

2020 Suburban Cook County Youth Risk Behavior Survey (SCC YRBS)

METHODOLOGY REPORT

Submitted to:



Prepared by:



JANUARY 2021

Table of Contents

Introduction	2
Contract Award and Subsequent Modification due to COVID-19 Pandemic	2
Questionnaire Development	3
Sampling	4
Recruitment and Shift in Methodology	5
Refusals	7
Fielding and Shift in Methodology	7
Exhibit 1. Count of Schools Collected, by Week by PAPI in Spring	10
Exhibit 2. Count of Schools Scheduled but Not Collected	10
Exhibit 3. Count of Schools Collected, by Week via Web Survey in Fall	11
Data Receipt	11
Response Rates and Findings from Paradata	12
Exhibit 4. School and Student Participation in the Spring and Fall	12
Exhibit 5. Overall Combined Participation	12
Exhibit 6. Survey Completion Time	12
Exhibit 7. Devices Used to Participate in the SCC YRBS	12
Nonresponse Bias Analysis	13
School Nonresponse Analysis	13
Exhibit 8. School level Characteristics Used for Nonresponse Analysis	14
Exhibit 9. School Participation Rates by School Characteristics	14
Student Nonresponse Analysis	15
Exhibit 10. Student Population Characteristics Used for Nonresponse Analysis	15
Exhibit 11. School Participation Rates by Student Characteristics Aggregated to the School Level	16
Weighting	16
Exhibit 12. State Enrollment Totals by Grade, Sex, and Race/Ethnicity	18
Exhibit 13. SCC Weighted Estimates by Survey Mode	19
Recommendations for the SCC YRBS	21
Appendix. Screenshots of the online SCC YRBS	22



Introduction

The Cook County Department of Public Health (CCDPH) contracted with ICF to conduct the Suburban Cook County Youth Risk Behavior Survey (SCC YRBS) in the spring of 2020. The SCC YRBS is a survey of students attending public schools in grades 9 through 12 that assesses priority health risk behaviors, including: behaviors that result in unintentional injuries and violence; tobacco use; alcohol and other drug use; sexual behaviors that could contribute to sexually transmitted diseases, and unintended pregnancies; dietary behaviors and physical activity.

The Youth Risk Behavior Surveillance System (YRBSS), upon which the SCC YRBS was based, was designed in cooperation with federal agencies and numerous state and local departments of education and health and is conducted at the national, state and local levels. Cook is the largest county in Illinois with over 5 million residents, half of which reside in the suburbs of Chicago. SCC YRBS results will help describe the extent to which youth are engaging in risky behaviors in the 125 suburban municipalities that comprise CCDPH's jurisdiction. The last local YRBS was conducted in Suburban Cook County in 2010.

A representative sample of schools, and a random selection of students within those schools, was selected to participate. ICF carried out the SCC YRBS in compliance standards set by the International Organization for Standardization (ISO).¹ In addition to ISO compliance, the SCC YRBS was certified through ICF's Institutional Review Board (IRB). The IRB deemed the study as Not Human Subject Research in accordance with the Common Rule;² however, because the SCC YRBS collected data from a protected population (i.e., youth), all protocols were carefully reviewed with human subjects' protection at the forefront.

The unprecedented and unexpected effects of the coronavirus (COVID-19) pandemic led to significant changes in project scope, including an abrupt and early end to spring fielding, shift in methodology and completion of fielding in the fall of 2020. As a result, data was collected via two modes (paper questionnaire and web survey), in two settings (in school via paper questionnaire and distance learning via web survey), and in two seasons across two academic years (spring 2020 and fall 2020).

Contract Award and Subsequent Modification due to COVID-19 Pandemic

The SCC YRBS contract was fully executed between CCDPH and ICF in December 2019 with an end date of August 2020. ICF was tasked with drawing a representative sample of 25 schools, preparing survey and

¹ ICF is one of the first U.S.-based survey research firms to attain ISO 20252 certification. The certification offers evidence-based proof that our processes and procedures are conducted according to industry-recognized best practices and assures our clients that we deliver reliable, valid, secure, and transparent research services.

² <https://www.hhs.gov/ohrp/regulations-and-policy/requests-for-comments/draft-guidance-activities-deemed-not-be-research-public-health-surveillance/index.html>. Accessed December 2020.

invitation materials, recruiting and scheduling schools, hiring and training field staff, conducting survey administration, processing and scanning answer sheets, providing incentives to participating schools, preparing a raw data file and producing a final weighted data set and codebook. A kickoff meeting was held January 6, 2020 to review project goals and timeline. Thereafter, CCDPH and ICF met weekly to monitor project progress. ICF provided a meeting agenda and tracking report two days prior to meetings. Recruitment and data collection efforts were underway when, on March 13, Illinois Governor Jay Robert (J.R.) Pritzker ordered schools closed due to the COVID-19 pandemic. As of that date, 15 of the 25 sampled schools (60%) had agreed to participate. Data collection was complete in seven schools; eight additional schools were scheduled for later in March, April and May. However, schools did not reopen in the 2019-2020 academic year and paper-based data collection efforts ceased. ICF provided CCDPH with a preliminary analysis of the partially collected data. With just 28% of schools surveyed in the spring, data was determined to be not generalizable. CCDPH wished to resume data collection in the fall of 2020 with a web survey, as it was unknown whether schools would reopen for in-person instruction in the fall. CCDPH requested, and ICF was awarded, a no-cost contract extension from August 31, 2020 to February 2021. Because no additional funding was available, the contract extension included a deliverables modification which included web survey development and shifted school recruitment tasks for the fall to CCDPH.

Questionnaire Development

Spring - Paper and Pencil Instrument

CCDPH chose the standard high school YRBS questionnaire developed by the CDC to administer the SCC YRBS. The standard YRBS questionnaire included 89 questions to measure emerging and prevailing risk behaviors among high school students. CCDPH provided ICF with the standard questionnaire in a one-column, 21-page format. ICF formatted the questionnaire to a two-column, 12-page, camera-ready format and printed 600 reusable paper questionnaires and 2,200 scannable answer sheets. Paper questionnaires and scannable answer sheets were used to field the SCC YRBS in seven schools in the spring of 2020. In the fall, schools shifted to remote instruction and opted for web survey administration. No paper questionnaires were used in the fall.

Fall - Web Survey

It was unknown whether schools would reopen for in-person instruction and in-person data collection in fall of the 2020/2021 school year. To allow data collection to continue, CCDPH asked ICF to develop a web survey using the standard high school YRBS questionnaire. Based on the recommendation of ICF's survey methodologist, the questionnaire was reviewed to determine whether seasonality might impact data collected across the spring and fall. It was determined that questions asking about behaviors in the past 30 days could include summer behaviors, if the survey was administered too early in the school year. To avoid this seasonality effect, data collection began 30 days or more after the first day of school. Further, a "semester measurement" (mode) in post-stratification could be used in analyses to note data collected in spring or fall. ICF used Voxco, a data collection software, to program and field the SCC YRBS in the fall of 2020. In addition to the student questionnaire, a teacher classroom information form was programmed to capture enrollment data on the survey date. Voxco is an integrated, multimode data collection platform,



hosted on a professionally managed network infrastructure. The web programming of the questionnaire began on August 25, 2020. Within a week, CCDPH was provided the first test link to review and provide feedback on the format and layout of the instrument. Two rounds of client feedback were implemented and the survey was deemed final and ready to go live at www.sccyrbs.com on October 16, 2020.

Sampling

The 2020 SCC YRBS sample was selected using a multistage cluster design. The first stage of sampling was an independent sample of high schools. The sampling frame contained 63 schools containing at least one grade of students between 9th – 12th grade. The total student enrollment on the frame in grades 9-12 was 115,641. A sample of 25 schools was drawn with probabilities proportional to size (PPS).

The second stage was selecting classrooms within each school. The goal was to obtain approximately 2,500 surveys at the high school level. Within each sampled school approximately 100 high school students were selected. In each participating school, an approximately equal number of classes were selected at random, and all students within a sampled class were selected to participate in the survey. The sampling design ensured all students had the same probability of selection and all students had one, and only one, chance of being selected. To accomplish this, all classes were selected using random class intervals generated based on the school's population. Schools provides an exhaustive list of classes that either met during a particular period of the day or across an academic subject required of all students. This class listing served as the sampling frame for the school. On average 3-6 classes were randomly selected in a school, depending on their enrollment.

ICF used the following steps in the selection of classes:

1. Worked with school contact to determine the type of class to be used. The “frame” from which to select participating classes could be through a specific period of the day, like second period. If this did not work for a school, they could also go through a subject that all students were required to take, such as Advisory. The objective was to use a frame that included all eligible students in the grades for which the school was targeted.
2. Obtained a list of all class sections for the type of class determined in Step 1.
3. Identified all ESOL, Special Education, small “classes” (e.g., Teachers Aid), and classes that meet off campus. Determined whether these classes are ineligible for the survey. Determining factors included whether 1) an intact class of students was incapable of completing the survey on their own, 2) student anonymity might be compromised due to small class size, or 3) it was logistically impossible for a survey administrator (data collector or teacher) to survey all class members in a single, classroom setting. Any class that had one or more of these limitations was deemed ineligible and was removed from the class selection frame. We crossed out any classes that are thereby deemed ineligible or otherwise removed them from the frame.



4. Numbered the remaining classes sequentially from 1 to N until all classes had been given a number (skipping over ineligible classes identified in Step 3).
5. Used the class interval numbers generated during the sample draw to randomly select the class to participate in the survey.
6. Recorded the teacher name, class period, and any other identifiers for each selected class into ICF's proprietary Data Collection Management Application (DCMA) to generate a Summary of School Arrangements Form, which was then shared with the school and used as the official documentation of the class selection outcome.

Recruitment and Shift in Methodology

Spring – ICF led recruitment efforts

ICF staff involved in recruitment activities had seven years of proven experience recruiting districts and schools to participate in school-based studies, including national and state YRBS projects. Recruitment staff completed the Collaborative Institutional Training Initiative (CITI Program) certification in social and behavioral research, which includes human subjects' protections. They were familiar with project-specific details, class selection protocols, and strategies to overcome challenges expected in getting schools to agree to participate in the SCC YRBS.

Invitations to participate in the 2020 SCC YRBS were sent in hard copy via FedEx to all districts with sampled schools on January 17, 2020. The Chief Operating Officer at CCDPH, Terry Mason, M.D, signed the letter of invitation. Each invitation packet included:

- Tailored district invitation letter
- Infographic showing national YRBS data results
- Sample parental permission form
- Survey fact sheet
- Sample 2020 SCC YRBS Questionnaire
- Duplicate packet of materials for each selected school, to be forwarded from district office

ICF began calling the sampled districts and schools immediately upon this mail-out to obtain agreement to participate. Regular and frequent phone and email outreach continued throughout the survey fielding window. When resistance was met, ICF field staff conducted in-person visits to districts and schools. ICF's Survey Logistics Coordinator was tasked with securing agreement to participate, working with the school to identify a contact responsible for coordinating the SCC YRBS, scheduling a convenient date for survey administration, conducting class selection, scheduling an ICF Data Collector to visit the school to administer the survey and answering any questions about conducting the SCC YRBS. All school agreement decisions were documented in ICF's proprietary Data Collection Management Application (DCMA). This system served as a mechanism to help centralize the management of the study, facilitate information exchange with data collectors, and allow all members of the project management, recruitment,



survey support members and field staff access to information necessary to implement the study. Recruitment, participation tracking, and scheduling were key pieces tracked in the system and used in developing weekly reports for CCDPH.

On Friday, March 13, 2020, Illinois Governor J.B. Pritzker ordered all Illinois schools to close to slow the spread of COVID-19. As of March 13, seven schools (28%) had participated, eight more were scheduled to participate in March, April or May and recruitment efforts were ongoing with the other ten sampled schools. The order, initially in effect until March 30, was repeatedly extended through the end of the school year with no schools reopening in the spring of 2020.

Fall – CCDPH led recruitment efforts

ICF conducted a preliminary analysis of the partially collected data and deemed it not generalizable to the full population of high school students in Suburban Cook County due to the small number of records. CCDPH asked ICF to complete fielding in the fall with the option of a web survey since it was unknown how soon schools would resume in-person instruction. Since additional funding was not available, CCDPH took a large role in recruiting schools to redirect contract resources to program a web survey. ICF staff revised invitation materials to resume recruitment. On September 18, 2020 invitation letters signed by CCDPH's Senior Public Health Medical Officer Rachel Rubin, M.D., M.P.H, F.A.C.P., were sent to the 15 districts (representing 18 schools) that had not yet participated. Like what was sent in January, each invitation packet included:

- Tailored district invitation letter
- Infographic showing national YRBS data results
- Sample parental permission form
- Survey fact sheet
- Sample 2020 SCC YRBS Questionnaire
- Duplicate packet of materials for each selected school, to be forwarded from district office

ICF staff met with CCDPH staff to share recruitment strategies and orient them to the task of obtaining additional clearances. CCDPH then followed up with districts and schools by phone and email to confirm participation. Once CCDPH confirmed participation, ICF staff worked with the school point of contact to complete class selection, schedule the survey and provide survey administration instruction materials. Unlike the spring, no data collection staff visited schools to administer the survey.

In the fall, six schools participated via web survey, as schools were not open for in-person instruction and students were exclusively distance learning.

School Awards

Each school that participated in the SCC YRBS received a \$500 school award in appreciation for time and partnership in the SCC YRBS effort. The school point of contact was asked to complete the school award form to process the award check. ICF processed and sent awards via FedEx to the school point of contact.



Refusals

Spring – Loss of Instructional Time

Refusal reasons for non-participation in the SCC YRBS given by school districts and schools varied but the most common reasons included:

- Loss of instructional time
- Too many surveys and standardized tests
- Not mandated, do not want to do it

Various refusal conversion methods were used but largely unsuccessful prior to the halt of spring data collection. These methods included:

- In-person recruitment visits (by ICF data collector)
- CCDPH outreach by email to principals

Typically, these types of refusal conversion methods have high rates of success. However, due to COVID-19 and a truncated window for these efforts to play out, they did not yield usual results.

Fall – COVID-19 Recovery

As the COVID-19 pandemic continued, districts and schools were struggling with re-opening plans in the fall of 2020. The primary refusal reason for every nonparticipating district and school was the inability to take on anything additional for staff and students while trying to resume instruction. CCDPH staff were successful in convincing six schools to participate despite their pressing COVID concerns.

Fielding and Shift in Methodology

Spring – Paper and Pencil Survey led by Data Collector

Two seasoned ICF survey administrators were assigned to the 2020 SCC YRBS. Each had extensive experience as data collectors for national and state school-based surveys. Both survey administrators lived near the Cook County metropolitan area and attended a one-day training with ICF and CCDPH staff at the CCDPH office in Oak Forest on February 13th, 2020.

The Survey Administrator Training was designed to prepare survey administrators to successfully conduct the SCC YRBS, followed a carefully thought out agenda that included modules on the background and history of the SCC YRBS, proper conduct of the survey administration according to CDC protocol, and interacting with school personnel. Although there were no “final tests,” each survey administrator was assessed to ensure that they were equipped with the necessary skills and ready to conduct the SCC YRBS according to a rigorous protocol. Survey administration officially began immediately after training.

Prior to every data collection, ICF prepared a package of pre-survey school correspondence designed to ensure a successful survey administration. Shipments were sent to schools one to two weeks prior to



survey administration via FedEx Priority Overnight Delivery to communicate a sense of urgency to school contacts. The recruiter alerted school contacts to the expected timeframe for receipt of the pre-survey correspondence, emphasizing that teachers must distribute parental permission forms to students in selected classes in advance of the survey date.

The parental permission form packets included the following documents for the school contact's reference and/or action, as well as an envelope for the teacher of each selected class.

- Dear Principal/Contact Letter
- Summary of School Arrangements (SSA) form, documenting selected classes, survey administration date, and other logistical details
- Fact Sheet
- Data Collection Checklist Coversheet, stapled in front of a Data Collection Checklist (see below)
- Parental Permission Form
- School Enrollment Form
- School Award Form
- Sample Questionnaire (watermarked "Do Not Copy")

The packets included the following documents for each teacher in a manila envelope, hand-labeled with the teacher's name, class name and period number on the front:

- Dear Teacher Letter
- SSA (with the selected teacher name and class highlighted to draw immediate attention)
- Fact Sheet
- Data Collection Checklist (one per every 50 students enrolled in a class)
- Instructions to be Read When Distributing Permission Forms
- Parental Permission Forms

Data collectors were instructed to perform a variety of activities in preparation for visiting a school. Approximately one week in advance of their scheduled arrival at a school, field staff called the school contact to make a formal introduction, review the logistics for the visit (e.g., arrival time, parking information), and briefly review the survey administration schedule to see if any changes were anticipated due to staff availability or planned school activities. The primary reason behind these calls was to ensure the distribution of permission forms from teachers to students. If the data collector was unsuccessful in reaching the contact after multiple tries to reach them by phone, an e-mail was sent.

Data collectors also were instructed to prepare each school's survey materials according to the protocol covered during training. That is, each school's materials were to be organized and bundled separately, and all classes prepared individually with survey instruments, pencils, student envelopes, and make-up materials. Only one school's materials were to be carried into each school, regardless of the number of schools scheduled for data collection within a given week. These protocols were established to maximize efficiency while at a school and reduce burden on data collectors while in the field.



Upon arriving at the school, standard procedure was for the assigned data collector to check in with the school contact at a pre-arranged time and place to make an in-person introduction, express appreciation for the school's participation, review the survey arrangements for the day, pick up the completed School Enrollment Form (used to weight the data) and School Award Form, arrange a time after the last class had been surveyed to update the contact on the day's progress, and identify a location where the data collector could wait during any down time.

Data collectors visited participating classrooms in chronological order to administer the survey to eligible students. Prior to survey administration, data collectors reviewed the Data Collection Checklist with teachers to confirm classroom enrollment and to document the number of student absences, returned parental opt out forms, and any students unable to complete the survey independently. The data collector distributed questionnaires, answer sheets and sharpened pencils to students. Next, the data collector read a brief introductory script reinforcing the survey was voluntary, anonymous and any questions could be skipped over. Students were reminded to not write names or any personally identifying information on the answer sheet. The data collector and teacher were asked to remain in the front of the classroom to protect student privacy and increase student candor while completing the survey. Data collectors and teachers were instructed to respond to any student question with the reply, "do the best you can," so as not to influence answers and to ensure survey administration fidelity. At the end of the class period, or when all students had completed the survey, the data collector collected surveys and answer sheets. Students were told to keep the sharpened pencils. The survey typically took 30-35 minutes to administer, including time to distribute and collect materials.

Once data collection at a school was concluded, field staff followed explicit instructions regarding how to facilitate and collect surveys, enter initial student participation rates into the DCMA, reconcile counts, and package their surveys and paperwork for return to ICF headquarters. Data collectors were instructed to package each school's materials separately and to ship all schools administered in a week together once all collections had been completed. Materials were shipped using FedEx Priority Overnight labels generated in advance with the tracking number recorded in the participation tracking section of the DCMA. This allowed for ICF to follow-up with FedEx should any shipment be delayed or not arrive as expected.

It is uncommon for a school to achieve a 100% student participation rate on the initial day of survey administration. To this end, make-up procedures were established to provide instructions and materials in the appropriate quantities for teachers to administer the survey to eligible non-participants upon their return to class. Materials included survey administration instructions, a survey administration script, a Make-up List containing the names/identifiers of eligible students (which was completed by the data collector while visiting the class), survey booklets and answer sheets, student privacy envelopes, and a Business Reply Envelope (BRE) to use in returning completed survey booklets at no expense to the school.

Returned make-up surveys were incorporated into the appropriate school and class, and the associated paperwork in a "Master Binder" was updated. Student participation rate information was then updated in the DCMA. In the spring, schools and teachers were generally responsive to our requests to conduct make-ups with students and return completed materials to ICF. Five out of the seven schools that participated in the spring, returned a total of 28 make-up surveys.



Exhibit 1 shows for each week of active data collection, the number of schools with successful survey administrations. The last scheduled date for data collection was March 12th, 2020. All schools closed the following week due to mandated school closures and, per Governor's order, and remained closed for the remainder of the academic school year. The abrupt school closures resulted in an immediate end to the spring 2020 SCC YRBS data collection.

Exhibit 1. Count of Schools Collected, by Week by PAPI in Spring

Week	# Schools Collected
February 17 - February 21	1
February 24 – February 28	3
March 02 - March 06	1
March 09 - March 13	2
TOTAL	7

The eight schools that were scheduled after March 13th were unable to participate in the spring and ten more schools that were undecided or soft refusals were also not able to be collected in the spring (shown in Exhibit 2).

Exhibit 2. Count of Schools Scheduled but Not Collected Due to COVID-19, by Week

Week	# Schools Not Collected
March 16 - March 20	2
March 23 - March 27	2
March 30 – April 3	1
April 6 – April 10	2
May 4 – May 8	1
TOTAL	8

Fall – Web Survey led by Teachers

In the fall, Illinois Governor J.B. Pritzker lifted school closure restrictions and allowed districts and schools to determine whether to reopen for in-person instruction and/or remote virtual learning. Most schools in the sample chose to open with remote instruction to slow the spread of COVID-19. Because in-person data collection was not possible, all materials and instructions were provided electronically to schools to assist with survey administration. ICF streamlined materials for ease of use and provided school contacts with the following via email:

- Step-by-Step Survey Administration Instructions with unique class access codes
- Parental Permission Form
- School Enrollment Form
- School Award Form

Schools followed their established process to distribute permission forms to ensure that all parents of students in the selected classes were sent a form and understood how to return it, if necessary.



Teachers were asked to read an introductory script and direct students to www.sccyrbs.com. Teachers then provided students with a unique five-digit classroom access code to log into the survey securely. Students were routed to a page with navigation instructions, read a passage that informed them of their rights as a participant prior to starting the survey, and then brought to the start of the survey. Students were able to track their completion by a progress bar at the top of the screen. At the conclusion of the survey, students were given the option to go back and review any of the questions before submitting and closing out of their web browser.

While students were taking the survey, teachers were asked to log in to www.classroominformation.com, enter the same unique five-digit classroom access code to complete a brief form to document class enrollment, returned permission forms and student absences. Exhibit 3 shows the number of schools collected via web survey during each week of active collection in the fall.

Exhibit 3. Count of Schools Collected, by Week via Web Survey in Fall

Week	# Schools Collected
November 2 – November 6	1
November 16 – November 20	1
November 30 – December 4	2
December 7 – December 11	2
TOTAL	6

Data Receipt

The DCMA was used to monitor and track completed school and class-level data. In the spring, survey administrators were instructed to enter participation information at the classroom level on the same day that survey administration took place. This included class enrollment, number of absent students, number of student and parent refusals, and the number of completed surveys. This information was then calculated to give a preliminary student participation rate for the school. Survey administrators were also instructed to send weekly mailings of the Data Collection Checklists (DCC) and completed answer sheets by class for the schools they proctored each week. DCC's were required for all sampled classes in order to calculate the response rate within each class and school. Once the forms were received at the ICF office, each DCC was verified against what has been entered into the DCMA, and answer sheets were reviewed for scanning, counted and verified in the system. Names, student identifiers, stray marks or anything written on the front or backs of answer sheets was erased. To ensure proper scanning, answer sheets completed in ink were gone over with #2 pencil. Defaced, torn or damaged answer sheets were transcribed onto clean answer sheets.

In the fall, completed web surveys were captured in real time in Voxco. The web survey system was monitored and reviewed daily to note any rise in the number of completed surveys. Classroom enrollment completed by teachers via the classroom information form was also captured in real time in Voxco.

Response Rates and Findings from Paradata

Participation rates were calculated separately for both schools and students as a percentage of the number of schools participating divided by the number of schools selected and the number of students participating divided by the number of eligible students enrolled in the classes selected. An overall participation rate consists of the two separate school and student participation rates multiplied by each other. For the purposes of calculating preliminary participation rates, all surveys on which at least one question was answered were included in the numerator. Tabulated prior to cleaning, such participation rates do not reflect the final, post-editing participation rates.

Below, Exhibit 4 notes school and student participation for the spring via paper and pencil instrument and for the fall via web survey. Exhibit 5 notes combined, overall participation in the SCC YRBS.

Exhibit 4. School and Student Participation in the Spring and Fall

Participation	Spring PAPI	Fall Web	Total	Percentage
School	7	6	13/25	52%
Student	619	691	1310/1448	90.4%

Exhibit 5. Overall Combined Participation

School Response x Student Response = Overall Response Rate
52% x 90.4% = 47%

With 2020 being the maiden voyage into a web implementation of the SCC YRBS, we offer here some summary details captured as part of the paradata set collected concurrently with the student response data. Exhibit 6 below shows the minimum, average and maximum time it took a student to complete the web survey.

Exhibit 6. Survey Completion Time

Minimum	Average	Maximum
28 seconds	17.5 minutes	1 hour 49 minutes

In addition to tracking the completion times by survey, we were also able to see the types of devices students used to access the SCC YRBS web survey. A laptop or desktop computer was by far the most commonly used device. Surprisingly, fewer than 10% of students used a smartphone and only 4% used a tablet to complete the survey. Exhibit 7 presents the breakdown of device type used.

Exhibit 7. Devices Used to Participate in the SCC YRBS

Device	Percentage of Use
--------	-------------------



Laptop/Desktop	88.3
Smartphone	7.6
Tablet	4

Nonresponse Bias Analysis

Given the unusual effect COVID-19 had during data collection for the 2020 SCC YRBS and the lower than expected school response rate, ICF conducted additional analyses to examine potentials for nonresponse bias. Each analysis looked at different area of nonresponse (school and student). With the lower response rates, described in the response rate section above, there was a higher potential for nonresponse bias. Nonresponse bias refers to the potential for systematic under-representation and consequent bias in survey estimates due to nonresponse. Nonresponse bias is a function of the amount of nonresponse and differences between the non-respondent and respondent subgroups with respect to characteristics estimated by the survey. The analysis of nonresponse bias is important for two reasons including:

- It can inform statistical adjustments to the response data (i.e., more robust nonresponse adjustments to the weights).
- It can inform users about the representativeness of the data.

The first step in the assessment of nonresponse bias was to determine whether nonresponse rates pose a potential problem overall or for certain population subgroups. High levels of nonresponse would indicate that more intensive efforts are needed to attain participation overall or for certain subgroups. Even in surveys where nonresponse does not reach these levels, efforts may be suggested to reduce or to adjust for the residual bias that may be induced by nonresponse.

Although nonresponse can occur at both the school and student level, the nonresponse analysis was based on school characteristics because the differences between responding and nonresponding students could not be measured through this survey. To assess student response, we analyzed aggregate demographic and socioeconomic characteristics of the student population available at the school level. These analyses looked to identify lower responding subgroups and aimed to compensate for potential nonresponse bias in the weighting process with the use of weighting class adjustments.

School Nonresponse Analysis

We began the school nonresponse analysis by merging the SCC YRBS sample of schools to a national frame of schools. The national frame included several additional school level variables as well as variables that described the student population within a school. We also used the percentage of race/ethnicity within schools from the original sampling frame. By merging the files, we were able to use these variables to examine relationships between school level characteristics and nonresponse.

An important question for data interpretation is asking whether schools that responded in the SCC YRBS were systematically different from nonresponding schools based on characteristics that may be relevant to survey outcomes. For example, if schools with an increase in enrollment from year to year had higher incidence of e-cigarette use and these same schools responded at a significantly lower rate than schools with no enrollment

change or a decrease in enrollment, there was a potential for under representation of e-cigarette use. To determine if SCC YRBS responding schools were systematically different from nonresponding schools, several characteristics for both responding and nonresponding schools, listed in Exhibit 8, were compared. The variables represented fixed school characteristics like urban vs suburban as well as non-fixed school characteristics like annual shifts in student enrollment and the student to computer ratio. These variables were chosen because they were present for all or nearly all responding and nonresponding schools. We also chose to limit the number of school level variables to reduce the possibility of finding significant differences by chance.

Exhibit 8. School level Characteristics Used for Nonresponse Analysis

School Characteristics	
NCES Locale Codes	National Center for Education Statistics locale codes (City, Suburb, Town, and Rural) Schools classified within each of these area types. Only City and Suburb are present in SCC.
Change in School Enrollment	School enrollment decreased, increased, or remained the same from the previous school year.
Student: Computer Ratio	Ratio of number of students to number of computers (Above/Below Median)
Student: Teacher Ratio	Ratio of number of student to number of teachers (Above/Below Media)

We began by looking at bivariate relationships between each independent variable in Exhibit 8 and the potential for nonresponse from a school defined by an indicator variable where 1 indicated a responding school and 0 indicated a nonresponding school. If more than one significant relationship was found, we then created multivariate models to further examine the relationship between the independent school level variables and response.

Exhibit 9 compares school participation rates by the school characteristics. The table contains the variables description and response levels. Each variable has the total sampled schools within a level, the number of responding and nonresponding schools, and the response rate within each of the variable levels. Finally, the chi-square value and the p-value associated with the chi-square test is presented in the last two columns of the table. A chi-square test was conducted for each of the independent school level variables and the dependent variable school response. Among the school level variables examined; none were found to have a significant relationship with school level response.

Exhibit 9. School Participation Rates by School Characteristics

School Characteristic	Sampled	Participating	Non-participating	Participation Rate	Chi-sq	p-value
Change in School Enrollment						
Decrease	4	1	3	25.0%	2.25	0.32
No Change	7	3	4	42.9%		
Increase	14	9	5	64.3%		
NCES Locale Codes						

City	6	2	4	33.3%	1.10	0.29
Suburb	19	11	8	57.9%		
Student: Computer Ratio						
Below median	11	4	7	36.4%	1.92	0.17
Above median	14	9	5	64.3%		
Student: Teacher Ratio						
Below median	23	11	12	47.8%	2.01	0.16
Above median	2	2		100.0%		

While there were differences between the participation rates by several of the school level characteristics, none were found to be statistically significantly different. This is due to small sample sizes within the categories.

Student Nonresponse Analysis

In addition to school characteristics, we assessed potential difference by the demographic characteristics of the student population. As the incidence of many of the health and health risk behaviors measured by the SCC YRBS correlates with race/ethnicity and socioeconomic status (SES), one protection against nonresponse bias is the assurance that participating schools do not differ from nonparticipating schools in terms of these basic demographic characteristics. Therefore, in addition to school characteristics, we assessed potential difference by the demographic characteristics of the student population. Because we do not have individual student characteristics for students that did not participate, we relied on the aggregate student population statistics at the school level. While the measurement of SES is a complicated endeavor, we compared proxy measures of SES by participation status: a school affluence indicator, percent college-bound, and a poverty level indicator. These variables are described in Exhibit 10.

Exhibit 10. Student Population Characteristics Used for Nonresponse Analysis

Student Population Characteristics	
School Percent Black	The percentage of students in the school who are reported as Black.
School Percent Hispanic	The percentage of students in the school who are reported as Hispanic.
School Percent White	The percentage of students in the school who are reported as White.
School Affluence	Supplied by MDR as a variable on the NYTS sampling frame, the Affluence Indicator is computed using a proprietary algorithm developed to rank a school's socioeconomic status. The index augments the U. S. Census Bureau's Socioeconomic Status (SES) with a variety of data points including but not limited to: Instructional Expenditures per Pupil, Instructional Materials Expenditures, Student-to-Computer Ratio, Title I Percent of Students, Title I Funds, and Total Expenditures per Pupil. The result is a five-category index, which was collapsed for the current analyses into two categories coded as: 1(Low/Below Average), 2 (Average/Above Average/High).
School Percent College Bound	The percentage of students in the school reportedly going to college.
Poverty Level indicator	The proportion of students below poverty line.

Like the school level nonresponse analysis, we conducted bivariate analysis among the independent descriptive student variables in Exhibit 10 and a school's potential for nonresponse. Like the bivariate results table in the school level nonresponse analysis, Exhibit 11 compares school participation by the selected race/ethnicity and SES variables. There were no significant differences in school response by percent Black, percent Hispanic or percent White student population. Only schools with a larger proportion of students college bound had a significantly lower response rate (27.3%) compared to schools with fewer students' college bound students (75.0%). The proportion of students' college bound was based on the median percentage of students' college bound in all school sampled. The median percent of students' college bound was 77%. Schools with 77% of students' college bound or more were classified into one category, while schools with less than 77% students' college bound were classified into another category.

Exhibit 11. School Participation Rates by Student Characteristics Aggregated to the School Level

Student Characteristic within School	Sampled	Participating	Non-participating	Participation Rate	Chi-sq	p-value
School Percent Black						
Below median	13	5	8	38.5%	1.99	0.16
Above median	12	8	4	66.7%		
School Percent Hispanic						
Below median	12	6	6	50.0%	0.04	0.85
Above median	13	7	6	53.8%		
School Percent White						
Below median	12	8	4	66.7%	1.99	0.16
Above median	13	5	8	38.5%		
School Affluence						
Low/Below Avg	2	1	1	50.0%	0.00	0.95
Avg/Above Avg/High	23	12	11	52.2%		
School Percent College Bound						
Below median	12	9	3	75.0%	5.24	0.02
Above median	11	3	8	27.3%		
Poverty Level indicator						
Below median	15	7	8	46.7%	0.43	0.51
Above median	10	6	4	60.0%		

The findings in the nonresponse analysis were used to inform the school level nonresponse adjustment described below. In particular, the school level variable percent college bound was used to define nonresponse adjustment cells.

Weighting



The SCC YRBS sample was designed so that each student at a given level was assigned the same probability of selection. To weight the survey data using Suburban Cook County enrollment totals for grade, sex, and race/ethnicity, missing data for these survey responses were imputed. Each of the three demographics used for weighting were handled in a slightly different manner, described below.

Imputation of Grade

For those records either missing on the grade variable or reporting “Ungraded or other grade,” the student’s response was imputed based on the median grade of the student’s class. This type of imputation uses the clustered nature of grade within a class/subject to impute missing grade values, since most subjects are taught by grade, i.e. all 10th grade student take the same level of English.

Imputation of Sex

For those cases missing sex, the variable was imputed by ordering the dataset by the unique student identifier within class and assigning the missing response with the sex category of the previous student with non-missing data for that question. This process of imputation is called hot-deck imputation. Hot-deck imputation is a method for handling missing survey responses by using responses from other, similar respondents.

Creation and Imputation of Race/Ethnicity

To weight the data using race/ethnicity, a variable was created based on the student’s responses to the survey questions on race and ethnicity. If a respondent stated that they were Hispanic, they were assigned to this category in the newly created variable, regardless of their reported race. Those students who listed their race as White or African American and were not Hispanic were listed in the newly created variable as White or African American, respectively. Students who stated that they were any other race and were not Hispanic were listed as ‘Other’ race in the collapsed variable. For reference, the alternative answer choices were Asian, Native Hawaiian or Other Pacific Islander, or Other.

After this recoding process, any students still missing a response for race/ethnicity were imputed using the same method used for missing sex.

Steps to Produce Student Weights

The weight of a respondent at a given level was the product of several weights and/or weight adjustments. The initial weight prior to the final population adjustment was the product of five different factors:

W_1 = Inverse of the probability of selection of the school and level.

W_2 = Adjustment for school nonresponse. School nonresponse adjustment cells were defined by using the results of the nonresponses analysis. Adjustment cells were defined using the proportion of students who are college bound; schools with greater than or equal to 77% of students college bound vs schools with less than 77% of students college bound. The adjustment was obtained after dividing the schools into the four nonresponse adjustment cells and adjusting for the number of refusing schools in each group.

W_3 = Sampling interval. This was obtained by dividing the enrollment by the target sample for the school.

W_4 = Adjustment for class nonresponse (entire class not responding). If n classes were selected in the school and k participated in the survey, $W_4 = (n/k)$.



W_5 = Adjustment for student nonresponse within class. The first was the inverse of the proportion of students answering the survey in the class.

Prior to the final step of the weighting process, county student enrollment totals for three demographic categories (grade, sex, and race/ethnicity) used for weighting were retrieved from the sampling frame. The enrollments by demographic are presented in Exhibit 12.

Exhibit 12. State Enrollment Totals by Grade, Sex, and Race/Ethnicity

Demographic		Population Total
Grade	9th	30,145
	10th	28,881
	11th	28,140
	12th	28,475
Race/Ethnicity	Black	22,223
	White	46,234
	Hispanic	33,830
	Other	13,354
Gender	Female	56,655
	Male	58,986

We adjusted the student-non-response-adjusted weights to marginal population totals (also called dimensions) using an iterative raking procedure. Raking systematically adjusts the student weights to one dimension at a time. The weights were adjusted to two dimensions; grade by sex and grade by race/ethnicity, as presented in Exhibits 12 above.

The final weighting step was the raking adjustment described below.

W_6 = Adjustments for raking. To produce the final weight, the products of the previous factors are added for the grade, race/ethnicity, and sex. W_6 is the value of the respective population count divided by the sum of the products.

The final student weight is defined as: $\text{Weight} = W_1 W_2 W_3 W_4 W_5 W_6$

Standard statistics and variance estimation methods assume a simple random sample and do not account for the complex multistage sample design. This results in smaller confidence intervals and inaccurate results. To produce standard errors and confidence intervals that account for the clustered nature of the sample design we produced variance stratum and cluster variables used in survey statistical software. These variables, VAR_STRAT and VAR_CLUST, mirror the sample design. These variables can be found at the end of the final datafile. The final weights were checked to ensure every responding student had a positive weight, that the sum of the weights by grade, by sex and by race summed to the total state student enrollments in Table 13 and finally that every variance strata (VAR_STRAT) had at least two variance cluster (VAR_CLUST).

Weighted Estimates and Variances

The survey variances (expressed through standard errors and corresponding confidence intervals) for several estimates of characteristics of high school students in Suburban Cook County using the 2020 SCC YRBS data are presented in Exhibit 13. The estimates are presented by survey mode (paper vs web). The standard errors for all the estimates were below 0.05 (5.0%). The estimates were computed using SAS Proc SurveyFreq.

Exhibit 13. SCC Weighted Estimates by Survey Mode

Question	Survey Mode	Value	Frequency	Percent	Standard Error	95% Confidence Interval		Chi Square	p-value
						Lower	Upper		
During the past 12 months, have you ever been electronically bullied? (Count being bullied through texting, Instagram, Facebook, or other social media.)									
Q24	Paper	Yes	77	11.33	1.22	8.85	13.82	1.58	0.24
		No	538	88.67	1.22	86.18	91.15		
	web	Yes	89	13.65	1.52	10.56	16.75		
		No	587	86.35	1.52	83.25	89.44		
During the past 12 months, did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing some usual activities?									
Q25	Paper	Yes	216	32.12	2.57	26.89	37.34	0.02	0.92
		No	396	67.88	2.57	62.66	73.11		
	web	Yes	216	32.47	2.25	27.90	37.03		
		No	458	67.53	2.25	62.97	72.10		
During the past 30 days, on how many days did you use an electronic vapor product?									
Q35	Paper	0 days	497	82.66	1.90	78.80	86.52	1.90	0.21
		1+days	108	17.34	1.90	13.48	21.20		
	web	0 days	574	85.49	1.39	82.67	88.31		
		1+days	89	14.51	1.39	11.69	17.33		

During the past 30 days, on how many days did you have at least one drink of alcohol?									
Q41	Paper	0 days	501	83.94	1.60	80.69	87.19	9.04	0.01
		1+days	101	16.06	1.60	12.81	19.31		
	web	0 days	522	77.25	1.88	73.44	81.06		
		1+days	144	22.75	1.88	18.94	26.56		
On an average school night, how many hours of sleep do you get?									
Q88	Paper	< 8hrs	471	80.73	2.81	75.01	86.44	33.23	<.0001
		>=8hrs	127	19.27	2.81	13.56	24.99		
	web	< 8hrs	436	66.35	1.84	62.62	70.09		
		>=8hrs	225	33.65	1.84	29.91	37.38		
During the past 12 months, how would you describe your grades in school?									
Q89	Paper	As & Bs	401	75.96	2.46	70.96	80.95	6.26	3.53
		Cs & Ds	158	22.65	2.46	17.64	27.66		
		Fs	8	1.39	0.54	0.29	2.50		
	web	As & Bs	487	76.76	3.15	70.36	83.15		
		Cs & Ds	123	19.81	2.55	14.63	24.98		
		Fs	22	3.44	0.80	1.81	5.06		

The survey mode was linked to the time of administration. Students who participated by paper were surveyed during the spring of 2020 prior to the COVID-19 school closures. The web administration occurred during the Fall of the 2020/21 school year. Any differences seen are more likely due to time of administration than mode of administration.

Among the questions we compared, only two had statistically significant differences by mode. The question “During the past 30 days, on how many days did you have at least one drink of alcohol?” saw a significant increase from the spring administration to the fall administration. During the spring 16.06% reported having one or more drinks of alcohol compared to 22.75% in the fall. We also saw a significant increase in the number of hours slept between spring and fall, with only 19.27% of student reporting 8+ hours of sleep in the spring compared to 33.65% in the fall.

Overall, the results of the weighting process demonstrate that the variability in the weights was small and the overall variances were also relatively small. Some differences are seen between mode of administration, but this is likely due to changes that have occurred between the spring and fall of 2020.

Recommendations for the SCC YRBS

Looking beyond the impact of COVID-19 pandemic, the biggest lesson learned on the 2020 SCC YRBS was the importance of giving districts advance notice that the survey is coming later in the academic year. For future survey cycles, CCDPH should look to provide advance notification to districts of the possibility of their schools' selection in the SCC YRBS. Any early communication at the start of the school year (or earlier) would be beneficial in overcoming this objection. ICF proposes that CCDPH send a memo to superintendents, possibly with an infographic highlighting how 2020 SCC YRBS results were used, at the beginning of the school year letting them know that the SCC YRBS is coming. This would then allow for follow-up on approval and official invitation closer to the survey fielding window from those selected districts and schools.

Another common objection we heard from schools is that they had “just” participated in the Illinois 5Essentials Survey and did not have time to take another survey. Although that survey had been conducted in the fall, districts and schools still felt it was too soon for another survey. To get ahead of this objection, CCDPH may consider fielding the next SCC YRBS to coincide with the national YRBS and IL YRBS. Opportunities for overlap coordination with national and state efforts could increase participation.

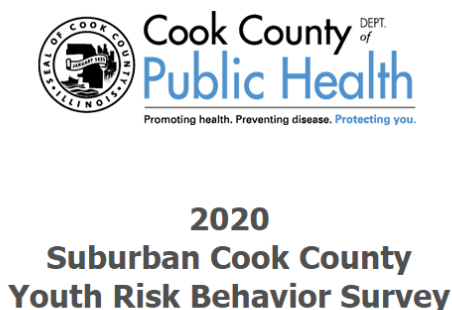
A final recommendation as we look ahead to the next cycle of the SCC YRBS is the promotion of the length of the web survey. The very short completion time as noted above could be used as a major selling point in the next cycle. This year, in all survey documents the estimated completion time noted was 30 minutes. If the survey length is kept about the same, it is a real possibility that schools would agree that a survey that takes less than 20 minutes is doable in their classes. To further reduce the completion time, and subsequently reduce student burden, a future consideration could also be to include skip patterns in the web survey.

This concludes the 2020 Suburban Cook County Youth Risk Behavior Survey Final Summary Report. ICF looks forward to the opportunity of working with the Cook County Department of Public Health again on the next cycle of the SCC YRBS.



Appendix A. Screenshots of the online SCC YRBS

Login Page for the Online Suburban Cook County Youth Risk Behavior Survey



Welcome.

Please enter your access code and then
click "Continue"

CONTINUE

Navigation Instructions Displayed to Students Prior to Starting the Survey



2020 Suburban Cook County Youth Risk Behavior Survey

Directions


- Use your mouse (or finger, if using a touch-screen device) to click on the answer that best fits what you know, believe, or do.
- If you need to change your answer, click on a different response.
- If you want to delete your answer, use the **CLEAR RESPONSE** button at the bottom of the page.
- Your answers will automatically be saved as you advance through the questionnaire.
- **Do not use the browser's back button to navigate through the questionnaire. Please use the GO BACK and CONTINUE buttons at the bottom of each page.**

To begin the survey, click on the CONTINUE button below.

GO BACK

CONTINUE

Student Assent Screen



2020 Suburban Cook County Youth Risk Behavior Survey

This survey is about health behavior. It has been developed so you can tell us what you do that may affect your health. The information you give will be used to improve health education for young people like yourself.

The answers you give will be kept private. No one will know how you respond. Answer the questions based on what you really do.

Completing the survey is voluntary. Whether or not you answer the questions will not affect your grade in this class. If you are not comfortable answering a question, just leave it blank.


The questions that ask about your background will be used only 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.

Make sure to read every question. The survey usually takes about 30 minutes to complete. Please begin.

Thank you very much for your help.

[GO BACK](#) [CONTINUE](#)

Sample Question and Progress Bar



2020 Suburban Cook County Youth Risk Behavior Survey

Progress: 2%

3. In what grade are you?

☐ 9th grade

☐ 10th grade

☐ 11th grade

☐ 12th grade

☐ Ungraded or other grade

[GO BACK](#) [CONTINUE](#)

[CLEAR RESPONSE](#)

Review and Submission Summary Screen



2020 Suburban Cook County Youth Risk Behavior Survey

You have reached the end of the questionnaire.

*You have not answered all of the questions in the questionnaire. Please select the question(s) below to view the unanswered question(s). If you choose not to answer any of these questions, click **Submit Questionnaire**.*

- ☐ Question 10
- ☐ Question 17
- ☐ Question 50
- ☐ Review your entire questionnaire, starting at Question #1
- ☐ **Submit Questionnaire**

GO BACK

CONTINUE