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## Permalink

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## Journal

American Journal of Preventive Medicine, 46(5)

## ISSN

0749-3797

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## Publication Date

2014-05-01

## DOI

10.1016/j.amepre.2014.01.014

Peer reviewed

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*Am J Prev Med*. Author manuscript; available in PMC 2018 February 01.

Published in final edited form as:

*Am J Prev Med*. 2014 May ; 46(5): 496–506. doi:10.1016/j.amepre.2014.01.014.

# Smoking among US Hispanic/Latino adults: The Hispanic Community Health Study/Study of Latinos

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## Abstract

**Background—**Prior national surveys capture smoking behaviors of the aggregate US Hispanic/Latino population, possibly obscuring subgroup variation.

**Purpose—**To describe cigarette use among Hispanic/Latino adults across subgroups of age, sex, national background, socioeconomic status, birthplace and degree of acculturation to the dominant US culture.

**Methods—**Cross-sectional survey of 16,322 participants in the Hispanic Community Health Study/Study of Latinos aged 18 to 74 years old, recruited in Bronx NY, Chicago IL, Miami FL and San Diego CA during 2008–2011.

**Results—**Prevalence of current smoking was highest among Puerto Rican persons (men 35.0%, women 32.6%) and Cuban persons (men 31.3%, women 21.9%), with particularly high smoking intensity as measured by pack-years and cigarettes/day among Cubans. Dominican persons had the lowest smoking prevalence (men 11.0%, women 11.7%). Persons of other national backgrounds had smoking prevalence that was intermediate between these groups, and typically higher among men than women. Non-daily smoking was common, particularly although not exclusively among young men of Mexican background. Persons of low socioeconomic status were more likely to smoke, were less likely to have quit smoking, and less frequently used over-the-counter quit aids as compared to those with higher income and education. Smoking was more common among individuals who were US-born and who had higher level of acculturation to the dominant US culture, particularly among women.

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**Conflict of Interest:** No financial disclosures were reported by the authors of this paper 11 November 2013

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**Conclusions—**Smoking behaviors vary widely across Hispanic/Latino groups in the US, with high prevalence of smoking among population subgroups with specific, readily-identifiable characteristics.

In the US, cigarette smoking accounts for over 400,000 premature deaths and over $96 billion in annual loss of productivity [1]. While smoking behaviors are known to differ across race and ethnicity groups in the US, no large recent tobacco use surveys reflect the present-day Hispanic/Latino population living in the US [2–6]. Existing nation-wide surveys (e.g., National Health Interview Survey [2] and Tobacco Use Supplement to the Current Population Surveys [4]) would indicate that the overall prevalence of smoking is relatively modest among US Hispanic/Latino adults, while likely obscuring important differences across groups. Using data from the NIH Hispanic Community Health Study/Study of Latinos (HCHS/SOL), we examined smoking behaviors among over 16,000 Hispanic/Latino adults living in four urban US regions. The goals of the present analyses were to describe smoking behaviors among Hispanic/Latino adults, while examining variation by age, sex, personal or family national background, and social and demographic variables including socioeconomic status and acculturation to the dominant US culture.

## Methods

### Participants

Participants in the Hispanic Community Health Study/Study of Latinos (HCHS/SOL) included 16,415 adults, aged 18 to 74 years at the time of screening, living in Bronx, NY, Chicago, IL, Miami, FL, and San Diego, CA. Persons eligible for the study were community-dwelling men and women who self-identified as Hispanic or Latino and who were able to travel to a local study field center. Individuals who were institutionalized, on active military duty or who planned to move from the study area were excluded. Pregnant women were enrolled after the end of pregnancy.

Eligible participants were selected using a two-stage sampling approach. In the first sampling stage, a stratified-random sample of census block groups was selected within census tracts that were chosen to provide diversity within the study population with regard to socioeconomic status, nation of origin and family national background. In the second sampling stage, households were chosen at random within the randomly-selected census block groups, with over selection of households that matched with commercially available lists of Hispanic/Latino households. Household response rates ranged from ~ 30 to 40% within each field center. Of screened individuals who were eligible, 41.7% were enrolled.

### Data collection and variable definitions

Study examinations included completion of standardized clinical measurements and questionnaires, conducted between 2008 and 2011 by a bilingual interviewer in either English or Spanish. Lifetime history of cigarette smoking was elicited by the question, “Have you ever smoked at least 100 cigarettes in your entire life?” Use of cigars and pipes (ever use) was asked and analyzed separately from cigarette smoking. Other smoking-related variables included number of cigarettes per day, age at smoking initiation, and periods of smoking cessation. Individuals who reported having ever quit smoking for 6 months or

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longer were queried about their ever use of smoking cessation aids such as nicotine gum, patches, and oral medications. Self-reported information was used to define current daily smokers, as well as intermittent or non-daily smokers who were defined as current smokers who did not report using cigarettes on a daily basis. Among current daily smokers, we estimated lifetime pack-years based upon age of smoking initiation, periods of quitting, and average lifetime cigarettes smoked per day. Reproducibility of smoking variables was assessed in a sample of 56 individuals through repeated study visits conducted a median of 42 days apart (kappa = 0.93 for smoking status, and intraclass correlation coefficient, ICC of 0.89 for age started smoking, 0.92 for current cigarettes per day, and 0.83 for lifetime average cigarettes per day). Acculturation was measured using a modified 10-item version of the Short Acculturation Scale for Hispanics (SASH), with 5 point Likert scale responses coded as an average overall summary score, and as subscales reflecting language preferences (6 items) and socialization practices and preferences (4 items) [7]. Higher SASH response values represent greater acculturation to the dominant US culture. The overall scale reliability was acceptable in the full sample (Cronbach's $\alpha$ = .90), and for both English- and Spanish-language versions ($\alpha_{English}$ = .76; $\alpha_{Spanish}$ = .85). The reliability of SASH was similar across Hispanic/Latino background groups (ranging from $\alpha_{South\ Americans}$= .85 to $\alpha_{Mexicans}$ = .89). For analyses of Hispanic/Latino group defined by Latin American national background (defined either by personal or family place of origin), we categorized both US-born and non-US-born individuals into mutually exclusive groups based upon background.

### Statistical analyses

Weighted prevalences of smoking among men and women were computed using sample weights which were adjusted, trimmed and calibrated to the 2010 US Census population age and Hispanic/Latino background ("ethnicity") distributions for the four geographic areas of our study. Sample weights were also designed to correct for nonresponse, with adjustment for characteristics of the nonsampled population. Prevalence, intensity and cumulative exposure to cigarette smoking were estimated for gender- and national group-specific populations. Multivariable logistic regression was used to assess the association of smoking variables with gender, age, income, education, health insurance status, field center and Hispanic/Latino national background, as quantified by odds ratios (ORs) and 95 percent confidence intervals (CIs). We also identified variables associated with quitting smoking in an analysis that was limited to individuals who had ever reported smoking a total of 100 or more cigarettes. Among former smokers, we examined characteristics associated with having ever received prescription and over-the-counter smoking cessation products. For national background groups who were well-represented in two sites, we examined regional differences in smoking prevalences. Analyses were performed using SAS© version 9.3 (Cary, NC) in2012–2013.

## Results

Included were 16,322 individuals after exclusion of 93 with incomplete smoking data. Mean age was 40.3 years among 6,532 men, 25.0% of whom were born within the 50 states. Mean age was 41.8 years among 9,790 women, 20.9% of whom were born within the 50 states. Approximately half of participants at the time of examination lacked health insurance, and

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59.0% of men and 48.8% of women reported having an annual household income above $20,000 (Table 1).

The age-standardized prevalence of current cigarette smoking was highest among men and women of Puerto Rican background (age-standardized prevalence 35.0% among men and 32.6% among women), followed by persons of Cuban background (31.3% among men and 21.9% among women). Analysis of age-specific prevalences revealed that over 40% of Puerto Rican men and women between the ages of 30 and 50 years of age were current smokers (Figure). dominican men and women both had relatively low prevalence of current smoking (age-standardized prevalence 11.0% among men and 11.7% among women). Among the other groups, which had prevalences of current smoking that were intermediate between the groups mentioned above, smoking was more common among men than among women (age-standardized prevalences were Mexican, men 23.4% and women 10.4%; Central American, men 20.6% and women 8.5%; South American, men 15.8% and women 11.7%; multiple or other backgrounds, men 23.4% and women 20.3%). Among Mexican men, smoking prevalences were similar in Chicago and San Diego sites, whereas Mexican women in San Diego had significantly higher smoking prevalence than Mexican women in Chicago (12.1% versus 7.8%, $P< 0.05$). Among Puerto Ricans, smoking prevalences were similar in the Bronx and Chicago sites (data not shown).

Analyses of current daily smokers revealed substantial variation in smoking intensity by national background (Table 2). Smoking intensity as defined by number of cigarettes smoked per day was highest among daily smokers who were of Cuban background. Half of Cuban men and over one-third of Cuban women who smoked daily reported that they consumed 20 or more cigarettes per day. As compared with other groups of daily smokers, Mexican men and women less commonly reported consuming 20+ cigarettes per day (7.1% among male daily smokers and 4.2% among female daily smokers).

A substantial number of individuals who were current smokers reported that they smoked cigarettes only on some days rather than daily (Table 3). This pattern of intermittent current smoking was most common among Mexican men (prevalence 15.5%), Central American men (9.8%) and Puerto Rican men (9.0%). Intermittent smoking was reported by participants in nearly all age, sex and national background groups although was most common among younger adults (Figure). Within several groups defined by national background, over one-fifth of intermittent smokers reported having smoked 20 or more days in the last month (Puerto Rican and South American men, and Dominican, Cuban, Puerto Rican and Central American women).

In multivariable adjusted models, the likelihood of being a current smoker was independently associated with male sex, age below 60 years, lower income and lower level of education (in particular, lacking a high school diploma but having 9+ years of schooling) each were independently associated with higher likelihood of being a current smoker ($P< 0.05$) (Table 4).

Analyses that were limited to ever-smokers identified several characteristics associated with higher likelihood of quitting (e.g., being a former rather than a current smoker) (Table 5).

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The likelihood of having quit increased across the age spectrum, with higher levels of income, with having had greater than a high school education, and with higher lifetime average cigarettes per day, although quitting was not significantly associated with gender or health insurance coverage.

Among former smokers, the proportion that had ever used prescription smoking cessation products was 5.5% among individuals with health insurance and 1.7% among those without health insurance ($P_{\chi^2} = 0.002$). Use of over-the-counter prescription smoking cessation products was also more common among insured as compared with uninsured former smokers (5.8% versus 2.8%, $P_{\chi^2} = 0.021$). After adjustment for health insurance status and other potential confounders, persons with higher income levels were significantly more likely than those with lower income levels to have used over-the-counter smoking cessation products ($P < 0.050$), although income was not associated with the use of prescription smoking cessation products in multivariable analyses (data not shown).

After adjustment for demographics, socioeconomic status and health insurance status, individuals who were born within the 50 states or who were more acculturated to US culture as measured by high SASH scores were significantly more likely to be current smokers (Table 6). These associations were stronger and more consistent among women as compared with men.

Among men, lifetime prevalence of cigar smoking was 9.2% and lifetime prevalence of pipe smoking was 3.0%. Cigar smoking was most common among Puerto Rican men (12.9%), followed by Central American men (10.2%) and Mexican men (8.8%) with other groups having prevalence of 5% or below. Pipe smoking was reported by 5.0% of Central American men and by fewer than 3% among other groups. Among women, few had a lifetime history of cigar and pipe smoking (2.7% and 0.8%, respectively). Among those who had never smoked cigarettes, only 2% of men and <1% of women reported a history of cigar or pipe use.

## Discussion

Smoking prevalences among US Latino adults vary nearly three-fold comparing the national background groups with the most versus the least cigarette use. Contrasted against earlier studies, our data portray the evolving epidemiology of smoking among Hispanics and the burden of smoking relative to other US groups. In the 1982–1984 Hispanic Health and Nutrition Examination Survey (HHANES), 40% or more of Puerto Rican, Cuban and Mexican men were smokers, which equaled the prevalence among African Americans at the time and exceeded the prevalence among non-Hispanic whites [5, 6]. Today, Puerto Rican and Cuban men continue to have high smoking prevalence, which now exceeds that among US non-Hispanic whites by a considerable margin (35.0% and 31.1% among Puerto Rican and Cuban men in this study, respectively, versus 22.6% in 2010 for non-Hispanic whites)[8]. Women from Puerto Rican and Cuban groups, who in the 1980s had smoking prevalences that were similar or lower as compared with African Americans and non-Hispanic whites, now smoke more frequently than other groups (prevalences 32.6% among Puerto Ricans and 21.9% among Cubans, respectively, versus 19.6% among non-Hispanic Whites and 17.1%

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among African Americans). In our present-day survey, Mexican and Central American men have smoking prevalence approximately equal to that among non-Hispanic whites and African Americans, while women in these groups are less likely to smoke than other major US race/ethnicity groups [8]. Other groups in our survey including Dominican and South American men and women, which have not been well-studied, have prevalence of smoking well below US national averages [2].

Potential limitations of our study include the reliance upon self-report to measure tobacco use, which was shown to be reliable in a repeated measures study but not validated against biomarkers. Other products that we did not assess include spit tobacco and snuff. Although we provided weighted prevalence estimates that were adjusted for survey nonresponse, the moderate degree of nonresponse may have introduced selection bias, albeit by using door-to-door survey methods we avoided systematic biases associated with telephone surveys [4, 6, 9, 10]. As we did not recruit individuals living in rural or suburban locations, our cohort members may not be fully representative of US populations. On the other hand, almost half of the total US Hispanic/Latino population is contained within ten large metropolitan areas [11], which encompass our four study regions.

Our findings have several implications for tobacco use prevention and cessation strategies among US Hispanic/Latino adults. First, Hispanic/Latino adults often report smoking intermittently rather than on a daily basis, and among some groups (Mexican, Central American) intermittent smokers almost equal or outnumber daily smokers [12, 13]. Among intermittent smokers, we documented substantial levels of cigarette exposure as measured by smoking days per month and number of cigarettes on smoking days. Physicians should recognize that intermittent smokers are likely to be at elevated risks of tobacco-related illnesses and therefore should actively screen for and intervene on this pattern of cigarette use. It is unclear whether this propensity for intermittent smoking among several Hispanic/Latino groups may reflect lower susceptibility to tobacco addiction, social conventions or other factors.

Second, the use of smoking cessation products was relatively low in this population as compared with previously reported population-based data [14]. This suggests the need for further research on availability, awareness and acceptability of quit aids in Hispanic/Latino communities.

Third, our data point to potential social and cultural influences that may affect smoking behaviors among Hispanic/Latino populations. We found that being born in the US (among women) and having greater level of acculturation to the dominant US culture (among both men and women) was associated with higher likelihood of smoking. This suggests vulnerability, particularly among women in our study, to acculturation stress, media or cultural influences in the US which may promote smoking. The association between acculturation and tobacco use in women may also reflect gender norms relating to smoking in Latin America with low prevalence among recently-arrived female immigrants. Albeit, on the whole, among migrant groups in the US prevailing smoking behaviors in their country of origin are only weakly associated overall with likelihood of being a smoker [15]. Of note, while place of birth was not associated with smoking among men, we observed an

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association between greater acculturation and higher smoking prevalence among men. This contrasts with prior data showing that that more highly acculturated Hispanic/Latino men have relatively lower smoking prevalence [6, 10]. The difference in results may be explained by the fact that these prior studies were conducted at least a decade earlier and primarily enrolled Mexican and Central American men who, as compared with those in our study were younger and more likely to be US-born.

In summary, while the overall US-wide decline in smoking over recent decades demonstrates the feasibility of effective (although incompletely realized) tobacco control efforts, our data suggest that additional efforts are needed to reach the US Hispanic/Latino population. Prior experience shows that it can be difficult to predict the effect that macro-level tobacco control approaches will have in specific populations. For instance, compared with non-Hispanic Whites, Latinos nationwide are more likely (and African Americans less likely) to live in localities with smoke-free laws [16], and Hispanic and African American smokers and are particularly sensitive to increases in cigarette prices [1718]. However, at the aggregate level, tobacco control policies such as clean indoor air laws and tax increases have appeared to benefit people from all race and ethnic groups similarly [19]. Our study suggests (as others have before) several tobacco control opportunities among Hispanics: socioeconomic and demographic variables can be used to target public health interventions towards groups at high risk of smoking initiation; physicians can address nondaily smoking as an important likely risk factor for smoking-associated illness; and steps are needed to increase the availability of smoking cessation aids in Latinos. Finally, while low smoking prevalence is a possible reason for longer life expectancy among immigrants in the US [20], relatively less acculturated communities are at risk for worsening future epidemics of tobacco use should they become more like the mainstream US over time.

## Acknowledgments

**Funding**

The Hispanic Community Health Study/Study of Latinos was carried out as a collaborative study supported by contracts from the National Heart, Lung, and Blood Institute (NHLBI) to the University of North Carolina (N01-HC65233), University of Miami (N01-HC65234), Albert Einstein College of Medicine (N01-HC65235), Northwestern University (N01-HC65236), and San Diego State University (N01-HC65237). The following institutes, centers, or offices contribute to the HCHS/SOL through a transfer of funds to the NHLBI: National Center on Minority Health and Health Disparities, the National Institute on Deafness and Other Communications Disorders, the National Institute of Dental and Craniofacial Research, the National Institute of Diabetes and Digestive and Kidney Diseases, the National Institute of Neurological Disorders and Stroke, and the Office of Dietary Supplements. The lead author gratefully acknowledges the Helen Riaboff Whiteley Center of University of Washington for facilitating the completion of this work. Molly Jung, MS, David Hanna, PhD and Sara Gonzalez, PhD are acknowledged for assistance with manuscript preparation.

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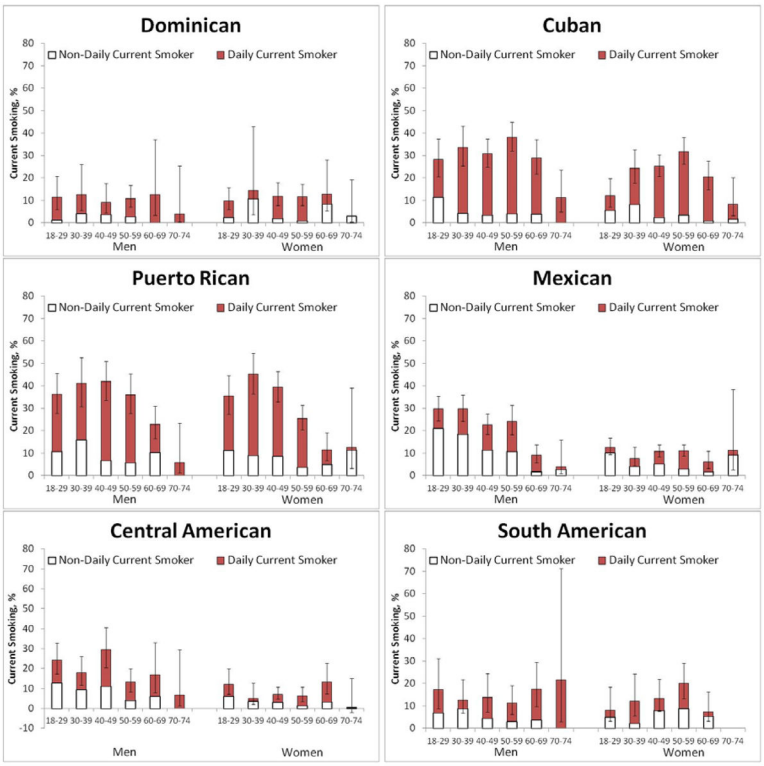


**Figure. Prevalence of current and ever smoking by age, sex, and Latin American personal or family national background: the Hispanic Community Health Study/Study of Latinos**

Current smoking was defined by self-reported use of cigarettes, either on a daily basis (red bars) or non-daily/intermittent basis (white bars), and ever smoking (blue bars) was defined as self-reported lifetime smoking of at least 100 cigarettes. Error bars represent 95% confidence intervals for the prevalence of any (daily or non-daily) smoking. Subjects included 15,322 adults aged 18 to 74 years living in Bronx NY, Chicago IL, Miami FL and San Diego CA who were recruited between 2008 and 2011.

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*Am J Prev Med*. Author manuscript; available in PMC 2018 February 01.

**Table 1**

Characteristics of men and women participating in the HCHS/SOL.

| | | Men (N=6532) | | Women (N=9790) | |
|---|---|---|---|---|---|
| | | N | % | N | % |
| Age | | | | | |
| 18–29 years | | 1240 | 28.8 | 1424 | 25.8 |
| 30–40 years | | 1112 | 23.9 | 1552 | 22.4 |
| 41–59 years | | 3110 | 34.5 | 5106 | 36.9 |
| 60+ years | | 1070 | 12.9 | 1708 | 14.8 |
| History of coronary heart disease * | | 531 | 6.7 | 603 | 5.4 |
| History of cancer | | 158 | 2.6 | 485 | 4.6 |
| No health insurance | | 3323 | 52.5 | 4576 | 46.9 |
| Income <$10,000 | | 747 | 11.5 | 1582 | 17.4 |
| Income $10,000–$20,000 | | 1827 | 29.5 | 3032 | 33.8 |
| Income $20,000–$40,000 | | 2178 | 34.4 | 2870 | 32.3 |
| Income $40,000–$75,000 | | 990 | 16.8 | 1022 | 12.5 |
| Income >$75,000 | | 362 | 7.8 | 283 | 4.0 |
| Less than 9th grade education | | 1375 | 16.6 | 2393 | 19.3 |
| Some high school education | | 1032 | 17.0 | 1309 | 14.5 |
| High school education | | 1807 | 30.2 | 2320 | 26.9 |
| Some education beyond high school | | 1549 | 26.8 | 2613 | 29.4 |
| Bachelor’s degree or higher | | 668 | 10.9 | 925 | 11.0 |
| **Personal or family national background and birthplace** | | | | | |
| Dominican | Born in 50 states | 60 | 1.6 | 77 | 1.7 |
| | Born outside of 50 states | 449 | 6.6 | 886 | 9.9 |
| Cuban | Born in 50 states | 53 | 1.5 | 66 | 1.4 |
| | Born outside of 50 states | 1043 | 20.4 | 1181 | 17.0 |
| Puerto Rican | Born in 50 states | 487 | 8.6 | 633 | 6.9 |
| | Born outside of 50 states | 648 | 8.4 | 953 | 8.2 |
| Mexican/Mexican-American | Born in 50 states | 460 | 9.8 | 611 | 8.0 |
| | Born outside of 50 states | 1979 | 26.7 | 3406 | 30.2 |

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| | | Men (N=6532) | | Women (N=9790) | |
|---|---|---|---|---|---|
| | | N | % | N | % |
| Central American† | Born in 50 states | 37 | 0.5 | 42 | 0.6 |
| | Born outside of 50 states | 642 | 6.8 | 1002 | 6.9 |
| South American† | Born in 50 states | 22 | 0.3 | 23 | 0.3 |
| | Born outside of 50 states | 414 | 4.4 | 611 | 5.0 |
| Other or multiple backgrounds | Born in 50 states | 132 | 2.6 | 146 | 2.0 |
| | Born outside of 50 states | 95 | 1.7 | 128 | 1.9 |

*Myocardial infarction, angina, or coronary revascularization including coronary artery bypass graft, angioplasty, or stent

†Central and South American national backgrounds represented included Nicaragua (n=547), Honduras (n=470), Ecuador (n=349), Guatemala (n=308), Colombia (n=280), Peru (n=147) and El Salvador (n=140).

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**Table 2**

Smoking behaviors of current daily smokers among participants in the HCHS/SOL

| | | | Age at initiation, yrs | | Cigarettes/day | | | | Lifetime pack-years | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Daily current smokers, %* | N | Mean | SE | Mean | SE | 10–19 cigs/day, % | ≥20 cigs/day, % | Mean | SE |
| **Men** | | | | | | | | | | |
| **Overall** | 16.9 | 1101 | 16.6 | 0.2 | 12.1 | 0.4 | 30.8 | 27.1 | 19.5 | 1.0 |
| Dominican | 8.8 | 40 | 16.6 | 0.6 | 7.7 | 1.2 | 12.1 | 9.4 | 15.4 | 3.9 |
| Cuban | 26.2 | 315 | 16.1 | 0.3 | 17.1 | 0.6 | 30.9 | 50.3 | 31.3 | 1.5 |
| Puerto Rican | 27.0 | 318 | 16.2 | 0.5 | 10.7 | 0.5 | 35.1 | 21.0 | 16.4 | 1.1 |
| Mexican | 10.3 | 261 | 17.7 | 0.4 | 7.9 | 0.5 | 30.4 | 7.1 | 10.2 | 0.9 |
| Central American | 12.1 | 82 | 17.5 | 0.7 | 12.7 | 2.9 | 25.0 | 23.5 | 12.0 | 1.4 |
| South American | 9.6 | 42 | 17.7 | 0.8 | 9.6 | 1.7 | 32.5 | 15.6 | 15.2 | 2.8 |
| Other or Multiple | 16.4 | 43 | 16.3 | 0.6 | 9.0 | 1.2 | 28.9 | 16.1 | 10.3 | 2.1 |
| | $P < 0.001$ | | $P = 0.026$ | | $P < 0.001$ | | $P < 0.001$ | | $P < 0.001$ | |
| **Women** | | | | | | | | | | |
| **Overall** | 10.7 | 1055 | 17.7 | 0.3 | 10.4 | 0.4 | 27.3 | 22.2 | 16.2 | 0.8 |
| Dominican | 7.5 | 77 | 17.2 | 0.9 | 9.5 | 1.0 | 27.6 | 21.1 | 12.6 | 1.7 |
| Cuban | 18.2 | 276 | 18.0 | 0.5 | 13.0 | 0.6 | 29.1 | 34.9 | 23.6 | 1.7 |
| Puerto Rican | 24.2 | 355 | 16.01 | 0.3 | 10.3 | 0.5 | 29.3 | 20.8 | 14.8 | 1.0 |
| Mexican | 4.4 | 222 | 19.8 | 1.5 | 6.8 | 0.9 | 21.0 | 4.2 | 10.1 | 1.8 |
| Central American | 5.0 | 49 | 21.1 | 1.2 | 7.5 | 1.2 | 29.2 | 10.5 | 11.3 | 2.2 |
| South American | 6.6 | 37 | 19.8 | 1.4 | 7.8 | 1.0 | 24.1 | 12.5 | 12.9 | 2.1 |
| Other or Multiple | 10.6 | 39 | 17.0 | 0.9 | 9.9 | 1.5 | 21.5 | 23.8 | 8.3 | 1.4 |
| | $P < 0.001$ | | $P < 0.001$ | | $P < 0.001$ | | $P < 0.001$ | | $P < 0.001$ | |

*P* represents statistical tests comparing across groups defined by Hispanic national background (ANOVA or Rao-Scott Chi-squared tests)

* Figures in the table are not standardized for age. Please refer to text and figure for age-standardized estimates of smoking prevalence

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**Table 3**

Smoking behaviors of current intermittent smokers among participants in the HCHS/SOL

| | | | Age at initiation, yrs | | Cigarettes/day on smoking days | | Smoking days/month | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Intermittent smokers, %* | N | Mean | SE | Mean | SE | Mean | SE | ≤10 smoking days/mo, % | ≥20 smoking days/mo, % |
| **Men** | | | | | | | | | | |
| **Overall** | 9.9 | 575 | 17.6 | 0.3 | 3.6 | 0.2 | 10.4 | 0.5 | 60.1 | 19.5 |
| Dominican | 2.3 | 16 | 19.2 | 1.5 | 3.8 | 0.8 | 8.7 | 0.9 | 80.2 | 5.5 |
| Cuban | 4.9 | 51 | 18.1 | 0.8 | 4.3 | 0.5 | 11.7 | 1.0 | 44.7 | 17.9 |
| Puerto Rican | 9.0 | 95 | 17.4 | 0.5 | 5.1 | 0.7 | 11.4 | 1.1 | 60.6 | 23.2 |
| Mexican | 15.5 | 294 | 17.6 | 0.4 | 3.1 | 0.3 | 9.6 | 0.7 | 62.6 | 18.0 |
| Central American | 9.8 | 68 | 17.4 | 0.6 | 4.1 | 0.7 | 10.8 | 1.0 | 56.7 | 18.9 |
| South American | 5.5 | 30 | 18.1 | 1.1 | 2.4 | 1.4 | 11.2 | 2.1 | 65.1 | 20.3 |
| Other or Multiple | 9.3 | 21 | 15.8 | 1.1 | 4.4 | 1.1 | 13.4 | 2.6 | 56.5 | 37.3 |
| | $P < 0.001$ | | $P = 0.67$ | | $P = 0.002$ | | $P = 0.24$ | | $P = 0.221$ | |
| **Women** | | | | | | | | | | |
| **Overall** | 5.8 | 428 | 18.7 | 0.3 | 3.1 | 0.2 | 11.3 | 0.8 | 60.0 | 24.1 |
| Dominican | 4.3 | 22 | 18.1 | 1.6 | 1.9 | 0.5 | 11.4 | 3.9 | 70.7 | 25.0 |
| Cuban | 3.7 | 42 | 20.0 | 0.7 | 4.1 | 0.8 | 15.7 | 1.2 | 37.9 | 38.8 |
| Puerto Rican | 7.4 | 92 | 17.4 | 1.5 | 3.7 | 0.4 | 13.7 | 1.6 | 47.5 | 29.5 |
| Mexican | 6.2 | 186 | 19.4 | 0.5 | 3.0 | 0.4 | 7.6 | 0.8 | 75.4 | 9.7 |
| Central American | 3.3 | 35 | 19.4 | 1.2 | 3.9 | 1.5 | 10.2 | 2.5 | 58.9 | 20.8 |
| South American | 5.3 | 33 | 19.4 | 1.0 | 2.3 | 0.3 | 8.7 | 1.1 | 67.8 | 4.4 |
| Other or Multiple | 14.6 | 18 | 16.6 | 0.6 | 2.4 | 0.3 | 18.4 | 4.6 | 35.2 | 63.6 |
| | $P = 0.016$ | | $P = 0.002$ | | $P = 0.015$ | | $P < 0.001$ | | $P = 0.004$ | |

*P* represents statistical tests comparing across groups defined by Hispanic/Latino background (ANOVA or Rao-Scott Chi-squared tests)

* Figures in the table are not standardized for age. Please refer to text and figure for age- standardized estimates of smoking prevalence

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*Am J Prev Med*. Author manuscript; available in PMC 2018 February 01.

**Table 4**

Association of current smoking with age, gender, socioeconomic status and health insurance coverage among participants in the HCHS/SOL

| | % current smokers | *P* ($\chi^2$) | OR for current smoking* | 95% CI | *P* |
|---|---|---|---|---|---|
| Female | 16.4 | <0.001 | 1 | (Reference) | |
| Male | 26.1 | | 1.82 | 1.58 , 2.09 | <0.001 |
| Age 18–29 | 21.9 | <0.001 | 1 | (Reference) | |
| Age 30–40 | 22.4 | | 1.04 | 0.82 1.32 | 0.753 |
| Age 41–59 years | 22.3 | | 0.97 | 0.82 , 1.15 | 0.722 |
| Age ≥ 60 years | 14.1 | | 0.46 | 0.36 , 0.6 | <0.001 |
| Income < $10,000 | 27.7 | <0.001 | 1 | (Reference) | |
| Income $10,000–$20,000 | 22.8 | | 0.75 | 0.62 , 0.9 | 0.002 |
| Income $20,000–$40,000 | 19.0 | | 0.58 | 0.48 , 0.7 | <0.001 |
| Income $40,000–$75,000 | 19.0 | | 0.58 | 0.45 , 0.75 | <0.001 |
| Income > $75,000 | 13.9 | | 0.39 | 0.26 , 0.59 | <0.001 |
| Less than 9th grade education | 18.6 | <0.001 | 1 | (Reference) | |
| Some high school education | 30.3 | | 1.47 | 1.18 , 1.84 | 0.001 |
| High school education | 23.2 | | 1.04 | 0.84 , 1.27 | 0.735 |
| Some education beyond high school | 18.5 | | 0.82 | 0.67 1.00 | 0.053 |
| Bachelor’s degree or higher | 15.1 | | 0.72 | 0.55 , 0.94 | 0.015 |
| Has health insurance | 19.7 | 0.006 | 1 | (Reference) | |
| No health insurance | 22.7 | | 1.15 | 0.98 , 1.35 | 0.087 |
| Bronx | 22.2 | <0.001 | 1 | (Reference) | |
| Chicago | 20.0 | | 0.96 | 0.78 , 1.19 | 0.727 |
| Miami | 24.0 | | 1.34 | 1.01 , 1.78 | 0.043 |
| San Diego | 18.0 | | 1.11 | 0.85 1.45 | 0.450 |

OR, odds ratio

*Adjusted for all variables in table, in addition to Hispanic/Latino background. Persons with missing values of covariates were excluded from the analysis. Sample size for Table 4 is 14379.

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*Am J Prev Med*. Author manuscript; available in PMC 2018 February 01.

**Table 5**

Among ever smoker HCHS/SOL participants, association of quitting with smoking intensity, demographic and socioeconomic characteristics

| | N | Among ever smokers, % quit | OR for having quit* | 95% CI | *P* |
|---|---|---|---|---|---|
| Female | 2594 | 44.0 | 1 | (Reference) | |
| Male | 3066 | 46.5 | 0.99 | 0.83 , 1.19 | 0.955 |
| Age 18–29 years | 628 | 27.4 | 1 | (Reference) | |
| Age 30–40 years | 821 | 39.5 | 1.64 | 1.16 , 2.31 | 0.005 |
| Age 41–59 years | 3199 | 49.5 | 2.58 | 1.94 , 3.43 | <0.001 |
| Age≥60 years | 1012 | 68.4 | 6.5 | 4.64 , 9.09 | <0.001 |
| Income < $10,000 | 1020 | 40.3 | 1 | (Reference) | |
| Income $10,000–$20,000 | 1826 | 42.3 | 1.17 | 0.91 , 1.5 | 0.217 |
| Income $20,000–$40,000 | 1875 | 48.9 | 1.58 | 1.24 , 2.01 | <0.001 |
| Income $40,000–$75,000 | 716 | 47.8 | 1.5 | 1.09 , 2.07 | 0.013 |
| Income > $75,000 | 223 | 57.4 | 1.89 | 1.13 , 3.15 | 0.015 |
| Less than 9th grade education | 1232 | 52.4 | 1 | (Reference) | |
| Some high school education | 972 | 38.1 | 0.95 | 0.72 , 1.26 | 0.716 |
| High school education | 1464 | 39.9 | 0.94 | 0.73 , 1.22 | 0.639 |
| Some education beyond high school | 1469 | 48.8 | 1.31 | 1.03 , 1.69 | 0.031 |
| Bachelor’s degree or higher | 523 | 55.3 | 1.39 | 0.99 , 1.95 | 0.057 |
| Has health insurance | 2903 | 48.2 | 1 | (Reference) | |
| No health insurance | 2757 | 43.0 | 0.85 | 0.71 , 1.02 | 0.076 |
| Average cigarettes/day (per unit) | | | 1.02 | 1.02 , 1.03 | <0.001 |
| Bronx | 609 | 38.9 | 1 | (Reference) | |
| Chicago | 710 | 45.3 | 1.17 | 0.87 , 1.57 | 0.286 |
| Miami | 736 | 45.5 | 1.04 | 0.72 , 1.51 | 0.839 |
| San Diego | 851 | 52.1 | 1.09 | 0.76 , 1.58 | 0.635 |

OR, odds ratio

*Adjusted for all variables in table, in addition to Hispanic/Latino background. Persons with missing data were excluded from the analysis.

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**Table 6**

Association of place of birth and acculturation with current smoking among participants in the HCHS/SOL

| | Men (N=5922) | | | | | | | Women (N=8457) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Adjusted OR of smoking per 1 unit higher SASH or for those born in 50 states | | | | | | | Adjusted OR of smoking per 1 unit higher SASH or for those born in 50 states | | | | |
| | Mean/% | SE | OR* | 95% CI | | | P | Mean/% | SE | OR* | 95% CI | | | P |
| Overall SASH score | 2.25 | 0.03 | 1.19 | 1.02 | , | 1.38 | 0.028 | 2.10 | 0.03 | 1.57 | 1.30 | , | 1.88 | <0.001 |
| Language acculturation score (subscale) | 2.22 | 0.04 | 1.16 | 1.03 | , | 1.29 | 0.011 | 2.03 | 0.04 | 1.42 | 1.25 | , | 1.63 | <0.001 |
| Social acculturation score (subscale) | 2.28 | 0.02 | 1.06 | 0.90 | , | 1.24 | 0.518 | 2.21 | 0.02 | 1.25 | 1.00 | , | 1.57 | 0.049 |
| Born within 50 states | 24% | | 1.21 | 0.93 | , | 1.58 | 0.157 | 20% | | 2.53 | 1.91 | , | 3.36 | <0.001 |

OR, odds ratio. SASH, Short Acculturation Scale in Hispanics (Marín, G., Sabogal, F., VanOssMarín, B., Otero-Sabogal, F., Pérez-Stable, E. J. (1987). Development of a short acculturation scale for Hispanics. Hispanic Journal of Behavioral Sciences, 9, 183–205).

SASH responses were a Likert scale ranging from one to five, with higher values representing greater acculturation to the dominant US culture.

*Adjusted for age, education, income, health insurance status, Hispanic/Latino national background, and field center. For analysis of place of birth, OR represents comparison of smoking prevalence among those born within the 50 states versus those who were foreign-born or born in Puerto Rico