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Overview

Basic methodologic information on national datasets that assess e-cigarette use among youth and young adults is presented in Table A2.1-1. The surveys included in the table typically assess awareness, ever use, and past-30-day use of e-cigarettes. The Population Assessment of Tobacco and Health (PATH) study assesses the type of e-cigarette used (e.g., open system vs. closed system), but the National Youth Tobacco Survey (NYTS), National Adult Tobacco Survey (NATS), Styles survey (also known as HealthStyles and Summer Styles), and Monitoring the Future (MTF) do not. Estimates from these five surveys are nationally representative and are useful for examining trends across time and co-use with other tobacco products.

Some of the surveys, however, include an insufficient sample of adolescents, young adults, and racial/ethnic

minorities or other groups of special interest within these age categories to allow for more granular analyses that are valid and reliable. Further, the youth surveys (NYTS and MTF) are school-based and, therefore, exclude youth not in school (e.g., dropouts and those missing the survey on days of administration). As a result, they may not generalize to the entire population of youth.

Chapter 2 employs cross-sectional data from the 2011–2015 NYTS, the 2014 and 2015 MTF, the 2013–2014 NATS, and the 2010–2014 Styles survey. Because the surveys are cross-sectional, temporality and directionality of associations cannot be inferred. Unfortunately, data from the PATH study were not yet available for inclusion in this chapter at the time of its preparation. The longitudinal nature of the PATH study will be valuable in the future, as the study of e-cigarette use in these populations continues.

Youth Surveys

National Youth Tobacco Survey

The NYTS, which has been administered by the Centers for Disease Control and Prevention (CDC) in collaboration with the U.S. Food and Drug Administration (FDA) since 2011, provides data on tobacco use among youth in order to understand the effect of tobacco control interventions and policies. The NYTS is a school-based, self-administered, paper-and-pencil survey of U.S. middle and high school students that examines tobacco use broadly, as it includes the use of cigarettes, smokeless tobacco, snus, cigars, hookahs, pipes, bidis, and kreteks (beginning in 2014, kreteks were deleted from the survey). NYTS data have been collected periodically since 1999; e-cigarette measures were added in 2011. An item to assess the perceived harm of e-cigarettes relative to cigarettes was added in 2012, while a question on absolute harm was added in 2014. Of 255 schools selected for the 2015 NYTS, 185 (72.6%) participated, with a sample of 17,711 (87.4%) among 20,259 eligible students; the overall response rate was 63.4%. The present report uses data from the 2011–2015 NYTS surveys.

For additional information on methods used in NYTS surveys conducted prior to 2013–2014, see http://www.cdc.gov/tobacco/data_statistics/surveys/nyts/.

Monitoring the Future Survey

Administered by the University of Michigan's Institute for Social Research and funded by the National Institute on Drug Abuse (NIDA), the purpose of the MTF survey is to monitor changes in attitudes, beliefs, and behaviors among U.S. adolescents in grades 8, 10, and 12. The survey is a school-based, self-administered, paper-and-pencil questionnaire with cross-sectional and longitudinal components; an item on e-cigarettes was added in 2014. The survey assesses the use of cigarettes, smokeless tobacco, cigars (large cigars and little cigars/cigarillos), and hookahs; questions on e-cigarettes were added in 2014. The present report uses data from the 2014 and 2015 MTF surveys. More information on methods employed in MTF surveys can be found in Bachman and colleagues (2014).

Young Adult and Adult Surveys

National Adult Tobacco Survey

Administered since 2012 by CDC in collaboration with FDA, the purpose of the NATS is to assess the prevalence of tobacco use among U.S. adults and examine the factors that promote and protect against tobacco use. The NATS is a landline and cell phone survey of noninstitutionalized adults 18 years of age or older residing in the 50 U.S. states or the District of Columbia. Data on the use of cigarettes, smokeless tobacco, cigars (large cigars, cigarillos, and filtered cigars), hookahs, and pipes were collected in 2009–2010 and 2013–2014; measures to assess e-cigarette use were added in 2012. For additional information on methods used in NATS surveys conducted prior to 2012–2014, see http://www.cdc.gov/tobacco/data_statistics/surveys/nats/.

Styles (Also Known as HealthStyles)

The Styles survey, a series of national consumer panel surveys of U.S. adults 18 years of age and older, has been administered in seasonal waves since 1995. This survey is sponsored by CDC and administered by Porter Novelli, a multinational public relations firm. Formally known as the “Summer Styles” survey, although often commonly referred to as HealthStyles, it reaches more than 4,000 adults during the summer to examine their beliefs and behaviors regarding a variety of health topics. The Styles survey assesses sociodemographic characteristics related to tobacco use (cigarettes, smokeless tobacco, snus, cigars, and hookahs); e-cigarette measures were added in 2009. Styles transitioned to an online-only methodology in 2011; thus, both mail (August–September) and web (July–August) versions of Styles were fielded in 2010. Only the web version was fielded in 2011 (July–August), 2012 (June–July), and 2013 (June–July). The present report uses data from the 2010–2014 Styles surveys.

Youth, Young Adult, and Adult Surveys

Population Assessment of Tobacco and Health Study

The PATH study is sponsored by FDA's Center for Tobacco Products (CTP) and administered by NIDA. The purpose of this large, nationally representative, longitudinal survey of tobacco-related knowledge, attitudes, beliefs, behaviors and use, and health outcomes among U.S. adolescents (12–17 years of age) and adults is to yield comprehensive data that can be used to inform CTP's regulatory activities as well as educate the interested public. For adults, biomarkers of exposure are collected as well to inform our knowledge of tobacco-related disease processes. Approximately 46,000 persons were included in the first wave of the PATH study, which was conducted in 2013–2014; follow-up data collection for this initial

wave and for subsequent waves is ongoing. The in-person, computer-assisted interviews include extensive questions on cigarettes, e-cigarettes, cigars (traditional large cigars, cigarillos, and filtered cigars), pipe tobacco, smokeless tobacco, snus, dissolvable tobacco, hookahs, bidis (youth only), and kreteks (youth only). Adult participants are also asked to contribute buccal cells, urine, and/or blood samples. Original analyses using the PATH study data were not available for inclusion in this chapter at the time of its preparation, but Table A2.1-1 in this appendix and Table A2.2-2 in Appendix 2.2 include information about the PATH study and e-cigarette items on this survey for comparison with other national surveys. The survey's longitudinal design will contribute to the state of the science in critical ways. Studies that have appeared in the literature using these data are highlighted where appropriate (e.g., Ambrose et al. 2015).

Table A2.1-1 Sources of national data on e-cigarette use among youth and young adults

	NYTS	MTF	NATS	Styles	PATH	NHIS	YRBSS
Sponsoring agency or organization	Centers for Disease Control and Prevention and Food and Drug Administration since 2011	National Institute on Drug Abuse, administered by the University of Michigan's Institute for Social Research	Centers for Disease Control and Prevention and Food and Drug Administration since 2012	Centers for Disease Control and Prevention, in partnership with Hollywood, Health & Society	Food and Drug Administration and National Institutes of Health	Centers for Disease Control and Prevention, National Center for Health Statistics	Centers for Disease Control and Prevention, Division of Adolescent and School Health
Type of survey	Cross-sectional	Cross-sectional and longitudinal	Cross-sectional	Cross-sectional	Cross-sectional and longitudinal	Cross-sectional	Cross-sectional
Years	1999, 2000, 2002, 2004, 2006, 2009, 2011–2015	1975–2015	2009–2010, 2012–2013, 2013–2014	1995–2014	2013–2015	1957–2014	1991–2015
Year e-cigarette measures added	2011	2014	2012–2013	2009	2013–2014	2014	2014–2015
Mode of survey administration	School-based, self-administered questionnaire	School-based, self-administered questionnaire; follow-up survey by mail	Landline and cell phone survey	Postal mail surveys/web-based surveys	In-person interview; subsample biospecimen collection in adults only	In-person interview	School-based, self-administered questionnaire
Response rate	2015: 72.6% for schools; 87.4% for students; 63.4% overall	<ul style="list-style-type: none"> • 2014: 90% of 8th graders; 88% of 10th graders; 82% of 12th graders • 2015: 89% of 8th graders; 87% of 10th graders; 83% of 12th graders 	<ul style="list-style-type: none"> • 2012–2013: 44.9% • 2013–2014: 36.1% 	<ul style="list-style-type: none"> • 2013: 66.1% • 2014: 69%^a 	Not available	2014: 73.8% for households	2014–2015: 69% for schools; 86% for students; 60% overall

Table A2.1-1 Continued

	NYTS	MTF	NATS	Styles	PATH	NHIS	YRBSS
Ages/grades	6th–12th grades	8th and 10th graders (since 1991) and 12th graders (since 1975); college students; young adults	Noninstitutionalized adults ≥18 years of age residing in the 50 states or Washington, DC	Adults ≥18 years of age	Youth 12–17 years of age and adults ≥18 years of age	Adults, 18 years of age and older, living in households across the United States	All regular public ^b and private ^c schools with students in at least one of grades 9–12 in the 50 states and the District of Columbia
Sample size	2015: 17,711 students; 185 schools	<ul style="list-style-type: none"> • 2014: 41,551 students; 377 schools • 2015: 44,892 students; 382 schools 	<ul style="list-style-type: none"> • 2012–2013: 60,192 • 2013–2014: 75,233 	<ul style="list-style-type: none"> • 2013: 4,033 • 2014: 4,269 	~46,000 adolescents and adults	36,697 adults	15,624 students
Type of tobacco examined (most current survey available)	Cigarettes, smokeless tobacco, snus, cigars, e-cigarettes, hookah, pipes, bidis, kreteks (kreteks deleted on 2014 survey)	Cigarettes, smokeless tobacco, large cigars, little cigars or cigarillos, e-cigarettes, hookah	Cigarettes, smokeless tobacco, large cigars, cigarillos, filtered cigars, e-cigarettes, hookah, pipes	Cigarettes, smokeless tobacco, snus, cigars, e-cigarettes, hookah	Cigarettes, e-cigarettes, traditional cigars, cigarillos, filtered cigars, pipe tobacco, smokeless tobacco, snus, dissolvable tobacco, waterpipe tobacco, bidis (youth only), kreteks (youth only)	Cigarettes, smokeless tobacco, large cigars, cigarillos, filtered cigars, e-cigarettes, hookah, pipes	Cigarettes, smokeless tobacco, cigars, e-cigarettes

Notes: MTF = Monitoring the Future; NATS = National Adult Tobacco Survey; NHIS = National Health Interview Survey; NYTS = National Youth Tobacco Survey; PATH = Population Assessment of Tobacco and Health Study; YRBSS = Youth Risk Behavior Surveillance System.

^a The Styles survey considers its response rate to be the proportion of those who responded to the survey divided by those who were contacted. This does not fit the American Association for Opinion Research (2008) definition of response rate, which considers the number of complete interviews with reporting units divided by the number of eligible reporting units in the sample.

^b Might include charter schools and public alternative, special education, or vocational schools.

^c Might include religious and other private schools, but does not include private alternative, special education, or vocational schools.

References

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