

Brief report

Trends in Cigar Use in the United States, 2002–2016: Diverging Trends by Race/Ethnicity

Andrea H. Weinberger PhD^{1,2}, Cristine D. Delnevo PhD, MPH³,
Jiaqi Zhu MA^{4,5}, Misato Gbedemah MPH⁵, Joun Lee BA^{1,6}, Lisa N. Cruz
BA¹, Rachel S. Kashan MA¹, Renee D. Goodwin PhD, MPH^{4,5,7,✉}

¹Ferkauf Graduate School of Psychology, Yeshiva University, Bronx, NY; ²Department of Epidemiology and Population Health, Albert Einstein College of Medicine, Bronx, NY; ³Center for Tobacco Studies, School of Public Health, Rutgers University, Piscataway, NJ; ⁴Institute for Implementation Science in Population Health, City University of New York, New York, NY; ⁵Department of Epidemiology and Biostatistics, Graduate School of Public Health and Health Policy, City University of New York, New York, NY; ⁶Department of Clinical Psychology, Teachers College, Columbia University, New York, NY; ⁷Department of Epidemiology, Mailman School of Public Health, Columbia University, New York, NY

Corresponding Author: Renee D. Goodwin, PhD, MPH, Department of Epidemiology and Biostatistics, Graduate School of Public Health and Health Policy, City University of New York, 55 West 125th Street, Rm 611, New York, NY 10027, USA.

E-mail: renee.goodwin@sph.cuny.edu

Abstract

Introduction: Although there are racial/ethnic differences in cigarette use, little is known about how non-cigarette tobacco use differs among racial/ethnic groups. This study investigated trends in cigar use from 2002 to 2016, by racial/ethnic group, in nationally representative US data.

Methods: Data were drawn from the 2002–2016 National Survey on Drug Use and Health public use data files (total analytic sample $n = 630\,547$ including 54 060 past-month cigar users). Linear time trends of past-month cigar use were examined by racial/ethnic group (Non-Hispanic [NH] White, NH Black, Hispanic, NH Other/Mixed Race/Ethnicity) using logistic regression models.

Results: In 2016, the prevalence of past-month cigar use was significantly higher among NH Black respondents than among other racial/ethnic groups ($ps < .001$). Cigar use was also higher among NH White respondents than among Hispanic and NH Other/Mixed Race/Ethnicity respondents. The year by racial/ethnic group interaction was significant ($p < .001$). Past-month cigar use decreased significantly from 2002 to 2016 among NH White and Hispanic respondents ($ps = .001$), whereas no change in prevalence was observed among NH Black ($p = .779$) and NH Other/Mixed Race/Ethnicity respondents ($p = .152$). Cigar use decreased for NH White men ($p < .001$) and did not change for NH White women ($p = .884$). Conversely, cigar use increased for NH Black women ($p < .001$) and did not change for NH Black men ($p = .546$).

Conclusions: Cigar use remains significantly more common among NH Black individuals in the United States and is not declining among NH Black and NH Other/Mixed Race/Ethnicity individuals over time, in contrast to declines among NH White and Hispanic individuals.

Implications: This study identified racial/ethnic differences in trends in past-month cigar use over 15 years among annual cross-sectional samples of US individuals. The highest prevalence of cigar use in 2016 was found among NH Black individuals. In addition, cigar use prevalence did not decline from 2002 to 2016 among NH Black and NH Other/Mixed Race/Ethnicity groups over time, in contrast to NH White and Hispanic groups. Further, cigar use increased over time for NH Black women. Targeted public health and clinical efforts may be needed to decrease the prevalence of cigar use, especially for NH Black individuals.

Introduction

Tobacco use is a leading cause of mortality and morbidity in the United States and globally.^{1,2} Although the majority of tobacco users in the United States smoke cigarettes,³ the sale of other tobacco products such as cigars is increasing.^{2,4} The observed increase in cigar sales may be driven in part by tobacco control efforts directed at reducing cigarette use.⁴ Cigar users have greater mortality overall and from cancers and other diseases (eg, coronary heart disease and stroke) than non-cigar users.^{5,6} Further, hundreds of millions of dollars in healthcare costs annually are attributed to cigar use with additional significant costs for dual cigar–cigarette users.⁷

Tobacco use and tobacco-related consequences differ by US racial/ethnic groups.⁸ Compared to cigarette use, less is known about racial/ethnic differences in cigar use. Cross-sectional epidemiological studies have found mixed results, with some research reporting higher prevalence rates of cigar use by non-Hispanic (NH) Black persons than by other racial/ethnic groups,^{3,9–11} whereas other studies^{10,12} suggest no differences for NH Black versus other individuals. The use of cigars may have changed differentially over time; however, few epidemiological studies have examined trends in cigar use over time by racial/ethnic group. One study of US individuals aged 18–25 found that there was an increase in cigar use from 2002 to 2008 for NH White male young adults but not for NH White female young adults or other racial/ethnic groups.¹¹ To the best of our knowledge, no study has examined trends in cigar use over time among US individuals aged 12 years and older within the past decade.

Additional research is warranted to better understand racial/ethnic differences in cigar use among US individuals, and especially to examine whether racial/ethnic differences have emerged over time, to inform targeted public health and clinical efforts toward persons from various racial/ethnic backgrounds. The purpose of this study was to extend our knowledge of racial/ethnic differences in cigar use among persons in the United States by (1) estimating the prevalence of past-month cigar use by racial/ethnic group in 2016 and (2) investigating trends in past-month cigar use from 2002 to 2016 by race/ethnicity.

Methods

Study Population

Data came from the National Survey on Drug Use and Health (NSDUH; see Center for Behavioral Health Statistics and Quality¹³ for more details about the NSDUH). The NSDUH collects yearly cross-sectional data in each of the 50 US states and the District of Columbia from non-institutionalized civilians aged 12 years and older. The current analyses were conducted on data from the years 2002 to 2016 extracted from the public data portal (<http://datafiles.samhsa.gov/>). The datasets from each year were concatenated adding a variable for the survey year. The analytic sample for the 2016 analyses was composed of 43 512 respondents including 2869 past-month cigar users (6.6% of the 2016 NSDUH sample). The total combined analytic sample for the analyses from 2002 to 2016 was 630 547 including 54 060 past-month cigar users (8.6% of the combined 2002–2016 NSDUH sample).

Measures

Prevalence of Current Cigar Use

Past-month use of any type of cigar was assessed using the following questions: “During the past 30 days, have you smoked part or all of

any type of cigar? How long has it been since you last smoked part or all of any type of cigar?” Those who responded to “Within the past 30 days” were classified as past-month cigar users.

Race/Ethnicity

Racial/ethnic groups were classified as follows: NH Black (reference group), NH White, Hispanic, and NH Other/Mixed Race/Ethnicity (ie, NH Native American/Alaskan Native, NH Native Hawaiian/Other Pacific Islander, NH Asian, NH more than one race).

Demographics

Demographic covariates were as follows: age (12–17 years as reference, 18–25, 26–34, 35 years or older), gender (male as reference, female), and total annual family income (<\$20 000 as reference, \$20 000–\$49 999, \$50 000–\$74 999, \$75 000 or more).

Statistical Analysis

First, the demographic distributions for the 2016 analytic sample overall and by racial/ethnic group were summarized, and comparisons were conducted using chi-square tests. Second, the prevalence of past-month cigar use and associated standard errors (SEs) among the whole population and stratified by race/ethnicity were calculated for 2016 (Aim 1). Third, to estimate past-month cigar use prevalence from 2002 to 2016 by race/ethnicity (Aim 2), the prevalence of past-month cigar use and associated SEs among the whole population and stratified by race/ethnicity was calculated for each year from 2002 to 2016. Time trends in the prevalence of past-month cigar use stratified by race/ethnicity were tested using logistic regression with continuous year as the predictor for the linear time trend. These analyses were conducted twice: first, unadjusted, and then adjusting for age, gender, and income. To determine whether there were differential time trends in past-month cigar use by race/ethnicity status, additional logistic regressions were run that included the two-way interaction of year by race/ethnicity overall (NH White, NH Black, Hispanic, NH Other/Mixed Race/Ethnicity). Finally, the prevalence of cigar use over time was examined stratified by age and gender for the NH White and NH Black groups (ie, the racial/ethnic groups with large enough samples to allow for these analyses).

Analyses incorporated the NSDUH sampling weights and controlled for the complex clustered sampling using SAS-callable SUDAAN, version 11.0.1 (RTI International, Research Triangle Park, NC; <http://www.rti.org/sudaan/>), which used the Taylor series estimation methods to provide accurate SEs. As our analyses used data from 15 NSDUH years, we divided the survey weights by 15 to obtain nationally representative estimates.

Results

Demographics, 2016

In 2016, the majority of past-month cigar users identified as NH White (63.89%; 20.01% NH Black, 11.02% Hispanic, 5.08% NH Other) and reported non-daily cigar use (86.89%). See [Table 1](#) for demographics and frequency of cigar use for the 2016 analytic sample overall and by race/ethnicity.

Cigar Use Prevalence in 2016 by Race/Ethnicity

The prevalence of past-month cigar use in 2016 by racial/ethnic group was 9.01% for NH Black respondents (SE = 0.47), 6.87% for NH White respondents (SE = 0.23), 3.74% for Hispanic respondents (SE = 0.29), and 3.37% for NH Other/Mixed Race/Ethnicity

respondents (SE = 0.37; see [Supplementary Table 1](#)). Compared to NH Black respondents, past-month cigar use was significantly lower for NH White respondents (odds ratio [OR] = 0.74, 95% confidence interval [CI] = 0.65 to 0.85, $p < .001$), Hispanic respondents (OR = 0.39, 95% CI = 0.32 to 0.48, $p < .001$), and NH Other/Mixed Race/Ethnicity respondents (OR = 0.86, 95% CI = 0.75 to 0.98, $p < .001$). Comparisons remained significant after adjusting for age, gender, and income (NH White vs. NH Black, adjusted OR [AOR] = 0.86, 95% CI = 0.75 to 0.98, $p < .001$; Hispanic vs. NH Black AOR = 0.35, 95% CI = 0.29 to 0.43, $p < .001$; NH Other/Mixed Race/Ethnicity vs. NH Black AOR = 0.32, 95% CI = 0.25 to 0.41, $p < .001$).

Trends in Cigar Use Prevalence From 2002 to 2016 by Race/Ethnicity

See [Figure 1](#) and [Supplementary Table 1](#) for the prevalence of past-month cigar use from 2002 to 2016 by race/ethnicity. The year by group interaction was significant in unadjusted and adjusted models. The prevalence of cigar use among NH Black and NH Other/Mixed Race/Ethnicity respondents did not change over time whereas significant decreases in the prevalence of cigar use for NH White and Hispanic respondents were observed.

Cigar use was examined over time, stratified by age and gender, within the NH White and NH Black groups. With regard to age ([Supplementary Table 2](#)), cigar use decreased over time among those who aged 12–17, 18–25, and more than 35 years, among both NH White and NH Black respondents. For both NH White and NH Black respondents, there was no significant change in the prevalence of cigar use over time for respondents aged 26–34 years. With regard to gender ([Supplementary Table 3](#)), cigar use decreased over time for NH White men and remained unchanged for NH White women. Conversely, cigar use increased over time for NH Black women and did not change for NH Black men.

Discussion

This study used 15 years of repeated cross-sectional data from individuals aged 12 years and older in the United States to examine

trends in cigar use by race/ethnicity. In 2002, NH Black and NH White individuals reported the highest and similar prevalences of cigar use (ie, 8.39% and 8.57%, respectively). Over time, cigar use decreased among NH White individuals and did not change among NH Black individuals. Consequently, in 2016, NH Black individuals reported a prevalence of cigar use that was significantly higher than that among other racial/ethnic groups. In contrast, Hispanic and NH Other/Mixed Race/Ethnicity individuals reported lower prevalences of cigar use across the time span. There was a higher prevalence of cigar use among Hispanic persons than among NH Other/Mixed Race/Ethnicity persons in 2002; however, the prevalence of cigar use decreased over time among Hispanic individuals and did not change among NH Other/Mixed Race/Ethnicity individuals, leading to similar prevalences for both by 2016. Further, although cigar use decreased among NH White individuals, cigar use in 2016 was higher among NH White individuals than among Hispanic and NH Other individuals. Finally, cigar use did not change among NH White and NH Black respondents aged 26–34 years, NH White women or among NH Black men, though cigar use *increased* among NH Black women.

Cigar use was highest among NH Black individuals. In contrast to NH White persons, NH Black persons did not show a decline in cigar use and, in fact, cigar use increased among NH Black women. The reasons for and mechanisms related to the lack of decrease in the use of cigars for NH Black individuals are not known. Given the higher health risks for cigar use relative to no cigar use and racial/ethnic disparities in morbidity and mortality, further research is warranted. Understanding how to reduce tobacco use may be especially important for NH Black persons because of the “smoker’s paradox,” a term that describes the phenomenon of NH Black individuals reporting lower cigarette use than other groups yet experiencing equal or higher tobacco-related health consequences.¹⁴ It is not clear whether or how much cigars play a role in the “smoker’s paradox” and this question should be examined through future research. NH Black adolescents report greater susceptibility to use cigars than do NH White and Hispanic adolescents,¹⁵ and cigars are the most commonly reported tobacco product used by NH Black

Table 1. Demographics for the Sample of Past-Month Cigar Users Overall and by Racial/Ethnic Group in 2016 (National Survey on Drug Use and Health, Aged 12 and older)

Characteristics	Total		NH White		NH Black		Hispanic		NH Other		p Value
	n	% (SE)	n	% (SE)	n	% (SE)	n	% (SE)	n	% (SE)	
Total	2869		1711	63.89 (1.18)	576	20.01 (0.96)	360	11.02 (0.85)	222	5.08 (0.52)	
Frequency of cigar use											.0027
Non-daily	2601	86.89 (0.98)	1593	87.76 (1.22)	475	81.43 (1.96)	325	90.21 (1.98)	208	90.22 (3.86)	
Daily	268	13.11 (0.98)	118	12.24 (1.22)	101	18.57 (1.96)	35	9.79 (1.98)	14	9.78 (3.86)	
Gender											.0001
Men	2096	78.33 (0.91)	1310	80.68 (1.19)	367	71.16 (1.69)	257	77.57 (3.07)	162	78.64 (3.73)	
Women	773	21.67 (0.91)	401	19.32 (1.19)	209	28.84 (1.69)	103	22.43 (3.07)	60	21.36 (3.73)	
Age, y											<.0001
12–17	276	3.57 (0.28)	165	3.45 (0.35)	38	2.99 (0.55)	40	4.59 (1.26)	33	5.18 (1.26)	
18–25	1195	24.38 (1.05)	711	23.77 (1.16)	215	21.88 (1.76)	174	31.29 (3.37)	95	26.93 (4.82)	
26–34	581	21.68 (1.11)	326	19.53 (1.15)	141	24.77 (1.98)	78	31.15 (4.03)	36	15.99 (3.76)	
35+	817	50.37 (1.66)	509	53.25 (1.78)	182	50.36 (2.83)	68	32.98 (4.02)	58	51.90 (6.32)	
Total annual family income											<.0001
\$0–\$19 999	733	21.93 (1.06)	337	16.27 (1.16)	240	38.02 (2.51)	83	20.08 (3.31)	73	33.73 (5.20)	
\$20 000–\$49 999	899	28.87 (1.12)	486	26.36 (1.32)	194	31.20 (2.60)	145	39.62 (3.40)	74	28.01 (5.46)	
\$50 000–\$74 999	370	12.89 (0.90)	231	13.60 (1.16)	55	12.28 (1.78)	58	12.51 (2.34)	26	7.18 (2.16)	
\$75 000+	867	36.31 (1.44)	657	43.77 (1.63)	87	18.50 (2.50)	74	27.80 (3.70)	49	31.08 (5.49)	

NH, non-Hispanic; SE, standard error.

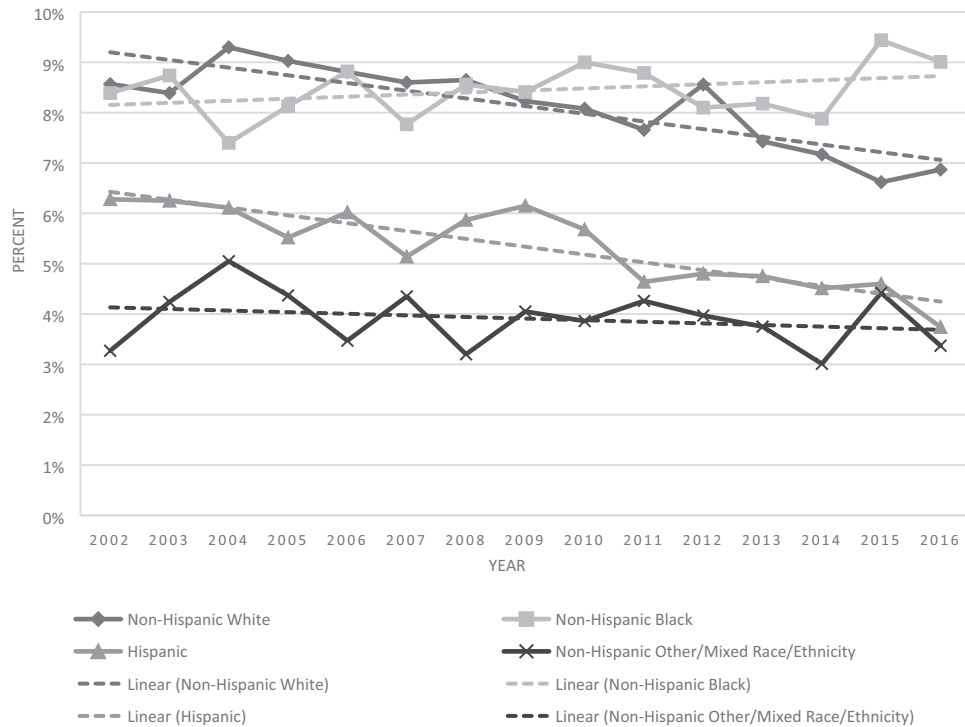


Figure 1. Prevalence of past-month cigar use from 2002 to 2016 by race/ethnicity.

middle and high school students (vs. electronic cigarettes for other racial/ethnic groups).¹⁶ In addition to targeting NH Black adults, especially women, to decrease the prevalence of cigar use, it may also be useful to target young cigar users and youth who may be susceptible to later cigar use.

There are a number of limitations. The NSDUH includes US persons aged 12 and older and results would need to replicate in other samples (eg, persons outside of the United States). Because of small sample sizes, we could not examine subgroups in the NH Other/Mixed Race/Ethnicity category (eg, NH American Indian/Alaska Native; NH Asian) or subgroups within the 35 and older age group and could not compare results by cigar use frequency (eg, non-daily vs. daily). The NSDUH does not ask about specific cigar types (eg, little cigars and cigarillos). There may be racial/ethnic differences in the use of cigar types,¹⁷ and we found racial/ethnic differences in daily versus non-daily use of cigars in 2016, so future research should examine these research questions. This article focused on racial/ethnic differences. Future research focusing on cigar use among other demographic subgroups (eg, gender and age) is needed as is an examination of other potential demographic moderators of the relationship between cigar use and race/ethnicity. Future research should also examine racial/ethnic differences in trends of use of other non-cigarette tobacco products (eg, electronic cigarettes and hookah), co-use of multiple tobacco products (eg, cigars and cigarettes¹⁸), and co-use of cigars and cannabis (eg, blunt use¹⁹).

Cigar use in the United States remains significantly more common among NH Black persons than among any other racial/ethnic group and is higher among NH White persons than among Hispanic and NH Other individuals. Cigar use is not declining among NH Black and NH Other/Mixed Race/Ethnicity groups over time and is increasing among NH Black women, in contrast to a decline in NH White and Hispanic groups. Targeted public health and clinical efforts may help to decrease the prevalence of cigar use over time,

especially for NH Black individuals who demonstrate the highest prevalence among racial/ethnic groups.

Supplementary Material

Supplementary data are available at *Nicotine and Tobacco Research* online.

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Declaration of Interests

The authors have no conflicts of interest to report.

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