and 11 from the same California population during approximately the same time period. The prevalence estimates from both surveys were generally more similar to each other than different, especially in contrast to national youth tobacco survey data, increasing our confidence that estimates accurately reflect current tobacco use rates among California's in-school youth.

Part of the perceived increase in tobacco use, at least in the younger grades, could be attributed to the use of informed consent procedures during this latest survey. All respondents to the 2003-2004 CSTS were recruited under "active informed consent" procedures that required a signature from the parents before the student was permitted to take part in the survey. A change in state law permitted three quarters of the respondents in the 2005-2006 CSTS to be recruited under "passive informed consent" procedures, which permitted students to participate as long as the parent had not objected to the student's participation. The student response rate for the 2005-2006 CSTS was therefore higher than the corresponding rate in 2003-2004. Past research has indicated slightly higher cigarette smoking rates among potential respondents screened out by the active parental consent procedure relative to the passive consent procedure (Anderman et al., 1995; Dent et al., 1993). Once potential respondents have been screened out, the remaining respondents will typically report slightly lower rates of smoking under active consent conditions than under passive consent conditions.

To answer this, prevalence estimates obtained from respondents recruited under passive consent conditions were compared to prevalence estimates obtained from respondents recruited under active consent procedures. For most comparisons, no significant differences in tobacco use prevalence estimates were observed between students recruited using passive consent compared to students recruited using active consent procedures. When differences were found, they tended to be small and were associated with higher estimates under passive consent for seventh and ninth graders but were associated with lower estimates under passive consent for 10$^{th}$, 11$^{th}$, and 12$^{th}$ grade respondents. Other factors that may have contributed to the increased current smoking prevalence include a decrease in students' intentions not to smoke, a decrease in TUPE resources in California schools, a decrease in tobacco control efforts by the state, stable cigarette prices, and increased tobacco marketing.

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Nearly half of lifetime and current smokers reported a desire to quit smoking cigarettes and approximately one out of ten smokers have participated in available cessation programs, including the state tobacco quitline. African American smokers were particularly likely to use smoking cessation resources. Other studies have shown some student smokers to be averse to using school-based cessation resources but open to using existing cessation resources in the community (Leatherdale, 2006). Rates of cessation by student smokers may increase if increased efforts are made to match student smokers with existing smoking cessation resources in the community.

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# CHAPTER 3

## CHAPTER 3: STUDENT-LEVEL DESCRIPTIVES: ATTITUDES AND BELIEFS ABOUT TOBACCO USE

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# CHAPTER 3: STUDENT LEVEL DESCRIPTIVES: ATTITUDES AND BELIEFS ABOUT TOBACCO USE

## Introduction

Psychosocial factors play an important role in the development of smoking behaviors among children and adolescents (Turner, Mermelstein & Flay, 2004) as is reflected by their presence in the logic model guiding our analyses (Chapter 1). Some of these factors include advertising; role models who smoke; perceptions about one's ability to refuse an offer to smoke; peer influences to smoke; normative expectations with regard to smoking; the perception that smoking has personal utility; availability of cigarettes; and, perceived harm. Flay, et al. (1983) proposed a model of cigarette smoking that identified predictable stages in the development of the smoking habit. In the first stage, peers and family who smoke play a role in influencing non-smokers to think about smoking cigarettes (Flay, d'Avernas, Best, Kersall & Ryan, 1983). These social influences and others continue to be cited as strong predictors of future tobacco use among youth, and prevention programs based on social influence approaches have generally, but not always (Peterson, Kealey, Mann, Marek & Sarason, 2000) been shown to decrease rates of adolescent smoking (Hahn et al., 1990; Sussman et al., 1990).

Students completing the CSTS were asked questions about tobacco use behaviors, and were asked to comment on their attitudes about the tobacco industry; social desirability of tobacco use; perceived health consequences of tobacco use; and, perceived social norms, to examine these possible influences. The domains and items used for the student-level analysis in Chapter 3 are found in **Table 3.1** along with Cronbach's alpha coefficients for each domain. This chapter will report the student-level descriptives, and Chapters 5 and 8 will explore how grantee status and program implementation are related to adolescent tobacco use and its correlates.

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**Table 3.1 Items Used in the Analysis (Student Survey)**

| Domain (Cronbach's Alpha) | Question Number (Q) | Question |
|---|---|---|
| Social perceptions about smoking (0.59) | Q35 | Do you think young people who smoke cigarettes have more friends? |
| | Q36 | Do you think smoking cigarettes makes young people look cool or fit in? |
| Perceived health consequences from smoking (0.54) | Q37 | Do you think young people risk harming themselves if they smoke from 1 to 5 cigarettes per day? |
| | Q38 | Do you think it is safe to smoke for only a year or two, as long as you quit after that? |
| | Q51 | Do you think the smoke from other people's cigarettes is harmful to you? |
| | Q96 | People can get addicted to using tobacco just like they can get addicted to using other drugs such as cocaine or heroin. |
| Secondhand Smoke (0.83) | Q48 | During the past 7 days, on how many days were you in the same room with someone who was smoking cigarettes? |
| | Q49 | During the past 7 days, on how many days were you in the same room AT HOME with someone who was smoking cigarettes? |
| | Q50 | During the past 7 days, on how many days did you ride in a car with someone who was smoking cigarettes? |
| Anti-tobacco industry norms (0.64) | Q72 | Do you think that tobacco companies try to get people addicted to cigarettes? |
| | Q73* | Tobacco companies would stop selling cigarettes if they knew for sure that smoking hurts people. |
| | Q74 | Tobacco companies try to get young people to start smoking by using advertisements that are attractive to young people. |
| <u>Media Exposure</u> | | |
| Anti-Tobacco Media Exposure (0.68) | Q67 | When you listen to the radio, how often do you hear advertisements about NOT smoking or about NOT chewing tobacco? |
| | Q68 | When you see billboards (outdoor signs), how often do you see advertisements about NOT smoking or about NOT chewing tobacco? |
| | Q69 | When you watch TV, how often do you see stories or advertisements about the dangers of smoking tobacco or chewing tobacco? |

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**Table 3.1 Items Used in the Analysis (Student Survey)**

| Domain (Cronbach's Alpha) | Question Number (Q) | Question |
|---|---|---|
| Pro-Tobacco Media Exposure (0.40) | Q45 | When you watch TV or go to the movies, how often do you see actors using tobacco? |
| | Q46 | During the past 12 months, did you buy or receive anything that has a tobacco company name or picture on it? |
| | Q47 | Would you ever use or wear something that has a tobacco company name or picture on it such as a lighter, T-shirt, hat, or sunglasses? |
| | Q70 | When you go to sports events, fairs or community events, how often do you see advertisements for cigarettes or chewing tobacco? |
| Recalled TV Messages (0.55) | | During the last 30 days, do you remember seeing on TV any of the following messages ABOUT NOT SMOKING? |
| | Q71a | Showed smoke swirling on screen and voices talking about smoking situations. |
| | Q71b | Showed tobacco executives from a tobacco company talking about light cigarettes. |
| | Q71c | Showed tobacco executives talking about becoming a friend of ethnic communities by paying for and supporting community events and organizations. |
| | Q71d | Showed the inside of a body and the damage done by breathing in smoke from someone else's cigarette. |
| | Q71e* | Ending with the word "truth." |
| | Q72f | Ending with the phrase "do you smell smoke." |
| Smoking Norms Percentage Reporting | Q94 | Most young people do NOT smoke cigarettes. |

* Item was dropped in creating an index for each domain based on results of factor analyses and Cronbach's alpha

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## Social Perceptions/Social Appeal

The perceived social desirability of smoking is considered a strong predictor of smoking behavior among youth. A review of the literature on psychosocial factors related to adolescent smoking (Tyas & Pederson, 1998) identified 20 risk factors including age, ethnicity, peer smoking, peer attitudes and norms, family environment, school factors, risk behaviors, stress, depression/distress, attitudes, and health concerns. Adolescents face many challenges that influence the development of their self-identity, and their peers play a major role in that development (Jessor, 1991). Sussman et al. (1995) offered three examples of informational social influences: identification with social images, estimates of prevalence of a behavior, and a specific perspective regarding an evaluative quality of a behavior. Youth who perceive that they will benefit socially by smoking, by appearing independent, more grown-up, tougher, or friendly, are more likely to be or become smokers (Botvin & Epstein, 1999; Chassin, Presson, & Sherman, 1990; Burton, Sussman, Dent, Hansen, Johnson & Flay, 1989).

Respondents' answers to two CSTS questions were evaluated as evidence of how motivated they were by social desirability concerns. These questions were: (1) young people who smoke have more friends, and (2) smoking cigarettes makes young people look cool/fit in. Response options were "definitely yes," "probably yes," "probably not", and "definitely not." Grouping definitely/probably yes into one response option and definitely/probably not into the second option-dichotomized responses. The overall rates of students reporting either “definitely or probably not” that they believed young people who smoke cigarettes have more friends were similar for middle and high school students (77.6 percent and 78.0 percent, respectively). Across gender and ethnicity, fewer students perceived that smoking makes young people look cool than those perceiving that smokers have more friends. The results presented in **Table 3.2** are similar to those found in the 2003-2004 IETP (McCarthy, Dietsch, Hanson & Zheng, 2007).

The only clear pattern in response rates for both social perceptions questions was that more Caucasian students in both middle and high schools responded negatively to the social desirability questions compared to all other ethnic groups. These findings are consistent with those found in 2003-2004.

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**Table 3.2 Perceptions about Consequences of Tobacco Use (Middle School)**

| Measures | Overall | Female | Male | Asian/PI | African American | Hispanic/ Latino(a) | Caucasian |
|---|---|---|---|---|---|---|---|
| Perceived Social Consequences | | | | | | | |
| Young people who smoke cigarettes have more friends[1] | 77.6% [73.6, 81.1] | 80.2% [76.3, 83.6] | 75.1% [70.6, 79.1] | 81.3% [77.2, 84.9] | 73.0% [62.8, 81.3] | 71.8% [67.3, 75.9] | 85.9% [82.5, 88.7] |
| Smoking cigarettes makes young people look cool/ fit in[1] | 86.2% [83.3, 88.6] | 87.8% [85.0, 90.2] | 84.5% [81.2, 87.4] | 89.6% [86.9, 91.7] | 83.4% [76.0, 88.9] | 82.7% [79.1, 85.8] | 90.5% [88.7, 92.1] |
| Perceived Health Consequences | | | | | | | |
| Young people risk harming themselves if they smoke 1-5 cigarettes/day[2] | 86.8% [85.1, 88.3] | 87.9% [86.2, 89.4] | 85.7% [83.7, 87.6] | 89.7% [86.1, 92.4] | 85.3% [80.3, 89.2] | 83.8% [82.1, 85.4] | 90.8% [89.3, 92.2] |
| It's safe to smoke for only a year or two, as long as you quit after that[1] | 86.0% [83.8, 87.9] | 88.2% [85.3, 90.5] | 83.9% [81.5, 86.1] | 87.7% [83.4, 90.9] | 85.4% [76.7, 91.2] | 83.0% [80.4, 85.3] | 90.0% [87.9, 91.7] |
| The smoke from other people's cigarettes is harmful to you[2] | 90.7% [89.2, 92.1] | 91.6% [89.3, 93.3] | 89.9% [88.0, 91.6] | 91.8% [86.2, 95.3] | 87.8% [80.1, 92.8] | 89.0% [87.2, 90.5] | 93.7% [91.7, 95.3] |
| People can get addicted to using tobacco like they can get addicted to using other drugs[2] | 92.8% [91.4, 94.0] | 95.0% [93.4, 96.2] | 90.7% [88.8, 92.3] | 93.7% [88.0, 96.8] | 87.5% [81.6, 91.7] | 90.9% [88.4, 93.0] | 96.4% [94.6, 97.6] |

Note: Brackets contain the 95 percent confidence intervals.
[1]Percent responding “Definitely Not” or “Probably Not”
[2]Percent responding “Definitely Yes” or “Probably Yes”

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**Table 3.2 Perceptions about Consequences of Tobacco Use (High School)**

| Measures | Overall | Female | Male | Asian/PI | African American | Hispanic/ Latino(a) | Caucasian |
|---|---|---|---|---|---|---|---|
| Perceived Social Consequences | | | | | | | |
| Young people who smoke cigarettes have more friends[1] | 78.0% [76.9, 79.1] | 81.1% [79.8, 82.3] | 75.0% [73.8, 76.2] | 75.8% [73.2, 78.1] | 75.6% [72.7, 78.3] | 72.9% [71.2, 74.5] | 85.0% [83.8, 86.1] |
| Smoking cigarettes makes young people look cool/fit in[1] | 87.6% [87.1, 88.1] | 90.8% [90.1, 91.4] | 84.5% [83.7, 85.3] | 85.0% [83.6, 86.4] | 87.1% [85.0, 89.1] | 86.6% [85.6, 87.4] | 89.9% [89.1, 90.6] |
| Perceived Health Consequences | | | | | | | |
| Young people risk harming themselves if they smoke 1-5 cigarettes/day[2] | 91.6% [90.9, 92.2] | 93.1% [92.4, 93.7] | 90.1% [89.2, 90.9] | 92.5% [90.9, 93.9] | 89.1% [86.3, 91.3] | 90.2% [89.3, 91.0] | 93.4% [92.8, 94.0] |
| It's safe to smoke for only a year or two, as long as you quit after that[1] | 86.1% [85.3, 86.9] | 89.4% [88.5, 90.3] | 82.8% [81.7, 83.9] | 86.4% [84.4, 88.1] | 86.9% [84.0, 89.3] | 85.2% [83.8, 86.6] | 87.1% [86.0, 88.1] |
| The smoke from other people's cigarettes is harmful to you[2] | 92.9% [92.3, 93.4] | 94.5% [93.6, 95.3] | 91.3% [90.7, 91.8] | 93.7% [92.4, 94.8] | 92.4% [90.5, 93.9] | 91.4% [90.5, 92.3] | 94.4% [93.9, 94.9] |
| People can get addicted to using tobacco like they can get addicted to using other drugs[2] | 94.5% [94.0, 94.9] | 96.5% [96.0, 96.9] | 92.5% [91.9, 93.2] | 94.8% [93.2, 96.1] | 92.7% [90.9, 94.2] | 94.0% [93.4, 94.5] | 95.4% [94.8, 95.9] |

Note: Brackets contain the 95 percent confidence intervals.
[1]Percent responding “Definitely Not” or “Probably Not”
[2]Percent responding “Definitely Yes” or “Probably Yes”

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## Health Consequences of Tobacco Use

Four questions in the CSTS were designed to assess perceived harmfulness of tobacco use and perceived harmfulness of exposure to secondhand smoke. The results are presented in Table 3.2 for gender and ethnicity for middle and high school students separately. The response options were recoded so that all of the frequencies in the table are consistent and represent positive responses to each question. Overall, most students believe that exposure to cigarette smoke either by smoking or through environmental exposure is harmful. There were no notable changes in 2005-2006 on any of these items. More than 80.0 percent of students across age, gender, and ethnicity perceived tobacco to be harmful across all four questions.

Girls in high school were more likely to report believing in the harmfulness of tobacco compared to boys across all four questions. Girls in middle school were more likely to report believing in the harmfulness of tobacco compared to boys for all questions except for harmfulness of second-hand smoking. When examining these items by ethnic group, the results for both middle and high school youth were similar across groups. The exception was for Caucasian (90.0 percent) middle school students, who were less likely to believe that it is safe to smoke for only a year or two as long as you quit, compared to 87.7 percent of A/PI, 85.4 percent of African Americans and 83.0 percent of Hispanics. In high schools, the rates were quite similar across ethnic groups. The data collected on perceived harm of cigarette smoking supported what others have found (Chassin, Presson, Rose & Sherman, 2001). The majority of students from an early age understand the physical health consequences of tobacco use.

## Social Influences

The CSTS included questions that asked students about their exposure to tobacco use at home, in a car, and with close friends. Three of these questions also assessed the exposure to secondhand smoke (SHS), but were included in this section because they assessed the prevalence of smoking in the youths' environment. **Table 3.3** shows the proportion of students responding either "zero" or "none" to five questions assessing social influences of cigarette smoking by gender, ethnicity and current smoking status. Higher proportions of youth responding "no" or "never" suggest less social influence on smoking behavior. The response options were coded in the negative to allow for comparisons to NYTS-U.S. data (CDC, 2001).

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**Table 3.3 Secondhand Smoke and Social Influence of Smoking (Percent Responding "None" or "0")**

| | Exposure to cigarette smoke[1] | Exposure to cigarette smoke at home[2] | Exposure to cigarette smoke in car[3] | Live with smoker[4] | Close friend smokes[5] |
|---|---|---|---|---|---|
| Middle School | | | | | |
| Overall | 66.9% [64.5, 69.3] | 80.2% [78.2, 82.0] | 79.5% [77.4, 81.3] | 69.2% [66.7, 71.7] | 80.8% [78.1, 83.2] |
| Female | 65.5% [63.0, 68.0] | 80.1% [78.1, 82.0] | 78.8% [76.2, 81.1] | 68.3% [65.2, 71.2] | 82.2% [79.8, 84.3] |
| Male | 68.3% [65.1, 71.4] | 80.3% [77.9, 82.4] | 80.1% [77.4, 82.5] | 70.2% [67.6, 72.6] | 79.4% [75.9, 82.5] |
| Asian/PI | 71.1% [66.3, 75.5] | 84.0% [80.2, 87.1] | 86.1% [82.4, 89.2] | 73.2% [68.4, 77.5] | 90.9% [86.7, 93.9] |
| African American | 59.8% [53.5, 65.8] | 75.7% [68.5, 81.6] | 73.2% [64.9, 80.2] | 66.4% [57.7, 74.1] | 76.2% [68.7, 82.3] |
| Hispanic/Latino(a) | 71.6% [68.9, 74.2] | 82.7% [80.1, 85.0] | 81.1% [78.4, 83.5] | 69.5% [66.4, 72.3] | 76.7% [73.8, 79.4] |
| Caucasian | 60.3% [54.7, 65.5] | 76.6% [71.7, 80.8] | 76.4% [71.9, 80.4] | 68.6% [63.8, 73.0] | 83.8% [80.8, 86.4] |
| Non-current Smoker | 69.0% [66.3, 71.5] | 81.8% [79.6, 83.8] | 81.0% [78.9, 83.0] | 70.7% [68.1, 73.2] | 83.9% [81.5, 86.0] |
| Current Smoker | 37.0% [30.2, 44.4] | 56.4% [49.6, 63.0] | 55.8% [48.9, 62.4] | 48.2% [42.4, 54.1] | 32.2% [24.5, 41.1] |
| High School | | | | | |
| Overall | 53.0% [51.7, 54.3] | 79.2% [78.3, 80.1] | 72.9% [71.9, 73.9] | 68.3% [66.9, 69.6] | 61.2% [59.8, 62.6] |
| Female | 51.7% [50.0, 53.3] | 78.7% [77.6, 79.8] | 72.7% [71.4, 74.1] | 67.8% [66.1, 69.5] | 61.9% [60.2, 63.6] |
| Male | 54.3% [52.8, 55.8] | 79.7% [78.5, 80.9] | 73.1% [71.7, 74.3] | 68.8% [67.3, 70.2] | 60.4% [58.9, 61.9] |
| Asian/PI | 58.0% [55.8, 60.2] | 80.1% [77.5, 82.5] | 76.4% [73.4, 79.2] | 69.1% [65.8, 72.2] | 69.7% [66.6, 72.6] |
| African American | 53.4% [49.3, 57.4] | 75.1% [72.2, 77.8] | 69.0% [65.2, 72.5] | 67.1% [63.5, 70.5] | 69.6% [65.2, 73.7] |
| Hispanic/Latino(a) | 57.7% [56.1, 59.3] | 81.9% [80.9, 82.9] | 75.2% [74.0, 76.3] | 67.5% [65.8, 69.1] | 59.5% [57.8, 61.1] |
| Caucasian | 46.7% [45.0, 48.4] | 77.3% [75.6, 79.0] | 70.5% [68.7, 72.2] | 69.3% [67.3, 71.2] | 58.6% [56.9, 60.4] |
| Non-current Smoker | 58.5% [57.3, 59.7] | 81.9% [80.9, 82.8] | 79.1% [78.1, 80.1] | 70.4% [69.0, 71.8] | 68.7% [67.5, 69.8] |
| Current Smoker | 22.6% [20.3, 25.1] | 64.4% [62.5, 66.2] | 38.6% [36.5, 40.7] | 56.3% [53.9, 58.6] | 19.3% [17.4, 21.3] |

Note: Brackets contain the 95 percent confidence intervals.
[1] Q48. During the past 7 days, on how many days were you in the same room with someone who was smoking cigarettes?
[2] Q49. During the past 7 days, on how many days were you in the same room AT HOME with someone who was smoking cigarettes?
[3] Q50. During the past 7 days, on how many days did you ride in a car with someone who was smoking cigarettes?
[4] Q52. Does anyone who lives with you NOW smoke cigarettes?
[5] Q53. How many of your four closest friends smoke cigarettes?

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The majority of youth responding to these questions were not exposed to tobacco smoke in a room or car, although the rates were substantially lower among high school students compared to middle school students (53.0 percent and 66.9 percent, respectively) for non-exposure to tobacco smoke in a room (not at home). Eighty percent of middle school students (80.2 percent) and 79.2 percent of high school students reported that during the past week they were not in a room at home with someone smoking cigarettes. Slightly fewer high school youth (72.9 percent) than middle school youth (79.5 percent) responded that they had not been in a car with someone who was smoking during the past seven days. There is a two-percentage point increase from the 2003-2004 IETP report among high school students reporting that they had not been exposed to cigarette smoking at home. Interestingly, as in the previous IETP, the proportion of youth responding that they do not live with someone who smokes is about ten percentage points lower than the proportion saying that they were not in a room at home with someone who was smoking. This suggests that while students may be living with others who smoke, the smoking behavior occurs outside or in an area of the home away from youth.

As in the 2003-2004 report, the investigators compared the proportion of current smokers to non-smokers regarding how they responded to questions about SHS exposure and about the effect of social influences on smoking. The percent of smokers reporting no exposure to SHS was about 20 percentage points lower than rates reported by non-smokers. Additionally, non-smokers were two to three times more likely to report not having a close friend who smoked compared to smokers. However, differences between current smokers and non-smokers were less in 2005-2006 than in 2003-2004 for middle school students. This indicates an increasing trend of exposure to SHS and to pro-smoking social influences among middle school students.

Consistently lower proportions of African American middle school youth responded that they had not been exposed SHS in a room, in a room at home, or in a car. The rates of Caucasian high school students reporting exposure to SHS in a room and in a car were lower than high school students from other ethnic groups. African American high school students (69.3 percent) and Asian/PI middle school students (73.2 percent) had the lowest rates of reporting that they lived with someone who smoked. Middle school African American students had a slightly lower rate of reporting that none of their friends smoke when compared to other ethnic groups while in high school, Hispanic and Caucasian students had lower rates by at least ten percentage points.

As might be expected, the proportion of high school students reporting that they do not have any close friends who smoke cigarettes was substantially lower compared to the proportion of middle school students reporting this (61.2 percent vs. 80.8 percent). Although the differences between age groups remained the same, the percent of students across groups reporting that they do not have any close friends who smoke cigarettes was nearly ten percentage points higher than in the 2001-2002 IETP. Also consistent with findings from the 2003-2004 IETP, 83.8 percent of Caucasian students and 90.9 percent of Asian/PI students reported having no friends who smoked in middle school, compared to Hispanic/Latino(a)s (76.7 percent) and African Americans (76.2

percent). Again, in high school this pattern was reversed, with Caucasians and Hispanic/Latino(a)s having the lowest rates of reporting that none of their closest friends smoked (58.6 percent and 59.5 percent, respectively) compared to Asian/PI students (69.7 percent) and African American students (69.6 percent). These numbers are similar to those reported in 2003-2004, and are approximately 10 percentage points higher than reported in 2001-2002.

## Social Perceptions, Social Influences, and Perceived Health Consequences of Tobacco Use: Comparisons with NYTS-U.S.

The NYTS-U.S. (CDC, 2006) also asked questions to assess social perceptions, health consequences, and social influences. To facilitate the comparison of responses to questions from the CSTS with responses to similar questions from NYTS-U.S., only results for students responding "definitely not" or "definitely yes" to questions assessing these constructs were analyzed. **Table 3.4** presents the proportion of youth who answered "definitely not" to these two statements: (1) young people who smoke have more friends and (2) smoking cigarettes makes young people look cool/fit in. The 2004 NYTS dropped the question about smokers having more friends but did ask the question about smoking helping people look cool. Results from the 2005-2006 CSTS confirmed the NYTS findings, showing that high school students were only slightly less likely than middle school students to deny that smoking could make someone look cool and help them to fit in socially (76.9 percent versus 78.9 percent, respectively). When looking at the results by gender, the 2005-2006 CSTS patterns were similar to those of 2004 NYTS-U.S. in showing that a higher proportion of girls than boys responded "definitely not" when asked whether smokers looked cool. Curiously, both the NYTS and the CSTS rates showed no change in the proportion of girls saying "definitely not" to this question between middle school and high school whereas the boys showed a small but significant drop (76.6 percent (middle school) versus 72.6 percent (high school).

**Table 3.5** shows the rates for students responding to the questions assessing the perceived health consequences of smoking. Contrary to previous U.S. – California comparisons, currently, U.S. students are more strongly convinced that exposure to SHS is harmful (70.5 percent in both U.S. middle and high schools versus 63.4 percent (CA middle schools) and 59.9 percent (CA high schools)). Currently, U.S. students more strongly deny that it is safe to smoke for a year or two (73.0 percent in U.S. middle schools; 64.6 percent in U.S. high schools versus 63.4 percent in CA middle schools; 59.9 percent in CA high schools). Questions about students' perception of the harmfulness of smoking and about the relative addictiveness of tobacco use were dropped from the NYTS. Other nationally representative adolescent tobacco use data was recently reported for the Monitoring the Future Survey (MTFS) (Johnston, O'Malley, Bachman, Schulenberg, 2007). The U.S. versus California comparison described above may be unfair inasmuch as the MTFS national data for 8$^{th}$ and 10$^{th}$ graders showed declines since 2004 in perceived risks of smoking. Had the NYTS been conducted in 2005 or 2006, the proportion of U.S. youth who perceived smoking as carrying significant health risk might have been lower than seen in 2004.

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**Table 3.4 Perceived Social Consequences of Smoking**

| | Smokers have more friends[1] ("Definitely Not") | Smokers look cool or fit in[2] ("Definitely Not") |
|---|---|---|
| Middle School | | |
| Overall | 34.8% [32.3, 37.4] | 71.0% [67.5, 74.2] |
| Female | 34.7% [31.1, 38.5] | 74.1% [70.6, 77.3] |
| Male | 34.8% [32.3, 37.5] | 67.9% [64.2, 71.5] |
| Asian/PI | 39.9% [35.2, 44.7] | 75.4% [72.2, 78.4] |
| African American | 32.3% [25.9, 39.3] | 70.5% [60.8, 78.6] |
| Hispanic/Latino(a) | 31.4% [29.1, 33.9] | 66.5% [61.8, 70.9] |
| Caucasian | 38.1% [34.6, 41.7] | 76.0% [73.5, 78.3] |
| Non-current Smoker | 35.7% [33.2, 38.2] | 72.9% [69.4, 76.1] |
| Current Smoker | 21.7% [16.4, 28.0] | 41.8% [35.1, 48.4] |
| High School | | |
| Overall | 30.1% [29.1, 31.1] | 69.1% [68.3, 69.9] |
| Female | 32.9% [31.6, 34.2] | 74.8% [74.0, 75.7] |
| Male | 27.3% [26.1, 28.6] | 63.5% [62.3, 64.7] |
| Asian/PI | 29.9% [27.6, 32.4] | 67.8% [65.8, 69.7] |
| African American | 31.8% [29.3, 34.4] | 73.5% [70.8, 76.0] |
| Hispanic/Latino(a) | 26.1% [24.9, 27.4] | 67.9% [66.8, 69.0] |
| Caucasian | 34.1% [32.6, 35.7] | 70.4% [69.0, 71.8] |
| Non-current Smoker | 31.8% [30.8, 32.9] | 73.0% [72.2, 73.9] |
| Current Smoker | 20.4% [18.6, 22.2] | 47.4% [45.2, 49.6] |

Note: Brackets contain the 95 percent confidence intervals.
[1] Q35. Do you think young people who smoke cigarettes have more friends?
[2] Q36. Do you think smoking cigarettes makes young people look cool or fit in?

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**Table 3.5 Perceived Health Consequences of Smoking**

| | Safe to smoke[1] ("Definitely Not") | Perceived harm of smoking[2] ("Definitely Yes") | Perceived harm of secondhand smoke[3] ("Definitely Yes") | Addicted to tobacco[4] ("Definitely Yes") |
|---|---|---|---|---|
| Middle School | | | | |
| Overall | 63.4% [60.7, 66.0] | 71.6% [68.6, 74.4] | 70.0% [67.0, 72.8] | 68.7% [65.5, 71.7] |
| Female | 66.1% [62.4, 69.7] | 73.6% [70.1, 76.9] | 69.7% [66.3, 73.0] | 70.7% [67.5, 73.7] |
| Male | 60.7% [58.1, 63.3] | 69.6% [66.3, 72.8] | 70.2% [66.8, 73.4] | 66.7% [62.7, 70.5] |
| Asian/PI | 63.8% [57.3, 69.9] | 74.9% [68.1, 80.7] | 71.9% [64.6, 78.1] | 69.1% [56.1, 79.6] |
| African American | 67.2% [59.9, 73.7] | 69.9% [62.2, 76.7] | 73.4% [63.1, 81.7] | 66.8% [59.3, 73.6] |
| Hispanic/Latino(a) | 59.4% [56.4, 62.4] | 66.1% [63.8, 68.4] | 65.9% [62.8, 68.9] | 64.1% [61.0, 67.1] |
| Caucasian | 67.7% [64.4, 70.8] | 79.0% [75.7, 81.9] | 74.6% [70.5, 78.3] | 75.4% [72.1, 78.3] |
| Non-current Smoker | 65.3% [62.8, 67.7] | 73.1% [70.3, 75.8] | 70.9% [68.1, 73.6] | 69.7% [66.5, 72.7] |
| Current Smoker | 34.8% [27.9, 42.3] | 47.3% [38.3, 56.5] | 55.9% [47.3, 64.1] | 52.5% [45.0, 59.9] |
| High School | | | | |
| Overall | 59.9% [58.8, 61.0] | 77.1% [76.0, 78.2] | 73.3% [72.1, 74.5] | 75.4% [74.2, 76.5] |
| Female | 64.9% [53.6, 66.1] | 80.9% [79.8, 81.9] | 76.4% [75.0, 77.7] | 78.8% [77.5, 80.0] |
| Male | 55.0% [53.7, 56.4] | 73.4% [71.9, 74.9] | 70.4% [68.9, 71.8] | 72.0% [70.5, 76.5] |
| Asian/PI | 61.9% [60.1, 63.7] | 80.4% [77.9, 82.7] | 77.3% [75.2, 79.2] | 75.8% [73.2, 78.3] |
| African American | 63.3% [59.9, 66.6] | 77.7% [74.0, 81.1] | 75.1% [72.2, 77.7] | 73.0% [69.4, 76.3] |
| Hispanic/Latino(a) | 58.3% [56.6, 60.0] | 74.2% [72.7, 75.7] | 70.3% [68.4, 72.1] | 71.4% [70.1, 72.8] |
| Caucasian | 60.6% [59.2, 62.1] | 79.3% [78.1, 80.4] | 75.0% [73.8, 76.1] | 80.1% [78.8, 81.4] |
| Non-current Smoker | 64.7% [63.6, 65.8] | 80.5% [79.3, 81.5] | 75.9% [74.6, 77.2] | 77.3% [76.0, 78.5] |
| Current Smoker | 33.5% [31.6, 35.4] | 58.9% [56.7, 61.0] | 59.0% [56.9, 61.0] | 65.0% [62.8, 75.6] |

Note: Brackets contain the 95 percent confidence intervals.
[1] Q38. Do you think it is safe to smoke for only a year or two, as long as you quit after that?
[2] Q37. Do you think young people risk harming themselves if they smoke from 1 to 5 cigarettes per day?
[3] Q51. Do you think the smoke from other people's cigarettes is harmful to you?
[4] Q96. People can get addicted to using tobacco just like they can get addicted to using other drugs such as cocaine or heroin.

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## Attitudes and Beliefs about the Tobacco Industry

As was found in the third wave of the IESS and the 2001-2002 and 2003-2004 IETP surveys, the prevailing attitude among both middle and high school students was strongly negative regarding the tobacco industry. The most negative attitudes were about whether tobacco companies try to get people addicted to tobacco, although only slightly higher for high school students compared to middle school students. These numbers were not substantially different from the 2003-2004 data. **Table 3.6** depicts the results by gender and ethnicity. Asians and Caucasians tended to have slightly more negative attitudes about the tobacco industry than either Hispanic/Latino(a)s or African Americans.

## Media Exposure

**Table 3.7** depicts the responses to anti-smoking media exposure by school type, gender, ethnic group, and smoking status. The patterns of the results are similar to those found in the 2003-2004 IETP. For both middle school and high school students, television was the most recalled media source for ads regarding the dangers of using tobacco (63.8 percent and 69.8 percent, respectively). More students recalled hearing ads on the radio than recalled seeing them on billboards, and high school students recalled radio ads at slightly lower rates than middle school students. Age was not a big factor in students' recollection of being exposed to anti-smoking messages, with 75.6 percent of middle school students and 78.5 percent of high school students reporting *any* exposure to anti-tobacco messages. No differences were shown for smokers vs. nonsmokers reporting exposure to anti-smoking messages for both middle and high school students. Consistently across gender, ethnicity and current smoking status, fewer students in both middle school and high school reported being exposed to anti-smoking messages in the 2005-2006 CSTS than students in the 2003-2004 CSTS.

**Table 3.8** shows the percent of students responding that they had seen specific anti-tobacco ads on television. The response patterns are consistent with the 2003-2004 IETP. Fewer middle school students (56.3 percent) than high school students (74.8 percent) reported seeing at least one of the ads. Nearly twice as many high school students (53.7 percent) as middle school students (27.1 percent) recalled seeing the American Legacy Foundation's 'truth' ads. Only 6.4 percent of middle school students and 5.2 percent of high school students recalled exposure to ads of a fictional tobacco-marketing executive that ended with the question "Do you smell smoke?"

In addition to asking about anti-tobacco media exposure, the 2005-2006 IETP asked questions about exposure to pro-smoking electronic media messages or tobacco industry paraphernalia. **Table 3.9** shows the proportion of youth responding that they had seen actors using tobacco either in the movies or on television, or responding that they had seen tobacco advertisements at community events. Far more students reported seeing actors using tobacco than recalled seeing tobacco advertising at community events across age and gender. The patterns are nearly identical to the findings from the 2003-2004 IETP. More middle school current smokers reported

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exposure to pro-tobacco media than non-smokers by approximately six percentage points. The pattern was similar for high school students with smaller differences. Students were also asked two questions about tobacco company paraphernalia: (1) if they had ever received or purchased it; and, (2) whether or not they ever wore/used it. Although the rates for high school students were lower in general compared to middle school students, most reported not buying or receiving tobacco related items (88.3 percent of middle school students and 85.2 percent of high school students), nor did they wear or use tobacco related items (52.1 percent of middle school students and 37.8 percent of high school students). These numbers are similar to numbers reported in the 2003-2004 IETP. Across age groups, boys were more likely than girls to have either received or used tobacco-related items (**Table 3.10**) ($p<.05$). The percentage of current smokers reporting that they had not received or would not wear tobacco-related items was far smaller than for non-smokers across all age groups.

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**Table 3.6. Attitudes about Tobacco Industry**

| Measures | Overall | Female | Male | Asian/PI | African American | Hispanic/ Latino(a) | Caucasian |
|---|---|---|---|---|---|---|---|
| Middle School | | | | | | | |
| Tobacco companies would stop selling cigarettes if they knew for sure that smoking hurts people[1] | 79.8% [77.2, 82.1] | 80.6% [77.9, 83.1] | 79.0% [75.9, 81.7] | 81.5% [72.3, 88.1] | 76.1% [68.0, 82.7] | 75.3% [72.4, 77.9] | 87.0% [85.3, 88.5] |
| Tobacco companies try to get people addicted to cigarettes[2] | 85.2% [83.4, 86.8] | 84.7% [82.2, 86.9] | 85.7% [83.6, 87.5] | 85.9% [79.1, 90.7] | 86.6% [81.8, 90.3] | 81.9% [79.4, 84.1] | 89.3% [87.4, 90.9] |
| Tobacco companies try to get young people to start smoking by using advertisements that are attractive to young people[2] | 79.8% [77.4, 82.0] | 80.6% [77.7, 83.3] | 79.0% [76.2, 81.5] | 78.5% [70.5, 84.7] | 81.4% [76.0, 85.8] | 76.9% [74.5, 79.1] | 84.0% [81.0, 86.6] |
| High School | | | | | | | |
| Tobacco companies would stop selling cigarettes if they knew for sure that smoking hurts people[1] | 88.9% [88.0, 89.7] | 90.5% [89.5, 91.5] | 87.2% [86.2, 88.2] | 89.1% [87.7, 90.5] | 85.5% [82.7, 87.9] | 85.8% [84.3, 87.2] | 93.0% [92.2, 93.7] |
| Tobacco companies try to get people addicted to cigarettes[2] | 90.2% [89.6, 90.8] | 91.0% [90.2, 91.8] | 89.4% [88.6, 90.1] | 90.6% [89.0, 92.0] | 89.0% [87.0, 90.7] | 88.9% [87.9, 89.8] | 91.8% [91.1, 92.5] |
| Tobacco companies try to get young people to start smoking by using advertisements that are attractive to young people[2] | 88.6% [87.8, 89.3] | 90.5% [89.7, 91.3] | 86.7% [85.7, 87.6] | 90.5% [88.9, 91.9] | 87.3% [84.7, 89.5] | 87.2% [86.0, 88.4] | 89.3% [88.9, 90.9] |

Note: Brackets contain the 95 percent confidence intervals.
[1]Percent responding “Definitely Not” or “Probably Not”
[2]Percent responding “Definitely Yes” or “Probably Yes”

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**Table 3.7 Media Exposure to Anti-smoking Messages (Percent Responding "Sometimes" or "A lot")**

| | Radio[1] | Billboard[2] | TV[3] | Any exposures to anti-smoking messages |
|---|---|---|---|---|
| Middle School | | | | |
| Overall | 47.9% [45.1, 50.7] | 43.6% [39.9, 47.4] | 63.8% [61.6, 66.0] | 75.6% [73.4, 77.6] |
| Female | 45.5% [42.2, 49.0] | 40.5% [36.6, 44.6] | 64.7% [62.4, 67.1] | 75.6% [73.3, 77.7] |
| Male | 50.4% [47.5, 53.3] | 46.6% [42.5, 50.8] | 63.0% [59.9, 65.9] | 75.6% [72.8, 78.2] |
| Asian/PI | 47.7% [41.6, 53.9] | 44.0% [36.3, 51.9] | 58.0% [53.9, 62.0] | 70.4% [65.6, 74.8] |
| American | 51.9% [43.0, 60.6] | 47.4% [40.1, 54.9] | 72.1% [65.2, 78.1] | 81.5% [76.4, 85.7] |
| Hispanic/Latino(a) | 51.4% [48.8, 54.0] | 49.0% [45.5, 52.5] | 67.0% [64.5, 69.4] | 79.1% [76.5, 81.5] |
| Caucasian | 40.8% [37.5, 44.2] | 34.7% [29.9, 39.8] | 59.1% [55.4, 62.7] | 70.7% [67.6, 73.6] |
| Non-current Smoker | 47.6% [44.7, 50.4] | 43.5% [39.7, 47.4] | 64.1% [61.7, 66.4] | 75.7% [73.4, 77.8] |
| Current Smoker | 51.8% [44.4, 59.1] | 45.0% [38.2, 52.0] | 59.4% [53.1, 65.5] | 75.3% [68.4, 81.1] |
| High School | | | | |
| Overall | 45.6% [44.5, 46.8] | 43.4% [42.1, 44.7] | 69.8% [68.8, 70.7] | 78.5% [77.6, 79.3] |
| Female | 44.7% [43.3, 46.1] | 41.3% [39.8, 42.9] | 70.3% [69.1, 71.5] | 78.8% [77.8, 79.8] |
| Male | 46.7% [45.3, 48.0] | 45.5% [44.1, 46.9] | 69.2% [68.0, 70.4] | 78.1% [77.1, 79.1] |
| Asian/PI | 47.3% [45.1, 49.5] | 43.7% [41.5, 46.0] | 69.9% [67.8, 71.9] | 78.7% [76.8, 80.4] |
| American | 50.2% [47.7, 52.8] | 46.0% [43.1, 48.8] | 71.2% [68.8, 73.5] | 82.0% [79.8, 84.0] |
| Hispanic/Latino(a) | 47.3% [45.5, 49.2] | 46.2% [44.3, 48.2] | 69.9% [68.6, 71.2] | 79.3% [78.2, 80.4] |
| Caucasian | 42.2% [40.9, 43.6] | 39.8% [38.4, 41.2] | 69.6% [68.3, 71.0] | 76.9% [75.7, 78.0] |
| Non-current Smoker | 45.3% [44.1, 46.4] | 42.7% [41.3, 44.1] | 70.3% [69.3, 71.4] | 78.6% [77.7, 79.5] |
| Current Smoker | 47.8% [45.4, 50.2] | 47.4% [45.3, 49.5] | 66.5% [64.7, 68.3] | 77.5% [75.6, 79.2] |

Note: Brackets contain the 95 percent confidence intervals.
[1] Q67. When you listen to the radio, how often do you hear advertisements about NOT smoking or NOT chewing tobacco?
[2] Q68. When you see billboards (outdoor signs), how often do you see advertisements about NOT smoking or about NOT chewing tobacco?
[3] Q69. When you watch TV, how often do you see stories or advertisements about the dangers of smoking tobacco or chewing tobacco?

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**Table 3.8 Recall Viewing Specific Television Ads**

| | Overall | Female | Male | Asian/PI | African American | Hispanic/ Latino(a) | Caucasian |
|---|---|---|---|---|---|---|---|
| Middle School | | | | | | | |
| Smoke swirls on screen | 19.1% [17.0, 21.5] | 18.5% [15.9, 21.4] | 19.7% [17.0, 22.7] | 15.7% [12.5, 19.6] | 26.1% [19.9, 33.4] | 21.9% [20.1, 23.9] | 14.4% [11.6, 17.6] |
| Talk about light cigarettes | 15.3% [13.2, 17.8] | 13.2% [10.9, 15.9] | 17.4% [14.8, 20.4] | 13.6% [10.1, 18.0] | 22.1% [15.6, 30.3] | 14.0% [11.7, 16.6] | 16.3% [13.3, 19.8] |
| Talk about becoming a friend of ethnic communities | 10.3% [9.2, 11.6] | 10.6% [9.2, 12.2] | 10.0% [8.7, 11.6] | 9.4% [7.0, 12.6] | 12.7% [8.2, 19.2] | 9.7% [8.4, 11.3] | 11.1% [9.6, 12.8] |
| Inside of a body and damage | 21.6% [19.9, 23.5] | 24.3% [21.7, 27.3] | 19.1% [17.0, 21.4] | 22.4% [19.4, 25.7] | 19.7% [13.7, 27.4] | 22.2% [19.3, 25.4] | 21.3% [19.1, 23.6] |
| End with word "truth" | 27.1% [24.1, 30.2] | 27.6% [24.5, 30.9] | 26.6% [23.3, 30.0] | 24.1% [19.5, 29.4] | 31.0% [22.9, 40.6] | 27.9% [24.0, 32.2] | 26.5% [23.2, 30.1] |
| "Do you smell smoke?" | 6.4% [5.7, 7.3] | 7.7% [6.5, 9.0] | 5.2% [4.3, 6.3] | 7.7% [6.2, 9.5] | 6.7% [4.9, 9.2] | 6.0% [5.0, 7.2] | 6.6% [5.4, 8.0] |
| Any of the above | 56.3% [53.6, 58.9] | 56.1% [53.5, 58.7] | 56.4% [52.8, 60.0] | 50.6% [46.8, 54.4] | 66.5% [61.3, 71.4] | 58.5% [55.3, 61.6] | 52.6% [48.3, 56.8] |
| High School | | | | | | | |
| Smoke swirls on screen | 19.2% [18.6, 19.9] | 18.8% [17.9, 19.8] | 19.6% [18.6, 20.7] | 19.4% [18.1, 20.9] | 18.9% [17.0, 20.9] | 21.3% [20.2, 22.5] | 16.8% [16.1, 17.6] |
| Talk about light cigarettes | 25.2% [24.2, 26.3] | 24.1% [22.9, 25.2] | 26.4% [25.2, 27.7] | 22.4% [20.3, 24.7] | 22.7% [20.3, 25.3] | 21.3% [19.9, 22.8] | 30.9% [29.6, 32.3] |
| Talk about becoming a friend of ethnic communities | 16.4% [15.8, 17.1] | 14.7% [13.9, 15.5] | 18.1% [17.2, 19.0] | 14.3% [12.9, 15.8] | 18.0% [15.9, 20.4] | 14.6% [13.6, 15.8] | 18.9% [17.9, 19.9] |
| Inside of a body and damage | 16.5% [15.9, 17.1] | 16.9% [15.9, 17.9] | 16.2% [15.4, 17.0] | 17.9% [16.8, 19.1] | 14.9% [12.9, 17.1] | 17.0% [15.8, 18.1] | 16.0% [15.0, 17.0] |
| End with word "truth" | 53.7% [52.1, 55.2] | 55.6% [53.9, 57.2] | 51.8% [50.0, 53.6] | 52.8% [50.5, 55.2] | 52.3% [48.4, 56.3] | 49.7% [47.4, 52.0] | 58.8% [57.0, 60.5] |
| "Do you smell smoke?" | 5.2% [4.8, 5.6] | 4.8% [4.3, 5.3] | 5.6% [5.1, 6.2] | 5.1% [4.5, 5.8] | 5.6% [4.3, 7.2] | 4.6% [4.0, 5.3] | 5.7% [5.1, 6.3] |
| Any of the above | 74.8% [73.8, 75.9] | 74.5% [73.4, 75.5] | 75.2% [73.9, 76.5] | 73.4% [71.6, 75.2] | 74.0% [71.1, 76.7] | 75.2% [73.6, 76.7] | 75.2% [73.6, 76.8] |

Note: Brackets contain the 95 percent confidence intervals.

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**Table 3.9 Exposure to Pro-tobacco Media**

| | See actors using tobacco[1] | See tobacco ads in sport/community events[2] |
|---|---|---|
| Middle School | | |
| Overall | 76.0% | 47.0% |
| | [73.7, 78.2] | [43.8, 50.1] |
| Female | 73.3% | 46.7% |
| | [70.6, 75.9] | [42.6, 50.9] |
| Male | 78.7% | 47.2% |
| | [75.8, 81.3] | [43.9, 50.5] |
| Asian/PI | 70.3% | 41.1% |
| | [64.6, 75.4] | [33.1, 49.7] |
| African American | 73.4% | 42.3% |
| | [66.8, 79.1] | [36.3, 48.4] |
| Hispanic/Latino(a) | 78.3% | 50.3% |
| | [75.7, 80.8] | [45.9, 54.7] |
| Caucasian | 75.6% | 45.6% |
| | [71.6, 79.1] | [42.0, 49.3] |
| Non-current Smoker | 75.6% | 46.2% |
| | [73.3, 77.9] | [42.9, 49.5] |
| Current Smoker | 81.9% | 57.9% |
| | [75.1, 87.2] | [51.1, 64.4] |
| High School | | |
| Overall | 86.0% | 52.1% |
| | [85.3, 86.6] | [51.0, 53.3] |
| Female | 85.8% | 51.7% |
| | [85.0, 86.6] | [50.1, 53.3] |
| Male | 86.2% | 52.5% |
| | [85.2, 87.1] | [51.2, 53.8] |
| Asian/PI | 85.5% | 49.1% |
| | [83.8, 87.0] | [46.4, 51.9] |
| African American | 84.8% | 50.6% |
| | [82.2, 87.2] | [47.2, 54.0] |
| Hispanic/Latino(a) | 86.4% | 52.9% |
| | [85.1, 87.6] | [51.1, 54.7] |
| Caucasian | 85.9% | 52.6% |
| | [85.0, 86.8] | [51.1, 54.2] |
| Non-current Smoker | 85.5% | 50.9% |
| | [84.7, 86.2] | [49.8, 52.1] |
| Current Smoker | 88.7% | 58.3% |
| | [87.3, 90.0] | [56.0, 60.6] |

Note: Brackets contain the 95 percent confidence intervals.
[1] Q45. When you watch TV or go to movies, how often do you see actors using tobacco? (Percent Responding "Most of the time" or "Some of the time")
[2] Q70. When you go to sports events, fairs or community events, how often do you see advertisements for cigarettes or chewing tobacco? (Percent Responding "A lot" or "Sometimes")

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**Table 3.10 Tobacco Related Items**

| | Bought or received tobacco related items last year[1] ("No") | Would wear or use tobacco related items[2] ("Definitely Not") |
|---|---|---|
| Middle School | | |
| Overall | 88.3% [86.9, 89.6] | 52.1% [49.6, 54.5] |
| Female | 90.9% [89.2, 92.4] | 56.9% [53.4, 60.3] |
| Male | 85.8% [83.7, 87.6] | 47.4% [44.2, 50.6] |
| Asian/PI | 92.0% [89.5, 94.0] | 62.6% [57.2, 67.7] |
| African American | 84.5% [78.6, 89.0] | 54.1% [47.6, 60.4] |
| Hispanic/Latino(a) | 87.5% [85.5, 89.3] | 47.6% [45.2, 50.0] |
| Caucasian | 88.8% [86.7, 90.6] | 53.6% [50.0, 57.1] |
| Non-current Smoker | 89.9% [88.5, 91.2] | 53.8% [51.3, 56.3] |
| Current Smoker | 62.2% [56.6, 67.5] | 22.9% [18.0, 28.7] |
| High School | | |
| Overall | 85.2% [84.5, 85.9] | 37.8% [36.7, 38.9] |
| Female | 87.2% [86.3, 88.0] | 42.2% [40.7, 43.6] |
| Male | 83.3% [82.4, 84.2] | 33.6% [32.3, 34.9] |
| Asian/PI | 88.5% [86.9, 89.8] | 45.7% [43.6, 47.7] |
| African American | 86.1% [83.8, 88.1] | 40.1% [37.3, 42.9] |
| Hispanic/Latino(a) | 84.1% [83.1, 85.0] | 35.8% [34.3, 37.3] |
| Caucasian | 85.3% [84.2, 86.4] | 36.8% [35.2, 38.4] |
| Non-current Smoker | 88.3% [87.6, 88.9] | 40.4% [39.2, 41.6] |
| Current Smoker | 68.2% [66.6, 69.9] | 23.6% [21.9, 25.5] |

Note: Brackets contain the 95 percent confidence intervals.
[1] Q46. During the past 12 months, did you buy or receive anything that has a tobacco company name or picture (logo) on it?
[2] Q47. Would you ever use or wear something that has a tobacco company name or picture (logo) on it such as a lighter, T-shirt, hat or sunglasses?

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## Normative Expectations

Accuracy of perceived norms about peer tobacco use is one factor in predicting the onset and development of tobacco use (Hansen & Graham, 1991). Perceived norms were assessed by asking respondents to mark “True”, “False”, or “Don’t know/not sure” in response to the statement, “Most people do NOT smoke cigarettes.” The percent of students responding “true” to this question (55.6 percent of students in grade six compared to 35.6 percent of students in grade 12) was slightly lower for both age groups, compared to the 2003-2004 data. However, fewer high school students believe that most young people do not smoke. This is not consistent with other findings that as students get older their perceptions about peer use of tobacco become more accurate. If perceived prevalence of use by peers were predictive, then commensurately lower rates of use for older students would be expected, but this was not the case. These results are found in **Table 3.11**.

## Exposure to Tobacco Lessons

Through grade nine, between 70.9 percent and 78.4 percent of students recalled receiving information about tobacco use at school. These rates dropped from 70.9 percent in grade eight to 65.1 percent in grade ten. These rates continued to decline in high school to 51.5 percent in grade 11 and to 47.5 percent in grade 12. These results are found in **Table 3.12**. The data shows that most of the tobacco lessons were taught in specific classes, such as science, health, and physical education. The disparity in recollection of tobacco lessons may reflect the courses and grades in which information about tobacco use was a focus. The decline seen in rates of students recalling exposure to information about tobacco use in high school was not unexpected. These numbers reflect the entire population of students participating in the survey, including high schools that do not receive tobacco use prevention education funding. As suggested in the 2003-2004 IETP report, more research on the validity and reliability of questions asking about exposure to school TUPE lessons needs to be conducted to provide a deeper understanding of how students interpret such questions.

Of those recalling that they had been exposed to tobacco use prevention education lessons, 93.5 percent of students in grade six perceived tobacco use prevention information received at school to be helpful in making decisions about tobacco use. Across grade levels, the overall proportion of students perceiving the information as helpful was 74.6 percent. The perceptions shown in **Table 3.13** declined monotonically with age, with only 65.0 percent of students in grade 12 reporting that tobacco use prevention information was helpful. When asked if the information received at school helped them to feel that it is okay to say “no” to friends who offer cigarettes, 92.0 percent of students in grade six reported that the information was helpful. This perception fell to 69.0 percent in grade 12.

Students' recalled exposure to tobacco use prevention information provided at school appears to be related to their perceived self-efficacy for refusing peer offers of tobacco. Students recalling that they had been exposed to tobacco lessons in school during the

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last year were 1.66 times more likely to report that what they learned in school helped them to feel that it is okay to say “no” to cigarette offers from friends (95% CI: [1.45, 1.90]).

**Table 3.11 Belief that Majority of Peers Do Not Use Tobacco**

| Grade | Overall | Asian/PI | African American | Hispanic/ Latino(a) | Caucasian |
|---|---|---|---|---|---|
| 6th | 55.6% | 71.4% | 44.4% | 53.4% | 57.1% |
| | [50.5, 60.6] | [60.1, 80.6] | [32.2, 57.4] | [43.3, 63.2] | [50.4, 63.5] |
| 7th | 50.0% | 59.2% | 39.9% | 45.0% | 57.2% |
| | [44.7, 55.2] | [45.8, 71.4] | [26.4, 55.1] | [39.6, 50.6] | [47.6, 66.2] |
| 8th | 41.8% | 50.9% | 39.8% | 36.9% | 44.7% |
| | [37.3, 46.5] | [41.5, 60.2] | [27.7, 53.3] | [30.3, 43.9] | [36.2, 53.5] |
| 9th | 37.8% | 48.5% | 39.7% | 31.2% | 41.6% |
| | [35.7, 40.0] | [43.0, 54.1] | [33.2, 46.7] | [28.5, 34.1] | [38.8, 44.5] |
| 10th | 34.0% | 37.5% | 32.6% | 29.6% | 38.0% |
| | [32.1, 36.0] | [31.2, 44.3] | [26.3, 39.6] | [26.9, 32.4] | [34.9, 41.1] |
| 11th | 34.4% | 37.3% | 29.4% | 28.4% | 40.1% |
| | [32.3, 36.5] | [32.3, 42.7] | [24.1, 35.4] | [25.8, 31.1] | [36.5, 43.7] |
| 12th | 35.6% | 36.7% | 32.8% | 28.1% | 42.4% |
| | [33.5, 37.8] | [32.7, 40.8] | [26.7, 39.5] | [24.7, 31.7] | [39.5, 45.3] |
| Total | 37.0% | 41.9% | 35.2% | 31.3% | 41.6% |
| | [35.7, 38.3] | [38.8, 45.1] | [31.9, 38.6] | [29.9, 32.9] | [39.7, 43.6] |

Note: Brackets contain the 95 percent confidence intervals.

**Table 3.12 Received Information About Tobacco at School**

| Grade | Overall | Asian/PI | African American | Hispanic/ Latino(a) | Caucasian |
|---|---|---|---|---|---|
| 6th | 78.4% | 82.3% | 72.7% | 80.6% | 75.4% |
| | [73.2, 82.8] | [71.9 89.4] | [51.8, 86.8] | [72.9, 86.5] | [67.9, 81.6] |
| 7th | 75.9% | 78.1% | 81.0% | 76.5% | 73.2% |
| | [69.1, 81.6] | [71.8, 83.4] | [68.8, 89.2] | [66.9, 84.0] | [63.6, 81.0] |
| 8th | 70.9% | 67.2% | 72.4% | 72.1% | 70.1% |
| | [66.0, 75.3] | [61.1, 72.8] | [62.4, 80.6] | [65.4, 78.0] | [62.8, 76.5] |
| 9th | 75.4% | 77.2% | 74.7% | 76.7% | 73.5% |
| | [72.8, 77.9] | [72.9, 81.1] | [68.1, 80.3] | [73.2, 79.8] | [69.7, 76.9] |
| 10th | 65.1% | 65.6% | 65.5% | 65.7% | 64.5% |
| | [62.8, 67.3] | [59.4, 71.3] | [59.9, 70.7] | [62.6, 68.8] | [61.5, 67.3] |
| 11th | 51.5% | 54.7% | 51.9% | 54.5% | 46.5% |
| | [49.2, 53.7] | [49.5, 59.8] | [47.6, 56.1] | [51.2, 57.8] | [42.8, 50.1] |
| 12th | 47.5% | 46.0% | 50.3% | 54.2% | 41.4% |
| | [45.0, 50.1] | [41.1, 51.0] | [44.2, 56.5] | [50.8, 57.5] | [37.9, 45.0] |
| Total | 63.0% | 63.0% | 64.2% | 66.3% | 59.0% |
| | [61.6, 64.4] | [60.4, 65.5] | [61.1, 67.2] | [64.4, 68.2] | [56.9, 61.0] |

Note: Brackets contain the 95 percent confidence intervals.

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**Table 3.13 Tobacco Information Helpful**

| Grade | Overall | Asian/PI | African American | Hispanic/ Latino(a) | Caucasian |
|---|---|---|---|---|---|
| 6th | 93.5% | 93.2% | 96.1% | 92.0% | 95.3% |
| | [91.3, 95.2] | [83.4, 97.4] | [78.3, 99.4] | [87.8, 94.9] | [92.3, 97.2] |
| 7th | 90.1% | 98.0% | 78.9% | 90.4% | 89.8% |
| | [87.8, 92.1] | [94.7, 99.3] | [64.8, 88.4] | [86.4, 93.3] | [87.0, 92.0] |
| 8th | 82.0% | 83.3% | 81.4% | 83.2% | 79.7% |
| | [79.0, 84.7] | [76.8, 88.2] | [70.9, 88.8] | [78.8, 86.9] | [74.9, 83.8] |
| 9th | 78.5% | 84.6% | 78.0% | 81.6% | 72.1% |
| | [76.6, 80.3] | [80.7, 87.7] | [70.5, 84.0] | [79.0, 83.9] | [68.9, 75.1] |
| 10th | 71.3% | 79.1% | 74.8% | 75.0% | 63.4% |
| | [69.0, 73.5] | [73.5, 83.9] | [66.9, 81.3] | [72.1, 77.6] | [60.6, 66.2] |
| 11th | 66.6% | 72.2% | 72.2% | 72.9% | 56.5% |
| | [64.3, 68.8] | [66.7, 77.1] | [64.0, 79.1] | [69.5, 76.0] | [53.0, 59.9] |
| 12th | 65.0% | 73.2% | 70.8% | 74.7% | 49.2% |
| | [61.4, 68.3] | [69.5, 76.6] | [63.2, 77.4] | [71.0, 78.0] | [44.4, 53.9] |
| Total | 74.6% | 80.4% | 76.5% | 79.1% | 66.4% |
| | [73.3, 75.9] | [78.1, 82.4] | [72.7, 79.9] | [77.7, 80.4] | [64.3, 68.4] |

Note: Brackets contain the 95 percent confidence intervals.

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## Awareness of Other Tobacco Activities

**Table 3.14** illustrates reported awareness of other tobacco cessation activities at school. Smokers and Caucasians were less likely than nonsmokers and students of other racial/ethnic groups to be aware of the availability of peer counselors to help student smokers to quit their habit. In general students across age groups, gender, and ethnicity were more aware of peer trainings to help others stop smoking than were aware of actual cessation classes at their school. Fifty-two percent (52.2 percent) of middle school students and 54.2 percent of high school students responded “yes” to the question about peer trainings to help others stop smoking. This is a substantial increase from the 2001-2002 findings, which were under 10 percent and is about the same as seen in the 2003-2004 CSTS.

Thirty-four percent (33.9 percent) of high school students compared to 10.7 percent of middle school students knew about cessation classes. Fewer middle school students were aware of cessation classes at their schools compared to the 2003-2004 findings (10.7 percent vs. 16.6 percent). Looking at current smokers and non-smokers across grades, fewer non-smokers were aware of peer trainings than smokers. Moreover, high school students who reported being current smokers were more aware of peer trainings than their non-smoking peers. This was not true for middle school smokers. Current smokers and non-smokers showed no differences in reporting cessation classes across grades. Chapter 7 discusses how student awareness of school-based cessation resources corresponds to teachers’ and administrators’ perceptions about school-based resources for tobacco use prevention. Approximately three quarters of respondents

reported that the information they received in school during the past year was helpful in making a decision about not using tobacco (Table 3.13). Twenty one percent of middle school students who reported being current smokers and 29 percent of high school current smokers indicated that the tobacco use prevention information helped them think about quitting their use of tobacco.

**Table 3.14 Awareness of Tobacco Quitting Programs at School**

| | Trained Peer Students[1] (% "Yes") | Cessation Classes for Students[2] (% "Yes") |
|---|---|---|
| Middle School | | |
| Overall | 52.2% [50.0, 54.4] | 10.7% [7.3, 15.2] |
| Female | 52.7% [49.7, 55.6] | 8.5% [4.8, 14.8] |
| Male | 51.7% [48.8, 54.6] | 12.5% [9.4, 16.5] |
| Asian/PI | 55.5% [50.0, 60.8] | 8.5% [4.5, 15.5] |
| African American | 53.6% [45.7, 61.4] | 16.2% [10.1, 25.1] |
| Hispanic/Latino(a) | 53.8% [50.8, 56.8] | 11.6% [7.9, 16.7] |
| Caucasian | 48.0% [45.4, 50.6] | 8.7% [4.3, 16.9] |
| Non-current Smoker | 52.8% [50.5, 55.2] | 10.2% [6.9, 14.8] |
| Current Smoker | 44.9% [37.0, 52.9] | 16.6% [9.0, 28.7] |
| High School | | |
| Overall | 54.2% [52.6, 55.7] | 33.9% [28.5, 39.8] |
| Female | 54.4% [52.5, 56.4] | 32.4% [26.2, 39.3] |
| Male | 53.9% [52.3, 55.5] | 35.3% [30.3, 40.6] |
| Asian/PI | 58.6% [56.3, 60.9] | 29.0% [23.4, 35.3] |
| African American | 56.3% [53.1, 59.5] | 33.4% [25.2, 42.7] |
| Hispanic/Latino(a) | 55.5% [53.2, 57.7] | 29.5% [23.4, 36.3] |
| Caucasian | 50.7% [48.7, 52.8] | 40.2% [32.3, 48.5] |
| Non-current Smoker | 55.2% [53.6, 56.7] | 34.4% [28.8, 40.5] |
| Current Smoker | 48.5% [46.1, 50.9] | 31.4% [26.0, 37.4] |

Note: Brackets contain the 95 percent confidence intervals.
[1] Q65. At your school, can students your age be trained to help students who want to quit using tobacco?
[2] Q66. Does your school have any special groups or classes for students who want to quit using tobacco?

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**Table 3.15** shows the percentage of students who recalled tobacco lesson topics, by middle and high school status, gender, and ethnicity. Overall, fewer high school students recalled various topics. The results are similar across gender and no consistent patterns emerged for ethnic groups. As can be seen in **Figure 3.1** the frequency of students recalling exposure to selected tobacco use prevention topics decreased with age for all topics. The physical harm associated with tobacco use continues to be one of the topics most frequently cited by students as being taught in the tobacco use prevention education lessons. Almost as frequently, students mentioned having a guest speaker talk to their class about not using tobacco, suggesting that teachers are going beyond the traditional didactic strategy of lecturing on the harmful consequences of tobacco use.

**Figure 3.1 Frequency of Students Recalling Having Been Exposed to Selected Topics**

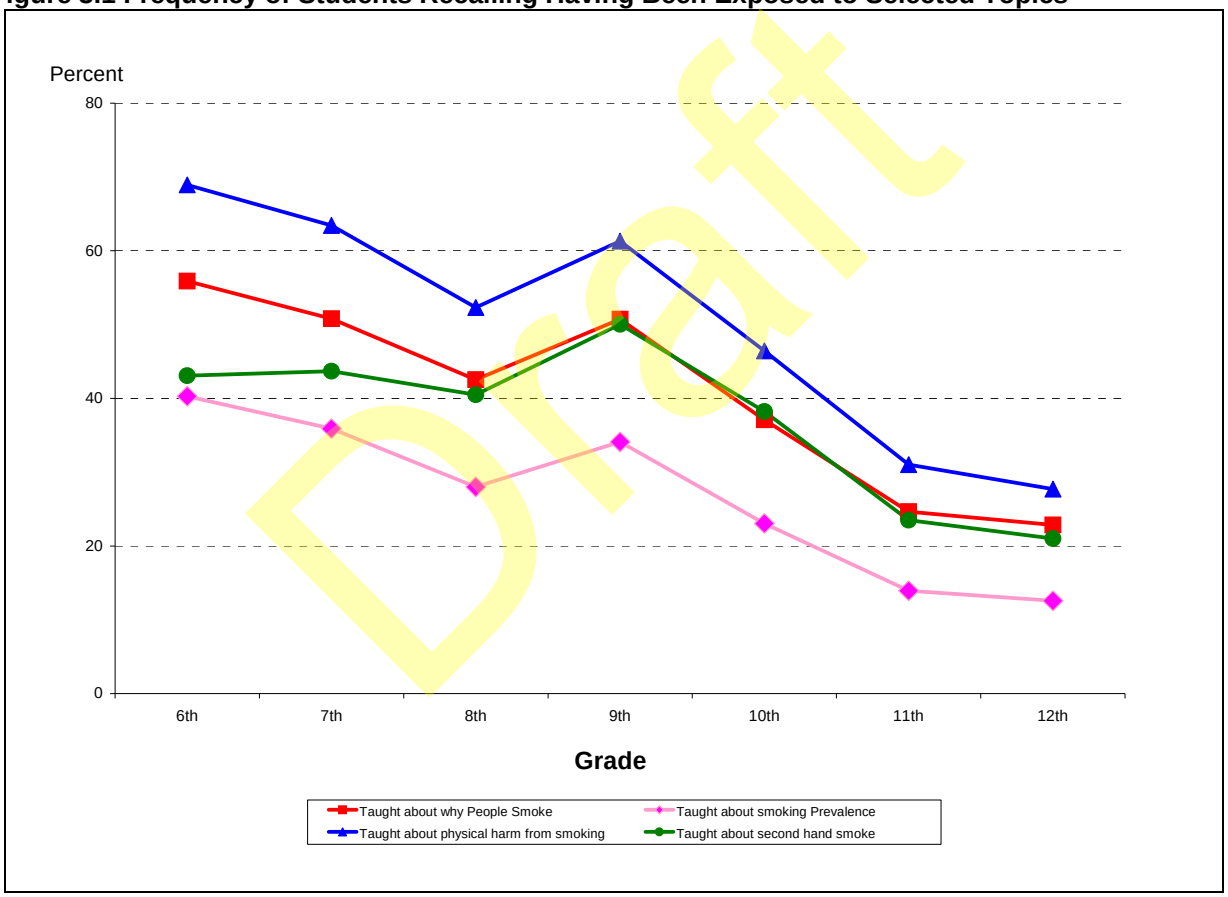

**Table 3.15 Tobacco Lesson Content**

| Grade | Teacher/Guest Speaker[1] | Assembly / Event[2] | Why People Smoke[3] | Smoking Prevalence[4] | Physical Harm[5] | Secondhand Smoke[6] |
|---|---|---|---|---|---|---|
| Middle School | | | | | | |
| Overall | 55.0% [50.7, 59.1] | 54.2% [47.7, 60.5] | 48.8% [44.6, 53.0] | 33.9% [29.8, 38.3] | 60.4% [56.2, 64.5] | 42.3% [38.3, 46.5] |
| Female | 56.5% [52.2, 60.7] | 54.8% [47.4, 62.0] | 49.9% [45.2, 54.6] | 34.2% [29.4, 39.3] | 62.4% [57.9, 66.7] | 42.4% [38.1, 46.9] |
| Male | 53.4% [49.0, 57.8] | 53.6% [47.4, 59.6] | 47.7% [43.4, 52.1] | 33.6% [29.6, 37.9] | 58.5% [53.8, 63.0] | 42.2% [37.8, 46.7] |
| Asian/PI | 61.4% [56.2, 66.4] | 54.6% [45.0, 63.8] | 51.2% [46.1, 56.2] | 32.2% [27.9, 36.8] | 61.1% [57.5, 64.5] | 42.3% [38.5, 46.1] |
| African American | 48.8% [36.2, 61.6] | 55.0% [44.0, 65.6] | 50.5% [39.6, 61.3] | 30.8% [24.3, 38.2] | 58.6% [47.1, 69.1] | 42.1% [32.6, 52.3] |
| Hispanic/Latino(a) | 54.8% [49.7, 59.8] | 55.5% [48.1, 62.6] | 50.6% [45.0, 56.1] | 37.2% [31.2, 43.6] | 61.2% [55.6, 66.4] | 42.7% [37.3, 48.3] |
| Caucasian | 54.4% [49.2, 59.5] | 52.0% [43.8, 60.2] | 45.1% [40.9, 49.4] | 30.6% [26.6, 34.9] | 59.5% [54.0, 64.8] | 41.4% [35.9, 47.1] |
| High School | | | | | | |
| Overall | 36.3% [34.6, 38.1] | 25.8% [24.1, 27.7] | 35.0% [33.3, 36.6] | 21.8% [20.4, 23.2] | 43.0% [41.3, 44.7] | 34.4% [32.8, 36.1] |
| Female | 37.4% [35.4, 39.4] | 25.8% [23.8, 27.9] | 36.0% [34.2, 37.9] | 21.3% [19.7, 22.9] | 44.2% [42.3, 46.0] | 35.2% [33.3, 37.1] |
| Male | 35.3% [33.5, 37.1] | 25.9% [24.0, 27.9] | 33.9% [32.1, 35.7] | 22.3% [20.7, 24.0] | 41.8% [40.0, 43.7] | 33.7% [31.8, 35.5] |
| Asian/PI | 39.4% [36.8, 42.1] | 26.6% [24.1, 29.3] | 37.1% [35.0, 39.3] | 24.0% [22.1, 26.0] | 45.7% [43.5, 47.9] | 37.6% [35.3, 40.1] |
| African American | 35.6% [31.7, 39.7] | 27.0% [23.4, 31.0] | 33.9% [29.5, 38.4] | 23.5% [20.6, 26.6] | 41.6% [38.1, 45.2] | 34.8% [31.0, 38.9] |
| Hispanic/Latino(a) | 39.1% [36.5, 41.7] | 27.2% [25.0, 29.7] | 37.2% [34.7, 39.8] | 24.2% [22.2, 26.4] | 45.8% [43.0, 48.6] | 36.5% [34.2, 38.9] |
| Caucasian | 32.4% [30.2, 34.6] | 23.7% [21.1, 26.5] | 32.0% [30.0, 34.2] | 18.1% [16.5, 19.7] | 39.3% [37.3, 41.4] | 31.0% [29.0, 32.9] |

Note: Brackets contain the 95 percent confidence intervals.
[1] Q56. During the last year (12 months), did your teacher or a guest speaker (for example, a nurse or someone from your community) talk to your class about NOT using tobacco?
[2] Q57. During the last year (12 months), did you go to a school assembly or event about the harmful effects of tobacco use?
[3] Q58. During the last year (12 months), did any of your teachers talk about the reasons why people your age smoke or do NOT smoke?
[4] Q59. During the last year (12 months), did any of your teachers talk about how many people your age do NOT smoke?
[5] Q60. During the last year (12 months), did any of your teachers talk about the effects of cigarette smoking on your body?
[6] Q61. During the last year (12 months), did any of your teachers talk about the effects of second-hand smoke?

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## Knowledge of harmfulness of tobacco use

Examination of **Table 3.16** shows, predictably, that knowledge of specific harms associated with tobacco use varied by school type and by smoking status. High school students were more knowledgeable than middle school students about the connection between asthma exacerbation and tobacco use, between perinatal problems and tobacco use, and between lung cancer and exposure to secondhand smoke. Curiously, Asian/PI middle school students were less likely to acknowledge the link between asthma exacerbation and tobacco use than Latino or African American middle school students, perhaps because asthma is typically less commonly found in Asian/PI families than in Latino and African American families (Akinbami & Schoendorf, 2002).

Current smokers, whether in middle school or in high school, were predictably (Segerstrom et al., 1993) less likely to acknowledge connections between exacerbation of asthma, perinatal problems and tobacco use, or lung cancer risk and exposure to secondhand smoke compared to their non-smoking peers. The one idea that middle school smokers were more knowledgeable about compared to their non-smoking peers, was that adolescents were not too young to get addicted to tobacco (47.4 percent versus 36.3 percent, respectively). Gender differences were inconsistent, with girls more likely to acknowledge the harmfulness of tobacco use to perinatal outcomes but less likely than boys to acknowledge the risk of lung cancer associated with exposure to secondhand smoke.

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**Table 3.16 Knowledge about Deleterious Consequences of Tobacco Use**

| Grade | Smoking and Asthma[1] | Tobacco Addiction[2] | Smoking and Pregnancy[3] | SHS and Lung Cancer[4] |
|---|---|---|---|---|
| Middle School | | | | |
| Overall | 64.3% [61.3, 67.1] | 36.9% [33.5, 40.5] | 89.7% [85.6, 92.7] | 62.7% [59.5, 65.8] |
| Female | 64.4% [61.2, 67.5] | 34.6% [31.5, 37.8] | 92.1% [88.0, 94.9] | 59.2% [55.0, 63.3] |
| Male | 64.1% [60.4, 67.7] | 39.1% [34.3, 44.1] | 87.4% [83.2, 90.7] | 66.0% [62.7, 69.2] |
| Asian/PI | 57.9% [51.0, 64.5] | 32.0% [25.7, 39.1] | 91.8% [85.3, 95.6] | 63.2% [56.6, 69.3] |
| African American | 67.4% [58.8, 75.0] | 45.1% [38.9, 51.4] | 88.1% [81.7, 92.4] | 64.4% [54.4, 73.2] |
| Hispanic/Latino(a) | 66.0% [62.5, 69.4] | 32.7% [29.3, 36.3] | 90.4% [88.3, 92.2] | 58.4% [55.3, 61.4] |
| Caucasian | 63.6% [58.1, 68.8] | 42.7% [37.3, 48.3] | 88.8% [80.3, 93.9] | 68.4% [64.3, 72.2] |
| Non-current Smoker | 64.9% [61.6, 68.0] | 36.3% [32.7, 40.0] | 90.2% [86.1, 93.2] | 63.2% [60.0, 66.3] |
| Current Smoker | 55.8% [46.5, 64.7] | 47.4% [40.3, 54.6] | 81.7% [72.5, 88.3] | 54.6% [46.1, 62.9] |
| High School | | | | |
| Overall | 75.3% [73.7, 76.8] | 57.5% [55.3, 59.7] | 90.7% [88.4, 92.5] | 73.8% [72.5, 75.1] |
| Female | 78.5% [76.7, 80.1] | 56.5% [54.1, 58.8] | 92.7% [90.4, 94.5] | 72.9% [71.2, 74.5] |
| Male | 72.1% [70.4, 73.8] | 58.5% [56.0, 60.9] | 88.6% [86.3, 90.5] | 74.7% [73.4, 76.0] |
| Asian/PI | 74.3% [71.4, 77.0] | 51.5% [47.1, 55.9] | 90.6% [86.5, 93.6] | 78.7% [76.4, 80.8] |
| African American | 77.1% [73.2, 80.6] | 58.8% [55.1, 62.4] | 88.3% [85.4, 90.7] | 72.2% [69.2, 74.9] |
| Hispanic/Latino(a) | 73.8% [71.9, 75.6] | 51.2% [48.7, 53.7] | 89.9% [87.3, 92.4] | 68.3% [66.4, 70.0] |
| Caucasian | 76.8% [74.8, 78.7] | 66.1% [64.1, 68.1] | 92.0% [89.4, 94.0] | 78.5% [77.5, 79.5] |
| Non-current Smoker | 76.2% [74.6, 77.7] | 57.5% [55.4, 59.7] | 91.6% [89.4, 93.4] | 74.7% [73.3, 76.1] |
| Current Smoker | 70.4% [67.7, 72.9] | 57.4% [53.8, 60.8] | 85.3% [82.1, 87.9] | 68.9% [66.5, 71.1] |

Notes: Brackets contain the 95 percent confidence intervals.
[1] Q91. Smoking cigarettes makes asthma worse.
[2] Q92. Teenagers are too young to get addicted to tobacco.
[3] Q93. A pregnant woman can harm her unborn baby if she smokes cigarettes.
[4] Q95. Breathing smoke from someone else's cigarette can cause lung cancer.

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## Current Smokers: Perceptions, Exposure to Secondhand Smoke, and the Media

To look more closely at how social influences are related to current smokers, the items depicted in Table 3.1 were summarized using confirmatory factor analysis. Cronbach's alphas for the reliability of the items comprising each of the eight resulting factors (domains) ranged from 0.40 to 0.83. For each domain the responses were divided into high, medium, and low categories by dividing the distribution of respondents roughly equally into three groups. **Table 3.17** shows the percent of current smokers falling into the low, medium, and high categories. In general, results supported what was expected.

Across age groups, smoking was inversely related to two social consequence domains: (1) negative social perceptions (smokers do not have more friends and smoking does not make young people look cool), and (2) perceived negative health consequences. More current smokers fell into the low category (do not perceive that smokers have more friends or that smoking makes young people look cool) compared to the high category (10.7 percent of middle school smokers and 23.4 percent of high school smokers). The pattern was the same for the perceived negative health consequences domain.

Higher percentages of middle and high school current smokers (9.2 percent and 26.0 percent, respectively) were grouped into the low category (do not believe that smoking is harmful) compared to middle school and high school students in the high category (2.1 percent and 6.6 percent respectively). A higher percentage of smokers fell into the high category for exposure to SHS (15.0 percent and 34.3 percent) and for exposure to pro-tobacco media (13.7 percent and 24.4 percent) for both middle and high school students, respectively. For high school students, 19.4 percent of smokers fell into the low category for anti-tobacco industry beliefs compared to 12.6 percent in the high category, indicating that current smokers were less likely to hold anti-tobacco industry beliefs. There were no clear response patterns for smokers with respect to either of the domains assessing anti-tobacco media exposure or recall of anti-tobacco TV messages.

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**Table 3.17 Beliefs about Tobacco Use, Secondhand Smoke, and Media Exposure among Current Smokers**

| | Students Reporting Current Smoking | |
|---|---|---|
| | **Middle School** | **High School** |
| Anti-smoking Social Perceptions | | |
| Low | 10.7% [9.3, 12.2] | 23.4% [21.9, 25.0] |
| Medium | 3.3% [2.4, 4.6] | 10.5% [9.4, 11.7] |
| High | 3.2% [2.2, 4.6] | 9.3% [8.3, 10.3] |
| Perceived Negative Health Consequences from Smoking | | |
| Low | 9.2% [7.9, 10.7] | 26.0% [24.3, 27.9] |
| Medium | 4.6% [3.3, 6.5] | 15.0% [13.8, 16.2] |
| High | 2.1% [1.3, 3.4] | 6.6% [5.9, 7.4] |
| Exposure to Secondhand Smoke | | |
| Low | 3.0% [2.3, 3.8] | 5.4% [4.9, 6.0] |
| Medium | 6.9% [5.2, 9.0] | 15.3% [14.0, 16.6] |
| High | 15.0% [11.8, 18.9] | 34.3% [32.1, 36.7] |
| Anti-tobacco Industry Beliefs | | |
| Low | 6.7% [5.4, 8.2] | 19.4% [18.0, 20.9] |
| Medium | 4.7% [3.3, 6.6] | 13.5% [12.2, 14.9] |
| High | 6.2% [4.5, 8.5] | 12.6% [11.6, 13.8] |
| Anti-tobacco Media Exposure | | |
| Low | 6.0% [4.8, 7.6] | 15.1% [14.1, 16.2] |
| Medium | 4.8% [3.5, 6.4] | 13.9% [12.9, 15.0] |
| High | 7.5% [6.0, 9.3] | 16.6% [15.0, 18.4] |
| Pro-tobacco Medial Exposure | | |
| Low | 3.3% [2.7, 4.0] | 10.9% [10.0, 12.0] |
| Medium | 5.2% [4.0, 6.8] | 13.2% [12.1, 14.3] |
| High | 13.7% [11.1, 17.0] | 24.4% [22.7, 26.1] |
| Recall of Anti-tobacco TV Messages | | |
| Low | 4.9% [3.8, 6.3] | 14.2% [13.2, 15.2] |
| Medium | 8.5% [6.9, 10.4] | 17.7% [16.4, 19.1] |
| High | 5.3% [3.1, 8.8] | 13.8% [12.4, 15.3] |

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## Conclusion

The findings reported in this chapter are consistent with the findings in the 2003-2004 CSTS. The vast majority of California's young people continue to report negative perceptions about tobacco use. Girls were usually but not always more likely to report believing in the harmfulness of tobacco compared to boys. A majority of youth were not exposed to SHS. Older students reported less accurate estimates of the prevalence of peer tobacco use compared to younger students, contrary to the corresponding finding in the previous IETP. This is also inconsistent with the view that normative expectations predict tobacco use among youth. New analyses looking at social influences across smoking status found differences in the expected direction.

The perception reported by students that tobacco use prevention messages focus more on the physical consequences of tobacco use than on social resistance skills or use of peer leaders to help students quit smoking may represent lost opportunities for prevention and may help to explain students' decreasing satisfaction with the content of the tobacco use prevention messages with increasing grade.

The overall pattern of results shows that mean California student cognitions remained generally consistent with low rates of tobacco use, particularly in the lower grades. There are two emerging trends that are cause for concern, however. One is a trend now for California youth to report weaker beliefs than students nationally about the harmfulness of secondhand smoke and about the harmfulness of smoking for only one or two years. The second is a trend for California boys to hold progressively weaker anti-tobacco beliefs as they advance from middle school to high school despite the fact that California girls' anti-tobacco attitudes remain about the same as they advance from middle school to high school. New gender-specific messages targeting boys may help prevent this drop.

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# CHAPTER 4

## TEACHER-LEVEL DESCRIPTIVE DATA

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# CHAPTER 4: TEACHER LEVEL DESCRIPTIVE DATA

**CHAPTER HIGHLIGHTS**

- **Most California teachers (95%) do not currently smoke and are supportive of tobacco-free school policies.**
- **Roughly a third of all teachers, and two-thirds of science, health, and physical education teachers, reported providing some kind of tobacco use prevention education (TUPE) in the last year; these figures are lower than those in previous years.**
- **Some teachers are unclear about their role in tobacco use prevention education and the extent of expectations for such education. Less than a fifth of all teachers think the *district* expects them to provide TUPE lessons, but over half of science, health, and physical education teachers think the *school* administration expects them to do so. Most teachers who have provided some TUPE lessons report experiencing moderate to high support for doing so.**
- **Although many teachers have mainstreamed tobacco use prevention in their teaching, they continue to rely primarily on conventional teaching methods such as lecturing rather than on more interactive methods, such as students role-playing the act of refusing a cigarette. They also continue to focus disproportionately on the physical consequences of tobacco use, even though other topics are likely to have more impact.**
- **Larger proportions of TUPE-eligible teachers report receiving in-service training compared to previous years, and only trained teachers report confidence in their preparedness to teach TUPE lessons. However, many teachers are *not* using or are not aware of specific published model tobacco-use-prevention curricular programs.**
- **Teachers report lack of time as the chief barrier to providing TUPE. Another reported barrier is that TUPE is not a mandated part of their standard curriculum.**

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## Introduction

This chapter reviews descriptive data obtained from the teachers of students who participated in the student survey. The information was obtained using an anonymous questionnaire. It queried the teachers about their experience with tobacco use, their motivation to participate in tobacco use prevention education, and some detailed information about the specific content and strategies that characterize their personal involvement in tobacco use prevention education.

## Lifetime and current rates of smoking reported by teachers

California teachers, as a group, report low rates of current smoking. Nine hundred and one teachers responded to the survey (93 percent response rate) in the high school and middle school classes in which the surveys were conducted. Of these, 867 reported their smoking status. Slightly more of the respondents were men (52 percent) than women (48 percent). Men predominated in the high schools (55 percent) whereas women predominated in the middle schools (68.2 percent). The teachers reported an average tenure at their school of 8.7 years, ranging from brand new to over 40 years. Eighty-five percent of the teachers identified their schools as high schools; 15 percent identified their schools as middle schools or junior high schools.

Only 55 of these teachers reported smoking any cigarettes in the last month (6.4 percent). By definition, “current smoking” includes persons who reported smoking at least 100 cigarettes in their lives and who reported at the time of survey that they currently smoked every day or on some days in the last month. Using this definition, the prevalence rate of current smoking among teachers was 5.4 percent. Eleven teachers who had not smoked at least 100 cigarettes in their lifetime now reported having smoked "some days" in the last month. The good news is that 74.1 percent of teachers who had reported having smoked at least 100 cigarettes in their lifetime now reported not smoking on even a single day in the last month. This represents a higher abstinence rate among ever smokers than has been previously reported for U.S. adults, where the abstinence prevalence rate among ever smokers is now around 50 percent (CDC, 2005).

## Teacher support for school-wide and school staff no-tobacco use policy

Teachers expressed high support for their school’s school-wide no-tobacco use policy. Eighty-nine percent (89.5%) expressed the strongest support possible. Not surprisingly, support for their school’s school-wide policy dipped for the few teachers who smoked, but 68.2% of the “everyday” smokers and 75.4% of the “occasional” smokers (smoking some days each month) still expressed the strongest support possible. The pattern of results was similar for teachers’ support of their school staff-specific no-tobacco use policy.

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## Teacher reports of past experience teaching TUPE lessons, of administration support for teaching TUPE lessons

Among all teachers surveyed, 25.5 percent [95% CI: 21.6 – 29.9] reported having taught some kind of tobacco use prevention lesson during the last school year. Sampled middle school teachers were approximately four times more likely than sampled high school teachers to report having taught some kind of tobacco use prevention lesson either during the last year or during the current year (OR = 0.24; 95% CI: 0.15 – 0.39). Physical education and health teachers in high school and physical education, health, and science teachers in middle school are those particularly expected to teach tobacco lessons. Among these teachers, 43.8 percent [95% CI: 32.0 – 56.4] reported having taught a tobacco use prevention lesson during the last school year, which is less than the 63.6 percent observed for the same question in the 2003-2004 Independent Evaluation of TUPE programs (IETP) and also less than the 72.8 percent observed for the same question during the 2001-2002 IETP.

A potential influence on teachers' inclination to teach tobacco use prevention was the degree to which they said that school and district administrators expected teachers to teach tobacco use prevention lessons. The percentage of health education, physical education and science teachers reporting that **district administrators** expected them to teach tobacco use prevention lessons was 60.1 percent. An additional 14.0 percent reported not knowing whether the district administrators expected them to teach tobacco use prevention lessons. Health education, physical education and science teachers who reported that district administrators expected them to teach tobacco use prevention lessons were more than twenty times more likely to report having taught a tobacco use prevention lesson in the previous year than teachers who reported that district administrators did not have this expectation (OR = 21.2, 95% CI: 11.5 – 39.2). Teachers who reported that district administrators expected them to teach tobacco use prevention lessons were nearly twice as likely (OR = 2.0, 95% CI: 1.2 – 3.2) to report having infused their curriculum with tobacco use prevention lessons than other teachers.
The percentage of health education, physical education and science teachers reporting that **school site** administrators expected them to include tobacco use prevention lessons in their subjects was 53.6 percent. However, 29 percent did not report an expectation to include the lessons. Teachers who reported that their school administrator expected them to teach tobacco use prevention lessons were over twenty times more likely to report having taught a tobacco use prevention lesson in the previous year than teachers who reported that their school site administrator did not have this expectation (OR = 21.8; 95% CI: 11.7 – 40.7). Teachers who reported that their school site administrator expected them to teach tobacco use prevention lessons were five-fold more likely (OR = 5.3; 95% CI: 3.2 – 8.9) to report having infused their curriculum with tobacco use prevention lessons than teachers who reported no such expectation.

The teachers who had taught tobacco use prevention lessons in the current year or in the last school year responded to a four-point Likert-scale for questions about the level

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of administrator support for tobacco use prevention education that they had experienced. These perceived administrator support questions were separate from the questions about what the teachers thought the administrators expected teachers to teach. Choices for the support questions ranged from "a great deal [of support]" to "not at all." In general, the teachers reported a moderately high level of administrator support. Sixty percent of TUPE-experienced teachers reported getting either moderate or a great deal of support for tobacco use prevention education from district administrators. Sixty-five percent reported receiving moderate or a great deal of support from school site administrators. As discussed in Chapter 1, district administrators were district-level staff responsible for TUPE, and school site administrators were either the principal, assistant principal, or vice principal at the school.

### Infusion of regular curriculum with TUPE messages

Over two thirds of the teachers (69.1 percent) reported that they infused their respective subjects with tobacco use prevention lessons. Middle school and high school teachers were about equally likely (63.9 percent and 70.9 percent respectively) to report infusing their curriculum with tobacco control lessons. These rates are higher than national rates recently reported by NCI (Crossett et al., cited in NCI, 2001) and higher than what they were in California in the 2001-2002 and 2003-2004 IETP surveys. Nationally, 55 percent of middle school teachers and 47 percent of high school teachers reported infusing their subject matter with tobacco control lessons.

Students' lack of interest in tobacco use prevention education could adversely affect teachers' inclination to infuse their subject matter with tobacco control lessons. Fortunately, most teachers (91.9 percent) reported that their students were "moderately" or "very" interested in the tobacco use prevention lessons that they had taught in the last year.

### Curriculum Content

Several questions were designed to gather information about the tobacco use prevention curriculum used by the 216 teachers who taught TUPE lessons during the previous (2005-2006) school year. **Table 4.1** shows (in rank-order of popularity) the topics that were included in their lessons.

The most popular topic for teachers to discuss in their tobacco use prevention lessons was: "Effects of tobacco on physical health." The popularity of this topic stretches back to the earliest days of the first concerted attempts to get young people not to use tobacco (Thompson, 1978). Its continuing popularity seems inconsistent with the paucity of scientific evidence for its utility in dissuading young people from beginning the tobacco use habit (USDHHS, 1994). By contrast, teaching refusal skills and correcting high estimates of peer smoking rates have been found to be consistently helpful in reducing youth smoking (USDHHS, 1994), and yet are discussed only 56 percent as often as the effects of tobacco on physical health.

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The second most popular topic was the influence of tobacco advertising and marketing. This is probably a topic that teachers enjoy in part because exposure to advertising is so ubiquitous in the U.S. and yet its influence on behavior is seldom discussed in traditional courses. "Effects of secondhand smoke" is another popular topic. Teachers may like discussing secondhand smoke in class in part because most teachers are not smokers themselves and so they can relate more to the documented health effects on non-smokers of exposure to secondhand tobacco smoke. The twelve enumerated topics were apparently fairly exhaustive, because only 16.5 percent of respondents felt compelled to write in additional topics. Twenty-seven percent of the write-in topics concerned smokeless tobacco use; another 14.6 percent of the write-in topics concerned the costs of tobacco use and the economics of the tobacco industry. The remaining write-in topics included a disparate laundry list, including: the ethics of marketing a product that kills, the addiction process, the history of tobacco, and current events involving tobacco control.

**Table 4.1 Major Topics Discussed in Tobacco Use Prevention Lessons, Rank-ordered by Popularity**

| Curriculum Topic | Prevalence |
|---|---|
| Effects of tobacco on physical health | 79.2%<br>[73.6 – 83.8] |
| Influence of tobacco advertising and marketing | 62.1%<br>[54.8 – 68.9] |
| Reasons why young people use tobacco | 61.1%<br>[52.6 – 69.1] |
| Effects of secondhand smoke | 60.8%<br>[52.7 – 68.3] |
| Social influences that promote tobacco use | 59.4%<br>[52.2 – 66.3] |
| Social consequences of tobacco use | 55.6%<br>[47.9 – 62.9] |
| Statistics on prevalence of youth tobacco use | 49.6%<br>[41.0 – 58.3] |
| Behavioral skills for resisting tobacco offers | 44.5%<br>[37.1 – 52.0] |
| General personal and social skills (including goal-setting, problem-solving, communication skills, assertiveness) | 38.6%<br>[30.6 – 47.4] |
| How to quit smoking and rates of relapse | 25.9%<br>[11.4 – 22.0] |
| Cigar use: prevalence and dangers | 20.8%<br>[14.5– 28.9] |
| Discussion about other topics, esp. smokeless tobacco use | 16.5%<br>[19.2 – 33.8] |
| | |

Note: Brackets contain the 95 percent confidence intervals

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## Modes of TUPE instruction

Teachers who taught tobacco use prevention lessons in the previous school year (2004-2005) were asked if they used the following modalities: classroom discussion, small group activities, lectures, role-playing, and student worksheets. The most popular modality was classroom discussion, with over 96 percent (96.9 percent) of teachers reporting at least some use of this modality. Lectures were the next most popular modality, with more than 89 percent (89.6 percent) saying that they used lectures at least some of the time in conducting their tobacco use prevention lessons.

Surprisingly, relatively little use was made of role-playing, which is virtually essential in teaching refusal skills and social skills (e.g., Dusenbury et al., 1995). Fewer than half (41.3 percent) said that they used role-playing when they taught tobacco use prevention. Small group activities (55.1%) and student worksheets (57.2 percent) were just slightly more popular than role-playing. As Dusenbury et al. (1995) noted, one of the consistent features of drug abuse prevention programs determined empirically to be effective was that their educational strategies were interactive, such as the use of role-playing and small-group activities. Related to this is the consensus that peer-to-peer anti-smoking messages were more effective than teacher-to-student anti-smoking messages. Role-playing and small group activities lend themselves to peer-to-peer interactions more so than didactic teacher lectures or teacher-led classroom discussions. The significant differences observed here in teachers' choice of educational modality between classroom discussions and didactic lectures compared to role-playing and small group exercises are therefore surprising. Future in-service training might be improved by focusing more on training teachers regarding the use of role-playing and small group exercise to help teachers feel more comfortable with the use of these educational strategies.

## In-service Training on Tobacco Use Prevention Education

Among health, physical education, and middle school science teachers – teachers who are often given the responsibility to teach tobacco lessons – over fifty-two percent (52.5 percent) have received some in-service training on tobacco use prevention education in the last five years, which is an increase over the one third who had received some in-service TUPE training in 2001-2002 and the 44.7 percent who received some in-service TUPE training in 2003-2004. Eighteen percent (18.2 percent) reported receiving more than one full day of in-service training, 18.9 percent received exactly one full day, and 62.9 percent received less than one day of in-service training. The proportion of trainees who have had at least one full day of training has declined relative to two years ago, even though a greater proportion of eligible teachers now report having at least some TUPE training.

Generally it was only those teachers who had received tobacco use education prevention training who reported feeling well prepared to conduct TUPE lessons. Of health, physical education, and middle school science teachers who reported no in-service training, only 6.3 percent felt they were prepared "a great deal." By contrast, a

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much higher proportion of teachers who reported having some in-service training believed they were prepared "a great deal" (46.4 percent). Those who reported having some in-service training were more likely to report feeling prepared compared to teachers who reported having received no training (OR = 1.33; 95% CI: 1.00 – 1.91).

## Barriers to Teaching Tobacco Use Prevention

All respondents were asked to review a list of potential barriers to teaching tobacco use prevention lessons and to mark those that they thought applied to them. They were also asked to describe additional barriers, as appropriate. **Table 4.2** shows the frequency with which TUPE-experienced teachers endorsed each of nine potential barriers. Approximately one fifth (19.9 percent) of these teachers reported that they encountered none of the barriers queried. The most often cited barrier to teaching tobacco use prevention lessons was lack of time (53.2 percent). The second most common barrier cited was that tobacco use prevention was not seen to be a part of the teacher's curriculum (36.5 percent). One fifth of the respondents cited the fact that TUPE was not assessed as an important student outcome and that there was a lack of adequate instructional materials as additional barriers. Most of the other choices were mentioned by less than 15% of the respondents. These additional choices concerned the priority that the district or the school placed on tobacco use prevention, either explicitly or by inadequate provision of training.

**Table 4.2 List of Major Barriers, Rank-ordered by Frequency of Mention**

| Major Barriers | Prevalence |
|---|---|
| Lack of time | 53.2% [44.0 – 62.1] |
| Prevention is not part of my curriculum | 36.5% [27.4 – 46.6] |
| Prevention is not part of outcomes assessed | 19.9% [14.5 – 26.6] |
| None of these barriers | 19.9% [13.6 – 28.8] |
| Lack of adequate instructional materials | 17.3% [12.2 – 23.9] |
| Prevention is not mandated in my district | 12.6% [7.9 – 19.6] |
| I haven't received adequate training | 11.7% [7.1 – 18.7] |
| District has not made it a high priority | 8.6% [5.3 – 13.8] |
| Other barriers | 5.5% [2.7 – 11.0] |
| School has not made it a high priority | 4.8% [2.8 – 8.2] |
| | |

Note: Brackets contain the 95 percent confidence intervals

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## Resources for Tobacco Control

The effectiveness of tobacco control efforts by teachers is affected by the community, and by school tobacco control resources available. In general, only a minority of teachers agreed that key school tobacco control resources were available. For instance, only 22.3 percent answered "yes," to the question: "Have you ever received information from your school about where school staff could go if they wanted help in quitting their tobacco use?" There were some differences in perceived resources depending on whether the school was a middle school or high school. For example, no middle school teachers confirmed that their school offered an on-campus tobacco use cessation program for students. By contrast, twenty-two percent (21.9 percent) of high school teachers asserted that their school provided an on-campus tobacco use cessation program for students. More than half of teachers reported that there was no noticeable change in the availability of TUPE resources compared to the year before (51.1 percent). However, the majority of respondents agreed (55.3 percent) that general campus resources, such as school counselors and other special programs that could help students with personal problems such as a drug abuse problem were available, even if tobacco-specific resources were not.

The TUPE-experienced teachers reported a number of episodic TUPE relevant resources (see **Table 4.3**). The most frequently cited activities tended to be nationally-recognized activities adopted by many schools across the country, such as Red Ribbon Week (64.6 percent), the ACS adult tobacco use cessation program, the "Great American SmokeOut" (49.6 percent) and the ACS teen education TUPE program, "Teens Kick Ash" (13.2 percent). Other TUPE activities involved student artwork and essays relevant to tobacco use education (42.3 percent and 27.5 percent, respectively). More conventional health education efforts, such as school assemblies (14.1 percent), the offering of smoking cessation programs (21.9 percent) and TUPE health education partnerships with local health departments (7.4 percent) were also evident. A miscellaneous category with write-in examples was completed by 7.3 percent of the TUPE-experienced teachers. Their examples included several that involved use of the school's public address system to convey anti-tobacco messages and several that incorporated TUPE activities in standard academic activities, such as in-class student presentations and school science fairs.

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| Table 4.3 List of Episodic School TUPE Resources, Rank-ordered by Frequency of Mention | |
|---|---|
| Episodic TUPE Resources | Prevalence |
| Celebrated drug-free week / red ribbon week | 64.6% [57.1 – 71.5] |
| ACS program: "Great American SmokeOut" | 49.6% [40.6 – 58.5] |
| Displayed anti-tobacco posters (made by students) | 42.3% [34.1 – 50.9] |
| Hold a poster, essay (etc.) contest about tobacco use | 27.5% [18.5 – 38.8] |
| Offered smoking cessation programs/classes | 21.9% [16.2 – 28.9] |
| Tobacco Use Prevention Assembly | 14.1% [9.2 – 21.0] |
| ACS program; "Teens Kick Ash" | 13.2% [7.4 – 22.6] |
| School sponsored an anti-tobacco club | 12.3% [7.6 – 19.2] |
| None of the above activities | 8.9% [5.0 – 15.4] |
| | |

Note: Brackets contain the 95 percent confidence intervals

It is difficult for teachers to involve parents meaningfully in anti-tobacco efforts even though they are recognized as important influences on their children's health-related lifestyle choices. With both parents/guardians typically working, they often report not having the time to be involved in their child's school activities. Teachers are also wary of the possibility of encountering a parent who does not appreciate schools teaching their children that their parents' tobacco use habit may be a health hazard to their children as well as to themselves (Moolchan & Mermelstein, 2002).

The teachers' most popular strategies for involving parents are described in **Table 4.4** and are rank-ordered by the percent of teachers who have used each one. Even though only 30% of teachers used it, the teachers' most popular strategy for engaging parents in tobacco use prevention activities was to involve them in homework. Various information-sharing strategies were also endorsed, depending on the strategy, by approximately a fifth of the teachers. Less than a tenth of the teachers reported using strategies requiring more active involvement of parents, such as asking selected parent experts to speak professionally on the dangers of tobacco use (4.8 percent) or asking them to serve as judges of poster artwork or of written student essays focusing on anti-tobacco messages (8.4 percent). An abundance of scientific literature speaks to the importance of parental influences on student tobacco use (e.g., Resnick et al., 1997; Distefan et al., 1998; Cohen et al., 1997; Turner et al., 2004) but the practical barriers to involving parents limits their presence in school-based tobacco use education efforts.

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| Table 4.4 List of Strategies Used by Teachers to Involve Parents in TUPE Activities | |
|---|---|
| Strategies to Involve Parents in TUPE Activities | Prevalence |
| Involved parents in TUPE-related homework | 30.4% [23.5 – 38.3] |
| Distributed handbook to parents with tobacco-free policy in it | 21.9% [16.6 – 28.3] |
| Distribute newsletters or educational materials to parents | 18.9% [13.4 – 25.9] |
| TUPE displays / discussions at Open House/ Health Fair or other parent meetings | 18.4% [13.1 – 25.4] |
| Provided information to parents about smoking cessation | 13.6% [9.3 – 19.6] |
| Other strategies – please specify | 8.8% [8.8 – 8.8] |
| Involved parents in school related TUPE activities (e.g., as judges of poster/essay contests) | 8.4% [4.9 – 14.0] |
| Invited parents to be guest speakers on tobacco issues | 4.8% [2.5 – 8.9] |
| Held meetings with parents of student smokers | 3.3% [1.6 – 6.6] |
| | |

Note: Brackets contain the 95 percent confidence intervals

## Most Important Risk Factors for Youth Smoking

TUPE-experienced respondents were asked to rate the magnitude of nine specific risk factors suggested by scientific literature to contribute to youth smoking. Respondents were also invited to write in their own suggestions. The specific question was "To what extent do you think that the following risk factors influence students to use tobacco?" The response options consisted of a 6-interval Likert scale: "0=Not at all," "1=Very small extent," "2=Small extent," "3=Modest extent," "4=Great extent, and "5=Very great extent."

**Table 4.5** shows mean ratings for nine specific risk factors in rank order of mean magnitude. TUPE-experienced teachers rated peer influence as the greatest single influence on youth smoking. Family members' use of tobacco was the second most important influence. The next three influences, all of which can be characterized as features of the adolescent environment, were rated as having roughly comparable impact; pro-smoking messages, availability of tobacco, and the use of other illicit drugs. Teachers agree that knowledge obtained via tobacco use education and student academic performance are two protective factors against adolescent tobacco use. Teachers also acknowledge some influence of socioeconomic and cultural factors on youth smoking. Only fifteen of the respondents wrote in any additional suggested influences. Some of the suggestions overlapped with the rated items but two additional themes were provided; genetics and personality. Some teachers believe that addictive personalities and genetic susceptibility to addiction or rebelliousness may also contribute to youth smoking. Even those who suggested alternative influences did not rate their importance as high relative to the influences previously rated. The most

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noteworthy observation was that these teachers appear to rate the influence of pro-smoking messages in the media as a more significant risk factor compared to lack of exposure to tobacco use education.

| **Table 4.5 Major Risk Factors for Youth Tobacco Use** | |
|---|---|
| Major risk factors for youth tobacco use | Mean of magnitude of influence |
| Friends' use of tobacco | 4.36<br>[4.24 – 4.49] |
| Family members' use of tobacco | 4.15<br>[4.02 – 4.28] |
| Pro-smoking media messages | 3.64<br>[3.44 – 3.84] |
| Availability of tobacco | 3.53<br>[3.36 – 3.70] |
| Use of other drugs | 3.62<br>[3.47 – 3.78] |
| Insufficient tobacco use prevention education | 2.75<br>[2.51 – 2.98] |
| Performance in school | 2.55<br>[2.36 – 2.74] |
| Ethnic/cultural background | 2.35<br>[2.14 – 2.55] |
| Family income | 2.36<br>[2.12 – 2.59] |
| | |

Note: Brackets contain 95 percent confidence intervals
Note: Response options were – "0=Not at all," "1=Very small extent," "2=Small extent," "3=Modest extent," "4=Great extent", and "5=Very great extent."

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## Topics for in-service training

For eligible teachers who have not received any TUPE in-service training, professional development or training that covered the basic tenets of tobacco use education as recommended by the CDC (CDC, 1994) or by the U.S. Department of Education appears to improve teacher preparedness to teach TUPE lessons. Teachers who have received TUPE in-service training in the past were asked, “What topics should be now highlighted?” The topics to be highlighted should take advantage of advances in the field and should remedy discrepancies between what teachers currently know and do and what the field suggests they should know about effective tobacco use education.

A review of teachers’ use of published TUPE curricula generally shows that many are **not** relying on the best-accepted published curricula for their TUPE lessons, or, for that matter, on ANY published curricula. The questionnaire included 26 specific TUPE-relevant programs, a 27$^{th}$ option labeled "Other – please specify" and a 28$^{th}$ option labeled "None of these." Thirty-nine percent (39.1 percent) of these TUPE-experienced teachers chose "none of these" as their only answer. The next most popular choice was "Other-please specify," which garnered 17 percent recognition (17.4 percent).

Fifty-two respondents wrote in alternatives, with several volunteering the fact that they had developed their own idiosyncratic program, based on current news, magazine clippings and news stories and various anti-tobacco videos. Ten open-ended responses named published health texts by such publishers as McGraw-Hill, Glencoe Health, Holt Health, and Princeton Healthpress. Five open-ended responses named programs that had been listed in the survey but missed by the respondent (e.g., two mentions of Life Skills program). None of the remaining open-ended alternatives garnered more than three mentions; the idiosyncratic choices ranged from a Red Cross educational program to an HBO special entitled, "Addicted."

Of the specific published programs that were rated, the programs most often mentioned were; “Too Good for Drugs” (10.7 percent), “Project Alert” (8.8 percent), and “Project Towards No Drug Abuse” (5.2 percent). "Here's looking at you, 2000" was mentioned by 4.3 percent, the University of Minnesota Smoking Prevention Program was mentioned by 3.0 percent, and "Project Towards No Tobacco Use” (TNT) was mentioned by 1.9 percent. Voluntary health association programs were mentioned, including smoking prevention programs from the American Lung Association (6.5 percent), the American Heart Association (4.0 percent) and the American Cancer Society (2.9 percent). Prevention programs designed by one's own school district were cited by 5.5 percent of respondents. A tobacco infusion curriculum specifically developed by the Sacramento County Office of Education, entitled, "Tobacco Free!" was mentioned by 4.8%. A program designed to encourage already-addicted smokers to quit, called "TAP” or “TEG” (focusing on readiness to quit and cessation) was also mentioned by 3 percent. All other specific programs garnered less than 2 percent of the responses, including programs on the list of CDC-approved or US Department of Education-approved programs.

TUPE-experienced teachers may not know the names of published TUPE curricula because they did not receive training to deliver a specific published tobacco use prevention curriculum. In fact, only 25.8 percent of TUPE-experienced teachers reported being trained to deliver a specific published tobacco use prevention curriculum in the last five years. An additional 3.8 percent simply said that they did not remember if their TUPE training included training to deliver a specific published TUPE program.
For the minority of teachers who did receive professional development training, what was the content of their training? Respondents were queried about five general areas of relevance to tobacco use prevention education and were also given the option to write in a general topic area in which they received training. Table 4.6 lists these areas of professional development training and the number of hours of training obtained over the last five years as reported by TUPE-experienced teachers.

The TUPE-specific training opportunities were clearly less popular than the more generic youth development trainings, which may reflect teacher preference, but only a minority of TUPE-experienced teachers appeared to have attended any of these health-related professional development trainings in the last three years. The data does not provide enough information to know if these small numbers reflect teachers’ preference to attend other kinds of trainings or difficulties in matching teacher availability with

training opportunity. Given the empirical relationship between exposure to TUPE training and teacher preparation to teach TUPE lessons with confidence, it would seem beneficial to find more effective ways than have been tried thus far to expose a higher proportion of TUPE teachers to TUPE-relevant professional development training.

**Table 4.6 Major areas of professional development training and average hours of training received**

| Major area of professional development training | Percent who received training | Mean # of hours | # of participants |
|---|---|---|---|
| Developmental assets | 16.8% [11.5 – 24.0] | 5.6 hours | 40 |
| Youth development | 12.6% [8.3 – 18.6] | 10.3 hours | 28 |
| Science-based prevention & intervention programs | 15.0% [10.7 – 20.7] | 8.2 hours | 33 |
| Readiness to quit programs | 8.0% [4.6 – 13.5] | 3.9 hours | 15 |
| Tobacco use cessation programs | 5.6% [3.3 – 10.6] | 4.2hours | 17 |
| Other: specify | 2.6% [0.8 – 8.6] | 7.8 hours | 7 |

Note: Brackets contain 95 percent confidence intervals

## Summary

Schools have long been the target of public health advocates for preventing tobacco use initiation among children, and for good reason. About 90 percent of California school-age children attend public schools. Public school teachers are highly respected by children and are the most commonly observed adult models for most children other than their adult family members. Most teachers (89.5 percent) in California appear to be supportive of tobacco-free school policies but less than half of all TUPE eligible teachers feel well prepared to teach TUPE lessons. Fifty-four percent of TUPE-eligible teachers who have received some TUPE training report feeling well prepared to teach TUPE lessons. Nevertheless, further training and training on topics unfamiliar to TUPE instructors (such as refusal skills training) would be beneficial.

The good news is that very few teachers are current smokers. At a minimum, California's public school students will see little evidence that smoking is popular among their teachers. The impressively low rates of tobacco use by teachers helps to reinforce a message implicit in most tobacco use prevention programs - namely, that cigarette smoking is not normative behavior among adults. Analytical results suggest an association between teachers' perceptions of school-level support and their perception of students' level of interest in TUPE content. This finding implies that it is important for TUPE instruction to have well-publicized support from school and district administrators.

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Teachers should be encouraged to educate their students about the typical misrepresentations of pro-smoking messages and about ways in which students can learn to be more critical consumers of commercial messages. Such encouragement should, among other things, include in-service TUPE training that addresses how teachers can combat pro-tobacco media messages. Teachers can do more than just model abstinence, but they will need more exposure to training opportunities, more support from district and school personnel, and greater clarity from the state about TUPE being a priority. Probably the most obvious and helpful resource would be the provision of more targeted and more frequent in-service training regarding how to teach tobacco use prevention education. Chapters 7 and 8 describe some of the school and district level influences that have an effect on teachers' impact on their students' tobacco use behaviors and attitudes.

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# CHAPTER 5

## TUPE COMPETIVE GRANT FUNDING, PROGRAM EXPOSURE, AND STUDENT TOBACCO USE

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# CHAPTER 5: TUPE COMPETITIVE GRANT FUNDING, PROGRAM EXPOSURE, AND STUDENT TOBACCO USE

**CHAPTER HIGHLIGHTS**

- **High schools with competitive TUPE grants were more likely than non-grantee high schools to offer cessation services and referral to students, and to sponsor school-wide anti-tobacco activities.**
- **High Schools with competitive TUPE grants were more likely to provide tobacco use prevention lessons, cover specific topics on tobacco use, and provide professional development training to school coordinators (according to *school coordinator* report).**
- **Students attending high schools with competitive TUPE grants were more likely to report being referred to an adult counselor or a peer counselor if caught smoking, and to recall exposure to tobacco prevention services, cessation training, and classes compared to those in non-grantee high schools.**
- **Students attending high schools with competitive TUPE grants for 3-6 years were more likely to report cigarette use and less likely to recall exposure to tobacco prevention services and cessation training than those in high schools with competitive TUPE grants for less than 3 years or 6 years or more.**
- **Grantee high schools were not significantly different from non-grantee high schools on several aspects of TUPE program implementation (such as school no-tobacco use policy, suspension policy, hours taught and curriculum used for tobacco use prevention lessons).**

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## Introduction

Since 1994 the California Department of Education (CDE) has allocated school-based tobacco use prevention funds to school districts using two different mechanisms – an entitlement program that allocates funds for tobacco use prevention for programs in grades four through eight, and a competitive grant program that allocates funds to selected districts for grades 9 through 12. This chapter focuses on the high school competitive grant program. It examines differences in program implementation, program exposure, student tobacco use, and factors associated with student tobacco use (i.e., precursors) between high schools that have been awarded competitive TUPE grants and those that have not been awarded such grants.

It is important to note that it is not just schools with competitive TUPE grants that provide tobacco use prevention services to high school students. Most districts in the State receive funding from the Federal Safe and Drug Free Schools Program (Title IV), which requires that schools provide tobacco use prevention services to all students. In addition, lessons about tobacco use are a common component of most health education curricula. Although many schools in California provide tobacco use prevention activities without using TUPE funds, the competitive TUPE program provides the bulk of the funding available for tobacco use prevention and intervention services to high schools in the State.

The investigators examined whether schools with competitive TUPE grants differ from those without such grants in ways that are not directly related to tobacco prevention education activities. **Table 5.1** shows the mean demographic characteristics of grantee and non-grantee schools, based on information from the California Basic Educational Data & Statistics (CBEDS) data and from the Academic Performance Index (API) data. Overall, grantee and non-grantee schools are roughly similar in terms of student demographics, including; student enrollment, the proportion of Asian, African American, and Hispanic/Latino(a) students, the proportion of students receiving subsidized meals, parental education level, and academic achievement test scores.

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**Table 5.1 Demographic Characteristics of Non-Grantee and Grantee High Schools (S.D.)**

| | Competitive Grant Status | | |
|---|---|---|---|
| | **Non-grantee** | **Grantee** | ***p-value*** |
| Student Enrollment | 2,266 (873.5) | 2,281 (792.7) | 0.92 |
| African American (%) | 6.9 (7.8) | 5.6 (6.4) | 0.28 |
| Hispanic/Latino(a) (%) | 36.8 (25.6) | 34.8 (24.5) | 0.65 |
| Caucasian, non-Hispanic/Latino(a) (%) | 38.5 (25.1) | 41.9 (26.4) | 0.45 |
| Subsidized Meals (%) | 32.1 (23.1) | 29.2 (23.0) | 0.48 |
| Academic Performance Index (standardized achievement test scores) | 705.4 (86.8) | 724.5 (74.9) | 0.18 |
| Parental Education (1=less than high school, 5=graduate degree) | 2.8 (0.8) | 3.0 (0.8) | 0.26 |
| Number of schools | 73 | 62 | |

Note: Parentheses contain standard deviations.
* $0.01 \leq p < 0.05$
** $p < 0.01$

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## Program Implementation in TUPE-Grantee and Non-Grantee Schools

**Tables 5.2 – 5.5** show teacher, school TUPE coordinator, and school administrator reports of various measures of program implementation by TUPE grantee status for high schools. The implementation measures can be grouped into four areas: (1) enforcement of school no-tobacco use policies and consequences of violating school no-use policies, (2) TUPE instruction, (3) school-wide anti-tobacco activities, and (4) tobacco cessation activities. The investigators describe grantee and non-grantee differences in implementation across these areas in turn.

**Table 5.2 High School Teacher, Principal, and Coordinator Reports of Prevention/Intervention Policies and Tobacco Instruction by School TUPE Grantee Status**

| | Teacher | | Coordinator | | Administrator | |
|---|---|---|---|---|---|---|
| | Non-grantee | Grantee | Non-grantee | Grantee | Non-grantee | Grantee |
| No-Tobacco use Policy | | | | | | |
| Enforcement (a great deal) | 74.7% [66.4, 81.5] | 72.5% [65.3, 78.6] | 81.5% [66.9, 90.6] | 62.9% [45.1, 77.8] | 94.0% [85.8, 97.6] | 97.8% [88.7, 99.6] |
| Consequences of Violation | | | | | | |
| Suspension/ expulsion | 55.5% [45.8, 64.8] | 51.5% [41.9, 61.0] | 71.8% [55.8, 83.6] | 60.8% [44.3, 75.1] | 70.4% [56.2, 81.5] | 61.3% [44.3, 76.0] |
| Referral to cessation services | 15.0% [9.3, 23.3] | 35.0%** [25.0, 46.5] | 35.3% [22.0, 51.2] | 90.7%** [81.1, 95.7] | 46.3% [33.2, 60.0] | 90.2%** [77.1, 96.2] |
| Tobacco Instruction | | | | | | |
| Lessons | 74.0% [64.4, 81.8] | 75.1% [61.2, 85.2] | 41.4% [27.0, 57.5] | 66.5%* [49.1, 80.3] | — — | — — |
| Hours taught | 3.4 [2.1, 4.7] | 4.1 [3.0, 5.2] | 8.1 [1.2, 15.0] | 18.9 [9.9, 27.8] | — — | — — |
| Published curriculum | 50.7% [35.2, 66.0] | 71.0% [56.7, 82.0] | — — | — — | — — | — — |
| Science-based curriculum | 10.0% [2.2, 35.2] | 7.3% [3.4, 15.2] | 38.7% [20.5, 60.8] | 63.6% [44.2, 79.4] | — — | — — |

Note: Brackets contain the 95 percent confidence intervals.
* $0.01 \leq p < 0.05$
** $p < 0.01$

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**Table 5.3 High School Teacher and Coordinator Reports of Prevention/Intervention Curriculum Topics by School TUPE Grantee Status**

| | Teacher | | Coordinator | |
|---|---|---|---|---|
| | Non-grantee | Grantee | Non-grantee | Grantee |
| Topics Covered | | | | |
| Tobacco and health | 2.3%<br>[0.9, 6.0] | 8.1%<br>[2.0, 27.9] | 54.2%<br>[38.8, 68.9] | 83.6%**<br>[68.9, 92.1] |
| Smoking prevalence | 1.3%<br>[0.3, 5.1] | 5.3%<br>[0.8, 28.9] | 51.8%<br>[36.8, 66.4] | 76.8%*<br>[61.8, 87.1] |
| Reasons why people smoke | 0.0%<br>[—] | 1.0%<br>[0.1, 6.8] | 47.8%<br>[33.1, 63.0] | 81.1%**<br>[66.6, 90.3] |
| Social consequences | 0.6%<br>[0.1, 4.2] | 0.0%<br>[—] | 51.7%<br>[36.5, 66.5] | 72.8%<br>[54.9, 85.5] |
| Secondhand smoke | 0.7%<br>[0.1, 5.2] | 6.3%*<br>[1.3, 26.3] | 49.0%<br>[34.1, 64.0] | 79.1%**<br>[64.4, 88.8] |
| Social influences | 0.6%<br>[0.1, 4.2] | 5.6%<br>[0.7, 33.7] | 48.0%<br>[33.2, 63.2] | 69.6%<br>[51.5, 83.2] |
| Behavioral skills | 0.0%<br>[—] | 0.0%<br>[—] | 43.0%<br>[28.9, 58.3] | 79.9%**<br>[65.4, 89.4] |
| General social skills | 0.0%<br>[—] | 0.0%<br>[—] | 33.3%<br>[20.7, 49.0] | 66.2%**<br>[48.9, 80.1] |
| Tobacco cessation | 0.0%<br>[—] | 0.0%<br>[—] | 31.8%<br>[19.6, 47.2] | 78.6%**<br>[64.2, 88.3] |
| Tobacco advertising | 1.0%<br>[0.2, 4.0] | 0.0%<br>[—] | 46.6%<br>[32.1, 61.7] | 66.0%<br>[49.1, 79.6] |
| Smokeless tobacco | —<br>— | —<br>— | 44.1%<br>[29.7, 59.6] | 76.0%**<br>[61.1, 86.5] |
| Cigar use | 0.0%<br>[—] | 0.0%<br>[—] | 22.3%<br>[12.0, 37.6] | 50.5%**<br>[35.1, 65.8] |

Note: Brackets contain the 95 percent confidence intervals.
* $0.01 \leq p < 0.05$
** $p < 0.01$

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**Table 5.4 High School Teacher and Coordinator Reports of Professional Development/Trainings by TUPE Grantee Status**

| | Teacher | | Coordinator | |
|---|---|---|---|---|
| | **Non-grantee** | **Grantee** | **Non-grantee** | **Grantee** |
| Professional Development/Training | | | | |
| In-service training | 26.3%<br>[18.5, 35.9] | 40.3%<br>[27.5, 54.5] | —<br>— | —<br>— |
| Developmental asset training | 7.7%<br>[2.8, 19.2] | 2.4%<br>[0.6, 9.3] | 28.2%<br>[16.2, 44.5] | 57.5%*<br>[40.4, 72.9] |
| Youth development training | 3.8%<br>[1.3, 10.2] | 7.8%<br>[3.2, 18.0] | 33.9%<br>[20.3, 50.8] | 53.5%<br>[37.2, 69.2] |
| Science-based prevention training | 0.5%<br>[0.1, 4.2] | 3.4%<br>[1.2, 9.4] | 8.6%<br>[4.1, 17.2] | 54.6%**<br>[37.2, 71.0] |
| Readiness to quit training | 1.4%<br>[0.4, 5.0] | 3.4%<br>[1.2, 9.4] | 11.0%<br>[4.7, 23.6] | 54.9%**<br>[37.2, 71.4] |
| Cessation programs | 2.0%<br>[0.5, 8.0] | 3.9%<br>[1.3, 10.9] | 21.3%<br>[12.2, 34.5] | 70.2%**<br>[54.8, 82.1] |
| Preparedness (a great deal) | 24.9%<br>[14.2, 40.0] | 25.3%<br>[16.3, 37.0] | 23.4%<br>[12.1, 40.4] | 63.7%**<br>[46.1, 78.2] |

Note: Brackets contain the 95 percent confidence intervals.
* $0.01 \leq p < 0.05$
** $p < 0.01$

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**Table 5.5 High School Teacher, Principal, and Coordinator Reports of School-Wide Anti-tobacco Activities by TUPE Grantee Status**

| | Teacher | | Coordinator | | Administrator | |
|---|---|---|---|---|---|---|
| | Non-grantee | Grantee | Non-grantee | Grantee | Non-grantee | Grantee |
| School-Wide Anti-tobacco Activities | | | | | | |
| Teens Kick Ash | 3.7% [1.6, 8.4] | 20.9%** [12.7, 32.4] | 8.4% [2.5, 24.9] | 45.2%** [30.3, 61.1] | 32.3% [20.3, 47.1] | 40.2% [25.3, 57.0] |
| Smoke Out | 28.5% [20.3, 38.3] | 47.5%** [38.4, 56.8] | 40.3% [26.0, 56.4] | 69.7%* [51.9, 83.0] | 49.1% [34.5, 63.9] | 73.3%* [58.3, 84.4] |
| Assembly | 6.4% [3.4, 11.9] | 16.8%* [10.3, 26.3] | 10.7% [3.7, 27.3] | 47.8%** [32.2, 63.7] | 17.3% [8.4, 32.4] | 48.1%** [32.6, 64.0] |
| Contest | 14.2% [8.6, 22.6] | 16.5% [10.0, 26.1] | 37.0% [23.4, 53.0] | 42.9% [28.3, 59.0] | 14.4% [8.2, 24.1] | 51.5%** [35.4, 67.2] |
| Anti-tobacco club | 5.4% [2.3, 12.2] | 16.8%* [11.0, 24.6] | 19.9% [11.7, 31.9] | 35.7% [22.3, 51.8] | 24.4% [15.6, 36.1] | 35.4% [21.6, 52.2] |
| Local health department | 4.0% [2.0, 7.8] | 8.4% [3.9, 17.3] | 3.7% [1.1, 12.1] | 40.4%** [26.4, 56.2] | 10.8% [4.9, 22.1] | 33.2%** [20.1, 49.6] |
| Anti-tobacco posters | 25.7% [19.1, 33.8] | 40.8%* [31.6, 50.6] | 55.1% [40.5, 68.9] | 75.0% [56.6, 87.3] | 37.4% [26.9, 49.2] | 74.7%** [60.0, 85.3] |
| Red Ribbon Week | 42.3% [33.8, 51.3] | 56.0% [46.8, 64.7] | 66.9% [52.4, 78.8] | 77.1% [57.8, 89.2] | 64.0% [49.7, 76.2] | 84.9%* [73.4, 92.0] |
| Number of activities | 1.4 [1.1, 1.8] | 2.6** [2.0, 3.1] | 2.8 [2.1, 3.5] | 5.6** [4.3, 6.8] | 2.7 [2.2, 3.2] | 5.3** [4.4, 6.2] |
| Cessation Activities | | | | | | |
| Cessation programs | 10.5% [6.4, 16.8] | 27.6%** [20.5, 36.2] | 22.8% [12.1, 38.8] | 75.8%** [57.4, 87.9] | 16.7% [8.2, 30.9] | 66.1%** [48.1, 80.4] |
| Referral to cessation | 5.1% [1.9, 12.8] | 23.7%** [15.7, 34.1] | 32.7% [17.8, 52.2] | 77.3%** [62.8, 87.3] | — — | — — |

Note: Brackets contain the 95 percent confidence intervals.
* $0.01 \leq p < 0.05$
** $p < 0.01$

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## Enforcement of School No-Tobacco Use Policy and Consequences of Violation

Overall, there were few significant differences between grantee and non-grantee schools in reports of the level of enforcement of student violations of school no-use policies. The majority of respondents reported that school no-use policies were enforced "a great deal" against students caught smoking, with the highest levels of enforcement reported by school administrators

**Figure 5.1** and **Table 5.2** display grantee/non-grantee differences in school responses to student violations of the no-tobacco use policy in middle schools. Overall, there were no significant differences regarding suspension/expulsion as a consequence of violation across grantee and non-grantee schools. According to teachers, school coordinators, and school administrators in high schools, grantee schools are more likely to refer students who violated the no-tobacco use policy to cessation services than non-grantee schools. Approximately 35 percent of teachers (95% CI [25.0, 46.5]), 91 percent of school coordinators (95% CI [81.1, 95.7]), and 90 percent of school administrators (95% CI [77.1, 96.2]) in grantee high schools reported that students who are caught smoking cigarettes at school are referred to cessation services, compared to 15 percent of teachers (95% CI [9.3, 23.3]), 35 percent of coordinators (95% CI [22.0, 51.2]), and 46 percent of administrators (95% CI [33.2, 60.0]) in non-grantee schools.

**Figure 5.1 Consequences of Violation of No-Tobacco Use Policy by Grantee Status (High Schools)**

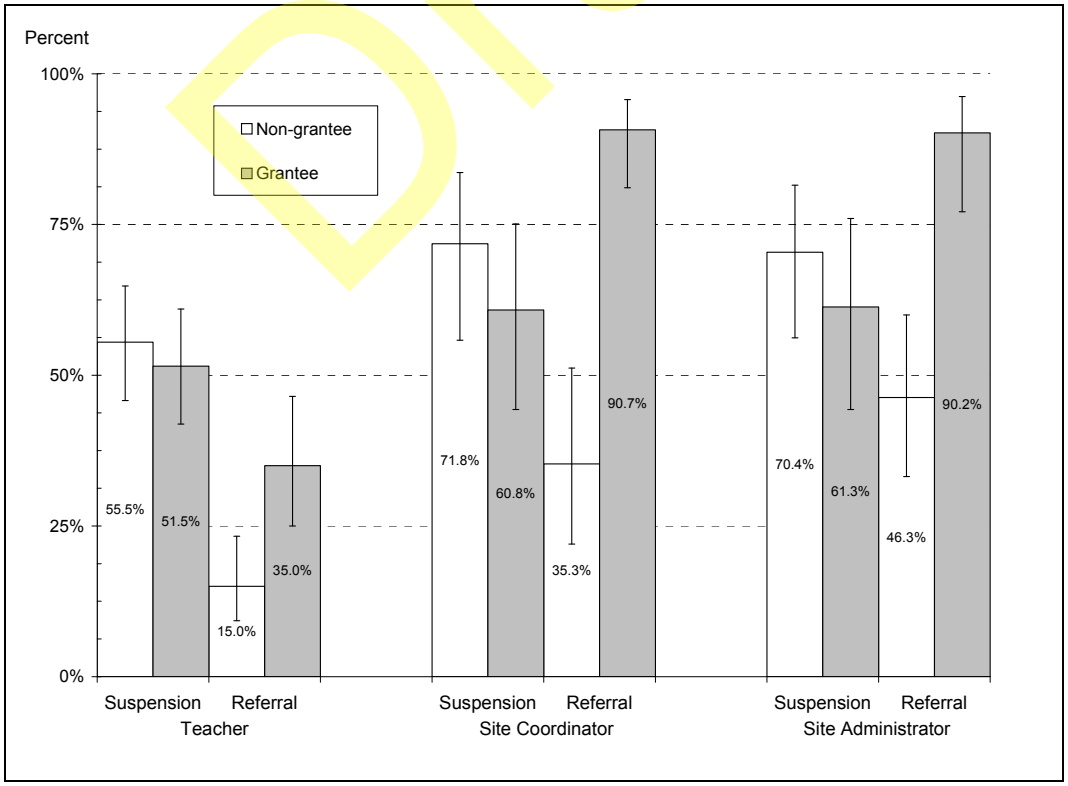


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**Table 5.6. Student Reports of No-Tobacco Use Policies by High School Competitive Grantee Status**

| | High School Grant Status | | |
|---|---|---|---|
| | Non-grantee (Percent) | Grantee (Percent) | *p*-value |
| Presence of No-Use Policy (Yes) | 90.2% [89.0, 91.2] | 90.8% [89.7, 91.8] | 0.40 |
| Consequences of Violation of No-Use Policy | | | |
| Suspension | 47.6% [45.5, 49.8] | 46.6% [44.1, 49.2] | 0.58 |
| Ticket | 14.9% [12.6, 17.5] | 16.9% [14.5, 19.6] | 0.32 |
| Referred to Special Class | 6.9% [6.1, 7.8] | 8.8%* [7.6, 10.2] | 0.01 |
| Referred to Adult Counselor | 10.8% [9.5, 12.2] | 11.8% [10.6, 13.2] | 0.28 |
| Referred to Peer Counselor | 4.7% [4.0, 5.4] | 6.0%* [5.1, 7.0] | 0.02 |
| Parent Conference | 21.1% [19.5, 22.9] | 22.6% [20.9, 24.3] | 0.26 |

Note: Brackets contain the 95 percent confidence intervals.
* $0.01 \leq p < 0.05$
** $p < 0.01$

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## Tobacco Use Prevention Instruction

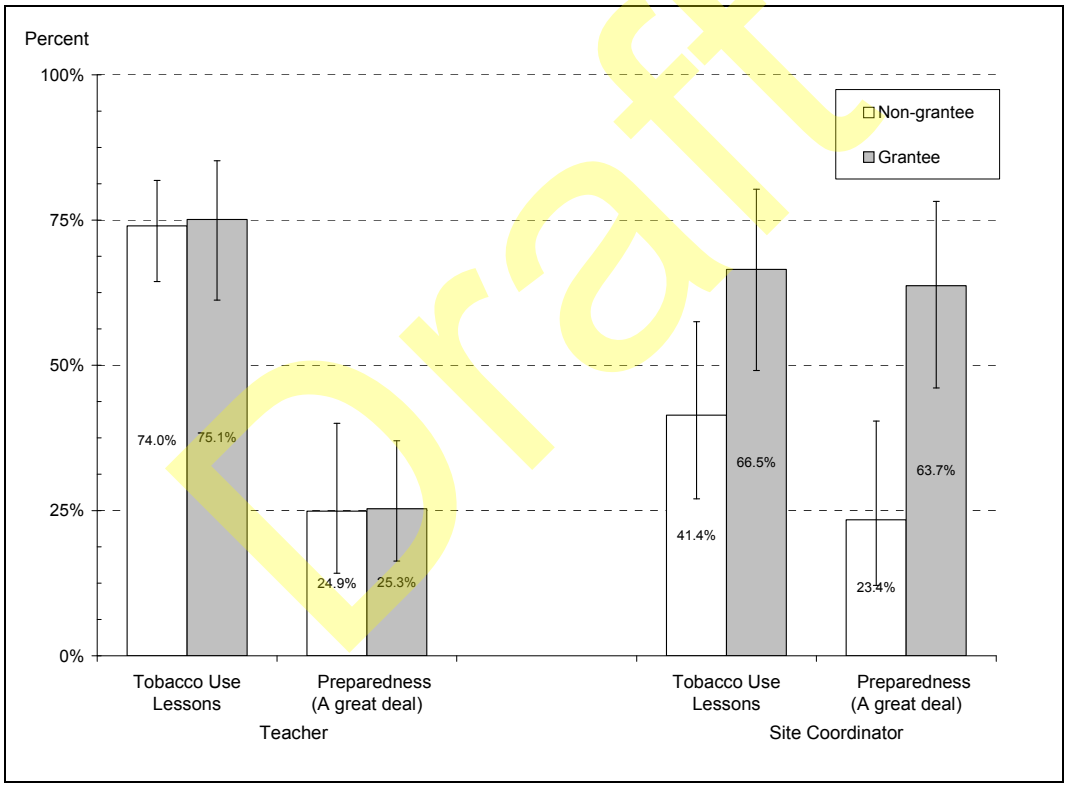
Few differences were apparent between grantee and non-grantee high schools in teacher reports of tobacco instruction provided to students. Teacher reports pertaining to tobacco instruction come from teachers who taught tobacco use prevention education (TUPE) lessons – teachers of other subjects were excluded from the analyses because very few of them would be expected to teach tobacco-related lessons. In high schools, TUPE teachers were equally likely to provide tobacco prevention lessons in grantee and non-grantee schools, and they were equally likely to rely on a published or science-based curriculum and to cover the same topics in their lessons. For the most part, school coordinator reports of tobacco-related instruction also did not differ by grantee status. Difference by grantee status was only found in one area; high schools with competitive grants provided more tobacco use lessons than non-grantee high schools (66.5 percent (95% CI [49.1, 80.3]) vs. 41.4 percent (95% CI [27.0, 57.5])).

With regards to tobacco use prevention instruction, the major difference between staff in grantee and non-grantee schools involved teaching tobacco use lessons. As shown in Figure 5.2, coordinators in high school grantee schools were more likely to report having taught tobacco use prevention lessons during the last school year. About 67 percent (95% CI [49.1, 80.3]) of coordinators in grantee schools reported teaching tobacco use prevention lessons, compared to about 41 percent of coordinators in non-grantee schools (95% CI [27.0, 57.5]). In addition, TUPE coordinators in grantee high schools reported substantially higher levels of preparedness to teach tobacco

prevention lessons than their counterparts in non-grantee schools (63.7 percent; 95% CI [46.1, 78.2] vs. 23.4 percent; 95% CI [12.1, 40.4]). However, the grantee/non-grantee difference for teachers was not statistically significant.

Coordinators in grantee high schools were more likely to report covering specific topics in their tobacco use prevention lessons than coordinators in non-grantee high schools. These topics included; “Tobacco and health”, “Smoking prevalence”, “Reasons why people smoke”, “Secondhand smoke”, “Behavior skills”, “General social skills”, “Tobacco cessation”, “Smokeless tobacco”, and “Cigar use” (Table 5.3). No significant grantee/non-grantee differences were found in terms of using a science-based curriculum.

**Figure 5.2 Tobacco Use Prevention Education Lessons and Preparedness by Grantee Status (High Schools)**

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## Professional Development Training

There were significant grantee and non-grantee differences in professional development training, according to high school coordinator report (Table 5.4). Coordinators in grantee high schools were more likely than their counterparts in non-grantee high schools to report participating in professional training in regards to “Developmental asset training” (57.5 percent; 95% CI [40.4, 72.9] vs. 28.2 percent; 95% CI [16.2, 44.5]), “Science-based prevention training” (54.6 percent; 95% CI [37.2, 71.0] vs. 8.6 percent; 95% CI [4.1, 17.2]), “Readiness to quit training” (54.9 percent; 95% CI [37.2, 71.4] vs. 11.0 percent; 95% CI [4.7, 23.6]), and “Cessation programs” (70.2 percent; 95% CI [54.8, 82.1] vs. 21.3 percent; 95% CI [12.2, 34.5]).

## School-wide Anti-tobacco Activities

Grantee and non-grantee high schools also differed with respect to reports of school-wide anti-tobacco activities. According to the high school staff surveys, grantee schools were more likely than non-grantee schools to conduct activities as part of “Teens Kick Ash” (20.9 percent; 95% CI [12.7, 32.4] vs. 3.7 percent; 95% CI [1.6, 8.4]; teacher report, 45.2 percent; 95% CI [30.3, 61.1] vs. 8.4 percent; 95% CI [2.5, 24.9]; coordinator report). Grantee schools were also more likely than non-grantee schools to sponsor an anti-tobacco contest (51.5 percent; 95% CI [35.4, 67.2] vs. 14.4 percent; 95% CI [8.2, 24.1]; administrator report), sponsor an anti-tobacco club (16.8 percent; 95% CI [11.0, 24.6] vs. 5.4 percent; 95% CI [2.3, 12.2]; teacher report), participate in tobacco prevention activities with the local health department (40.4 percent; 95% CI [26.4, 56.2] vs. 3.7 percent; 95% CI [1.1, 12.1]; coordinator report, 33.2 percent; 95% CI [20.1, 49.6] vs. 10.8 percent; 95% CI [4.9, 22.1]; administrator report) and post anti-tobacco posters (40.8 percent; 95% CI [31.6, 50.6] vs. 25.7 percent; 95% CI [19.1, 33.8]; teacher report, 74.7 percent; 95% CI [60.0, 85.3] vs. 37.4 percent; 95% CI [26.9, 49.2]; administrator report).

Teachers, coordinators and administrators in grantee high schools all were more likely than those in non-grantee high schools to report that their school sponsored a special day where students and staff were encouraged to refrain from smoking, and that they held an anti-tobacco assembly. According to high school staff, grantee schools provided about one or two more school-wide tobacco prevention activities, on average, than non-grantee schools (2.6 vs. 1.4; 95% CI [2.0, 3.1] and [1.1, 1.8] for teacher report, 5.6 vs. 2.8; 95% CI [4.3, 6.8] and [2.1, 3.5] for coordinator report, 5.3 vs. 2.7; 95% CI [4.4, 6.2] and [2.2, 3.2]) (**Figure 5.3**).

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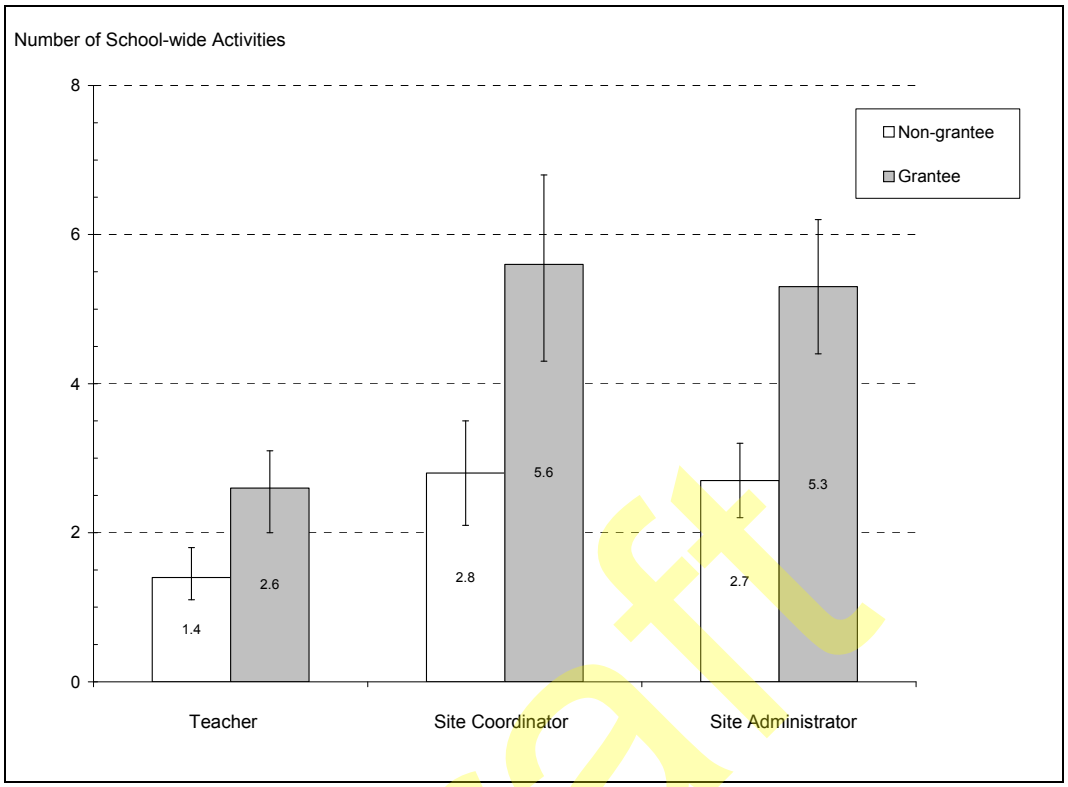
**Figure 5.3 Number of School-Wide Anti-Tobacco Activities by Grantee Status (High Schools)**




## Cessation Activities

**Figure 5.4** shows grantee/non-grantee differences in reports of the presence of cessation programs for high school students. The figure shows that grantee high schools are about two to four times more likely to have a cessation program for students than non-grantee schools. Overall, teachers were less than half as likely to be aware of such services compared to school coordinators and school administrators. Teachers and coordinators in grantee high schools were more likely to report that they referred students to cessation programs than those in non-grantee schools.

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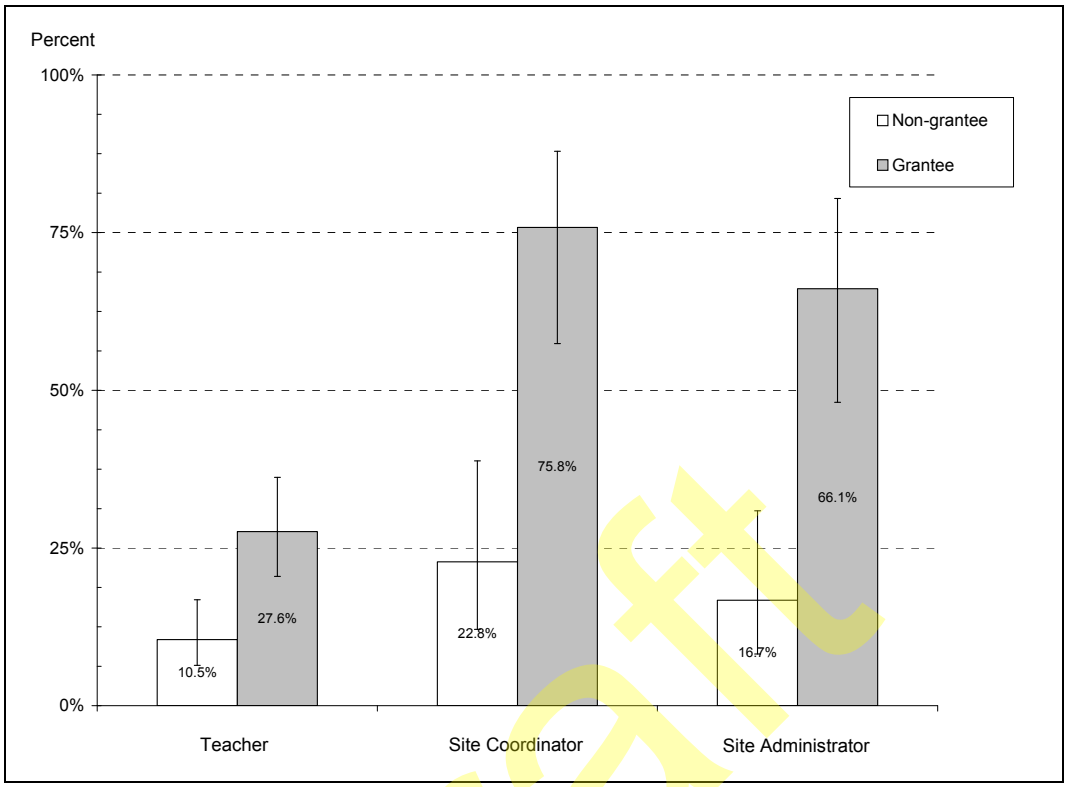
**Figure 5.4 School Tobacco Cessation Program by Grantee Status (High Schools)**




## Student Exposure to Prevention/Intervention Services in TUPE-Grantee and Non-Grantee High Schools

**Figures 5.5 – 5.7** and **Tables 5.7 – 5.8** show differences in student reports of exposure to program services between high schools with TUPE competitive grants and schools without such grants. The student measures of exposure to program services are described in more detail in Chapter 3. Overall, the results indicate that students in grantee high schools reported higher levels of exposure to tobacco prevention education services than students in non-grantee schools.

More high school students in grantee than in non-grantee schools reported that they received information about tobacco use (63.2 percent; 95% CI [60.7, 65.6] vs. 59.3 percent; 95% CI [57.3, 61.1]), that a guest speaker talked to their class about not using tobacco (39.1 percent; 95% CI [36.5, 41.6] vs. 34.1 percent; 95% CI [31.9, 36.4]), and that they attended a school assembly about the harmful effects of tobacco use (29.8 percent; 95% CI [26.9, 32.9] vs. 22.6 percent; 95% CI [20.7, 24.7]). However, the investigators did not find significant differences on other prevention/intervention services, e.g., tobacco lessons, teaching about why people smoke, smoking prevalence, physical harm from smoking, secondhand smoke, smoking decision-making skills, and refusal skills training. It may underscore the fact that the state TUPE competitive program is not the only source of resources for public school-based tobacco prevention activities.

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No attempt was made in this study to quantify the impact of other resources such as tobacco use prevention and cessation materials from the American Cancer Society, American Lung Association, American Heart Association or other federally funded prevention programs.

**Table 5.7. Student Reports of Exposure to Prevention/Intervention Services by High School Competitive Grantee Status**

| | High School Grant Status | | |
|---|---|---|---|
| | Non-grantee (Percent) | Grantee (Percent) | *p*-value |
| Received information about tobacco | 59.3% [57.3, 61.1] | 63.2%* [60.7, 65.6] | 0.02 |
| Tobacco information helpful | 42.7% [40.7, 44.8] | 45.2% [42.9, 47.5] | 0.12 |
| Tobacco lessons | 38.4% [35.7, 41.2] | 42.2% [39.2, 45.2] | 0.07 |
| Guest speaker | 34.1% [31.9, 36.4] | 39.1%** [36.5, 41.6] | <0.00 |
| Assembly about tobacco use | 22.6% [20.7, 24.7] | 29.8%** [26.9, 32.9] | 0.00 |
| Taught about why people smoke | 34.5% [32.2, 36.8] | 35.5% [33.1, 38.0] | 0.54 |
| Taught about smoking prevalence | 21.4% [19.6, 23.3] | 22.2% [20.1, 24.4] | 0.57 |
| Taught about physical harm from smoking | 42.5% [40.3, 44.7] | 43.6% [41.0, 46.3] | 0.52 |
| Taught about 2nd hand smoke | 34.4% [31.9, 37.0] | 34.5% [32.5, 36.5] | 0.98 |
| Smoking Decision-making skills | 42.7% [40.7, 44.8] | 45.2% [42.9, 47.5] | 0.12 |
| Refusal skills training | 15.3% [14.0, 16.8] | 15.2% [14.0, 16.6] | 0.91 |
| Cessation training | 50.8% [49.1, 52.5] | 58.3%** [55.6, 60.8] | 0.00 |
| Cessation classes | 6.9% [5.6, 8.6] | 21.5%** [16.8, 27.0] | 0.00 |

Note: Brackets contain the 95 percent confidence intervals.
* $0.01 \leq p < 0.05$
** $p < 0.01$

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**Figure 5.5 Access to Tobacco-Related Information by High School Grantee Status**

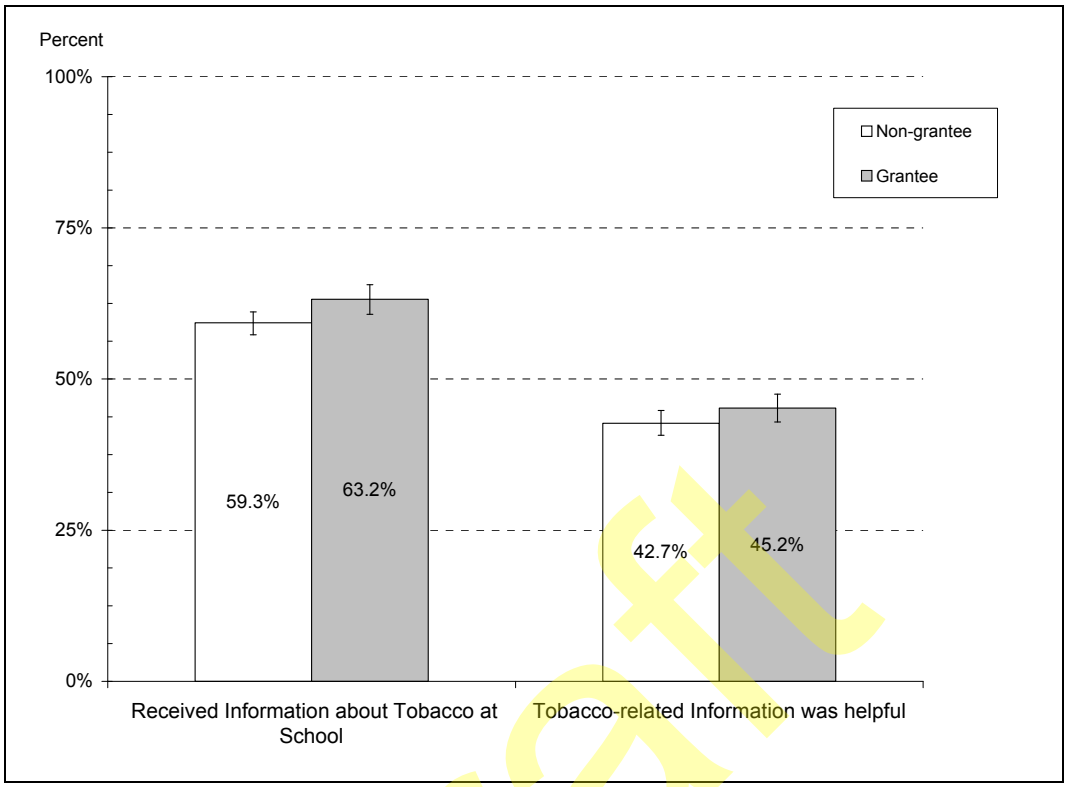


**Figure 5.6** shows student exposure to tobacco lessons and tobacco-related topics by TUPE grantee status for high school students. Once again, students in non-grantee middle schools reported higher levels of exposure to tobacco lessons than their counterparts in grantee schools. Among high schools, exposure to tobacco lessons was higher among grantee schools (42.2 percent 95% CI [39.2, 45.2] vs. 38.4 percent; 95% CI [35.7, 41.2]). However, the difference was marginally statistically significant ($p = 0.07$). Figure 5.6 also shows grantee/non-grantee differences in student exposure to specific tobacco topics. The most common topics covered were tobacco decision-making skills, the physical consequences of tobacco use, and the reasons why people smoke. The least common topic covered was refusal skills training. Differences between grantee and non-grantee schools were not statistically significant for any topic.

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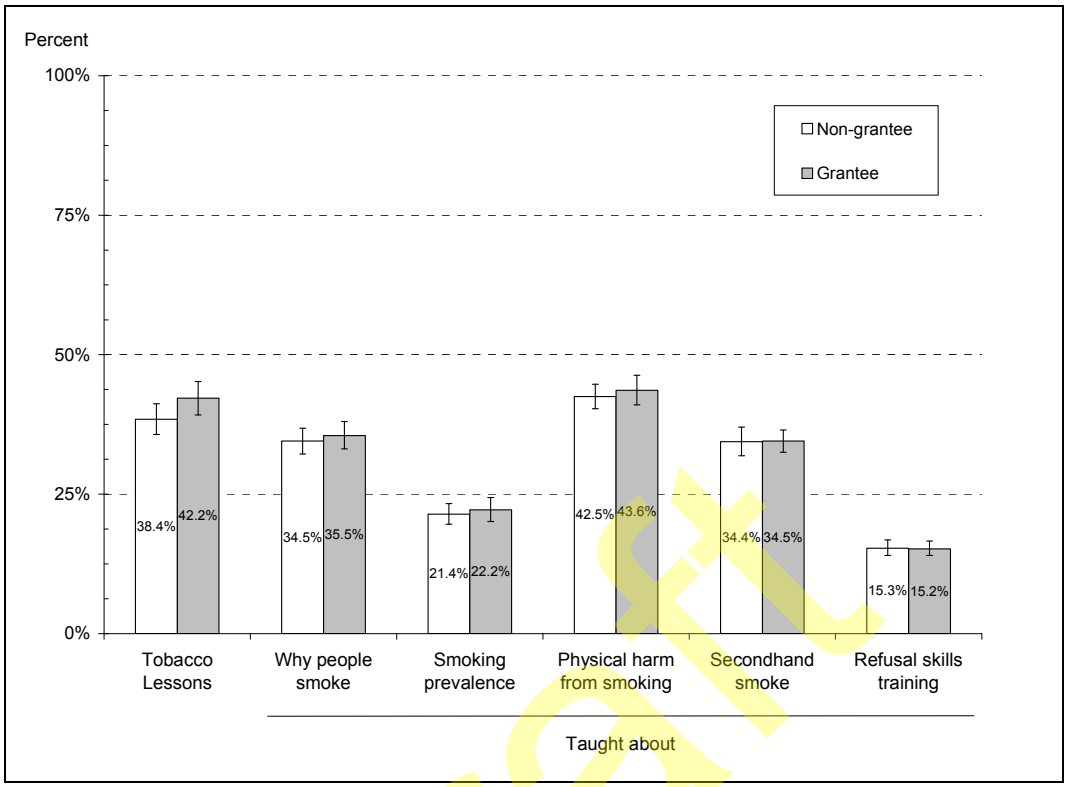
**Figure 5.6 Exposure to Tobacco Lessons by Grantee Status (High Schools)**




As discussed in Chapter 3, secondary students are less likely to attend courses that cover tobacco use prevention-related material as they advance to higher grades. This same pattern is present in grantee and non-grantee schools. However, as shown in **Figure 5.7**, juniors and seniors in grantee schools reported higher rates of exposure to tobacco use prevention education lessons.

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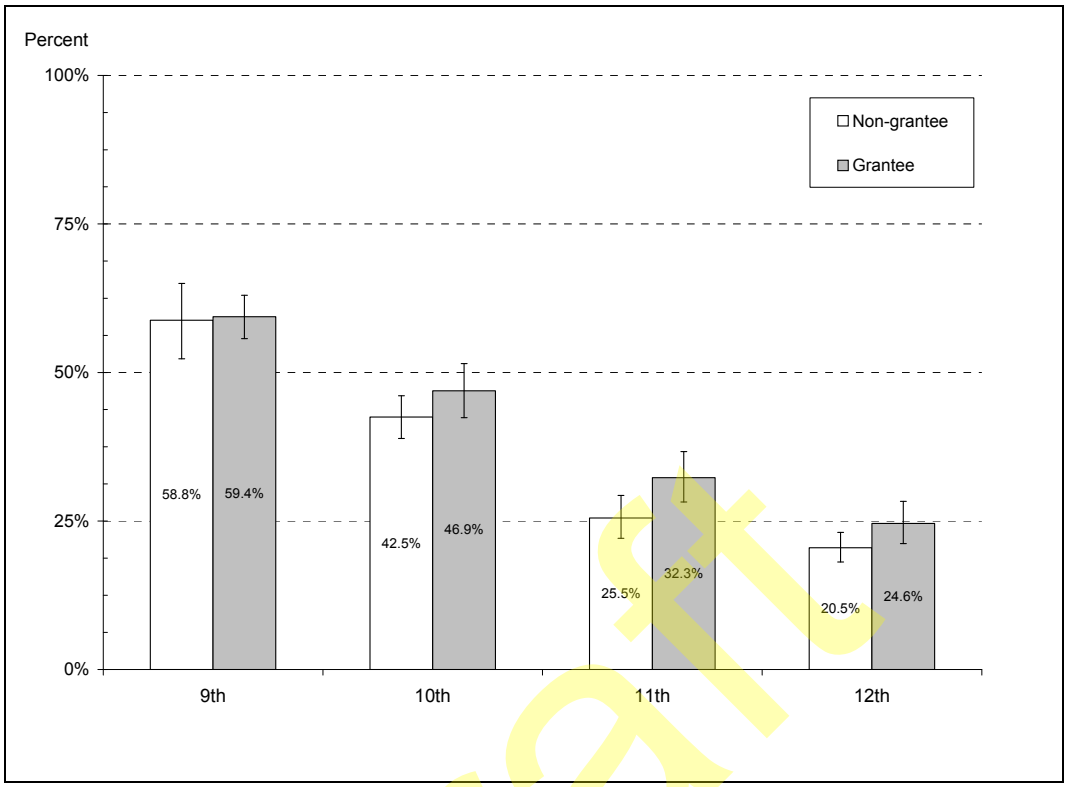
**Figure 5.7 Exposure to Tobacco Lessons by Grade and Grantee Status (High Schools)**




As shown in **Figure 5.8**, students in grantee high schools reported that their schools provided more cessation-related services than students in non-grantee schools. The most pronounced difference between grantee and non-grantee schools was in the presence of cessation groups/classes. Over one-fifth of students (21.5 percent) in grantee high schools reported that their school has special groups or classes for students who want to quit smoking, compared to 6.9 percent of students in non-grantee schools (95% CI [16.8, 27.0] and [5.6, 8.6]). More students in grantee high schools reported that students their age can be trained to help students who want to quit using tobacco than students in non-grantee high schools (58.3 percent v. 50.8 percent, respectively) (95% CI [55.6, 60.8] and [49.1, 52.5]). Clearly, TUPE funding in high schools appears to make it more possible for high schools to provide cessation services.

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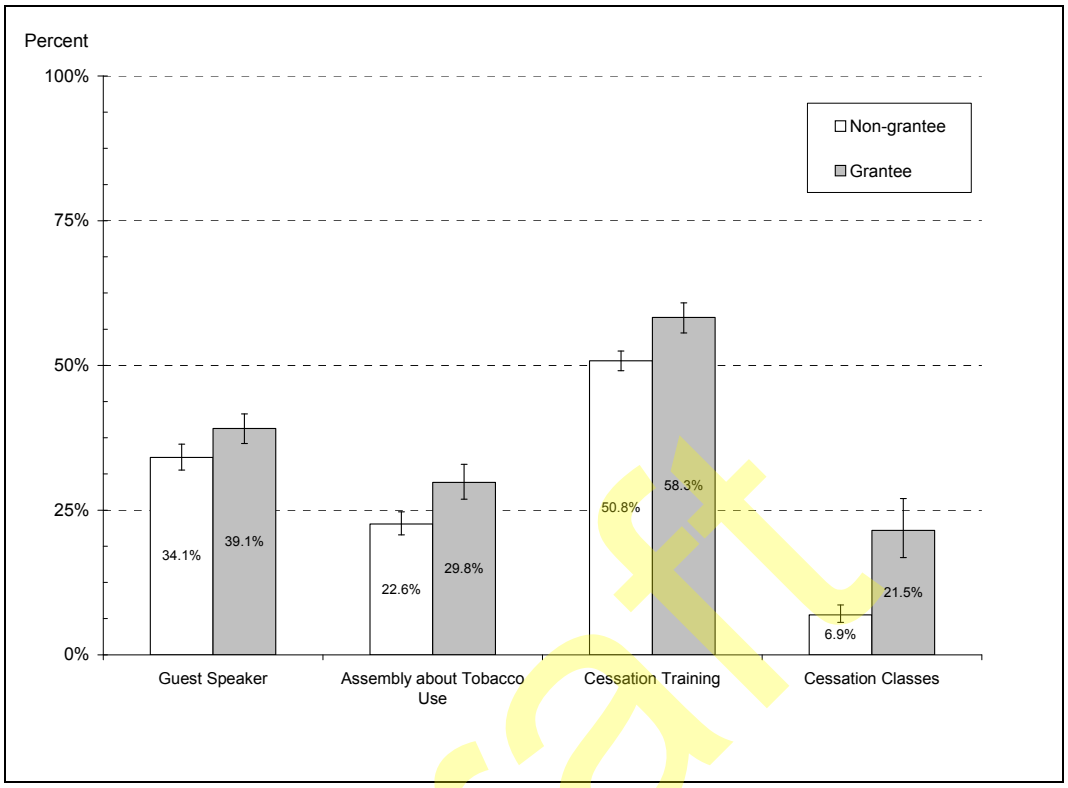
**Figure 5.8 School-wide Tobacco Events and Cessation Activities (Student Reports) by Grantee Status (High Schools)**




The investigators also examined the relationship between how long each high school had had a competitive grant and student reports of exposure to program services. To do this, the investigators divided schools with TUPE grants into three groups – those that had a grant less than three years, those with grants for more than three years but less than six years, and those that had a grant for six years or more. A period of three years was considered minimally necessary for schools to fully realize the benefits of developing and implementing a school-based tobacco use prevention education program. The investigators then compared student reports across these three groups of grantee schools.[1] These comparisons are presented in **Table 5.8**.

In contrast to what the investigators found in analyzing the 2003-04 IETP data, TUPE grant duration was found to be significantly related to student measures of tobacco use prevention services. Students in high schools that had had a competitive grant for 3-6 years reported LESS exposure to program services than students in high schools that had had a grant for either less than 3 years, or for more than 6 years (Table 5.8).

[1] The investigators also compared teacher and school coordinator reports of program implementation across these three groups of grantee schools. Although the limited sample size reduces the ability to detect differences, in no case was there evidence that TUPE grant duration was related to teacher and coordinator reports of program implementation.

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**Table 5.8. Student Reports of Exposure to Prevention/Intervention Services by Duration of High School Competitive Grant**

| | Length of TUPE Grant | | | |
|---|---|---|---|---|
| | 0-3 Years (Percent) | 3-6Years (Percent) | 6+ Years (Percent) | *p-value* |
| Received information about tobacco | 65.0% [62.2, 67.8] | 53.4% [48.1, 58.6] | 64.7%** [61.5, 67.8] | 0.00 |
| Tobacco information helpful | 48.3% [45.6, 51.1] | 37.3% [31.2, 43.8] | 44.3%** [42.1, 46.6] | 0.00 |
| Tobacco lessons | 43.6% [40.7, 46.5] | 29.5% [25.5, 33.8] | 45.5%** [41.0, 50.1] | 0.00 |
| Guest speaker | 41.9% [38.5, 45.3] | 29.9% [23.7, 37.0] | 39.1%* [35.7, 42.6] | 0.01 |
| Assembly about tobacco use | 31.9% [28.5, 35.6] | 20.5% [14.6, 27.9] | 30.7%* [25.8, 36.1] | 0.03 |
| Taught about why people smoke | 37.0% [33.6, 40.4] | 27.9% [22.5, 34.1] | 36.7%* [33.7, 39.9] | 0.02 |
| Taught about smoking prevalence | 24.3% [20.9, 27.9] | 16.2% [13.4, 19.6] | 22.0%** [19.8, 24.2] | <0.01 |
| Taught about physical harm from smoking | 45.0% [40.8, 49.3] | 36.2% [30.7, 42.0] | 44.7% [41.5, 48.0] | 0.05 |
| Taught about 2nd hand smoke | 35.7% [32.8, 38.7] | 26.5% [22.0, 31.7] | 36.0%** [33.7, 38.3] | 0.00 |
| Smoking Decision-making skills | 48.3% [45.6, 51.1] | 37.3% [31.2, 43.8] | 44.3%** [42.1, 46.6] | 0.00 |
| Refusal skills training | 16.0% [14.1, 18.0] | 14.0% [10.3, 18.8] | 14.8% [13.4, 16.3] | 0.55 |
| Cessation training | 61.1% [57.8, 64.4] | 52.7% [48.0, 57.3] | 56.8%* [53.3, 60.3] | 0.01 |
| Cessation classes | 22.5% [17.4, 28.7] | 15.3% [7.1, 29.8] | 22.6% [14.5, 33.3] | 0.56 |

Note: Brackets contain the 95 percent confidence intervals.
* $0.01 \leq p < 0.05$
** $p < 0.01$

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## Student Tobacco Use and Tobacco Use Precursors in TUPE-Grantee and Non-Grantee High Schools

With the exception of cessation services, reception of tobacco information, use of guest speakers, and use of tobacco use assemblies, the results presented above indicate that students in grantee schools reported similar levels of exposure to program services as students in non-grantee schools. Because there were few apparent differences in program exposure, there were likely to be few grantee/non-grantee differences in tobacco use among students. According to the results shown in **Table 5.9** and **Figure 5.9**, lifetime tobacco use, current cigarette use, daily cigarette use, and lifetime regular cigarette use were not different in grantee and non-grantee schools. Although the lack of association between TUPE participation and student smoking behavior is consistent

with the inference that the competitive TUPE program was not effective in reducing tobacco use, other inferences are also plausible. For example, it is equally plausible that grantee schools had a greater need for services prior to receiving an award, and thus higher tobacco use rates initially.

The finding that tobacco use rates were no different in grantee and non-grantee schools at the time of the survey would then suggest that grantee schools had made progress in reducing tobacco use, bringing their previously high rates down to the same level as the rates of non-TUPE-funded schools. With cross-sectional data such as these, it is impossible to make strong inferences about the effectiveness of the competitive TUPE program. Repeated assessment of the same schools over time would help to distinguish these alternative explanations for why there were few significant differences in student tobacco use by TUPE funding status. The results of such an assessment are reported in Chapter 9.

**Table 5.9. Student Smoking Behavior by High School Competitive Grantee Status**

| | High School Grantee Status | | |
|---|---|---|---|
| | Non-grantee (Percent) | Grantee (Percent) | *p-value* |
| Lifetime cigarette use | 40.8% [38.8, 43.0] | 41.9% [39.6, 44.2] | 0.50 |
| Current cigarette use | 14.9% [13.7, 16.1] | 16.1% [14.5, 17.8] | 0.25 |
| Daily cigarette use | 8.2% [7.5, 9.0] | 8.6% [7.4, 10.0] | 0.63 |
| Lifetime 100+ cigarette use | 5.8% [5.1, 6.6] | 6.5% [5.5, 7.7] | 0.30 |

Note: Brackets contain the 95 percent confidence intervals.
* $0.01 \leq p < 0.05$
** $p < 0.01$

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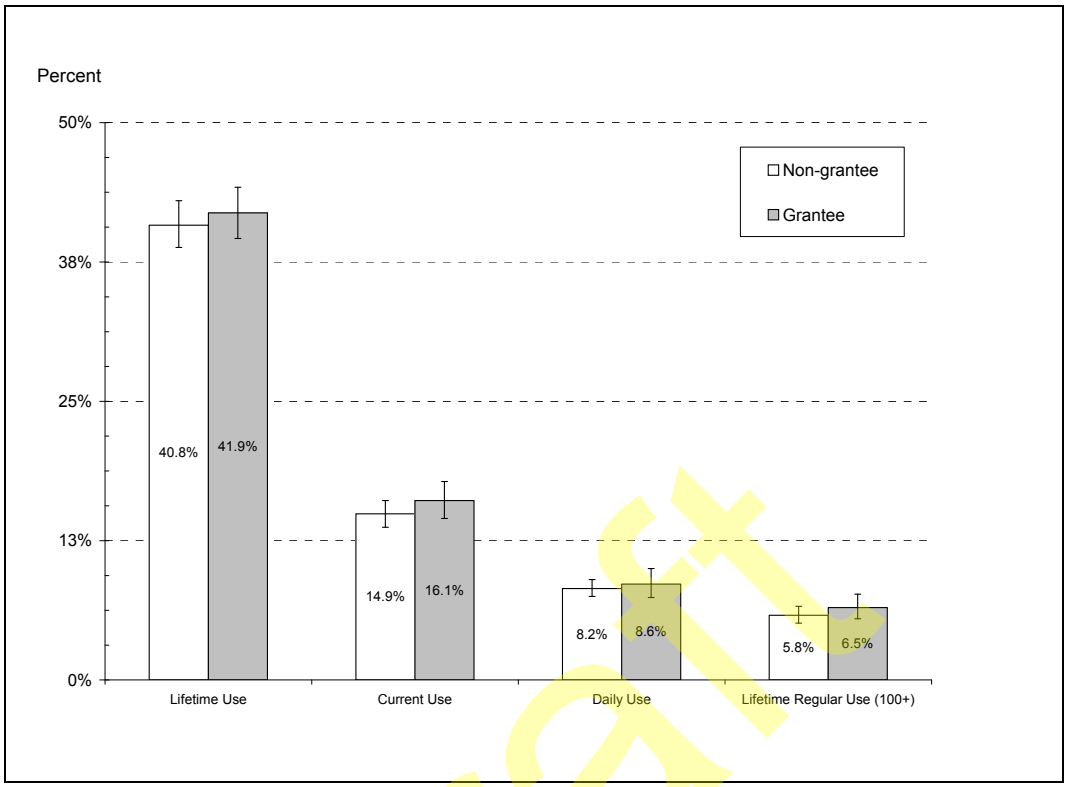
**Figure 5.9. Student Tobacco Use by TUPE Grantee Status (High Schools)**




**Figures 5.10** and **5.11** and **Table 5.10** show grantee/non-grantee differences in tobacco use precursors – factors known to be associated with reductions in future tobacco use. For the majority of indicators, students in grantee and non-grantee schools reported similar values on the tobacco use precursors considered. Intentions not to smoke in the future, ease of tobacco refusal, peer cigarette use, accuracy of smoking norms, and knowledge about consequences of tobacco use were not statistically different between students in grantee and non-grantee high schools. Students in grantee schools endorsed anti-tobacco industry beliefs more strongly (3.30; 95% CI [3.28, 3.32] vs. 3.27; 95% CI [3.25, 3.29]] than their counterparts in non-grantee schools. However, this difference was marginally non-significant ($p = 0.06$).

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**Figure 5.10 Student Tobacco Use Precursors by TUPE Grantee Status (High Schools)**

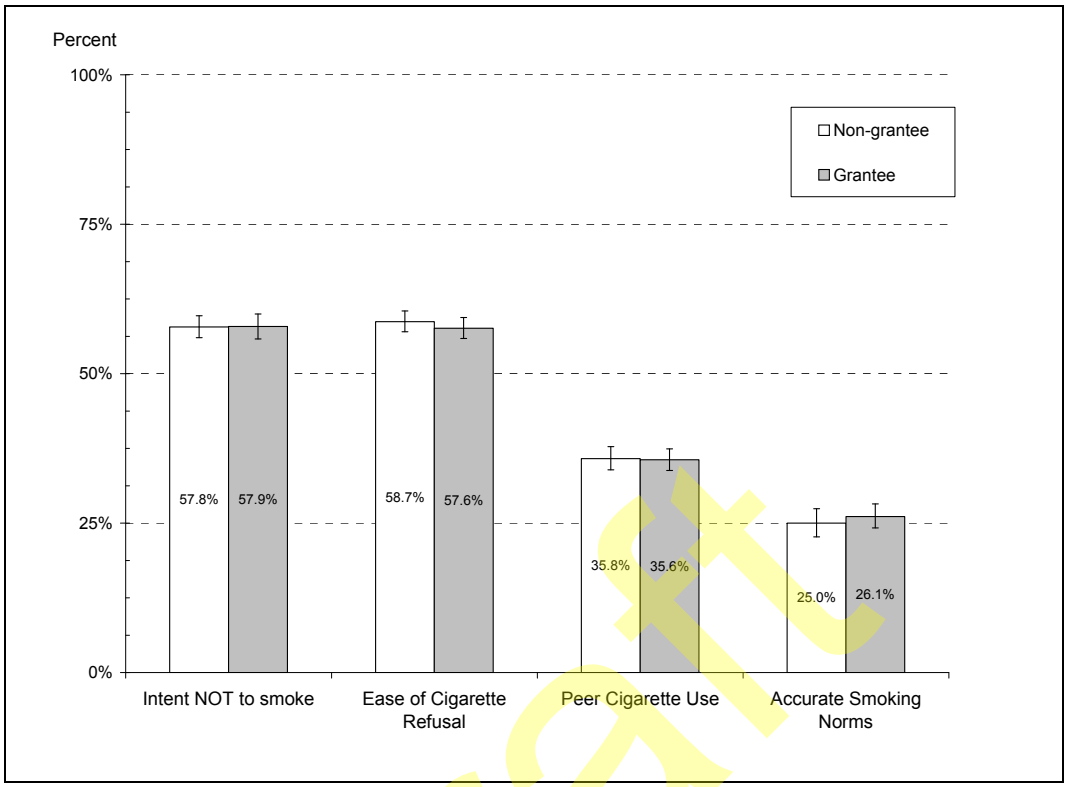


**Figure 5.11 Anti-smoking perceptions by TUPE Grantee Status (High Schools)**

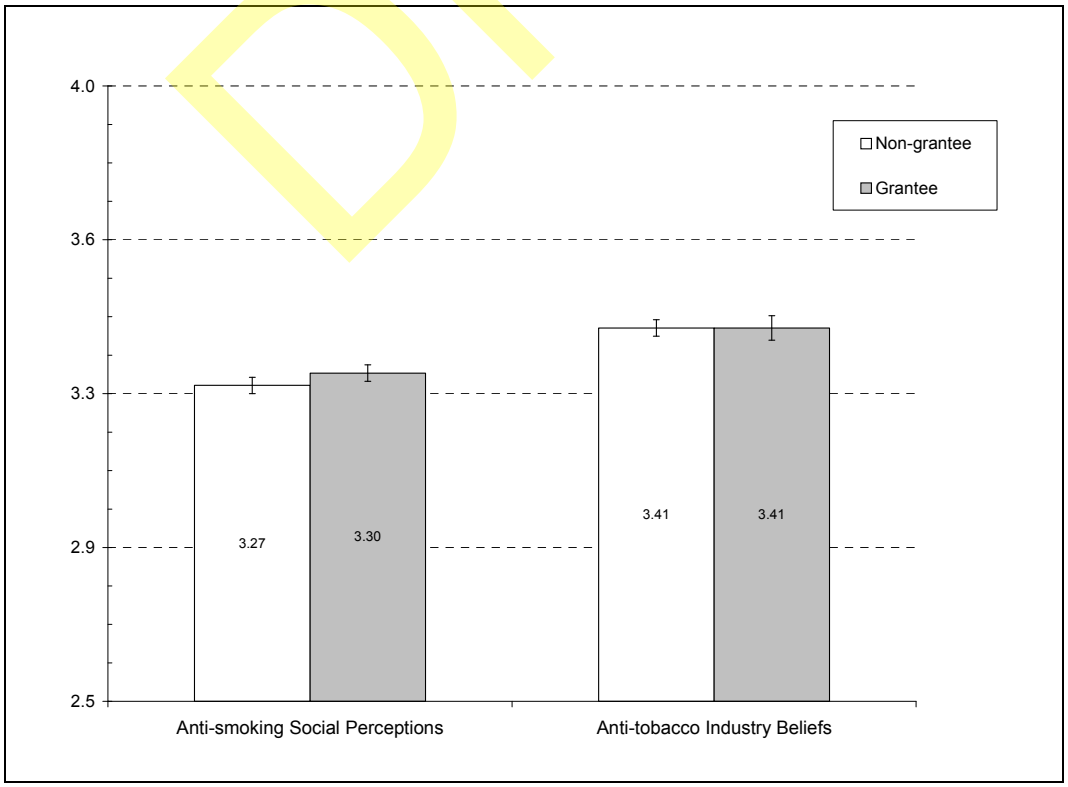


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**Table 5.10. Student Precursors to Smoking by High School Competitive Grantee Status**

| | High School Grantee Status | | |
|---|---|---|---|
| | **Non-grantee** | **Grantee** | ***p-value*** |
| Intent NOT to smoke | 57.8%<br>[56.0, 59.7] | 57.9%<br>[55.8, 60.0] | 0.96 |
| Ease of cigarette refusal | 58.7%<br>[57.0, 60.5] | 57.6%<br>[55.9, 59.4] | 0.39 |
| Peer cigarette use | 35.8%<br>[33.9, 37.8] | 35.6%<br>[33.8, 37.4] | 0.86 |
| Accurate smoking norms | 25.0%<br>[22.7, 27.4] | 26.1%<br>[24.2, 28.2] | 0.47 |
| Anti-smoking social perceptions | 3.27<br>[3.25, 3.29] | 3.30<br>[3.28, 3.32] | 0.06 |
| Knowledge about consequences of tobacco use | 0.70<br>[0.68, 0.72] | 0.71<br>[0.69, 0.73] | 0.64 |
| Anti-tobacco industry beliefs | 3.41<br>[3.39, 3.43] | 3.41<br>[3.38, 3.44] | 0.92 |

Note: Brackets contain the 95 percent confidence intervals.
* $0.01 \leq p < 0.05$
** $p < 0.01$

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As discussed at the beginning of this chapter, grantee schools differed slightly from non-grantee schools in terms of their demographic composition, which may have masked differences between grantee schools and non-grantee schools attributable to tobacco prevention education. To account for this potential confound, the investigators used conditional multiple regression to examine differences in student tobacco use and tobacco use precursors across grantee and non-grantee schools. In these regression models, the investigators controlled for ethnic composition, the percentage of students receiving subsidized meals, and parental education. The results based on these models were substantively identical to those discussed above. The investigators conclude that differences between grantee and non-grantee schools in student ethnic and socioeconomic composition did not mask differences in student tobacco use or tobacco use precursors.

As the investigators did with exposure to program services, the investigators also examined how tobacco use and tobacco use precursors varied across grantee high schools by duration of funding. If schools become more effective at preventing and reducing tobacco use with increasing experience, then the investigators would expect grantees that had been funded for a longer period of time to exhibit lower levels of tobacco use and lower levels of precursors to tobacco use than more recent grantees. **Tables 5.11** and **5.12** show how tobacco use prevalence and tobacco use precursors are related to the duration of TUPE competitive grant funding. The results suggest that grant duration was significantly related to student measures of tobacco use or its precursors. More students in high schools that had had a competitive grant for 3 to 6 years reported current cigarette use, daily cigarette use, and use of 100 cigarettes or more in their lifetime than did students in high schools that had had a grant for fewer

than 3 years or 6 years or more. Students in high schools that had been funded for a longer period (6+ years) reported greater anti-tobacco industry beliefs than their counterparts in high schools that had been funded for fewer than 6 years.

**Table 5.11. Student Smoking Behavior by Duration of High School TUPE competitive Grant**

| | Length of TUPE Grant | | | |
|---|---|---|---|---|
| | **0-3 Years (Percent)** | **3-6 Years (Percent)** | **6+ Years (Percent)** | ***p-value*** |
| Lifetime cigarette use | 40.9% [37.3, 44.6] | 46.5% [40.8, 52.3] | 41.4% [38.3, 44.4] | 0.22 |
| Current cigarette use | 13.6% [11.5, 16.0] | 21.3% [16.8, 26.5] | 17.1%** [15.2, 19.3] | 0.00 |
| Daily cigarette use | 7.3% [6.0, 8.7] | 12.3% [8.7, 17.0] | 8.9%** [7.0, 11.3] | 0.03 |
| Lifetime 100+ cigarette use | 5.0% [4.0, 6.3] | 10.4% [7.5, 14.3] | 6.8%** [5.4, 8.6] | 0.00 |

Note: Brackets contain the 95 percent confidence intervals.
* 0.01 ≤ p < 0.05
** p < 0.01

**Table 5.12. Student Precursors to Smoking by Duration of High School TUPE competitive Grant**

| | Length of TUPE Grant | | | |
|---|---|---|---|---|
| | **0-3 Years** | **3-6Years** | **6+ Years** | ***p-value*** |
| Intent Not to smoke | 58.5% [54.9, 62.0] | 56.2% [52.1, 60.2] | 57.9% [54.7, 61.0] | 0.70 |
| Ease of cigarette refusal | 59.0% [56.6, 61.3] | 55.0% [49.6, 60.4] | 57.0% [54.2, 59.8] | 0.29 |
| Peer cigarette use | 34.6% [32.1, 37.3] | 39.7% [35.1, 44.4] | 35.1% [32.4, 38.0] | 0.15 |
| Accurate smoking norms | 27.6% [24.6, 30.8] | 20.8% [18.0, 23.9] | 26.4% [23.2, 29.9] | 0.05 |
| Anti-smoking social perceptions | 3.29 [3.26, 3.32] | 3.28 [3.22, 3.34] | 3.31 [3.28, 3.34] | 0.47 |
| Knowledge about consequences of tobacco use | 0.70 [0.66, 0.74] | 0.70 [0.64, 0.76] | 0.73 [0.71, 0.75] | 0.14 |
| Anti-tobacco industry beliefs | 3.38 [3.34, 3.42] | 3.38 [3.28, 3.48] | 3.45* [3.41, 3.50] | 0.02 |

Note: Brackets contain the 95 percent confidence intervals.
* 0.01 ≤ p < 0.05
** p < 0.01

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## Conclusion

Our analyses of teacher, school coordinator, school administrator, and district coordinator reports of program implementation indicated that high schools with competitive TUPE grants were more likely than other schools to offer cessation services and referral to students, cover specific topics on tobacco use, sponsor school-wide anti-tobacco activities, and to provide professional development training to school coordinators. The investigators also found no evidence of differences in program implementation across grantee and non-grantee high schools (such as school no-tobacco use policy, suspension policy, hours of TUPE classes taught, and curriculum used for tobacco use prevention lessons).

The majority of secondary school students in CA recalled receiving information about tobacco use at school. Students who attended schools with competitive TUPE grants were equally likely to recall being exposed to specific topics on tobacco use compared to other students. This underscores the fact that the state TUPE competitive program is not the only source of resources for school-based tobacco prevention activities[2]. Even high schools that do not have competitive TUPE grants are able to provide tobacco prevention education to their students. The most significant difference between grantee and non-grantee schools is the presence of cessation classes and cessation training. Almost one fifth of students in grantee schools indicated that their school has a special program for students who want to quit smoking, compared to seven percent among students in non-grantee schools. Services for cessation appear to be a common component funded by the high school competitive TUPE program. There appeared to be no TUPE curriculum differences, however, to parallel the observed differences in cessation services between TUPE grantee and non-grantee schools.

TUPE competitive grant duration was significantly related to student exposure to tobacco prevention services and student tobacco use. These results differed from those reported in previous In-School Evaluation of TUPE Program (IETP) reports or in the predecessor, Independent Evaluation of Student Smoking (IESS) reports.

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[2] Some non-TUPE-funded schools had resources for supporting a TUPE-type curriculum. Given that many schools used their Safe & Drug-Free Schools resources to discourage tobacco use, it is a parsimonious explanation for the lack of curriculum differences between TUPE-funded and non-TUPE-funded schools to believe that students in the non-TUPE-funded schools nevertheless received exposure to some kind of TUPE-type curriculum.

# CHAPTER 6

## KNOWLEDGE OF TUPE PROGRAM IMPLEMENTATION

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# CHAPTER 6: KNOWLEDGE OF TUPE PROGRAM IMPLEMENTATION

**CHAPTER HIGHLIGHTS**

- **Reports of TUPE program implementation were not consistent across school-level and district-level staff, in part because district coordinators had a more inclusive perspective that included all schools while TUPE staff at sampled schools had perspectives more likely to be unique to their school.**
- **District staff tended to report a higher frequency of adherence to federal guidelines (e.g., instruction on various effects of tobacco use, not just physical consequences; using developmentally appropriate, science-based published curricula; involving parents and families) than was reported by school staff.**
- **Staff across all levels reported the presence and enforcement of a tobacco-control policy in their respective school, but there was lack of agreement on the consequences for violation of this policy, suggesting that such policies may need to be more clearly and consistently defined and communicated throughout the school.**
- **Both quantitative and qualitative data gathered during interviews with a subset of schools indicated that staff were including multiple approaches to tobacco use prevention (such as social causes of tobacco use and social consequences of tobacco use in addition to physical health effects) and that nearly all were using at least one science-based program.**
- **School TUPE coordinators and teachers continue to feel unprepared to teach about tobacco and revealed that significant barriers existed for engaging in professional development and implementing TUPE training among teachers already overburdened with high-pressure demands regarding meeting state education standards and boosting their students' academic achievement.**

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## Introduction

To assess the extent to which teachers and administrators were knowledgeable about and actively involved in the TUPE program in their school or district, data was collected from adults at randomly selected school sites and district offices. This data was also collected to enable a comparison of the data from the adult surveys with student data to help understand how various types and intensities of TUPE program implementation related to observed student outcomes. Using data from these sources, Chapter 7 discusses the effects of school-level policies and practices on student exposure to TUPE programming, and Chapter 8 discusses the impact of school-level policies and practices on student tobacco use outcomes and tobacco use precursors.

More specifically, this chapter will provide a description of the responses across the four adult surveys (teacher, school administrator, school TUPE/Health Coordinator, and District TUPE/Health Coordinator) with respect to questions about the teachers' knowledge of their local TUPE Program and knowledge of the CDC Tobacco Program Guidelines (CDC, 1994). In addition to the quantitative data collected through the self-report surveys, qualitative data was collected from 18 schools, six middle and twelve high schools. The schools were represented by 16 school districts (three schools were in the Los Angeles Unified School District). In addition to the interviews, data was collected from the District Annual Reports submitted to CDE about Title IV and TUPE program activities and from successful proposals for the TUPE competitive grants in middle and high schools.

### Adult Surveys: Responses to Items Related to Centers for Disease Control and Prevention (CDC) Guidelines

As discussed in Chapter 1, surveys were administered to adults at both the school level and the district level. The school site administrator was typically the principal or assistant principal in charge of all health-related curricula. The school site coordinator was either the designated TUPE Coordinator or if there was none, then some other teacher responsible for the health curriculum at the site. Finally, the teachers were those who happened to be in the classrooms of students selected for participation in this study. It is noteworthy that some of these teachers had no previous involvement with TUPE. These teachers completed their survey while their class completed the student survey.

### CDC Guideline Number One: Develop and Enforce a School Policy on Tobacco Use

There was high consensus on the items related to school policy. The majority of the adult respondents said they were aware of school and district tobacco use/tobacco-free policies. When asked how these policies were communicated at the school-level, the most common responses were (1) parent/student/employee handbooks; (2) staff meetings; (3) posters/signs/fliers; and (4) email or website postings. **Table 6.1** provides responses to questions about tobacco use policies. In general, adults at the district and

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school sites agreed that the policies applied to both students and adults and were enforced 24 hours per day. In general teachers were less aware (80.1 percent; 95% CI [75.9, 83.8]) than site coordinators (86.9 percent; 95% CI [77.2, 92.9]), and site administrators (91.7 percent; 95% CI [85.9, 95.2]) that the policy applied to visitors. Answers regarding consequences of the policies for students varied, suggesting that while there may be a policy in place, the consequences of violating the policy were either not well developed or not clearly communicated to staff, or both. Again, there was more congruence among administrators than teachers.

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**Table 6.1 Staff Reports of Adherence to CDC Guidelines Component 1: Tobacco Use Policies and Enforcement**

| | Teacher[1] (Percent) [CI] | Site Coordinator (Percent) [CI] | Site Administrator (Percent) [CI] | District Coordinator (Percent) [CI] |
|---|---|---|---|---|
| To whom the policy applies | | | | |
| Students | 87.4% [83.7, 90.4] | 89.9% [80.1, 95.1] | 99.1% [97.0, 99.7] | — |
| Teachers and staff | 84.6% [80.0, 88.2] | 90.6% [81.9, 95.4] | 96.6% [92.3, 98.5] | — |
| School visitors | 80.1% [75.9, 83.8] | 86.9% [77.2, 92.9] | 91.7% [85.9, 95.2] | — |
| Don't know | 9.9% [7.7, 12.6] | 7.7% [3.5, 16.1] | 0.2% [0.0, 1.2] | — |
| Responsible for enforcing the policy at school | | | | |
| Administrators | 93.1% [90.5, 95.0] | 97.0% [85.9, 99.4] | 99.6% [98.3, 99.9] | — |
| Faculty and staff | 82.9% [79.8, 85.6] | 89.7% [82.5, 94.1] | 80.8% [72.8, 86.8] | — |
| Security guards / School resource officers | 78.8% [75.0, 82.2] | 84.7% [74.3, 91.4] | 85.6% [79.3, 90.2] | — |
| Students | 16.0% [13.5, 18.8] | 25.1% [16.7, 36.0] | 21.7% [14.1, 31.8] | — |
| Policy enforced during school hours | | | | |
| A great deal | 84.7% [81.4, 87.6] | 74.1% [63.4, 82.6] | 96.2% [91.6, 98.3] | 88.0% [74.4, 94.9] |
| Moderately | 12.8% [10.0, 16.2] | 16.4% [10.6, 24.5] | 3.8% [1.7, 8.4] | 11.0% [4.5, 24.5] |
| Not too much | 2.0% [1.0, 4.0] | 9.5% [4.1, 20.1] | 0.0% [—] | 0.8% [0.1, 5.6] |
| Not at all | 0.5% [0.1, 1.9] | 0.0% [—] | 0.0% [—] | 0.2% [0.0, 1.8] |
| Consequences for student's offenses on school ground | | | | |
| Suspension | 51.4% [47.1, 55.6] | 66.8% [56.4, 75.8] | 66.9% [56.7, 75.7] | 71.0% [53.5, 83.9] |
| Getting a ticket | 10.1% [7.4, 13.8] | 30.3% [21.5, 40.8] | 39.0% [30.1, 48.7] | 49.4% [27.7, 71.4] |
| Referred to a special class | 12.7% [10.0, 16.1] | 34.2% [24.9, 44.9] | 32.7% [24.1, 42.7] | 56.6% [35.8, 75.3] |
| A special class in lieu of suspension | 4.0% [2.7, 5.9] | 25.6% [18.2, 34.8] | 20.6% [13.9, 29.5] | 52.9% [31.6, 73.3] |
| An adult counselor | 12.5% [9.9, 15.6] | 30.0% [21.0, 40.9] | 35.8% [26.3, 46.6] | 58.0% [37.6, 76.0] |
| A peer counselor | 3.1% [2.1, 4.7] | 4.9% [2.4, 9.9] | 14.0% [8.9, 21.4] | 13.8% [6.5, 26.9] |
| Punishment for smoking | 8.0% [6.0, 10.5] | 18.4% [11.1, 28.8] | 29.3% [20.7, 39.8] | 32.4% [11.2, 64.5] |
| Parents are called in | 16.4% [12.9, 20.5] | 37.4% [27.8, 48.1] | 52.1% [41.7, 62.4] | 61.9% [42.2, 78.3] |

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**Table 6.1 Staff Reports of Adherence to CDC Guidelines Component 1: Tobacco Use Policies and Enforcement**

| | Teacher[1] (Percent) [CI] | Site Coordinator (Percent) [CI] | Site Administrator (Percent) [CI] | District Coordinator (Percent) [CI] |
|---|---|---|---|---|
| A cessation clinic | 5.2% [3.6, 7.5] | 35.3% [26.0, 45.9] | 37.7% [28.9, 47.4] | 61.3% [41.5, 78.0] |
| Required to go to Saturday school | 4.0% [2.8, 5.8] | 18.4% [11.7, 27.8] | 13.5% [8.3, 21.1] | 27.5% [14.9, 45.0] |

[1] All teachers

More district coordinators than site staff believed that the consequences of smoking at school were: referral to a special class, referral to an adult counselor, parents called in, or referral to a cessation clinic. Teachers differed from all other staff in their responses to this item. These disparities may be a result of district policies that allow school administrators some discretion in determining the consequences of policy violations at the site level. It could also reflect imperfect communication from the district to the school and from school administrators to staff about the policy enforcement protocol and the consequences of violating those policies.

**Table 6.2** shows teachers' reports on policy enforcement and consequences of violation, both for teachers who taught health-related subjects and for teachers who did not teach health-related subjects.[1] The responses were similar to those reported for teacher and administrator respondents in the 2003-2004 IETP report. The responses to the questions about enforcement of the school's tobacco-free policy were higher for "health" teachers compared to "non-health" teachers with respect to suspension, getting a ticket, and parents called in as consequences of violation of policies, and that students are responsible for enforcing the policy at school.

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[1] Science & health teachers in middle schools; health and physical education teachers in high schools.

**Table 6.2 Teacher Reports of Adherence to CDC Component 1 – Tobacco Use Policies, by Subject Matter Taught by Middle/High School Teachers**

| | Teachers who Teach Health-related subject(s)[1] (Percent), [CI] | Teachers who do not Teach Health-related subject(s) (Percent), [CI] |
|---|---|---|
| To whom the policy applies | | |
| Students | 92.4% [83.9, 96.6] | 86.4% [82.1, 89.8] |
| Teachers and staff | 89.5% [79.2, 95.0] | 83.6% [78.4, 87.7] |
| School visitors | 87.7% [78.6, 93.3] | 78.5% [73.6, 82.8] |
| Don't know | 6.3% [2.8, 13.9] | 10.6% [8.2, 13.6] |
| Responsible for enforcing the policy at school | | |
| Administrators | 93.6% [86.7, 97.0] | 93.0% [90.1, 95.1] |
| Faculty and Staff | 84.4% [75.2, 90.7] | 82.6% [79.3, 85.5] |
| Security Guards/School Resource Officers | 62.9% [53.1, 71.7] | 82.1% [77.9, 85.7] |
| Students | 23.9% [17.8, 31.3] | 14.3% [11.5, 17.8] |
| Policy enforced during school hours | | |
| A great deal | 86.3% [76.7, 92.3] | 84.4% [80.5, 87.7] |
| Moderately | 10.6% [5.0, 21.3] | 13.2% [10.0, 17.3] |
| Not too much | 3.1% [1.1, 8.8] | 1.7% [0.8, 3.6] |
| Not at all | 0.0% [—] | 0.6% [0.2, 2.3] |
| Consequences for student's offenses on school ground | | |
| Suspension | 61.7% [51.4, 71.7] | 49.2% [44.5, 54.0] |
| Getting a ticket | 17.1% [10.2, 27.1] | 8.7% [5.9, 12.6] |
| Referred to a special class | 15.1% [7.8, 27.4] | 12.3% [9.7, 15.4] |
| A special class in lieu of suspension | 3.4% [1.4, 8.2] | 4.1% [2.6, 6.4] |
| An adult counselor | 18.7% [12.0, 27.8] | 11.2% [8.4, 14.7] |
| A peer counselor | 1.9% [0.5, 6.9] | 3.4% [2.2, 5.2] |

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**Table 6.2 Teacher Reports of Adherence to CDC Component 1 – Tobacco Use Policies, by Subject Matter Taught by Middle/High School Teachers**

| | Teachers who Teach Health-related subject(s)[1] (Percent), [CI] | Teachers who do not Teach Health-related subject(s) (Percent), [CI] |
|---|---|---|
| Punishment for smoking | 9.2% [5.2, 15.8] | 7.7% [5.7, 10.5] |
| Parents are called in | 37.4% [28.0, 47.8] | 12.0% [9.2, 15.6] |
| A cessation clinic | 4.8% [1.7, 12.6] | 5.3% [3.7, 7.5] |
| Required to go to Saturday school | 4.5% [1.8, 10.6] | 4.0% [2.6, 6.0] |

[1]Science and Health teachers in middle and high schools.

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## CDC Guideline Number Two: Provide Instruction About the Negative Physiologic and Social Consequences of Tobacco Use, Social Influences on Tobacco Use, Peer Norms Regarding Tobacco Use, and Refusal Skills

## CDC Guideline Number Three: Provide Developmentally Appropriate Tobacco Use Prevention Education in K-12; This Instruction should be Especially Intensive at the Junior High/Middle School Level and be reinforced at the High School Level

Beginning in the 2002-2003 school year, school districts were required to submit a Local Education Agency Plan (LEAP) to the California Department of Education (CDE) for federal entitlements as part of the No Child Left Behind Act of 2001. Although the TUPE program is a state-funded program, it was included in the LEAP template under Performance Goal 4: All students will be educated in learning environments that are safe, drug-free, and conducive to learning. Districts receiving TUPE entitlement funds were required to identify one program addressing alcohol, violence, other drugs, and tobacco that they would then administer to at least 50 percent of students in an identified target group. The duration of each district's LEAP is five years (July 1, 2003 through June 30, 2008). Districts began implementing their plan during the 2003-2004 school year and were required to have the plan for Goal 4 fully implemented by the end of the 2005-2006 school year.

Subsequent to the submission of the LEAPs, CDE added the requirement that the programs selected must be “science-based.” **Tables 6.3** and **6.4** show the percent of site- and district-level coordinators reporting the use of one or more of these programs at all middle schools in the sample and at TUPE grantee and non grantee high schools. The reports show marked improvement from the findings in 2003-2004 on the use of science-based programs. However, again there was discrepancy between site-level (52.4 percent; 95% CI: [29.2, 74.7]) and district-level (98.6 percent; 95% CI: [92.1, 99]) reports of the use of these programs at the middle schools. All middle schools are eligible to receive TUPE entitlement funding, and a small number of schools have received grade 6-8 competitive grant funding. There was more congruence between

site and district coordinators at the TUPE grantee high schools, with 84.2 percent (95% CI: [72.3, 91.6]) of site and 100 percent of district coordinators reporting use of one or more science-based programs. Moreover, it appears that a greater number of schools receiving TUPE competitive grant funding compared to non-grantee schools are using science-based programs.

**Table 6.3 Staff Reports of Use of Science-based Program at Middle Schools**

| | Site Coordinator (Percent), [CI] | District Coordinator (Percent), [CI] |
|---|---|---|
| Botvin's LifeSkills™ Training | 2.3% [0.3, 15.9] | 17.1% [3.3, 55.1] |
| Minnesota Smoking Prevention Program | 0.0% [—] | 55.8% [14.0, 90.8] |
| Project ALERT | 50.1% [27.1, 73.1] | 77.7% [38.8, 95.0] |
| Project Toward No Drug Abuse (TND) | 0.0% [—] | 81.2% [48.5, 95.2] |
| Project Toward No Tobacco Use (TNT) | 24.1% [6.4, 59.4] | 5.5% [1.1, 22.7] |
| Too Good for Drugs | 25.9% [7.7, 59.7] | 68.5% [27.0, 92.7] |
| TAP or TEG (readiness to quit and cessation) | 6.1% [1.3, 23.4] | 69.3% [29.1, 92.6] |
| Any of the above | 52.4% [29.2, 74.7] | 98.6% [92.1, 99.8] |

**Table 6.4 Staff Reports of Use of Science-based Program at High Schools by TUPE Grantee Status**

| | Site Coordinator | | District Coordinator | |
|---|---|---|---|---|
| | Grantee (Percent) [CI] | Non-grantee (Percent) [CI] | Grantee (Percent) [CI] | Non-grantee (Percent) [CI] |
| Botvin's LifeSkills™ Training | 0.0% [—] | 0.0% [—] | 12.5% [4.1, 32.2] | 19.8% [8.1, 40.9] |
| Minnesota Smoking Prevention Program | 22.1% [10.0, 41.9] | 3.8% [0.9, 14.4] | 40.1% [11.7, 77.3] | 0.7% [0.1, 5.1] |
| Project ALERT | 11.5% [4.5, 26.6] | 1.5% [0.3, 6.7] | 64.7% [37.3, 85.0] | 53.5% [34.0, 72.0] |
| Project Toward No Drug Abuse (TND) | 17.0% [9.3, 29.0] | 7.2% [2.6, 18.6] | 58.5% [29.7, 82.5] | 16.2% [5.6, 38.6] |
| Project Toward No Tobacco Use (TNT) | 15.3% [7.0, 30.3] | 8.1% [3.1, 19.6] | 12.0% [4.3, 29.3] | 6.9% [2.0, 21.2] |
| Too Good for Drugs | 24.6% [14.1, 39.2] | 26.1% [14.5, 39.2] | 79.4% [57.3, 91.7] | 48.9% [30.2, 68.0] |
| TAP or TEG (readiness to quit and cessation) | 58.7% [43.2, 72.6] | 12.3% [4.7, 28.5] | 70.8% [44.6, 87.9] | 18.4% [7.2, 39.6] |
| Any of the above | 84.2% [72.3, 91.6] | 41.7% [27.9, 56.9] | 100.0% [—] | 91.4% [78.5, 96.9] |

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**Table 6.5** provides an overview of instructional programs related to CDC Components Two and Three, addressing the content of the TUPE curriculum and the developmental appropriateness of the grade level sequencing of TUPE messages. In general, the perception of the district coordinators with regard to instructional content was not congruent with responses from site staff. The CDC Guidelines listed several topics that have been found to be important components of effective tobacco use prevention programs. The adult respondents were asked to mark all of the topics taught in tobacco prevention lessons. Consistent with the findings in 2003-2004, district coordinators tended to report a higher frequency for each of the topics listed, compared to other staff respondents. It is unclear why teachers who reported teaching tobacco lessons in the previous year reported a lower prevalence of having taught all of the topics except for the effects of tobacco on physical health and tobacco advertising and marketing, when compared to all other adult respondents.

Health effects of tobacco and second-hand smoke were the most widely named topics across adult respondents (this topic was followed in popularity by: reasons why young people smoke, secondhand smoke, and the effects of tobacco advertising). Only 36.5 percent of teachers who taught prevention lessons in the past year included general personal and social skills, while 49.8 percent of site coordinators and 80.5 percent of district coordinators marked this topic. Ten percent (10.3 percent; 95% CI: [6.7, 15.5]) of the teachers who taught tobacco prevention lessons reported that they did not include any of the11 topics in their lessons, and 69.6 percent (95% CI: [62.7, 75.8]) of teachers who taught prevention lessons covered at least 3 topics in their prevention lessons during last school year.

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**Table 6.5 Staff Reports of Adherence to CDC Guidelines Components 2 & 3: Tobacco Use Prevention Education Curriculum – Content.**

| | Teacher[1] (Percent) [CI] | Site Coordinator (Percent) [CI] | District Coordinator (Percent) [CI] |
|---|---|---|---|
| Teaching new science-based curriculum | | | |
| Percent of respondents reporting teaching | 9.3% [4.7, 17.5] | 42.3% [31.0, 54.4] | — |
| Topics of Instruction | | | |
| Effects of tobacco on health | 75.8% [69.9, 80.8] | 67.5% [57.5, 76.1] | 95.7% [90.1, 98.2] |
| How many young people smoke | 44.9% [37.0, 53.1] | 63.2% [53.3, 72.1] | 70.5% [53.1, 83.4] |
| Reasons why young people smoke | 56.5% [48.8, 63.8] | 63.0% [53.0, 71.9] | 77.7% [62.9, 87.7] |
| Cost of using tobacco | — | — | 72.5% [55.7, 84.8] |
| Social consequences of using tobacco | 50.7% [43.1, 58.2] | 60.7% [50.9, 69.8] | 74.7% [58.7, 86.0] |
| Second-hand smoke | 57.9% [50.1, 65.3] | 62.8% [52.9, 71.8] | 88.3% [77.9, 94.2] |
| Social influences promoting tobacco use | 53.7% [46.4, 60.8] | 58.0% [48.1, 67.3] | 77.9% [63.1, 87.9] |
| Behavioral skills for resisting offers | 41.0% [34.4, 48.0] | 59.5% [49.7, 68.7] | 79.3% [64.1, 89.1] |
| General personal and social skills | 36.5% [29.3, 44.4] | 49.8% [40.4, 59.2] | 80.5% [66.5, 89.6] |
| Tobacco cessation | 23.4% [17.2, 30.9] | 50.0% [40.1, 59.9] | 64.9% [45.8, 80.2] |
| Tobacco advertising and marketing | 58.0% [51.2, 64.6] | 55.6% [45.8, 64.9] | 77.5% [61.4, 88.1] |
| Smokeless tobacco | — | 58.9% [48.9, 68.2] | 45.7% [23.7, 69.5] |
| Cigar use | 18.6% [12.9, 26.1] | 33.2% [24.0, 43.8] | 42.0% [20.0, 67.8] |
| Method of delivery (Somewhat/A great deal) | | | |
| Classroom discussion | 88.7% [80.9, 93.6] | 88.4% [76.2, 94.8] | 97.7% [90.3, 99.5] |
| Small group activities | 35.3% [28.8, 42.5] | 72.6% [62.5, 80.8] | 91.7% [81.0, 96.6] |
| Lecture | 73.2% [65.7, 79.5] | 83.9% [75.4, 89.8] | 87.7% [73.1, 94.9] |
| Student worksheets | 43.1% [34.4, 52.3] | 76.2% [65.2, 84.6] | 86.1% [71.5, 93.9] |
| Environmental strategies | — | 27.9% [19.1, 38.9] | — |
| Family and community collaboration | — | 19.2% [12.4, 28.5] | — |
| Media literacy | — | 61.9% [50.5, 72.1] | — |

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**Table 6.5 Staff Reports of Adherence to CDC Guidelines Components 2 & 3: Tobacco Use Prevention Education Curriculum – Content.**

| | Teacher[1] (Percent) [CI] | Site Coordinator (Percent) [CI] | District Coordinator (Percent) [CI] |
|---|---|---|---|
| Peer helping/peer leaders | — | 44.0% [32.7, 56.0] | — |
| School policies | — | 55.5% [43.6, 66.9] | — |
| Service learning | — | 20.4% [13.4, 29.8] | — |
| Tobacco use cessation | — | 63.5% [52.2, 73.5] | — |
| Youth development/caring schools & caring classrooms | — | 33.8% [25.1, 43.8] | — |
| Role-playing | 25.3% [19.1, 32.7] | 33.0% [23.3, 44.4] | 76.2% [56.6, 88.7] |
| <u>Decision-making about curricula/topics used</u> | | | |
| Teacher makes decision | 56.0% [47.1, 64.6] | — | 2.1% [0.3, 12.4] |
| Site coordinator makes decision | — | 59.3% [49.4, 68.5] | 4.1% [1.4, 11.1] |
| District coordinator makes decision | — | — | 15.9% [7.8, 29.6] |
| Site/district administrator makes decision | 52.2% [45.8, 58.5] | — | — |
| Other | — | — | 77.9% [61.3, 88.7] |

[1]Teachers that taught prevention lessons last year (2004-2005)
[2] "Make all/some decisions" vs. "Make the decisions"
*CDC recommended programs.

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Apparently, more school-site coordinators (31.3 percent; 95% CI: [23.0, 41.2]) did not recall any of the topics being covered in tobacco prevention lessons at their schools. More than 90 percent of district coordinators believed that teachers covered at least three topics in their prevention lessons during the 2005-2006 school year. Again, as with the policy questions, there was great disparity between what district staff thought schools were doing and what school-site staff reported doing. It is important to note that districts were not selected to be representative of the state and schools participating in the survey were not selected to be representative of the district. Given that middle schools can now compete for grant money over and above what they receive as entitlement through the district, not all schools in a district are necessarily implementing programs equally. Most likely the district coordinator responses were influenced by their assessments of the overall implementation of TUPE in all schools in the district, even if the particular school being evaluated did not happen to feature the program or TUPE program component being taught elsewhere in the district.

When asked about the method of delivery of the tobacco lessons, the majority of teachers (88.7 percent), site coordinators (88.4 percent), and district coordinators (97.7 percent) marked class discussion. Lecture (73.2 percent) was the next most frequently marked method by teachers followed by student worksheets (43.1 percent), and small group activities (35.3 percent). More than half of teachers (56.0 percent) reported that teachers make the decision about the curricula used and half (52.2 percent) marked that site coordinators and/or district administrators make the decision. A truly effective TUPE program should feature all of the recommended TUPE components but teachers seemed reluctant to employ the most interactive of the recommended components, namely small group activities and role-playing. Increased teacher training regarding how to conduct TUPE lessons might remedy this problem.

**CDC Guideline Number Four: Provide Program-specific Training for Teachers**

Responses to questions addressing CDC Guidelines four, five, and six are reported in Table 6.4. Approximately one-third of site coordinators (32.5 percent) and one-fifth of teachers (20.5 percent) reported receiving one or more days of in-service training for tobacco use prevention, with 24.9 percent of teachers reporting that they were trained to deliver a specific published tobacco curriculum. These numbers are similar to the numbers reported in the previous 2003-2004 IETP report. Forty-three percent (42.9) of site coordinators and 32.7 percent of teachers felt they were “a great deal” prepared to teach about tobacco use prevention. Teacher training is one of the most costly components of implementing a specific tobacco use prevention curriculum. With reductions in TUPE entitlement funding, schools may not have the resources to pay for training. Furthermore, the increased pressure to keep teachers in the classroom to improve student test scores makes it difficult to get teachers released from class to attend TUPE trainings.

**CDC Guideline Number Five: Involve Parents or Families in Support of School-based Tobacco Use Prevention Programs**

Site staff and district coordinators were also asked questions about parent involvement. **Table 6.6** describes the percentages of teachers, site coordinators, and site administrators reporting use of a variety of strategies for involving parents in school-based tobacco control efforts and who reported using them to a “modest extent” or “very great extent.” The results show patterns similar to those reported in previous TUPE evaluations, with 75.1 percent of site administrators and 60.0 percent of site coordinators responding that tobacco materials were distributed to parents. Distributing tobacco cessation materials to parents or setting up tobacco control displays at "Open House" were cited over 40 percent of the time by site TUPE coordinators and by site administrators as strategies used at the school. Most frequently cited strategies reported by teachers were; including parents in homework assignments (11.4 percent), and displays at open house (9.0%). The discrepancy between teacher ratings and ratings by the other staff on these questions is cause for concern, even taking into account that some teachers had minimal experience with TUPE programs. Low teacher ratings may reflect the difficulty that schools generally have involving parents, especially

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low-income parents, in any optional school-based activities (Hemann & Earle, 2000). The literature demonstrates the importance of the influence of parents on their children's inclination to take up a tobacco use habit (Distefan et al., 1998). It is not clear whether schools have the necessary resources and strategies to effectively capitalize on the acknowledged impact parents have on their children's tendency to use tobacco.

**Table 6.6 Staff Reports of Adherence to CDC Guidelines Components 4, 5 and 6: Parent Involvement, Teacher Training and Cessation Efforts**

| | Teacher[1] (Percent) [CI] | Site Coordinator (Percent) [CI] | Site Administrator (Percent) [CI] | District Coordinator (Percent) [CI] |
|---|---|---|---|---|
| **Involvement of Parents and Families (Modest Extent to Very Great Extent)** | | | | |
| Included parents in homework assignments | 11.4% [7.9, 16.3] | 20.6% [13.1, 30.7] | 34.8% [26.2, 44.6] | — |
| Held meetings with parents | 0.5% [0.1, 3.7] | 9.7% [5.1, 17.6] | 24.7% [16.8, 34.8] | — |
| Distributed materials to parents | 12.2% [8.5, 17.3] | 60.0% [48.7, 73.4] | 75.1% [64.5, 83.5] | — |
| Distributed newsletters/educational materials | 7.2% [4.2, 12.0] | 37.9% [28.0, 48.9] | 60.7% [51.1, 69.6] | |
| Provided cessation information | 4.2% [2.3, 7.6] | 30.8% [21.0, 42.7] | 43.9% [34.4, 54.0] | — |
| Displays at open house for parents | 9.0% [5.5, 14.3] | 40.1% [29.9, 51.3] | 45.6% [36.2, 55.3] | — |
| Invited parents to be guest speakers | 2.2% [0.9, 5.4] | 4.9% [2.0, 11.6] | 14.7% [9.6, 21.9] | — |
| Involved parents in school related activities | 1.5% [0.6, 4.1] | 12.1% [6.7, 20.7] | 18.4% [12.2, 26.8] | |
| Other involvement | 3.2% [1.2, 8.5] | 9.9% [3.1, 27.6] | 60.9% [19.1, 91.2] | — |
| **Professional Development Topics** | | | | |
| Developmental assets | 18.6% [12.7, 26.4] | 58.1% [47.3, 68.2] | — | — |
| Youth Development | 14.5% [9.8, 20.9] | 58.2% [46.8, 68.7] | — | — |
| Science-based prevention & intervention programs | 13.9% [9.8, 19.2] | 68.4% [58.2, 77.0] | — | — |
| Readiness to Quit programs | 7.6% [4.4, 12.7] | 69.8% [59.2, 78.6] | — | — |
| Cessation programs | 5.8% [3.3, 10.1] | 59.1% [47.8, 69.5] | — | — |
| Distributed a newsletter about the TUPE | — | — | — | 39.6% [17.6, 66.8] |
| Disseminated fliers about the trainings | — | — | — | 62.8% [43.4, 78.8] |
| Distributed a training video | — | — | — | 33.8% [12.3, 65.0] |
| Disseminated information on website or via email listservs | — | — | — | 66.3% [47.7, 80.9] |

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**Table 6.6 Staff Reports of Adherence to CDC Guidelines Components 4, 5 and 6: Parent Involvement, Teacher Training and Cessation Efforts**

| | Teacher[1] (Percent) [CI] | Site Coordinator (Percent) [CI] | Site Administrator (Percent) [CI] | District Coordinator (Percent) [CI] |
|---|---|---|---|---|
| Distributed other resources | — | — | — | 33.1% [18.4, 52.1] |
| Other | 2.8% [1.0, 8.0] | 80.0% [55.5, 92.8] | — | 5.5% [2.3, 12.7] |
| **Teacher Training** | | | | |
| One or more days of In-service training | 20.5% [15.4, 26.7] | 32.5% [23.7, 42.8] | — | — |
| One or more tobacco-specific in-service training district sponsored or attended | — | — | — | 45.7% [25.9, 66.9] |
| Were trained to deliver a specific published tobacco use curriculum | 24.9% [17.8, 33.7] | — | — | — |
| **Preparedness to teach (a great deal)** | 32.7% [25.2, 41.2] | 42.9% [33.0, 53.4] | — | — |
| School-level coordinator supports the TUPE (somewhat or a great deal) | — | — | — | — |
| School site administrator supports the TUPE (somewhat or a great deal) | 63.5% [55.0, 71.2] | 78.1% [66.4, 86.6] | 95.3% [89.7, 97.9] | — |
| District-level coordinator/administrator supports the TUPE (somewhat or a great deal) | 59.4% [51.3, 67.0] | 81.6% [71.6, 88.7] | 82.2% [73.3, 88.6] | 90.4% [79.7, 95.7] |
| **Cessation** | | | | |
| Resources for students at school | 36.5% [28.9, 44.7] | 53.7% [43.5, 63.6] | 62.9% [53.5, 71.4] | — |
| Resources for staff/teacher at school | 30.2% [22.9, 38.6] | 61.0% [50.7, 70.5] | 38.2% [29.4, 47.9] | — |

Notes: [1] Teachers who taught prevention lessons last year

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## CDC Guideline Number Six: Support Cessation Efforts among Students and all School Staff who use Tobacco

Table 6.6 also shows the responses of teachers who taught prevention lessons during the last school year, and responses from site and district coordinators regarding smoking cessation resources at school. Most schools appear to have some type of smoking cessation resource at school for students. Thirty-seven percent (36.5) of teachers, 53.7 percent of site coordinators, and 62.9 percent of site administrators responded 'yes' when asked if their school had special classes, groups, or programs for students who want help quitting smoking. Thirty percent (30.2) of teachers, 61.0 percent of site coordinators, and 38.2 percent site administrators reported that there were resources for staff or teachers if they wanted help quitting their tobacco use. These rates were close to those found in the 2003-2004 IETP. Typically, high schools are more likely to offer cessation programs at the site level than middle schools, because there are relatively few regular student smokers in grades 6-8 compared to the number of student smokers in grades 9-12. Our results support this observed

difference in availability of cessation programs between middle and high schools. It is not unusual for schools to collaborate with community-based agencies to provide services that are more successfully conducted away from the school setting. One barrier to conducting smoking cessation classes at school is that students have to be pulled out of class or must have parents drive them to attend Saturday school. Furthermore, teachers or other program facilitators must be paid to work on Saturdays. Teachers are not always willing to release students, especially high-risk students, from course work to attend cessation classes during school time.

**Positive Consequences of Receiving Tobacco Prevention Education (TUPE) Funds**

As shown in **Table 6.7**, two districts (representing two participating schools) reported that they did not receive TUPE funds. An additional forty percent (39.6) reported that they received funding, but not enough. Funding to implement health programs was the most frequently cited barrier among site coordinators and administrators. The most frequently marked options by district coordinators, in order, were: holding schools or districts accountable (81.9 percent), links with local lead health agencies (77.2 percent), funding to implement health programs (76.4 percent), funding to provide training and substitute coverage (74.2 percent), and links with community based organizations (56.8 percent). As might be expected, higher percentages of district coordinators responded "yes" on these items compared to teachers or site administrators. This makes sense given that TUPE funding is allocated to the district rather than directly to the schools.

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**Table 6.7 Positive Consequences and Barriers associated with tobacco use prevention education**

| | Teacher[1] (Percent) [CI] | Site Coordinator (Percent) [CI] | Site Administrator (Percent) [CI] | District Coordinator (Percent) [CI] |
|---|---|---|---|---|
| **Positive Consequences of Receiving Tobacco Prevention Education Funds** | | | | |
| Links with local lead health agencies | — | 37.9% [28.5, 48.2] | 35.2% [26.8, 44.7] | 77.2% [61.7, 87.6] |
| Links with community based organizations (AHA, ACS, ALA) | — | 29.1% [20.8, 39.1] | 23.6% [16.6, 32.3] | 56.8% [31.8, 78.8] |
| Funding to implement health programs | — | 49.9% [40.2, 59.6] | 49.1% [39.6, 58.8] | 76.4% [61.1, 86.9] |
| Funding to provide training and substitute coverage | — | 45.2% [35.1, 55.7] | 31.7% [23.3, 41.5] | 74.2% [57.9, 85.7] |
| Forces school/district to be held accountable for progress in reducing student tobacco use | — | — | — | 81.9% [69.0, 90.1] |
| Other | — | 16.4% [9.7, 26.3] | 6.8% [2.6, 16.7] | 19.7% [10.3, 34.4] |
| **Barriers of Teaching of Tobacco Use Prevention Lessons** | | | | |
| Tobacco use prevention education is not part of my curriculum | 65.8% [61.2, 70.1] | 20.8% [13.8, 30.2] | 11.1% [6.6, 18.1] | 23.6% [4.9, 64.9] |
| Tobacco use prevention education is not mandated in my school or district | 14.1% [11.5, 17.2] | 7.1% [3.9, 12.5] | 8.2% [4.9, 13.4] | 2.5% [0.7, 8.5] |
| Tobacco use prevention is not part of student outcomes that are assessed | 19.6% [16.5, 23.1] | 15.9% [10.8, 22.8] | 24.4% [16.9, 33.9] | 28.7% [15.5, 46.9] |
| Our teachers are not interested or committed to it | — | — | 12.9% [7.1, 22.3] | — |
| Lack of adequate instructional materials (or curricula) | 11.7% [9.2, 14.9] | 15.5% [9.2, 24.8] | 15.0% [9.8, 22.1] | 8.1% [3.7, 16.9] |
| Lack of time | 29.6% [25.6, 33.9] | 37.5% [28.3, 47.7] | 51.7% [42.4, 60.9] | 86.4% [74.4, 93.2] |
| Lack of substitute coverage and/or funding to pay for substitutes | 2.6% [1.7, 3.9] | 9.5% [5.6, 15.7] | 14.6% [9.2, 22.4] | 11.7% [5.3, 24.0] |
| Received funding, but not enough | — | — | — | 30.3% [17.1, 47.8] |
| We do not receive TUPE funding | — | — | — | 1.1% [0.3, 3.8] |
| Our school district has not made tobacco use prevention a high priority | 9.9% [7.9, 12.2] | 10.1% [5.4, 18.2] | 15.2% [9.3, 23.9] | 11.3% [5.5, 21.9] |
| Our school administrator has not made tobacco use prevention a high priority | 7.9% [6.3, 9.8] | 11.4% [6.4, 19.4] | 18.9% [12.9, 26.9] | 25.5% [13.8, 42.3] |
| I have not received adequate tobacco use prevention training | 14.4% [12.3, 16.9] | 9.5% [4.9, 17.7] | 17.2% [11.1, 25.9] | 0.5% [0.1, 3.8] |
| New CDE requirement to use only science-based programs required by NCLB act | — | — | — | 18.6% [9.6, 32.9] |
| Other | 4.4% [2.8, 6.8] | 8.8% [5.5, 14.0] | 5.6% [2.2, 13.5] | 15.4% [7.2, 29.8] |

[1] All teachers

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## Barriers to Teaching Tobacco Use Prevention

Lack of time was the most frequently cited barrier to teaching tobacco lessons across all adult respondents with the exception of teachers. The most frequently cited barrier for teachers was that tobacco use prevention education was not part of the curriculum. Interestingly, district coordinators cited lack of time more frequently (86.4 percent) than school site staff by at least 30 percent ranging from 34.7 percent to 56.8 percent; teachers (29.6 percent; 95% CI [25.6, 33.9]); site coordinators (37.5 percent; 95% CI [28.3, 47.7]); and site administrators (51.7 percent; 95% CI [42.4, 60.9]). There was more congruence among responses with respect to several other barriers such as (1) tobacco use is not part of the school's regular curriculum (range = 11.1 percent to 65.8 percent); (2) lack of instructional materials (range = 8.1 percent to 15.0 percent); (3) tobacco use prevention is not part of normally assessed student outcomes (range = 15.9 percent to 28.7 percent). Sixty-six (65.8) percent of teachers reported that tobacco use prevention education was not part of their regular curriculum. Only nineteen (18.6) percent of district coordinators responded that the new requirement to use only science-based programs as required by the No Child Left Behind Act was a barrier compared to nearly 40 percent who reported so in 2003-2004 IETP evaluation. When asked how the new science-based requirement affected the TUPE program, the most commonly cited response was that new curriculum had to be purchased, thus increasing the cost of materials and teacher training. Additionally, the science-based curricula were more difficult to implement. On the other hand, some reported that it strengthened their program by making it more “grounded” and gave them more “power” and authority with the schools.

In summary, the major benefits of TUPE funding included increased resources to support the implementation of science-based programs and the enablement of links to community programs and local health agencies. The major barriers to TUPE implementation in the schools, especially from the teacher perspective, included lack of mention of tobacco in the standard curriculum, lack of time in the face of competing priorities, lack of resources, and lack of accountability in the form of regular state testing of students' knowledge of TUPE.

## Evaluation Plan

District coordinators were asked whether or not they had an evaluation plan for the TUPE program and how it was used if they had one. Sixty-six (65.7) percent reported that they had either an outside evaluator (53.2 percent) or a district-employee evaluator (12.4 percent). Ninety-four (94.3) percent reported that they conducted some type of evaluation and that the results were reported. Only 21.1 percent reported the results to students. Most commonly, the results were presented to district administrators (82.3 percent), site administrators (81.7 percent), teachers (61.9 percent), and parents (56.8 percent) and were used to improve implementation and/or redirect the focus based on survey findings.

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Encouragingly, nearly all schools reported conducting some type of evaluation of their TUPE activities; although few students ever heard about the results of the evaluation. Instead, results were most often shared with local tobacco control agencies, district administrators and school administrators and shared fairly often with teachers and community groups.

**Qualitative Data from Interviews, Annual Reports, and Proposals**

The technique of collecting data from multiple sources to balance the strengths and weaknesses of each source and thus maximize confidence in the data is referred to as triangulation. The interviews, Annual Reports, and TUPE Competitive Grant proposals served as the data sources used to implement this technique. Interpretation of the results is discussed below.

For the interviews, a list of schools was generated using two criteria: (1) overlap schools from the 2003-2004 In School Evaluation Survey, and (2) schools with staff who had a good understanding of the TUPE program at their site (based on notes taken during school recruitment). In addition to interviewing the site TUPE Coordinator (or equivalent), a teacher designated to teach tobacco use prevention was recruited. A total of 18 schools, six middle and twelve high schools, provided interviews complete enough to be included in the final sample of schools participating in the interviews. These schools were represented by 16 school districts (three schools were in Los Angeles Unified School District). In addition to the site coordinators, 11 districts and 10 site-based teachers participated in the survey, and investigators obtained information from all three sources (district, site coordinator and teacher) from seven schools. The aim was to conduct a more 'in-depth' and qualitative look at TUPE programs within the school setting. The schools and districts were not selected to be a representative sample.

WestEd staff used scripted interview questions designed specifically for the district-level respondent, site TUPE Coordinator, and a teacher designated to teach evidence-based curricula. The Annual Reports and proposals (for schools with TUPE grants) were reviewed for the eighteen schools in the interview sample. Data from the three sources were reviewed for recurring themes and characteristics as well as to identify anomalous or unique features of the site's TUPE programs. Because interviews involved such a small proportion of the schools that participated in the IETP, the data should be viewed as reflecting only TUPE programs that were in place in this subset of schools.

To promote the most effective use of limited resources and to fund effective comprehensive programs that demonstrate progress toward preventing and/or reducing the use of tobacco, the CDE supports the Principles of Effectiveness as adopted by the United States Department of Education and required by the No Child Left Behind (NCLB) Act of 2001.[2] These principles serve as the basis for considering TUPE

[2] Taken from the RFA for middle school and high school TUPE competitive grants

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competitive grant applications and cover the following: 1) conducting an assessment, 2) setting performance measures, 3) employing effective science-based programs, 4) analysis of data, 5) parent involvement, 6) periodic evaluation, and 7) use of evaluation results. These principles served as the basis for interview questions used to collect qualitative data.

## Results

The results presented here are not intended to reflect the full range of TUPE programs in all schools, but instead are meant to provide a deeper understanding of TUPE at a small cross-section of participant sites. However, the findings from the qualitative data do converge with the findings from the adult survey data, thereby corroborating the survey results. One of the serendipitous findings during recruitment of school site coordinators for interviews was a high turnover rate. With the exception of coordinators who left for medical reasons, family illness, or retirement, it was unclear why some were no longer serving as the coordinator. This may explain some of the discrepancy between what district administrators and site coordinators reported in both the interview and survey data. The results below are aligned with the components noted in the Principals of Effectiveness.

The majority of adults interviewed said that a needs assessment was conducted using multiple methods, including biennial administration of the California Healthy Kids Survey (CHKS). Schools used the results of the needs assessment to inform decisions about the kinds of activities and curricula they wanted to implement. They also used the findings to set performance measures around student tobacco use and for periodic evaluations.

As was found in both the 2001-2002 and the 2003-2004 IETP, TUPE programs varied greatly from school to school. Each program emphasized different aspects of tobacco use, from prevention to media literacy, to the biology of the tobacco plant. Some programs were sustained throughout an entire year, while others were offered during specific semesters, and still others simply prescribed a certain number of hours of TUPE lessons that each student should receive over the course of the year. In the middle schools, tobacco prevention was taught at all grade levels, primarily in health, science and PE. Most high schools offered tobacco prevention education in 9$^{th}$ grade only, some in 10$^{th}$ grade. The majority of high schools offered tobacco education in health, biology, and peer mediation classes. A difference found in the 2005-2006 IETP was a high percentage of districts and schools noting that they were using science-based programs in their schools, regardless of funding status. Slightly more than 71 percent of district coordinators surveyed responded that TEG and TAP (smoking cessation and readiness curricula) were used, and these results were supported in the interview data, annual reports, and proposals.

Involving parents in meaningful ways continues to be a challenge for districts. The districts that seemed to have a more cohesive program in terms of coordination between district TUPE coordinators, site coordinators, and teachers reported having

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parents involved in advisory groups and various activities to promote tobacco awareness. Rather than actively involving parents in decision-making, most schools seem to have more success informing parents about TUPE activities through newsletters and back to school nights.

Although not presently a requirement, most schools utilized either an outside or district-based evaluator to assist them with data analyses, for periodic evaluation, and for using the results of the evaluation to inform decisions. That being said, with the new emphasis on using science-based programs and the cost of purchasing materials and training teachers to implement the new programs, it would be burdensome for schools to abandon existing programs to purchase new ones should the evaluation suggest that the current programs are not working. One of the most commonly cited challenges of implementing the science-based programs was finding time to adequately train teachers and retain those teachers from year to year to ensure the programs are delivered with fidelity.

## Conclusion

Results from the adult surveys were mixed, depending on the respondents' positions. As indicated in the 2003-2004 IETP, several reasons may contribute to the mixed results. First, schools were not sampled by district and cannot be considered to be representative of a district unless the school responding was the only school in the district. It is likely that the district coordinator would know about the TUPE program features common to all the schools in the district but also likely that the district administrator would be less aware of TUPE program features that were unique to a specific school. Because funding for TUPE programs is disparate across the State, it is likely that TUPE-funded schools could afford TUPE program features not shared with other schools in the district. Some districts serve only high school students, which means that the only tobacco funding for their schools would be through the competitive grant process. Districts serving grades 4-8 receive entitlement funding for TUPE, and some of their middle schools may receive funding through the competitive grant process. It is therefore often the case that districts may have a tobacco use prevention plan that is not implemented universally across schools. Overall, schools seem to be implementing a variety of tobacco education programs ranging from one-day events to full semesters of research-based curricula. Moreover, more school staff are aware of science-based programs and report using them compared to previous years.

As with the previous IETP report, there are some findings that are discouraging. The lack of consistency in school-level and district-level staff responses to questions about the tobacco policy at their school/district was a concern. A positive finding was that data collectors conducting site visits observed visibly posted signs indicating that tobacco use was not allowed on school sites. A small percentage of high schools did not receive TUPE funding. These schools would not be required to have a policy in place. Chapters 7 and 8 examine these differences. However, almost all school staff reported having a smoke-free school policy and most reported that it was being enforced. It was unclear from the responses how well the schools communicated to

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students and staff what the consequences would be of violating the school's smoke-free policy. A successful program would ensure that all school staff, students, and parents were familiar with the policy and familiar with the consequences of violating it. This does not appear to be happening consistently.

The most discouraging finding, although not surprising, was the lack of site coordinators who felt prepared to teach about tobacco. It is increasingly difficult for teachers to be released from their classroom teaching responsibilities to attend all day trainings in tobacco use prevention. It is equally difficult to persuade teachers to attend Saturday trainings or trainings during breaks (winter/spring). Trainings after school for one or two hours do not provide teachers with enough information to teach research-based programs. Moreover, it is questionable how effective those trainings can be after the teachers have been with as many as 150 students over the course of a day in secondary schools. If schools are required to use only science-based programs for tobacco prevention education, teachers must have opportunities to attend trainings to ensure the programs are taught with fidelity.

An ongoing concern is the apparent lack of communication between district and site staff. Those at the district-level seem to be reporting the best-case scenario, compared to site-level staff that tend to report somewhat less compliance with the plans. Again, to more fully understand these issues it is recommended that a mechanism be employed to obtain a deeper understanding of how the school environment and behavior of its adults prevents and/or facilitates smoking related behaviors among students. Additionally, a closer look at the communication patterns across district and site staff is warranted in future studies.

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# CHAPTER 7

## RELATIONSHIP OF SCHOOL-LEVEL POLICIES AND PRACTICES TO STUDENT PROGRAM EXPOSURE

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# CHAPTER 7: RELATIONSHIP OF SCHOOL-LEVEL POLICIES AND PRACTICES TO STUDENT PROGRAM EXPOSURE

**CHAPTER HIGHLIGHTS**

- **The relationships between adult-reported school-level tobacco prevention practices and policies and students' reported TUPE program exposure were inconsistent: some school-wide prevention activities and specific TUPE-program implementation measures were positively associated with student program exposure, but several were not, or were not different between students in TUPE grantee vs. non-grantee schools.**
- **School district support for implementation of tobacco prevention lessons and school-wide anti-tobacco activities was associated with higher likelihood of students having received tobacco-related information and reporting that they found such information useful.**
- **Across types of schools, tobacco prevention lessons, supportive consequences of violation of no-use policy (coordinator and administrator report) and use of traditional modes of instruction were positively associated with student recall of exposure to program services.**
- **Teacher, coordinator, and administrator report of availability of cessation programs at school was positively associated with student awareness of cessation services.**
- **Students in TUPE-funded schools were more likely to receive training in specific content areas, such as why people smoke, the physical harmfulness of smoking and secondhand smoke.**
- **Coordinator training and preparedness to teach tobacco prevention lessons were positively associated with students' reported exposure to program services.**
- **Intriguingly, only students in non-grantee schools that sponsored school-wide tobacco prevention activities were more likely to report finding TUPE information helpful, to report receiving tobacco prevention lessons, to report learning information about reasons why people smoke, to report learning about the prevalence of smoking, to learn about the physical harmfulness of smoking and second hand smoke. Weaker but similar associations were observed for TUPE grantee schools.**
- **For many other comparisons there were few differences between grantee and non-grantee schools in how effective various TUPE program implementation measures were for reaching students in these schools.**

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## Introduction

Other chapters in this report have described the wide variety of policies and practices implemented in CA schools that are intended to reduce student tobacco use. These practices include enforcement of no-tobacco use policies, delivery of tobacco prevention curricula, sponsorship of school-wide prevention activities, involvement of parents and families in tobacco prevention, and providing support for tobacco use cessation – to name just a few. These services are typically provided to students across all schools in the state, not just to students in schools with TUPE funding. The purpose of this chapter is to examine how these policies and practices were related to student-reported exposure to program services. The investigators also examined differences in program delivery in high schools that received competitive TUPE grants relative to those that did not receive such grants.

The analyses reported here illustrate how well different tobacco policies and practices in schools reached students, and help to gauge their potential for affecting student tobacco use outcomes and precursors to use – a topic that is examined in more detail in Chapter 8.

For ease of interpretation, the analyses described below examined the numerous outcome measures completed by respondents without attempting first to summarize those that were highly correlated. With so many statistical tests, however, it is likely that some of the "statistically significant" findings reported here were due to chance factors alone. The reader is therefore encouraged to be skeptical of isolated findings and to favor those findings that have been corroborated across multiple, similar measures. This warning applies particularly to coefficients whose nominal *p*-values are greater than 0.01.

This chapter addresses outputs at the school level and proximal outcomes at the student level (See Figure 1). Specifically, it address the relationships of tobacco prevention practices and policies observed at the schools with student reports of exposure to the TUPE program, refusal skills, anti-tobacco attitudes, and knowledge about the consequences of tobacco use.

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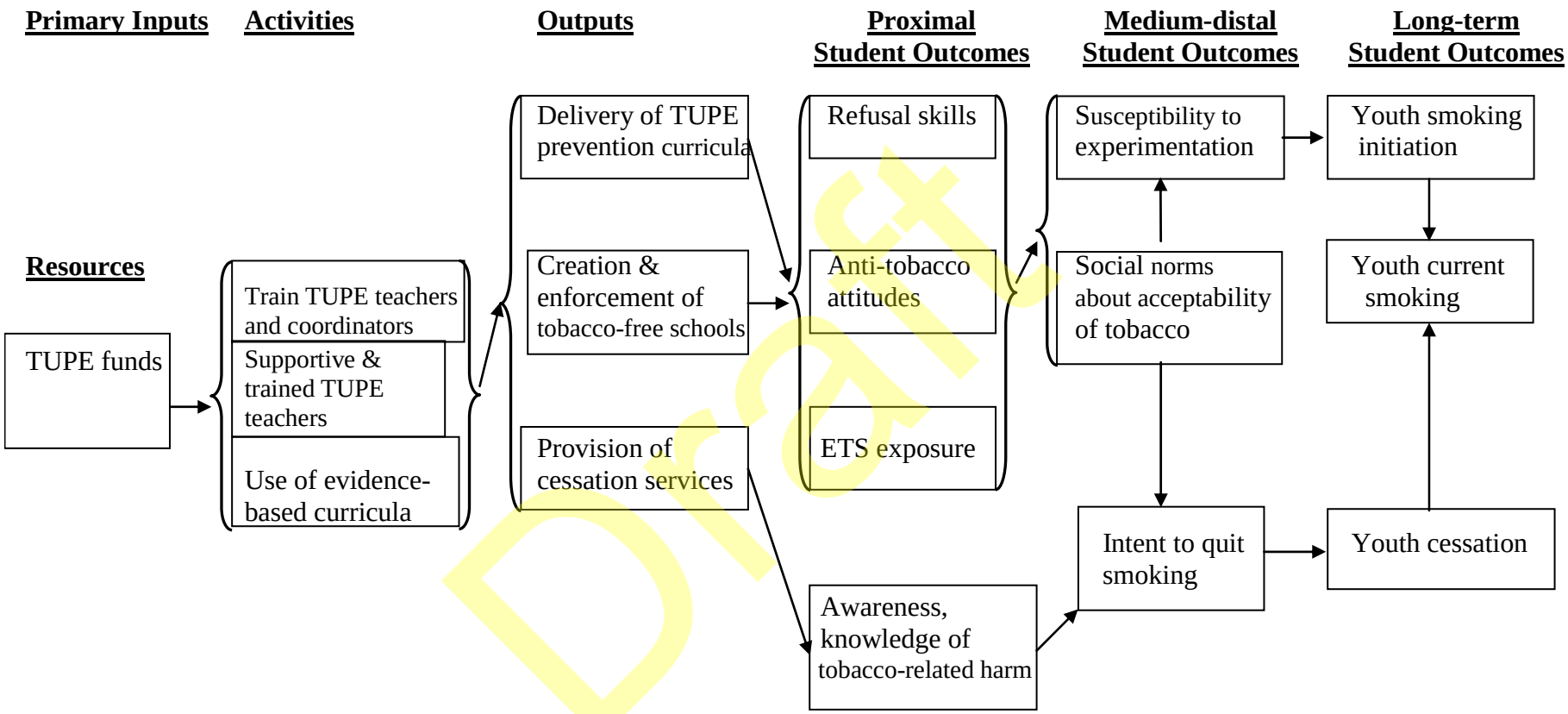
**Figure 1 Subset of In-School Evaluation Logic Model diagram**

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## Analytic Strategy

To examine how school policies and practices are related to student program exposure, the investigators estimated logistic or ordinary least squares regression models depending on whether or not the dependent variable was dichotomous or continuous. These regression models took the following general form:

$$Exposure_{ij} = \alpha_0 + \beta_1 * Practice_j + \beta_2 * Grade_{ij} + \beta_3 * Gender_{ij} + \beta_4 * Ethnic_{ij} + \varepsilon_{ij}, \quad [1]$$ [1]

Where *Exposure* represents student-reported exposure to specific program services for student *i* in school *j*, *Practice* represents the teacher/school administrator-reported tobacco prevention activity in school *j*, *Grade* is a set of dichotomous "dummy" variables indicating a student's grade in school (seventh, eighth, etc.), *Gender* is a dichotomous variable indicating whether the student is male, and *Ethnicity* is a set of "dummy" dichotomous variables representing student racial/ethnic group membership (American Indian, Asian, African American, Latino, Pacific Islander, Caucasian). Of particular interest is the coefficient $\beta_1$, which represents the association between a particular tobacco prevention activity and student exposure to program services after controlling for grade, gender, and racial/ethnic composition across schools. This coefficient taps the effectiveness of teacher/administrator-reported tobacco policies and practices in reaching students as reflected in student-reported variation in hypothesized tobacco use precursors.

The estimation procedures took into account sample weighting, clustering, and stratification. To obtain the standard errors of [1], the dependence among students within schools was adjusted for by using the Huber-Caucasian sandwich estimator of variance that relaxes the assumption of independence of observations (Huber, 1967; Kish and Frankel, 1974; Caucasian, 1980).[2]

## Measures

### Tobacco Use Policies and Practices

The investigators relied on teacher, school coordinator, and school administrator survey responses to measure tobacco use policies and practices at schools. For the teacher reports, measures were calculated by averaging reports across TUPE-experienced

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[1] Equation [1] represents the case for when the dependent variable is continuous. For dichotomous tobacco outcomes (e.g., lifetime use), the investigators estimate:
$\log(P_{ij}/1-P_{ij}) = \alpha_0 + \beta_1 * Practice_j + \beta_2 * Grade_{ij} + \beta_3 * Gender_{ij} + \beta_4 * Race/Ethnic_{ij}$.

[2] Because schools are the primary sampling units in the 2005-6 IETP and the estimation procedures take into account this complexity, the estimates, standard errors, and degrees of freedom for testing $\beta_1$ in [1] are virtually identical to those based on a multilevel model with a random intercept. Specialized multilevel modeling software (e.g., HLM) was not used in this report to estimate the association between school-level TUPE practices and student tobacco use outcomes because commercially available multilevel modeling software currently is unable to handle stratification.

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teachers only, within each school. TUPE-experienced teachers were those who reported having taught TUPE lessons in the current school year or sometime during the previous school year. For the 41 schools with no TUPE-experienced teacher respondents, the mean responses were reported for all teachers. **Table 7.1** lists the tobacco policy and practice measures used in this chapter by source of report. The investigators focused on five broad areas of tobacco use prevention/intervention services: (1) no-tobacco use policies, (2) tobacco-related instruction, (3) school-wide anti-tobacco activities, (4) cessation activities, and (5) governance. Appendix Table A7.1 shows the questionnaire items used to assess each measure.

**Table 7.1 School-level Tobacco Use Policy and Practice Measures**

| | Teacher | Coordinator | Administrator |
|---|---|---|---|
| Tobacco Policy | | | |
| Enforcement of no-use policy | √ | √ | |
| Consequences of violation | √ | √ | √ |
| Tobacco-related Instruction | | | |
| Lessons taught | √ | √ | |
| Hours of instruction | √ | √ | |
| Infusion of tobacco lessons into other subjects | √ | | |
| Published curriculum | √ | | |
| Topics covered | √ | √ | |
| Mode of delivery | √ | √ | |
| Training | √ | √ | |
| Barriers to teaching lessons | √ | √ | √ |
| School-wide Anti-tobacco Activities | | | |
| Number of school-wide activities | √ | √ | √ |
| Cessation Activities | | | |
| Presence of cessation services for students | √ | √ | |
| Referral of smokers to 800-NO-BUTTS hotline | √ | √ | √ |
| Parent involvement | √ | √ | √ |
| Involvement of parents in TUPE activities | √ | √ | √ |
| Governance | | | |
| Support from district | √ | √ | √ |
| School-level and personal support | √ | √ | √ |

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## Student Exposure to Program Services

The measures of student exposure to program services are identical to those used and discussed in Chapters 3 and 5. This chapter examines how teacher-/administrator-reported tobacco use policies and practices were related to student reports of receiving tobacco-related information, helpfulness of received tobacco information for making decisions about tobacco use, exposure to tobacco lessons, exposure to specific topics about tobacco use, knowledge about school-wide anti-tobacco activities (e.g., guest speakers and assemblies), and knowledge about peer abstinence training and cessation classes at school.

## Relationship between School Tobacco Policies and Practices and Student Exposure to Program Services

### No-Tobacco Use Policy

#### *Enforcement of No-Tobacco Use Policy*

A large majority of teachers and school coordinators reported that they prohibited students from using tobacco on school property "a great deal." However, the level of enforcement reported by teachers was unrelated to most measures of student exposure to program services. The 2001-2002 IETP Final Report indicated that students reported being exposed to more program services in schools where teachers, TUPE school coordinators, and administrators reported high levels of punitive enforcement. These differences were not replicated in this most recent study. Overall, these results provide little support for the notion that exclusive attention to enforcing punitive no-tobacco use policies could divert resources away from tobacco use prevention education.

#### *Consequences for Students Who Violate School No-Tobacco Use Policy*

It is debatable whether suspension, expulsion, or parent conferences are as effective in deterring tobacco use in the long-run as providing prevention and intervention services. To address this question, teacher, school coordinator, and school administrator reports regarding what is supposed to happen to students caught smoking cigarettes on school premises were examined. Responses were then categorized as punitive (suspension/expulsion/parent conference) or supportive (referred to special class, referred to tobacco cessation program), and associations of punitive and supportive consequences with student exposure to program services were examined. **Table 7.2** shows that student awareness of peer abstinence training and cessation classes was associated with increases in both **teacher** and **coordinator** reports of supportive consequences and that coordinator reports of supportive consequences were also positively associated with student reported exposures to program services (i.e., information about tobacco at school, tobacco lessons, and specific tobacco lesson content). On the other hand, Table 7.2 also shows that teacher-rated punitive policies were not associated with student-reported exposure, cessation training or classes.

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**Table 7.2 Relationship of Consequences of Violation of School No-Tobacco Use Policy to Student Reports of Exposure to Program Services**

| | Punitive Consequences | | | | | |
|---|---|---|---|---|---|---|
| **Student Reports of School's Program Services** | **Teacher** | | **Coordinator** | | **Administrator** | |
| | **OR** | **p-val** | **OR** | **p-val** | **OR** | **p-val** |
| Received information about tobacco at school | 1.02 [0.91, 1.14] | 0.72 | 1.08 [0.93, 1.25] | 0.33 | 1.02 [0.87, 1.20] | 0.79 |
| Tobacco information helpful | 1.04 [0.94, 1.14] | 0.47 | 1.06 [0.94, 1.19] | 0.37 | 1.02 [0.90, 1.15] | 0.81 |
| Tobacco lessons | 1.03 [0.89, 1.20] | 0.68 | 1.18 [0.98, 1.43] | 0.09 | 1.06 [0.87, 1.29] | 0.55 |
| Taught about why people smoke | 1.04 [0.90, 1.20] | 0.59 | 1.09 [0.93, 1.27] | 0.29 | 1.04 [0.88, 1.22] | 0.67 |
| Taught about smoking prevalence | 1.06 [0.91, 1.24] | 0.45 | 1.08 [0.92, 1.27] | 0.36 | 1.05 [0.89, 1.24] | 0.56 |
| Taught about physical harm from smoking | 1.02 [0.90, 1.16] | 0.71 | 1.06 [0.92, 1.23] | 0.40 | 1.01 [0.87, 1.18] | 0.88 |
| Taught about secondhand smoke | 1.02 [0.86, 1.20] | 0.83 | 1.06 [0.92, 1.23] | 0.40 | 1.00 [0.85, 1.17] | 0.97 |
| Refusal skills training | 1.04 [0.91, 1.19] | 0.59 | 1.11 [0.97, 1.27] | 0.14 | 1.12 [0.98, 1.29] | 0.10 |
| Guest speaker | 1.05 [0.93, 1.18] | 0.46 | 1.11 [0.95, 1.31] | 0.19 | 0.97 [0.81, 1.16] | 0.74 |
| Assembly about tobacco use | 1.00 [0.82, 1.23] | 0.97 | 1.10 [0.87, 1.39] | 0.41 | 1.04 [0.82, 1.32] | 0.74 |
| Peer abstinence training | 0.92 [0.81, 1.04] | 0.20 | 0.99 [0.87, 1.12] | 0.85 | 1.00 [0.88, 1.14] | 0.99 |
| Student-reported Cessation classes | 0.63 [0.36, 1.08] | 0.09 | 0.87 [0.53, 1.43] | 0.58 | 0.95 [0.57, 1.59] | 0.84 |

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**Table 7.2 (continued). Relationship of Consequences of Violation of No-Tobacco Use Policy to Student Reports of Exposure to Program Services**

| | Supportive Consequences | | | | | |
|---|---|---|---|---|---|---|
| **Student Reports of Exposure to Program Services** | **Teacher** | | **Coordinator** | | **Administrator** | |
| | **OR** | **p-val** | **OR** | **p-val** | **OR** | **p-val** |
| Received information about tobacco at school | 1.07 [0.93, 1.22] | 0.35 | 1.26** [1.12, 1.43] | 0.00 | 1.23** [1.08, 1.39] | 0.00 |
| Tobacco information helpful | 1.02 [0.92, 1.13] | 0.68 | 1.13* [1.02, 1.26] | 0.02 | 1.13* [1.02, 1.25] | 0.02 |
| Tobacco lessons | 1.06 [0.92, 1.23] | 0.41 | 1.32** [1.12, 1.57] | 0.00 | 1.35** [1.14, 1.60] | 0.00 |
| Taught about why people smoke | 1.02 [0.90, 1.15] | 0.81 | 1.14 [0.98, 1.32] | 0.09 | 1.13 [0.97, 1.31] | 0.12 |
| Taught about smoking prevalence | 1.04 [0.89, 1.21] | 0.65 | 1.12 [0.96, 1.32] | 0.15 | 1.11 [0.94, 1.31] | 0.22 |
| Taught about physical harm from smoking | 1.01 [0.91, 1.12] | 0.86 | 1.13 [0.98, 1.30] | 0.08 | 1.18* [1.02, 1.35] | 0.02 |
| Taught about secondhand smoke | 0.99 [0.89, 1.11] | 0.90 | 1.07 [0.92, 1.25] | 0.36 | 1.16 [0.99, 1.36] | 0.06 |
| Refusal skills training | 1.00 [0.90, 1.12] | 0.93 | 1.08 [0.95, 1.23] | 0.23 | 1.18* [1.03, 1.35] | 0.02 |
| Guest speaker | 1.04 [0.92, 1.18] | 0.49 | 1.25** [1.08, 1.45] | 0.00 | 1.24** [1.07, 1.44] | 0.00 |
| Assembly about tobacco use | 1.09 [0.90, 1.32] | 0.38 | 1.29** [1.07, 1.56] | <0.01 | 1.19 [0.99, 1.42] | 0.06 |
| Peer abstinence training | 1.15** [1.04, 1.28] | <0.01 | 1.29** [1.15, 1.46] | 0.00 | 1.28** [1.14, 1.43] | 0.00 |
| Student-reported cessation classes | 1.90** [1.48, 2.45] | 0.00 | 3.18** [2.18, 4.65] | 0.00 | 3.18** [2.29, 4.42] | 0.00 |

Notes:

i. OR is odds ratio, reflecting that teacher/coordinator/site administrator reported school TUPE sanction policies to be "supportive" or "punitive," when students said "yes" to having been exposed to specific TUPE program services.

ii. The investigators categorized responses as punitive (suspension/expulsion/parent conference are teacher / coordinator perceived consequences of violating school smoke-free policy) and supportive (referred to special class, referred to tobacco cessation program are teacher / coordinator perceived consequences of violating school smoke-free policy)

iii. Results come from models that control for student gender, ethnicity, and grade level.

iv. * $0.01 \leq p < 0.05$

** $p < 0.01$

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School administrator reports of supportive responses were positively associated with student exposure to specific topics in the TUPE curriculum, training on refusal skills, and provision of peer abstinence training and cessation classes by their school. Overall, students in schools that relied more heavily on supportive policies to shape student tobacco use behavior reported a higher likelihood that tobacco information in TUPE lessons was helpful, that they learned about the physical harmfulness of smoking, and that they received training in refusal skills. Teacher, administrator and coordinator reports that their schools relied more heavily on supportive policies to shape student tobacco use behavior were consistently associated with student perceptions that their schools offered peer abstinence training and cessation classes. This last finding is not too surprising, because teacher perception of a school's supportiveness (as opposed to punitiveness) was defined, in part, by the teacher's report that the school provided peer abstinence training and cessation classes to students found in violation of the school's smoke-free policy in lieu of suspension or expulsion.

## Anti-tobacco Instruction

### *Tobacco Lessons and Hours of Instruction*

The relationship between the level of tobacco instruction and student exposure to tobacco-related information was also examined. As seen in **Table 7.3**, teacher and school coordinator reports of providing tobacco use prevention lessons were positively related to student reports of exposure to tobacco-related information. What is also apparent from the results is that tobacco use prevention lessons, as reported by teachers, were positively related to student reports of tobacco lessons and specific tobacco lesson content (e.g., smoking prevalence) but that this was not confirmed by site coordinator reports. The 2003-2004 IETP final report indicated that providing tobacco prevention lessons was positively associated with a major component of TUPE lessons – refusal skills training. However, this association was not reflected in the IETP 2005-2006 data. These relationships for teachers are presented graphically in **Figure 7.1**. The overall results suggest that saturation of tobacco-related education is not only associated with the delivery of more content, but also with the delivery of better quality, more useful tobacco prevention information to students. Interestingly, however, teacher- and coordinator-reported hours spent on TUPE lessons were not related to student reports of exposure to program services (**Table 7.4**).

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**Table 7.3 Relationship of Tobacco Use Prevention Instruction Lessons to Student Reports of Exposure to Program Services**

| | Taught Tobacco Prevention Lessons | | | |
|---|---|---|---|---|
| | Teacher | | School Coordinator | |
| Outcome variable | OR | p-value | OR | p-value |
| Received information about tobacco at school | 1.17* [1.02, 1.34] | 0.03 | 1.10 [0.96, 1.25] | 0.16 |
| Tobacco information helpful | 1.14* [1.01, 1.28] | 0.03 | 1.11* [1.00, 1.23] | 0.04 |
| Tobacco lessons | 1.21* [1.02, 1.44] | 0.03 | 1.15 [0.96, 1.37] | 0.12 |
| Taught about why people smoke | 1.22** [1.06, 1.40] | <0.01 | 1.19* [1.01, 1.40] | 0.03 |
| Taught about smoking prevalence | 1.24** [1.07, 1.45] | <0.01 | 1.15 [0.97, 1.37] | 0.10 |
| Taught about physical harm from smoking | 1.22** [1.07, 1.39] | 0.00 | 1.17* [1.01, 1.36] | 0.04 |
| Taught about secondhand smoke | 1.20* [1.04, 1.39] | 0.02 | 1.21* [1.03, 1.42] | 0.02 |
| Refusal skills training | 1.16 [0.99, 1.37] | 0.06 | 0.93 [0.82, 1.07] | 0.31 |

Notes:
i. OR is odds ratio, reflecting that teacher / coordinator taught more lessons when students reported "yes" to listed outcome variable
ii. Results come from models that control for student gender, ethnicity, and grade level.
iii. * $0.01 \leq p < 0.05$
** $p < 0.01$

**Figure 7.1 Tobacco Instruction and Student Exposure to Program Services**

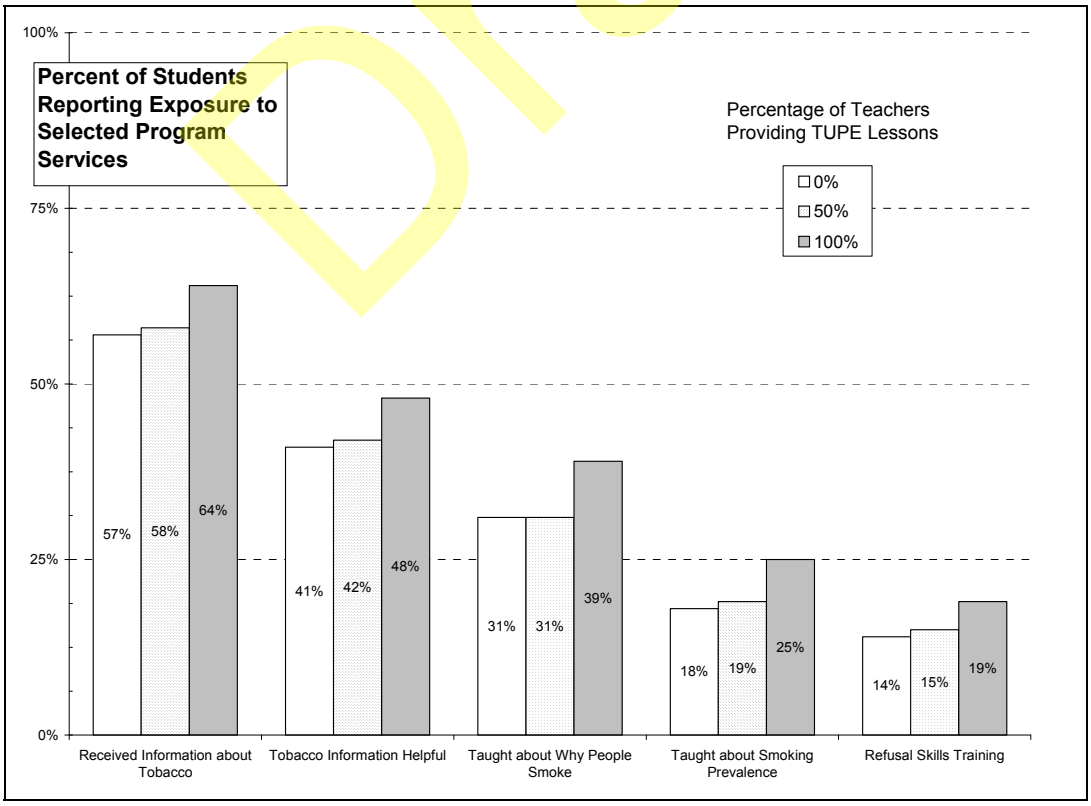


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**Table 7.4 Relationship of Hours of Tobacco Use Prevention Instruction to Student Reports of Exposure to Services**

| | Hours of Instruction | | | |
|---|---|---|---|---|
| | Teacher | | School Coordinator | |
| **Outcome variable** | **OR** | **p-value** | **OR** | **p-value** |
| Received information about tobacco at school | 1.003 [0.982, 1.024] | 0.79 | 1.000 [0.998, 1.002] | 0.97 |
| Tobacco information helpful | 1.003 [0.987, 1.018] | 0.72 | 1.001 [0.999, 1.002] | 0.49 |
| Tobacco lessons | 1.002 [0.982, 1.023] | 0.82 | 1.001 [0.999, 1.003] | 0.28 |
| Taught about why people smoke | 1.007 [0.990, 1.024] | 0.44 | 1.002 [0.999, 1.004] | 0.31 |
| Taught about smoking prevalence | 1.010 [0.989, 1.030] | 0.36 | 1.002 [0.999, 1.005] | 0.30 |
| Taught about physical harm from smoking | 1.004 [0.988, 1.021] | 0.63 | 1.001 [0.998, 1.004] | 0.45 |
| Taught about secondhand smoke | 1.003 [0.987, 1.020] | 0.71 | 1.002 [0.999, 1.004] | 0.21 |
| Refusal skills training | 1.009 [0.995, 1.024] | 0.20 | 1.000 [0.998, 1.001] | 0.55 |

Notes:
i. OR is odds ratio, reflecting that hours of instruction as reported by teachers/ coordinators were higher when student said "yes" to the specific outcome variable.
ii. Results come from models that control for student gender, ethnicity, and grade level.
iii. * $0.01 \leq p < 0.05$
** $p < 0.01$

### *Infusion of Tobacco Prevention Curriculum in Other Subjects*

One might expect that when teachers routinely integrate tobacco-related information into their usual non health-related lessons, students would be more likely to retain tobacco-related knowledge. When examining the relationship between infusion and student exposure to lessons and lesson content, no support was found for this expectation (**Table 7.5**).

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**Table 7.5 Relationship of Tobacco Infusion to Student Reports of Exposure to Services, Based on Teacher's Report**

| Outcome variable | OR | p-value |
|---|---|---|
| Received information about tobacco at school | 1.01 [0.86, 1.20] | 0.88 |
| Tobacco information helpful | 1.00 [0.87, 1.15] | 0.99 |
| Tobacco lessons | 0.99 [0.79, 1.25] | 0.96 |
| Taught about why people smoke | 1.02 [0.83, 1.25] | 0.84 |
| Taught about smoking prevalence | 1.04 [0.84, 1.27] | 0.74 |
| Taught about physical harm from smoking | 1.03 [0.85, 1.24] | 0.79 |
| Taught about secondhand smoke | 1.03 [0.85, 1.25] | 0.77 |
| Refusal skills training | 0.99 [0.83, 1.18] | 0.90 |

Notes:
i. OR is odds ratio, reflecting that teacher reports of infusion of tobacco use prevention message were positively related to student reports of exposure to specific TUPE lessons.
ii. Results come from models that control for student gender, ethnicity, and grade level.
iii. * $0.01 \leq p < 0.05$
** $p < 0.01$

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### *Use of Published vs. Non-published Tobacco Curriculum*

On average, use of a consensus model tobacco curriculum may help ensure that students are exposed to a broader array of tobacco-related topics compared to the use of a non-standard, locally developed curriculum. However, the extent to which breadth versus depth of curriculum content is more effective in reducing student tobacco use is unknown. The results in **Table 7.6** suggest that the use of a published tobacco curriculum is not associated with student reports of exposure to lessons or lesson content. On the other hand, use of unpublished TUPE curricula was positively associated with topics concerning the physical harm of smoking, information on secondhand smoke, and refusal skills training. These results are consistent with those reported in previous IETP evaluation reports – where the use of unpublished curricula (teacher reports) was found to have more pronounced effects on student exposure to lessons and lesson content than the use of published curricula. One potential explanation for this finding may be that teachers are more motivated when they have a choice of what TUPE strategies to teach. Chapter 6 documents the variability of adherence to recommended practices across randomly selected schools that

participated in intensive interviews. However, no data was collected on the quality of teacher adherence to tobacco use prevention best practices. A science-based curriculum taught without fidelity may have less impact than a more ad hoc curriculum taught with enthusiasm.

**Table 7.6 Curriculum Used by Teacher and Student Reports of Exposure to Program Services**

| | Published | | Unpublished | |
|---|---|---|---|---|
| **Outcome variable** | **OR** | **p-value** | **OR** | **p-value** |
| Received information about tobacco at school | 0.96 [0.79, 1.17] | 0.69 | 1.05 [0.91, 1.20] | 0.50 |
| Tobacco information helpful | 0.97 [0.83, 1.13] | 0.70 | 1.02 [0.91, 1.14] | 0.75 |
| Tobacco lessons | 0.96 [0.77, 1.21] | 0.74 | 1.16 [0.96, 1.39] | 0.12 |
| Taught about why people smoke | 0.98 [0.81, 1.18] | 0.80 | 1.13 [0.97, 1.32] | 0.12 |
| Taught about smoking prevalence | 1.06 [0.87, 1.28] | 0.57 | 1.16 [0.98, 1.37] | 0.08 |
| Taught about physical harm from smoking | 0.99 [0.85, 1.16] | 0.91 | 1.15* [1.00, 1.32] | <0.05 |
| Taught about secondhand smoke | 0.96 [0.81, 1.14] | 0.62 | 1.21* [1.04, 1.41] | 0.02 |
| Refusal skills training | 1.12 [0.95, 1.34] | 0.18 | 1.08 [0.93, 1.26] | 0.32 |

Notes:
i. OR is odds ratio, reflecting that teacher reports of whether the TUPE program was published or unpublished was related to whether the student said "yes" to having been exposed to specific TUPE lessons
ii. Results come from models that control for student gender, ethnicity, and grade level.
iii. * $0.01 \leq p < 0.05$
** $p < 0.01$

### *Tobacco Prevention Topics Covered and Mode of Delivery*

The teacher and school coordinator surveys asked about the topics covered in tobacco prevention lessons, including; the effects of tobacco on health, smoking prevalence, behavioral skills for resisting tobacco offers, and tobacco advertising and marketing. These topics were examined regarding their association with student reports of exposure to lessons and lesson content. Both teacher and coordinator reports of tobacco prevention topics were strongly and consistently related to student exposure to tobacco lessons. Teacher- and coordinator-reported tobacco topics were also consistently related to student perceptions of the usefulness of tobacco-related information and lesson content learned in school.

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The relationships between methods of lesson delivery and student exposure to lessons and lesson content were examined as well. Methods of delivery included traditional lectures, class discussions, and non-traditional methods such as small group activities, student worksheets, and role-playing. For teacher reports about their own tobacco prevention instructional techniques, in no case was a particular method of instruction found to be significantly associated with student reports of exposure to lessons and lesson content. However, this was not the case with school coordinator reports of the methods used in their schools. As shown in **Table 7.7**, school coordinator reports of the use of lectures were associated with greater student recall of having received tobacco information, of tobacco lessons and of lesson content. The use of classroom discussion and media literacy were not associated with student exposure to tobacco information, lessons, and lesson content, but use of small group activities was associated with student reports of exposure to topics about the physical harmfulness of smoking. The relationship between different modes of instruction and recall of tobacco lessons is displayed graphically in **Figure 7.2**.

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**Table 7.7 Relationship of Tobacco Prevention Instructional Methods to Student Reports of Exposure to Services, Based on School Coordinator's Report**

| Student reports of exposure to TUPE services | Classroom Discussion | | Small Group Activities | | Lecture | | Media Literacy | |
|---|---|---|---|---|---|---|---|---|
| **Outcome variable** | **OR** | **p-val** | **OR** | **p-val** | **OR** | **p-val** | **OR** | **p-val** |
| Received information about tobacco at school | 0.97 [0.84, 1.12] | 0.69 | 0.87 [0.73, 1.04] | 0.12 | 1.17* [1.02, 1.34] | 0.03 | 0.86 [0.67, 1.10] | 0.24 |
| Tobacco information helpful | 0.99 [0.88, 1.11] | 0.82 | 0.92 [0.80, 1.05] | 0.19 | 1.11 [1.00, 1.24] | 0.06 | 0.88 [0.72, 1.07] | 0.19 |
| Tobacco lessons | 1.06 [0.89, 1.26] | 0.52 | 0.88 [0.72, 1.07] | 0.21 | 1.21* [1.03, 1.42] | 0.02 | 0.98 [0.71, 1.34] | 0.88 |
| Taught about why people Smoke | 1.04 [0.88, 1.23] | 0.66 | 0.88 [0.72, 1.07] | 0.21 | 1.16 [0.99, 1.35] | 0.06 | 0.84 [0.63, 1.14] | 0.26 |
| Taught about smoking prevalence | 1.05 [0.86, 1.28] | 0.62 | 0.85 [0.69, 1.05] | 0.12 | 1.18 [0.98, 1.43] | 0.08 | 0.85 [0.63, 1.14] | 0.26 |
| Taught about physical harm from smoking | 1.00 [0.84, 1.18] | 0.97 | 0.81* [0.68, 0.97] | 0.02 | 1.23** [1.06, 1.42] | <0.01 | 0.87 [0.65, 1.17] | 0.36 |
| Taught about SHS | 1.09 [0.92, 1.31] | 0.32 | 0.89 [0.73, 1.08] | 0.24 | 1.21* [1.02, 1.43] | 0.03 | 0.94 [0.70, 1.26] | 0.68 |
| Refusal skills training | 0.96 [0.82, 1.12] | 0.62 | 1.03 [0.86, 1.23] | 0.78 | 1.09 [0.93, 1.29] | 0.28 | 0.85 [0.69, 1.05] | 0.14 |

Notes:
i. OR is odds ratio, reflecting that student reports of exposure to specific TUPE services increased with increasing use of selected classroom instructional strategies as reported by site coordinator
ii. Results come from models that control for student gender, ethnicity, and grade level.
iii. * $0.01 \leq p < 0.05$
** $p < 0.01$

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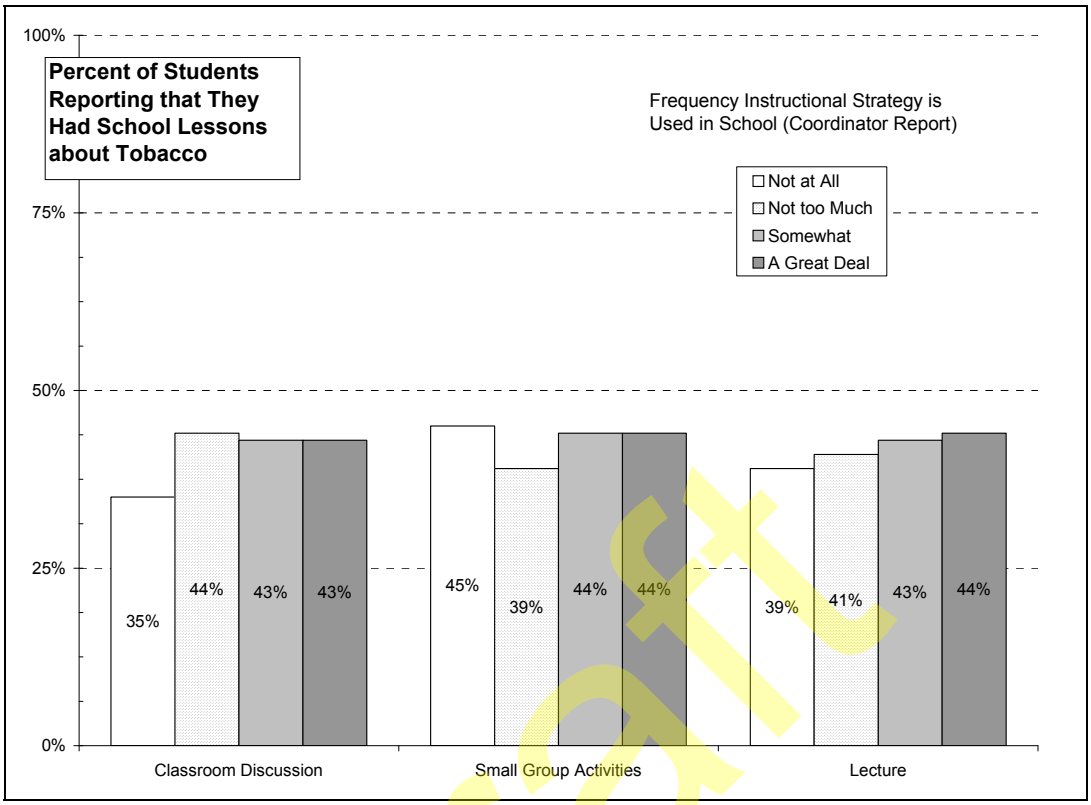
**Figure 7.2 Tobacco Instructional Modality and Students' Report of Tobacco Lessons**




### *Tobacco-related Instructional Training and Preparedness*

The investigators used two indicators of teacher/coordinator training in tobacco education to examine how training is related to student exposure to tobacco-related information, lessons, and lesson content: the receipt of in-service training on tobacco prevention education and the level of preparedness for teaching tobacco prevention lessons. The results presented in **Table 7.8** show that variations in teacher and coordinator TUPE training are reflected in student reports of exposure to tobacco lessons and lesson content. Coordinator reports of TUPE training were positively related to student reports of having received information about tobacco at school, the perceived usefulness of tobacco information, having tobacco lessons, and tobacco use prevention education (TUPE) class content. Coordinator preparedness, but not teacher preparedness, was consistently and positively associated with student-reported exposure to various kinds of TUPE content. Even though associations with teacher reports of preparedness were also consistently positive, they were statistically weak or non-significant – a pattern that contrasted with the previous IETP Final Report.

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**Table 7.8 Relationship of Tobacco Prevention Training and Feeling Prepared to Teach TUPE Lessons with Student Reports of Exposure to TUPE-related Information**

| | Training | | | | Level of Perceived Preparedness | | | |
|---|---|---|---|---|---|---|---|---|
| | Teacher | | School Coordinator | | Teacher | | School Coordinator | |
| **Outcome variable** | **OR** | **p-val** | **OR** | **p-val** | **OR** | **p-val** | **OR** | **p-val** |
| Received information about tobacco at school | 1.16 | 0.36 | 1.22** | 0.00 | 1.01 | 0.89 | 1.20* | 0.01 |
| | [0.85, 1.57] | | [1.07, 1.39] | | [0.83, 1.25] | | [1.05, 1.38] | |
| Tobacco information helpful | 1.11 | 0.30 | 1.14* | 0.01 | 1.11 | 0.27 | 1.18** | 0.00 |
| | [0.91, 1.36] | | [1.03, 1.26] | | [0.92, 1.34] | | [1.06, 1.31] | |
| Tobacco lessons | 1.14 | 0.43 | 1.23* | 0.02 | 1.10 | 0.54 | 1.38** | 0.00 |
| | [0.83, 1.57] | | [1.04, 1.46] | | [0.81, 1.48] | | [1.16, 1.63] | |
| Taught about why people smoke | 1.04 | 0.74 | 1.14 | 0.09 | 1.11 | 0.48 | 1.24** | <0.01 |
| | [0.80, 1.36] | | [0.98, 1.33] | | [0.83, 1.47] | | [1.06, 1.45] | |
| Taught about smoking prevalence | 1.02 | 0.87 | 1.20* | 0.03 | 1.23 | 0.19 | 1.34** | 0.00 |
| | [0.77, 1.36] | | [1.02, 1.42] | | [0.90, 1.67] | | [1.14, 1.57] | |
| Taught about physical harm from smoking | 1.06 | 0.65 | 1.21** | <0.01 | 1.09 | 0.50 | 1.22** | <0.01 |
| | [0.82, 1.37] | | [1.05, 1.39] | | [0.84, 1.41] | | [1.05, 1.41] | |
| Taught about SHS | 1.04 | 0.80 | 1.09 | 0.26 | 1.19 | 0.27 | 1.23* | 0.01 |
| | [0.79, 1.35] | | [0.94, 1.26] | | [0.87, 1.61] | | [1.05, 1.43] | |
| Refusal skills training | 1.17 | 0.12 | 1.03 | 0.62 | 0.98 | 0.87 | 1.03 | 0.65 |
| | [0.96, 1.44] | | [0.90, 1.18] | | [0.78, 1.23] | | [0.89, 1.20] | |

Notes:
i. OR is odds ratio reflecting that teachers' and coordinators' level of TUPE training are higher when students say "yes" to having been exposed to specific TUPE lessons.
ii. Results come from models that control for student gender, ethnicity, and grade level.
iii. * $0.01 \leq p < 0.05$
** $p < 0.01$

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### *Barriers to Teaching Tobacco Lessons*

Teachers, school coordinators, and school administrators were asked to indicate perceived barriers to teaching tobacco use prevention lessons in their school. The investigators examined the relationship of perceived barriers to three student outcome variables: 1) the receipt of tobacco use-related information at school, 2) the usefulness of this information, and 3) whether or not students were exposed to tobacco use prevention lessons. **Table 7.9** shows how perceived barriers were related to each of these student program outcomes. In general, the results indicated that greater barriers to teaching tobacco use prevention were associated with reduced student exposure to tobacco information and tobacco lessons, although the results varied considerably depending on the type of barrier, the person reporting (teacher vs. coordinator vs. administrator), and the outcome assessed. Students were less likely to report that they received tobacco-related information in schools where teachers reported that their district had not made tobacco use prevention a high priority (OR = 0.69; 95% CI [0.58, 0.83]). The barriers of "low district priority" and "outcomes not assessed" were both negatively related to student- reported helpfulness of TUPE lessons (OR = 0.74; 95% CI [0.63, 0.87] and OR = 0.78; 95% CI [0.62, 0.99], respectively), and the barrier of "low district priority" was negatively related to student-reported exposure to tobacco lessons (OR = 0.59; 95% CI [0.45, 0.78]).

Administrator-reported barriers were less consistently related to student program outcomes compared to teacher-reported barriers. Students in schools in which the administrator stated that tobacco prevention was not mandated (OR = 0.82; 95% CI [0.70, 0.96]) and was a low priority for the school (OR = 0.87; 95% CI [0.77, 0.98]) reported decreased perceived usefulness of TUPE information received compared to students in other schools. Teacher- and administrator-reported barriers were significantly related to student reports of the usefulness of tobacco-related information received. Contrary to expectation, students in schools where coordinators reported "a lack of substitute coverage and/or funding to pay for substitutes" as a barrier were consistently **more likely** to report exposure to tobacco prevention lessons, receiving TUPE information, and that the TUPE information they received was useful. It is possible that coordinators who perceived a lack of funding were in schools that nevertheless had some funding for TUPE lessons.

With exception of the "lack of funding barrier," the evidence is generally consistent that barriers to implementing TUPE services at the school, particularly barriers identified by teachers and site administrators, are associated with the reduced likelihood that students reported receiving tobacco use prevention education and that the TUPE information they did receive was helpful. The teaching modality used to disseminate TUPE information was important according to site coordinator reports. More traditional teaching methods, such as lectures, were associated with an increased likelihood that students would remember receiving tobacco information, tobacco lessons in general, and lessons about the physical harmfulness of smoking and secondhand smoke. Conversely, more interactive modalities, such as small group activities, were associated with reduced likelihood that students would remember lessons about the physical harmfulness of smoking.

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**Table 7.9 Relationship of Barriers to Teaching Prevention Lessons to Student Reports of Exposure to Services**

| | Outcome variable: Student reported that they received information | | | | | |
|---|---|---|---|---|---|---|
| | Teacher | | Coordinator | | Administrator | |
| | OR | p-val | OR | p-val | OR | p-val |
| Barriers | | | | | | |
| Not part of curriculum | 0.91 | 0.26 | 0.92 | 0.33 | 0.91 | 0.29 |
| | [0.77, 1.07] | | [0.77, 1.09] | | [0.77, 1.08] | |
| Not mandated | 0.82 | 0.08 | 0.94 | 0.58 | 0.83 | 0.12 |
| | [0.66, 1.03] | | [0.74, 1.19] | | [0.66, 1.05] | |
| Outcomes not assessed | 0.82 | 0.19 | 1.06 | 0.55 | 1.06 | 0.38 |
| | [0.61, 1.11] | | [0.87, 1.31] | | [0.92, 1.22] | |
| Not interested | — | — | — | — | 1.15 | 0.08 |
| | — | | — | | [0.98, 1.35] | |
| Lack of materials | 0.85 | 0.12 | 1.01 | 0.88 | 0.97 | 0.74 |
| | [0.69, 1.04] | | [0.85, 1.21] | | [0.83, 1.14] | |
| Lack of time | 1.01 | 0.87 | 1.00 | 1.00 | 0.97 | 0.70 |
| | [0.86, 1.19] | | [0.87, 1.15] | | [0.85, 1.12] | |
| Lack of funding | 0.84 | 0.25 | 1.30** | 0.00 | 1.05 | 0.43 |
| | [0.62, 1.14] | | [1.12, 1.51] | | [0.93, 1.18] | |
| Low district priority | 0.69** | 0.00 | 0.86 | 0.20 | 0.91 | 0.32 |
| | [0.58, 0.83] | | [0.68, 1.09] | | [0.76, 1.09] | |
| Low school priority | 0.97 | 0.87 | 0.92 | 0.53 | 0.88 | 0.09 |
| | [0.63, 1.47] | | [0.71, 1.20] | | [0.76, 1.02] | |
| Lack of training | 0.95 | 0.74 | 0.86 | 0.19 | 0.87 | 0.09 |
| | [0.71, 1.28] | | [0.69, 1.08] | | [0.73, 1.02] | |
| All barriers | 0.95* | 0.02 | 1.01 | 0.53 | 1.00 | 0.91 |
| | [0.91, 0.99] | | [0.97, 1.06] | | [0.97, 1.03] | |

| | Outcome variable: Student reported that information received was helpful | | | | | |
|---|---|---|---|---|---|---|
| | Teacher | | Coordinator | | Administrator | |
| | OR | p-val | OR | p-val | OR | p-val |
| Barriers | | | | | | |
| Not part of curriculum | 0.94 | 0.35 | 0.99 | 0.88 | 0.97 | 0.66 |
| | [0.82, 1.08] | | [0.86, 1.14] | | [0.83, 1.13] | |
| Not mandated | 0.84 | 0.10 | 0.87 | 0.20 | 0.82* | 0.01 |
| | [0.68, 1.03] | | [0.71, 1.07] | | [0.70, 0.96] | |
| Outcomes not assessed | 0.78* | 0.04 | 0.99 | 0.94 | 1.04 | 0.52 |
| | [0.62, 0.99] | | [0.85, 1.16] | | [0.92, 1.17] | |
| Not interested | — | — | — | — | 1.05 | 0.45 |
| | — | | — | | [0.92, 1.20] | |
| Lack of materials | 0.89 | 0.16 | 1.05 | 0.53 | 1.00 | 0.96 |
| | [0.75, 1.05] | | [0.90, 1.23] | | [0.87, 1.14] | |
| Lack of time | 0.94 | 0.32 | 1.01 | 0.90 | 0.95 | 0.39 |
| | [0.82, 1.07] | | [0.90, 1.12] | | [0.86, 1.06] | |
| Lack of funding | 0.94 | 0.65 | 1.28** | 0.00 | 1.06 | 0.33 |
| | [0.74, 1.21] | | [1.15, 1.42] | | [0.94, 1.21] | |
| Low district priority | 0.74** | 0.00 | 0.87 | 0.20 | 0.88 | 0.07 |
| | [0.63, 0.87] | | [0.70, 1.08] | | [0.77, 1.01] | |
| Low school priority | 0.89 | 0.36 | 0.87 | 0.20 | 0.87* | 0.03 |
| | [0.69, 1.15] | | [0.71, 1.07] | | [0.77, 0.98] | |
| Lack of training | 1.00 | 0.98 | 0.93 | 0.51 | 0.90 | 0.11 |
| | [0.78, 1.28] | | [0.74, 1.16] | | [0.79, 1.02] | |
| All barriers | 0.95** | <0.01 | 1.01 | 0.60 | 0.99 | 0.37 |
| | [0.91, 0.99] | | [0.98, 1.04] | | [0.97, 1.01] | |

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| | Outcome variable: Student reported exposure to tobacco prevention lessons | | | | | |
|---|---|---|---|---|---|---|
| | Teacher | | Coordinator | | Administrator | |
| | OR | p-value | OR | p-value | OR | p-value |
| Barriers | | | | | | |
| Not part of curriculum | 0.89 | 0.28 | 0.88 | 0.22 | 0.85 | 0.13 |
| | [0.72, 1.10] | | [0.71, 1.08] | | [0.69, 1.05] | |
| Not mandated | 0.78 | 0.12 | 0.89 | 0.33 | 0.79 | 0.15 |
| | [0.57, 1.07] | | [0.70, 1.13] | | [0.58, 1.09] | |
| Outcomes not assessed | 0.75 | 0.08 | 0.91 | 0.43 | 1.05 | 0.59 |
| | [0.54, 1.04] | | [0.72, 1.15] | | [0.87, 1.27] | |
| Not interested | — | — | — | — | 1.05 | 0.68 |
| | — | | — | | [0.84, 1.29] | |
| Lack of materials | 0.80 | 0.09 | 1.06 | 0.59 | 0.91 | 0.39 |
| | [0.62, 1.03] | | [0.85, 1.31] | | [0.74, 1.13] | |
| Lack of time | 1.00 | 0.99 | 0.99 | 0.93 | 0.96 | 0.68 |
| | [0.82, 1.22] | | [0.83, 1.18] | | [0.81, 1.15] | |
| Lack of funding | 0.85 | 0.43 | 1.33** | 0.00 | 1.02 | 0.80 |
| | [0.56, 1.28] | | [1.11, 1.58] | | [0.86, 1.21] | |
| Low district priority | 0.59** | 0.00 | 0.79 | 0.08 | 0.84 | 0.13 |
| | [0.45, 0.78] | | [0.60, 1.03] | | [0.66, 1.06] | |
| Low school priority | 0.85 | 0.46 | 0.85 | 0.24 | 0.82 | 0.07 |
| | [0.56, 1.29] | | [0.65, 1.11] | | [0.67, 1.02] | |
| Lack of training | 0.83 | 0.31 | 0.83 | 0.31 | 0.82 | 0.08 |
| | [0.57, 1.20] | | [0.58, 1.19] | | [0.66, 1.02] | |
| All barriers | 0.93* | 0.01 | 1.01 | 0.83 | 0.99 | 0.44 |
| | [0.88, 0.98] | | [0.96, 1.06] | | [0.95, 1.02] | |

Notes:
i. OR is odds ratio reflecting that student reported exposure to tobacco use prevention lessons is low when teachers, coordinators or administrators checked "yes" that specific barriers to implementing TUPE existed at their school
ii. Results come from models that control for student gender, ethnicity, and grade level.
iii. * $0.01 \leq p < 0.05$
** $p < 0.01$

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## School-wide Anti-tobacco Activities

### *Number of School-Wide Activities*

Teachers, coordinators, and administrators were asked about nine school-wide, tobacco prevention activities (e.g., Great American Smoke-out, anti-tobacco club, etc.) that took place at their school during the school year prior to the survey. **Table 7.10** illustrates how the total count of these activities was associated with students' receipt of tobacco-related information, perceived usefulness of this information, and cessation classes. The results suggest that students reported higher levels of receipt of tobacco-related information and higher usefulness of this information when they attended schools that sponsored more school-wide tobacco education activities. School-wide tobacco-related activities also showed significant positive associations with student-reported exposure to tobacco lessons, helpfulness of TUPE information, cessation classes, and each measure of lesson content (not shown), suggesting that these outcomes should not be evaluated in isolation.

**Table 7.10 Relationship of School Activities to Student Reports of Exposure to TUPE-related Information and Services**

| | Outcome variable | | | | | |
|---|---|---|---|---|---|---|
| | Received Information | | Information helpful | | Cessation Classes | |
| | OR | p-value | OR | p-value | OR | p-value |
| School wide activities | | | | | | |
| Teacher | 1.05** [1.02, 1.09] | <0.01 | 1.04* [1.01, 1.07] | 0.02 | 1.34** [1.18, 1.54] | 0.00 |
| School coordinator | 1.05** [1.03, 1.07] | 0.00 | 1.03** [1.02, 1.05] | 0.00 | 1.17** [1.10, 1.25] | 0.00 |
| School administrator | 1.04** [1.02, 1.07] | 0.00 | 1.03** [1.01, 1.05] | 0.00 | 1.17** [1.09, 1.26] | 0.00 |

Notes:
i. OR is odds ratio, reflecting higher likelihood of students reporting having received information and having found TUPE information helpful for higher teacher-reported levels of school-wide TUPE activities
ii. Results come from models that control for student gender, ethnicity, and grade level.
iii. * 0.01 ≤ p < 0.05
** p < 0.01

## Cessation Activities

As expected, teacher, coordinator, and administrator reports of the presence of special programs for students who wanted help quitting their smoking habit were positively related to student reports of the presence of peer abstinence training and cessation classes. These relationships are shown in **Table 7.11** and **Figure 7.3**.

**Table 7.11 Relationship of Cessation Activities to Student Awareness of Cessation Services**

| | Outcome variable | | | |
|---|---|---|---|---|
| | Peer Abstinence Training | | Cessation Classes | |
| | OR | p-value | OR | p-value |
| Cessation Program | | | | |
| Teacher | 1.69** [1.34, 2.12] | 0.00 | 8.62** [4.59, 16.19] | 0.00 |
| School coordinator | 1.38** [1.22, 1.57] | 0.00 | 3.52** [2.36, 5.27] | 0.00 |
| School administrator | 1.29** [1.13, 1.47] | 0.00 | 3.10** [2.02, 4.76] | 0.00 |

Notes:
i. OR is odds ratio, reflecting that when teachers, coordinators or administrators reported the presence of cessation activities at their school, the students were more likely to report being aware of peer abstinence training and cessation classes sponsored by their school.
ii. Results come from models that control for student gender, ethnicity, and grade level.
iii. * 0.01 ≤ p < 0.05
** p < 0.01

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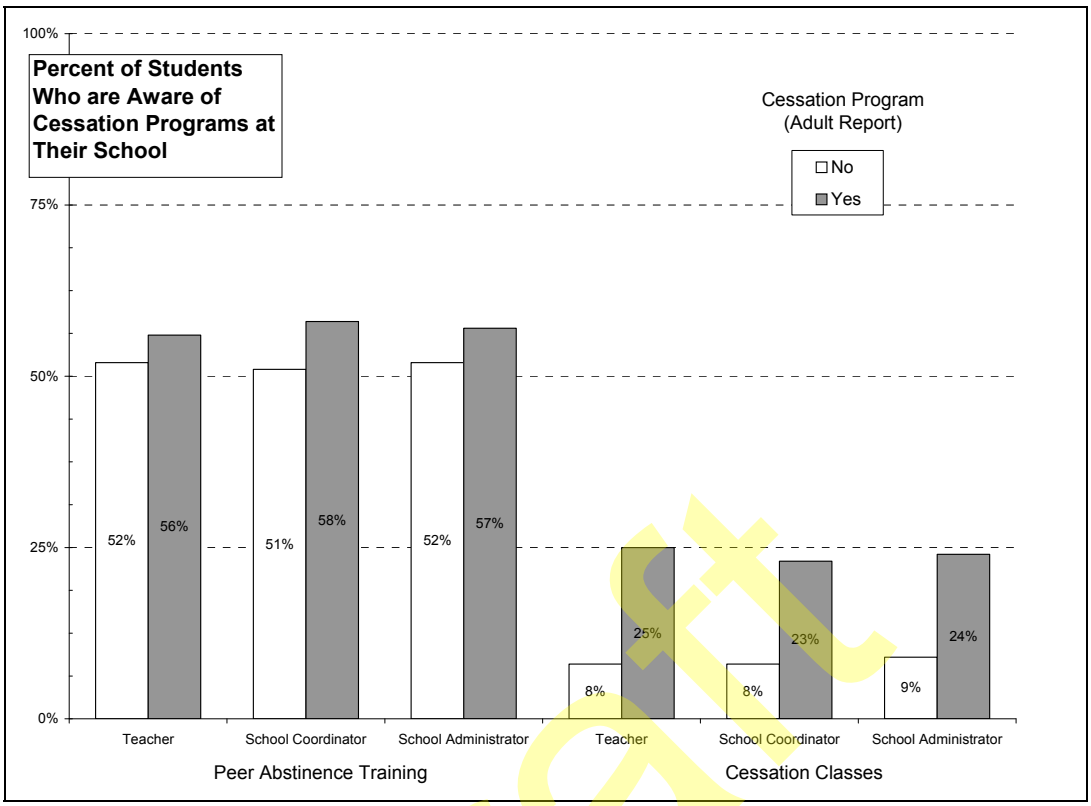
**Figure 7.3 Student Awareness of Cessation Services by Teacher, Coordinator, and Administrator reports of Cessation Program**




## Governance

### *Tobacco Prevention/Intervention Resources and Support from the School District*

The first two panels in **Table 7.12** show how perceived changes in prevention/intervention resources and support from the school district are related to students' receipt of tobacco-related information and their satisfaction with the perceived usefulness of this information in making decisions about tobacco use. Students who were in schools where coordinators reported currently receiving more tobacco-related resources than last year were more likely to report receiving tobacco-related information at school and to report that the information was helpful compared to students in other schools. Coordinator reported increases in resources were also positively associated with increased student reports of tobacco lessons. Teachers' perceived increases in resources were positively related to student reports of peer abstinence training and cessation classes (not shown).

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**Table 7.12 Relationship of School Activities, Tobacco Prevention/Intervention Resources, and Support from District to Student Reports of Exposure to Services**

| | Outcome variable | | | |
|---|---|---|---|---|
| | Received Information | | Information helpful | |
| | OR | p-value | OR | p-value |
| Increases in TUPE Resources | | | | |
| Teacher | 1.14 [0.90, 1.46] | 0.27 | 1.13 [0.93, 1.36] | 0.22 |
| Site coordinator | 1.21* [1.03, 1.42] | 0.02 | 1.17* [1.03, 1.33] | 0.02 |
| Decreases in TUPE Resources | | | | |
| Teacher | 0.98 [0.67, 1.43] | 0.91 | 0.99 [0.75, 1.29] | 0.92 |
| Site coordinator | 1.12 [0.92, 1.36] | 0.27 | 1.12 [0.98, 1.28] | 0.09 |
| Support from district | | | | |
| Teacher | | | | |
| District expects teachers to offer TUPE lessons | 1.10 [0.93, 1.30] | 0.26 | 1.11 [0.97, 1.28] | 0.13 |
| District supports TUPE program | 1.10 [0.91, 1.35] | 0.33 | 1.21* [1.02, 1.43] | 0.03 |
| Site coordinator | | | | |
| District expects teachers to offer TUPE lessons | 1.21** [1.06, 1.38] | 0.00 | 1.11 [0.99, 1.24] | 0.08 |
| District supports TUPE program | 1.12 [0.96, 1.30] | 0.14 | 1.11 [0.99, 1.25] | 0.08 |
| Site administrator | | | | |
| District supports TUPE program | 1.23** [1.08, 1.41] | 0.00 | 1.22** [1.10, 1.35] | 0.00 |
| Priority of Tobacco Education at School | | | | |
| Teacher | 1.11 [0.98, 1.25] | 0.10 | 1.12** [1.04, 1.21] | 0.00 |
| Tobacco education is a valuable use of student time | | | | |
| Site administrator | 1.12 [0.99, 1.28] | 0.08 | 1.16** [1.04, 1.29] | <0.01 |

Notes:
i. OR is odds ratio, reflecting that students are more likely to remember getting TUPE information and more likely to find the TUPE information helpful when teachers and site administrators report that the district strongly supports TUPE program and is investing resources in TUPE
ii. Results come from models that control for student gender, ethnicity, and grade level.
* $0.01 \leq p < 0.05$
** $p < 0.01$

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Table 7.12 shows how district support for tobacco prevention was related to student receipt of tobacco-related information and to the perceived usefulness of that information. Teacher, but not coordinator reports, demonstrated that when district administrators were perceived to offer strong support for tobacco lessons, students more frequently reported that the tobacco-related information they had received was helpful ([OR= 1.21, 95% CI: [1.02, 1.43]). Coordinator reports of district support were also positively associated with student receipt of tobacco information (OR = 1.21, 95% CI: [1.06, 1.38]). Consistently, students were more likely to report that they received tobacco-related information (OR = 1.23, 95% CI: [1.08, 1.43]) and that the information was helpful (OR = 1.22, 95% CI: [1.10, 1.35]) in schools where site administrators perceived strong support for TUPE programs from the district. This suggests that better quality and more useful tobacco-related information is provided to students when district administrators clearly indicate their active support for tobacco use prevention lessons to teachers, coordinators and administrators.

Table 7.12 also shows that teacher and administrator perceptions regarding the priority of the tobacco use prevention education program at the school were positively related to students' perceived helpfulness of tobacco information (OR = 1.12, 95% CI: [1.04, 1.21] for teacher report; OR = 1.16, 95% CI: [1.04, 1.29] for administrator report). Teachers' and administrators' personal opinions about the value of tobacco use prevention education for students were not significantly related to student reports of receiving TUPE information. In sum, when teachers perceive there to be strong support by the district for the school's TUPE program, students are more likely to report having found the TUPE information helpful. Student reports of exposure to TUPE information and ratings of the helpfulness of the TUPE information were positively related to site administrator perceptions of district support for TUPE.

## School Tobacco Policies and Practices and Student Exposure to Program Services: Differences across High Schools with Competitive TUPE Grants

This section briefly highlights differences between high schools with competitive TUPE grants and those without such grants as they affect the relationships between policies and practices and student exposure to program services. To examine grantee/non-grantee differences in the effectiveness of program implementation in reaching students, investigators estimated interaction effects between grantee status and each of the tobacco policy/practice variables described above. Overall, only a few significant differences were found across grantee and non-grantee schools.

### School No-Tobacco Use Policy

#### *Enforcement of School No-Use Policy*

Few differences were observed between grantee and non-grantee high schools regarding associations between the level of enforcement of no-tobacco use policies and student reports of exposure to TUPE program services.

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### *Consequences for Students who Violate School No-Use Policy*

No significant associations were found between schools that employed suspension/expulsion policies for violation of the school no-smoking rule and student reports of exposure to TUPE content across schools (**Table 7.13**).

**Table 7.13 Consequences of Violation of School No-Use Policy and Student Reports of Exposure to Program Services in grantee and non-grantee High Schools**

| | Suspensions/Expulsion (Administrator) | | | |
|---|---|---|---|---|
| | Non-grantee | | Grantee | |
| **Outcome variable** | **OR** | **p-value** | **OR** | **p-value** |
| Received information about Tobacco at school | 0.88 [0.76, 1.03] | 0.12 | 0.91 [0.71, 1.18] | 0.47 |
| Tobacco information helpful | 0.90 [0.78, 1.03] | 0.13 | 0.97 [0.84, 1.13] | 0.69 |
| Tobacco lessons | 0.91 [0.69, 1.19] | 0.48 | 0.91 [0.71, 1.16] | 0.45 |
| Taught about why people smoke | 1.00 [0.79, 1.26] | 0.98 | 0.86 [0.70, 1.06] | 0.15 |
| Taught about smoking prevalence | 0.93 [0.77, 1.14] | 0.50 | 0.96 [0.73, 1.27] | 0.80 |
| Taught about physical harm from smoking | 0.91 [0.75, 1.11] | 0.35 | 0.92 [0.71, 1.19] | 0.53 |
| Taught about SHS | 0.96 [0.76, 1.21] | 0.73 | 0.87 [0.73, 1.04] | 0.12 |
| Refusal skills training | 0.96 [0.77, 1.19] | 0.69 | 0.90 [0.74, 1.10] | 0.29 |

Notes:
i. OR is odds ratio.
ii. Results come from models that control for student gender, ethnicity, and grade level.
iii. * $0.01 \leq p < 0.05$
** $p < 0.01$

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## Tobacco Use Prevention Instruction

### *Tobacco Lessons, Hours of Instruction, and Infusion of Tobacco Lessons*

The investigators found that total hours of instruction of tobacco use prevention lessons were positively associated with student reports of exposure to TUPE content about why people smoke and about smoking prevalence in non-grantee high schools. These associations were weaker in schools with TUPE funding and were not significant. **Table 7.14** shows that, in non-grantee schools, hours of instruction were positively associated with student reports of receiving information about why people smoke and about smoking prevalence. In grantee schools, hours of instruction were positively associated with student reports of receiving information about refusal skills training. Overall, these results suggest that hours of tobacco prevention lessons were associated with a significantly increased likelihood of more exposure to tobacco lesson content detailing reasons why people smoke and about smoking prevalence among students in non-grantee schools, and tobacco lesson contents about refusal skills training in grantee schools. The relationship between tobacco lessons and student exposure to program services did not differ markedly in grantee and non-grantee schools – although both factors had stronger, more positive relationships with student-reported peer abstinence training and cessation classes in grantee schools. Overall, however, there is little evidence that grantee schools do a better job in reaching students compared to non-grantee schools. Little evidence was found to support the idea that infusion of tobacco-related information into non-health related subjects is differentially associated with student exposure to program services in grantee and non-grantee schools.

**Table 7.14 Hours of Instruction and Student Reports of Exposure to Program Services in grantee and non-grantee High Schools**

| | Hours of Instruction (Teacher) | | | |
|---|---|---|---|---|
| | Non-grantee | | Grantee | |
| **Outcome variable** | OR | p-value | OR | p-value |
| Received information about Tobacco at school | 1.02 [0.99, 1.05] | 0.12 | 1.00 [0.97, 1.03] | 0.99 |
| Tobacco information helpfu0.99l | 1.02 [0.99, 1.04] | 0.16 | 1.00 [0.99, 1.03] | 0.88 |
| Tobacco lessons | 1.03 [1.00, 1.07] | 0.08 | 1.01 [0.98, 1.04] | 0.54 |
| Taught about why people smoke | 1.04* [1.01, 1.07] | 0.02 | 1.01 [0.99, 1.04] | 0.31 |
| Taught about smoking prevalence | 1.04* [1.01, 1.07] | 0.01 | 1.02 [0.98, 1.05] | 0.33 |
| Taught about physical harm from smoking | 1.02 [0.99, 1.05] | 0.13 | 1.02 [0.99, 1.04] | 0.15 |
| Taught about SHS | 1.02 [0.99, 1.05] | 0.20 | 1.02 [0.99, 1.04] | 0.16 |
| Refusal skills training | 1.01 [0.98, 1.04] | 0.65 | 1.02* [1.01, 1.04] | 0.04 |

Notes:
i. OR is odds ratio.
ii. Results come from models that control for student gender, ethnicity, and grade level.
* $0.01 \leq p < 0.05$
** $p < 0.01$

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### *Tobacco Prevention Topics Covered and Mode of Delivery*

One tobacco use prevention topics – "behavior skills for resisting tobacco offers" as well as one instructional strategy – "media literacy" were positively associated with student reports of exposure to TUPE content in grantee schools. These associations were consistently significant in grantee schools, but weaker and not significant in non-grantee schools. **Table 7.15** shows that teacher reports of the use of "behavior skills for resisting tobacco offers" were associated with an increased likelihood of student reports of receiving information about reasons why people smoke, smoking prevalence, physical harm from smoking, and about second hand smoke. **Table 7.16** shows that school coordinator reports of the use of the "media literacy" strategy were positively associated with student reports of receiving information about tobacco lessons, reasons why people smoke, and about second hand smoke in grantee schools. The use of the "media literacy" strategy was found to be negatively related to student reports of receiving information on refusal skills training in non-grantee schools.

**Table 7.15 Teacher Reports of Tobacco Prevention Topic and Student Reports of Exposure to Program Services in grantee and non-grantee High Schools**

| | Behavior Skills for Resisting Tobacco Offers | | | |
|---|---|---|---|---|
| | Non-grantee | | Grantee | |
| **Outcome variable** | **OR** | **p-value** | **OR** | **p-value** |
| Received information about Tobacco at school | 0.91 [0.70, 1.17] | 0.45 | 1.24 [0.95, 1.63] | 0.12 |
| Tobacco information helpful | 0.91 [0.70, 1.17] | 0.46 | 1.12 [0.96, 1.31] | 0.14 |
| Tobacco lessons | 0.91 [0.61, 1.35] | 0.63 | 1.23 [0.95, 1.59] | 0.11 |
| Taught about why people smoke | 0.98 [0.67, 1.44] | 0.93 | 1.26* [1.01, 1.58] | 0.04 |
| Taught about smoking prevalence | 1.17 [0.74, 1.84] | 0.51 | 1.35* [1.06, 1.72] | 0.01 |
| Taught about physical harm from smoking | 0.89 [0.66, 1.18] | 0.41 | 1.47** [1.16, 1.85] | 0.00 |
| Taught about SHS | 0.90 [0.64, 1.26] | 0.52 | 1.30** [1.09, 1.55] | 0.00 |
| Refusal skills training | 1.11 [0.80, 1.54] | 0.54 | 1.16 [0.90, 1.49] | 0.26 |

Notes:
i. OR is odds ratio.
ii. Results come from models that control for student gender, ethnicity, and grade level.
iii. * $0.01 \leq p < 0.05$
** $p < 0.01$

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**Table 7.16 School Coordinator Reports of Instructional Strategy and Student Reports of Exposure to Program Services in grantee and non-grantee High Schools**

| | Media Literacy | | | |
|---|---|---|---|---|
| | Non-grantee | | Grantee | |
| **Outcome variable** | **OR** | **p-value** | **OR** | **p-value** |
| Received information about tobacco at school | 0.79 [0.59, 1.06] | 0.11 | 1.24 [1.00, 1.54] | 0.05 |
| Tobacco information helpful | 0.86 [0.67, 1.11] | 0.26 | 1.06 [0.90, 1.24] | 0.51 |
| Tobacco lessons | 0.93 [0.64, 1.34] | 0.68 | 1.47** [1.16, 1.86] | 0.00 |
| Taught about why people smoke | 0.84 [0.58, 1.21] | 0.35 | 1.25* [1.05, 1.48] | 0.01 |
| Taught about smoking prevalence | 0.96 [0.70, 1.32] | 0.81 | 1.12 [0.92, 1.37] | 0.24 |
| Taught about physical harm from smoking | 0.85 [0.65, 1.11] | 0.24 | 1.30 [1.02, 1.67] | 0.04 |
| Taught about SHS | 0.86 [0.65, 1.12] | 0.26 | 1.41** [1.13, 1.75] | 0.00 |
| Refusal skills training | 0.70* [0.50, 0.98] | 0.04 | 1.10 [0.87, 1.39] | 0.42 |

Notes:
i. OR is odds ratio.
ii. Results come from models that control for student gender, ethnicity, and grade level.
* $0.01 \leq p < 0.05$
** $p < 0.01$

### *Tobacco Prevention Instructional Training and Preparedness*

For school teachers, tobacco use prevention training was differentially associated with student reports of exposure to tobacco lessons and lesson content in grantee and non-grantee schools. As shown in **Table 7.17**, teacher reports of training were positively associated with being taught about tobacco lessons, but only at grantee schools (OR (grantee) = 1.44; 95% CI: [1.03, 2.00]). Teacher reports of training were also positively associated with being taught about secondhand smoke (OR (grantee) = 1.33; 95% CI: [1.03, 1.72]), and were marginally associated with being taught about why people smoke, and about physical harm from smoking. Coordinator reports of training were positively associated with being taught about refusal skills training, but only at grantee schools. In non-grantee schools, teacher reports of preparedness to teach were positively associated with student reports of helpfulness of tobacco information received (OR (non-grantee) = 1.26; 95% CI: [1.03, 1.54]), being taught about smoking prevalence (OR (non-grantee) = 1.57; 95% CI: 1.09, 2.26), and being taught about second hand smoke (OR (non-grantee) = 1.52; 95% CI: [1.08, 2.14]). Site coordinator preparedness to teach TUPE lessons was associated with student exposure to tobacco lessons (OR (non-grantee) = 1.33; 95% CI: [1.08, 1.63]).

In sum, students are more likely to report receiving TUPE information and finding that information helpful when their TUPE teachers and TUPE coordinators have had more tobacco use education training (in grantee schools) and when their TUPE teachers and TUPE coordinators feel well-prepared to teach TUPE lessons (in non-grantee schools). Conversely, formal training in how to teach TUPE lessons did not seem to be related to teacher reports of having received such training or to student reports of having received TUPE lessons or having found the TUPE information helpful.

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**Table 7.17. Relationship of Training and Preparedness to Student Reports of Exposure to Lessons and Lesson Content in Grantee and Non-grantee High Schools**

| | Training | | | | | | | | Preparedness | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Teacher | | | | Coordinator | | | | Teacher | | | | Coordinator | | | |
| | Non-grantee | | Grantee | | Non-grantee | | Grantee | | Non-grantee | | Grantee | | Non-grantee | | Grantee | |
| | OR | p-val | OR | p-val | OR | p-val | OR | p-val | OR | p-val | OR | p-val | OR | p-val | OR | p-val |
| Received information about tobacco at school | 0.96 [0.69, 1.33] | 0.81 | 1.30 [0.81, 2.07] | 0.27 | 1.14 [0.92, 1.43] | 0.23 | 1.06 [0.83, 1.36] | 0.61 | 1.16 [0.94, 1.44] | 0.17 | 0.93 [0.66, 1.30] | 0.66 | 1.15 [0.97, 1.37] | 0.11 | 1.04 [0.80, 1.35] | 0.77 |
| Tobacco information helpful | 1.01 [0.77, 1.33] | 0.93 | 1.15 [0.90, 1.47] | 0.25 | 1.12 [0.94, 1.33] | 0.22 | 1.06 [0.89, 1.26] | 0.49 | 1.26* [1.03, 1.54] | 0.03 | 1.10 [0.85, 1.42] | 0.47 | 1.14 [0.98, 1.34] | 0.10 | 1.10 [0.94, 1.28] | 0.24 |
| Exposure to Tobacco lessons | 0.93 [0.54, 1.58] | 0.78 | 1.44* [1.03, 2.00] | 0.03 | 1.13 [0.86, 1.48] | 0.37 | 1.14 [0.84, 1.56] | 0.40 | 1.35 [0.95, 1.91] | 0.09 | 1.14 [0.80, 1.64] | 0.47 | 1.33** [1.08,1 .63 ] | <.01 | 1.18 [0.89, 1.58] | 0.25 |
| Taught about why people smoke | 0.89 [0.58, 1.35] | 0.57 | 1.32 [0.99, 1.74] | 0.06 | 1.04 [0.83, 1.31] | 0.71 | 1.16 [0.93, 1.45] | 0.19 | 1.37 [0.98, 1.93] | 0.07 | 1.08 [0.79, 1.47] | 0.65 | 1.15 [0.90, 1.47] | 0.25 | 1.20 [0.92, 1.57] | 0.17 |
| Taught about smoking prevalence | 0.82 [0.54, 1.23] | 0.34 | 1.15 [0.80, 1.65] | 0.46 | 1.06 [0.82, 1.37] | 0.66 | 1.20 [0.94, 1.54] | 0.15 | 1.57* [1.09, 2.26] | 0.02 | 1.14 [0.81, 1.62] | 0.45 | 1.21 [0.95, 1.54] | 0.13 | 1.26 [0.95, 1.66] | 0.11 |
| Taught about physical harm from smoking | 0.95 [0.70, 1.28] | 0.73 | 1.23 [0.97, 1.54] | 0.08 | 1.13 [0.92, 1.38] | 0.23 | 1.20 [0.97, 1.48] | 0.10 | 1.27 [0.96, 1.68] | 0.09 | 1.14 [0.88, 1.49] | 0.32 | 1.17 [0.95, 1.44] | 0.13 | 1.10 [0.84, 1.44] | 0.49 |
| Taught about secondhand smoke | 0.92 [0.61, 1.38] | 0.69 | 1.33* [1.03, 1.72] | 0.03 | 1.00 [0.75, 1.33] | 0.99 | 1.04 [0.86, 1.25] | 0.71 | 1.52* [1.08, 2.14] | 0.02 | 1.14 [0.85, 1.52] | 0.38 | 1.18 [0.88, 1.59] | 0.25 | 1.07 [0.87, 1.32] | 0.51 |
| Refusal skills training | 0.81 [0.53, 1.22] | 0.31 | 1.27 [0.94, 1.70] | 0.12 | 1.04 [0.81, 1.35] | 0.75 | 1.21 [0.99, 1.47] | 0.06 | 0.89 [0.68, 1.17] | 0.41 | 1.11 [0.85, 1.44] | 0.45 | 1.01 [0.76, 1.33] | 0.96 | 1.11 [0.88, 1.41] | 0.37 |

Notes:
i. OR is odds ratio.
ii. Results come from models that control for student gender, ethnicity, and grade level.
iii. * $0.01 \leq p < 0.05$
** $p < 0.01$

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## Cessation Activities

Relationships between the presence of special programs for students who want help quitting their smoking habit (as reported by teachers, coordinators, and administrators) and student reports of peer abstinence training or cessation classes were examined for grantee and non-grantee high schools. No significant differences were observed between grantee and non-grantee high schools for any of these associations.

## School-wide Anti-tobacco Activities and Governance

For school coordinators, the number of school-wide activities was differentially associated with student reports of exposure to tobacco lessons and lesson content in both grantee and non-grantee schools. **Table 7.18** shows that coordinator reports of school-wide activities were consistently positively associated with exposure to tobacco lessons and lesson content only in non-grantee schools. These associations were not significant in grantee schools. No evidence was found to support that teacher and administrator reported number of school-wide anti-tobacco activities were differentially related to student exposure to TUPE services in grantee vs. non-grantee schools.

**Table 7.18 School Coordinator Reports of School-wide Activities and Student Reports of Exposure to Program Services in grantee and non-grantee High Schools**

| | School-wide Activites | | | |
|---|---|---|---|---|
| | Non-grantee | | Grantee | |
| **Outcome variable** | **OR** | **p-value** | **OR** | **p-value** |
| Received information about Tobacco at school | 1.05** [1.01, 1.10] | 0.01 | 1.02 [0.99, 1.05] | 0.15 |
| Tobacco information helpfu0.99l | 1.05* [1.01, 1.09] | 0.02 | 1.01 [0.99, 1.03] | 0.34 |
| Tobacco lessons | 1.12** [1.06, 1.18] | 0.00 | 1.03 [1.00, 1.07] | 0.06 |
| Taught about why people smoke | 1.07** [1.03, 1.12] | 0.00 | 1.02 [0.99, 1.05] | 0.22 |
| Taught about smoking prevalence | 1.05 [1.00, 1.11] | 0.06 | 1.01 [0.98, 1.04] | 0.58 |
| Taught about physical harm from smoking | 1.07** [1.03, 1.11] | 0.00 | 1.00 [0.97, 1.03] | 0.99 |
| Taught about SHS | 1.07** [1.03, 1.12] | 0.00 | 1.00 [0.98, 1.03] | 0.74 |
| Refusal skills training | 1.03 [0.98, 1.08] | 0.26 | 1.01 [0.98, 1.04] | 0.36 |

Notes:
i. OR is odds ratio.
ii. Results come from models that control for student gender, ethnicity, and grade level.
* $0.01 \leq p < 0.05$
** $p < 0.01$

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## Summary

The purpose of this chapter was to examine how tobacco prevention policies and practices in CA schools were related to student-reported exposure to TUPE information and program services. Differences in these relationships across high schools that received competitive TUPE grants and those that did not receive such grants were also examined. The analyses focus on five broad areas of tobacco use prevention/ interventions services: (1) no-tobacco use policies; (2) tobacco prevention instruction; (3) school-wide anti-tobacco activities; (4) cessation activities; and, (5) governance. Overall, school-level policies and practices were associated with student-reported exposure to tobacco prevention services.

Enforcement of school no-tobacco use policies was essentially unrelated to student exposure to prevention services, at least with respect to teacher and coordinator reports. But administrator reports of enforcement were associated with **lower** levels of exposure to prevention services – the higher the level of enforcement, the less likely students were to report that they received tobacco-related information at school or were exposed to lesson content. It is possible that high levels of enforcement divert resources away from other prevention activities. Scientific literature corroborates the weak relationship between punitive enforcement of school no-tobacco use policies (e.g., Darling et al., 2006). However, research does indicate a negative relationship between strict monitoring of school policies and reduced tobacco use (Kumar et al., 2005). Regarding tobacco prevention instruction, tobacco prevention lessons, hours of instruction (teacher-reported), infusion of tobacco-related information into non-health related subjects, and the use of non-traditional instructional modalities, such as small group activities and classroom discussion, were found to be positively associated with student recall of exposure to program services.

Students in all schools that sponsored school-wide, tobacco prevention activities were more likely to report finding the TUPE information helpful, to report peer abstinence training and to report the availability of cessation classes. Sponsorship of school-wide tobacco prevention activities was associated with student reports of higher levels of tobacco-related information, tobacco lessons, information about why people smoke, information about the harmfulness of smoking, and information about the harmfulness of second hand smoke, but only in non-TUPE-funded schools. The same associations were observed in TUPE-funded schools but were not statistically significant. Finally, support from the school district, in terms of providing clear expectations that tobacco prevention lessons should be taught, were associated with higher levels of students receiving tobacco-related information and having positive perceptions of its usefulness. This suggests that better quality, more useful tobacco-related information is provided to students when district administrators expect tobacco prevention lessons to be taught.

Few substantive differences were apparent between grantee and non-grantee high schools regarding the effectiveness of program implementation to reach students. Overall, a preponderance of the findings suggests that anti-tobacco activities are similarly effective in reaching students in grantee and non-grantee schools. Several exceptions to this were apparent, however. For example, school coordinator

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preparedness to teach tobacco use prevention lessons was more positively associated with student exposure to program services in grantee schools than in non-grantee schools. Coordinator-rated support from district administrators was also more positively associated with student exposure to services in grantee schools compared to non-grantee schools.

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**Table A7.1 Constructs and Items Used in the Analysis (Adult Survey)**

| Construct | Question Number (Q)[1] | Question |
|---|---|---|
| Tobacco Policy | | |
| Enforcement of no-use policy | **T Q38**<br>**C Q43** | In your opinion, to what extent is your school's no-tobacco use policy being enforced during school hours? |
| Consequences of violation | | What is supposed to happen to students who are caught smoking cigarettes or using smokeless tobacco at your school? (Mark all that apply) |
| Punitive | **T Q40_1**<br>**C Q42a**<br>**A Q27a** | They are suspended/expelled |
| | **T Q40_8**<br>**C Q42h**<br>**A Q27h** | Their parents are called in for a conference |
| Supportive | **T Q40_3**<br>**C Q42c**<br>**A Q27c** | They are referred to a special class |
| | **T Q40_4**<br>**C Q42d**<br>**A Q27d** | They can choose to attend a special class in lieu of suspension |
| | **T Q40_9**<br>**C Q42i**<br>**A Q27i** | They are REFERRED to a tobacco cessation clinic or program |
| | **T Q37_10**<br>**C Q42j**<br>**A Q27j** | They are REQUIRED to go to a special tobacco education class (i.e., Saturday school) |
| Tobacco Prevention Instruction | | |
| Lessons taught | **T Q9**<br>**C Q10** | During the last school year (2004-05), did you teach any tobacco use prevention lessons? |
| Hours of instruction | **T Q10**<br>**C Q11** | During the last school year (2004-05), on average, how many classroom HOURS did you spend teaching tobacco prevention lessons to a classroom of students?[2] |
| Infusion of tobacco lessons into other subjects | **T Q13** | During the last school year (2004-05), did you teach any information about tobacco use that you infused into your subject areas (for example, discussing how many people use tobacco as part of a math lesson)? |
| Published curriculum | **T Q14** | During the last school year (2004-05), did you teach any tobacco use prevention lessons from a PUBLISHED curriculum. (Note: By "published" curriculum, the investigators mean those published by commercial companies, community organizations, your school district, etc.) |

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**Table A7.1 Constructs and Items Used in the Analysis (Adult Survey)**

| Construct | Question Number (Q)[1] | Question |
|---|---|---|
| Topics covered | | During the last school year (2004-05), which of the following topics did you cover in your tobacco prevention lessons? (Mark all that apply) |
| | **T Q16_8**<br>**C Q22h** | Behavioral skills for resisting tobacco offers |
| | **T Q16_9**<br>**C Q22i** | General personal and social skills |
| Mode of delivery | | In the tobacco prevention lessons you taught last year (2004-05), how much did you use the following instructional strategies? |
| Traditional | **T Q18a**<br>**C Q23a** | Classroom discussion |
| | **T Q18c**<br>**C Q23c** | Lecture |
| Non-Traditional | **T Q15b**<br>**C Q23b** | Small group activities |
| | **T Q15d**<br>**C Q23d** | Student worksheets |
| | **T Q15e**<br>**C Q23m** | Role-playing |
| Training | **T Q25**<br>**C Q30c\d\e** | During the past five years, how much tobacco use prevention training have you received? |
| | **T Q27**<br>**C Q31** | Overall, to what extent do you feel you are prepared to teach tobacco prevention lessons? |
| Barriers to teaching lessons | | Which of the following have been BARRIERS to your teaching of tobacco prevention lessons? (Mark all that apply) |
| | **T Q20_1**<br>**C Q26a**<br>**A Q20a** | Tobacco use prevention is not part of my curriculum |
| | **T Q20_2**<br>**C Q26b**<br>**A Q20b** | Tobacco prevention education is not mandated in my school or school district |
| | **T Q20_3**<br>**C Q26c**<br>**A Q20c** | Tobacco prevention is not part of student outcomes that are assessed |
| | **A Q20d** | Our teachers are not interested or committed to it. |
| | **T Q20_4**<br>**C Q26d**<br>**A Q20e** | Lack of adequate instructional materials (or curricula) |

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**Table A7.1 Constructs and Items Used in the Analysis (Adult Survey)**

| Construct | Question Number (Q)[1] | Question |
|---|---|---|
| | **T Q20_5**<br>**C Q26e**<br>**A Q20f** | Lack of time |
| | **T Q20_6**<br>**C Q26f**<br>**A Q20g** | Lack of substitute coverage and/or funding to pay for substitutes |
| | **T Q20_7**<br>**C Q26g**<br>**A Q20h** | Our school district has not made tobacco prevention a high priority |
| | **T Q18_8**<br>**C Q26h**<br>**A Q20i** | Our school administrator has not made tobacco prevention a high priority[3] |
| | **T Q18_9**<br>**C Q26i**<br>**A Q20j** | I have not received adequate tobacco prevention training[4] |
| School-wide anti-tobacco activities<br>Number of school-wide activities | | During the last school year (2004-05), did your school do any of the following? (Mark all that apply) |
| | **T Q33_1**<br>**C Q37a**<br>**A Q21a** | Conduct activities as part of the American Cancer Society's "Teen Kick Ash" |
| | **T Q33_2**<br>**C Q37b**<br>**A Q21b** | Celebrate a special day called the "Great American Smokeout" |
| | **T Q33_3**<br>**C Q37c**<br>**A Q21c** | Hold an assembly or other event about tobacco prevention |
| | **T Q33_4**<br>**C Q37d**<br>**A Q21d** | Hold a contest (for example, a poster or essay contest) about tobacco |
| | **T Q33_5**<br>**C Q37e**<br>**A Q21e** | Sponsor an anti-tobacco club |
| | **T Q33_ 6**<br>**C Q37f**<br>**A Q21f** | Participate in tobacco prevention activities with the local health department |
| | **T Q33_7**<br>**C Q37g**<br>**A Q21g** | Display tobacco-related posters (made by students or others) |

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**Table A7.1 Constructs and Items Used in the Analysis (Adult Survey)**

| Construct | Question Number (Q)[1] | Question |
|---|---|---|
| | **T Q33_8**<br>**C Q37h**<br>**A Q21h** | Offer smoking cessation classes or programs |
| | **T Q33_9**<br>**C Q37i**<br>**A Q21i** | Celebrate Drug Free Week or Red Ribbon Week |
| | **T Q33_10**<br>**C Q37j**<br>**A Q21j** | Other anti-tobacco activity |
| <u>Cessation Activities</u> | | |
| Presence of cessation services for students | **T Q33_8** | During the last school year (2004-2005), did your school offer smoking cessation classes or programs? |
| <u>Governance</u> | | |
| Support from district | **T Q8**<br>**C Q7** | Does your school district administration expect you to teach tobacco use prevention lessons as part of your curriculum?[5] |
| | **T Q28**<br>**C Q34**<br>**A Q11** | To what extent have your school DISTRICT administrators supported you in your teaching of tobacco prevention lessons?[6] |
| School Support | **T Q6** | In relation to other health education topics, what priority does tobacco prevention education hold at your school |

Notes: For the following Notes 1-6, item varies across survey.

[1] T, C, and A refer to Teacher, Site-Coordinator, and School Administrator questionnaires, respectively.

[2] C Q7. During the last school year (2004-05), how many classroom HOURS or class periods did you spend teaching tobacco prevention lessons to a classroom of students?

[3] A Q20i. Our school has not made tobacco prevention a high priority.

[4] A Q20j. Our teachers have not received adequate tobacco prevention training

[5] C Q7. Do you inform teachers about the district's expectation for teaching tobacco use prevention lessons as part of the school's curriculum?

[6] C Q34. To what extent have your school district administrators supported you in the implementation of tobacco use prevention lessons at your school?

A Q11. To what extent has the TUPE program coordinator at your school district supported the teachers at your school in their implementation of tobacco prevention lessons and other activities (e.g., provided staff development, new materials, etc.)

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# CHAPTER 8

## RELATIONSHIP OF SCHOOL-LEVEL POLICIES AND PRACTICES TO STUDENT TOBACCO USE OUTCOMES

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# CHAPTER 8: RELATIONSHIP OF SCHOOL-LEVEL POLICIES AND PRACTICES TO STUDENT TOBACCO USE OUTCOMES

**CHAPTER HIGHLIGHTS**

- **There was consistent evidence that student tobacco use was lower when teachers reported higher levels of district support for TUPE implementation.**
- **Student anti-smoking attitudes and beliefs (intent not to smoke, low peer smoking estimates, anti-tobacco industry attitudes) were positively associated with teacher perception of support from the school district for teaching tobacco use prevention lessons to students.**
- **There was consistent evidence that student tobacco use was lower when the topics covered in tobacco prevention lessons included: "Effects of tobacco on health," "Social consequences of using tobacco," and "Tobacco advertising and marketing."**
- **Teacher reported hours of TUPE-related instruction were negatively associated with student current tobacco use, lifetime use, and peer cigarette use in TUPE-funded schools but not in non-TUPE funded schools. Teacher reported hours of TUPE-related instruction were positively associated with student intention not to smoke, student reported ease of refusal of offers of cigarettes, and with student anti-tobacco industry norms in TUPE-funded schools (but not in non-TUPE funded schools)**
- **No other student tobacco use indicators or precursors were differentially associated with program policies and practices in grantee vs. non-grantee schools.**
- **There was little systematic evidence to indicate that school-level tobacco policies (like enforcement of no-tobacco use policies; punitive and supportive consequences for violation) and TUPE practices were associated with student tobacco use or tobacco use precursors.**

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## Introduction

The results reported in Chapter 7 suggest that school-level tobacco prevention and intervention activities were weakly associated with student reported exposure to program services. The purpose of Chapter 8 is to examine how the policies and practices discussed in Chapter 7 were related to student tobacco use outcomes. Differences in program "effectiveness" in high schools that received competitive TUPE grants relative to those that did not receive such grants were also examined.

This chapter will discuss and present associations between policies/practices and student outcomes. Although it may be tempting to make inferences about the effectiveness, or lack of effectiveness, of policies and practices based on these associations – inferences about causality should not be made. The results reported in Chapters 1 through 8 rely exclusively on a cross-sectional design. Chapter 9 examines results comparing the same high schools (but not necessarily the same students) on responses to the 2005-2006 survey compared to responses on the 2003-2004 survey and therefore permit some inferences about causal direction.

Cross-sectional data, on the other hand, do not permit the separation of the reciprocal influences of school practices and student tobacco use outcomes from each other. For example, a particular school practice – such as posting signs on school grounds stating that tobacco use is prohibited – may be found to be associated with *greater* levels of student tobacco use. This hypothetical positive association could be interpreted two ways. One could say that posting signs may actually increase student tobacco use [although unlikely] or, conversely, that administrators who discover high numbers of students who smoke at their school may feel compelled to combat the problem by posting signs indicating that tobacco use is prohibited. It is dangerous to draw strong conclusions about program effectiveness based exclusively on the cross-sectional data that are the basis of the analyses reported here in Chapters 1 through 8. For instance, it is clear that tobacco policies and practices are influenced by student tobacco use behavior, so the causal direction from policy to student tobacco use could actually be reversed. Care should also be taken in interpreting differences in associations between school practices and student outcomes across high schools that received TUPE competitive grants and those that did not receive such grants.

Tobacco policies and practices may be more heavily influenced by student tobacco use behavior in grantee schools simply because these schools have more funds to mobilize prevention resources. If this is the case, a particular school practice aimed at reducing tobacco use would more likely be associated with <u>higher</u> tobacco use in grantee schools than in non-grantee schools. In other words, schools are not randomly assigned to grantee and non-grantee conditions. Nor are schools randomly assigned to deliver different dosages and/or different types of tobacco prevention and intervention services.

In short, the IETP data in Chapters 1 through 8 is cross-sectional, so inferences about program effectiveness should be made with caution. Alternatively, the IETP findings in Chapter 9 are based on comparing same-school results at two different points of time,

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therefore at least clarifing the temporal direction of observed changes, so some causal inferences can be made with confidence. Despite these limitations, the analyses reported herein are still valuable in that they can suggest how different tobacco use policies and practices may affect student tobacco use and the precursors to tobacco use.

## Analytic Strategy

The analytic strategy used in this chapter is almost identical to that used in Chapter 7 with the exception of the examination of student reports of actual tobacco use and known precursors to tobacco use instead of student-reported exposure to TUPE programs and services. Using logistic or ordinary least squares regression models, the investigators modeled each tobacco outcome as a function of policies and practices, grade in school, gender, and a set of dichotomous variables representing racial/ethnic group membership. As with all the analyses in this report (except Chapter 9), the estimation procedures took into account sample weighting, clustering, and stratification. This chapter focuses on the section of the logic model in Figure 1 that involves outputs at the school level and outcomes at the student level. In particular, Chapter 8 addresses the relationships of tobacco prevention practices and policies at the schools with proximal, medium-distal, and long-term student outcomes.

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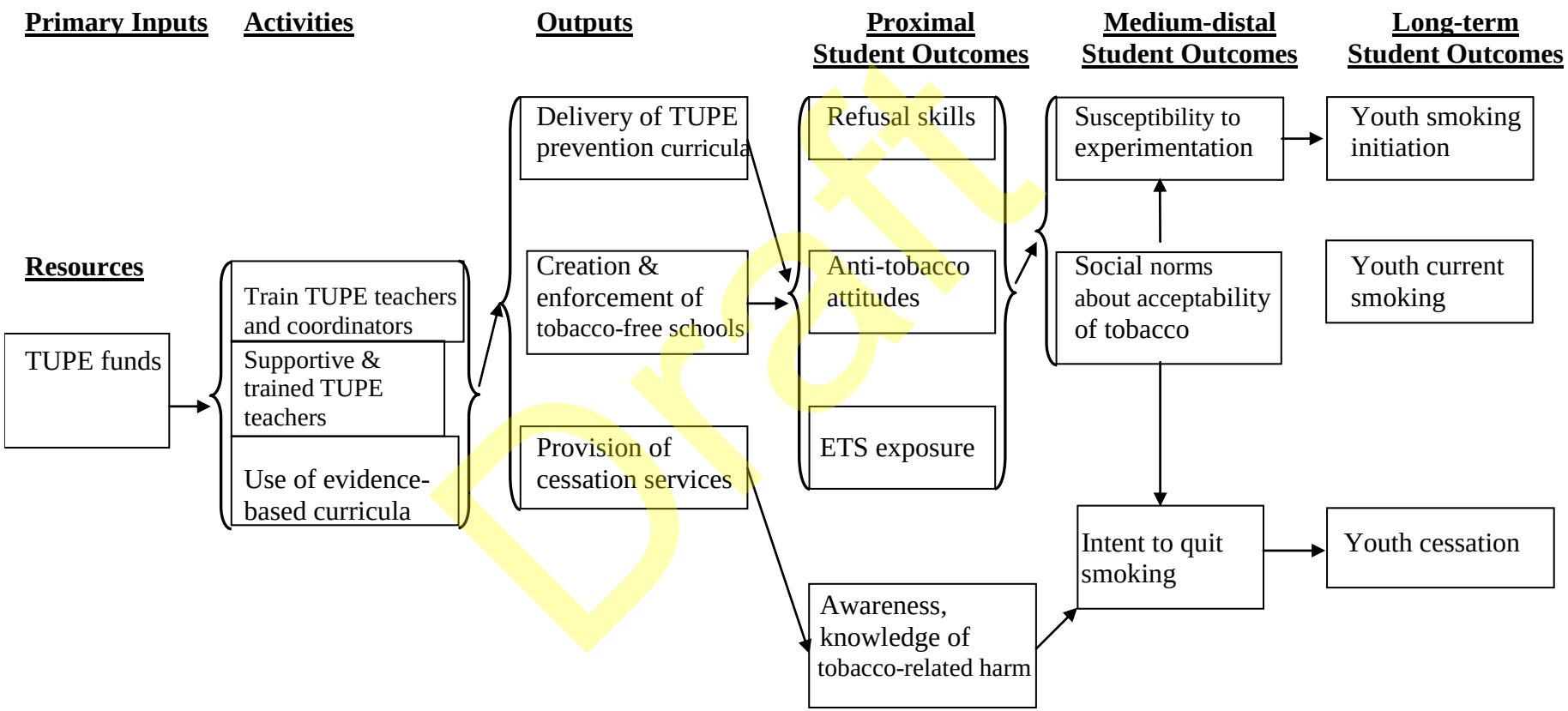
**Figure 1 Subset of In-School Evaluation Logic Model diagram**

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## Measures

### Tobacco Use Policies and Practices

The tobacco use policy and practice measures used in this chapter were identical to those used in Chapter 7 (see Table 7.1 and Appendix Table A7.1).

### Student Tobacco Use, and Precursors to Tobacco Use

Five measures of smoking prevalence were examined; lifetime cigarette use, lifetime regular cigarette use (100+ cigarettes), 30-day cigarette use (current smoker), frequent cigarette use (20+ days in past 30-days), and 30-day cigarette use on school property. The investigators also examined how proximal factors known to be associated with future smoking (i.e., low endorsement of items assessing the social desirability of smoking) – such as intentions to not smoke, peer cigarette use, and beliefs about the negative social consequences of smoking - are associated with tobacco programs and policies. These measures have been described in more detail in Chapter 3.

## School Tobacco Policies and Practices and Student Tobacco Outcomes

### No-Tobacco Use Policy

*Enforcement of No-Tobacco-Use Policy and Consequences for Students Who Violate Policy*

Although student prohibitions against smoking on school grounds are almost universal in California schools, some variation exists across schools in the level of enforcement of these prohibitions. Overall, neither teacher- nor coordinator-reported level of enforcement of no-tobacco-use policies were related to student reports of smoking or the precursors to smoking. In addition, punitive and supportive policies regarding the consequences for students caught violating the no-smoking policy were mostly unrelated to student tobacco outcomes. The relationships between student tobacco outcomes and punitive or supportive responses are presented in **Table 8.1**. An examination of the table indicates that most of the tobacco use outcomes were unaffected by the nature of the punishment for students caught smoking on school grounds. Several statistically significant associations between type of consequence and precursors of smoking were evident, however. Based on site coordinator and administrator reports, punitive consequences were significantly associated with higher student rates of frequent cigarette use on school property (OR = 1.53; 95% CI: [1.09, 2.14]), and marginally associated with increased likelihood of students reporting that they smoked 100 cigarettes or more in a lifetime (OR = 1.18; 95% CI: [0.98, 1.43]). According to teacher reports, the nature of enforcement of school tobacco-free policies was associated with student tobacco outcomes (lifetime 100+ cigarettes smoked and smoking at school) and a precursor of smoking – the accurate reporting of smoking norms.

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**Table 8.1 Relationship of Consequences of Violation of No-Tobacco-Use Policy to Student Tobacco Outcomes**

| | Teacher | | | | Site Coordinator | | | | Site Administrator | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Punitive | | Supportive | | Punitive | | Supportive | | Punitive | | Supportive | |
| | OR/β | *p*-val | OR/β | *p*-val | OR/β | *p*-val | OR/β | *p*-val | OR/β | *p*-val | OR/β | *p*-val |
| Lifetime cigarette use | 1.00 | 0.91 | 1.01 | 0.80 | 1.04 | 0.44 | 1.10 | 0.08 | 1.08 | 0.20 | 1.00 | 0.95 |
| | [0.92, 1.08] | | [0.91, 1.12] | | [0.93, 1.17] | | [0.99, 1.22] | | [0.96, 1.21] | | [0.90, 1.12] | |
| Lifetime 100+ cigarette use | 1.16* | 0.04 | 1.10 | 0.27 | 1.18 | 0.09 | 1.10 | 0.36 | 1.18 | 0.08 | 0.99 | 0.92 |
| | [1.01, 1.34] | | [0.93, 1.30] | | [0.97, 1.43] | | [0.90, 1.33] | | [0.98, 1.43] | | [0.82, 1.20] | |
| Current cigarette use | 1.05 | 0.30 | 1.08 | 0.22 | 1.00 | 0.96 | 1.10 | 0.16 | 1.06 | 0.44 | 0.97 | 0.65 |
| | [0.95, 1.16] | | [0.96, 1.22] | | [0.87, 1.14] | | [0.96, 1.26] | | [0.92, 1.21] | | [0.85, 1.11] | |
| Frequent cigarette use (20+ days) | 1.29 | 0.12 | 1.35 | 0.05 | 1.53* | 0.02 | 1.13 | 0.49 | 1.20 | 0.28 | 1.18 | 0.37 |
| | [0.94, 1.78] | | [0.99, 1.84] | | [1.09, 2.14] | | [0.79, 1.62] | | [0.86, 1.67] | | [0.82, 1.69] | |
| Smoke at school | 1.09 | 0.18 | 1.14* | 0.04 | 1.08 | 0.38 | 1.07 | 0.44 | 1.10 | 0.30 | 0.99 | 0.94 |
| | [0.96, 1.23] | | [1.01, 1.30] | | [0.91, 1.29] | | [0.89, 1.29] | | [0.91, 1.33] | | [0.84, 1.18] | |
| Intent to not smoke | 1.02 | 0.66 | 0.98 | 0.61 | 1.01 | 0.81 | 0.94 | 0.19 | 0.96 | 0.37 | 1.01 | 0.80 |
| | [0.94, 1.11] | | [0.89, 1.07] | | [0.92, 1.12] | | [0.85, 1.03] | | [0.87, 1.06] | | [0.92, 1.11] | |
| Ease of cigarette refusal | 1.00 | 0.96 | 0.99 | 0.79 | 1.01 | 0.78 | 0.96 | 0.41 | 0.96 | 0.37 | 1.04 | 0.42 |
| | [0.92, 1.08] | | [0.89, 1.09] | | [0.93, 1.11] | | [0.88, 1.05] | | [0.87, 1.05] | | [0.95, 1.13] | |
| Peer cigarette use | 1.05 | 0.23 | 1.06 | 0.19 | 1.01 | 0.90 | 1.04 | 0.45 | 1.04 | 0.43 | 0.99 | 0.87 |
| | [0.97, 1.14] | | [0.97, 1.15] | | [0.90, 1.12] | | [0.94, 1.16] | | [0.94, 1.16] | | [0.89, 1.10] | |
| Accurate smoking norms | 0.89* | 0.04 | 0.99 | 0.85 | 0.95 | 0.47 | 0.96 | 0.56 | 0.93 | 0.30 | 0.98 | 0.75 |
| | [0.80, 0.99] | | [0.89, 1.11] | | [0.83, 1.09] | | [0.83, 1.11] | | [0.81, 1.07] | | [0.86, 1.12] | |
| Beliefs about the negative social consequences of smoking | -0.002 | 0.88 | -0.007 | 0.48 | 0.010 | 0.52 | -0.012 | 0.41 | -0.005 | 0.73 | 0.015 | 0.30 |
| | [-.027, .023] | | [-.027, .012] | | [-.021, .041] | | [-.041, .017] | | [-.036, .025] | | [-.013, .043] | |
| Anti-cigarette industry norms | 0.014 | 0.41 | 0.022 | 0.12 | 0.010 | 0.55 | 0.007 | 0.66 | -0.010 | 0.61 | 0.042* | 0.02 |
| | [-.019, .047] | | [-.005, .049] | | [-.023, .043] | | [-.026, .041] | | [-.047, .028] | | [.008, .075] | |
| Perceived physical harm from smoking | 0.001 | 0.94 | 0.009 | 0.37 | 0.014 | 0.37 | 0.015 | 0.31 | -0.003 | 0.80 | 0.025 | 0.10 |
| | [-.022, .024] | | [-.011, .029] | | [-.016, .044] | | [-.014, .043] | | [-.029, .023] | | [-.005, .054] | |

Notes:

i. OR is odds ratio; β is regression coefficient, reflecting how the punitiveness or supportiveness of sanctions against student violations of the school's smoke-free policy affect student reports of tobacco use and tobacco use precursors.

ii. Results come from models that control for student gender, ethnicity, and grade level. Coefficients for "beliefs about the negative social consequences of smoking," "anti-cigarette industry norms," and "perceived physical harm from smoking" come from ordinary least squares regression models. All the other coefficients come from logistic regression models and are expressed as odds ratios.

iii. * $0.01 \leq p < 0.05$

** $p < 0.01$

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Supportive policies were associated with an increased likelihood of students reporting cigarette use on school grounds (OR = 1.14; 95% CI: [1.01, 1.31]). Punative policies, on the other hand, were associated with a significantly decreased likelihood of students accurately reporting smoking as a minority behavior among both adults and teens (smoking norms) (OR = 0.89; 95% CI: [0.80, 0.99]). These tobacco use results may be interpreted as the unintended result of punitive or supportive policies encouraging smoking. However, it could be that schools with more students who smoke are more likely to shelve their suspension policies and implement more supportive policies to combat student smoking, or that tobacco consuming students drop out of zero-tolerance schools at a greater rate. Student reports of increases in anti-cigarette industry norms were positively related to site administrator reports, but only when site administrators indicated that their schools relied more on supportive strategies to enforce their tobacco-free policy.

*Differences by Competitive Grant Status*

The relationship between the level of enforcement of no-tobacco-use policies and student tobacco outcomes did not differ by TUPE competitive grantee status. Nor, for the most part, were student tobacco outcomes differentially related to punitive or supportive policies for students caught smoking in grantee vs. non-grantee high schools. An exception was a differential pattern found for the association of supportive policies for smoking at school, refusal skills, and friends' smoking. In non-TUPE-funded schools, teacher-reported use of a supportive approach to enforcing the school's tobacco-free policy was associated with increased student cigarette use at school (OR = 1.48; 95% CI [1.18, 1.86]), friends' cigarette use (OR = 1.29; 95% CI [1.13, 1.48]), and decreased likelihood of student reports that they would NOT smoke a cigarette if their best friend offered it (OR = 0.89; 95% CI: [0.80, 0.99]).

**Tobacco Related Instruction**

*Tobacco Lessons, Hours of Instruction, and Infusion of Tobacco-related Topics into Curriculum*

Teacher and coordinator reports of tobacco lessons taught, total hours of tobacco-related instruction, and infusion of tobacco-related topics into curriculum were not found to be associated with most of the student tobacco outcome measures assessed. These results are shown in **Table 8.2**. Teacher reports of tobacco lessons taught were significantly related to a decreased likelihood of students' reporting having smoked 100 cigarettes or more (OR = 0.80; 95% CI: [0.65, 0.99]) and student current cigarette use (OR = 0.83; 95% CI: [0.71, 0.97]). Total teacher TUPE instruction time was positively associated with stronger student beliefs about the ease of cigarette refusal (OR = 1.01; 95% CI: [1.001, 1.026]) and intent not to smoke (OR = 1.02; 95% CI: [1.01, 1.03]). Overall however, there was little evidence that schools that delivered more frequent tobacco-related instruction had lower levels of student tobacco use.

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Consistent with the results reported in the 2003-2004 IETP report, the investigators found no evidence that the infusion of tobacco-related topics into non-health related subjects was associated with lower rates of student tobacco use.

**Table 8.2 Relationship of Teacher Report of Tobacco Lessons, Hours of Instruction and Infusion of Tobacco-related Topics to Student Tobacco Outcomes**

| | Lessons | | Hours of Instructions | | Infusion | |
|---|---|---|---|---|---|---|
| | OR/β | *p*-value | OR/β | p-*value* | OR/β | p-*value* |
| Lifetime cigarette use | 0.92 [0.82, 1.05] | 0.22 | 0.99 [0.98, 1.00] | 0.18 | 0.97 [0.84, 1.11] | 0.62 |
| Lifetime 100+ cigarette use | 0.80* [0.65, 0.99] | < 0.05 | 0.99 [0.97, 1.02] | 0.55 | 0.94 [0.72, 1.23] | 0.67 |
| Current cigarette use | 0.83* [0.71, 0.97] | 0.02 | 0.99 [0.98, 1.00] | 0.11 | 0.99 [0.83, 1.18] | 0.92 |
| Frequent cigarette use (20+ days) | 0.89 [0.56, 1.41] | 0.62 | 0.99 [0.94, 1.04] | 0.62 | 1.06 [0.64, 1.76] | 0.81 |
| Smoke at school | 0.86 [0.71, 1.04] | 0.12 | 0.99 [0.97, 1.01] | 0.43 | 1.01 [0.80, 1.28] | 0.94 |
| Intent to not smoke | 1.08 [0.97, 1.21] | 0.17 | 1.01* [1.001, 1.03] | 0.04 | 0.94 [0.83, 1.06] | 0.33 |
| Ease of cigarette refusal | 1.10 [0.99, 1.22] | 0.08 | 1.02* [1.01, 1.03] | 0.03 | 0.97 [0.86, 1.08] | 0.53 |
| Peer cigarette use | 0.89 [0.79, 1.00] | 0.06 | 0.99 [0.98, 1.01] | 0.30 | 1.03 [0.90, 1.18] | 0.62 |
| Accurate smoking norms | 1.09 [0.94, 1.27] | 0.25 | 1.00 [0.98, 1.02] | 0.79 | 1.03 [0.87, 1.21] | 0.73 |
| Beliefs about the negative social consequences of smoking | 0.012 [-.022, .046] | 0.49 | 0.002 [-.002, .006] | 0.43 | -0.005 [-.039, .030] | 0.79 |
| Anti-cigarette industry norms | 0.017 [-.020, .054] | 0.37 | 0.003 [-.001, .007] | 0.21 | -0.013 [-.054, .028] | 0.54 |
| Perceived physical harm from smoking | 0.012 [-.011, .035] | 0.29 | 0.000 [-.003, .003] | 0.98 | -0.017 [-.050, .017] | 0.33 |

Notes:
i. OR is odds ratio; β is regression coefficient, reflecting how teacher reports of hours of TUPE instruction and number of TUPE lessons taught in the last year relate to student reports of tobacco use and tobacco use precursors.
ii. Results come from models that control for student gender, ethnicity, and grade level. Coefficients for "beliefs about the negative social consequences of smoking," "anti-cigarette industry norms," and "perceived physical harm from smoking" come from ordinary least squares regression models. All the other coefficients come from logistic regression models and are expressed as odds ratios.
iii. * $0.01 \leq p < 0.05$; ** $p < 0.01$

*Differences by Competitive Grant Status*

The relationship of teacher reported "hours of tobacco-related instruction" to student tobacco use and its precursors differed consistently by grantee status. As shown in **Table 8.3**, hours of instruction at TUPE-funded high schools appeared to be negatively associated with lifetime smoking (OR = 0.98; 95% CI: [0.97, 0.99]), current smoking (OR = 0.98; 95% CI: [0.96, 0.99]), peer cigarette use (OR = 0.98; 95% CI: [0.97, 0.99]), and positively related to intent **not** to smoke (OR = 1.02; 95% CI: [1.002, 1.03]), reported ease of cigarette refusal (OR = 1.02; 95% CI: [1.001, 1.04], and reported anti-tobacco industry norms (OR = 0.005; 95% CI: [0.0004, 0.010]). These associations, moreover,

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were not observed at non-grantee schools. However, teacher and coordinator reports of tobacco lessons and infusion of tobacco-related topics into non-health related subjects were not found to be differentially related to student tobacco outcomes by high school competitive grant status (not shown).

**Table 8.3 Relationship of Teacher Report of Hours of Instruction to Student Tobacco Outcomes in Grantee/Non-grantee High Schools**

| | Hours of Instruction | | | |
|---|---|---|---|---|
| | Non-grantee | | Grantee | |
| | OR/β | *p*-value | OR/β | *p*-value |
| Lifetime cigarette use | 1.01 [0.99, 1.03] | 0.40 | 0.98* [0.97, 0.99] | 0.02 |
| Lifetime 100+ cigarette use | 1.01 [0.98, 1.05] | 0.45 | 0.98 [0.94, 1.01] | 0.15 |
| Current cigarette use | 1.00 [0.98, 1.03] | 0.71 | 0.98* [0.96, 0.99] | 0.04 |
| Frequent cigarette use (20+ days) | 0.97 [0.90, 1.04] | 0.42 | 0.98 [0.92, 1.03] | 0.40 |
| Smoke at school | 1.00 [0.96, 1.05] | 0.88 | 0.99 [0.96, 1.02] | 0.43 |
| Intent to not smoke | 1.00 [0.97, 1.02] | 0.67 | 1.02* [1.002, 1.03] | 0.03 |
| Ease of cigarette refusal | 1.00 [0.98, 1.02] | 0.72 | 1.02* [1.001, 1.04] | 0.04 |
| Peer cigarette use | 1.01 [0.98, 1.04] | 0.39 | 0.98** [0.97, 0.99] | <0.01 |
| Accurate smoking norms | 0.98 [0.95, 1.01] | 0.27 | 1.01 [0.99, 1.04] | 0.30 |
| Beliefs about the negative social consequences of smoking | 0.003 [-.003, .008] | 0.29 | 0.002 [-.001, .005] | 0.23 |
| Anti-tobacco industry norms | 0.005 [-.000, .010] | 0.06 | 0.005* [.0004, .010] | 0.03 |
| Perceived health consequences from smoking | 0.002 [-.002, .006] | 0.34 | 0.003 [-.001, .006] | 0.16 |

Notes:

i. OR is odds ratio; β is regression coefficient, reflecting how TUPE grantee / non-grantee status interacts with teacher reports of hours of TUPE instruction to influence student reports of tobacco use and tobacco use precursors.

ii. Results come from models that control for student gender, ethnicity, and grade level. Coefficients for "beliefs about the negative social consequences of smoking," "anti-cigarette industry norms," and "perceived physical harm from smoking" come from ordinary least squares regression models. All the other coefficients come from logistic regression models and are expressed as odds ratios.

iii. * $0.01 \leq p < 0.05$

** $p < 0.01$

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*Use of Tobacco Prevention Curriculum, Topics Covered, and Mode of Delivery*

Overall, the use of a published or non-published tobacco use prevention curriculum was not found to be associated with student tobacco use outcomes (**Table 8.4**). The only exception was the significant relationship between the use of a non-published curriculum in tobacco prevention lessons and students reporting **less** cigarette use on school grounds (OR = 0.81; 95% CI: [0.66, 0.99]). Additionally, TUPE coordinators identified topics that were taught as part of TUPE classes. The inclusion of these topics in tobacco prevention classes was not consistently related to student outcomes.

**Table 8.4 Relationship of Teacher Report of Using Tobacco Prevention Curriculum to Student Tobacco Outcomes**

| | **Published Curriculum** | | **Non-published Curriculum** | |
|---|---|---|---|---|
| Outcome variable | **OR/β** | ***p*-value** | **OR/β** | **p-value** |
| Lifetime cigarette use | 0.96 [0.84, 1.09] | 0.54 | 0.96 [0.85, 1.09] | 0.52 |
| Lifetime 100+ cigarette use | 0.87 [0.67, 1.12] | 0.27 | 0.97 [0.81, 1.16] | 0.72 |
| Current cigarette use | 0.88 [0.75, 1.04] | 0.13 | 0.92 [0.80, 1.06] | 0.26 |
| Frequent cigarette use (20+ days) | 0.81 [0.51, 1.28] | 0.36 | 0.77 [0.49, 1.20] | 0.25 |
| Smoke at school | 0.85 [0.69, 1.04] | 0.11 | 0.81* [0.66, 0.99] | < 0.05 |
| Intent to not smoke | 1.10 [0.96, 1.26] | 0.18 | 1.04 [0.92, 1.18] | 0.51 |
| Ease of cigarette refusal | 1.11 [0.98, 1.26] | 0.10 | 1.03 [0.92, 1.15] | 0.61 |
| Peer cigarette use | 0.88 [0.76, 1.02] | 0.08 | 0.94 [0.83, 1.07] | 0.36 |
| Accurate smoking norms | 1.07 [0.90, 1.29] | 0.44 | 1.09 [0.92, 1.30] | 0.32 |
| Beliefs about the negative social consequences of smoking | 0.033 [-0.004, 0.069] | 0.08 | 0.030 [-0.007, 0.068] | 0.11 |
| Anti-cigarette industry norms | -0.013 [-0.050, 0.023] | 0.47 | 0.013 [-0.024, 0.050] | 0.49 |
| Perceived physical harm from smoking | -0.013 [-0.053, 0.026] | 0.51 | 0.003 [-0.031, 0.038] | 0.85 |

Notes:
i. OR is odds ratio; β is regression coefficient, reflecting how teacher reports of tobacco prevention curriculum in TUPE lessons relate to student reports of tobacco use and tobacco use precursors.
ii. Results come from models that control for student gender, ethnicity, and grade level. Coefficients for "beliefs about the negative social consequences of smoking," "anti-cigarette industry norms," and "perceived physical harm from smoking" come from ordinary least squares regression models. All the other coefficients come from logistic regression models and are expressed as odds ratios.
iii. * $0.01 \leq p < 0.05$
** $p < 0.01$

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As shown in **Table 8.5**, teacher-reported topics in TUPE lessons were associated with student tobacco use outcomes. The topics addressed included physical health consequences, social impacts, and media on tobacco use.

The topic, “Effects of Tobacco on [Physical] Health,” was found to be negatively related to students' reporting having smoked 100 cigarettes or more in lifetime, current cigarette use, and cigarette use on school grounds. “Social Consequences of Using Tobacco,” was associated with a decreased likelihood of students reporting current cigarette use and frequent cigarette use. “Tobacco Advertising and Marketing,” was negatively related to students' reporting having smoked 100 cigarettes or more in a lifetime, current cigarette use, cigarette use at school, and peer cigarette use, and was positively associated with increased anti-cigarette industry norms and perceived physical harm from smoking. Teacher- and coordinator-reported methods used to deliver tobacco lessons (e.g., lectures, class discussions) were unrelated to student tobacco use and to the precursors of student tobacco use.

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**Table 8.5 Relationship of Teacher Reports of Selected Topics in Tobacco Use Prevention Lessons to Student Tobacco Outcomes**

| | Effects of Tobacco on Health | | Social Consequences of Using Tobacco | | Tobacco Advertising and Marketing | |
|---|---|---|---|---|---|---|
| | **OR/β** | ***p*-val** | **OR/β** | ***p*-val** | **OR/β** | ***p*-val** |
| Lifetime cigarette use | 1.00 | 0.95 | 0.94 | 0.38 | 0.87 | 0.05 |
| | [0.88, 1.13] | | [0.82, 1.08] | | [0.76, 1.00] | |
| Lifetime 100+ cigarette use | 0.81* | 0.04 | 0.84 | 0.15 | 0.73** | < 0.01 |
| | [0.66, 0.99] | | [0.66, 1.07] | | [0.59, 0.91] | |
| Current cigarette use | 0.86* | 0.03 | 0.83* | 0.02 | 0.79** | < 0.01 |
| | [0.75, 0.99] | | [0.72, 0.97] | | [0.67, 0.94] | |
| Frequent cigarette use (20+ days) | 0.76 | 0.26 | 0.58* | 0.02 | 0.82 | 0.42 |
| | [0.46, 1.23] | | [0.37, 0.92] | | [0.50, 1.33] | |
| Smoke at school | 0.80* | 0.02 | 0.83 | 0.07 | 0.77* | 0.03 |
| | [0.66, 0.97] | | [0.68, 1.01] | | [0.61, 0.98] | |
| Intent to not smoke | 1.05 | 0.44 | 1.05 | 0.42 | 1.03 | 0.64 |
| | [0.93, 1.17] | | [0.93, 1.20] | | [0.91, 1.17] | |
| Ease of cigarette refusal | 1.05 | 0.38 | 1.09 | 0.19 | 1.06 | 0.32 |
| | [0.94, 1.17] | | [0.96, 1.24] | | [0.94, 1.19] | |
| Peer cigarette use | 0.91 | 0.12 | 0.89 | 0.07 | 0.88* | 0.04 |
| | [0.80, 1.03] | | [0.78, 1.01] | | [0.78, 0.99] | |
| Accurate smoking norms | 1.08 | 0.38 | 1.16 | 0.11 | 1.09 | 0.38 |
| | [0.91, 1.27] | | [0.97, 1.40] | | [0.90, 1.31] | |
| Beliefs about the negative social consequences of smoking | 0.013 | 0.50 | 0.015 | 0.46 | 0.021 | 0.23 |
| | [-.025, .050] | | [-.025, .055] | | [-.014, .057] | |
| Anti-cigarette industry norms | 0.006 | 0.77 | 0.021 | 0.41 | 0.049* | 0.02 |
| | [-.035, .047] | | [-.029, .072] | | [.008, .091] | |
| Perceived physical harm from smoking | 0.010 | 0.51 | 0.009 | 0.56 | 0.026* | < 0.05 |
| | [-.020, .040] | | [-.022, .040] | | [.001, .051] | |

Notes:

i. OR is odds ratio; β is regression coefficient, reflecting how teacher reports of selected tobacco prevention topics affect student reports of tobacco use and tobacco use precursors.

ii. Results come from models that control for student gender, ethnicity, and grade level. Coefficients for "beliefs about the negative social consequences of smoking," "anti-cigarette industry norms," and "perceived physical harm from smoking" come from ordinary least squares regression models. All the other coefficients come from logistic regression models and are expressed as odds ratios.

iii. * $0.01 \leq p < 0.05$

** $p < 0.01$

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*Differences by Competitive Grant Status*

Little evidence was found to support that the use of published vs. unpublished curricula, topics covered, or methods of instruction were differentially related to student tobacco outcomes across high schools with competitive grants vs. those without such grants.

## School-wide Anti-tobacco Activities

*Number of School-wide Anti-tobacco Activities*

Analyses suggest that the number of school-wide tobacco prevention activities that took place at schools during the year prior to the survey was unrelated to most student tobacco use outcomes and unrelated to most precursors, as **Table 8.6** illustrates.

**Table 8.6 Relationship of School-Wide Activities to Selected Student Tobacco Outcomes**

| | Teacher | | Site Coordinator | | Site Administrator | |
|---|---|---|---|---|---|---|
| | β | *p*-value | β | *p*-value | β | *p*-value |
| Beliefs about the negative social consequences of smoking | 0.001 [-.008, .010] | 0.85 | -0.000 [-.006, .005] | 0.87 | 0.001 [-.003, .006] | 0.57 |
| Anti-cigarette industry norms | 0.005 [-.004, .014] | 0.24 | 0.007** [.002, .012] | < 0.01 | 0.005 [-.000, .010] | 0.06 |
| Perceived physical harm from smoking | 0.002 [-.006, .011] | 0.58 | 0.001 [-.006, .008] | 0.76 | 0.002 [-.004, .008] | 0.47 |

Notes:
i. β is regression coefficient, reflecting how teacher / site coordinator / site administrator reports of school-wide TUPE activities affect student reports of tobacco use and tobacco use precursors.
ii. Results come from models that control for student gender, ethnicity, and grade level. Coefficients come from ordinary least squares regression models.
* $0.01 \leq p < 0.05$
** $p < 0.01$

*Differences by Competitive Grant Status*

No evidence was found to support a difference in the relationship between the number of school-wide tobacco prevention activities and student tobacco outcomes at grantee vs. non-grantee high schools.

## Governance

*Support from District, and Priority of Tobacco Use Prevention at School*

Issues surrounding the governance of tobacco use prevention education at schools were examined regarding how they related to student tobacco use outcomes. This examination focused on the level of support received from the district and the priority given to tobacco use prevention at the school. Analyses suggested that the perceived priority of tobacco use prevention education at the school was significantly related to a

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decreased likelihood of student reported current cigarette use (OR = 0.90; 95% CI: [0.82, 0.99]), and marginally associated with a decreased likelihood of cigarette use at school and with increased likelihood of students reporting intention not to smoke. Perceived support for tobacco use prevention education from the district was related to some of the student outcomes assessed. As presented in **Table 8.7**, students in schools where teachers reported that the district supported them teaching tobacco use prevention lessons were less likely to report lifetime cigarette use (OR = 0.78; 95% CI: [0.66, 0.92]), smoking at school (OR = 0.75; 95% CI: [0.57, 0.99]), and peer cigarette use (OR = 0.83; 95% CI: [0.71, 0.98]). These students were more likely to report intention not to smoke (OR = 1.28; 95% CI: [1.11, 1.47]), increased ease of cigarette refusal (OR = 1.23; 95% CI: [1.08, 1.39]), and more negative attitudes about the social consequences of smoking (β = 0.063; 95% CI: [0.022, 0.105]).

Students in schools where site coordinators reported that the district supported teachers in teaching tobacco use prevention lessons were more likely to report perceived physical harm from smoking (β = 0.033; 95% CI: [0.004, 0.061]). The results suggest that teacher perceptions of support from the district for TUPE were linked to better student tobacco use outcomes. Students in schools where teachers perceived strong support from the district for the school's TUPE program reported less smoking behavior and lower levels of several precursors to student smoking, especially student reports of intention not to smoke, ease of cigarette refusal, and negative social consequences of smoking.

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**Table 8.7 Relationship of Support from District to Student Tobacco Outcomes**

| | Teacher | | | | Site Coordinator | | | |
|---|---|---|---|---|---|---|---|---|
| | Expected to teach | | Level of support | | Expected to teach | | Level of support | |
| | OR/β | *p*-val | OR/β | *p*-val | OR/β | *p*-val | OR/β | *p*-val |
| Lifetime cigarette use | 0.93 | 0.24 | 0.78** | 0.00 | 0.95 | 0.43 | 0.99 | 0.89 |
| | [0.82, 1.05] | | [0.66, 0.92] | | [0.84, 1.08] | | [0.87, 1.13] | |
| Lifetime 100+ cigarette use | 0.89 | 0.31 | 0.90 | 0.42 | 0.87 | 0.22 | 0.86 | 0.11 |
| | [0.71, 1.12] | | [0.69, 1.17] | | [0.69, 1.09] | | [0.71, 1.04] | |
| Current cigarette use | 0.92 | 0.27 | 0.87 | 0.12 | 0.94 | 0.45 | 0.88 | 0.10 |
| | [0.79, 1.07] | | [0.73, 1.04] | | [0.79, 1.11] | | [0.75, 1.03] | |
| Frequent cigarette use (20+ days) | 1.32 | 0.20 | 1.22 | 0.49 | 1.40 | 0.07 | 1.15 | 0.48 |
| | [0.86, 2.02] | | [0.69, 2.19] | | [0.97, 2.01] | | [0.77, 1.71] | |
| Smoke at school | 0.94 | 0.56 | 0.75* | 0.04 | 1.03 | 0.79 | 0.98 | 0.84 |
| | [0.76, 1.16] | | [0.57, 0.99] | | [0.83, 1.27] | | [0.79, 1.21] | |
| Intent to not smoke | 1.09 | 0.19 | 1.28** | 0.00 | 1.04 | 0.45 | 1.09 | 0.14 |
| | [0.96, 1.23] | | [1.11, 1.47] | | [0.94, 1.16] | | [0.97, 1.21] | |
| Ease of cigarette refusal | 1.07 | 0.26 | 1.23** | 0.00 | 1.04 | 0.47 | 1.10 | 0.10 |
| | [0.95, 1.20] | | [1.08, 1.39] | | [0.94, 1.15] | | [0.98, 1.22] | |
| Peer cigarette use | 0.93 | 0.21 | 0.83* | 0.03 | 1.00 | 0.97 | 0.94 | 0.28 |
| | [0.83, 1.04] | | [0.71, 0.98] | | [0.88, 1.14] | | [0.84, 1.05] | |
| Accurate smoking norms | 1.07 | 0.39 | 1.15 | 0.25 | 1.03 | 0.70 | 0.97 | 0.69 |
| | [0.91, 1.26] | | [0.91, 1.45] | | [0.89, 1.20] | | [0.83, 1.13] | |
| Beliefs about the negative social consequences of smoking | 0.000 | 1.00 | 0.063** | 0.00 | 0.006 | 0.72 | 0.001 | 0.96 |
| | [-.038, .039] | | [.022, .105] | | [-.028, .040] | | [-.032, .034] | |
| Anti-cigarette industry norms | 0.012 | 0.57 | 0.028 | 0.16 | 0.012 | 0.53 | 0.028 | 0.13 |
| | [-.030, .054] | | [-.011, .067] | | [-.027, .052] | | [-.008, .064] | |
| Perceived physical harm from smoking | -0.010 | 0.57 | -0.003 | 0.86 | 0.003 | 0.83 | 0.033* | 0.02 |
| | [-.045, .025] | | [-.036, .030] | | [-.025, .031] | | [.004, .061] | |

Notes:

i. OR is odds ratio; β is regression coefficient, reflecting how teacher and site administrator reports of support from the district for the school's TUPE program affect student reports of tobacco use and tobacco use precursors.

ii. Results come from models that control for student gender, ethnicity, and grade level. Coefficients for "beliefs about the negative social consequences of smoking," "anti-cigarette industry norms," and "perceived physical harm from smoking" come from ordinary least squares regression models. All the other coefficients come from logistic regression models and are expressed as odds ratios.

iii. * $0.01 \leq p < 0.05$

** $p < 0.01$

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*Differences by Competitive Grant Status*

No differences were apparent between grantee and non-grantee high schools regarding associations between support from the district for tobacco use prevention and student tobacco outcomes. Grantee vs. non-grantee differences were not detected when analyzing teacher and coordinator reports of the relationship between the priority of tobacco use prevention to student tobacco use outcomes.

## Summary

This chapter examined how tobacco prevention policies and practices in California schools were related to student tobacco use outcomes and proximal precursors to tobacco use, such as student intentions not to smoke. Differences in these relationships were also examined across high schools that received competitive TUPE grants and those that did not receive such grants.

There was consistent evidence that student tobacco use was lower and tobacco use precursors were more "anti-tobacco" use when teachers reported higher levels of district support for TUPE implementation. There was also consistent evidence that student tobacco use was lower when teachers addressed the following specific topics in their tobacco use prevention lessons: "Effects of tobacco on health," "Social consequences of using tobacco," and "Tobacco advertising and marketing." As with student reports of program exposure, student anti-smoking attitudes and beliefs (intent not to smoke, low peer smoking estimates, anti-tobacco industry attitudes) were positively associated with teacher perception of support from the school district for teaching tobacco use prevention lessons to students.

Teacher-reported hours of TUPE-related instruction were negatively associated with student current tobacco use, lifetime use, and peer cigarette use in TUPE-funded grantee schools (but not in non-TUPE funded schools). Teacher-reported hours of TUPE-related instruction were positively associated with student intentions not to smoke, student-reported ease of refusal of cigarette offers, and with their anti-tobacco industry norms in TUPE-funded schools (but not in non-TUPE schools). In other respects, differences in student tobacco use and tobacco use precursors were not differentially associated with program policies and practices in grantee vs. non-grantee schools.

There was little systematic evidence to indicate that school-level tobacco policies (like enforcement of no-tobacco-use policies and punitive and supportive consequences for violation), and TUPE practices were associated with student tobacco use or tobacco use precursors. There were consistent relationships between teacher-reported district support for teaching TUPE lessons, lower student tobacco use, and teacher-reported choice of TUPE lesson topics. This may suggest that district policies and teacher practices with respect to tobacco use prevention can be effective in reducing student tobacco use. The cross-sectional nature of the survey data that are the basis of these analyses precludes making such a judgment.

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The safest conclusion regarding the abovementioned relationship is that school districts – while distributing TUPE funding to their schools, should make an effort to convince teachers and other school staff that the district supports teaching TUPE lessons and to encourage them to address lessons about cigarette advertising, the social consequences of tobacco use, and the health consequences of tobacco use because the teaching of these topics appears to be associated with lower student tobacco use.

Another reasonable conclusion is that TUPE grant-funded schools may be at an advantage to recruit one or two teachers to provide all TUPE lessons for the school, rather than spreading the responsibility more broadly. TUPE teaching effectiveness appears to be enhanced when teachers report a higher number of TUPE-related hours of instruction.

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## References

Aveyard, P., Markham, W.A. & Cheng, K.K. (2004). A methodological and substantive review of the evidence that schools cause pupils to smoke. *Social Science and Medicine, 58(11),* 2253-2265.

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# CHAPTER 9

## SCHOOL AND BIRTH COHORT ANALYSIS: EXAMINATION OF CHANGES OVER TIME IN HIGH SCHOOLS SURVEYED TWICE

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# CHAPTER 9: SCHOOL AND BIRTH COHORT ANALYSIS: EXAMINATION OF CHANGES OVER TIME IN HIGH SCHOOLS SURVEYED TWICE

**CHAPTER HIGHLIGHTS**

- **This cohort analysis confirmed that high school students increased their current and frequent tobacco use over the two-year period, especially cigar and smokeless tobacco use.**
- **Student pro-smoking attitudes, beliefs and social environments (intent to smoke, belief in positive social consequences, and more smoking peers) increased, while anti-smoking health and social beliefs decreased over the two-year period. Student attitudes about the tobacco industry became less negative over time.**
- **Regarding tobacco prevention program structure in this cohort of high schools, there was little evidence of overall change in the type and level of tobacco use prevention education (TUPE) program implementation between the 2003-2004 and 2005-2006 academic years.**
- **TUPE-funded grantee high schools reported higher levels and quality of tobacco prevention-related activities compared to non-grantee schools at each time point. These TUPE-funded implementation advantages appeared to be mediated through district-level support for these activities, which was itself directly associated with TUPE funding status.**
- **Evidence suggests that school-level TUPE activities were associated with changes in student tobacco use and intentions, but not with most of the hypothesized intermediate tobacco use precursors.**
- **Among the precursors to smoking, only smoking intentions and positive social outcome expectancies were predictive of changes in smoking.**
- **School API scores and average parent education levels (but not school enrollment size) were contextual factors that were positively associated with two-year changes in the prevalence of student smoking.**
- **The association of school TUPE activities with changes in student smoking can be partially explained by contextual factors, but reasons were unclear as to why higher school API or parent education levels were associated with greater increases in student tobacco use over time.**

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## Introduction

Previous chapters in this report have described a variety of student tobacco use-related outcomes, the policies and practices implemented in CA schools intended to influence those outcomes, and the relationships between student tobacco use outcomes and school policies and practices using a student population-based survey at one time point, the 2005-2006 academic year. Descriptions in previous chapters provide the best estimates for current types and amounts of tobacco use-related activities, attitudes and behaviors.

This chapter presents a cohort design analysis of the preceding constructs and their relationships to each other and over time, using data from the school-longitudinal component of the 2005-2006 evaluation design. The school-longitudinal component consisted of a re-assessment of high schools, and birth cohorts within those schools, originally part of the 2003-2004 IETP evaluation sample. Specifically, data is used at two time points from a single set of high schools, this chapter provides the following:

1. A re-examination of grade trends in smoking and smoking-related attitudes over the two-year period.

2. An examination of summary measures of school program components and their stability over time.

3. An examination of how TUPE funding and district support relate to school implementation component summary measures.

4. An examination regarding how school TUPE implementation is related to changes in tobacco use-related knowledge, and attitudes over the two-year period.

5. An examination of how tobacco use-related knowledge, attitudes, and behavioral outcomes relate to each other as students mature over the two-year period.

6. An examination of the relative impact of community-level influences on student tobacco use over the two-year period.

Chapter 9 begins by briefly describing the sample, methods and measures used in this cohort analysis and is further organized into six sub-sections, each addressing one of the analytic goals above.

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## Sample

Sixty-five high schools that participated in the 2003-2004 IETP were deliberately re-invited to participate in the 2005-2006 IETP for the purpose of conducting a school-level longitudinal (cohort) analysis. Because they were randomly selected (by region) in 2003-2004, they were treated as though they had been randomly selected in the current sample for prevalence estimation purposes. Of the 65 high schools that participated in the 2003-2004 IETP, 57 schools agreed to participate in 2005-2006 survey (87.7% response rate), with at least two schools participating in each region. Nearly half of the high schools (n=28) were current TUPE grantees.

At the second stage of sampling, 1-2 classes per grade were randomly selected from each school[1]. All students within a selected class were eligible to participate. Approximately 8,500 students from each type of school (grantee and non-grantee) participated in the survey. **Table 9.1** presents the demographic characteristics of the sample by competitive grant status.

**Table 9.1 Demographic Characteristics (S.D.) of Re-Surveyed High Schools by Non-Grantee and Grantee Status**

| | Competitive Grant Status* | | |
|---|---|---|---|
| | Non-grantee | Grantee | *p-value* |
| Student Enrollment | 2,424 (799) | 2,298 (749) | 0.54 |
| African American (%) | 4.9 (5.0) | 5.8 (5.4) | 0.49 |
| Hispanic/Latino(a) (%) | 38.4 (26.4) | 30.1 (23.1) | 0.21 |
| Caucasian, non-Hispanic/Latino(a) (%) | 40.5 (25.0) | 46.2 (25.9) | 0.40 |
| Subsidized Meals (%) | 30.4 (20.2) | 22.4 (19.2) | 0.13 |
| Academic Performance Index (standardized achievement test scores) | 705 (76) | 727 (82) | 0.26 |
| Parental Education (1=less than high school, 5=graduate degree) | 2.9 (0.6) | 3.2 (0.7) | 0.11 |
| Duration of Current Funding (months) | - | 70.5 (39.0) | - |
| Number of students surveyed (Grades 9-12),both time points* | 8560 | 8498 | 0.63 |
| Number of schools | 29 | 28 | 0.85 |

* See footnote below.

[1] More classrooms and students were sampled within each school in the 2005-2006 survey (n=10,795, 63% of the total student sample) compared to the 2003-2004 (n=6,263, 37% of total sample). Therefore, estimates in the 2005-2006 data are relatively more precise compared to 2003-2004 estimates.

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As in the full cross-sectional sample, there were no statistically significant differences regarding the characteristics of the TUPE-funded and non-TUPE-funded high schools in the repeated assessment sample.

**Weighting**

A weight was applied to each student record to adjust for varying probabilities of selection at each sampling stage, for student non-response, and for disproportionate population sampling. In the analysis presented in this chapter the weights were constructed such that each school and each grade within the school had an equal weight. This equal school weighting scheme differs from that used in other chapters, which used design-based student population weights to generate results generalizable to all (public) high school **students** throughout the state. In this chapter, by contrast, the primary interests include generalizing results to high schools and examining relative differences between groups of high schools or between time points. An equal school-grade weighting scheme was appropriate for this type of model-testing.

The specific weight used for each student (i) is given by:

$$W_{igs} = 40 * N_{gs}^{-1}$$

Where $N_{gs}^{-1}$ represents the inverse of the sample size in each grade (g) in each school (s). The value of 40 is the average $N_{gs}$. Similarly, adult survey data were equal school weighted by the inverse of the number of adult respondents of each type at the school (i.e. averaged). The student weights were scaled so that the sum of the weights was equal to the number of respondents, and the sum of the adult weights was equal to the sum of the number of schools.

**Grade and Birth Cohorts**

Typically, results over time from population-based school health surveys are presented for students at fixed grades over time, for example the 8$^{th}$ grade tobacco use rates at each year as shown in Chapter 2, Table 2.10. Here, the investigators define these types of trends over time as <u>grade cohort</u> trends, because values indicate students sharing a common grade. These types of trends are useful because they define expectations year to year in levels of skills or behaviors at a single point of student maturation. Changes in levels year to year are often attributable to environmental factors, such as an educational program. However, these types of trends are inherently cross-sectional at a student level because a sample from a new group of students is measured at each time point.

In contrast, <u>birth cohort</u> defines a group of student who share the same birth year. Trends over time in this type of cohort follow any developmental continuum that may exist with age. These trends are inherently longitudinal in that either the same students or a similar sample of students on the same development trajectory were measured at each time. Birth cohort trends are useful because they have expected rates of growth (as opposed to levels) over time that can be evaluated as a function of exposures to environmental factors such as educational programs. A high school measured over a two-year interval contains a student birth cohort of 9th and 10$^{th}$ graders most of whom become the school's 11$^{th}$ and 12$^{th}$ graders two years later.

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The data collected for this evaluation permits an examination of both types of cohorts over the most recent two-year period. The grade cohort trends in student outcomes are presented for the full sample of schools in prior chapters and are briefly re-examined here in the subset of 57 high schools followed over time. Students (more accurately, time-shifting grades) in the birth cohort sub-sample followed over time constitute the primary sample for the remaining analysis. The reader is reminded that all surveys were completed anonymously, so it was not possible to follow individual students. It was possible to follow only their grade-cohort as it changed from 9th grade to 11th grade or from 10th to 12th grade.

## Analytic Strategy

The primary analysis strategy employed the birth cohort sub-sample and variants of the random coefficients model, also known as the hierarchical linear model (HLM, Bryk & Raudenbush, 1992; Raudenbush & Bryk, 2002). The HLM model can be conceptualized as a two-stage system of equations in which the individual variation within each school is explained by a student-level equation (level-1), and the variation across schools in the school-specific regression coefficients is explained by a school-level equation (level-2).

In the first stage, a separate student-level regression is defined for each school (j). In this first stage, the units of analysis are individuals (i) and the specified regression models are of the following general form:

$$\text{Outcome}_{ij} = \beta_{0j} + \beta_{1j} * \text{Year}_{ij} + \beta_2 * \text{Demographics}_{ij} + e_{ij} \qquad \textbf{[1}^{2}\textbf{]}$$

In this equation, the random coefficient, $\beta 1_j$ represents the mean change of the outcome variable between the two time points for the birth cohorts at each school (j). That is, the cohort trends in outcomes for grade 9 & 10 students in 2003-2004 as they move to grades 11 & 12 in the 2005-2006 school year.

In a second stage, each of the cohort trends in school means ($\beta_{1j}$) is modeled as a function of school-level input, activity, and output variables (collectively labeled here as 'practices') and other external factors. In this second stage, the units of analysis are schools and the specified regression models have the following general form:

$$\beta_{1j} = \gamma_{10} + \gamma_{11} * \text{Practices}_j \ldots + \gamma_{12} * \text{ExternalFactors}_j \ldots + \mu_{1j} \qquad \textbf{[2]}$$

$$\beta_{0j} = \gamma_{00} + \gamma_{01} \text{Practices}_j \ldots + \gamma_{02} * \text{ExternalFactors}_j \ldots + u_{0j} \qquad \textbf{[3]}$$

In these equations, $\gamma_{10}$ represents the mean cohort trend across schools and $\gamma_{11}$ indexes the association between the practices and the cohort trend (change in outcome). The influences of school and community level external factors such as school size, relative affluence, or region are captured by $\gamma_{12}$. Similarly, equation 3 coefficient $\gamma_{00}$ represents the overall average of the Outcome, $\gamma_{01}$ indexes the average effect of Practices on the outcome, and $\gamma_{12}$ indexes the average effect of the external factors.

[2] For binary outcomes, the logistic link function is used, see Chapter 7, footnote 1.

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Equations 1, 2 and 3 above are combined into a single equation for estimation purposes:

$$Outcome_{ij} = \gamma_{00} + \gamma_{10}Year_{ij} + \gamma_{01}Practices_j + \gamma_{11}Practices_j * Year_{ij} + \ldots + u_{1j}X_{ij} + u_{0j} + e_{ij} \quad \textbf{[4]}$$

Of particular interest in the combined equation are: the coefficient on $\gamma_{10}Year_{ij}$, which again specifies the change in the outcome over time; the coefficient $\gamma_{01}$ on $Practice_j$, which specifies the average of the cross-sectional effects of Practice on the outcome; and the coefficient $\gamma_{11}$ on the interaction term between $Year_{ij}$ and $Practices_j$ which specifies the effects of Practices on <u>changes</u> in Outcomes.

These 'birth-cohort' models will be applied when examining student outcomes in the birth cohort sub-sample. Grade-cohort models are estimated using students from all grades at each year and specified conceptually by replacing 'year' with 'grade' in equation **[1]** and moving 'Year' to equation **[2]** in place of 'practices.'

**Measures**

*Student Tobacco Use and Precursors to Tobacco Use*

Four binary measures of cigarette use were examined – lifetime cigarette use, 30-day cigarette use (current smoker), frequent cigarette use (20+ days in past 30 days), and 30-day cigarette use on school property. In addition, two measures of other tobacco use – smokeless tobacco use in the last 30 days and cigar use in the last 30 days were examined with items defined in Chapter 2. In this chapter, the investigators also defined a multi-item <u>Smoking Index</u> as the standardized sum of the four cigarette and one cigar smoking measures (alpha=0.68).

Multi-item scales were constructed to serve as precursors of smoking, similar to those defined in earlier chapters (see Chapter 3, Table 3.1). In this chapter, the investigators further differentiated the tobacco use-related attitude and belief items into positive and negative valence item sets. Recent research has shown that youth hold independent positive and negative expectancies about the consequences of health-compromising behaviors, and that the expectancy of positive consequences may be more predictive of those behaviors than expectancy of negative consequences (Simons-Morton et al., 1999). Appendix Table A9.1 shows the items used to form the scales described in this chapter. Unlike other chapters, these measures were not dichotomized for analysis. Rather, they were kept as multi-point continuous measures and transformed to a common scale (standard deviation =1.0).

*Tobacco Use Policies and Practices*

The tobacco use policy and practice measures used in this Chapter are equivalent to those used in Chapter 7 (see Table 7.1 and Appendix Table A7.1). In this Chapter, the investigators further constructed multi-item <u>summary indices</u> from these measures by standardizing the sum of the items listed in each of the six broad areas of tobacco use prevention/intervention services: (1) no-tobacco use policies, (2) tobacco-related instruction, (3) school-wide anti-tobacco activities, (4) cessation activities, (5) parent involvement, and (6) governance/support. The summary measures used reports from the school tobacco coordinators and in the case of

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the instructional area, additional reports from the teachers who had taught tobacco lessons were used. A global implementation index was constructed as the sum of the first five component indices.

These models tested for the overall time trend in the tobacco use-related behavior or attitude in the repeated high school sample, and also for possible differences in time trends across grade, gender, ethnic, and region-specific groups using time by subgroup interactions. The overall, gender, ethnic, and region-specific trends were collapsed over all grade 9-12 students at each time point. In these analyses, the focus was on the changes over time in high school student tobacco use-related behaviors and attitudes using a before-and-after set of schools. The investigators used equal weighting of schools and grades, and included school enrollment size as a covariate. A logistic link function was used for testing trends in binary outcomes measures, and normal link function for the continuous measures.

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*Lifetime Smoking*

No change was found in the overall estimate of lifetime smoking (-0.3%. SE =1.3) over time (t= -.23, p=0.77). Lifetime smoking prevalence did vary with grade, gender, and ethnicity, but not by region. Lifetime smoking prevalence over time did vary with ethnicity (F=1.89, p=0.001) with Asian, African American, and Latino subgroups exhibiting statistically significant reductions in lifetime use relative to other race groups. There were no other significant changes over time in subgroup-specific rates of lifetime smoking.

**Table 9.2 Lifetime smoking (Grade Cohorts)**

| | | 2003-2004 | | | 2005-2006 | | |
|---|---|---|---|---|---|---|---|
| **Grade** | **N** | **Estimate** | **Lower Bound** | **Upper Bound** | **Estimate** | **Lower Bound** | **Upper Bound** |
| **9** | 3839 | 30.2% | 27.8% | 32.7% | 29.9% | 28.1% | 31.8% |
| **10** | 4827 | 38.2% | 36.1% | 40.3% | 40.2% | 38.3% | 42.0% |
| **11** | 3930 | 43.4% | 40.7% | 46.2% | 44.2% | 42.3% | 46.1% |
| **12** | 4237 | 52.9% | 50.2% | 55.6% | 49.4% | 47.5% | 51.2% |
| **All** | 16833 | 41.2% | 39.9% | 42.4% | 40.9% | 40.0% | 41.9% |

*Smoking in the Last 30 Days (Current Smoking)*

There was a significant increase of 2.4% (SE =0.7%) in the overall prevalence of current smoking (t=3.4, p<.001). The current smoking rate did vary at both time points with grade, gender, and ethnicity, but not by region. This overall estimated time trend increase held for each subgroup in that there were no statistically significant time by group interactions.

**Table 9.3 Current smoking (Grade Cohorts)**

| | | 2003-2004 | | | 2005-2006 | | |
|---|---|---|---|---|---|---|---|
| **Grade** | **N** | **Estimate** | **Lower Bound** | **Upper Bound** | **Estimate** | **Lower Bound** | **Upper Bound** |
| **9** | 3839 | 7.6% | 6.2% | 8.9% | 10.6% | 9.3% | 11.8% |
| **10** | 4827 | 11.6% | 10.2% | 13.0% | 14.2% | 12.9% | 15.5% |
| **11** | 3930 | 14.6% | 12.7% | 16.6% | 16.6% | 15.2% | 18.0% |
| **12** | 4237 | 17.7% | 15.6% | 19.7% | 20.0% | 18.5% | 21.5% |
| **All** | 16833 | 12.8% | 12.0% | 13.7% | 15.4% | 14.7% | 16.0% |

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*Smoking 20 or More Days in Last Month (Frequent Smoking)*

There was a small but statistically significant increase in the prevalence of frequent smoking in the repeated high schools [0.9% (SE =0.3%; t=2.93, p=.005)]. As was seen with the other smoking behaviors, frequent smoking varied at both times with grade, gender, and ethnicity, but not region. There were no subgroup variations in the time trend increase observed for frequent smoking.

**Table 9.4 Frequent Smoking (Grade Cohorts)**

| | | 2003-2004 | | | 2005-2006 | | |
|---|---|---|---|---|---|---|---|
| **Grade** | **N** | **Estimate** | **Lower Bound** | **Upper Bound** | **Estimate** | **Lower Bound** | **Upper Bound** |
| **9** | 3839 | 1.0% | 0.5% | 1.5% | 1.9% | 1.4% | 2.4% |
| **10** | 4827 | 1.9% | 1.3% | 2.4% | 3.0% | 2.3% | 3.6% |
| **11** | 3930 | 2.8% | 1.9% | 3.7% | 3.6% | 2.9% | 4.3% |
| **12** | 4237 | 3.9% | 2.9% | 4.9% | 4.9% | 4.1% | 5.7% |
| **All** | 16833 | 2.4% | 2.0% | 2.8% | 3.3% | 3.0% | 3.7% |

*Smoking at school in the last 30 days*

There was a small (1.3%, SE = 0.3%) but significant increase in the prevalence of smoking at school (t = 3.49, p = 0.001). Interestingly, no significant variation was found in smoking at school by grade level (t = 1.01, p = 0.31). Variation within time existed by gender and ethnicity, but not by region. The only significant variation in the time trend for any subgroup was one variation involving Native Americans. Native Americans increased their rates of smoking at school faster than other ethnic groups (t = 2.03, p = 0.04) from 2003-2004 to 2005-2006.

**Table 9.5 Smoking at School (Grade Cohorts)**

| | | 2003-2004 | | | 2005-2006 | | |
|---|---|---|---|---|---|---|---|
| **Grade** | **N** | **Estimate** | **Lower Bound** | **Upper Bound** | **Estimate** | **Lower Bound** | **Upper Bound** |
| **9** | 3839 | 2.6% | 1.8% | 3.4% | 4.5% | 3.7% | 5.3% |
| **10** | 4827 | 4.6% | 3.7% | 5.5% | 5.5% | 4.7% | 6.4% |
| **11** | 3930 | 3.6% | 2.6% | 4.6% | 5.1% | 4.3% | 5.9% |
| **12** | 4237 | 3.5% | 2.5% | 4.5% | 4.6% | 3.8% | 5.3% |
| **All** | 16833 | 3.6% | 3.1% | 4.0% | 4.9% | 4.5% | 5.3% |

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*Other Tobacco Use*

Although this chapter focuses primarily on smoking outcomes, for reference, change over time in the prevalence of cigar use in the last 30 days (not shown) was also examined and an overall significant increase of 2.4% (SE = 0.47%, p<. 001) was observed, with almost all of the increase attributable to males (3.6% SE =0.81, p<. 001). Native Americans increased their cigar use by 12.5% (SE = 4.3%, p<. 001). Similarly, a significant increase in smokeless tobacco use was observed over the 2003-2004 to 2005-2006 interval (not shown), with an overall (males + females) increase of 1.7% (SE = 0.27%, p<.001). The male increase in smokeless tobacco use was significantly greater than the female increase at 2.5% (SE =0.51%, p<.001). Native Americans also experienced a disproportionate increase in smokeless tobacco use at 4.3% (SE =2.4%, p<.01).

*Proximal- and Medium-distal Outcomes*

These models examined the time trend in standardized proximal and medium-distal outcome measures, predicted by year, with grade, gender, ethnicity, region, and school enrollment size as covariates. As shown above, the sample was all grade cohorts (9-12) at each year at repeated high schools. Only changes in overall standardized scale scores over time were examined. Changes in these measures were not examined within demographic subgroups, primarily because of the lack of variability seen in current and frequent smoking outcome changes above.

The results are summarized in **Table 9.6**. In order to make meaningful comparisons across the various outcome measurements, the scales were standardized to a standard deviation (SD) of one (SD = 1) prior to analysis. Therefore, values in Table 9.6 and beyond describe changes from 2003-2004 to 2005-2006 expressed in standard deviation units and were therefore comparable in terms of unit of measurement. Standard deviation scale changes on the order of 0.20 standard deviation units are often considered small but 'noticeable' in terms of observable social/psychological constructs (Cohen, 1988). In this sample, differences on the order of 0.03 SD units are statistically significant at a p = 0.05 level. The practical meaningfulness of a difference of that magnitude is left to the reader to gauge. As a point of reference, the change over time in the smoking index measure was 0.058 SD units. The corresponding change in current smoking was 2.4 percentage units.

The investigators found that student intentions and reports of numbers of friends smoking increased statistically over time, on the order of 0.04 SD units (SE = 0.014, p<.01). Student estimates regarding the number of students who smoke did not change over the interval.

In regards to perceptions of social consequences, the level of belief in there being positive consequences of smoking (e.g., looking cool) rose slightly (0.055 SD units, SE = 0.014, p<. 01) while perceptions of there being negative social consequences of smoking were not statistically significant (-0.022 SD units, SE =0.014, p=0.13). The increase in perceptions of positive social consequences of (adolescent) smoking was consistent, both theoretically and in magnitude, with the corresponding increase observed in the smoking index measure.

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The perceptions of negative health consequences (e.g., a belief that physical harm will result from smoking) also changed in a direction consistent with increased smoking, with a drop of –0.119 SD units (SE = 0.014, $p < 0.001$) in the scale between 2003-2004 and 2005-2006. The positive health outcome scale (e.g., smoking is a way to maintain body weight) was also observed to decrease slightly but not significantly (-0.025 SD units, SE = 0.014, $p = 0.09$).

Both pro- and anti- attitudes towards the tobacco industry decreased over time. The pro-industry attitude (e.g., willingness to wear a logo) decreased by –0.32 SD units and the anti-industry attitude (e.g., industry tries to get people addicted) by -0.096 units (SE = 0.014, p = 0.028 and 0.001). The values were the largest changes observed in this set of measures.

**Table 9.6 Time trends for Proximal and Medium-distal Outcomes (Grade Cohorts)**

| Outcome | Change Over Time | Standard Error | p-value |
|---|---|---|---|
| Smoking Index | 0.058 | 0.014 | 0.001 |
| Intention to Smoke | 0.036 | 0.014 | 0.013 |
| Smoking Prevalence Estimate | 0.008 | 0.014 | 0.533 |
| Friends Smoking | 0.041 | 0.014 | 0.004 |
| Positive Social Consequences | 0.055 | 0.014 | 0.001 |
| Negative Social Consequences | -.022 | 0.014 | 0.130 |
| Positive Health Consequences | -.025 | 0.014 | 0.090 |
| Negative Health Consequences | -.119 | 0.014 | 0.001 |
| Pro-Tobacco Industry Attitude | -0.029 | 0.014 | 0.054 |
| Anti-Tobacco Industry Attitude | -.096 | 0.014 | 0.001 |

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## Summary measures of school tobacco use prevention education program components and their stability over time

### Identification of a School Implementation Index Based on Staff Reports

An array of tobacco use policy and practice measures as reported by school staff were defined in Chapter 7 (see Table 7.1 and Appendix Table A7.1). In this Chapter, the investigators constructed multi-item summary indices from these measures by standardizing the sum of the items listed in each of the six broad conceptual areas of school-based tobacco use prevention/intervention services: (1) no-tobacco use policies, (2) tobacco-related instruction, (3) school-wide anti-tobacco activities, (4) cessation activities, (5) parent involvement, and (6) governance/support. The summary measures used the reports of school tobacco use prevention coordinators and in the case of the instructional area, additional reports from the teachers who had taught tobacco lessons were used.

A Policy Index was comprised of the breadth of policy, enforcement of no-tobacco use policy, and the use of supportive policy items. An Instructional Index was comprised of tobacco use prevention lesson hours, use of published tobacco use prevention curricula, breadth of topics covered, use of novel teaching modalities, and tobacco use prevention education (TUPE) training items. An Activities Index was comprised of the number of in-school TUPE activities outside of the classroom. A Parent Involvement Index was constructed from items measuring the extent of parent involvement in tobacco prevention activities. A Cessation Services Index consisted of the one item indicating the provision or referral of that service at school. And finally, the items referring to support from the district for tobacco related activities defined a District Support Index.

The above groupings were constructed largely on logical and theoretical bases and conformed to elements of best practice guidelines. The first five indices (all but the support index, which is regarded here as a program input in relation to the school) were further combined to form a global School Implementation Index. This global index yielded a single dimension in an empirical factor analysis of this data and had a reliability coefficient of 0.73, both of which indicated that this index was comprised of a one-dimensional construct. Higher scores on the global index (and each of the sub indices) indicate more implementation of activities thought to directly affect proximal and medium-distal tobacco use-related outcomes.

Now, the stability of these indices is examined in the set of high schools surveyed twice over the two-year period.

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**Tobacco Prevention Program Structure over time**

**Table 9.7** displays the changes over time, their standard errors, and p-values for statistical tests involving the five component and global implementation indices for all 57 sampled high schools combined. Changes in this table are expressed in standard deviation units and are therefore comparable across indices. Also shown is the measure of district support, which the investigators use as a measure of program input beyond the schools' control. None of the indices showed overall statistically significant changes over the time period examined ($p > 0.05$ for all).

**Table 9.7 Stability of School Activities Indices over Time**

| Component | Change Over Time | Standard Error | p-value |
|---|---|---|---|
| Policy Index (1) | 0.17 | 0.27 | 0.52 |
| Instructional Index (2) | -.18 | 0.22 | 0.40 |
| Activities Index (3) | -.17 | 0.23 | 0.45 |
| Parent Involvement Index (4) | -.31 | 0.25 | 0.22 |
| Cessation Services Index (5) | -.17 | 0.22 | 0.43 |
| Global Implementation Index | -.14 | 0.22 | 0.52 |
| District Support Index | 0.22 | 0.22 | 0.31 |

Note: Changes are measured in Standard Deviation units of the indices.

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## How TUPE Funding and District Support Relate to School Implementation Indices

In Chapter 5 of this report, funding status was related cross-sectionally to individual measures of program activity from a variety of sources. In this section, that analysis was extended to examine the impact of TUPE funding on the summary implementation measures and further examined whether TUPE funding resulted in changes in TUPE implementation over time.

Using each activity Index as an outcome, the investigators modeled activity and change in activity as a function of TUPE funding status. **Table 9.8** summarizes the results of this analysis. Values in the table are in standard deviation units and represent; (a) the average difference in the index between grantee and non-grantee schools at each time point (labeled as 'Index'), and (b) the average difference in change in index values over time between grantee and non-grantee schools (labeled as 'over time'). It is noted that even though the indices showed no change over time overall, it is still possible for grantee and non-grantee schools to differ in their change values.

The impact of funding on component indices was generally positive, with Activities (0.58, SE = 0.23, p=. 02) and Cessation Services (0.73, SE =0.24, p<. 01) Indices reaching statistical significance. The impact of TUPE funding on the Global Index was also statistically significant (0.66, SE = 0.23, p<. 01). Although generally positive, none of the funding impacts on index

changes over time were significant. The results suggest that TUPE grantee schools started out at higher rates of implementation, and maintained or increased slightly their implementation level advantage.

| Table 9.8 Effects of Funding on School Activities (Staff Reports) | | | |
|---|---|---|---|
| **Output** | **Impact of Funding Status** | **Standard Error** | **p-value** |
| | | | |
| Policy Index | 0.34 | 0.26 | 0.20 |
| Policy Index over Time | -.014 | 0.37 | 0.69 |
| | | | |
| Instruction Index | 0.41 | 0.24 | 0.10 |
| Instruction Index over time | 0.55 | 0.31 | 0.08 |
| | | | |
| Activities Index | 0.58 | 0.23 | 0.02 |
| Activities Index over time | 0.32 | 0.31 | 0.31 |
| | | | |
| Parent Involvement | 0.26 | 0.26 | 0.31 |
| Parent Involvement over time | 0.44 | 0.34 | 0.20 |
| | | | |
| Cessation Services | 0.73 | 0.24 | 0.004 |
| Cessation Services over time | 0.11 | 0.30 | 0.71 |
| | | | |
| Global Implementation Index | 0.66 | 0.23 | 0.007 |
| Global Index over time | 0.38 | 0.29 | 0.20 |
| | | | |
| District Support | 0.91 | 0.24 | 0.001 |
| District Support over time | -.36 | .030 | 0.23 |

Note: Shaded rows are for relationships examined over the interval 2003-2004 to 2005-2006.

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The impact of TUPE funding on the level and potential change in perceived district support were also examined (Table 9.8). The results demonstrated that the perception of district support was highly associated with TUPE funding at each time point, with differences of 0.91 SD units (a 'large' effect size) although that perception tended to diminish somewhat in the grantees (and increase somewhat in the non-grantees, based on the overall trend of 0.22 seen in Table 9.7) but this impact was not statistically significant.

Next, district support was considered as an input to implementation activity, that is, implementation indices (and their changes over time) were examined as a function of district support. **Table 9.9** shows the result for the average associations at each time point. As might be expected, district support was highly related to all of the implementation indices, with more support associated with increased TUPE activity. However, there was no impact of support on changes in indices over time (not shown).

| Table 9.9 Effect of District Support on Activities | | | |
|---|---|---|---|
| **Activity** | **Impact of District Support on Activities** | **Standard Error** | **p-value** |
| **Breadth of Policy** | 0.28 | 0.09 | 0.002 |
| **Tobacco Instruction** | 0.32 | 0.09 | 0.001 |
| **Activities** | 0.30 | 0.09 | 0.001 |
| **Parent Involvement** | 0.30 | 0.09 | 0.001 |
| **Cessation Services** | 0.25 | 0.09 | 0.008 |
| **Implementation Index** | 0.39 | 0.08 | .001 |

The lack of overall change in implementation over time limited the ability to detect TUPE funding status or District support as causal pathways for implementation change. Consistent associations were found between these inputs and implementation outputs at each time point. It is noted that the grantee schools in this sample have had TUPE funding for an average of 70 months (almost six years). Given this, the fact that they had higher levels of activity is both satisfying and not surprising. Similarly, the fact that neither group changed their levels of TUPE activity in the absence of any impetus to do so (i.e., changes in their funding or programmatic initiatives) was also not surprising.

Because TUPE funding status was so highly related to perceived district support, which in turn was related to levels of school activities, it is logical to assume that district support is one mechanism of action by which TUPE funding affects TUPE practice.

## Relationship of TUPE Implementation to Changes in Knowledge, Attitudes, and Behavior (Birth Cohort Sample)

This section examines how the school-based activities index constructed above influenced changes in student tobacco use and the precursors to student tobacco use over the two-year period. The sample was restricted to those students in the birth cohorts at each school. Because the birth cohort had aged over the two-year interval, tobacco use and its precursors were expected to have increased. **Table 9.10** displays the changes over time in the tobacco use-related outcomes.

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| Table 9.10 Time Trends in Tobacco Use and its Precursors (Birth Cohort Sample) | | | |
|---|---|---|---|
| **Outcomes** | **Change in Outcome over Time*** | **Standard Error** | **p-value** |
| **Smoking Index** | 0.268 | 0.019 | 0.001 |
| **Intention to Smoke** | 0.130 | 0.019 | 0.001 |
| **Friends Smoking** | 0.177 | 0.019 | 0.001 |
| **Smoking Prevalence** | 0.207 | 0.019 | 0.001 |
| **Positive Social** | 0.003 | 0.019 | 0.854 |
| **Negative Social** | -.237 | 0.019 | 0.001 |
| **Positive Health** | -.041 | 0.020 | 0.041 |
| **Negative Health** | -.055 | 0.019 | 0.006 |
| **Pro-Tobacco Industry** | 0.012 | 0.019 | 0.518 |
| **Anti-Tobacco Industry** | -.015 | 0.019 | 0.429 |

Note: Values are the average change in outcome index values as students moved between grades 9/10 to grades 11/12.
* Gamma one-zero ($\gamma_{10}$) in Equation 2

As expected, indices of smoking, intention to smoke, and number of friends smoking increased in each birth cohort as the cohort aged. Student estimates of peer smoking also increased in correspondence with the actual increases in the prevalence of smoking by students of their age.

Among the tobacco use-related attitude and belief indices, there were significant decreases in beliefs that there are negative social and health consequences of smoking (-.237 and -.041, SE =.019, p<. 050). The decreases in these protective factors over time were consistent with the observed increases in smoking. There was also a reduction in the belief that smoking has positive health value (e.g., as a weight control strategy, -.041, SE = .020, p=. 041). The belief that smoking has a positive social value and attitudes toward the tobacco industry remained relatively unchanged overall in this group of students as they aged.

Next, the impact of exposure to school-based prevention programs (as reflected in the global implementation index), on the changes in tobacco use-related attitudes and smoking behaviors is examined. **Table 9.11** displays the results of the hierarchical linear modeling of changes in proximal and medium-distal outcomes as a function of the global implementation index.

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| Table 9.11 Effects of School Program Implementation Activity on Tobacco Use and its Precursors | | | | |
|---|---|---|---|---|
| **Outcome** | **Average Cross-sectional Effect of Activity on the Outcome*** | **p-value of Cross-sectional Effect** | **Impact of Activity on changes in outcome+** | **p-value of Change** |
| Smoking Index | 0.049 (0.019) | 0.009 | -.070 (0.022) | 0.004 |
| Intention to Smoke | 0.030 (0.019) | 0.114 | -.059 (0.022) | 0.013 |
| Friends Smoking | 0.037 (0.019) | 0.051 | -.076 (0.022) | 0.001 |
| Smoking Prevalence Estimate | 0.041 (0.020) | 0.040 | - .021 (0.023) | 0.354 |
| Positive Social Consequences | -.002 (0.018) | 0.911 | -.020 (0.023) | 0.374 |
| Negative Social Consequences | -.003 (0.018) | 0.867 | 0.019 (0.023) | 0.390 |
| Positive Health Consequences | -.014 (0.017) | 0.410 | -.005 (0.022) | 0.853 |
| Negative Health Consequences | -.012 (0.018) | 0.505 | 0.029(0.023) | 0.208 |
| Pro-Tobacco Industry Attitude | 0.011 (0.018) | 0.541 | -.018 (0.022) | 0.414 |
| Anti-Tobacco Industry Attitude | 0.004 (0.019) | 0.833 | 0.001 (0.023) | 0.933 |

Note: Values are the effect of a one unit change in the predictor.
Values in parentheses are standard errors of the estimates.
Activity is measured as a global Implementation index
* Gamma zero-one($\gamma_{01}$) in Equation 3 and 4
+ Gamma one-one ($\gamma_{11}$) in Equation 2 and 4

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The level of TUPE implementation at each school was found to affect changes in the measures of proximal and medium-distal outcomes. The growth in the smoking index as these students moved between the 9th or 10th grade to the 11th or 12th grade was found to be reduced by an average of 0.070 SD units (SE = 0.022, p=0.004) for every one standard deviation (SD) unit increase in the global Implementation index. Similarly, intentions to smoke were also impacted, with a predicted reduction of 0.059 SD units (SE = .022, p=0.013) for each one SD unit change in TUPE implementation. The change in the reported number of friends smoking was also reduced, by 0.076 SD units (SE = 0.022. p=. 001) for each one SD unit change in TUPE implementation.

Somewhat surprisingly, the growth in the other precursors of smoking examined here appeared to be unaffected by exposure to school TUPE activities as measured by the global implementation index. These relationships were also explored using component indices and the overall summary measures presented here were found to accurately reflect what the component findings would have shown if they were reported.

The observed negative cross-time impact of the TUPE implementation index on student tobacco use was also surprising in light of the statistically significant positive relationship observed between the average TUPE implementation index score and the tobacco use outcomes at each cross-sectional assessment (see Table 9.11). One can speculate that the schools witnessing increased TUPE funding and increased TUPE implementation might have been those schools that momentarily had excessively high rates of tobacco use that motivated the increased TUPE activity. Lower growth in student tobacco use across time would then follow, either through regression to the mean or as a benefit of the temporary increase in TUPE implementation activity. Only random assignment of schools to increased TUPE implementation could distinguish between these two different explanations.

Assuming that the intent of school-based tobacco use prevention programs is to effect changes in the way students develop and maintain attitudes and beliefs that discourage smoking, these results suggest that either 1) these "precursor" attitudes and beliefs do not affect the growth of smoking behavior, 2) that the implementation of school-based tobacco use prevention education (TUPE) programs is correlated with other environmental factors that do impact that growth, or 3) that this evaluation failed to include the appropriate attitudinal measures or implementation indices. The next two sections will examine the first two possibilities.

### How smoking-related knowledge, attitudes, and behavioral outcomes relate to each other as students mature over time.

This section explores the relationships between proximal outcomes assumed to be precursors to smoking with the measured changes in smoking prevalence. This section uses the same birth cohort sample as was used in the previous section, and the same general analytic strategy, except that proximal outcomes were used to predict changes in smoking prevalence rather than exposure to prevention programs.

Intentions to smoke were associated with smoking at each time point and did predict changes in smoking behavior (in the expected direction) as measured by the smoking index. Other intermediate outcome measures, number of friends smoking and estimates of student smoking, had high cross-sectional associations with the smoking Index, but did not appear to predict changes in smoking across the two-year interval.

Each attitudinal and belief scale was strongly associated with the smoking index cross-sectionally, but only the positive social consequence scale appeared to be predictive of **changes** in smoking, with greater belief in smoking having a positive social benefit (i.e., looking cool) predicting greater increases in prevalence of smoking behaviors.

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| Table 9.12 Effects of Proximal and Medium-distal Outcomes on the Smoking Index | | | | |
|---|---|---|---|---|
| **Predictor** | **Average Cross-sectional Effect of Predictor on Smoking Index*** | **p-value of Cross-sectional Effect** | **Impact of Predictor on Changes in Smoking+** | **p-value of Change** |
| Intention to Smoke | 0.665 (0.011) | 0.001 | 0.090 (0.014) | 0.001 |
| Friends Smoking | 0.479 (0.013) | 0.001 | 0.014 (0.018) | 0.433 |
| Smoking Prevalence Estimate | 0.264 (0.014) | 0.001 | - .011 (0.020) | 0.564 |
| Positive Social Consequences | 0.278 (0.014) | 0.001 | 0.084 (0.019) | 0.001 |
| Negative Social Consequences | - .191 (0.015) | 0.001 | 0.027 (0.020) | 0.192 |
| Positive Health Consequences | 0.109 (0.014) | 0.001 | 0.008 (0.020) | 0.853 |
| Negative Health Consequences | -.292 (0.014) | 0.001 | -.012 (0.020) | 0.538 |
| Pro-Tobacco Industry Attitude | 0.350 (0.014) | 0.001 | 0.006 (0.020) | 0.753 |
| Anti-Tobacco Industry Attitude | -.138 (0.015) | 0.001 | -.008 (0.020) | 0.675 |

Note: Values are the effect of a one unit change in the predictor.
Note: Values in parentheses are standard errors of the estimates.
* Gamma zero-one($\gamma_{01}$) in Equation 3 and 4
+ Gamma one-one($\gamma_{11}$) in Equation 2 and 4

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## What is the relative strength of school TUPE activities compared to the influence of external factors for predicting prevalence of student tobacco use?

This section examines other non-school anti-tobacco activities and demographic contextual factors that may be predictive of the increase in the birth cohorts' smoking over time. The impact of these factors on smoking relative to the impact of school TUPE activities is also examined. Within the birth cohort sample, school TUPE activities were observed to predict changes in the prevalence of student tobacco use but were not predictive of changes in the expected precursors. Therefore, this analysis further addresses the possibility that contextual factors were the underlying cause of the relationship observed between school TUPE activities and student tobacco use prevalence.

### Measures

A school-level Index of Community Anti-tobacco Activity was constructed by taking the mean the student reports at each school regarding their participation in or awareness of community tobacco control activities, police enforcement of restrictions on tobacco sales to minors and on tobacco product possession by minors. The scale was standardized and scaled such that higher scores indicated that a larger proportion of the students at the school were aware of community tobacco control activities.

A school-level Index of Exposure to Anti-tobacco Use Messages in various communication media was also constructed. The school mean of student reports of exposure to anti-tobacco messages on radio, TV, or outdoor media was standardized such that higher values indicated more student exposure to anti-tobacco use media messages at that school.

School level contextual factors were derived from the California Basic Education Data and Statistics (CBEDS) data and included the school size (school enrollment size), the average achievement test scores for the school (API), the percentage of students eligible for government-subsidized school meals, and the average formal educational attainment of the parents of students at the school.

These school-level indicators were then used to predict changes in the smoking index as was done with the school TUPE activities index. Because the scales were standardized to the same measurement scale (standard deviation units), the relative sizes of the model coefficients reflect the relative contributions of each factor to the prediction of student tobacco use prevalence. The school Implementation Index was then re-examined as a predictor of student tobacco use in the context of these other factors.

**Results**

**Table 9.13** provides the results of the hierarchical linear models predicting the smoking index, both cross-sectionally (the average of the two time points) and as predictors of changes in smoking. The Community Programs Index was associated with smoking cross-sectionally (-0.67, SE =0.013,p<.01) but not with changes in smoking. The Anti-tobacco Media Messages Index was not related to smoking at either time point or with changes in smoking.

Regarding school demographic factors, the average API score for each school, average parent educational attainment and percent of students eligible for free or reduced price lunches at each school were highly related to the observed two-year changes in the prevalence of student smoking, with coefficients on the order of approximately 0.10 (or -0.10 for each 1 percent of students eligible for free or reduced price lunches). The school TUPE Activities Index alone had a statistically significant coefficient of -0.070 (p = 0.004) for predicting changes in the prevalence of student smoking over time. When the contextual factors listed in Table 9.13 were included in the model, that coefficient was reduced to -0.041, which was no longer statistically significant (p=0.091) but still suggestive of a benefit of TUPE implementation on reducing student smoking. This would indicate that these contextual factors are to some extent confounding the observed relationship of school TUPE activities to changes in the prevalence of student smoking within the birth cohort sample.

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| Table 9.13 Effects of External Factors on the Smoking Index | | | | |
|---|---|---|---|---|
| **Predictor** | **Average Cross-sectional Effect on Smoking Index*** | **p-value of Cross-sectional Effect** | **Impact of predictor on Changes in Smoking+** | **p-value change** |
| Community Programs | - .067(0.013) | .001 | 0.020 (0.020)- | 0.312 |
| Anti-media | 0.012 (0.014) | 0.391 | 0.041 (0.021) | 0.056 |
| Enrollment | -.022 (0.023) | 0.339 | 0.022 (0.020) | 0.278 |
| Parent Education | -.016 (0.043) | 0.709 | 0.111 (0.021) | 0.001 |
| API Scores | -.027 (0.040) | 0.499 | 0.123 (0.021) | 0.001 |
| Percent Meal Assistance | 0.078 (0.024) | 0.001 | -.108 (0.020) | 0.001 |
| School TUPE Index (alone) | 0.049 (0.019) | 0.009 | -.070 (0.022) | 0.004 |
| School TUPE index (adjusted for other predictors listed above) | 0.029 (0.019) | 0.126 | -.041 (0.241) | 0.091 |

Note: Values in parentheses are standard errors of the estimates.
Note: Parent education correlated r = .85 with API score and r = - .78 with Percent Meal Assistance.
Note: TUPE is "Tobacco Use Prevention Education"
* Gamma zero-one in Equation 3 and 4
+ Gamma one-one in Equation 2 and 4

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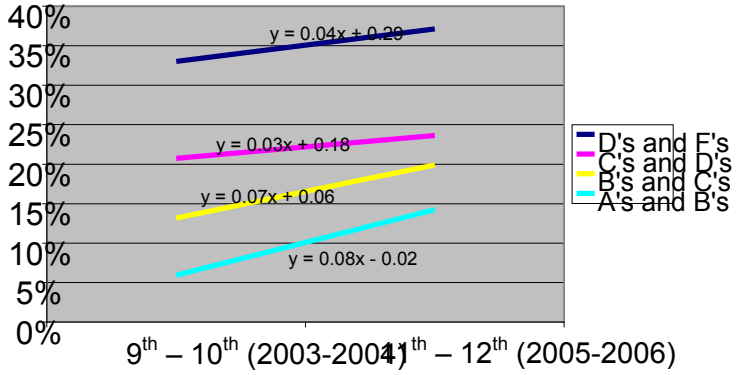
In part as a way to illuminate the surprising finding that the average level of parent education was positively associated with increased smoking over time, the change in current smoking over time in relation to student academic performance was examined. **Figure 9.1** illustrates how the amount of change in student current smoking prevalence between 2003-2004 and 2005-2006 depended on their academic performance. Consistent with previous literature (Escobedo & Peddicord, 1996), student-reported current smoking prevalence by grade level was inversely related to their letter grades (4.0 = A, 1.0 = D, etc.) at each assessment, with increased prevalence of current smoking occurring with lower academic performance ($\chi^2_{(1)}$ for trend = 202.5, $p < .0001$; $\chi^2_{(1)}$ for trend = 183.5, $p < .0001$, respectively). Across time, however, the amount of increase in current smoking prevalence was nearly twice as high in the higher-performing students compared to the lower-performing students, such that current smoking prevalence rates differed less between higher-performing and lower-performing students in 11th-12th grades than they had in 9th-10th grades. It is almost as if the high-performing students were making up for their initially low rates of smoking in 9th and 10th grades by “catching up” with their lower-performing peers in terms of their current smoking prevalence rates as they approached high school graduation.

**Figure 1 Current Smoking Prevalence over Time, by**




## Summary

The results of the school and birth cohort analyses using data collected twice from the same high schools in 2003-2004 and 2005-2006 largely confirmed the results obtained from the cross-sectional data collected in 2005-2006. The cohort analysis confirmed that high school students increased their current and frequent tobacco use over the two-year period, especially cigar and smokeless tobacco use.

Student pro-smoking attitudes, beliefs and social environments (intent to smoke, belief in positive social consequences of tobacco use, more smoking peers) increased, while anti-smoking health beliefs and beliefs about the negative social consequences of tobacco use decreased over the two-year period. Students also expressed less negative attitudes about the tobacco industry over the two-year interval.

There was little evidence of overall change in the type and level of school TUPE implementation between the 2003-2004 and 2005-2006 academic years. TUPE-funded high schools reported consistently higher levels and quality of tobacco prevention-related activities compared to non-grantee schools at each time point. These TUPE-funded implementation advantages appeared to be mediated through perceived district-level support for TUPE activities, which, in turn, was associated with school TUPE funding status.

The longitudinal evidence suggests that the number of school-level tobacco prevention activities was associated with changes in student tobacco use and intentions, but not with the hypothesized medium-distal tobacco use precursors such as student estimates of the number of peers who use tobacco or the number of friends who use tobacco. Among the precursors to smoking, only student-reported intention to smoke and their perception that positive social outcomes could be expected from tobacco use were predictive of school-level changes in smoking between 2003-2004 and 2005-2006.

Contextual factors were found to be relatively strong predictors of changes in the prevalence of student tobacco use. These contextual factors included schools' average API scores and average parent education levels (the higher the average educational achievement, the greater

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the increase in student tobacco use over time). Other contextual factors, notably school enrollment size, were **not** associated with changes in the prevalence of student smoking. It was concluded that the association of school TUPE activities with changes in student smoking could be partly explained by contextual factors. Further research may clarify why school API or parent education levels should influence the association observed between school TUPE activities and two-year changes in the prevalence of student smoking.

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**Appendix Table A9.1 Items Used in the Analysis (Student Survey)**

| Domain (Cronbach's Alpha) | Question Number (Q) | Question |
|---|---|---|
| **Positive Social Consequences of smoking (0.59)** | Q35 | Do you think young people who smoke cigarettes have more friends? |
| | Q36 | Do you think smoking cigarettes makes young people look cool or fit in? |
| | Q86 | Young people who smoke cigarettes appear more grown-up |
| | Q87 | Smoking cigarettes makes young people more relaxed. |
| | Q88 | Smoking cigarettes makes young people look cool. |
| **Negative Social Consequences of smoking** | Q84 | Smoking cigarettes is one way to lose friends who are nonsmokers |
| **Negative Health Consequences from smoking (0.54)** | Q37 | Do you think young people risk harming themselves if they smoke from 1 to 5 cigarettes per day? |
| | Q38 | Do you think it is safe to smoke for only a year or two, as long as you quit after that? |
| | Q51 | Do you think the smoke from other people's cigarettes is harmful to you? |
| | Q96 | People can get addicted to using tobacco just like they can get addicted to using other drugs such as cocaine or heroin. |
| | Q85 | Smokers have shorter lives than nonsmokers do. |
| | Q89 | Smoking cigars is just as harmful as smoking cigarettes. |
| | Q90 | Smoking cigarettes makes asthma worse. |
| | Q92 | A pregnant woman can harm her unborn baby if she smokes cigarettes. |
| | Q95 | People can get addicted to using tobacco just like they can get addicted |
| **Positive Health Consequences of Smoking** | Q83 | Smoking cigarettes helps keep a young person from gaining too much weigh. |
| **Anti-tobacco industry attitudes (0.64)** | Q72 | Do you think that tobacco companies try to get people addicted to cigarettes? |
| | Q73* | Tobacco companies would stop selling cigarettes if they knew for sure that smoking hurts people. |
| | Q74 | Tobacco companies try to get young people to start smoking by using advertisements that are attractive to young people. |

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**Appendix Table A9.1 Items Used in the Analysis (Student Survey)**

| Domain (Cronbach's Alpha) | Question Number (Q) | Question |
|---|---|---|
| **Pro-tobacco industry attitudes (0.85)** | Q47 | Would you ever use or wear something that has a tobacco company name on it ? |
| | Q46 | During the past 12 months, did you buy or receive anything that has a tobacco company name on it ? |
| **Anti-Tobacco Media Exposure (0.43)** | Q67 | When you listen to the radio, how often do you hear advertisements about NOT smoking or about NOT chewing tobacco? |
| | Q68 | When you see billboards (outdoor signs), how often do you see advertisements about NOT smoking or about NOT chewing tobacco? |
| | Q69 | When you watch TV, how often do you see stories or advertisements about the dangers of smoking tobacco or chewing tobacco? |
| | Q44 | During the past 30 days, have you seen or heard commercials on tv, the internet … |
| **Pro-Tobacco Media Exposure (0.42)** | Q45 | When you watch TV or go to the movies, how often do you see actors using tobacco? |
| | Q70 | When you go to sports events, fairs or community events, how often do you see advertisements for cigarettes or chewing tobacco? |
| **Community Anti-tobacco Actvity Exposure (school mean) (.62)** | Q75 | In your community, do police give tickets to youth who use tobacco? |
| | Q76 | In your community, do police work with youth to try to catch stores owners who sell youth tobacco |
| | | In your community, are there activities: |
| | Q77 b | Support a youth group |
| | Q77c | Reduce exposure to smoke exposure |
| | Q77d | Keep kids form getting tobacco |
| | Q77e | Reduce tobacco advertizing, |
| | Q77f | Program for people to quit |
| **Smoking Norms** | Q54 | About what percent of students in your grade have smoked cigarettes |
| **Prevalence Estimation** | Q54 | About what percent of students in your grade have smoked cigarettes? |
| **Intent (.82)** | Q32 | Do you think you will smoke a cigarette at any time during the next year? |
| | Q33 | If one of your best friends offered you a cigarette would you smoke it? |

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## Selected References


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# CHAPTER 10

# CONCLUSIONS AND RECOMMENDATIONS

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# CHAPTER 10: CONCLUSIONS AND RECOMMENDATIONS

**CHAPTER HIGHLIGHTS**

**This evaluation focused on four broad cross-sectional research questions and three broad questions asked of the 57-school longitudinal cohort with regard to youth tobacco use and prevention in California. These included:**

**Cross- sectional study questions**

- **What is the prevalence of tobacco-related behavior, attitudes, knowledge and awareness regarding tobacco and tobacco use prevention among California students and how do they compare to students nationally?**
- **What types of school-based tobacco prevention and intervention policies and practices are being implemented in California schools and to what level and consistency are they being implemented?**
- **Is program exposure associated with lower levels of student tobacco use and lower levels of factors known to be precursors to tobacco use (e.g., pro-smoking attitudes)?**
- **What are the contextual influences, such as the degree of support for teaching TUPE lessons from district administrators that need to be taken into account when designing more effective school-based TUPE programs? Is TUPE funding an important contextual influence?**

**Longitudinal Cohort Study Questions**

- **Examine how TUPE funding and district support relate to school implementation component summary measures.**
- **Examine how school TUPE implementation is related to changes in tobacco use-related knowledge, attitudes and behavior over the two-year period.**
- **Examine the relative impact of community-level influences on student tobacco use over the two-year period**

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## Conclusions

The previous chapters reviewed the 2005-2006 tobacco use patterns observed in California in-school youth and related this epidemiological information to school district staff information about TUPE-funded activities conducted in the recent past. Both school-level and district-level influences on student rates of tobacco use were examined, although the focus has been on the school-level information.

This evaluation of California in-school youth must, of course, be understood in the context of the large backdrop of tobacco use prevention education occurring at the community, state and national level, and in the context of the recent implementation of new tobacco-related public policies. A demonstrably beneficial statewide policy change has been the 80 percent rise in the price of cigarettes observed between 1999 and 2004 (CDC, 1998). This increase in price occurred as a result of a 1999 increase of 50¢ in the state tobacco excise tax and by accompanying tobacco industry price increases (reviewed in Rohrbach et al., 2002). All ages and ethnic groups reduce tobacco use as the price of tobacco products rise, but younger adolescents and African Americans are the most responsive (e.g., Chaloupka and Pacula, 1999). On the downside, investment by the State of California in tobacco use prevention has been declining. **Figure 1** shows the dollar amounts spent on school-based interventions since 2000. **Figure 2** shows the per capita amounts, taking into account the increasing size of California's student population.

**Figure 1: California Department of Education TUPE Funding**

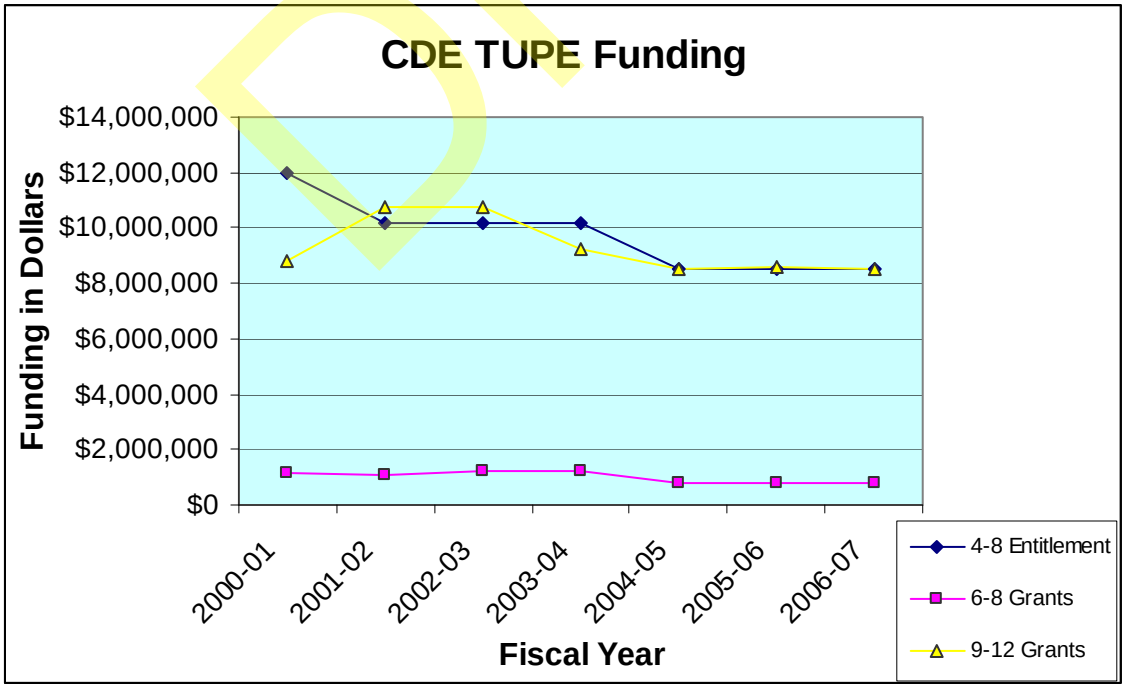


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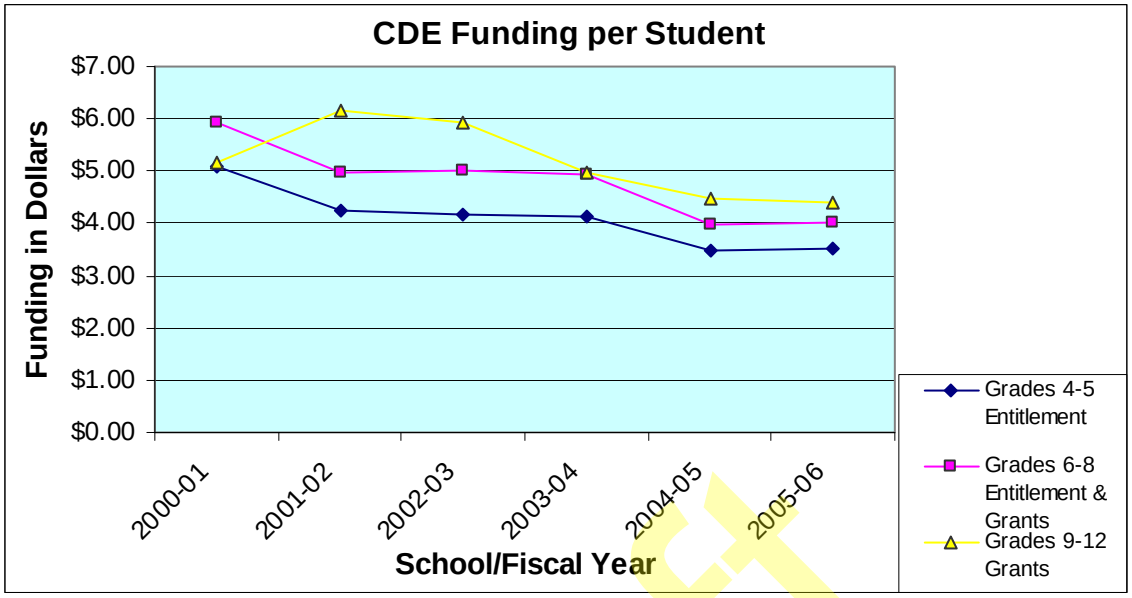
**Figure 2: California Department of Education Funding per Student, by grade groupings**




## California Student Tobacco Use has Increased Relative to Previous Years

The observed student tobacco use prevalence rates reported here reflect the complex survey design used to collect the data and were cross-validated against the rates observed in a parallel random sample survey conducted in the same population during the same time interval. These rates were compared to the 2001-2002 and 2003-2004 IETP rates obtained using a very similar instrument and similar methods as those employed here. The rates were also compared to sets of California youth smoking prevalence rates obtained periodically since 1995-1996 (Rohrbach et al., 2002), and to corresponding rates observed in randomly-sampled in-school youth across the U.S.

Unfortunately, California in-school youth tobacco use has increased slightly relative to previous years, in contrast to corresponding U.S. rates which continue to decline slightly, indicating a leveling off of the decline. National youth tobacco use rates have themselves recently plateaued after several years of decline (Johnston et al., 2007-in press). Beliefs and attitudes reported by California youth, relative to the beliefs of U.S. students, are now less strongly anti-tobacco than they once were, and may possibly presage a convergence of tobacco use rates in the future. For the present, however, prevention of tobacco use in school children continues to be working in California relative to a decade ago, at least as reflected by student-reported lifetime tobacco use rates. Overall, California youth current tobacco use rates now appear to be converging with corresponding national rates.

## Program Implementation and Linkages to Student Outcomes

A number of the findings relative to the second and third cross-sectional study goals of this evaluation were good; some were varied. Most schools are now using science-

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based TUPE curricula, which is an improvement over past years. District support for teachers teaching TUPE lessons appeared to be consistently related to student reports that the TUPE information they received was helpful. District support for teachers was also consistently related to decreased risk of lifetime smoking, smoking at school, peer smoking and increased intention not to smoke. These findings corroborate the importance of district support for TUPE reported in the previous 2003-2004 IETP study. Potentially more exciting was the consistent finding in TUPE-funded schools (only) that teacher-reported hours of TUPE instruction were negatively associated with student tobacco use outcomes, including current and lifetime use, and positively associated with precursors to continued abstinence, particularly the intention not to smoke in the future.

Based on the cross-sectional data reported here, one can only speculate regarding reasons for the past success of tobacco use prevention in California school youth. Elements of TUPE-funded activities appear to be related to increased youth awareness of the dangers associated with tobacco use. But student-reported awareness of the dangers of tobacco use may be promoted by the influence of pre-existing cultural and religious disincentives to smoke as well as by community-level tobacco control efforts (Flay, 2000; Turner et al., 2004).

Neither students nor teachers reported as much knowledge about tobacco control as would be expected if TUPE programs adhered to all of the recommendations of the CDC school-based tobacco control guidelines. This was also true in the two previous IETP reports.

Schools varied in the percentage of sampled teachers who had experience teaching tobacco use prevention, in the mean number of hours that their sampled teachers reported having spent teaching tobacco use prevention lessons in the last school year, and in the degree to which tobacco use prevention messages were infused throughout the curriculum. Schools in which teachers reported a large number of hours teaching tobacco use prevention lessons in the last school year had consistently higher levels of student-reported exposure to TUPE information and services. In such schools, students consistently scored higher than average in reported exposure to tobacco use prevention lessons, to being taught why people smoke, to saying that the tobacco use prevention information they had received was helpful, and in reporting greater knowledge of secondhand smoke, knowledge of peer smoking prevalence and about the physical harm caused by smoking and second hand smoke.

**TUPE Training and Curriculum: Improved with Experienced Teachers and Administrative Support**

The above findings suggest that TUPE training should be viewed as a means to an end and not an end itself. TUPE training helps only to the extent that it can motivate new teachers to become more experienced tobacco use prevention teachers. Excellent TUPE training by itself may not make as much of a difference on student-level outcomes compared to simply equipping a few dedicated TUPE teachers with a lot of experience. This inference stems from the observation that the frequency and content

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of in-service training to teach tobacco use prevention appeared to be unrelated to student reports of tobacco use prevention knowledge and other tobacco use-related outcomes.

One benefit of teaching experience is the ability, through trial and error, to discover what educational strategies work better than others. Lecturing is often used to teach tobacco education messages but it is associated with unimpressive student outcomes. When school TUPE/health education coordinators reported that lecturing was the primary method used to impart tobacco use education, it was as if the students had not been exposed to any tobacco use education. They did not appear to learn anything more than students who were not exposed to any tobacco use education messages. Students consistently reported more positive tobacco use prevention results when their school TUPE/health education coordinator reported that the school's tobacco use prevention classes featured classroom discussions of tobacco control messages. Small group activities were also somewhat useful, particularly for refusal skills training.

The current data raises the question of whether the State, school districts and schools should continue encouraging teachers to use CDC-recommended, “published,” integrated tobacco prevention programs in preference to "unpublished" programs. It was disconcerting to find that (slightly) better outcomes were achieved through the use of "unpublished" programs than through use of one of the few approved "published" programs. The data instead speak to the importance of having a school coordinator who is a "TUPE champion" and having each school identify a corps of committed TUPE teachers. This group of TUPE educators should, collectively, have extensive past experience with teaching tobacco use prevention lessons. It is anticipated that this experience can be shared with new TUPE teacher recruits as old members need to be replaced. In any case, even the "best" science-based TUPE program is not likely to have much impact in the hands of an inexperienced or dispirited TUPE teacher. If it is a choice between putting scarce TUPE dollars into retaining experienced personnel or into the best-vetted TUPE published program on the market, investment in personnel is likely to yield better outcomes.

Teachers reported that lack of district (and state) support for TUPE was an important barrier to school-based tobacco control efforts. The less-than-desirable levels of TUPE training may reflect lack of support from the administrators to whom these teachers report. Administrators expressed high levels of support for TUPE instruction; however, it may be that concern with maximizing student academic achievement test scores supersedes their support for TUPE instruction.

State resources for supporting school-based tobacco use education are dwindling. The current data show that school-level perceptions that TUPE resources are diminishing are associated with lower student reports of TUPE lessons learned and TUPE knowledge gained – especially for site coordinators. The relatively low rates of tobacco use reported here are going to be hard to maintain in the face of dwindling state TUPE resources, either with respect to school-based tobacco control or with respect to community tobacco control efforts. If this evidence of a link between perceived under-

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investments in TUPE and lower student TUPE learning is substantiated, the contribution of school-based tobacco control efforts in maintaining low adolescent tobacco use rates will be diminished. The good news is that, at least in the present report, many non-TUPE funded schools are perceived by their teachers and site coordinators as actively supporting and investing in TUPE activities. The challenge is to find alternative resources to replace the dwindling state TUPE resources.

A pattern that emerged in the previous IETP report but continues to pose a challenge is a cautionary message for district administrators. District administrators may turn to punitive enforcement of no-tobacco-use policies as the principal method of discouraging tobacco use among students in lieu of supporting TUPE programming, which can be costly. District administrator reports of punitive enforcement were found to be associated with lower levels of exposure to prevention services – the higher the level of punitive enforcement, the less likely students were to report that they received tobacco-related information at schools or were exposed to lesson content.

**TUPE Funding Can Affect Student Outcomes**

High schools with competitive TUPE grants were more likely than non-grantee high schools to offer cessation services and referrals for students caught smoking, and to sponsor school-wide anti-tobacco activities. High Schools with competitive TUPE grants were also more likely to provide tobacco use prevention lessons, cover specific topics on tobacco use, and provide professional development training to school coordinators. Students attending high schools with competitive TUPE grants were more likely to report being referred to an adult counselor or a peer counselor if caught smoking, report having access to on-campus cessation classes, to recall being exposed to tobacco use prevention services, and to be able to get training in providing cessation assistance to student smokers.

For teacher-reported of numbers of hours of TUPE instruction, the TUPE grant funding status of the teacher's school appeared to make a difference. In TUPE-funded schools, teacher-reported hours of TUPE instruction were consistently negatively associated with student tobacco use outcomes, including current use, lifetime use and peer use (never the case in non-funded schools). In TUPE funded schools, teacher-reported hours of TUPE instruction were also consistently positively associated with student-reported intention not to smoke, their reported ease of refusal of offers of cigarettes, and with their anti-tobacco industry norms (again, never the case in non-funded schools). It may take more than a dedicated teacher willing to conduct many hours of TUPE instruction to have an impact on student tobacco use and on precursors to student tobacco use - it may also require that the school deploy other TUPE-funded resources.

Recognizing the weakness of the cross-sectional nature of the current data, however, the most striking feature of the results involves the consistent association between a school's TUPE funding status and the impact of teacher-reported hours of instruction on student tobacco use outcomes; TUPE funding can make a difference. For most

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comparisons, however, TUPE funding status appeared insignificant. The preponderance of the evidence suggests that many school-based tobacco use prevention activities are effective in reaching students (in terms of exposure to TUPE lessons, and not student tobacco use), whether they attend TUPE grantee or non-grantee schools.

With respect to the third evaluation goal, *evaluating the impact of program exposure on student tobacco use behavior*, not much can be concluded. Few differences in student tobacco use were observed in comparisons involving TUPE grantee schools and non-grantee schools. The features that had the most influence on student knowledge and attitudes toward tobacco use (Chapter 7) were the same features that had the most influence on student tobacco use behavior in Chapter 8. Two features in particular stood out: hours of teaching TUPE lessons in the recent past (teacher report, especially in TUPE-funded schools), and addressing specific topics in TUPE lessons, notably lessons on the social consequences of tobacco use and how cigarette advertising is used to lure nonsmoking teenagers to use tobacco. The relative lack of significant relationships between TUPE intervention strategies and student smoking outcomes is consistent with a recent review of school-based smoking prevention strategies (Thomas & Perera, 2006).

The change in design of this TUPE evaluation has provided a partial solution to attempts to draw causal inferences from cross-sectional data. Resurveying a sample of previously sampled schools permits some longitudinal testing of hypothesized influences on student tobacco use and tobacco use precursors. Repeated testing of the same schools over time makes it possible to discern longitudinal program effects by holding the demographic and cultural characteristics of the students relatively constant. Changes over time in student tobacco use or in tobacco use-related knowledge and attitudes observed in the resurveyed schools may be easier to interpret because rival hypotheses that usually challenge inferences from cross-sectional data, such as confounding by differences in the ethnic and cultural composition of the students of comparison schools, are largely controlled for.

Unfortunately, the findings from the school cohort and birth cohort analyses did not shed new light on cross-sectional findings but largely confirmed them. In particular, the longitudinal cohort analyses confirmed that student-reported current tobacco use was increasing. Results for school TUPE implementation were mixed, with the cross-time cohort study results generally confirming the overall cross-sectional results, showing that TUPE implementation was associated with student tobacco use outcomes, and with lower prevalence of student tobacco use in those schools that implemented more TUPE activities. The cohort sub-study cross-sectional results, however, suggested that at least for high schools, greater TUPE implementation was associated with a <u>higher</u> prevalence of student tobacco use. Moreover, contrary to hypotheses, the negative cross-time relationship between TUPE implementation and student tobacco use was **not** mediated by corresponding changes in tobacco use precursors. Further examination of contextual influences, such as school-level average parental education attainment and school API score, indicated that the apparent positive relationship

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between implementation of TUPE activities and student tobacco use behavior was partially explained by socioeconomic factors.

## Recommendations

Regarding the potential for teachers to influence student tobacco use, the findings reviewed – especially in Chapters 4,5,6,7, 8 and 9 – support the following recommendations:

Schools would benefit from identifying committed TUPE "champions" to be their TUPE coordinators. TUPE coordinator knowledge of resources and how they can be best utilized can make a difference in student tobacco use prevention education outcomes. School administrators and TUPE coordinators would profit from concentrating TUPE training resources on a few good teachers rather than attempting to recruit whoever happens to be available to teach TUPE lessons. A few, very experienced TUPE teachers can yield better tobacco use education outcomes among students compared to a legion of inexperienced TUPE teacher recruits.

District administrators, school administrators and school TUPE coordinators may benefit by looking to the voluntary health associations, community health agencies, and federal tobacco control resources to help offset the dwindling state TUPE resources that are available to California schools.

School district administrators need to publicly support TUPE activities, to publicize this support regularly and to indicate that TUPE instruction is as important as other academic instruction. Teacher efforts will be more effective when they know that they have support from their administrators for their TUPE activities.

## Future Research on Student Tobacco Use and TUPE

Examining the impact of teacher-level and district staff-level information on student-level tobacco use makes it easier to illuminate the contextual nature of student tobacco use. The findings reviewed in Chapter 8 admirably illustrate that TUPE competitive grant funding can make a difference in whether teacher-reported hours of TUPE instruction will be associated with desirable student tobacco use outcomes. Another consistent contextual feature of successful tobacco use prevention is having a district publicize its strong support for the involvement of its teachers in TUPE activities.

In all probability, there is no single magic bullet tobacco control policy that will work in all schools at all times with all types of students. In the mean time, the tobacco use prevention education strategies reviewed in this report, which were originally featured in the consensus school guidelines promulgated by the CDC (1994), remain effective strategies for tobacco use prevention, pending further elucidation of the contexts in which each strategy works best.

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In theory, including a school cohort analysis where 57 high schools were re-surveyed along with the usual cross-sectional survey data obtained from an additional 110 schools was expected to help identify causal pathways that may not have been apparent in strictly cross-sectional data. In practice, the school cohort analyses merely confirmed the findings obtained from the more traditional cross-sectional data analysis. The cohort analysis did, however, provide more clarity compared to a cross-sectional analysis that the negative relationship observed between the number of TUPE activities in a school and the prevalence of its student smoking was **not** mediated by changes in most tobacco use precursors, such as student estimates of peer tobacco use.

The cohort analysis also made it clearer that non-TUPE school-level factors such as a school's average parent educational attainment and its API score were empirically important influences on both the school's TUPE activities and its prevalence of student smoking. Further research with nested school cohort data may be more illuminating compared to this first attempt at such a study design. Continued improvement in the development of multi-level statistical models may make it increasingly possible to more rigorously evaluate the separate contributions of schools, communities and statewide policies to determining prevalence levels of student tobacco use (e.g., Raudenbush and Bryk, 2002). New statistical methods and new researchers may extract new lessons from the available data and thereby generate new understanding about what works in school-based TUPE programming and what conditions might constrain the effectiveness of such programming.

This report covered only some of the epidemiological information that could potentially be extracted from the data collected. Future analysis of this data by other investigators may illuminate measured influences not addressed here. As a one-time snapshot or two-year school cohort study of the tobacco use status of in-school youth, this data permits only limited causal inferences. No single study can capture all of the major influences on adolescent tobacco use. The reader is encouraged to review the epidemiological findings reported here in light of the changing conception of adolescent tobacco use behavior emerging in the scientific literature (e.g., Turner et al., 2004).

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