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National Trends in Smoking Behaviors Among Mexican, Puerto Rican, and Cuban Men and Women in the United States

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Since 2000, Latinos have experienced the largest population growth of all US racial/ethnic groups, making Latinos the largest ethnic minority group in the country at 16.3% of the population.¹ Mexicans, Puerto Ricans, and Cubans are the 3 largest Latino national and family background groups in the United States.¹ The leading causes of death among Latinos are coronary heart disease and cancer, both of which are strongly associated with tobacco use.^{2,3} Although differences in smoking rates by Latino national origin groups have been found,⁴⁻⁶ very little research has examined trends in smoking behaviors for various Latino national origin groups by gender in the United States.

The aggregation of smoking rates for various Latino national origin groups masks important variations within the population group.⁴ For example, smoking prevalence rates as determined by national data from 2008 are highest among Cubans (21.5%), followed by Mexicans (20.1%), and Puerto Ricans (18.6%).³ Puerto Ricans and Cubans are also more likely to be current smokers than are Mexicans.⁷ Furthermore, although research grounded on a nationally representative sample found that Latinos were approximately 4.5 times more likely to be light smokers than were non-Hispanic Whites,⁸ that study provided only aggregated rates for all Latinos and did not differentiate between national origin groups. Gender differences have also been reported among disaggregated Latino groups. A higher prevalence of smoking has been reported among Mexican (25.0%), Puerto Rican (27.6%), and Cuban (24.7%) men than among Mexican (10.4%), Puerto Rican (24.2%), and Cuban (12.4%) women.⁷ The lower rates of smoking among women have been consistent in surveys of Latinos.^{5,7,9} Results from these studies, although informative, have generally been

Objectives. We examined trends in smoking behaviors across 2 periods among Mexicans, Puerto Ricans, and Cubans in the United States.

Methods. We analyzed data from the 1992–2007 Tobacco Use Supplements to the Current Population Survey. We constructed 2 data sets (1990s vs 2000s) to compare smoking behaviors between the 2 periods.

Results. Significant decreases in ever, current, and heavy smoking were accompanied by increases in light and intermittent smoking across periods for all Latino groups, although current smoking rates among Puerto Rican women did not decline. Adjusted logistic regression models revealed that in the 2000s, younger Mexicans and those interviewed in English were more likely to be light and intermittent smokers. Mexican and Cuban light and intermittent smokers were less likely to be advised by healthcare professionals to quit smoking. Mexicans and Puerto Ricans who were unemployed and Mexicans who worked outdoors were more likely to be heavy smokers.

Conclusions. Increases in light and intermittent smoking among Mexican, Puerto Rican, and Cuban Americans suggest that targeted efforts to further reduce smoking among Latinos may benefit by focusing on such smokers. (*Am J Public Health.* 2014;104:896–903. doi:10.2105/AJPH.2013.301844)

determined by aggregated Latino data or data from a single survey time point. Although such data are valuable and can demonstrate existing gender differences, national-level trends from Latino nationality groups in the United States add valuable information that have not been previously reported.

Previous research has also identified social and environmental factors associated with Latinos' smoking behaviors. Acculturation to mainstream US culture plays a significant role in one's health behaviors,¹⁰ and as Latinos acculturate, their smoking behaviors become similar to those of non-Hispanic Whites.⁷ Existing research has also revealed that Latinos are less likely to quit smoking,¹¹ receive tobacco screening, and be advised to quit by a physician than are non-Hispanic Whites.¹²⁻¹⁵ A health professionals' advice to quit smoking has been found to increase the likelihood that a smoker will successfully quit.^{16,17} Lastly, workplace smoking policies have also influenced smoking prevalence and intensity.¹⁸⁻²⁰ Work

environments adopting a smoke-free policy saw a 14% decrease in individuals' smoking.²¹ When examining national-level smoking behaviors among Latinos, it is important to account for social and environmental factors such as acculturation, physician advice to quit smoking, and work environment smoking policies, as they may influence smoking behaviors.

Existing research on smoking behaviors among Latino national origin groups has been predicated on data from specific regions of the United States.^{4,22-25} Although regional data are important for the development of community-level interventions,⁴ national-level data provide an overview of the country's progress in tobacco control as well as remaining and emerging challenges for Latinos nationwide. We compared smoking behaviors across 2 periods, about a decade apart, among Mexicans, Puerto Ricans, and Cubans. Our goals in these analyses were (1) to compare Latino national origin groups across 2 periods to examine factors affecting changes in smoking

behavior within and between groups, and (2) to evaluate demographic factors that influence current smoking behaviors within Latino national origin groups in the most recent period available. Examining long-term national trends in Latino smoking behaviors may prove vital to policymakers, public health officials, community workers, and interventionists as they address tobacco-related issues.

METHODS

We obtained data from the Tobacco Use Supplements (TUS) to the Current Population Survey (CPS). The CPS is a US Census Bureau continuous survey of more than 56 000 households per month. With a multistage stratified sample, we selected housing units from lists of addresses that we obtained from the 2000 decennial Census of Population and Housing. Initially, households were visited to administer the main survey; however, residents were presented with the option of a telephone survey. TUS data obtained from US households are periodically added to the CPS. The TUS were included in 1992–1993 and 1995–1996 in September, January, and May; in 2003 in February, June, and November; and in 2006–2007 in May, August, and January. The complete CPS methodology is published elsewhere.²⁶ The CPS has a response rate of 92%, whereas response rates for the TUS are greater than 65%.²⁶ We used only self-reported data in our analyses. We classified 1992–1993 and 1995–1996 data as time 1 (T1) and 2003 and 2006–2007 data as time 2 (T2) to compare and maximize the sample size of Latinos by national origin and to compare time trends.

Smoking-Related Measures and Demographics

TUS-CPS survey respondents were asked, “Have you ever smoked 100 cigarettes?” Respondents were considered “ever smokers” if they answered yes. Ever smokers were further asked, “Do you now smoke every day, some days, or not at all?” We considered participants who reported smoking every day current daily smokers and participants who reported smoking on some days as current intermittent smokers. We classified daily smokers who reported smoking fewer than 5 cigarettes a day as light daily smokers and those who smoked

more than 20 cigarettes a day as heavy daily smokers. We classified former smokers as ever smokers who reported not smoking at the time of the survey. Additional smoking-related variables we examined included being advised to quit smoking by a doctor, dentist, nurse, or other health professional among those who saw such a health professional in the past 12 months (yes, advised to quit vs did not see such a health professional in the past 12 months or saw a health professional but was not advised to quit), and workplace smoking policy (not employed, employed but not indoors, employed indoors without a complete ban, and employed indoors with complete ban).

Demographic measures of interest included age group (20–34 years, 35–49 years, 50–64 years, and ≥ 65 years), gender, level of education (< high school, some high school, high school graduate, some college, and college graduate), self-reported race/ethnicity, and language of interview (English, Spanish, other). We identified respondents as Hispanic or Latino on the basis of US Census categories and then further identified them on the basis of their national origin of Mexican, Puerto Rican, and Cuban. We have used the term “national origin” throughout the article to describe cultural ancestry of respondents.

Statistical Methods

We conducted current analyses using the most recent available data through TUS. We weighted all estimates by TUS-CPS survey weights, which account for selection probabilities from the sampling design, and we adjusted for survey nonresponse.²⁶ We computed all estimates in SAS version 9.2 (SAS Institute, Cary, NC), and we computed variance estimates using the published TUS-CPS replicate weights with Fay’s balanced repeated replication.^{26,27} We computed unadjusted prevalence rates using PROC SURVEYFREQ for categorical data and PROC SURVEYMEANS for continuous. We computed adjusted smoking prevalence rates using weighted logistic regression with PROC SURVEYLOGISTIC. We fit logistic regression models for binary outcomes, including light and intermittent smoking and heavy daily smoking in T2 data. We adjusted all logistic regression models for age group, level of education, gender, language of

interview, workplace smoking policy, and whether advised to quit by a health professional. We excluded Mexican (T1: 20; T2: 11), Puerto Rican (T1: 7; T2: 3), and Cuban (T1: 5; T2: 1) participants who identified as smokers but did not enter consumption data from all analyses. We focused on the population aged 20 years and older at the time of the survey because smoking patterns may not be fully established before aged 20 years.^{28,29}

RESULTS

Population demographic characteristics are presented in Table 1. In T1, of 17 371 respondents identified as Latinos of Mexican (n = 13 283), Puerto Rican (n = 2955), or Cuban (n = 1093) descent. At T2, 21 260 respondents identified as Latinos of Mexican (n = 17 449), Puerto Rican (n = 2768), or Cuban (n = 1043) descent. Cubans (T1: 41.8 ± 0.3 years; T2: 42.7 ± 0.3 years) were older than Mexican (T1: 35.6 ± 0.1 years; T2: 36.3 ± 0.0 years) and Puerto Rican (T1: 37.6 ± 0.2 years; T2: 38.9 ± 0.2 years) respondents in both periods. Across both periods, a larger proportion of Mexicans reported less than a high school education (T1: 24.7% ± 0.4%; T2: 20.0% ± 0.3%) than Puerto Ricans (T1: 8.6% ± 0.4%; T2: 5.9% ± 0.3%) and Cubans (T1: 13.9% ± 0.9%; T2: 11.4% ± 0.7%).

Smoking Behaviors Across Latino Subgroups

Table 2 presents the prevalence of ever, former, and current smokers across Latino national origin groups by gender. Table 3 presents smoking consumption levels and the mean number of cigarettes smoked among current smokers across Latino national origin groups. The following text highlights significant differences in smoking behaviors across Latino national groups by gender from these 2 tables.

Mexicans. Among Mexican men, there was a 34% decrease in current smokers from T1 (25.2% ± 0.5%) to T2 (16.7% ± 0.3%) and an increase in intermittent smokers from T1 (37.8% ± 0.9%) to T2 (41.9% ± 1.0%). There was a significant decrease of approximately 15% in heavy smokers (T1: 20.5% ± 0.7%; T2: 16.3% ± 0.7%). Among Mexican women, there was a significant decrease of

TABLE 1—Demographic Characteristics: Tobacco Use Supplements to the Current Population Survey, United States, 1992–2007

Characteristics	Mexican Origin, No. or % (95% CI)	Puerto Rican Origin, No. or % (95% CI)	Cuban Origin, No. or % (95% CI)
1992–1993 to 1995–1996			
Sample size	13 283	2955	1093
Mean age, y	35.6 (35.5, 35.7)	37.6 (37.4, 37.8)	41.8 (41.5, 42.1)
Male gender	51.9 (51.7, 49.9)	43.9 (43.3, 43.9)	51.3 (50.4, 52.2)
Education			
0–8th grade	24.7 (24.3, 25.1)	8.6 (8.2, 9.0)	13.9 (13.0, 14.8)
9th–12th (no high school diploma)	25.2 (22.2, 25.5)	28.5 (27.9, 29.1)	20.1 (19.2, 21.1)
High school graduate or earned GED	26.0 (25.7, 26.3)	30.4 (29.8, 31.0)	23.3 (22.2, 24.4)
< bachelor's degree	18.1 (17.8, 18.4)	21.8 (21.2, 22.4)	22.3 (21.7, 23.2)
≥ bachelor's degree	6.0 (5.8, 6.2)	10.7 (10.3, 11.1)	20.4 (19.5, 21.3)
Interviewed in Spanish	28.7 (28.1, 29.3)	13.5 (12.9, 14.1)	48.9 (46.9, 50.9)
2003 to 2006–2007			
Sample size	17 449	2768	1043
Mean age, y	36.3 (36.3, 36.3)	38.9 (38.7, 39.1)	42.7 (42.4, 43.0)
Male gender	53.2 (53.0, 53.4)	47.2 (46.5, 47.9)	52.8 (51.9, 53.7)
Education			
0–8th grade	20.0 (19.7, 20.3)	5.9 (5.6, 6.2)	11.4 (10.7, 12.1)
9th–12th grade, but no high school diploma	25.8 (25.5, 26.1)	23.5 (22.9, 24.1)	16.6 (15.8, 17.4)
High school graduate or earned GED	27.2 (26.9, 27.5)	31.3 (30.7, 31.9)	29.9 (28.9, 30.9)
< bachelor's degree	19.0 (18.7, 19.3)	24.9 (24.3, 25.5)	20.8 (20.1, 21.5)
≥ bachelor's degree	8.1 (7.9, 8.3)	14.3 (13.8, 14.8)	21.3 (20.4, 22.2)
Interviewed in Spanish	34.6 (34.1, 35.1)	12.2 (11.6, 12.8)	50.7 (49.1, 52.3)

Note. CI = confidence interval; GED = general equivalency diploma.

approximately 20% who were current smokers from T1 (13.0% ± 0.3%) to T2 (8.6% ± 0.2%) but no significant difference in intermittent smokers. The number of heavy smokers

decreased by approximately 26% from T1 (14.3% ± 0.8%) to T2 (10.5% ± 0.7%).

Puerto Ricans. Among Puerto Rican men, there was an approximately 37% decrease

in current smokers from T1 to T2 (T1: 31.8% ± 2.0%; T2: 19.9% ± 0.8%), whereas intermittent smokers increased by about 32% (T1: 16.6% ± 1.3%; T2: 21.9% ± 2.0%). Heavy smokers decreased by about 30% from T1 to T2 (T1: 41.9% ± 1.0%; T2: 29.4% ± 1.2%). There was no significant difference in current and intermittent smokers from T1 to T2 for Puerto Rican women. The prevalence of heavy smokers decreased by approximately 16% from T1 to T2 (T1: 25.6% ± 1.4%; T2: 21.5 ± 1.6%). Of the days Puerto Rican women smoked, the mean number of cigarettes smoked on these days decreased (T1: 13.4 ± 0.4%; T2: 12.1 ± 0.4%).

Cubans. For Cuban men, there was an approximately 30% decrease in current smokers from T1 to T2 (T1: 27.7% ± 1.2%; T2: 19.5% ± 1.3%); however, there was no significant difference in intermittent smokers (T1: 21.5% ± 2.6%; T2: 21.5% ± 3.1%) from T1 to T2. Heavy smokers decreased by approximately 33% from T1 to T2 (T1: 50.9% ± 2.3%; T2: 34.0% ± 3.3%). The mean number of cigarettes smoked on days smoked decreased for Cuban men (T1: 19.6 ± 0.7; T2: 15.3 ± 0.6). For Cuban women, the number of current and intermittent smokers decreased from T1 to T2. Current smokers decreased by about 24% (T1: 16.4% ± 0.9%; T2: 12.5% ± 0.9%), whereas intermittent smokers decreased by approximately 42% (T1: 27.6% ± 2.6%; T2: 15.9% ± 3.1%). A 19.0% decline in heavy

TABLE 2—Prevalence of Ever, Former, and Current Smokers by Latino National Origin: Tobacco Use Supplements to the Current Population Survey, United States, 1992–2007

Variable	Mexican Origin, % (95% CI)		Puerto Rican Origin, % (95% CI)		Cuban Origin, % (95% CI)	
	1992–1993 to 1995–1996	2003 to 2006–2007	1992–1993 to 1995–1996	2003 to 2006–2007	1992–1993 to 1995–1996	2003 to 2006–2007
Ever smokers						
Men	43.5 (43.0, 44.0)	31.2 (30.8, 31.6)	49.6 (48.6, 50.6)	39.8 (38.8, 40.8)	49.5 (48.2, 50.8)	30.7 (29.4, 32.0)
Women	22.8 (22.4, 23.2)	15.3 (15.0, 15.6)	33.1 (32.3, 33.9)	32.0 (31.2, 32.8)	24.3 (23.3, 25.3)	17.1 (16.1, 17.1)
Former smokers						
Men	19.0 (18.7, 19.3)	14.7 (14.4, 15.0)	19.3 (18.6, 20.0)	16.8 (16.1, 17.5)	23.7 (22.7, 24.7)	14.3 (13.3, 15.3)
Women	10.2 (10.0, 10.4)	6.9 (6.7, 7.1)	12.8 (12.3, 13.3)	13.8 (13.2, 14.4)	11.1 (10.4, 11.8)	7.2 (6.5, 7.9)
Current smokers						
Men	25.2 (24.7, 25.7)	16.7 (16.4, 17.0)	31.8 (30.8, 32.8)	19.9 (19.1, 20.7)	27.7 (26.5, 28.9)	19.5 (18.2, 20.8)
Women	13.0 (12.7, 13.3)	8.6 (8.4, 8.8)	21.6 (20.9, 22.3)	22.2 (21.6, 22.8)	16.4 (15.5, 17.3)	12.5 (11.6, 13.4)

Note. CI = confidence interval.

TABLE 3—Smoking Consumption Levels and Mean Number of Cigarettes Smoked Among Latino Current Smokers: Tobacco Use Supplements to the Current Population Survey, United States, 1992–2007

Smoking Levels	Mexican Origin		Puerto Rican Origin		Cuban Origin	
	1992-1993 to 1995-1996	2003 to 2006-2007	1992-1993 to 1995-1996	2003 to 2006-2007	1992-1993 to 1995-1996	2003 to 2006-2007
Men, % (95% CI)						
Intermittent	37.8 (36.9, 38.7)	41.9 (40.9, 42.9)	16.6 (15.3, 17.9)	21.9 (19.9, 23.9)	21.5 (18.9, 24.1)	21.5 (18.4, 24.6)
Daily, ≤ 5	16.5 (15.8, 17.2)	16.7 (15.9, 17.5)	5.9 (5.1, 6.7)	8.2 (7.1, 9.3)	4.6 (2.9, 6.3)	12.5 (10.3, 14.7)
Daily, 6-10	17.4 (16.7, 18.1)	17.9 (17.1, 18.7)	24.3 (22.8, 25.8)	29.5 (27.4, 31.6)	13.0 (11.0, 15.0)	17.5 (14.8, 20.2)
Daily, 11-19	7.2 (6.7, 7.7)	6.6 (6.1, 7.1)	10.0 (8.8, 11.2)	10.9 (9.6, 12.2)	8.3 (6.4, 10.2)	13.2 (10.8, 15.6)
Daily, ≥ 20	20.5 (19.8, 21.2)	16.3 (15.6, 17.0)	41.9 (39.9, 43.9)	29.4 (27.2, 31.6)	50.9 (48.6, 53.2)	34.0 (30.7, 37.3)
Women, % (95% CI)						
Intermittent	36.4 (35.4, 37.4)	35.9 (34.7, 37.1)	24.2 (22.7, 25.7)	22.0 (20.4, 23.6)	27.6 (25.0, 30.2)	15.9 (12.8, 19.0)
Daily, ≤ 5	18.8 (18.0, 19.6)	21.4 (20.4, 22.4)	15.2 (14.0, 16.4)	22.5 (20.9, 24.1)	8.9 (6.5, 11.3)	13.6 (10.8, 16.4)
Daily, 6-10	23.5 (22.7, 24.3)	26.5 (25.4, 27.6)	27.0 (25.4, 28.6)	24.1 (22.5, 25.7)	25.7 (23.8, 28.6)	33.6 (29.3, 37.9)
Daily, 11-19	6.0 (5.5, 6.5)	5.4 (4.8, 6.0)	7.3 (6.5, 8.1)	9.4 (8.3, 10.5)	10.0 (8.0, 12.0)	14.3 (11.1, 17.5)
Daily, ≥ 20	14.3 (13.5, 15.1)	10.5 (9.8, 11.2)	25.6 (24.2, 27.0)	21.5 (19.9, 23.1)	27.8 (25.3, 30.3)	22.6 (19.2, 26.0)
Nondaily smokers						
Cigarettes smoked/mo, mean (95% CI)						
Men	62.7 (60.2, 65.2)	43.8 (42.3, 45.3)	62.8 (56.4, 69.2)	79.7 (60.7, 92.7)	100.6 (89.5, 111.7)	87.8 (70.6, 105)
Women	44.8 (42.1, 46.2)	42.3 (39.8, 44.8)	88.3 (79.7, 96.9)	56.0 (49.1, 62.9)	109.7 (91.6, 127.8)	61.1 (41.4, 80.8)
Days smoked/mo, mean (95% CI)						
Men	12.1 (11.9, 12.3)	10.9 (10.7, 11.1)	12.3 (11.7, 12.9)	13.1 (12.5, 13.7)	12.4 (11.6, 13.2)	14.1 (13.0, 15.2)
Women	11.7 (11.4, 12.0)	11.1 (10.8, 11.4)	13.8 (13.3, 14.3)	13.0 (12.3, 13.7)	13.9 (12.7, 15.1)	14.1 (12.4, 15.8)
Cigarettes smoked on days smoked, mean (95% CI)						
Men	5.0 (4.8, 5.2)	3.6 (3.5, 3.7)	5.5 (5.1, 5.9)	5.1 (4.5, 5.7)	7.6 (6.7, 8.5)	5.6 (4.9, 6.3)
Women	3.7 (3.6, 3.8)	3.9 (3.7, 4.1)	5.6 (5.3, 5.9)	4.2 (3.8, 4.6)	6.3 (5.5, 7.1)	3.4 (2.6, 4.2)
Daily smokers						
Cigarettes smoked/d, mean (95% CI)						
Men	13.2 (13.0, 13.4)	11.9 (11.7, 12.1)	17.3 (16.9, 17.7)	14.0 (13.6, 14.4)	19.6 (18.9, 20.3)	15.3 (14.7, 15.9)
Women	10.9 (10.7, 11.1)	9.6 (9.4, 9.8)	13.4 (13.0, 13.8)	12.1 (11.7, 12.5)	14.3 (13.7, 14.9)	12.8 (12.2, 13.4)

Note. CI = confidence interval.

smokers was observed prevalence rates (T1: 27.8% ± 2.5%; T2: 22.6% ± 3.4%). A decrease in mean number of cigarettes smoked on days was observed (T1: 14.3 ± 0.6%; T2: 12.8 ± 0.6%).

Latino Smoking Behaviors

We fit adjusted logistic regression models to separately predict light and intermittent smoking and heavy daily smoking for each national origin group (Mexicans, Puerto Ricans, and Cubans) at T2. Results are presented in Table 4.

Mexicans. Mexicans aged 20 to 34 years (odds ratio [OR] = 2.23; 95% confidence interval [CI] = 1.53, 3.71) were twice as likely to engage in light and intermittent smoking and less likely to engage in heavy daily smoking (OR = 0.56;

95% CI = 0.31, 1.01) than were those older than 65 years. Mexican men were twice as likely to engage in heavy daily smoking (OR = 1.97; 95% CI = 1.45, 2.67) than were women. There was no significant difference in smoking across education level. Those who completed interviews in Spanish were twice as likely to be light and intermittent smokers (OR = 2.15; 95% CI = 1.67, 2.77) and less likely to be heavy daily smokers (OR = 0.47; 95% CI = 0.33, 0.68) than were those who completed interviews in English. Those who were advised to quit smoking by a health professional were less likely to be light and intermittent smokers (OR = 0.61; 95% CI = 0.50, 0.76) and more likely to be heavy daily smokers (OR = 1.41; 95% CI = 1.08, 1.86) than were individuals who had not visited

a doctor, dentist, nurse, or other health professional in 12 months or had visited a doctor but were not advised to quit. Individuals employed indoors without a complete smoke-free policy were significantly more likely to be heavy daily smokers (OR = 1.52; 95% CI = 1.00, 2.31) than were individuals employed indoors with a 100% workplace smoking policy. Individuals employed outdoors were significantly less likely to be light and intermittent smokers (OR = 0.71; 95% CI = 0.52, 0.97) and more likely to be heavy daily smokers (OR = 2.10; 95% CI = 1.38, 3.19). Individuals not employed were also twice as likely to be heavy daily smokers (OR = 1.91; 95% CI = 1.26, 2.89) than were individuals employed indoors with a complete ban.

TABLE 4—Results of Multivariate Analysis Examining Smoking Behaviors Among Latino Current Smokers: Tobacco Use Supplements to the Current Population Survey, 2003–2006/07

Variable	Mexican Origin (n = 2378), OR (95% CI; P)		Puerto Rican Origin (n = 635), OR (95% CI; P)		Cuban Origin (n = 189), OR (95% CI; P)	
	Intermittent and Daily ≤ 5	Heavy Daily ≥ 20	Intermittent and Daily ≤ 5	Heavy Daily ≥ 20	Intermittent and Daily ≤ 5	Heavy Daily ≥ 20
Age, y						
20–34	2.38 (1.53, 3.71; <.001)	0.56 (0.31, 1.01; .05)	1.44 (0.45, 4.54; .54)	0.73 (0.21, 2.57; .63)	0.98 (0.20, 4.78; .98)	0.59 (0.11, 3.36; .56)
35–49	1.46 (1.02, 2.50; .04)	0.72 (0.40, 1.29; .27)	1.21 (0.40, 3.62; .73)	0.99 (0.30, 3.23; .99)	0.45 (0.11, 1.81; .26)	1.37 (0.31, 5.94; .68)
50–64	1.04 (0.67, 1.61; .85)	1.38 (0.74, 2.57; .31)	0.85 (0.27, 2.68; .78)	1.32 (0.40, 4.32; .65)	0.83 (0.19, 3.68; .81)	1.15 (0.26, 5.14; .86)
≥ 65 (Ref)	1.00		1.00		1.00	
Education						
0–8th grade	0.80 (0.48, 1.33; .39)	1.23 (0.56, 2.73; .6)	0.47 (0.14, 1.58; .22)	0.56 (0.15, 2.13; .39)	0.34 (0.06, 2.11; .25)	2.41 (0.45, 12.84; .3)
9th–12th grade, but no high school diploma	0.78 (0.50, 1.21; .27)	1.31 (0.62, 2.74; .48)	0.50 (0.22, 1.16; .11)	0.60 (0.24, 1.52; .28)	0.28 (0.06, 1.18; .08)	1.74 (0.47, 6.51; .41)
Completed high school or earned GED	0.75 (0.49, 1.16; .2)	1.40 (0.69, 2.84; .36)	0.38 (0.18, 0.83; .02)	0.84 (0.34, 2.08; .66)	0.65 (0.21, 2.02; .45)	1.05 (0.34, 3.30; .93)
< bachelor's degree	0.90 (0.58, 1.40; .64)	1.13 (0.53, 2.41; .75)	0.47 (0.21, 1.06; .07)	0.81 (0.32, 2.02; .7)	1.04 (0.31, 3.51; .94)	1.32 (0.36, 4.82; .68)
Bachelor's degree (Ref)	1.00		1.00		1.00	
Gender						
Men	0.89 (0.72, 1.09; .26)	1.97 (1.45, 2.67; <.001)	0.51 (0.33, 0.78; <.01)	1.53 (0.97, 2.43; .07)	1.25 (0.59, 2.66; .56)	1.58 (0.70, 3.53; .27)
Women (Ref)	1.00		1.00		1.00	
Language of interview						
Other	0.73 (0.32, 1.66; .46)	1.24 (0.49, 3.12; .65)	1.32 (0.38, 4.65; .67)	0.84 (0.21, 3.31; .8)	0.66 (0.07, 6.01; .71)	1.34 (0.10, 18.62; .83)
Spanish	2.15 (1.67, 2.77; <.001)	0.47 (0.33, 0.68; <.001)	1.11 (0.61, 2.03; .73)	0.62 (0.29, 1.32; .21)	0.90 (0.37, 2.17; .82)	0.95 (0.45, 2.02; .9)
English (Ref)	1.00		1.00		1.00	
Health professional advised to quit in past 12 mo						
Yes	0.61 (0.50, 0.76; <.001)	1.41 (1.08, 1.86; .01)	0.85 (0.57, 1.26; .41)	1.21 (0.82, 1.79; .35)	0.26 (0.11, 0.59; <.01)	1.43 (0.65, 3.15; .37)
Did not see health professional or not advised (Ref)	1.00		1.00		1.00	
Workplace smoking policy						
Not employed	0.88 (0.67, 1.15; .34)	1.91 (1.26, 2.89; <.01)	1.37 (0.80, 2.35; .26)	2.23 (1.24, 4.00; .01)	0.95 (0.35, 2.57; .92)	1.52 (0.53, 4.32; .43)
Employed, not indoors	0.71 (0.52, 0.97; .03)	2.10 (1.38, 3.19; <.001)	1.86 (0.92, 3.74; .08)	1.76 (0.84, 3.68; .14)	0.99 (0.22, 4.51; .99)	0.82 (0.20, 3.30; .78)
Employed indoors, < 100% smoke-free	0.87 (0.65, 1.16; .34)	1.52 (1.00, 2.31; .05)	1.44 (0.74, 2.49; .33)	0.81 (0.39, 1.68; .58)	1.01 (0.39, 2.57; .99)	1.30 (0.45, 3.76; .63)
Employed indoors, 100% smoke-free (Ref)	1.00		1.00		1.00	

Note. CI = confidence interval; GED = general equivalency diploma; OR = odds ratio.

Puerto Ricans. There was no significant difference in smoking across age groups or receipt of advice to quit smoking by a doctor, dentist, nurse, or other health professional. Those who completed high school or obtained a general equivalency diploma only (OR = 0.38; 95% CI = 0.18, 0.83) and those who completed less than college (OR = 0.84; 95% CI = 0.34, 2.08) were less likely to be light and intermittent smokers than were college graduates. Men were significantly less likely to be light and intermittent smokers (OR = 0.51; 95% CI = 0.33, 0.78) than were women. Individuals not employed were twice as likely to be heavy daily smokers (OR = 2.23; 95% CI = 1.24, 4.00).

Cubans. After adjusting for potential demographic confounders, there were no significant differences across age, education, gender, language of interview, and workplace smoking policy with regard to light and intermittent and heavy daily smoking for Cubans. Individuals who were advised to quit smoking by a health professional were significantly less likely to be light and intermittent smokers (OR = 0.26; 95% CI = 0.11, 0.59) than were those who had not visited a doctor, dentist, nurse, or other health professional in 12 months or had visited a doctor but were not advised to quit.

DISCUSSION

Few studies have examined trends in Latino smoking behaviors at the national level, particularly among disaggregated Latino nationality groups by gender. To our knowledge, this is the first study to examine trends from the 1990s to the 2000s for Latinos of Mexican, Puerto Rican, and Cuban origin by gender.

We found significant decreases in ever smoking and current smoking across all men in Latino nationality groups. We also found similar decreases in ever smoking and in current smoking among Mexican and Cuban women. Unfortunately, such rates for Puerto Rican women did not decrease significantly. Large declines in heavy daily smoking for men and women among Latino national origin groups were accompanied by general increases in the proportions of light and intermittent smoking, particularly among Mexican and Puerto Rican men. Additionally, in T2, Mexican men were significantly more likely to be heavy daily smokers than were women, but this gender

difference in heavy daily smoking was not found among Puerto Ricans and Cubans. Our findings on heavy daily smoking, light and intermittent smoking, and gender differences in smoking among Latinos support previous research grounded on single time points.^{7,9,30} We also found that although the mean number of cigarettes smoked was higher among men than women, the mean number of cigarettes smoked per day by daily smokers decreased for both genders among all Latino national origin groups over time. In sum, whereas these findings suggest a general shift in the smoking behaviors of Latinos toward lower levels of smoking over time, it appears that progress in reducing smoking among Puerto Rican women may have lagged.

The lack of progress among Puerto Rican women is not well understood and is a novel finding. Historically, Latinos have had lower smoking rates than have non-Hispanic Whites, and studies focusing specifically on smoking among Puerto Rican women are scarce, possibly leading to fewer focused smoking interventions. Puerto Rican women have been documented to be at higher risk for smoking,⁷ and our findings support the need for focused smoking interventions for this group.

We noted differences in smoking by age groups after adjusting for gender, level of education, workplace smoking policy, being advised to quit smoking by a health professional, and language of interview. Younger Mexican smokers were twice as likely to engage in light and intermittent smoking; they may become heavier smokers or eventually quit, leaving a higher proportion of heavier smokers in older groups. Such possibilities deserve future research. It is interesting to note that differences across age groups were observed for Mexicans but not for Puerto Rican and Cubans.

Mexicans who completed interviews in Spanish were more likely to be light and intermittent smokers than were those who completed interviews in English. We did not observe this language effect among Cubans and Puerto Ricans. Research has shown that English-only speakers are at a higher risk of lifetime smoking than are Latinos using another language.^{31,32} The use of a multidimensional measure of acculturation in population-based health surveys is not always feasible, and

language of interview has often been used as a proxy measure because it accounts for the largest portion of the variance in the acculturation construct.³² This difference in smoking behavior by language of interview among Mexicans, but not Puerto Ricans and Cubans, highlights the complex nature of acculturation and the need for a more detailed examination of its association with smoking among Latino national groups.⁵

We found that light and intermittent smokers were less likely to receive advice from health professionals to quit smoking. Latinos have also been found to receive less advice to quit smoking,^{13,14,33} which may be attributable to differences in smoking level after health status is taken into account.³³ Because of the deleterious health effects of smoking and because the odds of successfully quitting are higher when advised by a health professional,³⁴ it is important that all smokers be advised to quit regardless of smoking level. We also found that heavy daily smokers were more likely to work in an environment not covered by a complete smoking ban, particularly Mexicans, the largest Latino group we examined. Because workplace smoking policy can directly affect smoking prevalence and intensity,^{35–38} ensuring that all employees have the benefit of a completely smoke-free workplace is important.

Limitations

Because of small sample sizes, we were unable to adequately examine smoking behaviors for other Latino national origin groups. Also, smoking status in the TUS-CPS was ascertained by self-report and not validated with biochemical tests. Previous research has found self-reporting of smoking intensity to be underreported when compared to serum cotinine levels even though average cotinine levels for Latinos are considerably lower than are those of smokers from other racial/ethnic groups.^{22,39} As determined by data from the National Health and Nutrition Examination Survey, more than 95% of non-Hispanic White, Mexican, and Black individuals who identified themselves as current smokers had serum cotinine levels consistent with active smoking; however, we did not analyze intensity levels.⁴⁰ Thus, misclassification of smoking status by using self-report only is uncommon.

Smoking definitions can often be subjective, and the categorization of intermittent smoking does not necessarily equate with low smoking levels. However, our definition of light and intermittent smokers is consistent with established limits from previous research.^{41,42} Researchers might consider using a measure of “monthly cigarette exposure” to better quantify tobacco use among light and intermittent smokers. Despite the aforementioned limitations, we are the first, to our knowledge, to examine smoking behaviors over time on a national level by Latino national origin groups and gender. A better understanding of racial/ethnic group smoking differences provides much needed information for smoking prevention across ethnic groups.

Conclusions

As the smoking topography evolves to larger proportions of light and intermittent smokers and as the demographic makeup of the United States changes, with the proportion of Latinos increasing, research that examines trends in smoking behaviors on the basis of national data becomes increasingly important. We have highlighted major differences over time in smoking behaviors by gender across Latino national origin groups. Although findings were encouraging, especially the general shift of the distribution among current smokers to lighter smoking, these results also underscore the need for continued efforts to reduce smoking among Latinos, especially among Puerto Rican women who have shown less progress than have other Latino groups examined. The increase in proportions of light and intermittent smoking among Latino current smokers suggests that targeted efforts to further reduce smoking among Latinos can benefit by focusing on such groups. Thus, population-level data for other Latino subgroups are needed, and reducing smoking among Latinos at both the national and local levels remains an important public health goal. ■

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Contributors

L. Blanco led the writing of the overall article. E. J. Pérez-Stable contributed to framing the article and provided analytical guidance. M. M. White and K. Messer performed the statistical programming. D. R. Trinidad was the principal investigator, provided study oversight, and framed the article. R. Garcia assisted in the development of the introduction and discussion. All authors contributed to the writing of the article.

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