

D. ANALYSIS AND REPORTING

Surveillance of tobacco use and related attitudes, knowledge, and beliefs is key to promoting reductions in tobacco use in Hispanic and Latino communities. Research has shown that well-conducted tobacco surveys that preserve the privacy of respondents produce reliable and accurate findings. Over the years, epidemiologists have developed effective questions, scales, and indices for measuring tobacco behaviors, attitudes, and beliefs. With good sample design, survey methodology, and survey execution, results from the Hispanic/Latino Adult Tobacco Survey (H/L ATS) can improve the ability to track tobacco use, knowledge, attitudes, and beliefs in a specific study population.

Four examples of analysis and reporting are provided in this guide (Sections D.1 through D.4). The behavior and policy outcomes used in these examples were chosen because they directly speak to the Centers for Disease Control and Prevention's and the Office on Smoking and Health's goals to (1) reduce initiation, (2) reduce exposure to secondhand smoke among nonsmokers, and (3) increase cessation.

For each of these three major goals, one can track survey data over time to assess the population of interest. Such assessment may consist of comparing this population with other populations, identifying necessary intervention programs, developing health messages and other social marketing communications, and tracking the effectiveness of programs.

Each of the Sections D.1 through D.4 begins by identifying the variables used to address the topic at hand. Variables are divided between "outcome" measures (the behavior to be explained) and "domain" measures (the factors used to predict the behavior). The variables are identified by question number from the H/L ATS.

The variables analyzed in Sections D.1 through D.4 illustrate how these four topics might be addressed. They are not intended to be an exhaustive treatment of analysis and reporting possibilities for the H/L ATS.

D.1 Tobacco Use Among Young Adults

Tobacco use among young adults is a critical item of information for crafting tobacco cessation and tobacco use avoidance programs. Section D.1 identifies some H/L ATS items that may be used to describe tobacco use among young adults in the target population. Table D-1 summarizes the questionnaire items that are used in the analysis tables (Tables D-2 through D-7).

Table D-1. H/L ATS Questions Addressed in Tables D-2 Through D-7

Variable	Table D-2	Table D-3	Table D-4	Table D-5	Table D-6	Table D-7
Outcomes	Q2, Q4, Q5	Q2, Q4, Q5, Q6, Q7	Q2, Q4	Q2, Q4, Q5	Q2, Q3	Q10
Domains	Q41, Q45	Q41, Q45	Q41	Q41, Q45, Q46	Q41, Q49, Q49a	Q2, Q4, Q5, Q35, Q41

D.1.1 Example 1: Current Smoking Levels

The cross-sectional percentage of young adults who are current smokers reflects both initiation of regular tobacco use and smoking cessation (Table D-2). The age range 18 to 24 years was chosen for the tables in this section because for most people late adolescence and early adulthood are a period of transition. Initiation of regular smoking and development of nicotine addiction occur most often during this age, whereas older adults are less likely to initiate regular tobacco use. Many young adults start smoking as they transition into postsecondary education or full-time employment. Many smokers also quit during this period: national quit rates among smokers in this age group are higher than those among older smokers (USDHHS, 1990).

Table D-2. “Current,” “Former,” and “Never” Smokers Among All Hispanic Persons Aged 18 to 24, by Country of Birth (Percentage)

Country of birth	Smoking status		
	Current smoker	Former smoker	Never smoker
Mexico			
Central America, South America			
Caribbean			
Spain			
United States			
Other			

Table D-2 shows current smoking prevalence (smoke now, every day, or some days) for Hispanic persons, stratified by country of birth, among persons aged 18 to 24 years. The “smoke now, every day, or some days” question was asked only of respondents who first had indicated that they had smoked at least 100 cigarettes in their lifetime. A “current smoker” is defined, therefore, as a person who has smoked at least 100 cigarettes in his lifetime and was smoking every day or some days at the time of survey. Differences in the initiation of smoking and early adulthood smoking among members of the various racial or ethnic groups seems to be related to numerous variables—sociodemographic, environmental, historical, behavioral, personal, and psychological (USDHHS, 1998).

The adverse health effects of smoking are influenced by both the number of years someone smokes and the intensity of the smoking. The H/L ATS asks about smoking intensity as measured by the number of cigarettes smoked per day (Table D-3). Table D-3 was constructed by recoding Q7 ("About how many cigarettes did you smoke a day . . .") into four categories. The denominator for Table D-3 includes both "every day" and "some days" smokers who reported smoking on at least a single day during the month preceding interview.

Table D-3. Number of Cigarettes Smoked Daily by "Every Day" and "Some Days" Hispanic Smokers Aged 18 to 24, by Country of Birth (Percentage)

Country of birth	Number of cigarettes smoked daily			
	Less than 1	1–10	11–20	More than 20
Mexico				
Central America, South America, Caribbean				
Other Latino/Hispanic countries (including Spain)				
United States				
Other				

One good measure of progression to established smoking during adolescence is the cross-sectional prevalence of persons who by early adulthood had smoked at least 100 cigarettes (Table D-4). By "progression to established smoking," we mean that people have advanced through the smoking uptake stages to the point that they are no longer "experimenters" (Mowery, Farrelly, Haviland, Gable, & Wells, 2004).

Table D-4. Whether Hispanic Adults Aged 18 to 24 Smoked 100 Cigarettes in Their Lifetime, by Age (Percentage)

Adult's age	Smoked 100 cigarettes in lifetime?	
	Yes	No
18–19		
20–24		

Current smoking status among 18- to 19-year-olds reflects the progression to established smoking by age 18 and the incidence of quitting by this age (Table D-5). Because the pattern of initiation and quitting may differ among these groups, Table D-5 is additionally stratified by the self-reported age at which the respondent came to the United States.

Table D-5. “Current,” “Former,” and “Never Smokers” Among All Hispanic Persons Aged 18 to 19, by Respondent’s Age Upon First Entry into the United States (Percentage)

Age at first entry into United States	Smoking status		
	Never smoker	Current smoker	Former smoker
0–11 years			
12–17 years			
18–19 years			

D.1.2 Example 2: Age at Initiation of Smoking

Progression to established smoking depends in part on the age at which people start experimenting with smoking. The H/L ATS asks respondents to report the age at which they first tried a cigarette (Table D-6). A problem with this measure is recall bias because older respondents, especially, may not accurately remember the age at which they first tried a cigarette. Nevertheless, the age of first experimentation with smoking remains an important indicator—one that helps focus interventions on the most appropriate age groups. An important tobacco control strategy has been to try to delay experimentation and regular smoking until late adolescence and early adulthood, a time when most people presumably have better skills and knowledge for rejecting tobacco as an unhealthy practice.

Table D-6. Age at Which Hispanic Persons Aged 30 or Older First Smoked a Cigarette, by Education (Percentage)

Highest education level completed	Age first smoked cigarette					
	10 or younger	11–14	15–16	17–18	19–20	21 or older
Less than high school						
High school graduate						
Some college						
College graduate						

Table D-6 shows the age at which the respondent first tried a cigarette (asked in Q3), by level of education completed, among those who were aged 30 years or older at survey. To make this table, Q3 responses were grouped into age categories. The denominator for Table D-6 includes only those who had ever tried a cigarette (asked in Q2). Level of education is an appropriate domain for this table because most people have completed their formal education by age 30.

Menthol cigarettes are used by some young adults to reduce throat irritation, and some smokers think that menthol cigarettes are less harmful to health than regular cigarettes (Giovino et al., 2004). Table D-7 shows the prevalence of use of menthol cigarettes by

Hispanic young adult current smokers, by whether the respondent thinks that quitting smoking after more than 20 years of smoking will benefit one's health. Analysts may want to be aware that in cognitive testing respondents who answered "No" to the question on whether quitting would benefit health included those who thought the benefits of quitting after smoking so much would be substantial but not great, as well as those who thought there would be no benefits from quitting at that point.

Table D-7. Use of Menthol Cigarettes Among Hispanic Smokers Aged 18 to 24, by Perceived Benefits of Quitting (Percentage)

Thinks quitting smoking after 20+ years will benefit health	Usually smokes menthol cigarettes?	
	Yes	No
Yes		
No		

D.2 Exposure to Secondhand Smoke

Exposure to secondhand tobacco smoke causes lung cancer, other respiratory diseases, and coronary heart disease in adults; inhalation of tobacco smoke also causes symptoms such as runny nose and throat irritation (USDHHS, 2006). Section D.2 offers some variables for analysis of H/L ATS data on exposure to secondhand smoke. Table D-8 summarizes the variables used in the tables developed to study this topic (Tables D-9 through D-13).

Table D-8. H/L ATS Questions Addressed in Tables D-9 Through D-13

Variable	Table D-9	Table D-10	Table D-11	Table D-12	Table D-13
Outcomes	Q22, Q23, Q25	Q22, Q23, Q24	Q2, Q4, Q5, Q23	Q29, Q30, Q31	Q34a, Q34b, Q34c, Q34d, Q34e, Q40
Domains	Q50	Q4, Q5, Q22, Q23, Q47	Q44	Q26, Q27, Q49a	Q2, Q4, Q5

D.2.1 Example 1: Exposure to Secondhand Smoke at Home

Young children are particularly vulnerable to secondhand smoke in the home because they spend so much time there. Measurement of home exposure to secondhand smoke is accomplished by three means: ambient air monitoring, biological markers of exposure among people who live in the home, and self-reports of exposure. The H/L ATS uses self-report, for which there are two questions: a question about home rules (Q25) and a question about recall of smoking in the home (Q24).

The percentage distribution of restrictions on family members' and guests' smoking in the home is shown in Table D-9. These home rules are stratified by income level, which is recoded into one of four groups from the eight income categories that respondents can self-report (Q50).

Table D-9. Home Smoking Rules Among All Hispanic Adults, by Income (Percentage)

Annual household income (\$)	Smoking permitted inside the home?			Don't know
	No, not anywhere or at any time	Allowed some places or times	Yes, allowed anywhere and at any time	
Less than 25K				
25K to less than 50K				
50K to less than 75K				
75K or more				

Although home rules can indicate exposure, they do not necessarily measure all secondhand smoke exposure at home, because smoking bans may be ignored. An alternative measure of home exposure among nonsmokers is possible with the H/L ATS: Q24 asks for the number of days that someone, excluding the respondent, smoked in the home during the 7 days preceding interview. Table D-10 shows the percentage of persons who reported that someone other than the respondent smoked in the home during the 7 days preceding the interview, by whether the respondent speaks Spanish or English. Language is being used here as a marker of generation. Usually those who speak English are second or third generation.

Table D-10. Number of Days in Past Week That Someone Smoked Inside Home, by Language Generally Spoken by Adult Respondent (Percentage)

Language spoken	Number of days smoking occurred in home during last week			
	None	1–2	3–6	7
Only English, English better than Spanish, or both equally				
Only Spanish or Spanish better than English				

Table D-10 requires some programming to develop. First, one must subset those respondents who are nonsmokers (based on Q4 and Q5). This subset is the denominator. Next, one must recode into appropriate groups the number of days that smoking occurred inside the home. Table D-10 shows only one of the possible recodings. Although it is a valid estimate of the population prevalence of nonsmokers who are exposed to secondhand

smoke in their homes, it does not measure the prevalence of households in which people are exposed to secondhand smoke, because the H/L ATS is generally weighted to the population of people, not households. Moreover, Table D-10 does not include home exposure as identified by smoker respondents to the survey.

A measure of children's potential exposure to secondhand smoke is possible with the H/L ATS. Research has shown that the total number of smokers in a household is correlated with increased serum cotinine levels—more so than number of days someone smoked in the home is correlated (Pirkle et al., 1996). Combining Q5 (whether respondent is a smoker) and Q23 (smoking status of all other adults in the home, excluding the respondent) yields the number of smokers in the household. Table D-11 shows the percentage of respondents who live in homes with one or more smokers, by the age of children in the home. Note that the outcome for Table D-11 (number of smokers in the home) does not include adolescent smokers. Also note that the domain levels in Table D-11 are not mutually exclusive. For example, a respondent who lives in a home with a newborn and a 5-year-old child will be counted in two rows of the table.

Table D-11. Number of Smokers in Home, by Age of Children in Home (Percentage)

Age of children in home	Number of smokers in home			
	None	1	2	More than 2
Newborn to 11 months old				
1–4 years old				
5–11 years old				
12–17 years old				

Because parents may choose not to smoke at home when their children are present, a smoker in the home with children is a good indicator of children's potential exposure but not as good a measure of actual exposure. Smoking at any time in the home may expose children later, however, because secondhand smoke tar is deposited on surfaces and evaporates as fine particles (Nazaroff & Singer, 2004). The levels of delayed exposure and risk from this exposure are as yet unknown.

D.2.2 Example 2: Exposure of Nonsmokers to Workplace Secondhand Smoke

The H/L ATS asks about workplace smoking policy that applies to the respondent's work areas (Q30) and indoor worksite public areas (Q31). Another indicator of exposure to secondhand smoke is Q28, which asks respondents whether they recall anyone's smoking in their work area in the week preceding the survey. These questions are asked only of respondents who are employed for wages or who are self-employed and work outside the

home. Table D-12 shows the prevalence of workplace smoking policies by education level. Table D-12 was constructed as a recode of Q30 and Q31.

Table D-12. Workplace Smoking Policy for Indoor Work Areas and Indoor Public Areas Used by Hispanic Nonsmoking Workers, by Education (Percentage)

Highest education level completed	Workplace smoking policy for indoor work areas and indoor public areas				
	Smoking not allowed in any work or public area	Smoking prohibited in some or all work areas only	Smoking prohibited in some or all public areas only	Smoking allowed in work and public areas	No official rule
Less than high school					
High school graduate					
Some college					
College graduate					

D.2.3 Example 3: Attitudes Toward Laws on Clean Indoor Air

Through ordinances and regulations, state and local governments can mandate that nonsmokers be protected from secondhand smoke in public places. Public support for banning smoking in public places increased dramatically during the past 20 years. As of 2001, about 1,200 local ordinances restricting smoking in public places had been enacted (Brownson, Hopkins, & Wakefield, 2002). In addition, many states, including Arizona, California, and Massachusetts, have enacted comprehensive bans on smoking in public indoor places—for example, bans in workplaces, restaurants, and bars (ANRF, 2007).

The H/L ATS contains a set of questions that measure respondents' support for smoking bans in indoor places. There are five questions (Q34a, Q34b, Q34c, Q34d, Q34e), each asking about a different venue. In addition, Q40a measures support for clean indoor air in a different way by asking whether the respondent would support a smoking ban in most indoor places but excluding bars, night clubs, and casinos. Table D-13 can be used to assess public support for smoking bans and to determine possible barriers to the enactment of a 100% ban.

Table D-13 was constructed by appending six separate cross-tabulations, one for each question. Standard statistical analyses like chi-square tests cannot be performed with this data structure that allows each respondent to be represented multiple times. It is possible to test for a difference in attitudes between one status and all others. For statistical methods for comparing two binomial proportions, see Fleiss, Levin, and Paik (2003). Table D-13 is stratified by respondent smoking status.

Table D-13. Whether Hispanic Adult Respondents Think Smoking Should Be Prohibited in Worksites and Other Indoor Places, by Smoking Status (Percentage)

Smoking status	Thinks smoking should be prohibited in all areas of				Supports law banning smoking in other places
	Public places (government buildings, banks, malls)	Work places	Restaurants	Bars, taverns, night clubs, Casinos	
Current smoker					
Former smoker					
Never smoker					

D.3 Smoking Cessation

Information about smoking cessation is important to the crafting of intervention programs. Section D.3 offers some variables for analysis of H/L ATS data on smoking cessation. Table D-14 summarizes the variables used in the analyses (Tables D-15, D-16, and D-17).

Table D-14. H/L ATS Questions Addressed in Tables D-15 Through D-17

Variable	Table D-15	Table D-16	Table D-17
Outcomes	Q12, Q15, Q16	Q13, Q14, Q21, Q21a	Q11
Domains	Q2, Q4, Q5, Q53	Q2, Q4, Q5, Q42	Q2, Q4, Q5

D.3.1 Example 1: Stages of Change

The H/L ATS can be used to develop an index for the prevalence of smokers who are ready to quit smoking (Table D-15). The stage-of-change index shown in Table D-15 is based on a series of questions, including whether the respondent had made a quit attempt during the 12 months preceding the survey (Q12); readiness to quit in the next 6 months (Q15); and readiness to quit in the next 30 days (Q16).

Respondents who at the time of interview were not seriously considering quitting in the next 6 months are “precontemplators.” Those who were seriously considering quitting in the next 6 months but not in the next 30 days are “contemplators.” Those who were planning to quit in the next 30 days but who had not made a serious quit attempt in the past year are in the “preparation” stage. Those smokers who were planning to quit in the next 30 days and who had made a quit attempt in the past year are in the “action” stage. The stage-of-change index is constructed only for current smokers.

Table D-15. Hispanic Current Smokers' Stage of Change Toward Smoking Cessation, by Whether Spouse or Partner Uses Tobacco (Percentage)

Spouse or partner currently smokes or uses smokeless tobacco?	Stage of change toward smoking cessation			
	Precontemplation	Contemplation	Preparation	Action
Yes				
No				

The delineation of stages of change in Table D-15 is not universally used. Moreover, the stage of change can measure only readiness to quit and cannot be used to infer actual quit attempts or success in quitting: quit attempts can be triggered by environmental changes; success in quitting depends on a host of other factors, including degree of addiction, level of self-efficacy for quitting, and level of self-confidence for quitting.

D.3.2 Example 2: Methods Used to Quit at Last Quit Attempt

Many therapies, self-help materials, and programs have been developed to assist individuals in quitting smoking. On the H/L ATS, three assisted-quitting methods were asked about independently; respondents could choose more than one method. Use of medications, including nicotine replacement therapy, is asked about in Q13. Q14 asks about the use of classes or counseling. Q21 and Q21a ask about seeking help in quitting from other persons, such as a medicine man, herbalist, or religious leader. Cessation method questions are asked of both current and former smokers.

Table D-16 shows the prevalence of use of the three assisted-quitting methods. Nicotine replacement therapy and classes or counseling reference the last quit attempt, whereas seeking help from other persons references a 12-month recall period. It is possible to test for a difference in prevalence of use between males and females. For statistical methods for comparing two binomial proportions, see Fleiss, Levin, and Paik (2003).

Table D-16. Methods Used to Quit Smoking Among Hispanic Current and Former Smokers, by Gender (Percentage)

Gender	Method used for last quit attempt		Consulted in past 12 months
	Nicotine patch, nicotine gum, or other medication	Classes or counseling	Saw a medicine man, santero, spiritist, herbalist, religious leader, or other non-health professional
Male			
Female			

D.3.3 Example 3: Length of Abstinence Among Former Smokers

Smokers and ex-smokers typically report making multiple attempts to quit (USDHHS, 1990). Among those who have quit for a single day, the failure rate is very high. The longer

the quit attempt lasts, the more likely it is that the individual will successfully avoid relapsing. The length of abstinence is used as an indicator of smokers' overall success in quitting and an indirect measure of smokers' knowledge of resources to help them quit. Table D-17 shows the length of abstinence for former smokers. The outcome variable for Table D-17 is a recode of Q11. The denominator for this table is persons who had smoked at least 100 cigarettes in their lifetime but were not smoking at time of interview (ascertained from Q2, Q4, and Q5). Respondents who reported in Q11 that they never smoked regularly are excluded from the denominator.

Table D-17. Length of Abstinence Among Hispanic Current and Former Smokers, by Age (Percentage)

Age	Length of abstinence			
	Up to 1 month	1–3 months	3 months to 1 year	Longer than 1 year
18–24 years				
25–44 years				
45–64 years				
65 years or older				

D.4 Use of Additional Data Sets

Reviewing findings from other reputable tobacco-related studies and relating that information to the target population can expand one's perspective, providing a fuller understanding of tobacco-related issues as they affect that specific population. Section D.4 presents two such analyses.

Table D-18 summarizes the H/L ATS variables used in the comparison presented in Table D-20 (no H/L ATS findings are presented in Table D-19).

Table D-18. H/L ATS Question Addressed in Tables D-19 and D-20

Variable	Table D-19	Table D-20
Outcomes	TUS-CPS	Q36
Domains	TUS-CPS	ANRF

D.4.1 Example 1: Occupational Differences in Workplace Smoking Policies

Table D-12 shows workplace smoking policies by education level, based on the H/L ATS. We can further explore differences in workplace policies among population groups by using the Tobacco Use Supplement (TUS) to the Current Population Survey (CPS). The TUS-CPS is a national survey that is prestratified by state (i.e., the sample is drawn independently within each state). There are enough completed interviews at the state level to make reliable

individual state estimates for many domains. A rich set of respondent and household occupational information is made available by linking responses to the TUS with items collected through the CPS. For example, Table D-19 shows workplace smoking policies by three broad occupational categories: white collar, blue collar, and food service. Although many business organizations have adopted smoke-free worksite policies, certain industries lag behind, particularly food service establishments and bars that serve the public (Shopland, Anderson, Burns, & Gerlach, 2004). Servers and other food service workers are often exposed to secondhand tobacco smoke while working. The occupational categories shown in Table D-19 are a recode based on the detailed occupational codes used by the CPS (U.S. Census Bureau, 2006). The TUS-CPS is sponsored by the National Cancer Institute and is fielded every 3 years.

Table D-19. U.S. Employed Smokers^a Who Work in Smoke-free, Smoking-allowed, and No-policy Workplaces, by Occupation (Percentage)^{b,c}

Occupation class	Workplace smoking policy		
	No policy	Smoking allowed	Smoke-free
White collar			
Blue collar			
Food service			

^aRespondents who reported smoking every day one year prior to survey.

^bTable excludes self-employed persons and persons who work outdoors.

^cSource: 2001–2002 NCI Tobacco Use Supplement to the Current Population Survey.

D.4.2 Example 2: Merging H/L ATS Data with Environmental Data

The H/L ATS can be used to assess differences in attitudes and beliefs about exposure to secondhand smoke and to determine whether the respondent lives in a locality with a law on clean indoor air. Q36 asks respondents whether they think that breathing secondhand smoke is harmful to one's health. This question is the outcome for Table D-20.

Table D-20. Beliefs About the Harmful Effects of Breathing Secondhand Smoke, by Strength of Local Clean Indoor Air Laws (Percentage)

Strength of local law on clean indoor air	Belief About breathing secondhand smoke		
	Harmful to one's health	Not harmful at all to one's health	Don't know
100% ban ^a			
Qualified ^b			
Weak or no law			

^aLaw prohibits smoking in all worksites and all public indoor places, including restaurants and freestanding bars.

^bLaw allows exemptions for some indoor places.

Information on the domain for Table D-20, the strength of local laws mandating clean indoor air, is available from the Americans for Nonsmokers' Rights Foundation (ANRF; <http://no-smoke.org/>). Since 1985 ANRF has tracked, collected, and analyzed local tobacco control ordinances, bylaws, and Board of Health regulations (ANRF, 2007). As of January 3, 2006, the database contained more than 5,000 ordinances from more than 2,900 communities. Each ordinance database record has more than 200 fields detailing characteristics of the law or regulation for each municipality. Table D-20 uses one of the primary fields in the ANRF database: whether the local ordinance completely bans smoking in public indoor places, whether the local ordinance is qualified (meaning that the ordinance exempts certain indoor places), or whether the local ordinance is weak or there is no local ordinance for clean indoor air. Information on the strength of local laws can be merged to the H/L ATS by zip code (Q55). Information on local ordinances for a specific state can be obtained by contractual agreement with ANRF.