

ORIGINAL INVESTIGATION

Race/Ethnicity, Nativity, and Tobacco Use Among U.S. Young Adults: Results From a Nationally Representative Survey

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ABSTRACT

Introduction: A growing body of research documents racial/ethnic disparities in U.S. cigarette smoking. To date, however, few studies have examined the influence of nativity, in addition to race/ethnicity, on current and ever use of cigarettes as well as other tobacco products among young adults. Here, racial/ethnic and nativity disparities in tobacco use and self-identified smoking status are documented for U.S. women and men aged 18–34, both unadjusted and adjusted for socioeconomic status.

Methods: The Legacy Young Adult Cohort Study ($N = 3,696$) was used to examine gender-specific tobacco use and smoking status differences among foreign-born Hispanics, U.S.-born Hispanics, U.S.-born non-Hispanic Blacks, and U.S.-born non-Hispanic Whites. Prevalence estimates and multivariable models of ever tobacco use, current tobacco use, and self-identified smoking status were calculated.

Results: U.S.-born Hispanics, Blacks, and Whites exhibit the highest levels of ever and current use across a range of tobacco products, whereas foreign-born Hispanics, particularly women, exhibit the lowest ever and current use of most products and are least likely to describe themselves as smokers. Controlling for socioeconomic covariates, current tobacco use is generally lower for most minority groups relative to Whites. Social or occasional smoking, however, is higher among U.S.-born Hispanics and Blacks.

Conclusions: The high level of tobacco use among U.S.-born young adults foreshadows substantial tobacco-related morbidity and mortality in the coming decades. Foreign-born Hispanic young adults, particularly women, exhibit the lowest levels of tobacco use. Future studies of tobacco use must differentiate racial/ethnic groups by nativity to better understand patterns of tobacco use.

INTRODUCTION

Cigarette smoking among U.S. youth and young adults remains one of the greatest public health and social issues of our time. Each day, close to 4,000 American youth smoke their first cigarette and nearly 1,000 youth become regular smokers (U.S. Department of Health and Human Services, 2012). As a result of continued tobacco use by many of these early initiators and later initiation among other young adults, 34% of U.S. young adults aged 18–25 reported being current cigarette smokers in 2010 (U.S. Department of Health and Human Services, 2012). Young adulthood represents a critical life-course stage in which long-term tobacco use habits are often established. The health, mortality, and economic consequences of regular

cigarette smoking are enormous, tragic, and well documented (Fenelon & Preston, 2012; Muennig, Fiscella, Tancredi, & Franks, 2010; U.S. Department of Health and Human Services, 2012). Reducing tobacco use during youth and young adulthood is essential to avert these tremendous harms.

Understanding the public health challenges and consequences of cigarette smoking necessitates that heterogeneity in use patterns be well documented and understood. This is particularly important with regard to race/ethnicity, given the rapidly changing U.S. population composition (Humes, Jones, & Ramirez, 2011; Williams & Sternthal, 2010; Winkleby & Cubbin, 2004). A growing body of research documents racial/ethnic disparities in cigarette smoking (Lawrence, Fagan, Backinger, Gibson, & Hartman,

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2007; Nelson et al., 2008; Trinidad, Pérez-Stable, White, Emery, & Messer, 2011; U.S. Department of Health and Human Services, 1998). Most recently, among young adults (i.e., aged 18–25), current smoking was reported to be 39% among non-Hispanic Whites, 27% for Hispanics, and 26% for non-Hispanic Blacks (U.S. Department of Health and Human Services, 2012). To date, few studies have examined the influence of nativity, in addition to race/ethnicity, on cigarette smoking patterns; such studies tend to find lower rates of smoking among immigrants than the U.S. born (Baluja, Park, & Myers, 2003; Georgiades, Boyle, Duku, & Racine, 2006; Lopez-Gonzalez, Aravena, & Hummer, 2005).

Cigarette smoking rates have also historically been lower among women than men. However, as overall smoking rates have decreased over time, they have not dropped as quickly for women. Since 1970, smoking rates among U.S. women have declined by about 30% compared with a 40% decline among men (Legacy Foundation, 2010). Racial/ethnic differences in cigarette smoking are also seen by gender. Current smoking among Hispanic women was 9.8% in 2009, about half that of White women (19.8%) and Black women (19.2%). Among men, current smoking among Hispanics (19.0%) was just 20% lower than that of Blacks (23.9%) and Whites (24.5%) (Centers for Disease Control and Prevention, 2010).

Few studies focus on racial/ethnic and nativity differences in other (i.e., non-cigarette) forms of tobacco use, including cigars, little cigars, hookah, pipes, smokeless tobacco, and more. One study documented higher cigar use among White and Black young adults compared with Hispanics (Cullen et al., 2011). Further, Biener, McCausland, Curry, and Cullen (2011) showed a higher level of snus experimentation among Whites aged 18–49 compared with minority groups, whereas Smith and colleagues (2011) demonstrated greater hookah use among Whites aged 18 and above in comparison to other racial/ethnic groups in California. Findings from the first wave of the Legacy Young Adult Cohort Study (LYACS) indicate that Hispanic young adults were significantly less likely than White young adults to report any current tobacco use, including use of cigarettes and other tobacco products (Rath, Villanti, Abrams, & Vallone, 2012).

The purpose of this study is to better understand contemporary racial/ethnic and nativity differences in cigarette smoking and other forms of tobacco use, using a new nationally representative sample of U.S. young adults aged 18–34. Prevalence estimation using nationally representative data is particularly important because much of the research on young adult tobacco use relies on samples of college students (Moran, Wechsler, & Rigotti, 2004; Morrell, Cohen, Bacchi, & West, 2005; Rigotti, Lee, & Wechsler, 2000). The first aim of the study is to document detailed tobacco use and smoking status disparities by race/ethnicity and, among Hispanics, by nativity (foreign born vs. U.S. born). Second, this study assesses whether socioeconomic status (SES) confounds racial/ethnic and nativity differences in tobacco-use behavior and self-identified smoking status due to substantial variation in SES by race/ethnicity (Anderson & Massey, 2001; National Research Council, 2006) and to the high correlation of tobacco use with SES (Barbeau, Krieger, & Soobader, 2004; Cutler & Lleras-Muney, 2008; Green et al., 2007; Mirowsky & Ross, 2003; U.S. Department of Health and Human Services, 2012).

METHODS

Data

This study uses cross-sectional data from the second wave of the LYACS. LYACS is a nationally representative sample of young adults aged 18–34 drawn from the Knowledge Networks' Knowledge Panel, an address-based probability sample that uses online data collection for adults aged 18 and older that covers both the online and offline populations in the United States. The purpose of this longitudinal cohort study is to better understand trajectories of tobacco use among young adults. Details on recruitment are provided elsewhere (Rath et al., 2012). Briefly, the LYACS included cell-phone-only households, and individuals in households without Internet access were provided with a free notebook computer and Internet service to reduce response bias. The LYACS oversampled African American and Hispanic young adults to ensure sufficient samples for subgroup analysis. The Independent Investigational Review Board, Inc. approved this study, and online consent was collected from participants before questionnaire self-administration. Poststratification weights are used to adjust for nonresponse or noncoverage bias. Baseline data were collected in July 2011 ($N = 4,215$). The second wave was conducted in January 2012, with 3,092 participants providing follow-up data and 1,144 new recruits ($N = 4,236$). Wave 2 data were used here because they contained a measure of nativity and detailed measures of SES. Respondents who identified as other than Black, Hispanic, or White and those with missing values on nativity, tobacco use, or model covariates were excluded. Foreign-born Blacks and Whites were also excluded due to small sample sizes. The final analytic sample consisted of 3,696 respondents.

Measures

Participants were categorized as Black or White if they self-identified as such and did not identify as Hispanic. Respondents who identified as Hispanic were classified as Hispanic regardless of the race with which they identified. Immigrant status among Hispanics was assigned to those who reported being born outside the 50 states; thus, island-born Puerto Ricans are classified as foreign born.

Ever use measures of 10 tobacco products (cigarettes, cigars, little cigars, hookah, pipe, e-cigarettes, dip/snuff, chewing tobacco, snus, and dissolvables) are assessed from the question, "Which, if any, of the following tobacco or nicotine products have you ever used or tried?"; a category of "ever use of any tobacco product" was also included. Similarly, current use (past 30 days) of those 10 products, as well as current use of any tobacco product, was assessed from the question, "During the last 30 days, on how many days have you used any of the following tobacco products?" Use on at least one day in the past 30 days is coded as current use. Although ever use and current use of the 10 specific tobacco products are shown separately in descriptive tables, the 10 products are categorized into "cigarettes" and "other products" in multivariable analyses due to the relatively low prevalence of several of the non-cigarette products.

Four categories of self-identified smoking status are included (smoker, social/occasional smoker, ex-smoker/tried smoking, and never-smoker); this measure is particularly

important because Blacks and Hispanics are more likely to report intermittent (or social/occasional) smoking (Fagan & Rigotti, 2009; Trinidad et al., 2009), a pattern that may be overlooked if current regular smoking was the sole focus.

In multivariable analyses, models are adjusted for age in single years (18–34) and six socioeconomic covariates, including educational attainment (less than high school, high school, some college, and bachelor's degree or higher), ratio of family income to the 2011 poverty threshold (less than 1.00, 1.00–1.99, 2.00–2.99, 3.00–3.99, and 4.00 or higher), employment status (not currently employed vs. currently employed), mother's and father's educational attainment (the same four categories as for own educational attainment), and self-reported childhood financial situation (pretty well off financially, about average, poor, and it varied).

Analysis

Prevalence estimates of ever tobacco use, current tobacco use, self-identified smoking status, and covariate distributions were calculated. Because estimates of tobacco use and smoking status vary by both race/ethnicity and gender, particularly for foreign-born Hispanics, descriptive tables and models are stratified by gender. Logistic regression models are used to examine cigarette use and other tobacco product use with respect to race/ethnicity, nativity, age, and socioeconomic covariates. Analyses are presented separately for ever use and current use. Multinomial logistic regression models of the four-category smoking status variable are estimated to examine racial/ethnic and nativity differences in smoking status, controlling for age and socioeconomic covariates. Relative risk ratios compare the odds of identifying as a smoker, social/occasional smoker, or ex-smoker/tried smoking relative to identifying as a never-smoker. In all multivariable analyses, Model 1 adjusts racial/ethnic and nativity disparities in the tobacco-use outcome for age alone, and Model 2 adjusts for age and socioeconomic covariates. Model 1 demonstrates sex-specific baseline estimates of racial/ethnic and nativity differences in tobacco use, net of age. Model 2 determines whether the associations would persist under the condition that the racial/ethnic groups did not differ by SES. All prevalence and *CI* estimates are weighted using `svy` commands in StataSE 12.0.

RESULTS

Racial/Ethnic and Nativity Differences in Tobacco Use

Among women (Table 1), foreign-born Hispanics demonstrate considerably lower ever use patterns of several tobacco products in comparison to Whites, U.S.-born Hispanics, and Blacks. Ever use of cigarettes is far lower among foreign-born Hispanics (16.7%, *CI* 11.5%–23.4%) compared with Whites (55.3%, *CI* 51.7%–58.9%), U.S.-born Hispanics (55.9%, *CI* 48.0%–63.6%), and Blacks (53.9%, *CI* 44.8%–62.7%). Ever use of little cigars, hookah, and e-cigarettes for foreign-born Hispanic women is also substantially below the levels of Whites. About one third (33.8%, *CI* 26.0%–42.5%) of foreign-born Hispanic women report ever using any tobacco product compared with more than 60% of White, U.S.-born Hispanic, and Black women. U.S.-born Hispanic women display few statistically significant differences in ever use

of tobacco products compared with Whites, with lower use of chewing tobacco and snus being the only two differences. There are no differences in ever tobacco use for Black women compared with White women, including ever use of any tobacco product.

Foreign-born Hispanic women also display substantially lower levels of current cigarette use (4.0%, *CI* 1.9%–8.0%) compared with Whites (22.7%, *CI* 19.7%–26.1%), U.S.-born Hispanics (16.7%, *CI* 11.3%–24.0%), and Blacks (24.2%, *CI* 16.3%–34.5%). Further, very few (1.7% or less) foreign-born Hispanic women report current use of cigars, little cigars, hookah, pipes, e-cigarettes, dip/snuff, chewing tobacco, snus, or dissolvables. There are no differences in current use of any of the tobacco products when comparing U.S.-born Hispanic women with Whites. Black women, in turn, report a higher level of current little cigar use than Whites (13.3% vs. 2.3%); they also report modestly higher use levels of some of the other products compared with Whites.

Table 1 also shows that just 1.5% of foreign-born Hispanic women report that they are smokers and 80.7% report that they are never-smokers. In comparison, 13.9% of White women classify themselves as smokers, whereas 60.9% classify themselves as never-smokers. The highest level of social/occasional smoking is among Black women (16.7%, *CI* 10.1%–26.4%) although the confidence interval of this estimate overlaps with Whites (8.4%, *CI* 6.5%–10.8%). Foreign-born and U.S.-born Hispanics were more likely to report lower SES based on education, income, employment status, and parental education compared with Whites.

Like their female counterparts, foreign-born Hispanic men are less likely to report ever use of a number of tobacco products compared with White, Black, and U.S.-born Hispanic men (Table 2). Ever use of cigarettes among foreign-born Hispanic men (32.3%, *CI* 23.7%–42.3%) is far lower than among U.S.-born Hispanic men (56.7%, *CI* 47.4%–65.5%) and White men (51.9%, *CI* 48.0%–55.8%) but about double that of foreign-born Hispanic women (16.7%). Ever use of most non-cigarette tobacco products is lowest among foreign-born Hispanic men and similarly high among U.S.-born Hispanic, Black, and White men. Ever use of little cigars, for example, ranges from 33.2% to 35.6% for the three groups of U.S.-born men but is 5.0% (*CI* 2.7%–9.0%) among foreign-born Hispanic men.

Current use of cigarettes and of any tobacco product is lower among foreign-born Hispanic men than among U.S.-born Hispanic men; for example, 13.6% (*CI* 7.7%–22.9%) of foreign-born Hispanic men report current cigarette use compared with 35.5% (*CI* 26.6%–45.4%) of U.S.-born Hispanic men. However, current use of most tobacco products among men does not statistically differ by race/ethnicity. One exception is the much higher use of little cigars among Black men (15.1%, *CI* 7.8%–27.2%) compared with Whites (4.0%, *CI* 2.7%–6.0%) and foreign-born Hispanics (1.9%, *CI* 0.7%–5.4%). Self-identified smoking status among men varies significantly by race/ethnicity in only one instance; 21.4% of U.S.-born Hispanic men report being social/occasional smokers compared with 10.7% of White men.

Multivariable Models of Tobacco Use

Table 3 confirms lower ever use of cigarettes and other tobacco products among foreign-born Hispanic women and men compared with White women and men, controlling for

Race/ethnicity, nativity, and tobacco use among U.S. young adults

Table 1. Prevalence of Tobacco Use, Self-Identified Smoking Status, and Socioeconomic Characteristics by Race/Ethnicity and Nativity, U.S. Young Women Aged 18–34

	Foreign-born Hispanic	U.S.-born Hispanic	Non-Hispanic Black	Non-Hispanic White
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Ever tobacco use				
Cigarettes	16.7* (11.5–23.4)	55.9 (48.0–63.6)	53.9 (44.8–62.7)	55.3 (51.7–58.9)
Cigars	20.7 (14.4–28.7)	24.7 (18.0–32.9)	23.3 (15.4–33.6)	25.8 (22.7–29.1)
Little cigars	2.7* (1.2–6.1)	21.9 (15.7–29.7)	27.2 (19.2–37.0)	25.9 (22.9–29.2)
Hookah	6.8* (3.7–12.0)	26.5 (19.6–34.7)	10.7 (6.1–18.2)	18.4 (15.6–21.5)
Pipe	2.4 (0.8–6.9) ^a	5.8 (2.4–13.2)	5.3 (1.9–13.5)	6.2 (4.7–8.3)
E-cigarettes	1.3* (0.4–3.6)	5.1 (2.8–9.0)	5.3 (1.9–14.1)	8.0 (6.3–10.1)
Dip/Snuff	0 ^a	2.6 (0.9–7.6)	5.5 (2.1–14.0)	6.7 (5.0–9.0)
Chewing tobacco	0 ^a	0.8* (0.3–2.1)	4.2 (1.3–13.2)	3.8 (2.5–5.7)
Snus	0 ^a	0.7* (0.3–1.7)	3.9 (1.1–13.3) ^a	3.3 (2.1–5.0)
Dissolvables	0 ^a	0.8 (0.2–2.5) ^a	4.0 (1.1–13.2)	0.5 (0.1–1.9)
Any tobacco product	33.8* (26.0–42.5)	67.5 (60.4–73.9)	62.7 (54.2–70.6)	61.6 (58.0–65.1)
Current tobacco use (past 30 days)				
Cigarettes	4.0* (1.9–8.0)	16.7 (11.3–24.0)	24.2 (16.3–34.5)	22.7 (19.7–26.1)
Cigars	1.7 (0.8–3.6)	2.3 (0.7–7.2)	7.2 (3.2–15.5)	1.7 (0.8–3.4)
Little cigars	0.2 (0.0–1.6) ^a	2.6 (0.9–7.2)	13.3* (7.4–22.8)	2.3 (1.3–4.1)
Hookah	0.5 (0.1–3.4) ^a	2.0 (1.0–4.0)	4.9 (1.7–13.5)	1.8 (1.0–3.1)
Pipe	0 ^a	0 ^a	4.3* (1.3–13.2)	0.1 (0.0–0.4) ^a
E-cigarettes	0.6 (0.1–3.0) ^a	1.6 (0.6–4.0)	4.0 (1.1–13.2)	1.8 (1.0–3.2)
Dip/Snuff	0 ^a	0.2 (0.0–1.3) ^a	3.9* (1.1–13.3) ^a	0.0 (0.0–0.1) ^a
Chewing tobacco	0 ^a	0.2 (0.0–1.3) ^a	3.9* (1.1–13.3) ^a	0.0 (0.0–0.1) ^a
Snus	0 ^a	0.1 (0.0–0.6) ^a	3.9 (1.1–13.3) ^a	0.3 (0.0–1.6) ^a
Dissolvables	0 ^a	0.3 (0.0–2.1) ^a	3.9* (1.1–13.3) ^a	0.0 (0.0–0.1) ^a
Any tobacco product	6.2* (3.6–10.4)	19.7 (14.0–27.0)	27.3 (19.1–37.3)	24.9 (21.8–28.4)
Self-reported smoking status				
Smoker	1.5* (0.5–4.5)	9.8 (5.4–17.3)	10.6 (5.9–18.5)	13.9 (11.4–16.9)
Social/Occasional smoker	5.4 (2.5–11.2)	9.9 (6.4–15.1)	16.7 (10.1–26.4)	8.4 (6.5–10.8)
Ex-smoker/tried smoking	12.4 (7.7–19.2)	21.7 (15.3–29.7)	16.2 (10.1–25.0)	16.7 (14.3–19.5)
Nonsmoker	80.7* (72.9–86.7)	58.6 (50.3–66.5)	56.5 (46.9–65.7)	60.9 (57.3–64.5)
Covariates				
Age (M)	27.4 (26.5–28.2)	24.9* (24.2–25.6)	26.3 (25.5–27.1)	26.1 (25.8–26.5)
Less than high school	36.8* (28.1–46.5)	13.4 (8.8–19.9)	9.7 (5.1–17.7)	6.7 (4.8–9.1)
Income to poverty < 1.00	56.8* (47.9–65.3)	33.8* (26.5–42.0)	50.2* (41.0–59.4)	19.6 (16.5–23.1)
Not working	66.6* (57.3–74.7)	54.1* (46.0–62.0)	50.9* (41.7–60.1)	35.6 (32.1–39.2)
Mother's education < 12 years	67.0* (58.3–74.7)	32.4* (25.2–40.5)	15.0 (9.3–23.5)	7.0 (5.1–9.6)
Father's education < 12 years	62.1* (52.8–70.5)	30.7* (24.2–38.2)	25.7* (18.0–35.2)	11.6 (9.2–14.5)
Family poor in childhood	24.7 (18.7–32.0)	18.3 (13.3–24.6)	14.0 (9.1–20.9)	19.8 (17.1–22.9)
Unweighted N	247	344	266	1,236

Note. ^aEstimates may be unreliable as a result of small cell sizes (fewer than five observations).

* indicates prevalence is significantly different from that of non-Hispanic whites ($p < .05$).

age differences across groups. Foreign-born Hispanic women exhibit 85% lower odds ($OR = 0.15$, $CI 0.09\%–0.23\%$) of ever cigarette use and 54% lower odds ($OR = 0.46$, $CI 0.30\%–0.70\%$) of ever using other tobacco products than White women in Model 1; these differences are largely unaffected by the inclusion of socioeconomic covariates in each Model 2. There are no differences between U.S.-born Hispanics and Whites or between Blacks and Whites in any of the ever use models for either women or men. Multivariable models of current tobacco use generally show lower levels of cigarette use and other tobacco use among foreign-born Hispanic women and men compared with White women and men. The inclusion of socioeconomic covariates in Model 2 for current use results in even wider differences between foreign-born Hispanics and

Whites, thus accentuating the lower levels of current use for foreign-born Hispanics.

Differences in current cigarette use between U.S.-born Hispanics and Whites are also confounded by socioeconomic covariates. Controlling for age alone in Model 1, current cigarette smoking among U.S.-born Hispanic women does not differ from that among White women. However, when controlling for both age and SES in Model 2, U.S.-born Hispanic women exhibit 54% lower odds of current smoking compared with Whites. For men, the higher likelihood of cigarette smoking among U.S.-born Hispanics relative to Whites in Model 1 is reduced to nonsignificance when SES is controlled in Model 2. The higher likelihood of current use of other products among Black women relative to White women ($OR = 2.75$, CI

Table 2. Prevalence of Tobacco Use, Self-Identified Smoking Status, and Socioeconomic Characteristics by Race/Ethnicity and Nativity, U.S. Young Men Aged 18–34

	Foreign-born Hispanic	U.S.-born Hispanic	Non-Hispanic Black	Non-Hispanic White
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Ever tobacco use				
Cigarettes	32.3* (23.7–42.3)	56.7 (47.4–65.5)	44.7 (33.1–56.9)	51.9 (48.0–55.8)
Cigars	36.3 (27.6–46.1)	41.8 (32.8–51.2)	26.1* (16.8–38.2)	46.4 (42.5–50.4)
Little cigars	5.0* (2.7–9.0)	33.9 (25.4–43.6)	33.2 (22.7–45.6)	35.6 (31.8–39.5)
Hookah	12.0 (7.2–19.5)	19.2 (12.9–27.6)	13.7 (7.2–24.5)	21.5 (18.4–25.1)
Pipe	2.5* (0.9–7.1)	12.7 (7.3–21.2)	9.7 (4.1–21.0)	17.9 (15.0–21.2)
E-cigarettes	1.9* (0.7–4.9)	16.4 (9.9–26.0)	4.8 (1.4–15.1)	8.8 (6.8–11.3)
Dip/Snuff	1.0* (0.2–4.2) ^a	14.8 (8.8–23.8)	10.3 (4.4–22.5)	21.5 (18.5–24.9)
Chewing tobacco	4.2* (1.7–10.1)	12.2 (6.9–20.8)	4.9 (1.5–15.2)	18.1 (15.2–21.3)
Snus	0.8* (0.1–4.5) ^a	11.1 (5.9–19.8)	5.4 (1.7–15.8)	14.0 (11.4–17.2)
Dissolvables	0.7 (0.1–4.9) ^a	2.1 (0.6–7.6) ^a	3.5 (0.7–15.9) ^a	1.7 (0.9–2.9)
Any tobacco product	53.9 (44.1–63.4)	63.6 (54.4–71.9)	54.3 (42.2–65.8)	63.4 (59.6–67.1)
Current tobacco use (past 30 days)				
Cigarettes	13.6 (7.7–22.9)	35.5 (26.6–45.4)	28.0 (18.4–40.2)	24.4 (21.1–28.1)
Cigars	10.3 (5.7–17.8)	12.1 (6.7–20.8)	10.4 (4.6–21.8)	6.6 (4.9–8.9)
Little cigars	1.9 (0.7–5.4) ^a	8.8 (4.7–15.9)	15.1* (7.8–27.2)	4.0 (2.7–6.0)
Hookah	1.3 (0.3–5.2) ^a	4.8 (2.0–11.2)	4.0 (1.0–15.2)	3.0 (1.9–4.8)
Pipe	0.7 (0.1–4.9) ^a	1.3 (0.3–5.9) ^a	4.4 (1.2–15.1)	2.0 (1.0–3.9)
E-cigarettes	0.7 (0.1–4.9) ^a	5.3 (2.1–12.8)	3.5 (0.7–15.9) ^a	1.7 (0.9–3.2)
Dip/snuff	0.7 (0.1–4.9) ^a	2.6 (0.9–7.2)	3.5 (0.7–15.9) ^a	4.7 (3.3–6.7)
Chewing tobacco	0.7 (0.1–4.9) ^a	1.4 (0.3–5.9) ^a	3.5 (0.7–15.9) ^a	1.2 (0.6–2.5)
Snus	0.7 (0.1–4.9) ^a	2.8 (0.7–10.2) ^a	3.6 (0.7–15.7) ^a	1.9 (1.0–3.8)
Dissolvables	0.7 (0.1–4.9) ^a	1.1 (0.2–6.4) ^a	3.5 (0.7–15.9) ^a	0.3 (0.1–0.9) ^a
Any tobacco product	21.4 (14.1–31.3)	40.3 (31.3–50.1)	30.4 (20.6–42.5)	32.9 (29.3–36.9)
Self-reported smoking status				
Smoker	4.3 (1.3–12.7)	18.0 (11.3–27.5)	10.9 (5.3–21.0)	15.0 (12.2–18.2)
Social/occasional smoker	17.7 (11.2–26.8)	21.4* (14.5–30.5)	20.4 (12.4–31.8)	10.7 (8.5–13.5)
Ex-smoker/tried smoking	21.7 (14.1–32.0)	11.7 (7.5–18.0)	10.6 (5.0–21.1)	13.1 (10.7–15.8)
Nonsmoker	56.3 (46.2–66.0)	48.8 (39.7–58.0)	58.1 (45.9–69.4)	61.3 (57.4–65.1)
Covariates				
Age (mean)	27.2 (26.3–28.0)	25.1 (24.3–25.9)	25.3 (24.1–26.5)	26.2 (25.8–26.5)
Less than high school	37.0* (27.8–47.1)	21.3* (13.6–31.8)	15.3 (7.8–27.8)	9.9 (7.4–13.0)
Income to poverty < 1.00	45.2* (35.6–55.0)	31.8* (23.3–41.7)	28.3 (18.9–40.0)	15.6 (12.8–18.9)
Not working	30.0 (21.4–40.3)	43.2* (34.3–52.5)	52.3* (40.4–64.0)	26.5 (23.1–30.2)
Mother's education < 12 years	66.0* (56.3–74.5)	44.2* (35.0–53.9)	4.6 (1.8–11.5)	7.4 (5.4–10.2)
Father's education < 12 years	62.6* (52.7–71.6)	46.0* (36.8–55.5)	12.2 (5.9–23.4)	7.3 (5.3–9.8)
Family poor in childhood	32.8* (24.3–42.6)	27.5 (20.0–36.6)	28.9 (18.8–41.5)	18.5 (15.5–22.0)
Unweighted <i>N</i>	166	223	127	1,087

Note. ^aEstimates may be unreliable as a result of small cell sizes (fewer than five observations).

* indicates prevalence is significantly different from that of non-Hispanic Whites ($p < .05$).

1.39%–5.45%) is also reduced ($OR = 2.18$, $CI 1.07\%–4.42\%$) although not eliminated from Model 1 to Model 2.

Table 4 presents multinomial logistic regression models of smoking status differences across racial/ethnic groups. Levels of social/occasional smoking for several minority groups are higher compared with that for Whites, but they are reduced or eliminated when models are adjusted for SES. U.S.-born Black and Hispanic women are equally likely to self-identify as smokers as White women when controlling only for age in Model 1, whereas they are far less likely to self-identify as smokers than Whites when SES is held constant in Model 2.

In general, higher levels of SES are associated with reduced tobacco use and lower odds of identification as a smoker (odds ratios and relative risk ratios for socioeconomic covariates are not displayed in Tables 3 and 4 but are available from the

lead author by request). Among women, lower family income is most consistently associated with tobacco use (six of seven multivariable models). Among men, father's lower educational attainment is the primary socioeconomic covariate related to tobacco use (five of seven models).

DISCUSSION

This study shows that young adult use of cigarettes and other tobacco products remains high for most racial/ethnic subgroups. Ever use of any tobacco product ranged between 54% and 68% for every group except foreign-born Hispanic women. Unfortunately, a majority of Americans in most population subgroups continue to experiment with tobacco products in young

Table 3. Odds Ratios From Multivariable Logistic Regression of Tobacco Use on Race/Ethnicity, Nativity, and Covariates

Race/ethnicity and nativity	Women				Men			
	Cigarettes		Other products ^a		Cigarettes		Other products ^a	
	Model 1 ^b	Model 2 ^c	Model 1 ^b	Model 2 ^c	Model 1 ^b	Model 2 ^c	Model 1 ^b	Model 2 ^c
Ever tobacco use								
Foreign-born Hispanic	0.15* (0.09–0.23)	0.15* (0.08–0.25)	0.46* (0.30–0.70)	0.52* (0.32–0.86)	0.40* (0.24–0.66)	0.35* (0.19–0.66)	0.50* (0.32–0.79)	0.53* (0.31–0.90)
U.S.-born Hispanic	1.10 (0.77–1.57)	1.04 (0.70–1.53)	1.18 (0.82–1.69)	1.24 (0.85–1.81)	1.32 (0.88–1.97)	1.23 (0.80–1.90)	0.84 (0.56–1.26)	0.90 (0.58–1.40)
Non-Hispanic Black	0.93 (0.62–1.41)	0.77 (0.50–1.21)	0.91 (0.59–1.38)	0.86 (0.54–1.36)	0.79 (0.47–1.33)	0.70 (0.41–1.20)	0.66 (0.39–1.11)	0.65 (0.38–1.11)
Non-Hispanic White	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Current tobacco use (past 30 days)								
Foreign-born Hispanic	0.14* (0.07–0.31)	0.06* (0.02–0.16)	0.38* (0.17–0.85)	0.23* (0.08–0.61)	0.47* (0.24–0.92)	0.26* (0.10–0.67)	0.59 (0.31–1.12)	0.51 (0.25–1.05)
U.S.-born Hispanic	0.67 (0.41–1.10)	0.46* (0.28–0.76)	0.87 (0.43–1.76)	0.75 (0.37–1.55)	1.77* (1.12–2.79)	1.45 (0.86–2.43)	1.21 (0.70–2.08)	1.16 (0.64–2.09)
Non-Hispanic Black	1.09 (0.64–1.85)	0.65 (0.37–1.14)	2.75* (1.39–5.45)	2.18* (1.07–4.42)	1.24 (0.70–2.22)	0.95 (0.53–1.70)	0.97 (0.49–1.94)	0.85 (0.43–1.65)
Non-Hispanic White	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Note. ^aCigars, little cigars, hookah, pipe, e-cigarette, dip/snuff, chewing tobacco, snus, and dissolvables are combined as “Other products” due to small cell sizes for individual products.

^bModel 1 adjusts for age.

^cModel 2 adjusts for age and socioeconomic status (education, income to poverty ratio, employment status, mother’s education, father’s education, and childhood financial situation).

* indicates statistical significance at $p < .05$.

Table 4. Relative Risk Ratios From Multinomial Logistic Regression of Self-Identified Smoking Status on Race/Ethnicity, Nativity, and Covariates (“Never-Smoker” as Reference Group)

Race/ethnicity and nativity	Ex-smoker/tried smoking		Social/occasional smoker		Smoker	
	Model 1 ^a	Model 2 ^b	Model 1 ^a	Model 2 ^b	Model 1 ^a	Model 2 ^b
Women						
Foreign-born Hispanic	0.53* (0.30–0.93)	0.51* (0.27–0.97)	0.52 (0.22–1.20)	0.32* (0.13–0.82)	0.08* (0.02–0.24)	0.02* (0.01–0.09)
U.S.-born Hispanic	1.41 (0.88–2.27)	1.28 (0.80–2.06)	1.17 (0.66–2.07)	1.02 (0.53–1.96)	0.78 (0.38–1.57)	0.45* (0.23–0.90)
Non-Hispanic Black	1.03 (0.57–1.87)	0.84 (0.44–1.60)	2.17* (1.13–4.17)	1.65 (0.85–3.20)	0.81 (0.41–1.63)	0.40* (0.19–0.84)
Non-Hispanic White	1.00	1.00	1.00	1.00	1.00	1.00
Men						
Foreign-born Hispanic	1.75 (0.97–3.16)	1.91 (0.90–4.07)	1.77 (0.97–3.24)	1.54 (0.71–3.34)	0.29* (0.09–0.96)	0.08* (0.02–0.29)
U.S.-born Hispanic	1.17 (0.66–2.07)	1.15 (0.60–2.18)	2.56* (1.45–4.51)	2.41* (1.26–4.63)	1.62 (0.87–3.00)	0.87 (0.42–1.78)
Non-Hispanic Black	0.88 (0.37–2.10)	0.82 (0.35–1.91)	2.04* (1.04–4.01)	1.64 (0.84–3.19)	0.80 (0.35–1.86)	0.46 (0.19–1.10)
Non-Hispanic White	1.00	1.00	1.00	1.00	1.00	1.00

Note. ^aModel 1 adjusts for age.

^bModel 2 adjusts for age and socioeconomic status (education, income to poverty ratio, employment status, mother’s education, father’s education, and childhood financial situation).

* indicates statistical significance at $p < .05$.

adulthood, the life-course stage in which long-term tobacco-use habits are often established. Although cigarettes remain the most prevalent tobacco product for most groups, ever use of cigars is higher than cigarettes for both foreign-born Hispanic men and women. Moreover, ever use of a diverse array of other tobacco products is particularly evident among U.S.-born White, Hispanic, and Black men. These data show that experimentation with non-cigarette tobacco products is widespread among American young adults and particularly among U.S.-born men.

Current patterns of tobacco use largely reflect high prevalence among U.S.-born Hispanics, Whites, and Blacks and much lower prevalence among foreign-born Hispanics, particularly women. Within each gender-specific U.S.-born racial/ethnic subgroup, between 17% and 36% of young adults report being current cigarette smokers. Consistent with previous studies, these data also demonstrate patterns of higher tobacco use among U.S.-born Hispanics compared with foreign-born Hispanics (Acevedo-Garcia, Pan, Jun, Osypuk, & Emmons, 2005; Singh & Siahpush, 2002). Aside from actual tobacco use, findings also show fewer self-described smokers among Hispanic immigrant women compared with U.S.-born Hispanic women, which may reflect different gendered cultural norms and socialization processes among those born outside the United States (McCleary-Sills, Villanti, Rosario, Bones, & Stillman, 2010). It is imperative that researchers examine racial/ethnic differences in tobacco-use patterns by nativity (Baluja et al., 2003; Georgiades et al., 2006); failure to disaggregate by country of origin within this subgroup may mask important differences in tobacco-use patterns.

Consistent with other recent studies (Fagan & Rigotti, 2009; Trinidad et al., 2009), higher levels of social and/or occasional smoking were found among U.S.-born Hispanics and Blacks compared with Whites. This pattern of tobacco use may reflect higher price sensitivity for the minority groups given their lower SES (Myers, Edland, Hofstetter, & Al-Delaimy, 2012). However, adjusting for SES did not fully explain higher levels of social/occasional tobacco use among the U.S.-born minority groups. This suggests that there may be other, non-SES factors related to the higher levels of social/occasional smoking among U.S.-born Hispanics and Blacks. Future research that examines SES gradients in tobacco use for each racial/ethnic group (Goldman, Kimbro, Turra, & Pebley, 2006; Winkleby & Cubbin, 2004) and non-SES factors related to tobacco use for each group is needed.

It is also the case that low SES confounds self-identification as a smoker among the minority groups. For example, U.S.-born Hispanic and Black women report an equivalent likelihood of identifying as a smoker relative to Whites; adjusting for SES, U.S.-born Hispanic and Black women were less likely to report being smokers than White women. Such effects indicate that were it not for their lower SES compared with Whites, U.S.-born Hispanic and Black women would be less likely to describe themselves as smokers than White women. Thus, socioeconomic disadvantage may be influencing U.S.-born Hispanics and Blacks in terms of both higher levels of social/occasional smoking compared with Whites and levels of current smoking that are equivalent to, instead of lower than, those of Whites.

Although the LYACS is a large, robust sample, cell size restrictions precluded considering racial/ethnic groups other than Blacks, Whites, and Hispanics; Black and White immigrants as separate subpopulations; and specific Hispanic

national origin subpopulations. In our sample, 58.0% of respondents were Mexican origin, 8.8% were Puerto Rican, less than 3% were either Cuban or Dominican, and 27.7% were identified as "other Hispanic." Thus, our results for foreign-born and U.S.-born Hispanics largely reflect tobacco-use patterns among Mexican origin and other Hispanic young adults. Further in-depth study of the specificity of Hispanic national origin subgroups would be useful given the growth, diversity, and heterogeneity in health outcomes that characterize the U.S. Hispanic population (Humes et al., 2011; Markides & Eschbach, 2005, 2011; National Research Council, 2006) particularly because higher levels of cigarette smoking among immigrants who are more acculturated to the United States have been documented (Bethel & Schenker, 2005; Choi, Rankin, Stewart, & Oka, 2008). Furthermore, specific dimensions of the immigration and acculturation processes, such as years lived in the United States and neighborhood ethnic concentration, might be useful in future studies of tobacco-use patterns among foreign-born Hispanics.

Small cell sizes also limited our ability to analyze racial/ethnic disparities with respect to other tobacco products; as a result, specific forms of tobacco use were categorized into cigarettes and other tobacco use in our multivariable models. The other tobacco-use category is not ideal given that specific types of tobacco product use vary by race/ethnicity. The cross-sectional data we used also did not allow for the understanding of changes in racial/ethnic patterns of tobacco use as they unfold across the young adult life course. Future work is planned to focus on trends over time in tobacco product use patterns particularly because age-related smoking patterns have been shown to be especially unique for Blacks in comparison to other groups (Geronimus, Neidert, & Bound, 1993; Pampel, 2008).

As with any nationally representative survey, the LYACS data are not necessarily nationally representative of specific racial/ethnic groups. Hispanic composition, in particular, has been shown to vary quite extensively across the nation's largest and most highly respected nationally representative datasets (Crimmins, Hayward, & Seeman, 2004). The LYACS sample is representative of noninstitutionalized young adults; thus, individuals who reside on military bases and in prisons are not included. Exclusions of institutionalized individuals from nationally representative datasets, particularly men in the age group we consider, are especially likely to produce lower estimates of tobacco use and other health risk behaviors for Blacks (and perhaps Hispanics) than what truly exist in the U.S. population (Pettit, 2012).

CONCLUSIONS

This study of U.S. young adults demonstrates that there are important racial/ethnic and nativity differences in tobacco use for both young women and men. In particular, tobacco product experimentation among U.S.-born Whites, Blacks, and Hispanics is prevalent across a range of products such that current cigarette use ranges from 17% to 36%, and there is higher use of specific products among specific groups (e.g., little cigar use among Blacks). Both regular tobacco use and social and/or occasional use among U.S. young adults are prevalent tobacco-use patterns, with the latter being especially pronounced among U.S.-born Blacks and Hispanics. Ever and current tobacco use

are significantly lower among foreign-born Hispanics, particularly women, but the same pattern is not evident for U.S.-born Hispanics. It is critical that national surveillance efforts continue to monitor use patterns across racial/ethnic groups, with a particular focus on examining tobacco use by nativity to most effectively implement tobacco cessation policies and programs in targeted ways (Kendzor et al., 2010; Levy et al., 2011). Studies incorporating measures of nativity can also advance our understanding of the role of acculturation on tobacco use.

As U.S. tobacco use becomes concentrated among those with lower socioeconomic position, Black and Hispanic young adults are increasingly vulnerable to initiation and established use of such products. Thus, aggressive efforts must be implemented to prevent those most at risk from the deadly toll of tobacco. These current findings indicate levels of young adult tobacco use that will likely result in substantial health, economic, and mortality consequences. Comprehensive tobacco control policies including targeted counter-marketing efforts are needed to address tobacco-use disparities that persist in our nation's young, vulnerable subpopulations.

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DECLARATION OF INTERESTS

None declared.

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