2013 National Youth Tobacco Survey

METHODOLOGY REPORT

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1.1 Overview of the National Youth Tobacco Survey (NYTS)

In conjunction with the state Youth Tobacco Survey (YTS), the National Youth Tobacco Survey (NYTS) was developed to provide the data necessary to support the design, implementation, and evaluation of state and national tobacco prevention and control programs (TCPs).[1,2] In addition, NYTS data supplement other existing surveys, such as the Youth Risk Behavior Surveillance System (YRBSS), by providing more comprehensive data of tobacco-related indicators for both middle school (grades 6–8) and high school (grades 9–12) students. Tobacco-related indicators included in the NYTS include: tobacco use (bidis, cigarettes, cigars, kreteks , tobacco pipes, smokeless tobacco, snus, dissolvable tobacco products, hookahs, and electronic cigarettes); exposure to secondhand smoke; smoking cessation; school curriculum; minors' ability to purchase or obtain tobacco products; and, knowledge and attitudes about tobacco and familiarity with pro-tobacco and anti-tobacco media messages. NYTS data also serve as essential benchmarks against which TCPs can assess the extent of youth tobacco use. The NYTS provides multiple measures and data for six of the 20 tobacco-related Healthy People 2020 objectives (USDHHS, 2010): TU-2, TU-3, TU-7, TU-11, TU-18 (including two sub-objectives: TU-18.1 [internet advertising and promotion] and TU-18.2 [magazine and newspaper advertising and promotion]), and TU-19.

First conducted during fall 1999 and again during spring 2000, 2002, 2004, 2006, 2009, 2011, 2012, and 2013, the NYTS provides data that are representative of all middle school and high school students in the 50 U.S. states and the District of Columbia.

1.2 Overview of the 2013 NYTS Methodology

The 2013 NYTS employed a stratified, three-stage cluster sample design to produce a nationally representative sample of middle school and high school students in the United States. Non-Hispanic black and Hispanic students were oversampled. Sampling procedures were probabilistic and conducted without replacement at all stages, and entailed selection of: 1) Primary Sampling Units (PSUs) (a county, or a group of small counties, or part of a very large county) within each created stratum; 2) schools within each selected PSU; and 3) students within each selected school. Participating students completed the survey via pencil and paper using a self-administered, scannable questionnaire booklet.

Participation in the NYTS was voluntary at both the school and student levels. At the student level, participation was anonymous. Schools used either passive or active permission forms at their discretion to fulfill requirements of the No Child Left Behind Act, whereby parents must be provided with a means to opt out of their child's participation.

The final sample consisted of 250 schools, of which 187 participated, yielding a school participation rate of 74.8%. A total of 18,406 student questionnaires were completed out of a sample of 20,301 students, yielding a student participation rate of 90.7%. The overall participation rate, defined as the product of the school-level and student-level participation rates, was 67.8%.

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[1] CDC. *Best Practices for comprehensive tobacco control programs-2014*. Atlanta, GA: US Department of Health and and Human Services, Public Health Service, CDC; 2014.

[2] MacDonald G, Starr G, Schooley M, Yee SL, Klimowski K, Turner K. *Introduction to program evaluation for comprehensive tobacco control programs*. Atlanta, GA: US Department of Health and Human Services, CDC; 2001.

A weighting factor was applied to each student record to adjust for non-response and for varying probabilities of selection. Weights were adjusted to ensure that the weighted proportions of students in each grade matched national population proportions. Final adjusted weights were scaled to ensure that the weighted count of students was equal to the total sample size.

The remainder of this report provides detailed information on the methodology used in the 2013 NYTS sample selection (Chapter 2), data collection (Chapter 3), and weighting of student response data (Chapter 4).

Chapter 2—NYTS Sampling Method

2.1 Overview

The objective of the NYTS sampling design was to support estimation of tobacco-related knowledge, attitudes, and behaviors in a national population of public, Catholic, and other private school students enrolled in grades 6 through 12 in the United States. More specifically, the study was designed to produce national estimates at a 95% confidence level by school level (middle school and high school), by grade (6, 7, 8, 9, 10, 11, and 12), by sex (male and female), and by race/ethnicity (non-Hispanic white, non-Hispanic black, and Hispanic). Additional estimates, such as cross-tabulations of grade by sex and of race/ethnicity by school level, were also supported; however, precision levels will vary considerably according to differences in sub-population sizes.

The universe for the study consisted of all public, Catholic, and other private school students enrolled in regular middle schools and high schools in grades 6 through 12 in the 50 U.S. states and the District of Columbia. Alternative schools, special education schools, Department of Defense operated schools, vocational schools that serve only pull-out populations, and students enrolled in regular schools unable to complete the questionnaire without special assistance, were excluded.

The NYTS is a continuation of the NYTS cycles that took place in 1999, 2000, 2002, 2004, 2006, 2009, 2011, and 2012. The NYTS employs a repeat cross-sectional design to develop national estimates of tobacco use behaviors and exposure to pro- and anti-tobacco influences among students enrolled in grades 6–12. The sampling design framework used for the 2012 NYTS was also employed for the 2013 NYTS; however, the development and implementation of the 2013 NYTS was coordinated with the 2013 Youth Risk Behavior Survey (YRBS) to avoid duplicative efforts and to minimize potential burden on school participants.

2.1.1 Oversampling of Racial/Ethnic Minorities

To facilitate accurate prevalence estimates among racial/ethnic minority groups, prior cycles of the NYTS have employed multiple strategies to increase the number of non-Hispanic black and Hispanic students included in the sample. These approaches have included over-sampling PSUs in high racial/ethnic minority strata, the use of a weighted measure of size, and double class selection in high-minority schools.

A weighted measure of size (MOS) has been used to increase the probability of selection of high racial/ethnic minority PSUs and schools within a Probability Proportional to Size (PPS) sampling design. The effectiveness of a weighted MOS in achieving oversampling is dependent upon the distributions of non-Hispanic black and Hispanic students in schools. The need for a weighted measure of size is predicated on a relatively low prevalence of minority students in the population; however, this premise has become less tenable with the increase of non-white students in the population overall, and specifically, Hispanic students.

In 1990, the contactor, ICF (formerly Macro International Inc.), conducted the first in a series of simulation studies to investigate the impact of various weighting functions on the numbers and percentages of racial/ethnic minority students reached in YRBS.[3] Sampling strategies based on this work were incorporated into the NYTS, and this study has been updated with each cycle of the NYTS to ensure that the minimum amount of weighting

[3] Errecart, M.T., *Issues in Sampling African-Americans and Hispanics in School-Based Surveys*. Centers for Disease Control, October 5, 1990.

in the MOS is being used, while still achieving adequate representation of non-Hispanic black and Hispanic students. The possibility of using an unweighted measure of enrollment size was investigated for the 2012 NYTS, with results demonstrating that adequate representation of non-Hispanic black and Hispanic students would be achieved through the use of an unweighted MOS. Thus, student enrollment was used as the unweighted MOS in the 2013 NYTS design, which also improved the statistical efficiency of the design.

Design parameters were examined to ensure that the precision and reliability of the data were not compromised by the employed sampling approach. Thresholds for double class selection were set, and PSUs were allocated to strata in the first sampling stage to generate adequate precision with minimum variance.

The need for oversampling Hispanic and non-Hispanic black students has been gradually reduced with the increasing numbers of minority populations in middle and high schools. Historically, the design has included the following three different ways of oversampling Hispanic and non-Hispanic black students:

- A weighted measure of size (described above)
- Disproportional allocation to strata with heavier concentrations of Hispanic and non-Hispanic black students
- Double class selection

In recent years, the growing percent of Hispanic students has eliminated the need for oversampling Hispanics.

The measure of size used in the 2013 NYTS sampling design no longer oversampled schools with heavier minority concentrations directly. In addition, the allocation to strata was proportional so the second oversampling approach was also no longer in effect. Nevertheless, double class selection was still implemented in the 2013 NYTS sampling.

In previous NYTS cycles, schools with high racial/ethnic populations were subject to double class selection. More specifically, two classes per grade were selected in these schools, compared to one class per grade in other schools, to increase the number of racial/ethnic minority students sampled. In the 2013 NYTS, double class selection was only used in schools that had greater than 5 percent non-Hispanic black student enrollment.

2.1.2 Sampling Stages and Measure of Size

The three-stage cluster sample was stratified by racial/ethnic composition, non-Hispanic black and Hispanic, and urban versus non-urban status at the first (primary) stage. Primary Sampling Units (PSUs) were defined as a county, a group of smaller counties, or a portion of a very large county. PSUs were classified as "urban" if they are in one of the 54 largest metropolitan statistical areas (MSAs) in the U.S.; otherwise, they were classified as "non-urban." Additionally, implicit stratification was imposed by geography by sorting the PSU frame by state and by 5-digit ZIP Code (within state). Within each stratum, a PSU was randomly sampled without replacement at the first stage.
In subsequent sampling stages, a probabilistic selection of schools and students was made from the sample PSUs.

The sampling stages may be summarized as follows:

- *Selection of PSUs*: Eighty-five PSUs were selected from sixteen strata, with probability proportional to the total number of eligible students enrolled in all eligible schools located within a PSU.

- *Selection of Schools:* At the second sampling stage, two double schools were selected from each PSU. An additional 24 large schools and 20 small schools were selected from subsample PSUs. The PSU subsample was drawn as a simple random sample, and the schools were drawn with probability proportional to the total number of eligible students enrolled in a school.

- *Selection of Students:* Students were selected via whole classes, whereby all students enrolled in any one selected class were by default chosen for participation. Classes were selected from course schedules provided by each school that agreed to participate. Schedules were constructed such that all eligible students were represented one time only.

Schools were stratified into double, large, and small schools based on their ability to support two, one, or less than one class selection per grade. In double schools, an average of 1.46 classes were selected per grade by selecting 2 classes per grade in 46% of selected double schools and one class per grade in the remaining schools. The double class sampling took place in 90 schools, with non-Hispanic black enrollments over the established 5% threshold.

The sampling approach utilized Probability Proportion to Size (PPS) sampling methods. In PPS sampling, when the MOS is defined as the count of final-stage sampling units, and a fixed number of units are selected in the final stage, the result is an equal probability of selection for all members of the universe. For the NYTS, we approximate these conditions, and thus obtain a roughly self-weighting sample.

The measure of size was used also to compute stratum sizes and PSU sizes. Assigning an aggregate measure of size to PSU, the sample allocates the PSU sample in proportion to the student population. Exhibit 2-1 presents a summary of the sampling design features.

Exhibit 2-1: Key Sampling Design Features

Sampling Stage	Sampling Units	Sample Size (Approximate)	Stratification	Measure of Size
1	PSUs: Counties or groups of counties	85	Urban vs. non-urban (2 strata); Minority concentration (8 strata)	Aggregate school size in target grades
2	Schools	219 school selections: 170 double schools (2 per PSU), 19[4] large schools and 30 small schools	Small, large and double; High-school vs. middle-school	Weighted enrollment (increased for black, Hispanic groups)
3	Classes/ students	1 or 2 classes per grade (2 per grade in large high-minority schools)		

[4] One of the ten PSUs sampled to contribute large schools did not contain a high school.

2.2 Stratification and Linking

This section describes frame preparation steps for the selection of the first- and second-stage samples of PSUs and schools. These steps include: combining counties into Primary Sampling Units; linking schools into Secondary Sampling Units; and the stratification and allocation methods at each of these stages.

The basis for the sampling frame is a comprehensive database of U.S. schools and school districts that was obtained from a commercial vendor. The school facility data are continuously updated with school contact information, facility information, and openings and closings. The frame also incorporates enrollment data, which serves as the basis for the measure of size used in the sampling. Enrollment data were obtained from the most recent Common Core of Data from the National Center for Education Statistics, which are continuously merged into the current school and school district data files of Quality Education Data, Inc. (formerly QED), acquired by MCH Strategic Data (http://www.mchdata.com/qed).

2.2.1 PSU

Defining a PSU

In defining PSUs, several issues are considered:

1. Each PSU should be large enough to contain the requisite numbers of schools and students by grade, yet not so large as to be selected with near-certainty.
2. Each PSU should be compact geographically so that field staff can go from school to school easily.
3. There should be recent data available to characterize the PSUs.
4. PSU definitions should be consistent with secondary sampling unit (school) definitions
5. PSU should contain at least 4 middle and 5 high schools.

Generally, counties were equivalent to PSUs with two exceptions: 1) low population counties are combined to provide sufficient numbers of schools and students; and 2) counties that are very large may be split to avoid becoming certainty or near-certainty PSUs. Certainty PSUs are those whose size is large enough to ensure selection with probability one (1.0) with a PPS sampling design that selects larger PSUs with larger probabilities. As certainty PSUs lead to inefficiencies in the design, they are split so that the new smaller units are no longer selected with probability one. Near-certainty units are also split to build in a safety buffer in the PSU sizes. County population figures were aggregated from school enrollment data for the grades of interest.

The 2013 NYTS PSU definitions were based on the definitions developed in the coordinated 2011 YRBS-NYTS cycle, and also used in the 2012 NYTS. The exact PSUs defined in 2013 NYTS sampling frame were updated to ensure that all PSU met the criteria above. The frame had 1,268 PSUs, 529 of which were comprised of one single county.

Stratification of PSUs

The PSUs were organized into 16 strata, based on urban/non-urban location (as defined above) and racial/ethnic minority enrollment of non-Hispanic blacks and Hispanics. The approach involves the computation of optimum stratum boundaries using the cumulative square root of "f" method developed by Dalenius and Hodges[5]. The boundaries or cutoffs change as the frequency distribution ("f") for the racial groupings change from one survey cycle to the next. These rules are summarized below.

- If the PSU is within one of the 54 largest MSA in the U.S. it is classified as "urban," otherwise it is classified as "non-urban."
- If the percentage of Hispanic students in the PSU exceeded the percentage of non-Hispanic black students, then the PSU is classified as Hispanic. Otherwise it is classified as non-Hispanic black.
- Hispanic urban and Hispanic non-urban PSUs were classified into four density groupings depending upon the percentages of Hispanics in the PSU.
  - For urban, High Hispanic PSU, the percentage cut points used to define the groups were 24, 40, and 60 percent
  - For non-urban, High Hispanic PSU, the percentage cut points used to define the groups were 24, 50, and 68 percent.
- Non-Hispanic Black urban and non-Hispanic black non-urban PSUs were also classified into four groupings depending upon the percentages of non-Hispanic blacks in the PSU.
  - For urban non-Hispanic black PSUs, the percentage cut points used to define the groups were 26, 36, and 54 percent.
  - For non-urban High non-Hispanic Black PSUs, the percentage cut points used to define the groups were 20, 36, and 58 percent.

Allocation of the PSU Sample

We designed and selected a sample of 85 PSUs that were allocated in proportion to student enrollment. Using simulations as in previous studies, we then made adjustments to the initial allocation to meet racial/ethnic minority targets. Specifically, the adjustments rounded fractional allocations, ensured that each strata would have at least two sampled PSUs, and to add balance to the distribution across strata.

Exhibit 2-2 presents the allocation of the PSU sample to strata. Compared to previous cycles, this allocation is closer to proportional and therefore more efficient statistically; i.e., it leads to smaller variances and tighter confidence intervals.

[5] Dalenius, T, and Hodges, JL (1959) Minimum Variance Stratification. Jour. Amer. Statist. Assoc., 54, 88-101.

Exhibit 2-2: Stratum Definition and PSU Allocation to Strata

Predominant Minority	Urban/Non-urban	Density Group Number	Stratum Code	Student Population	Percent of Student Population	Number of Sample PSUs
Non-Hispanic Black	Urban	1	BU1	2,527,334	9%	8
		2	BU2	1,773,146	6%	5
		3	BU3	888,683	3%	2
		4	BU4	518,266	2%	2
	Non-urban	1	BR1	3,942,092	14%	11
		2	BR2	1,947,857	7%	6
		3	BR3	1,108,460	4%	3
		4	BR4	399,673	1%	1
Hispanic	Urban	1	HU1	3,193,712	11%	10
		2	HU2	2,182,920	8%	7
		3	HU3	2,218,898	8%	6
		4	HU4	1,372,469	5%	4
	Non-urban	1	HR1	4,016,186	14%	12
		2	HR2	1,137,313	4%	3
		3	HR3	850,159	3%	3
		4	HR4	500,907	2%	2

2.2.2 Schools

Linking into Secondary Sampling Unit (SSU)

Schools were classified as "whole" for high schools if they have all high-school grades 9 through 12, and whole for middle schools if they had all grades 6–8. Otherwise, they were considered a "fragment" school. Fragment schools formed component schools that were linked with other schools (fragment or whole) to form a linked school that has all four grades. This process is illustrated in Figure 2-1, where 'Component School OID A' is linked with 'Component School OID B', to form a linked school, or 'Secondary Sampling Unit (SSU) XXX'. We linked schools before sampling using an algorithm, developed for use in the national YRBS that links geographically proximate schools. Linked schools were treated as a single school, or sampling unit, during sampling with selection performed at the grade level as described below.

Figure 2-1: Linked School Construction and Grade Sampling for High Schools

Linked School SSU XXX

Component School OID B (Whole)	Component School OID A (Fragment)
Grade 9	
Grade 10	Grade 10
Grade 11	Grade 11
Grade 12	Grade 12

Stratification

SSUs were stratified by school level (middle and high) and by size. Middle schools were those that contained any of grades 6 through 8, and high schools were those that contained any of grades 9 through 12. Schools that contained a mix of high and middle school grades were split into two sampling units, or one for each level.

SSUs were also stratified by school size into 'small', 'large', and 'double' based on their ability to support less than one, one, or two class selection per grade. Operationally, double SSUs contained at least 50 students at each grade level, large SSU contained between 25 and 49 students per grade, and small SSUs contained less than 25 students at any grade level.

It is important to note that the nomenclature used to describe school size stratification has been slightly modified for this cycle. Schools are now classified by enrollment size as 'small', 'large', or 'double'. The change in nomenclature was done to distinguish the schools where double class sampling would take place.

2.2.3 Sample Sizes

The original specifications for NYTS sample sizes were not given in terms of student yields; rather, they were specified in terms of the precision of the resulting estimates. Thus, the NYTS was designed to produce the key estimates accurate to within ± 5% at a 95% level of precision. Estimates by grade, sex, and grade by sex meet this standard. The same standard is used for the estimates for racial/ethnic groups by school level.

The NYTS is designed to produce accurate estimation to within ± 5% at a 95% precision level for the following key subgroup estimates:

- *Middle and high school (school level):* middle school students in total (grades 6–8 combined) and high school students in total (grades 9–12 combined)
- *Grade*: Individual grades 6, 7, 8, 9, 10, 11, and 12
- *Sex*: males and females in total, by school level (male middle school students, female high school students, etc.), and by individual grade (6^{th} grade males, 6^{th} grade females, etc.)
- (Race/Ethnicity): in total and by school level (e.g., Hispanic middle school students)

Over the past several cycles of NYTS, we have confirmed that sample sizes, and resulting student yields, were sufficient to achieve design goals in terms of precision. For the 2013 NYTS design, anticipated precision levels were developed to ensure that the 2013 design meets the original precision targets. The sample design proposed for the 2013 NYTS survey is consistent with the sample design used in past cycles, which includes adjusting sampling parameters to reflect changing demographics of the in-school population of middle and high school students. The number of schools selected and students per school were calculated so that, combined with anticipated response rates, we projected the study would obtain completed surveys from approximately 21,379 students.

As detailed in Section 2.2.2, linked schools, or second stage units (SSUs), were constructed to contain a full complement of grades—6 to 8 for middle schools and 9 to 12 for high schools.

Schools were further classified by size based on grade-level enrollments; the definition of size strata is provided in Section 2.2.2. This ensures that a sampled school of a given size classification is able to support the student sample sizes given in Exhibit 2-3.

The NYTS sample size calculations are based on the following assumptions:

- The main structure of the sampling design will be consistent with the design used to draw the sample for prior cycles of the NYTS.
- The selection of a minimum of one SSU at the high school level and one SSU at the middle school level within each PSU. Some PSUs are selected to provide up to four extra schools. A PSU is a county, a group of contiguous counties, or a section of a county if too large.
- SSUs with at least 56 students per grade are considered "Double", and those among the others with 28 students per grade are considered "Large"; otherwise, they are considered "Small."
- On average, each selected class will include 28 students (based on historical averages).
- For SSUs classified as Double schools, we will sample double the amount of students in 46% of these schools, by sampling eight classes instead of four.
- A 77% overall response rate (based on historical averages) calculated as the product of the school and student response rate.

Based on these assumptions, 85 PSUs were selected. Within each PSU, two double schools were drawn, one at the middle school level to supply students in grades 6 through 8, and one at the high school level to supply students in grades 9 through 12. In addition, 15 PSUs were sub-sampled to supply small SSUs, and another 10 PSUs were independently sub-sampled to supply large SSUs.

The number of students selected from all sample schools will be about 27,789 students (before non-response).

Exhibit 2-3 summarizes the designed sample sizes for each school type. This table details the number of schools that were specified to be drawn by the sample design along with the number of participating schools and students anticipated when we developed the sample design based on the given assumptions. Section 3.4 compares these projections to the actual sample yields.

In this exhibit, the schools are secondary sampling units (SSUs); SSUs are "virtual schools" created by combining actual, physical schools so that each virtual school unit has a complete set of grades for the level. The virtual schools will be expanded to physical schools.

Across the seven previous cycles of the NYTS (prior to the 2012 survey not yet completed at the time of this design work), the school participation has averaged 90%, with a low of 83%. Student participation has averaged 91% with a low of 88%. In calculating the drawn sample sizes for the 2013 NYTS, we made our approach more robust by assuming a conservative overall rate of 77%, which was slightly lower than the historical overall response rate of 82%.

Exhibit 2-3: Planned Sample Sizes for the 2013 NYTS

PSU	SSU		Sampled students prior to attrition	Sample size calculation	Overall yields at 77% overall response rate
85	Double High School	85	13,899	8,758 in 39 double schools (39 schools x 8 classes per school x 28 students per class) 5,141 in 46 non-double schools (46 schools x 4 classes per school x 28 students per class)	
	Double Middle School	85	10,424	6,569 students in 39 double schools (39 schools x 6 classes per school x 28 students per class) 3,856 students in 46 non-doubled schools (46 schools x 3 classes per school x 28 students per class)	
	Double Total	170	24,324		18,729
10 (sub-sample)	Large High School	10	1,120	10 PSU x 1 school per PSU x 28 kids per grade x 4 grades at the HS level	
	Large Middle School	10	840	10 PSU x 1 school per PSU x 28 kids per grade x 3 grades at the MS level	
	Large Total	20	1,960		1,509
15 (sub-sample)	Small	30	1,505	1,030 High School students (averages of 18.1 students per class and 57 classes, with 3.8 classes per school) 475 Middle School students (averages of 11.2 students per class and 42 classes, with 2.8 classes per school)	1,159
	Overall Total	220	27,789		21,397

In summary, the design anticipated that between 235 and 245 physical schools would be selected for participation in the 2013 NYTS, a number inflated due to school non-response, as well as from the linking of physical schools into SSUs. These schools were expected to yield approximately 21,397 students.

The large projected sample size permits analysis by individual grade and by sex without any special considerations in the sampling plan. Design effects were assumed by the design to be relatively small for subgroups that cut across schools; therefore, sex group estimates will have better precision than other groups. Thus, the designed confidence intervals were ± 3%.

Because the design expected to yield a greater number of completed surveys from high school students than from middle school students, overall estimates were anticipated to be more precise at the high school level than those at the middle school level. Moreover, because within grade estimates by sex have slightly larger standard errors than those for estimates by grade alone, estimates of sex were expected within ± 5%.

The next paragraphs discuss how the design was balanced to achieve precise estimates for subgroups defined by school level, grade, sex and race/ethnicity.

2.2.3.1 Middle School and High School Estimates

Estimates by school level are required to support separate analysis of students across middle school grades (6, 7, and 8) and high school grades (9, 10, 11, and 12). However, schools tend to vary in their grade structures, an inconsistency that compromises the ability to easily and efficiently link schools for sampling purposes in a manner that also uniformly divides students by grade. For example, 9th grade students are served by both junior high schools with grades 7–9 and by high schools with grades 9–12. As a result, we have developed the school linking approach described in Section 2.2.2 that was applied independently for high schools and middle schools.

2.2.3.2 Grade Estimates

The design balances the sample sizes for grade level by targeting 3,000 students per grade. This ensures that estimates at the grade level achieve the required precision levels. It is worth noting that this design feature resulted in a larger student allocation to the high school stratum than to the middle school stratum because high schools have four grades, compared to three grades for middle schools.

2.2.3.3 Sex Group Estimates

The large sample size permitted analysis by sex without any special considerations in the sampling plan. During the class selection process, frames of eligible classes from co-educational schools in which classrooms were segregated by sex (i.e., an all-male or all-female class) were avoided, if possible.

2.2.3.4 Race/Ethnicity Group Estimates

In order to support separate analysis of the data for non-Hispanic white, non-Hispanic black and Hispanic students, in total and by school level, adequate sample sizes were required by the designed for subgroups defined by: 1) school level by racial grouping; or 2) by sex grouping. Sample sizes were not designed, however, to support detailed analyses by sex and school level within racial/ethnic subgroups (e.g., middle school Hispanic males).

2.3 Sampling Methods

This section describes the methods used in the selection of PSUs, schools, grades, and classes of students. In this process, we define the probabilities of selection associated with the various sampling stages as follows:

- Probability of selecting PSUs
- Probability of selecting schools
- Probability of selection of grades
- Probability of selecting classes and students

These probabilities provide the basis for the sampling weights discussed in Chapter 4.

The overall probability of selection for a student is the product of the probability of selection of the PSU, which contains a group of schools, multiplied by the conditional probability of selecting the student's school and the conditional probability of selecting the student's class. These steps are detailed in the selection below.

2.3.1 Primary Sampling Unit

Selection

Within each first-stage stratum, the PSUs were sorted by five-digit ZIP Code to attain a form of implicit geographic stratification. Implicit stratification, coupled with the probability proportional to size (PPS) sampling method described below, ensures geographic sample representation. With PPS sampling, the selection probability for each PSU is proportional to the PSU's measure of size.

The following systematic sampling procedures were applied to the stratified frame to select a PPS sample of PSUs.

- Select 100 PSUs with a systematic random sampling method within each stratum. The method applies within each stratum a sampling interval computed as the sum of the measures of size for the PSUs in the stratum divided by the number of PSUs to be selected in the stratum.
- Subsample at random 12 of the sample PSUs for the medium school sample for each school level (middle school and high school)
- Subsample at random 10 of the sample PSUs for the small school sample for each school level (middle school and high school)

Probability

If MOS_{klm} is the measure of size for school *k* in PSU l in stratum *m* and if K_m is the number of PSUs to be selected in stratum *m*, then P^p_{lm} is the probability of selection of PSU *l* in stratum *m*:

$$P^{P}{}_{lm} = K_m \left(\frac{MOS_{.lm}}{MOS_{..m}} \right)$$

As noted below, 10 of the 100 sample PSUs were sub-sampled for the sampling of small schools, with 5 PSUs sub-sampled for each school level. Similarly, 12 PSUs were sub-sampled for the sampling of large schools, with 6 for each school level. Thus, the sub-sample PSUs have an additional factor in their selection probability for these classes of schools. This factor is incorporated into the school sampling probability below because it is more closely associated with school selection.

2.3.2 Schools

Selection

For 'double' schools, one high school and one middle school were selected with PPS systematic sampling within a PSU. The schools were selected into the sample with probability proportional to the weighted measure of size.

'Small' and 'large' schools were sampled independently from 'double' schools; they were set in two separate strata sampled at lower rates. This approach was implemented by drawing a sub-sample of 15 PSUs for the sampling of 'small' schools sampling and a subsample of 10 PSUs for 'large' school sampling at each level. One 'small' school or 'large' school was then selected in each sub-sampled PSU with probability proportional to weighted measure of size.

Replacement of Schools/School Systems

We did not replace refusing school districts, schools, classes, or students. We allowed for school and student non-response by inflating the sample sizes to account for non-response. With this approach, all schools can be contacted in a coordinated recruitment effort, which is not possible for methods that allow for replacing schools.

Probability

The probability of selecting 'double' school *k* in PSU l and stratum *m*, P^{DS}_{klm}, at each level was computed as follows:

$$P^{DS}_{klm} = \left(\frac{MOS_{klm}}{MOS_{.lm}} \right)$$

For 'small' schools, one school was drawn from sub-sampled PSU at each level, so the probability of selection of a 'small' school, P^{SS}_{klm}, then becomes:

$$P^{SS}_{klm} = (10/100)\left(\frac{MOS_{klm}}{MOS_{.lm}} \right)$$

For 'large' schools, one school was drawn from sub-sampled PSU, so the probability of selection of a 'large' school at each level, P^{LS}_{klm}, then becomes:

$$P^{LS}_{klm} = (12/100)\left(\frac{MOS_{klm}}{MOS_{.lm}} \right)$$

Note the additional sampling factor in the probability of selection for 'small' and 'large' schools is due to the PSU sub-sampling for these classes of schools as noted above.

2.3.3 Grades

Selection

Except for linked schools, all eligible grades were included in the class selection for each school.

In linked schools, grades were selected independently. One component school was selected to provide classes at each grade level, and grades within component schools were drawn with probability proportional to grade enrollment.

Probability

Most SSUs in the sample contained one component school. In these cases, all eligible grades were selected so that the probability of selecting a grade was 1.0.

In SSUs that were made up of component schools, the selection of each component school at each grade is made with PPS sampling. The school selections from each component school at each grade level were made independently.

We denote this P^{G}_{jklm} the probability of selecting grade *j* in SSU *k*, in PSU *l*, stratum *m*. For the j^{th} grade within SSU *k*, this probability is equal to the ratio of the number of students at grade *j* in the component school to the total enrollment in grade *j* across all component schools within the SSU

2.3.4 Classes

Selection

In ‘double’ schools, an average of 1.46 classes per grade were selected by selecting 2 classes per grade in 46% of the selected ‘double’ schools and one class per grade in the remaining ‘double’ schools. The double class sampling took place in schools with greater than 5% non-Hispanic black enrollment and one class per grade in the remaining schools.

One class per grade was selected in ‘large’ schools.

In ‘small’ schools, that is, those that could not support a full class selection at each grade, all students in all eligible grades were taken into the sample.

All students in a selected class who could complete the survey without special assistance were considered eligible and offered the opportunity to participate in the survey. Refusing students were not replaced. Non-response at the student level was accounted for in the sample size using an average per class yield that assumed student response rates derived from historical experience with the NYTS.

A set of classes was identified for each school at each grade level such that every student in a given grade level was enrolled in exactly one of the classes in the set. For example, a required English course might be used. If the school’s estimated non-Hispanic black enrollment exceeded 5%, two classes were randomly selected, without replacement, from the list. Otherwise, one class was randomly selected. Selections were made at all eligible grade levels in the school.

Probability

The probability of selection of a class when there are C_{jklm} classes at grade *j* in school *k*, PSU_i, stratum *m* is just $1/C_{jklm}$ or $2/C_{jklm}$ depending on whether 1 or 2 classes are taken in the school. All students in a selected class were chosen, so the probability of selection of a student is the same as the class (i.e., $1/C_{jklm}$ or $2/C_{jklm}$).

Note that the probability of student selection within a class does not vary by race, ethnicity, or sex. We denote this probability as P^C_{ijklm} as the probability of selecting class *i* in grade *j*, school *k*, PSU *l*, stratum *m*. Since every student in a selected class is also selected, the probability of selecting any student in class *i*, grade *j*, school *k*, PSU *l*, stratum *k*, is also equal to P^C_{ijklm}.

Chapter 3—NYTS Data Collection

3.1 Survey Instrument

The NYTS collects data on key short-term, intermediate, and long-term tobacco prevention and control outcome indicators. The 2013 survey instrument included a total of 81 questions, with the first five collecting student demographic information and the remaining measuring a comprehensive set of tobacco-related topics (Appendix A). Specific areas covered by the survey included: prevalence of tobacco product use; knowledge of and attitudes towards tobacco use; pro- and anti-tobacco media and advertising; minors' access to tobacco products; nicotine dependence; cessation attempts; exposure to second-hand smoke; harm perceptions; exposure to tobacco product warnings; and tobacco use prevention school curricula.

3.2 Recruitment Procedures

The schools selected to participate in the 2013 NYTS were located in 39 different states. Recruitment began in May 2012 with calls to State Departments of Education and Health. Letters of support were obtained from various State agencies and used in mailings to districts and schools. A date for survey implementation was selected to optimize the efficiency of data collection while accommodating school schedules. In selecting a date, convenience to the school and its calendar were considered. Additionally, an effort was made to schedule groups of schools from the same school district or PSU around the same time to facilitate efficient travel to and survey implementation within selected schools. Recruiters used an electronic calendar on a secure shared drive to facilitate communication and to avoid scheduling two schools for the same data collector on the same day.

3.3 Survey Administration

Survey administration in the schools began on February 12, 2013, immediately after data collector training, and continued until June 21, 2013. Each data collector visited an average of 3 schools per week. While the details of each data collection varied, there were six core steps followed for every school: 1) Pre-contact call with the principal or lead contact prior to arrival at the school; 2) Entry meeting with the principal or lead contact; 3) Entry meeting with teacher or group of teachers prior to survey administration; 4) Survey administration; 5) Post-survey meeting with the teacher or teachers; and 6) Post-survey meeting with the principal or lead contact prior to leaving the school. Most survey administrations could be completed in one day, while at other times, due to the number of classes selected or alternating block schedules, the data collector needed to return for a second day. Procedures were designed to protect students' privacy by assuring that student participation was anonymous and voluntary. Students completed a self-administered scannable questionnaire booklet via pencil and paper.

3.3.1 Data Collection Staffing

Data collectors were recruited from a pool of previously trained data collectors, as well as retired teachers associations, school health networks, and a variety of health education organizations. Data collector training was conducted on February 6 – 9, 2013. Key components of the training included:

- Precontact activities with the schools
- Entry and exit meetings with school officials
- Data collection protocols
- Follow up activities
- Communication with headquarters staff

3.3.2 Field Procedures

After schools had been recruited, classes selected, and a date scheduled, each school received a packet of pre-survey materials. These materials included all the information necessary to prepare the school for data collection. Teacher packets contained the parental permission forms that had to be given out to all students in the selected classes prior to data collection. The timing of these pre-survey packet mailings was determined in part by the type of permission form being used by the school. Passive parental permission forms, or forms returned only if the parents do not want their child to participate, were sent approximately one week prior to the scheduled date of data collection in the majority of schools. Active parental permission forms, forms that must be returned with the parent's signature in order for the child to participate, were sent out at least two weeks prior to the scheduled date of data collection, for schools that require active consent. Follow-up calls were made to the selected schools to answer any questions and to make sure materials were received and distributed to selected classes and students.

On a weekly basis, data collectors received mailings containing their assignments for the coming week, travel and logistics information, and their must-read weekly bulletin. Weekly bulletins underlined key performance issues, corrected misconceptions, provided consistent direction on any procedural changes, and kept everyone abreast of the latest must-have information. In addition to these mailings, boxes of survey supplies were sent to data collectors either to the data collector's home or hotel. These boxes contained all supplies necessary for completing the data collection, including questionnaires, data envelopes, field forms, and pencils. Data collectors were supplied with extra materials for emergency packs as well, which they carried with them at all times.

3.3.3 Classroom Selection

Students were selected for participation by default via the selection of whole classes (i.e., all students enrolled in a selected class were eligible to take the survey). The frames from which classes were chosen were constructed such that eligible students had one and only one chance of being selected. However, at times the specific method of selecting classes varied from school to school according to how a school's class schedule was structured. Typically, classes were selected from a list of required core courses such as English, social studies, math, or science. Among middle school students, and among high school students in a few states, physical education and/or health also were considered core courses. However, in a small number of schools, it was difficult to develop an appropriate frame using this approach. Therefore, in these schools, classes were selected by using a time of day (i.e., second period) when all eligible students were scheduled to be attending a class of one kind or another as the frame, and randomly selecting from all classes held at this time. Lastly, in some schools, school homerooms were used as the frame for class selection.

3.4 Participation Rates

Across the eight previous cycles of the NYTS, the school participation has averaged 88%, with a low of 83%. Student participation has averaged 90% with a low of 88%, and the overall response rate has averaged 81%. To be conservative, we assumed slightly lower values in developing the sample design for the 2013 NYTS: an assumed overall participation rate of 77%.

The actual response rates differed from our projections: an actual school participation rate of 74.8% and a student participation rate of 90.7%. These participation rates were lower for schools but higher for student participation. The overall participation rate, the product of the school-level and student-level participation rates was 67.8%

The 2013 NYTS data file contains responses from 18,406 students compared to the 21,397 responding students anticipated by the design. Exhibit 3-1 shows that student yields were lower than targeted for non-Hispanic Blacks, with a shortfall of 202 and 451 students for high and middle schools, respectively. Among Hispanics, a yield of 500 over target was observed among high school students but a shortfall of 76 was seen among middle school students.

Exhibit 3-1: Sample Yields for Non-Hispanic Black and Hispanic Students by School Level

Subgroup	Projected Participants	Actual Participants
Middle School non-Hispanic Blacks	1,775	1,324
Middle School Hispanics	1,775	1,699
High School non-Hispanic Blacks	1,975	1,773
High School Hispanics	1,975	2,482

Chapter 4—Weighting of NYTS Response Data

4.1 Overview

This section describes the procedures used to weight the data collected in NYTS 2013. The process involved the steps outlined below:

- Sampling weights
- Non-response adjustments
- Weight trimming
- Post-stratification to national estimates of racial totals by grade, gender and school type

This section focuses on the development of the weights for the student response data. The final student level response data were weighted to reflect the initial probabilities of selection and non-response patterns, to mitigate large variations in sampling weights, and to post-stratify the data to known sampling frame characteristics.

4.2 Sampling Weights

The sampling weight attached to each student response is the inverse of the probability of selection for that student. This basic weight can be adjusted to compensate for non-response, to alleviate excess weight variation, and to match the weighted data to known control totals. A convenient way of computing the basic weight is by inverting the probabilities of selection at each stage, to derive a partial weight or stage weight. The stage weights are then multiplied together to form the overall weight.

4.2.1 Adjusted Conditional Student Weights

The adjusted conditional student weight is the student weight given the selection of the PSU, school, and grade. This weight is the product of the inverse of the probability of selection, a non-response adjustment, and a ratio adjustment to control to known school enrollment totals.

This three step process is simplified algebraically (see Appendix B) and computed directly as the ratio of the number of enrolled students to the number of responding students in a given weight class within a school. The weighting class definition is set dynamically so as to avoid extreme weights.

We denote the student selection weight W^{R}_{cklm}, where the subscripts *k, l,* and *m* refer to the school, PSU and stratum as before. The subscript *c* refers to the weight computation class, described below. This weight is computed as below, where N is the number of enrolled students for each school (the counts are provided by the school during data collection by grade and sex) and R is the number of responding students in weight class *c* within a given school:

$$W^{R}_{cklm} = \frac{N_{cklm}}{R_{cklm}}$$

Weighting class *c* is defined by a sequence of rules that depends on the number of responding students. This is done to avoid large weights for classes with low numbers of respondents. This process operates entirely within school.

Initially the weight class is defined by grade and gender within each school. We then combine weight classes if the weight for the class exceeds a maximum value. This cap *C* is computed using the equation following.

$$C_{cklm} = 2\frac{N_{cklm}}{\min(10, N_{cklm})}$$

The combination sequence first groups males and females within grade. Both the cap and the weight are then re-computed. If the weight still exceeds the cap, grades are combined. The process is repeated, and if the student weight still exceeds the cap, the school is taken as the weight class.

This has the effect, within school, of setting an upper limit on the weight in class *C* of 2 in weight classes with an enrollment of less than 10, and 20% of the enrollment in weight classes with an enrollment of more than 10 but the cap could be exceeded in cases where the weight class is collapsed to the school level.

4.2.2 School Sampling Weights

For 'double' schools the partial school weight is the inverse of the probability of selection of the school given that the PSU was selected:

$$W^{DS}{}_{klm} = \left(\frac{MOS_{.lm}}{MOS_{klm}}\right) = \frac{1}{P^{DS}{}_{klm}}$$

For 'small' schools the partial school weight is:

$$W^{SS}{}_{klm} = (85/15)\left(\frac{MOS_{.lm}}{MOS_{klm}}\right) = \frac{1}{P^{SS}{}_{klm}}$$

For 'large' schools the partial school weight is:

$$W^{LS}{}_{klm} = (85/10)\left(\frac{MOS_{.lm}}{MOS_{klm}}\right) = \frac{1}{P^{LS}{}_{klm}}$$

4.2.3 Grade Sampling Weights

The partial weight for a grade, given the selection of the linked school containing it, is simply the inverse of the probability of selection described in Section 2.4. In a non-linked school the weight is 1.0. We denote the grade weight as $W^{G}{}_{jklm}$.

4.2.4 PSU Sampling Weights

The weight of the PSU is the inverse of the probability of selection of that PSU:

$$W^{P}{}_{lm} = \frac{1}{K_m}\left(\frac{MOS_{.m}}{MOS_{lm}}\right) = \frac{1}{P^{P}{}_{lm}}$$

For 'small' and 'large' school selections, the enclosing PSU were drawn as a subsample. This PSU subsampling component of the PSU weight is accounted for in the school selection probability and corresponding weight.

4.2.5 Overall Sampling Weight

The overall sampling weight is formed as the product of the stage selection weights. This weight, W^{T1}, is then adjusted for non-response, trimmed, and post-stratified to control totals as described in the following sections. This weight is computed as:

$$\begin{cases} W^{T1}{}_{hijklm} = W^{P}{}_{lm} W^{DS}{}_{klm} W^{G}{}_{jklm} W^{R}{}_{hijklm} \\ W^{T1}{}_{hijklm} = W^{P}{}_{lm} W^{LS}{}_{klm} W^{G}{}_{jklm} W^{R}{}_{hijklm} \\ W^{T1}{}_{hijklm} = W^{P}{}_{lm} W^{SS}{}_{klm} W^{G}{}_{jklm} W^{R}{}_{hijklm} \end{cases}$$

for 'double', 'large', and 'small' schools, respectively, where the weights in the latter portions of the equations are defined in the preceding sections.

4.3 Non-Response Adjustments

This section describes how weights are adjusted for nonparticipation by entire schools, using strata as weighting classes.

The adjustment process is different in small schools than in large and double schools, as represented by the following equations for the adjustment factor.

$$\begin{cases} A_m^{DS,LS} = \dfrac{\sum_{k,l\ \varepsilon\ \text{double and large, schools sampled}} W_{lm}^{P} W_{klm}^{DS,LS} MOS_{klm}^{DS,LS}}{\sum_{k,l\ \varepsilon\ \text{double and large, schools responding}} W_{lm}^{P} W_{klm}^{DS,LS} MOS_{klm}^{DS,LS}} \\ A^{SS} = \dfrac{\sum_{k,l\ \varepsilon\ \text{small schools sampled}} W_{lm}^{P} W_{klm}^{SS} MOS_{klm}^{SS}}{\sum_{k,l\ \varepsilon\ \text{small schools with respondents}} W_{lm}^{P} W_{klm}^{SS} MOS_{klm}^{SS}} \end{cases}$$

The first equation applies to 'double' and 'large' schools combined, and the second applies to 'small' schools. Note that this adjustment is made within stratum for 'double' and 'large' schools and across the whole sample for 'small' schools. The student weight, adjusted for non-response, is $A^{SS}{}_{lm}\ W^{T1}{}_{hijklm}$ for 'small' schools and $A^{DS,LS}{}_{lm}\ W^{T1}{}_{hijklm}$ for 'double' and 'large' schools.

To avoid very large weight adjustment factors, which may lead to variance increases, weighting classes combined the top two sampling strata in terms of racial/ethnic minority concentrations. . These weighting cells were created for computing non-response adjustments only – the collapsed strata not kept on the analytic file. Specifically, weighting cells combined the following pairs of strata: BU4 and BU3; BR3 and BR4; HU3 and HU4; and HR3 and

HR4. School response rates by weighting class, and the resulting non-response adjustment factors, are detailed in Exhibit 4-1. Note that the weighting classes are defined using collapsed sampling strata.

4.4 Weight Trimming

Extreme variation in sampling weights can cause inflated sampling variances, and offset the precision gained from a well-designed sampling plan. One strategy to compensate for this is to trim extreme weights and distribute the trimmed weight among the untrimmed weights. The method we used[6] is based on a similar procedure employed for the National Assessment of Educational Progress (NAEP).

The trimming is an iterative procedure. During each iteration, an optimal weight (W_o)[7], is calculated from the sum of the squared weights in the sample. Each weight W_i is then marked and trimmed if it exceeds that optimal weight. The trimmed weight is summed within grade and spread out proportionally over the unmarked cases in the grade. This process is repeated for 20 iterations or until no weight is being trimmed.

[6] Potter, F. (1988). Survey of Procedures to Control Extreme Sampling Weights. *American Statistical Association 1988 Proceedings: Survey Research Methods Section*, pp. 225–230.

[7] In the following discussion, the subscripts are used to indicate the iterative process used in the trimming algorithm. To avoid overly cumbersome notation, we have omitted the subscripts indexing the sampling stages. W, the initial weight, is taken as the non-response adjusted sampling weight described in the preceding section. The subscripts *k* and *n* represent the number of iterations and the number of cases/weights respectively.

Exhibit 4-1: Double and Large School Non-Response

School Level	Stratum (Non-Response)	Sampled Schools	Responding Schools	Percent Responding	Non-Response Adjustment
HS	BR1	13	11	84.62%	1.2
HS	BR2	7	7	100.0%	1.0
HS	BR3 and BR4	4	4	100.0%	1.0
HS	BU1	12	11	91.67%	1.1
HS	BU2	7	6	85.71%	1.0
HS	BU3 and BU4	5	5	100.0%	1.0
HS	HR1	14	10	71.43%	1.6
HS	HR2	4	4	100.0%	1.0
HS	HR3 and HR4	5	2	40.00%	2.3
HS	HU1	10	7	70.00%	1.3
HS	HU2	8	5	62.50%	1.7
HS	HU3 and HU4	13	7	53.85%	1.7
HS	Total	102	79	77.45%	.
MS	BR1	15	12	80.00%	1.2
MS	BR2	8	8	100.0%	1.0
MS	BR3 and BR4	5	5	100.0%	1.0
MS	BU1	13	10	76.92%	1.9
MS	BU2	7	6	85.71%	1.1
MS	BU3 and BU4	5	5	100.0%	1.0
MS	HR1	15	14	93.33%	1.0
MS	HR2	4	3	75.00%	1.3
MS	HR3 and HR4	8	4	50.00%	2.4
MS	HU1	13	11	84.62%	1.2
MS	HU2	11	6	54.55%	1.8
MS	HU3 and HU4	12	8	66.67%	1.4
MS	Total	116	92	79.31%	.
	Gross Total	218	171	78.44%	.

W_{ok} is determined by the following:

$$W_{ok} = \left(c \sum_{k=1}^{n} \frac{w_k^2}{n} \right)^{\frac{1}{2}}$$

The constant, 'c', is arbitrary. Setting it to a low level will generate high levels of trimming, while increasing it will reduce the level of trimming. For the current study, 'c' has been set so that approximately 5% of the weight will be trimmed in the first iteration of the trimming algorithm.

The results of the first iteration of the trimming operation are summarized in Exhibit 4-2.
Let W_{ik} and W_{ok} be the weight for the *i*th case and the optimum weight for the *k*th iteration, respectively, and define t_{ik} as 1 if W_{ik} is greater than or equal to W_{ok}, and zero otherwise.

Then the trimmed weight for the *k + 1* iteration is defined as follows:

$$W_{ik+1} = \begin{cases} W_{ok} & \text{if } W_{ik} \geq W_{ok} \\ \dfrac{\sum_{i=1}^{n} W_{ik}\left(1 - \dfrac{t_{ik} \times W_{ok}}{W_{ik}}\right)}{\sum_{i=1}^{n} W_{ik}(1 - t_{ik})} & \text{if } W_{ik} < W_{ok} \end{cases}$$

4.5 Post-Stratification to National Student Population Estimates

To obtain accurate counts of high school students in schools considered eligible for the NYTS by sex, gender, and race/ethnicity for use in post-stratification, we turned to two school universe surveys conducted by the National Center for Education Statistics (NCES). Raw school level data files were downloaded and processed to mirror eligibility requirements imposed on the sampling frame.

National estimates of racial/ethnic percentages were obtained from the two sources: 1) Private schools enrollments by grade and five racial/ethnic groups were obtained from the Private School Universe Survey (PSS); and 2) public school enrollments by grade, sex, and five racial/ethnic categories were obtained from the Common Core of Data (CCD), both produced by the National Center for Education Statistics (NCES) (Appendix C). These databases were combined to produce the enrollments for all schools, and to develop population percentages to use as controls in the post-stratification step.

Specifically, population control totals for public school enrollments were taken from the most recent NCES Common Core of Data (CCD) Public Elementary/Secondary School Universe Survey (2010–11).[8] Records for special education, vocational, and other/alternative schools were deleted prior to computing control totals. Control totals for private school enrollments were taken from the NCES Private School Universe Survey (PSS), School Year 2009-10 (most recent PSS data); this file was also restricted to "regular" schools.

[8] Common Core of Data, National Center for Education Statistics http://nces.ed.gov/ccd/. School Year 2010–11.

Exhibit 4-2: Results of First Trimming Iteration

Trimming Class	Number Cases	Trimming Factor	Total Weight	Percent Trimmed	CV After Trimming	CV Before Trimming	Design Effect After Trimming	Design Effect Before Trimming
NYTSBR106	295	3.5	447481.07	4.93905	41.507	57.171	1.17170	1.32574
NYTSBR107	305	1.8	453640.52	4.86141	38.638	48.174	1.14880	1.23131
NYTSBR108	297	1.9	422562.50	4.62490	36.189	47.362	1.13052	1.22356
NYTSBR109	322	3.4	528243.82	4.95334	48.550	64.697	1.23498	1.41727
NYTSBR110	296	2.5	447149.67	4.90142	35.104	51.049	1.12281	1.25971
NYTSBR111	311	2.4	402594.35	4.92091	48.270	57.769	1.23225	1.33265
NYTSBR112	243	2.2	345891.00	4.49907	41.993	51.367	1.17561	1.26277
NYTSBR206	287	9.1	378874.68	4.92259	153.957	165.999	3.36203	3.74596
NYTSBR207	274	9.8	339888.80	4.79306	138.979	157.527	2.92446	3.47242
NYTSBR208	271	6.6	294789.27	4.97879	118.854	130.306	2.40742	2.69170
NYTSBR209	231	2.2	312006.68	4.59582	39.880	49.591	1.15835	1.24486
NYTSBR210	263	1.9	276665.22	4.52269	36.264	44.708	1.13101	1.19912
NYTSBR211	214	2.4	272512.01	4.37229	39.006	49.338	1.15143	1.24228
NYTSBR212	257	3.1	257677.97	4.84595	45.128	58.752	1.20286	1.34384
NYTSBR306	132	1.7	88362.57	4.95680	45.977	52.224	1.20978	1.27067
NYTSBR307	128	1.2	94662.04	4.98980	24.328	29.192	1.05872	1.08455
NYTSBR308	137	1.3	83312.73	4.47106	27.771	33.702	1.07656	1.11276
NYTSBR309	120	1.7	156587.04	4.23676	38.559	44.200	1.14744	1.19374
NYTSBR310	140	1.4	145487.41	3.87328	29.038	33.650	1.08372	1.11242
NYTSBR311	69	1.0	122242.07	3.93577	5.115	9.929	1.00258	1.00971
NYTSBR312	105	3.0	117990.10	4.94038	44.826	57.691	1.19903	1.32965
NYTSBR406	33	1.0	18426.57	2.06997	0.094	4.300	1.00000	1.00179
NYTSBR407	32	1.6	20485.40	3.35425	28.568	35.507	1.07906	1.12213
NYTSBR408	46	1.1	20691.28	3.94160	5.369	13.369	1.00282	1.01749
NYTSBR409	41	1.1	112062.68	2.96812	5.197	11.223	1.00263	1.01229
NYTSBR410	44	1.0	107873.42	4.48909	0.427	9.518	1.00002	1.00885
NYTSBR411	31	1.4	100542.22	4.12915	16.535	25.308	1.02646	1.06198
NYTSBR412	41	1.4	72788.38	3.34374	18.803	25.674	1.03449	1.06431
NYTSBU106	277	8.1	465586.36	4.84087	94.116	112.556	1.88259	2.26231
NYTSBU107	305	7.5	609478.63	4.87309	81.793	100.016	1.66681	1.99704
NYTSBU108	304	7.0	610790.88	4.99476	83.509	101.324	1.69509	2.02327
NYTSBU109	305	2.7	388975.39	4.70123	39.987	51.766	1.15937	1.26710
NYTSBU110	303	1.8	430392.50	4.61179	33.972	43.592	1.11503	1.18940

Trimming Class	Number Cases	Trimming Factor	Total Weight	Percent Trimmed	CV After Trimming	CV Before Trimming	Design Effect After Trimming	Design Effect Before Trimming
NYTSBU111	333	3.5	433237.70	4.89635	33.350	54.257	1.11089	1.29350
NYTSBU112	321	1.9	407330.23	4.75893	32.080	45.150	1.10259	1.20321
NYTSBU206	180	1.9	170455.08	4.89767	51.744	57.487	1.26626	1.32863
NYTSBU207	219	1.7	207088.66	4.40678	30.287	38.237	1.09131	1.14554
NYTSBU208	195	2.0	205969.89	4.99840	31.083	42.732	1.09612	1.18167
NYTSBU209	239	2.5	293982.64	4.71863	41.988	54.272	1.17556	1.29331
NYTSBU210	217	3.1	326680.47	4.85937	57.218	67.879	1.32589	1.45863
NYTSBU211	198	3.9	280481.42	4.80823	71.534	82.883	1.50912	1.68349
NYTSBU212	210	3.3	299539.66	4.82555	66.381	77.745	1.43855	1.60155
NYTSBU306	111	0.9	96389.19	4.96455	0.000	5.965	1.00000	1.00353
NYTSBU307	120	1.4	99598.43	4.69482	16.361	27.572	1.02654	1.07539
NYTSBU308	125	1.1	99232.79	4.19434	10.536	18.581	1.01101	1.03425
NYTSBU309	62	3.0	119100.17	4.82684	63.050	74.651	1.39112	1.54829
NYTSBU310	108	1.2	117458.24	4.16849	18.282	23.697	1.03311	1.05564
NYTSBU311	104	2.3	112990.29	4.65428	27.709	40.358	1.07604	1.16131
NYTSBU312	101	1.3	102989.43	4.37938	11.972	20.868	1.01419	1.04312
NYTSBU406	110	3.5	114963.28	4.60920	55.116	67.557	1.30102	1.45224
NYTSBU407	107	3.7	106666.83	4.69011	76.352	88.168	1.57751	1.77009
NYTSBU408	113	3.7	110932.61	4.86101	77.865	89.700	1.60093	1.79749
NYTSBU409	124	4.3	284838.97	4.99812	74.810	86.568	1.55515	1.74335
NYTSBU410	118	3.0	197496.79	4.68550	61.128	70.238	1.37049	1.48916
NYTSBU411	114	6.0	188641.82	4.93066	65.738	83.170	1.42836	1.68567
NYTSBU412	96	1.8	185081.07	4.22843	38.508	46.505	1.14674	1.21402
NYTSHR106	350	11.5	542658.34	4.99023	80.358	106.357	1.64389	2.12795
NYTSHR107	372	6.5	778509.43	4.90948	105.553	119.292	2.11116	2.41924
NYTSHR108	407	6.7	810574.50	4.98145	103.863	117.515	2.07610	2.37758
NYTSHR109	296	4.7	860581.87	4.97057	67.407	81.178	1.45284	1.65675
NYTSHR110	244	4.0	777953.46	4.74869	64.263	76.029	1.41128	1.57568
NYTSHR111	286	4.7	773182.96	4.83612	79.961	92.641	1.63713	1.85524
NYTSHR112	271	6.3	740195.62	4.82254	91.815	105.606	1.83990	2.11114
NYTSHR206	81	1.4	160454.86	3.83425	37.585	41.628	1.13952	1.17115
NYTSHR207	74	2.6	152035.78	4.89045	59.175	68.528	1.34544	1.46326
NYTSHR208	86	1.5	153657.36	3.98703	31.267	37.388	1.09662	1.13816
NYTSHR209	109	7.3	177196.54	4.89985	84.469	101.410	1.70696	2.01896

Trimming Class	Number Cases	Trimming Factor	Total Weight	Percent Trimmed	CV After Trimming	CV Before Trimming	Design Effect After Trimming	Design Effect Before Trimming
NYTSHR210	117	2.6	153788.71	4.71771	46.718	56.336	1.21640	1.31467
NYTSHR211	114	4.6	151201.08	4.95607	54.959	70.992	1.29940	1.49957
NYTSHR212	91	2.2	162068.80	4.77002	36.518	47.152	1.13189	1.21988
NYTSHR306	67	2.0	114494.63	4.45946	71.805	75.886	1.50791	1.56727
NYTSHR307	65	1.1	143613.91	4.73569	9.829	18.776	1.00951	1.03471
NYTSHR308	58	2.5	141203.86	4.88242	25.555	41.124	1.06418	1.16620
NYTSHR309	75	1.2	179024.22	4.91809	29.999	33.784	1.08880	1.11261
NYTSHR310	62	1.2	168282.85	3.22903	25.134	27.615	1.06215	1.07503
NYTSHR311	61	1.4	163936.78	3.70246	21.687	28.062	1.04626	1.07746
NYTSHR312	66	1.7	132079.97	4.40938	29.908	39.153	1.08809	1.15097
NYTSHU106	291	3.2	389447.17	4.92335	77.355	86.826	1.59632	1.75128
NYTSHU107	303	2.4	387874.41	4.41909	46.640	56.400	1.21682	1.31704
NYTSHU108	315	2.7	419695.37	4.98435	56.645	66.569	1.31984	1.44173
NYTSHU109	283	4.1	554990.72	4.99516	52.804	67.743	1.27784	1.45729
NYTSHU110	252	9.9	556908.22	4.95873	86.303	107.732	1.74187	2.15601
NYTSHU111	261	3.1	535690.01	4.83888	58.210	68.625	1.33755	1.46913
NYTSHU112	328	5.7	518041.03	4.90861	82.821	97.500	1.68384	1.94773
NYTSHU206	165	3.7	306924.04	4.94595	61.920	74.984	1.38109	1.55886
NYTSHU207	160	2.9	323626.97	4.49575	62.330	71.378	1.38608	1.50630
NYTSHU208	191	3.5	343202.36	4.73265	55.219	67.103	1.30332	1.44793
NYTSHU209	213	3.5	286535.26	4.89854	48.189	64.335	1.23112	1.41196
NYTSHU210	163	2.1	269072.69	4.71359	46.793	54.297	1.21761	1.29301
NYTSHU211	147	2.0	234489.36	4.88992	47.611	54.423	1.22513	1.29417
NYTSHU212	144	1.7	235247.61	4.07867	31.409	39.963	1.09797	1.15860
NYTSHU306	169	1.9	382498.05	4.49130	40.847	49.457	1.16586	1.24315
NYTSHU307	185	2.5	353551.24	4.50185	45.792	55.555	1.20856	1.30697
NYTSHU308	157	1.3	353285.02	4.79226	28.530	36.073	1.08088	1.12930
NYTSHU309	162	3.5	478547.10	4.99012	50.863	66.126	1.25711	1.43457
NYTSHU310	176	3.1	435061.08	4.87250	47.842	61.779	1.22759	1.37949
NYTSHU311	184	2.7	429172.73	4.92075	52.308	63.241	1.27212	1.39776
NYTSHU312	138	1.5	431928.90	4.66080	25.708	33.643	1.06561	1.11237
NYTSHU406	81	2.9	91503.64	4.72086	50.227	60.509	1.24916	1.36161
NYTSHU407	69	1.7	170202.63	4.28631	36.034	42.473	1.12797	1.17778
NYTSHU408	95	1.5	158107.10	4.71080	30.603	40.818	1.09267	1.16486

Trimming Class	Number Cases	Trimming Factor	Total Weight	Percent Trimmed	CV After Trimming	CV Before Trimming	Design Effect After Trimming	Design Effect Before Trimming
NYTSHU409	56	1.5	249870.27	3.96146	38.942	42.715	1.14894	1.17920
NYTSHU410	106	1.1	160619.39	4.89585	8.379	20.422	1.00695	1.04131
NYTSHU411	93	4.0	221730.10	4.93640	86.297	95.607	1.73670	1.90425
NYTSHU412	83	2.6	223764.76	4.94607	67.326	74.382	1.44781	1.54660

Exhibit 4-3 gives counts of schools and students by grade for public and non-public schools based on both the raw file and the resulting set of eligible schools. The latter set of student totals was used as control totals for the post-stratification adjustments described next.

Given a national estimate of student counts R_a and a weighted response total of P_a for post-stratification adjustment class "a", the post-stratification factor was the ratio of R_a to P_a. Exhibit 4-4 gives the population control totals used in post-stratification adjustments alongside the sum of the weights in each post-stratum cell, as well as the adjustment factors calculated as the ratio of these two totals. More specifically, the adjustments in column G in this exhibit are computed as E/F, control total for the cell divided by the weight sum in the cell.

Post-stratification adjustment cells were defined by school type, grade, sex and race/ethnicity. Because estimates are typically reported separately for middle schools and high schools, the weights were adjusted separately for both subpopulations. Within the Private school adjustment cells, sex was omitted, as enrollments by gender were not available for these schools. This is indicated by a "Combined" sex in Exhibit 4-4. Also within private schools, the racial/ethnic groups were collapsed to preclude small numbers of students in the adjustment classes. For the public schools, five racial/ethnic categories were used: non-Hispanic white; non-Hispanic black; Hispanic; non-Hispanic Asian/ Pacific Islander; and non-Hispanic Native American/Alaska Native (Appendix C).

Following post-stratification, the adjusted weights sum to the control population totals.

4.6 Analysis Strata and Variance Estimation

Sampling variances for complex sampling designs can be estimated using one of several methods, including linearized estimators and balanced repeated replication. These methods are implemented with a variety of software packages, including SUDAAN, WesVar, Stata and SAS using special sample survey procedures (such as Proc SurveyMeans in SAS Version 9). The 2013 NYTS data were prepared for estimating variances using the method of linearized estimators.

Because estimates are typically reported separately for middle schools and high schools, analysis strata need to ensure that each stratum has two or more PSUs for variance estimation within each subpopulation (middle schools and high schools separately).

Exhibit 4-3: Counts by Schools and Students by Type and Eligibility Status

		Raw (all)		Eligible	
Type	**Grade**	**Schools**	**Students**	**Schools**	**Students**
Public	6	3,583	26,343	35,066	3,692,775
	7	4,054	31,941	27,558	3,683,938
	8	4,409	40,873	27,612	3,654,784
	9	6,412	122,896	20,680	3,907,060
	10	6,838	138,885	19,457	3,679,427
	11	6,923	160,170	19,167	3,392,630
	12	6,828	216,708	18,988	3,259,344
	Total	39,047	737,816	168,528	25,269,958
Private	6	2,178	20,049	15,355	306,460
	7	2,054	19,233	14,553	305,170
	8	2,125	20,517	14,334	305,489
	9	1,797	22,450	6,922	281,606
	10	1,745	23,017	6,572	279,592
	11	1,678	22,603	6,281	275,027
	12	1,599	22,462	6,167	271,152
	Total	13,176	150,331	70,184	2,024,496
Total	6	5,761	46,392	50,421	3,999,235
	7	6,108	51,174	42,111	3,989,108
	8	6,534	61,390	41,946	3,960,273
	9	8,209	145,346	27,602	4,188,666
	10	8,583	161,902	26,029	3,959,019
	11	8,601	182,773	25,448	3,667,657
	12	8,427	239,170	25,155	3,530,496
	Total	52,223	888,147	238,712	27,294,454

Exhibit 4-4: Post-Stratification Adjustments

School Type	Grade	Race/Hispanic Origin	Gender	(E) Control Total	(F) Weighted Estimate	No. of Cases	(G) Post-Stratification Adjustment
Private	6	Combined	Combined	296,239	194,662	127	1.52181
Private	7	Combined	Combined	294,840	243,240	184	1.21214
Private	8	Combined	Combined	295,191	240,776	189	1.22600
Private	9	Combined	Combined	272,669	442,066	304	0.61681
Private	10	Combined	Combined	270,774	476,136	303	0.56869
Private	11	Combined	Combined	266,308	482,118	330	0.55237
Private	12	Combined	Combined	262,611	465,957	265	0.56360
Public	6	Non-Hispanic Asian and Pacific Islander	Female	83,993	108,844	77	0.77169
Public	6	Non-Hispanic Black	Female	293,043	297,818	219	0.98396
Public	6	Hispanic	Female	437,910	409,250	263	1.07003
Public	6	Non-Hispanic Native American	Female	22,815	44,383	37	0.51404
Public	6	Non-Hispanic White	Female	961,220	915,914	629	1.04946
Public	6	Non-Hispanic Asian and Pacific Islander	Male	86,306	117,396	81	0.73517
Public	6	Non-Hispanic Black	Male	305,483	284,274	221	1.07461
Public	6	Hispanic	Male	456,836	409,335	296	1.11604
Public	6	Non-Hispanic Native American	Male	23,708	77,014	53	0.30784
Public	6	Non-Hispanic White	Male	1,021,460	909,629	626	1.12294
Public	7	Non-Hispanic Asian and Pacific Islander	Female	82,961	134,238	90	0.61801
Public	7	Non-Hispanic Black	Female	292,644	307,946	237	0.95031
Public	7	Hispanic	Female	430,449	458,216	288	0.93940
Public	7	Non-Hispanic Native American	Female	22,838	98,680	58	0.23144
Public	7	Non-Hispanic White	Female	968,116	925,957	610	1.04553
Public	7	Non-Hispanic Asian and Pacific Islander	Male	86,022	107,616	58	0.79934
Public	7	Non-Hispanic Black	Male	303,320	407,354	264	0.74461
Public	7	Hispanic	Male	449,797	477,449	288	0.94208
Public	7	Non-Hispanic Native American	Male	23,776	85,157	46	0.27920
Public	7	Non-Hispanic White	Male	1,024,017	995,070	595	1.02909
Public	8	Non-Hispanic Asian and Pacific Islander	Female	85,580	75,987	64	1.12625
Public	8	Non-Hispanic Black	Female	288,628	351,500	262	0.82113
Public	8	Hispanic	Female	422,768	525,017	334	0.80525
Public	8	Non-Hispanic Native American	Female	22,312	53,138	36	0.41990
Public	8	Non-Hispanic White	Female	968,394	950,659	604	1.01866
Public	8	Non-Hispanic Asian and Pacific Islander	Male	89,334	160,988	87	0.55491
Public	8	Non-Hispanic Black	Male	295,815	316,285	246	0.93528
Public	8	Hispanic	Male	437,034	488,241	300	0.89512
Public	8	Non-Hispanic Native American	Male	22,800	60,940	40	0.37413
Public	8	Non-Hispanic White	Male	1,022,119	1,004,476	635	1.01756
Public	9	Non-Hispanic Asian and Pacific Islander	Female	87,415	75,991	39	1.15034
Public	9	Non-Hispanic Black	Female	321,224	348,610	225	0.92144
Public	9	Hispanic	Female	441,642	671,598	327	0.65760
Public	9	Non-Hispanic Native American	Female	23,819	41,497	27	0.57399
Public	9	Non-Hispanic White	Female	1,015,797	1,177,688	576	0.86253
Public	9	Non-Hispanic Asian and Pacific Islander	Male	91,952	108,901	51	0.84436
Public	9	Non-Hispanic Black	Male	344,666	375,947	245	0.91679

School Type	Grade	Race/Hispanic Origin	Gender	(E) Control Total	(F) Weighted Estimate	No. of Cases	(G) Post-Stratification Adjustment
Public	9	Hispanic	Male	472,389	679,719	320	0.69498
Public	9	Non-Hispanic Native American	Male	25,536	94,239	45	0.27097
Public	9	Non-Hispanic White	Male	1,082,621	966,286	479	1.12039
Public	10	Non-Hispanic Asian and Pacific Islander	Female	87,245	111,562	73	0.78203
Public	10	Non-Hispanic Black	Female	298,317	313,559	240	0.95139
Public	10	Hispanic	Female	399,950	605,250	323	0.66080
Public	10	Non-Hispanic Native American	Female	22,167	63,699	34	0.34800
Public	10	Non-Hispanic White	Female	996,755	1,008,757	536	0.98810
Public	10	Non-Hispanic Asian and Pacific Islander	Male	91,740	80,617	48	1.13796
Public	10	Non-Hispanic Black	Male	302,961	325,913	218	0.92958
Public	10	Hispanic	Male	414,302	512,161	265	0.80893
Public	10	Non-Hispanic Native American	Male	23,140	60,152	39	0.38468
Public	10	Non-Hispanic White	Male	1,042,853	1,013,084	530	1.02938
Public	11	Non-Hispanic Asian and Pacific Islander	Female	83,060	99,555	71	0.83432
Public	11	Non-Hispanic Black	Female	270,278	351,841	253	0.76818
Public	11	Hispanic	Female	351,600	544,487	271	0.64575
Public	11	Non-Hispanic Native American	Female	20,462	20,532	17	0.99658
Public	11	Non-Hispanic White	Female	955,058	958,612	509	0.99629
Public	11	Non-Hispanic Asian and Pacific Islander	Male	87,816	100,906	53	0.87028
Public	11	Non-Hispanic Black	Male	260,589	304,663	222	0.85533
Public	11	Hispanic	Male	354,460	598,732	300	0.59202
Public	11	Non-Hispanic Native American	Male	20,769	37,656	21	0.55155
Public	11	Non-Hispanic White	Male	988,539	923,544	473	1.07038
Public	12	Non-Hispanic Asian and Pacific Islander	Female	80,949	86,000	57	0.94126
Public	12	Non-Hispanic Black	Female	259,801	290,926	214	0.89301
Public	12	Hispanic	Female	324,717	458,577	231	0.70810
Public	12	Non-Hispanic Native American	Female	19,339	21,221	17	0.91132
Public	12	Non-Hispanic White	Female	941,752	1,039,769	592	0.90573
Public	12	Non-Hispanic Asian and Pacific Islander	Male	84,706	109,029	59	0.77691
Public	12	Non-Hispanic Black	Male	240,128	274,341	198	0.87529
Public	12	Hispanic	Male	318,489	503,767	305	0.63221
Public	12	Non-Hispanic Native American	Male	19,505	45,957	27	0.42442
Public	12	Non-Hispanic White	Male	969,959	937,071	530	1.03510

As noted earlier, the allocation ensured that every stratum had at least two PSUs in the sample. This does not necessarily translate to two PSUs with valid student data for each school level (middle schools and high schools) in every stratum due to the effects of non-response at the school level. In particular, non-participating schools may lead to PSUs without student data for a given school level. All strata/level combinations but three had at least two PSUs. Stratum BR3 was combined with BR4 at both the high school and middle school levels, and stratum HR3 was combined with stratum HR4 at the middle school level.

Exhibit 4-5 displays the correspondence between the sampling strata and the analysis strata, which are represented by two variables on the analysis file. Thus, the analytic file contains 14 values in the analysis strata variable and 16 values in the design strata variable.

In addition, stratum codes used in sampling and weighting were converted to a numeric "analysis stratum" code for use in SUDAAN, which requires numeric variables.

Exhibit 4-5: Sampling and Analysis Stratum Coding Schemes

High Black		High Hispanic	
Sampling Stratum Code	**Analysis Stratum Code**	**Sampling Stratum Code**	**Analysis Stratum Code**
BR1	101	HR1	201
BR2	102	HR2	202
BR3	103	HR3	203
BR4	103	HR4	203
BU1	111	HU1	211
BU2	112	HU2	212
BU3	113	HU3	213
BU4	114	HU4	214

Exhibit 4-6 presents selected key survey estimates and their sampling errors estimated using Taylor series linearization methods which are usually employed by NYTS data analysts, and implemented with SUDAAN or similar software (e.g., SAS Proc SurveyMeans). Specifically, the exhibit presents the percent and standard error of the percent for estimates of current use of selected tobacco products separately for high schools (4-7a) and middle schools (4-7b).

Exhibit 4-6a: Current Use Estimates for Selected Tobacco Products for High School Students

Current Use

Product	Overall	Female	Male	Non-Hispanic White	Non-Hispanic Black	Hispanic
Cigarettes	12.7% (.7)	11.2% (.8)	14.1% (1.0)	14.0% (1.0)	9.0% (1.1)	13.4% (1.3)
Cigar	11.9% (.6)	8.3% (.7)	15.4% (.8)	11.4% (.7)	14.7% (1.3)	12.1% (1.0)
Smokeless Tobacco	5.7% (.7)	1.7% (.3)	9.6% (1.1)	7.5% (1.0)	2.4% (.6)	4.0% (.5)
Hookah	5.2% (.4)	4.8% (.4)	5.6% (.5)	5.3% (.4)	2.4% (.5)	7.1% (.7)
Electronic Cigarettes	4.5% (.4)	3.5% (.4)	5.5% (.6)	4.8% (.6)	2.7% (.5)	5.3% (.6)

Exhibit 4-6b: Current Use Estimates for Selected Tobacco Products for Middle School Students

Current Use

Product	Overall	Female	Male	Non-Hispanic White	Non-Hispanic Black	Hispanic
Cigarettes	2.9% (.3)	2.8% (.4)	3.0% (.4)	2.6% (.4)	1.7% (.4)	5.1% (.7)
Cigar	3.1% (.4)	2.9% (.5)	3.3% (.4)	2.2% (.5)	4.5% (.9)	4.7% (.6)
Smokeless Tobacco	1.4% (.3)	.8% (.2)	1.9% (.4)	1.4% (.4)	.8% (.3)	1.8% (.4)
Hookah	1.1% (.2)	1.3% (.3)	.9% (.2)	.7% (.2)	.9% (.3)	2.4% (.5)
Electronic Cigarettes	1.1% (.2)	.9% (.2)	1.4% (.2)	.9% (.2)	1.4% (.4)	1.8% (.4)

Example specifications for applying the method with both SAS and SUDAAN are provided below for computing prevalence.

Example: Estimates, Current Use by School Type

SAS:

```
Proc Surveymeans Data=nyts2013 mean;
Var ccigt_r ccigar_r cslt_r chookah_r celcigt_r;
Class ccigt_r ccigar_r cslt_r chookah_r celcigt_r;
Stratum stratum2;
Cluster psu2;
Weight wt;
Domain Schooltype  Schooltype*Sex  Schooltype*Race_S;
Title “NYTS 2013, Estimates by School Type, by School Type and Sex Cross-Classified, and by School Type and Race/Ethnicity Cross-Classified”;
run;
```

SAS:

```
Proc Descript Data=nyts2013 Filetype= SAS Design=WR;
Var ccigt_r ccigar_r cslt_r chookah_r celcigt_r;
Catlevel 1    1      1      1      1  ;
Nest Stratum2 PSU2 / Missunit;
Weight wt;
Subgroup School  Sex   Race_S ;
Levels   2       2       3;
Tables School  School*Sex  School*Race_S;
Title “NYTS 2013, Estimates by School Type, by School Type and Gender Cross-Classified, and by School Type and Race Cross-Classified”;
Print Percent Sepercent / Style=NCHS;
run;
```

Appendix A
Questionnaire

Form Approved
OMB No.: 0920-0621
Expiration Date: 01/31/2015

National Youth Tobacco Survey (NYTS) 2013 Questionnaire

This survey is about tobacco. We would like to know about you and things you do that may affect your health. Your answers will be used for programs for young people like yourself.

DO NOT write your name on this survey. The answers you give will be kept private.

NO one will know what you write. Answer the questions based on what you really do and know.

Completing the survey is voluntary. Whether or not you answer the questions will not affect your grade in this class. Try to answer all the questions. If you do not want to answer a question, just leave it blank. There are no wrong answers.

The questions that ask about your background will only be used to describe the types of students completing this survey. The information will not be used to find out your name. No names will ever be reported.

Please read every question. Try to answer all the questions. Fill in the circles in the booklet completely. When you are finished, follow the instructions of the person giving you the survey.

Thank You Very Much For Your Help.

The first five questions ask for some background information about you

1. How old are you?
- A. 9 years old
- B. 10 years old
- C. 11 years old
- D. 12 years old
- E. 13 years old
- F. 14 years old
- G. 15 years old
- H. 16 years old
- I. 17 years old
- J. 18 years old
- K. 19 years old or older

2. What is your sex?
- A. Male
- B. Female

3. What grade are you in?
- A. 6th
- B. 7th
- C. 8th
- D. 9th
- E. 10th
- F. 11th
- G. 12th
- H. Ungraded or other grade

4. Are you Hispanic, Latino/a, or Spanish origin (One or more categories may be selected)?
- A. No, not of Hispanic, Latino, Latina,, or Spanish origin
- B. Yes, Mexican, Mexican American, Chicano or Chicana
- C. Yes, Puerto Rican
- D. Yes, Cuban
- E. Yes, Another Hispanic, Latino/a or Spanish origin

5. What race or races do you consider yourself to be? (**You can CHOOSE ONE ANSWER or MORE THAN ONE ANSWER**)
- A. American Indian or Alaska Native
- B. Asian
- C. Black or African American
- D. Native Hawaiian or Other Pacific Islander
- E. White

This section ask about if you'll try tobacco that is smoked or put in your mouth

6. At any time during the next 12 months do you think you will use any form of tobacco?
- A. Definitely yes
- B. Probably yes
- C. Probably not
- D. Definitely not

7. Do you think that you will try any form of tobacco soon?
- A. Definitely yes
- B. Probably yes
- C. Probably not
- D. Definitely not

8. If one of your best friends were to offer you any form of tobacco, would you use it?
- A. Definitely yes
- B. Probably yes
- C. Probably not
- D. Definitely not

The next five sections ask about your use of different kinds of tobacco products
The next 14 questions are about cigarettes.

9. Have you **ever tried** cigarette smoking, even one or two puffs?
- A. Yes
- B. No

10. Do you think you will smoke a cigarette in the next year?
- A. Definitely yes
- B. Probably yes
- C. Probably not
- D. Definitely not

11. Do you think that you will try a cigarette soon?
- A. Definitely yes
- B. Probably yes
- C. Probably not
- D. Definitely not

12. If one of your best friends were to offer you a cigarette, would you smoke it?
- A. Definitely yes
- B. Probably yes
- C. Probably not
- D. Definitely not

13. How old were you when you **first tried** cigarette smoking, even one or two puffs?
- A. I have never smoked cigarettes, not even one or two puffs
- B. 8 years old or younger
- C. 9 years old
- D. 10 years old
- E. 11 years old
- F. 12 years old
- G. 13 years old
- H. 14 years old
- I. 15 years old
- J. 16 years old
- K. 17 years old
- L. 18 years old
- M. 19 years old or older

14. About how many cigarettes have you smoked in your **entire life**?

A. I have never smoked cigarettes, not even one or two puffs
B. 1 or more puffs but never a whole cigarette
C. 1 cigarette
D. 2 to 5 cigarettes
E. 6 to 15 cigarettes (about 1/2 a pack total)
F. 16 to 25 cigarettes (about 1 pack total)
G. 26 to 99 cigarettes (more than 1 pack, but less than 5 packs)
H. 100 or more cigarettes (5 or more packs)

15. During the **past 30 days**, on how many days did you smoke cigarettes?

A. 0 days
B. 1 or 2 days
C. 3 to 5 days
D. 6 to 9 days
E. 10 to 19 days
F. 20 to 29 days
G. All 30 days

16. During the past 30 days, **on the days you smoked**, about how many cigarettes did you smoke per day?

A. I did not smoke cigarettes during the past 30 days
B. Less than 1 cigarette per day
C. 1 cigarette per day
D. 2 to 5 cigarettes per day
E. 6 to 10 cigarettes per day
F. 11 to 20 cigarettes per day
G. More than 20 cigarettes per day

17. When was the last time you smoked a cigarette, even one or two puffs? (**PLEASE CHOOSE THE FIRST ANSWER THAT FITS**)

A. I have never smoked cigarettes, not even one or two puffs
B. Earlier today
C. Not today but sometime during the past 7 days
D. Not during the past 7 days but sometime during the past 30 days
E. Not during the past 30 days but sometime during the past 6 months
F. Not during the past 6 months but sometime during the past year
G. 1 to 4 years ago
H. 5 or more years ago

18. During the past 30 days, what brand of cigarettes did you usually smoke? (**CHOOSE ONLY ONE ANSWER**)

A. I did not smoke cigarettes during the past 30 days
B. I did not smoke a usual brand
C. American Spirit
D. Camel
E. GPC, Basic, or Doral
F. Kool
G. Lucky Strike
H. Marlboro
I. Newport
J. Parliament
K. Virginia Slims
L. Some other brand not listed here
M. Not sure

19. Menthol cigarettes are cigarettes that taste like mint. During the past 30 days, were the cigarettes that you usually smoked menthol?

A. I did not smoke cigarettes during the past 30 days
B. Yes
C. No
D. Not sure

20. During the past 30 days, how did you get your own cigarettes? (**You can CHOOSE ONE ANSWER or MORE THAN ONE ANSWER**)

A. I did not get cigarettes during the past 30 days
B. I bought a pack of cigarettes myself
C. I had someone else buy a pack of cigarettes for me
D. I asked someone to give me a cigarette
E. Someone offered me a cigarette
F. I bought cigarettes from another person
G. I took cigarettes from a store or another person
H. I got cigarettes some other way

21. During the **past 30 days**, where did you **buy** your own cigarettes? (**You can CHOOSE ONE ANSWER or MORE THAN ONE ANSWER**)

A. I did not buy cigarettes during the past 30 days
B. A gas station or convenience store
C. A grocery store
D. A drugstore
E. A vending machine
F. Over the Internet
G. Through the mail
H. Some other place not listed here

22. During the **past 30 days**, did anyone **refuse** to sell you cigarettes because of your age?

A. I did not try to buy cigarettes during the past 30 days
B. Yes
C. No

The next five questions are about smoking cigars.

23. Have you **ever tried** smoking cigars, cigarillos, or little cigars, such as Black and Milds, Swisher Sweets, Dutch Masters, White Owl, or Phillies Blunts, even one or two puffs?

A. Yes
B. No

24. How old were you when you **first tried** smoking a cigar, cigarillo, or little cigar, even one or two puffs?

A. I have never smoked cigars, cigarillos, or little cigars, not even one or two puffs
B. 8 years old or younger
C. 9 years old
D. 10 years old
E. 11 years old
F. 12 years old
G. 13 years old
H. 14 years old
I. 15 years old
J. 16 years old
K. 17 years old
L. 18 years old
M. 19 years old or older

25. During the **past 30 days**, on how many days did you smoke cigars, cigarillos, or little cigars?

A. 0 days
B. 1 or 2 days
C. 3 to 5 days
D. 6 to 9 days
E. 10 to 19 days
F. 20 to 29 days
G. All 30 days

26. During the **past 30 days**, how did you get your own cigars, cigarillos, or little cigars? (**You can CHOOSE ONE ANSWER or MORE THAN ONE ANSWER**)

A. I did not get cigars, cigarillos, or little cigars during the past 30 days
B. I bought them myself
C. I had someone else buy them for me
D. I asked someone to give me one
E. Someone offered it to me
F. I bought them from another person
G. I took them from a store or another person
H. I got them some other way

27. During the **past 30 days**, where did you **buy** your own cigars, cigarillos, or little cigars? (**You can CHOOSE ONE ANSWER or MORE THAN ONE ANSWER**)

A. I did not buy cigars, cigarillos, or little cigars during the past 30 days
B. A gas station or convenience store
C. A grocery store
D. A drugstore
E. A vending machine
F. Over the Internet
G. Through the mail
H. Some other place not listed here

The next five questions are about using smokeless tobacco. Please do not think about using snus when you answer these questions.

28. Have you **ever used** chewing tobacco, snuff, or dip, **such as** Redman, Levi Garrett, Beechnut, Skoal, Skoal Bandits, or Copenhagen, even just a small amount?

A. Yes
B. No

29. How old were you when you **used** chewing tobaccos, snuff, or dip for the first time?

A. I have never used chewing tobacco, snuff, or dip
B. 8 years old or younger
C. 9 years old
D. 10 years old
E. 11 years old
F. 12 years old
G. 13 years old
H. 14 years old
I. 15 years old
J. 16 years old
K. 17 years old
L. 18 years old
M. 19 years old or older

30. During the **past 30 days**, on how many days did you use chewing tobacco, snuff, or dip?

A. 0 days
B. 1 or 2 days
C. 3 to 5 days
D. 6 to 9 days
E. 10 to 19 days
F. 20 to 29 days
G. All 30 days

31. During the **past 30 days**, how did you get your own chewing tobacco, snuff, or dip? (**You can CHOOSE ONE ANSWER or MORE THAN ONE ANSWER**)

A. I did not get chewing tobacco, snuff, or dip during the past 30 days
B. I bought it myself
C. I had someone else buy it for me
D. I asked someone to give me some
E. Someone offered it to me
F. I bought it from another person
G. I took it from a store or another person
H. I got it some other way

32. During the **past 30 days**, where did you **buy** your own chewing tobacco, snuff, or dip? (**You can CHOOSE ONE ANSWER or MORE THAN ONE ANSWER**)

A. I did not buy chewing tobacco, snuff, or dip during the past 30 days
B. A gas station or convenience store
C. A grocery store
D. A drugstore
E. A vending machine
F. Over the Internet
G. Through the mail
H. Some other place not listed here

The next two questions are about smoking tobacco in a pipe. Please do not think about smoking tobacco in a waterpipe or hookah when you answer these questions

33. Have you **ever tried** smoking tobacco in a pipe, even one or two puffs?

A. Yes
B. No

34. During the **past 30 days**, on how many days did you smoke tobacco in a pipe?

A. 0 days
B. 1 or 2 days
C. 3 to 5 days
D. 6 to 9 days
E. 10 to 19 days
F. 20 to 29 days
G. All 30 days

The next three questions are about other forms of tobacco.

35. Which of the following tobacco products have you **ever heard** of? (**You can CHOOSE ONE ANSWER or MORE THAN ONE ANSWER**)

A. Roll-your-own cigarettes
B. Flavored cigarettes, such as Camel Crush
C. Bidis (small brown cigarettes wrapped in a leaf)
D. Clove cigars (kreteks)
E. Flavored little cigars (such as mint, clove, spice, alcohol (wine, cognac), candy, fruit, chocolate, or other sweets)
F. Smoking tobacco from a hookah or a waterpipe
G. Snus, such as Camel or Marlboro Snus
H. Dissolvable tobacco products, such as Ariva, Stonewall, Camel orbs, Camel sticks, or Camel strips
I. Electronic Cigarettes or E-cigarettes, such as Ruyan or NJOY
J. Some other new tobacco products not listed here
K. I have never heard of any of the products listed above or any new tobacco product

36. Which of the following tobacco products have you **ever tried**, even just one time? (**You can CHOOSE ONE ANSWER or MORE THAN ONE ANSWER**)

A. Roll-your-own cigarettes
B. Flavored cigarettes, such as Camel Crush
C. Bidis (small brown cigarettes wrapped in a leaf)
D. Clove cigars (kreteks)
E. Flavored little cigars (such as mint, clove, spice, alcohol (wine, cognac), candy, fruit, chocolate, or other sweets)
F. Smoking tobacco from a hookah or a waterpipe
G. Snus, such as Camel or Marlboro Snus
H. Dissolvable tobacco products, such as Ariva, Stonewall, Camel orbs, Camel sticks, or Camel strips
I. Electronic Cigarettes or E-cigarettes, such as Ruyan or NJOY
J. Some other new tobacco products not listed here
K. I have never tried any of the products listed above or any new tobacco product

37. In the **past 30 days**, which of the following products have you used on **at least one day**? (**You can CHOOSE ONE ANSWER or MORE THAN ONE ANSWER**)

A. Roll-your-own cigarettes
B. Flavored cigarettes, such as Camel Crush
C. Bidis (small brown cigarettes wrapped in a leaf)
D. Clove cigars (kreteks)
E. Flavored little cigars (such as mint, clove, spice, alcohol (wine, cognac), candy, fruit, chocolate, or other sweets)
F. Smoking tobacco from a hookah or a waterpipe
G. Snus, such as Camel or Marlboro Snus
H. Dissolvable tobacco products, such as Ariva, Stonewall, Camel orbs, Camel sticks, or Camel strips
I. Electronic Cigarettes or E-cigarettes, such as Ruyan or NJOY
J. Some other new tobacco products not listed here
K. I have not used any of the products listed above or any new tobacco product in the past 30 days

The next eleven questions ask about different issues related to tobacco.

38. How easy would it be for you to get tobacco products if you wanted some?

A. Very easy
B. Somewhat easy
C. Not easy at all

39. Do you believe that tobacco companies try to get young people under 18 to use tobacco products?

A. Yes
B. No

40. When you are using the Internet, how often do you see ads or promotions for cigarettes or other tobacco products?

A. I do not use the Internet
B. Never
C. Rarely
D. Sometimes
E. Most of the time
F. Always

41. When you read newspapers or magazines, how often do you see ads or promotions for cigarettes or other tobacco products?

A. I do not read newspapers or magazines
B. Never
C. Rarely
D. Sometimes
E. Most of the time
F. Always

42. During the past 30 days, did you receive coupons from a tobacco company through… (**You can CHOOSE ONE ANSWER or MORE THAN ONE ANSWER**)

A. The mail
B. E-mail
C. The Internet
D. Social Networks (such as Facebook and Twitter)
E. A text message
F. On a cigarette pack or other tobacco product
G. I did not receive coupons from a tobacco company

43. When you go to a convenience store, supermarket, or gas station, how often do you see ads or promotions for cigarettes or other tobacco products?

A. I never go to a convenience store, supermarket, or gas station
B. Never
C. Rarely
D. Sometimes
E. Most of the time
F. Always

44. During the past 30 days, how often did you see any ads or promotions for cigarettes or other tobacco products that were outdoors on a billboard or could be seen from outside a store?

A. I did not see an ad for cigarettes or other tobacco products during the past 30 days
B. Never
C. Rarely
D. Sometimes
E. Most of the time
F. Always

45. When you watch TV or go to the movies, how often do you see actors and actresses using cigarettes or other tobacco products?

A. I do not watch TV or go to the movies
B. Never
C. Rarely
D. Sometimes
E. Most of the time
F. Always

46. What is the name of your favorite cigarette brand? (**You can CHOOSE ONE ANSWER or MORE THAN ONE ANSWER**)

A. American Spirit
B. Camel
C. GPC, Basic, or Doral
D. Kool
E. Marlboro
F. Newport
G. Some other brand not listed here
H. I don't have a favorite cigarette brand
I. Not sure

47. Have you seen or heard advertisements against tobacco with any of the following? (**You can CHOOSE ONE ANSWER or MORE THAN ONE ANSWER**)

A. A man who lost his legs from amputations (removal of body parts)
B. A woman who lost her fingers and toes from amputations (removal of body parts)
C. A man with a scar on his chest from a heart attack
D. A woman putting on a wig and putting in her teeth while getting dressed
E. A son bathing and caring for his mother on her bed because she had a stroke
F. A mom giving her son an inhaler because he has breathing problems from being around adults who smoke cigarettes
G. A man in the shower covering the hole in his neck
H. A child scratching because of chicken pox
I. Don't know/Not sure
J. I haven't seen or heard any of these advertisements

48. How soon after you wake up do you want to use a tobacco product?

A. I do not use tobacco
B. Within 5 minutes
C. From 6 to 30 minutes
D. From more than 30 minutes to 1 hour
E. After more than 1 hour but less than 24 hours
F. I rarely want to use tobacco

Some cigarette or other tobacco companies make items like sports gear, T-shirts, hats, jackets,sunglassess or other items that people can buy or receive for free.

49. During the **past 12 months**, did you buy or receive anything such as a t-shirt, hat, sunglasses, that has a tobacco brand name, logo, or picture on it?

A. Yes
B. No

50. How likely is it that you would ever use or wear something--such as a t-shirt, hat, or sunglasses --that has a tobacco brand name, logo, or picture on it?

A. Very likely
B. Somewhat likely
C. Somewhat unlikely
D. Very unlikely

The next two questions are about visits to a doctor, dentist, nurse, or other health professional.

51. Think about each time that you visited a doctor, dentist, or nurse in the past 12 months. During any of these visits were you asked if you used tobacco that is smoked or put in your mouth?

A. I did not see a doctor, dentist, or nurse during the past 12 months
B. Yes
C. No

52. During the **past 12 months**, did any doctor, dentist, or nurse give you advice not to use tobacco that is smoked or put in your mouth?

A. I did not see a doctor, dentist, or nurse during the past 12 months
B. Yes
C. No

The next six questions are about quitting tobacco products.

53. Are you seriously thinking about quitting cigarettes? (**PLEASE CHOOSE THE FIRST ANSWER THAT FITS**)

A. I do not smoke cigarettes
B. Yes, within the next 30 days
C. Yes, within the next 6 months
D. Yes, within the next 12 months
E. Yes, but not within the next 12 months
F. No, I am not thinking about quitting cigarettes

54. During the **past 12 months**, how many times have you stopped smoking cigarettes for **one day or longer** because you were trying to quit smoking cigarettes **for good**?

A. I did not smoke cigarettes during the past 12 months
B. I did not try to quit during the past 12 months
C. 1 time
D. 2 times
E. 3 to 5 times
F. 6 to 9 times
G. 10 or more times

55. When you **last tried to quit** for good, how long did you stay off cigarettes? (**PLEASE CHOOSE THE FIRST ANSWER THAT FITS**)

A. I have never smoked cigarettes
B. I have never tried to quit
C. Less than a day
D. 1 to 7 days
E. More than 7 days but less than 30 days
F. More than 30 days but less than 6 months
G. More than 6 months but less than 1 year
H. 1 year or more

56. Are you seriously thinking about quitting the use **of all tobacco products**? (**PLEASE CHOOSE THE FIRST ANSWER THAT FITS**)

A. I do not use tobacco products
B. Yes, within the next 30 days
C. Yes, within the next 6 months
D. Yes, within the year
E. Yes, but not within the year
F. No, I am not thinking about quitting the use of all tobacco products

57. During the **past 12 months**, how many times have you stopped using **all tobacco products** for **one day or longer** because you were trying to quit all tobacco products **for good**?

A. I did not use tobacco products during the past 12 months
B. I did not try to quit all tobacco products during the past 12 months
C. 1 time
D. 2 times
E. 3 to 5 times
F. 6 to 9 times
G. 10 or more times

58. In the **past 12 months**, did you do any of the following to help you quit using tobacco of any kind for good? (**You can CHOOSE ONE ANSWER or MORE THAN ONE ANSWER**)

A. I did not use tobacco of any kind during the past 12 months
B. I did not try to quit during the past 12 months
C. Attended a program in my school
D. Attended a program in the community
E. Called a telephone help line or telephone quit line
F. Used nicotine gum
G. Used nicotine patch
H. Used any medicine to help quit
I. Visited an Internet quit site
J. Got help from family or friends
K. Used another method, such as hypnosis or acupuncture
L. Tried to quit on my own or quit "cold turkey"

The next five questions ask about you being around other people's tobacco smoke.

59. During the **past 7 days**, on how many days did someone smoke tobacco products in your home while you were there?

A. 0 days
B. 1 day
C. 2 days
D. 3 days
E. 4 days
F. 5 days
G. 6 days
H. 7 days

60. During the **past 7 days**, on how many days did you ride in a vehicle were someone was smoking a tobacco product?

A. 0 days
B. 1 day
C. 2 days
D. 3 days
E. 4 days
F. 5 days
G. 6 days
H. 7 days

61. During the **past 7 days**, on how many days did you breathe the smoke from someone who was smoking a tobacco product at your school, including school buildings, school grounds, and school parking lots?

A. 0 days
B. 1 day
C. 2 days
D. 3 days
E. 4 days
F. 5 days
G. 6 days
H. 7 days

62. During the **past 7 days**, on how many days did you breathe the smoke from someone who was smoking tobacco products in the place where you work?

A. I do not have a job
B. I did not work during the past 7 days
C. 0 days
D. 1 day
E. 2 days
F. 3 days
G. 4 days
H. 5 days
I. 6 days
J. 7 days

63. During the **past 7 days**, on how many days did you breathe the smoke from someone who was smoking tobacco products in an indoor or outdoor public place? Examples of indoor public places are school buildings, stores, restaurants, and sports arenas. Examples of outdoor public places are school grounds, parking lots, stadiums and parks.

A. 0 days
B. 1 day
C. 2 days
D. 3 days
E. 4 days
F. 5 days
G. 6 days
H. 7 days

The next five questions ask about smoking and other tobacco use in your home, your family's cars, and by your friends and family.

64. Inside your home (not counting decks, garages, or porches) is smoking…

A. Always allowed
B. Allowed only at some times or in some places
C. Never allowed

65. In the vehicles that you and family members who live with you own or lease, is smoking…

A. Always allowed
B. Sometimes allowed
C. Never allowed

66. Does anyone who lives with you now…? (**CHECK ALL THAT APPLY**).

A. Smoke cigarettes
B. Use chewing tobacco, snuff, or dip
C. Use snus
D. Smoke cigars, cigarillos, or little cigars
E. Smoke tobacco using a hookah or waterpipe
F. Smoke tobacco out of a pipe other than a hookah or waterpipe
G. Smoke bidis (small brown cigarettes wrapped in a leaf)
H. Smoke clove cigarettes (kreteks)
I. Use any other form of tobacco
J. No one who lives with me now uses any form of tobacco

67. How many of your closest friends use any form of tobacco?

A. None
B. One
C. Two
D. Three
E. Four
F. Five or more
G. Not sure

68. Out of every 10 students **in your grade** at school, how many do you think smoke cigarettes?

A. 0
B. 1
C. 2
D. 3
E. 4
F. 5
G. 6
H. 7
I. 8
J. 9
K. 10

The next seven questions are about your thoughts about tobacco.

69. In your opinion, inside your home, smoking tobacco products should….
- A. Always be allowed
- B. Be allowed only at some times or in some places
- C. Never be allowed

70. In your opinion, in their vehicles, people should …
- A. Always allow smoking
- B. Sometimes allow smoking
- C. Never allow smoking

71. Do you think that breathing smoke from other people's cigarettes or other tobacco products causes…
- A. No harm
- B. Little harm
- C. Some harm
- D. A lot of harm

72. Do you believe any of the following are less harmful than smoking cigarettes? (**You can CHOOSE ONE ANSWER or MORE THAN ONE ANSWER**)
- A. Smoking tobacco from a hookah or waterpipe
- B. Smoking tobacco from a pipe other than a waterpipe
- C. Smoking Bidis (small brown cigarettes wrapped in a leaf)
- D. Smoking Clove cigarettes (kreteks)
- E. Smoking flavored cigars, little cigars, and cigarillos (such as mint, clove, spice, alcohol (wine, cognac), candy, fruit, chocolate, or other sweets)
- F. Smoking cigars, cigarillos, or little cigars (those that are not flavored)
- G. Using electronic cigarettes, such as Ruyan or NJOY
- H. Do not know
- I. I do not believe that any of the above products are less harmful than cigarettes.

73. Do you believe any of the following are less harmful than smoking cigarettes? (**You can CHOOSE ONE ANSWER or MORE THAN ONE ANSWER)**
- A. Using chewing tobacco, snuff, or dip
- B. Using snus, such as Camel or Marlboro Snus
- C. Using dissolvable tobacco products, such as Ariva, Stonewall, Camel orbs, Camel sticks, Marlboro sticks, or Camel strips
- D. Using electronic cigarettes, such as Ruyan or NJOY
- E. Do not know
- F. I do not believe that any of the above products are less harmful than cigarettes

74. Do you think smoking cigarettes makes young people look cool **or** fit in?
- A. Definitely yes
- B. Probably yes
- C. Probably not
- D. Definitely not

75. Do you think young people who smoke cigarettes have more friends?
- A. Definitely yes
- B. Probably yes
- C. Probably not
- D. Definitely not

The last six questions are about your experiences at home, in your community, and at school.

76. Would your parents or guardians strongly disapprove if you used tobacco products?

A. I don't use tobacco products, and my parents would strongly disapprove if I did
B. I don't use tobacco products, and my parents would not strongly disapprove if I did
C. I use tobacco products, and my parents strongly disapproved when they first found out
D. I use tobacco products, and my parents did not strongly disapprove when they first found out
E. I use tobacco products, but my parents don't know, and they would strongly disapprove if they knew
F. I use tobacco products, but my parents don't know, and they would not strongly disapprove if they knew

77. During the **past 12 months**, have you been involved in any organized activities to keep people your age from using any form of tobacco product?

A. Yes
B. No

78. During **this school year**, were you taught in any of your classes about why you should not use tobacco products?

A. Yes
B. No

79. During the **past 30 days**, to your knowledge, has anyone, including yourself, smoked a tobacco product on school property when he or she was not supposed to?

A. Yes
B. No

80. During the **past 30 days**, to your knowledge, has anyone, including yourself, used some other type of tobacco product (**that is, one that is not smoked**) on school property when he or she was not supposed to?

A. Yes
B. No

81. During the **past 30 days**, how many days did you miss **at least one class period** because you skipped or "cut" or just did not want to be there?

A. 0 days
B. 1 day
C. 2 to 5 days
D. 6 to 10 days
E. 11 or more days

Appendix B
Student Weight Detail

Students are selected from schools via the selection of intact class sections as described in Section 2.2.4. The student sampling weight is computed based on a ratio of enrolling to responding students described in Section 4.2.1. The purpose of this section is to show that the resulting student weight is equivalent to computing a student weight as the inverse of the selection probability – as are the other stage sampling weights – followed by two adjustments, one for non-response, and another post-stratifying to known enrollment totals.

For the purposes of clarity, we omit the subscripts denoting the sampling stages and weight class. The un-subscripted quantities presented are assumed to be within weight class *c*, as defined in section 4.2.1.

The probability of selection of a class when there are C_{jklm} classes at grade j in school k, PSU_i, stratum m is just $1/C_{jklm}$ or $2/C_{jklm}$ depending on whether 1 or 2 classes are taken in the school. All students in a selected class were chosen so the probability of selection of a student is the same as the class, as well as constant across students within student weighting class. The initial selection probability is taken to be the inverse of this sampling probability.

In our simplified notation, letting K represent the number of sampled class sections, we have:

$$W = \frac{C}{K}$$

Non-Response Adjustment

The non-response adjustment inflates the weight of the responding students to equal that of the sampled students. The adjustment is calculated as the sum of the weights for sampled students to the sum of the weights for responding students;

$$F_{\text{NR}} = \frac{\sum_{\text{Selected}} \text{W}}{\sum_{\text{Responding}} \text{W}} = \frac{n}{R}$$

where *n* represents the number of sampled students and *R* represents the number of responding students in the student weight class. Note that the equation simplifies to a ratio that does not involve *W*, as *W* is constant within the class.

Enrollment Ratio Adjustment

Next, the non-response adjusted student weights are ratio adjusted to conform to known school enrollment totals for each grade and sex. The adjustment F_{ps} is computed as

$$F_{\text{ps}} = \frac{N}{\sum W'} = \frac{N}{R * W'}$$

where N is the number of enrolled students in the weight class, and

$$W' = W * F_{NR}$$

The fully adjusted student weight is computed as:

$$W'' = W' * F_{PS}$$

Simplifying, we get

$$\begin{aligned} W'' &= W' * F_{PS} \\ &= W' * \frac{N}{R * W'} \\ &= \frac{N}{R} \end{aligned}$$

Appendix C Common Core of Data Race/Ethnicity Definitions

Non-Hispanic American Indian/Alaska Native—A person having origins in any of the original peoples of North and South America (including Central America) and who maintains cultural identification through tribal affiliation or community recognition.

Non-Hispanic Asian/Pacific Islander—A person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands. This area includes, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, Thailand, Vietnam, Guam, the Philippine Islands, Samoa, and other Pacific Islands.

Non-Hispanic Black—A person having origins in any of the black racial groups of Africa; African American.

Hispanic—A person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.

Non-Hispanic White—A person having origins in any of the original peoples of Europe, North Africa, or the Middle East.