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Patterns of Premium and Nonpremium Cigar Use in the United States: Findings from Wave 6 (2021) of the Population Assessment of Tobacco and Health Study

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Abstract

Introduction: Understanding the characteristics of premium cigar use patterns is essential for minimizing public health harms. Typically, premium cigars are handmade, larger, more expensive, and without the characterizing flavors that are present in other cigar types: Nonpremium traditional cigars, cigarillos, and filtered cigars.

Aims and Methods: Self-reported brand and price data were used from Wave 6 of the Population Assessment of Tobacco and Health (PATH) Study to define and estimate premium versus nonpremium cigar use among U.S. adults, as well as to explore cigar smoking patterns, purchasing behavior, and reasons for use by cigar type.

Results: In 2021, 0.9% (95% CI = 0.7–1.0) of adults were premium cigar users, compared to 0.4% of nonpremium traditional cigar users (95% CI = 0.3–0.5), 1.1% of cigarillo users (95% CI = 1.0–1.2), and 0.6% filtered cigar users (95% CI = 0.5–0.7). Premium cigar users were overwhelmingly male (97.7%), and 35.8% were aged ≥55 years. The average premium cigar price/stick was $8.67, $5.50–7.00 more than other cigar types. Compared to other cigar types, significantly fewer premium cigar users had a regular brand with a flavor other than tobacco (~15% vs. 38%–53%). Though flavors remained the top reason for premium cigar use, they were less likely to endorse flavors as a reason for use than other cigar users (~40% vs. 68–74%). Premium cigar users had a lower prevalence (aRR: 0.37, 95% CI = 0.25–0.55) of dual use of cigars and cigarettes.

Conclusions: Although <1% of U.S. adults use premium cigars, their use and purchasing characteristics continue to differ from other cigar types, highlighting the importance of capturing data specific to premium cigar use.

Implications: This manuscript extends previous research from the National Academies of Science, Engineering, and Medicine report, "Premium cigars: Patterns of use, marketing, and health effects" by utilizing the most recent PATH Study data (Wave 6) to examine patterns of cigar use, including purchasing behavior and reasons for use, by cigar type (eg, premium traditional cigars, nonpremium traditional cigars, cigarillos, and filtered cigars). The findings support continued research on patterns of premium cigar use, which differ from use patterns of other cigar types.

Introduction

The health effects of cigar use are less well-established than those of cigarettes, but as a combustible tobacco product, cigars are associated with negative health outcomes including cancer, cardiovascular disease, and chronic obstructive pulmonary disease.[1] Yet, patterns of cigar use and subsequent health effects can vary depending on the cigar type being used.[2,3] National surveillance of cigar use in the United States has focused on three types of cigars: Traditional cigars (also referred to as regular cigars or large cigars), cigarillos, and filtered cigars.[4–6] However, the traditional cigar category is a heterogeneous group that includes both premium cigars and nonpremium large cigars (hereafter referred to as premium and nonpremium cigars).

In absence of a formal or legal definition for what constitutes a premium cigar, a court filing in 2020[7,8] defined a cigar that meets all eight of the following criteria as premium: (1) is wrapped in whole tobacco leaf, (2) contains a 100% leaf tobacco binder, (3) contains at least 50% (of the filler by weight) long filler tobacco (ie, whole tobacco leaves that run the length of the cigar), (4) is handmade or hand-rolled (ie, no machinery was used apart from simple tools, such as scissors to cut the tobacco prior to rolling), (5) has no filter, nontobacco tip, or nontobacco mouthpiece, (6) does not have a characterizing flavor other than tobacco, (7) contains only tobacco, water, and vegetable gum with no other ingredients or additives, and (8) weighs more than 6 pounds per 1000 units. This definition was broadly adopted for use in the National Academies of Science, Engineering, and Medicine (NASEM) report on premium cigar patterns of use, marketing, and health effects.[9]

The NASEM report found that premium cigars have remained a small but stable part of the U.S. cigar market.[9] Premium cigars were used by 0.7% of the U.S. population in 2016–2017, while nonpremium cigars, cigarillos, and filtered cigars were used by 0.5%, 1.5%, and 0.8%, respectively.[10] To effectively study cigar smoking patterns and health outcomes, the NASEM committee recommended the U.S. Food and Drug Administration in consultation with other federal agencies should develop formal categories and definitions for each cigar type, including differentiating premium from nonpremium cigar use to be used in research.[9]

Although some of the characteristics from the court definition are difficult to determine from publicly available information, previous research using data from the Population Assessment of Tobacco and Health (PATH) Study has developed definitions for estimating premium cigar use. Corey et al[2] and Jeon, Mok, and Meza[11] used a similar approach to categorize traditional cigar brands, focusing primarily on information related to the tobacco blends used, the absence of components (ie, tips or filters), and the manufacturing process (ie, handmade). These definitions also utilized self-reported price if brand information was unavailable. Together, this information was applied to data from Wave 1[2] through Wave 5[11] to classify each brand as premium or nonpremium. Although cigar price was not included as a criterion in the court filing, the price has a known impact on tobacco product use[12] such that increased tobacco product prices reduce consumption. Tobacco prices vary considerably across products and states, supporting the need for examining what price threshold could be used for defining premium cigars.[13]

The primary goal of this paper was to extend the findings of Corey et al[2] and Jeon, Mok, and Meza[11] by examining patterns of cigar product use by each cigar type (premium, nonpremium, cigarillo, and filtered cigar) using Wave 6 (2021) adult data from the PATH Study. Self-reported brand and price data were used to define and estimate premium cigar use compared to nonpremium, cigarillo, filtered cigar, and cigarette use. This paper reports on cigar smoking patterns, purchasing behavior, and reasons for use by cigar type. Prevalence and patterns of cigarette use, which continues to be the most prevalent combusted product used in the U.S.[9] were also included, as well as correlates of dual cigar and cigarette use for each cigar type. A secondary aim was to examine how different price thresholds impact sensitivity and specificity when distinguishing premium versus nonpremium status.

Methods

Study Design, Setting, and Participants

The PATH Study is an ongoing, nationally representative, longitudinal cohort study sponsored by the National Institute on Drug Abuse, the National Institutes of Health, and the Food and Drug Administration's Center for Tobacco Products and conducted under a contract with Westat. The PATH Study employed a stratified address-based, area probability sampling design at Wave 1 (September 12, 2013, to December 14, 2014) that oversampled adult tobacco users, young adults (aged 18–24 years), and African American adults.

At Wave 4, a probability replenishment sample was selected from the U.S. civilian noninstitutionalized population at the time of Wave 4 (data were collected from December 1, 2016, to January 3, 2018), including persons who were not in the civilian noninstitutionalized population at the time of Wave 1 (such as recent immigrants or those returning home from deployment). Members of the Wave 1 cohort who remained in the civilian noninstitutionalized population at the time of Wave 4 were combined with the Wave 4 replenishment sample to form the new Wave 4 cohorts. Details on interview procedures, questionnaires, sampling, weighting, response rates, and accessing the data are described in the *PATH Study Restricted-Use Files User Guide* at https://doi.org/10.3886/Series606. The study was conducted by Westat and approved by the Westat Institutional Review Board. All respondents aged 18 and older provided informed consent.

The current study analyzes adult (age 18 or older) data from the Wave 4 cohort in the Wave 6 Restricted Use File (data were collected, either in person or by telephone, from March 1, 2021, to November 30, 2021; N = 29 514), which will be posted on the NAHDAP website when available.[14] Full-sample and replicate weights were created to adjust for the complex sample design (eg, oversampling of particular demographic groups) and nonresponse. Because the individuals in the study were selected with the use of a probability sample, the weights allow analyses of the PATH Study data to obtain statistically valid estimates representing the resident population of the U.S. aged 18 years and older at Wave 6 who were in the civilian noninstitutionalized population at Wave 4, and the replicate weights enable computation of associated measures of statistical precision. This analysis used Wave 6 single-wave weights for the Wave 4 cohort to obtain statistically valid estimates from cross-sectional analyses. Further details regarding the PATH Study design and methods, as well as the reliability and validity of responses, are published elsewhere.[15–17]

Measures

Tobacco Product Use

Adults reported their lifetime, past 30-day (P30D), and current established use of cigarettes, cigars (traditional cigars, cigarillos, and filtered cigars), pipe tobacco, hookah, snus pouches/loose snus, other smokeless tobacco (including moist snuff, dip, spit, or chewing tobacco or smokeless tobacco pouches), and electronic nicotine products (including e-cigarettes, vape pens, personal vaporizers and mods, e-cigars, e-pipes, e-hookahs, and hookah pens), with pictures and descriptions displayed for each product to ensure accuracy. The current established use of cigarettes is defined as lifetime use of ≥100 cigarettes and current use every day or some days. For other products, including cigars, current established use is defined as fairly regular

use and current use every day or some days. For additional details on each cigar type asked about, see Supplementary Methods.

Coding Premium Versus Nonpremium Traditional Cigars

All adult current established cigar smokers were asked if they have a regular brand of cigars that they usually smoke and what brand of cigars they usually smoke. These brand data were used as step 1 in defining premium versus nonpremium cigar use. For those who did not provide a regular brand, price data were used as step 2. See Supplementary Methods for an additional description of the coding process.

Cigar Smoking Patterns

The lifetime number of cigars, prevalence of daily smoking, number of sticks used per day, duration of smoking, and current use of other cigar types or cigarettes were assessed. See Supplementary Methods for more details.

Cigar/Cigarette Purchasing

Respondents were asked whether they had a regular brand, the name of the regular brand, and whether the brand was flavored, including menthol (for traditional cigars, cigarillos, and filtered cigars) or mentholated (for cigarettes). They were also asked if they buy their cigars or cigarettes in person and where they go to buy them. Participants reported their usual purchase size as single or box or pack for cigars and single, box or pack, or carton for cigarettes. The price per cigar or cigarette was calculated as discussed in the Supplementary Methods.

Reasons for Cigar Smoking

Respondents were asked a total of nine questions about reasons why they or others would smoke cigars. Reasons included: "They are affordable", "They come in flavors I like", and "Smoking them satisfies my cravings for cigarettes". The full list of questions can be found in Supplementary Methods.

Demographic Characteristics

Respondents reported the following demographic characteristics: Sex (male, female); age in years (18–24, 25–34, 35–54, and ≥55); ethnicity and race (non-Hispanic, white; non-Hispanic, black/African American; non-Hispanic, Other/multi-race; Hispanic); education attainment (less than high school diploma, GED, high school diploma, some college/associate's degree, completed college or more); and annual household income (<$25 000, $25 000–$49 999, $50 000–$74 999, and ≥$75 000).

Statistical Analyses

The weighted prevalence of current established use of traditional cigars (combines premium and nonpremium), premium cigars, nonpremium cigars, cigarillos, filtered cigars, and cigarettes were calculated by demographic characteristics, smoking patterns, product characteristics/purchasing behavior, and reasons for use. Weighted multivariate poisson regressions were run to assess the correlates of current established dual use of at least one cigar type and cigarettes. Standard errors were derived using the balanced repeated replication method[18] with Fay's adjustment set to 0.3 to increase estimate stability.[19] All analyses were conducted using Stata survey data procedures, version 17.0.[20]

Our coding scheme, consistent with previous research,[2,10,11] used a $2 price per cigar cutoff for defining premium versus nonpremium cigar use when there were not sufficient brand data. Due to inflation and the possibility that a $2 cut-point may mistakenly classify some nonpremium cigars as premium, we utilized unweighted receiver operator characteristic analyses to identify cut-points for defining premium cigar use and assess the tradeoff between sensitivity and the specificity for different cut-points.[21]

Results

Overall Prevalence and Demographic Characteristics

Overall 0.9% (95% CI = 0.7–1.0) of U.S. adults used premium cigars in 2021, compared to 0.4% (95% CI = 0.3–0.5) that used nonpremium cigars, 1.1% (95% CI = 1.0–1.2) that used cigarillos, and 0.6% (95% CI = 0.5–0.7) that used filtered cigars. Across all cigar categories, users were primarily male (range 64.8–97.7%), with premium cigar users having a significantly larger proportion of male users (97.7%, [95% CI = 95.6–98.8]) compared to other cigar types (nonpremium cigar: 88.4% [95% CI = 82.1–92.7]; cigarillo: 71.6% [95% CI = 66.6–76.1]; and filtered cigar: 64.8% [95% CI = 56.2–72.6]). Cigarettes had significantly more female users (46.1%, [95% CI = 44.4–47.8]) than any of the types of cigars. Over a third of premium cigar users were aged 55 or older (35.8%, [95% CI = 28.4–43.9]), which was a significantly larger proportion than cigarillo users (18.7%, [95% CI = 14.5–23.8]), but not significantly different from other cigar types or cigarette smokers. Premium cigar users also comprised a larger proportion of those who identified as non-Hispanic, white (72.5%, [95% CI = 64.5–79.3]), those who completed a college degree or more (43.3%, [95% CI = 35.5–51.4]), and those who made $75 000 per year or greater (52.5%, [95% CI = 44.5–60.4]), compared to cigarillo and filtered cigar users (non-Hispanic, white cigarillo users: 42.4%, [95% CI = 37.5–47.4], filtered cigar users: 54.8%, [95% CI = 46.1–63.3]; completed a college degree or more cigarillo users: 12.7%, [95% CI = 9.2–17.2], filtered cigar users: 10.4%, [95% CI = 6.8–15.4]; made $75 000 or greater cigarillo users: 17.7%, [95% CI = 13.3–23.1], filtered cigar users: 10.1%, [95% CI = 6.0–16.6]). These demographic characteristics of premium cigar users did not differ from nonpremium traditional cigar users except for income (nonpremium cigar users: $75 000 per year or greater: 18.9%, [95% CI = 11.2–30.1]). For additional demographic characteristics, see Table 1.

Cigar Smoking Patterns

Premium cigar users exhibited similar lifetime cigar use to smokers of other cigar types (eg, over 70% of all cigar types, including premium, smoked 51 or more cigars in their lifetime), but premium cigar users smoked on fewer days in the past month than other cigar types (premium: 7.0 [SE: 0.9]; nonpremium: 10.4 [SE: 1.9], cigarillo: 15.3 [SE: 0.9]; and filtered cigar: 17.0 [SE: 1.4]; see Table 2). premium cigar users smoked an average of 0.1 (IQR: 0.03–0.3) sticks per day compared to an average of 0.2 (IQR: 0.03–0.8) sticks per day for nonpremium cigar users, 0.5 (IQR: 0.1–2.0) sticks per day for cigarillo users and 1.3 (IQR 0.2–7.0) sticks per day for filtered cigar users. Cigarette smokers smoked their product on more days in the past 30 days (mean = 26.3 [SE: 0.1]) and more sticks per day (mean=15.0 [SE: 0.2]) than all

Table 1. Weighted Demographic Characteristics of Adult Current Established[a] Premium and Nonpremium Traditional Cigar, Cigarillo, Filtered Cigar, and Cigarette Smokers, PATH Study Wave 6, 2021

	Traditional cigars overall[b] (n = 408)	Premium traditional cigars[c] (n = 267)	Nonpremium traditional cigars (n = 125)	Cigarillos (n = 503)	Filtered cigars (n = 240)	Cigarettes (n = 5624)
	W% (95% CI)	W% (95% CI)	W% (95% CI)	W% (95% CI)	W% (95% CI)	W% (95% CI)
Overall adult prevalence	1.3 (1.1–1.5)	0.9 (0.7–1.0)	0.4 (0.3–0.5)	1.1 (1.0–1.2)	0.6 (0.5–0.7)	14.4 (13.9–14.9)
Sex						
Female	6.2 (4.3–8.7)	2.3 (1.2–4.4)[†]	11.6 (7.3–17.9)	28.4 (23.9–33.4)	35.2 (27.4–43.8)	46.1 (44.4–47.8)
Male	93.8 (91.3–95.7)	97.7 (95.6–98.8)	88.4 (82.1–92.7)	71.6 (66.6–76.1)	64.8 (56.2–72.6)	53.9 (52.2–55.6)
Age group (years)						
18–24	3.4 (2.1–5.5)	2.7 (1.6–4.4)	3.4 (1.2–9.1)[†]	10.5 (8.1–13.3)	6.3 (3.6–10.8)	4.9 (4.4–5.5)
25–34	35.1 (28.8–42.0)	34.2 (27.2–41.9)	38.7 (25.8–53.4)	44.3 (38.6–50.2)	29.3 (22.4–37.3)	31.8 (30.4–33.3)
35–54	25.9 (20.4–32.2)	27.4 (20.6–35.4)	22.0 (12.9–35.1)	26.6 (21.6–32.2)	34.7 (26.8–43.6)	29.1(27.3–30.9)
≥55	35.6 (29.8–41.8)	35.8 (28.4–43.9)	35.9 (25.7–47.5)	18.7 (14.5–23.8)	29.7 (22.6–38.0)	34.2 (32.5–35.9)
Race/ethnicity						
White, non-Hispanic	67.9 (60.4–74.5)	72.5 (64.5–79.3)	59.8 (43.2–74.5)	42.4 (37.5–47.4)	54.8 (46.1–63.3)	67.7 (66.2–69.3)
Black/AA, non-Hispanic	9.3 (6.9–12.5)	6.8 (4.1–11.0)	14.2 (8.6–22.5)	35.3 (31.1–39.6)	23.6 (17.5–30.9)	14.3 (13.3–15.3)
Other or multi-race, non-Hispanic	5.6 (3.0–10.2)[†]	6.1 (3.0–12.2)[†]	3.7 (1.2–10.9)[†]	7.5 (5.1–10.9)	5.4 (3.2–8.9)	5.1 (4.5–5.8)
Hispanic	17.3 (11.1–25.8)	14.7 (9.1–22.7)	22.3 (9.2–44.8)[†]	14.8 (11.3–19.2)	16.2 (10.9–23.6)	12.9 (12.0–13.9)
Education						
Less than a high school diploma	8.9 (5.8–13.5)	6.7 (3.3–13.1)[†]	14.0 (8.7–22.0)	13.1 (9.4–18.1)	20.3 (14.3–28.1)	15.5 (14.3–16.7)
GED	4.2 (2.5–7.2)	1.7 (0.7–4.4)[†]	10.1 (5.3–18.3)[†]	8.6 (5.4–13.2)	9.8 (6.1–15.5)	10.7 (9.7–11.7)
High school diploma	22.8 (16.5–30.8)	19.5 (13.2–27.9)	30.0 (19.4–43.3)	29.2 (23.8–35.4)	35.6 (27.0–45.3)	30.3 (28.7–32.0)
Some college/ associate's degree	28.0 (23.1–33.5)	28.8 (22.4–36.1)	24.2 (16.1–34.8)	36.4 (31.3–41.8)	23.9 (18.5–30.4)	32.8 (31.2–34.3)
Completed college or more	36.0 (29.3–43.3)	43.3 (35.5–51.4)	21.6 (9.8–41.2)[†]	12.7 (9.2–17.2)	10.4 (6.8–15.4)	10.8 (9.9–11.8)
Income						
<$25 000	19.7 (13.4–27.9)	11.9 (6.7–20.3)	37.9 (24.8–52.9)	41.6 (36.3–47.1)	58.4 (50.1–66.3)	39.1 (37.3–40.8)
$25 000–$49 999	17.1 (13.3–21.9)	14.5 (10.3–20.1)	23.9 (15.7–34.6)	25.8 (21.3–30.9)	25.9 (19.7–33.3)	26.7 (25.4–28.0)
$50 000–$74 999	20.4 (14.1–28.4)	21.1 (15.0–28.8)	19.3 (7.3–41.9)[†]	14.9 (11.3–19.5)	5.5 (3.0–10.1)[†]	14.6 (13.4–15.7)
$≥75 000	42.8 (35.6–50.4)	52.5 (44.5–60.4)	18.9 (11.2–30.1)	17.7 (13.3–23.1)	10.1 (6.0–16.6)	19.7 (18.0–21.4)

W = weighted; CI = confidence interval; AA = African American; GED = General Education Development; PATH = Population Assessment of Tobacco and Health.
[a]Current established use of cigarettes is defined as lifetime use of ≥100 cigarettes and currently smoking every day or some days. For cigars, current established use is defined as fairly regular use and currently used every day or some days.
[b]Sixteen traditional cigar users were not able to be classified as premium versus nonpremium users because of missing brand and cigar price per stick data.
[c]Premium brand excludes ACID, which had been considered as a premium brand by Corey et al. 2018. Please see Supplementary Materials for premium cigar definition, and tables that show these analyses with ACID considered as a premium brand.
[†]Estimate should be interpreted with caution because it has low statistical precision. It is based on a denominator sample size of less than 50, or the coefficient of variation of the estimate or its complement is larger than 30%.

cigar types. Only 18.1% (95% CI = 12.9–24.8) of premium cigar users currently used other cigar types, compared to over 36% of other cigar type users (range: 36.7–46.6%). A larger proportion of other cigar-type users (nonpremium cigar: 56.7 [95% CI = 41.1–71.0]; cigarillo: 54.3 [95% CI = 49.0–59.5]; filtered cigar: 65.3 [95% CI = 56.1–73.5]) were also current established cigarette smokers compared to premium cigar users (21.2%, [95% CI = 15.7–27.9]). For additional cigar use characteristics see Table 2.

Cigar/Cigarette Purchasing

Although the majority (over 70%) of nonpremium, cigarillo, and filtered cigar users had a regular brand, only 43.4% (95% CI = 36.2–50.9) of premium cigar users had a regular brand (see Table 3). The most reported regular premium cigar brands were Cohiba (15.9%, [95% CI = 10.2–24.0]), Arturo Fuente (11.9%, [95% CI = 6.0–22.1]), and Romeo y Julieta (7.9%, [95% CI = 4.2–14.4]). Arturo Fuente and Romeo y Julieta's estimates should be interpreted with caution because they have low statistical precision. Black and Mild were the most used regular brand for nonpremium (22.6%, [95% CI = 11.7–39.1]), cigarillos (51.6%, [95% CI = 45.0–58.1]), and filtered cigar users (24.7%, [95% CI = 18.0–32.8]), with Swisher Sweets as the second most used for nonpremium (15.4%, [95% CI = 8.8–25.5]) and cigarillos (17.1%, [95% CI = 13.3–21.7]),

Table 2. Weighted Smoking Patterns Among Adult Current Established[a] Premium and Nonpremium Traditional Cigar, Cigarillo, Filtered Cigar, and Cigarette Smokers, PATH Study Wave 6, 2021

	Traditional cigars overall[b] (*n* = 408)	Premium traditional cigars[c] (*n* = 267)	Nonpremium traditional cigars (*n* = 125)	Cigarillos (*n* = 503)	Filtered cigars (*n* = 240)	Cigarettes (*n* = 5624)
	W% (95% CI)	W% (95% CI)	W% (95% CI)	W% (95% CI)	W% (95% CI)	W% (95% CI)
Lifetime cigar-type smoked						
<1–10 cigars	7.9 (5.2–11.8)	7.7 (4.2–13.6)	7.7 (4.0–14.2)[†]	10.5 (7.3–14.7)	17.4 (11.6–25.3)	N/A
11–50 cigars	18.3 (13.1–25.0)	17.2 (12.9–22.4)	18.6 (7.4–39.7)[†]	16.0 (12.3–20.6)	12.2 (8.0–18.1)	N/A
51 or more cigars	73.9 (66.5–80.1)	75.1 (67.3–81.6)	73.7 (56.1–86.0)	73.5 (68.0–78.5)	70.4 (61.9–77.7)	N/A
Now smoking products every day	9.8 (6.2–15.3)	6.9 (3.3–13.7)[†]	17.0 (8.6–30.9)[†]	27.6 (22.5–33.5)	36.9 (29.1–45.5)	78.5 (77.2–79.7)
Days smoked product in the past 30 days (median, IQR)	3.0 (1.0–10.0)	3.0 (1.0–8.0)	4.0 (1.0–20.0)	10.0 (3.0–30.0)	15.0 (4.0–30.0)	30.0 (30.0–30.0
Number of products smoked/day (median, IQR)[d]	0.1 (0.03–0.4)	0.1 (0.03 to 0.3)	0.2 (0.03–0.8)	0.5 (0.1–2.0)	1.3 (0.2–7.0)	10.0 (5.0–20.0)
Age (years) at first regular use of the product (median, IQR)	30.0 (23.0–47.0)	30.0 (23.0–48.0)	28.0 (23.0–45.0)	25.0 (18.0–37.0)	30.0 (22.0–44.0)	17.0 (15.0–20.0)
Duration (years) since first regular use of the product (median, IQR)	20.0 (8.0–32.0)	21.0 (8.2–31.0)	15.5 (7.0–32.5)	11.5 (6.8–23.0)	7.0 (4.9–14.5)	33.3 (21.2–45.0)
Currently use ≥1 other cigar type(s)	27.3 (22.3–33.0)	18.1 (12.9–24.8)	46.6 (33.4–60.3)	36.7 (31.1–42.7)	45.1 (36.6–53.8)	7.0 (6.2–7.8)
Currently use ≥1 noncigar, noncigarette product(s)	31.4 (24.6–39.2)	28.8 (22.0–36.8)	39.2 (26.4–53.7)	29.4 (24.7–34.5)	35.5 (27.2–44.8)	15.8 (14.8–16.9)
Cigarette smoking status[e]						
Currently established smoker	33.3 (27.1–40.2)	21.2 (15.7–27.9)	56.7 (41.1–71.0)	54.3 (49.0–59.5)	65.3 (56.1–73.5)	N/A
Former established smoker	36.9 (30.7–43.5)	45.2 (36.8–54.0)	22.8 (14.7–33.7)	25.4 (21.3–30.0)	21.8 (16.0–29.0)	N/A
Never smoker	29.8 (22.5–38.3)	33.6 (25.6–42.6)	20.5 (8.3–42.3)[†]	20.3 (16.4–24.9)	12.9 (7.6–20.9)	N/A

W = weighted; CI = confidence interval; IQR = interquartile range; PATH = Population Assessment of Tobacco and Health.
[a]Current established use of cigarettes is defined as lifetime use of ≥100 cigarettes and currently smoking every day or some days. For cigars, current established use is defined as fairly regular use and currently used every day or some days.
[b]Sixteen traditional cigar users were not able to be classified as premium versus nonpremium status because of missing brand and cigar price per stick data.
[c]Premium brand excludes ACID, which had been considered as a premium brand by Corey et al. 2018. Please see Supplementary Materials for premium cigar definition, and tables that show these analyses with ACID considered as a premium brand.
[d]Response of "less than 1 each day" was recorded as 0.5 per day. Any value over the 99th percentile was Winsorized to that value. Traditional cigars (99th percentile = 6, *n* changes = 6); Cigarillos (99th percentile = 10, *n* changes = 4); Filtered cigars (99th percentile = 30, *n* changes = 1); Cigarettes (99th percentile = 40, *n* changes = 34).
[e]Current established cigarette smokers smoked at least 100 in their lifetime and now smoke cigarettes every day or some days. Former established cigarette smokers had to have smoked at least 100 cigarettes in their lifetime and now smoke cigarettes not at all; never cigarette smokers had to smoke less than 100 cigarettes in their lifetime.
[†]Estimate should be interpreted with caution because it has low statistical precision. It is based on a denominator sample size of less than 50, or the coefficient of variation of the estimate or its complement is larger than 30%.

and Cheyenne as the second most used for filtered cigar users (14.4%, [95% CI = 8.3–23.8]). Although premium cigars typically do not come in flavors, 14.6% (95% CI = 10.3–20.2) of premium cigar users indicated that their regular brand was flavored, compared to over a third of nonpremium users (38.2%, [95% CI = 26.6–51.4]), and over half of the cigarillo and filtered cigar users (cigarillo: 53.3%, [95% CI = 47.7–58.8], filtered cigars: 51.1%, [95% CI = 42.3–59.9]).

The majority (67.5–88.3%) of users of all cigar types bought their cigars in person. Over 45% of premium cigar users bought cigars in a smoke shop or tobacco specialty store compared to 30% of nonpremium users and 12–19% of cigarillo and filtered cigar users. The majority (over 71%) of cigarillo, filtered cigar, and cigarette users bought their cigars in a convenience store or gas station compared to 8% (95% CI = 5.0–12.5) of premium cigar users and 45.5% (95% CI = 31.5–60.3) of nonpremium users. Average price per stick for a premium cigar was $8.67 (SE: 0.7), compared to $3.09 (SE: 0.6) for a nonpremium cigar, $1.34 (SE: 0.1) for a cigarillo, and $1.26 (SE: 0.4) for a filtered cigar. For additional cigar purchasing characteristics see Table 3.

Correlates of Dual Cigar/Cigarette Use

Only 18.0% (95% CI = 13.2–23.9) of premium cigar users were dual cigar and cigarette smokers, compared to 54.5% (95% CI = 39.7–68.5) of nonpremium cigar smokers, 52.2% (95% CI = 47.0–57.3) of cigarillo smokers, and 63.1% (95% CI = 53.9–71.4) of filtered cigar smokers. A multivariable weighted Poisson regression was run to determine the association between tobacco use or demographic variables and dual cigar and cigarette smoking. Of note, smoking premium cigars (adjusted prevalence ratio, aPR = 0.37 [95% CI = 0.25–0.55]) and daily cigar smoking (aPR = 0.73 [95% CI = 0.60–0.89]) were associated with lower risk of dual cigar and cigarette smoking. Using other tobacco products (aPR = 1.39 [95% CI = 1.16–1.67]), being age ≥35 years (aPR = 1.26 [95% CI = 1.05–1.51]), and having a GED, HS diploma, or less (aPR = 1.58 [95% CI = 1.28–1.96]) were associated with a higher risk of dual cigar and cigarette smoking. No other variables were associated with dual use. See all aPRs in Table 4.

Reasons for Cigar Smoking

Overall, about half of traditional cigar users endorsed "they come in flavors I like" as a reason for smoking cigars and

Table 3. Weighted Tobacco Product Characteristics and Purchasing Behaviors Among Adult Current Established[a] Premium and Nonpremium Traditional Cigar, Cigarillo, Filtered Cigar, and Cigarette Smokers, PATH Study Wave 6, 2021

	Traditional cigars overall[b] (n = 408)	Premium traditional cigars[c] (n = 267)	Nonpremium traditional cigars (n = 125)	Cigarillos (n = 503)	Filtered cigars (n = 240)	Cigarettes (n = 5624)
	W% (95% CI)	W% (95% CI)	W% (95% CI)	W% (95% CI)	W% (95% CI)	W% (95% CI)
Has a regular brand	51.8 (44.8–58.8)	43.4 (36.2–50.9)	74.2 (61.8–83.6)	78.2 (73.5–82.2)	71.0 (62.7–78.2)	93.9 (93.1–94.7)
Top five brands smoked[d,e]						
Brand one	Cohiba 10.0 (6.3–15.5)	Cohiba 15.9 (10.2–24.0)	Black and Mild 22.6 (11.7–39.1)[†]	Black and Mild 51.6 (45.0–58.1)	Black and Mild 24.7 (18.0–32.8)	Marlboro 32.1 (30.6–33.7)
Brand two	Black and Mild 8.4 (4.5–15.2)[†]	Arturo Fuente 11.9 (6.0–22.1)[†]	Swisher Sweets 15.4 (8.8–25.5)	Swisher Sweets 17.1 (13.3–21.7)	Cheyenne 14.4 (8.3–23.8)	Newport 18.3 (16.8–19.8)
Brand three	Arturo Fuente 7.5 (4.0–13.6)[†]	Romeo y Julieta 7.9 (4.2–14.4)[†]	Backwoods 10.6 (5.9–18.4)	Backwoods 9.2 (6.1–13.6)	Swisher Sweets 9.4 (4.6–18.3)[†]	Camel 9.5 (8.7–10.4)
Brand four	Swisher Sweets 5.7 (3.4–9.3)	Macanudo 7.3 (3.3–15.2)[†]	ACID 8.9 (3.5–20.7)[†]	White Owl 5.4 (3.1–9.1)	Djarum 6.7 (2.9–14.7)[†]	Pall Mall 6.3 (5.5–7.2)
Brand five	Romeo y Juliet 5.0 (2.6–9.4)[†]	Montecristo 4.1 (1.2–13.0)[†]	Dutch Masters 7.2 (3.2–15.4)[†]	Dutch Masters 2.1 (1.1–4.1)[†]	Phillies 6.7 (1.7–23.4)[†]	American Spirit 3.8 (3.1–4.6)
Regular brand flavored or mentholated[f]	21.6 (17.8–26.0)	14.6 (10.3–20.2)	38.2 (26.6–51.4)	53.3 (47.7–58.8)	51.1 (42.3–59.9)	40.3 (38.6–41.9)
Usually, buy…						
In-person	69.9 (63.0–76.0)	67.5 (58.8–75.2)	80.4 (68.3–88.6)	88.3 (83.6–91.8)	84.1 (74.9–90.4)	94.3 (93.3–95.1)
Online	21.6 (16.2–28.2)	26.4 (19.2–35.0)	13.4 (6.7–24.8)[†]	5.5 (3.3–9.1)	0.4 (0.1–1.5)[†]	0.1 (0.0–0.3)[†]
If in person, where you buy most of the time[g]						
Cigar bar	22.9 (16.9–30.3)	32.4 (24.4–41.6)	–	–	2.7 (0.8–9.0)[†]	N/A
Convenience store/gas station	21.5 (16.4–27.5)	8.0 (5.0–12.5)	45.5 (31.5–60.3)	73.9 (68.4–78.7)	71.3 (63.3–78.2)	81.7 (80.0–83.3)
Supermarket, grocery store, or drug store	–	–	10.0 (4.7–19.8)[†]	7.0 (4.1–11.8)	3.8 (1.7–8.0)[†]	5.3 (4.5–6.3)
Smoke shop/tobacco specialty or outlet store	40.0 (32.3–48.3)	45.8(36.7–55.1)	30.1 (15.5–50.2)	12.8 (9.3–17.3)	18.5 (13.5–24.9)	8.8 (7.7–10.0)
Liquor store	8.2 (5.3–12.5)	9.6 (6.1–14.9)	5.7 (2.3–13.4)[†]	4.6 (2.5–8.4)[†]	–	1.9 (1.5–2.5)
Usual purchase size						
Single	57.0 (50.2–63.6)	64.3 (54.9–72.8)	41.1 (27.3–56.4)	43.9 (38.1–49.9)	18.2 (75.9–86.5)	2.1 (1.7–2.6)
Box or pack	43.0 (36.4–49.8)	35.7 (27.2–45.1)	58.9 (43.6–72.7)	56.1 (50.1–61.9)	81.8 (75.9–86.5)	78.6 (77.1–80.0)
Carton	N/A	N/A	N/A	N/A	N/A	19.5 (18.0–20.8)
Price per stick (mean, se)[h]	$6.91 (0.5)	$8.67 (0.7)	$3.09 (0.6)	$1.34 (0.1)	$1.26 (0.4)	$0.37 (0.0)

W = weighted; CI = confidence interval; PATH = Population Assessment of Tobacco and Health.
[a]Current established use of cigarettes is defined as lifetime use of ≥100 cigarettes and currently smoking every day or some days. For cigars, current established use is defined as fairly regular use and currently used every day or some days.
[b]Sixteen traditional cigar users were not able to be classified as premium versus nonpremium status because of missing brand and cigar price per stick data.
[c]Premium brand excludes ACID, which had been considered as a premium brand by Corey et al. 2018. Please see Supplementary Materials for premium cigar definition, and tables that show these analyses with ACID considered as a premium brand.
[d]The PATH Study instrument allows for "other specify" brand responses. As an aggregated category "other" was in the top five, but none of the specific brands specified made it into the top five brands list.
[e]In the PATH Study instrument, respondents are allowed to pick whatever brand they want, no matter what types of cigars they said they use. This is why Black and Mild, for example, could be a top brand for traditional cigars, cigarillos, and filtered cigars.
[f]The PATH Study instrument asks if "your regular brand/last brand" is/was flavored. That question is not explicitly connected to the brand name question and that is why respondents could be premium cigar users but still say they used flavored cigars. For menthol status, "don't know" is a valid response option. Denominator includes "don't know" and "no".
[g]Showing the top 4 purchase locations for each product. The remainder of options were: warehouse club; duty-free shop or military commissary; bar, pub, restaurant, or casino; friend or relative; swap meet or flea market; a store on an Indian reservation; somewhere else.
[h]Any value over the 99th percentile was Winsorized to that value. Traditional cigars (99th percentile = 30.00, n changes = 8); Cigarillos (99th percentile = 8.00, n changes = 8); Filtered cigars (99th percentile = 20.04, n changes = 3); Cigarettes (99th percentile = 1.00, n changes = 51).
[†]Estimate should be interpreted with caution because it has low statistical precision. It is based on a denominator sample size of less than 50, or the coefficient of variation of the estimate or its complement is larger than 30%.

46.0% (95% CI = 34.7–57.8) endorsed "smoking them satisfies my cravings for cigarettes". Flavors were endorsed more by nonpremium cigar users than premium cigar users (73.8%, [95% CI = 62.2–82.8] vs. 40.1%, [95% CI = 32.7–48.0]). Nonpremium cigar users also endorsed "smoking them satisfies my cravings for cigarettes" more than premium cigar users (54.9%, [95% CI = 35.4–73.0] vs. 35.0%, [95% CI = 22.5–50.0]). Of note, none of the nine reasons for cigar smoking were endorsed by more than 40% of premium cigar users, implying that there may be other reasons for use of premium cigars. Cigarillo and filtered cigar users endorsed "they are affordable" and "they come in flavors I like" the most, with both endorsed by about 70% of users. Other reasons for use can be seen in Table 5.

Table 4. Weighted Percent of Dual Cigar and Cigarette Smokers[a] Among Adult Current Established Cigar Smokers and Adjusted Weighted Prevalence Ratios by Demographic and Cigar Smoking Characteristics, PATH Study Wave 6, 2021

	Weighted prevalence of dual cigar and cigarette use (95% CI)	Adjusted PR[b] (95% CI)
Smoke premium traditional cigars[c]		
Yes	18.0 (13.2–23.9)	**0.37 (0.25–0.55)**
No	55.1 (49.4–60.8)	Ref
Smoke nonpremium traditional cigars		
Yes	54.5 (39.7–68.5)	0.9 (0.70–1.21)
No	39.3 (35.5–43.2)	Ref
Smoke cigarillos		
Yes	52.2 (47.0–57.3)	1.22 (0.95–1.55)
No	32.4 (27.0–38.3)	Ref
Smoke filtered cigars		
Yes	63.1 (53.9–71.4)	1.28 (0.98–1.67)
No	34.6 (29.9–39.5)	Ref
Use other tobacco products		
Yes	55.9 (49.3–62.4)	**1.39 (1.16–1.67)**
No	36.1 (31.7–40.6)	Ref
Sex		
Male	38.3 (33.2–43.6)	Ref
Female	54.8 (48.5–60.8)	1.04 (0.87–1.24)
Age group		
18–34	40.0 (33.6–46.9)	Ref
≥35	42.5 (37.5–47.5)	**1.26 (1.05–1.51)**
Race/ethnicity		
White, non-Hispanic	38.4 (32.5–44.6)	Ref
Black/AA, non-Hispanic	48.2 (41.4–55.2)	0.97 (0.79–1.20)
Other/multi-race, or Hispanic	40.5 (29.9–52.0)	0.97 (0.72–1.30)
Education		
GED, HS diploma, or less	58.6 (52.5–64.5)	**1.58 (1.28–1.96)**
Some college/associate's degree or more	28.4 (23.6–33.6)	Ref
Daily cigar smoking[d]		
Yes	42.5 (33.7–51.8)	**0.73 (0.60–0.89)**
No	41.0 (36.0–46.1)	Ref

CI = confidence interval; PR = prevalence ratio; AA = African American; GED = General Education Development; PATH = Population Assessment of Tobacco and Health.
Bold text indicates significant prevalence ratio at *p-value* <0.05.
[a]All use in this table refers to current established use. Current established cigarette smokers smoked at least 100 in their lifetime and now smoke cigarettes every day or some days. For all other products, current established use is defined as ever using fairly regularly and currently using every day or some days.
[b]There were *n* = 952 current established cigar smokers with information on current cigarette smoking status (*n* = 556 cigar only; *n* = 396 dual cigar and cigarette). The regression analysis included *n* = 907 participants (*n* = 533 cigar only; *n* = 374 dual cigar and cigarette) after observations missing information for ≥1 covariate were excluded. The model was adjusted for all variables in the table.
[c]Premium brand excludes ACID, which had been considered as a premium brand by Corey et al. 2018. Please see Supplementary Materials for premium cigar definition, and tables that show these analyses with ACID considered as a premium brand.

Examining Price Cut-points for Defining Premium Cigar

Unweighted receiver operator characteristic curves were calculated to determine the optimal price cut-point for distinguishing between premium and nonpremium cigar use. Figure 1 presents the receiver operator characteristic curve. Our definition utilized a $2 cut-point when regular brand data were not available to align with Corey et al. 2018. Based on current data from Wave 6, the $2 cut-point is associated with 91.6% sensitivity, 66.3% specificity, and a Youden's J Index (a metric that maximizes sensitivity and specificity) of 57.8. The $3 cut-point was associated with 83.1% sensitivity, 76.7% specificity, and a Youden's J Index

of 59.9. If using the $3 cut-point, the overall number of premium cigar users changes from 267 to 257 which results in an overall prevalence of 0.8% (95% CI = 0.7–1.0), and was similar to the prevalence using our original definition with a $2 threshold (0.9% [95% CI = 0.7–1.0]).

Discussion

Cigars may be defined simply as "any roll of tobacco wrapped in tobacco leaf or in any substance containing tobacco"[22] but there are many different types of products included within this larger category. Therefore, having data specific to the use of particular sub-types of cigars is helpful in understanding

Table 5. Weighted Endorsed Reasons for Cigar Smoking[a] Among Adult Current Established[b] Premium and Nonpremium Traditional Cigar, Cigarillo, and Filtered Cigar Smokers, PATH Study Wave 6, 2021

	Traditional cigars overall[c] (*n* = 408)	Premium traditional cigars[d] (*n* = 267)	Nonpremium traditional cigars (*n* = 125)	Cigarillos (*n* = 503)	Filtered cigars (*n* = 240)
	W% (95% CI)	W% (95% CI)	W% (95% CI)	W% (95% CI)	W% (95% CI)
They are affordable	36.8 (30.3–43.9)	29.1 (22.1–37.3)	53.8 (38.2–68.6)	71.4 (66.5–75.9)	73.2 (64.2–80.6)
They come in flavors I like	49.5 (42.8–56.3)	40.1 (32.7–48.0)	73.8 (62.2–82.8)	68.3 (62.4–73.6)	69.2 (61.3–76.2)
I can smoke them at times when or in places where smoking cigarettes is not allowed	12.5 (8.1–18.8)	8.9 (5.6–14.0)	20.4 (11.1–34.5)	12.3 (9.1–16.3)	16.3 (10.7–23.9)
They might be less harmful than cigarettes	33.3 (27.5–39.7)	34.9 (28.1–42.4)	29.7 (19.2–42.9)	25.4 (20.6–30.9)	22.7 (17.6–28.8)
They might be less harmful–people around me than smoking cigarettes	22.7 (17.8–28.4)	20.9 (15.8–27.0)	26.2 (16.4–39.3)	19.8 (15.6–24.8)	20.0 (15.1–26.1)
Smoking them satisfies my cravings for cigarettes	46.0 (34.7–57.8)	35.0 (22.5–50.0)	54.9 (35.4–73.0)	55.3 (47.5–62.8)	58.0 (47.5–67.9)
Smoking them feels like smoking a regular cigarette	13.6 (8.5–21.0)	6.0 (3.1–11.6)[†]	30.6 (17.2–48.4)	27.2 (22.6–32.2)	46.4 (38.1–55.0)
Smoking them helps people–quit smoking cigarettes	18.0 (11.2–27.8)	18.8 (10.1–32.2)	18.2 (8.9–33.9)[†]	24.4 (18.9–30.8)	21.5 (15.2–29.6)
I smoke them as a way to cut down on cigarette smoking	19.5 (12.7–28.8)	11.6 (5.5–22.7)[†]	26.8 (15.4–42.5)	33.0 (26.6–40.1)	26.9 (19.9–35.2)

W = weighted; CI = confidence interval; PATH = Population Assessment of Tobacco and Health.
[a]Participants were shown a set of reasons (in a randomized order) for why people smoke cigars and were asked to select whether the reason applied to them ("yes"/"no"). The response options have changed since the Corey et al. paper and Wave 1. Since then, there are five response options that are no longer in the Wave 6 instrument and there are two response options (They might be less harmful to people around me than smoking cigarettes, and Smoking them satisfies my cravings for cigarettes) that have been added since Wave 1.
[b]Current established cigar use is defined as fairly regular use and currently using every day or some days.
[c]Sixteen traditional cigar users were not able to be classified as premium versus nonpremium status because of missing brand and cigar price per stick data.
[d]Premium brand excludes ACID, which had been considered a premium brand by Corey et al. 2018. Please see Supplementary Materials for premium cigar definition, and tables that show these analyses with ACID considered as a premium brand.
[†]Estimate should be interpreted with caution because it has low statistical precision. It is based on a denominator sample size of less than 50, or the coefficient of variation of the estimate or its complement is larger than 30%.
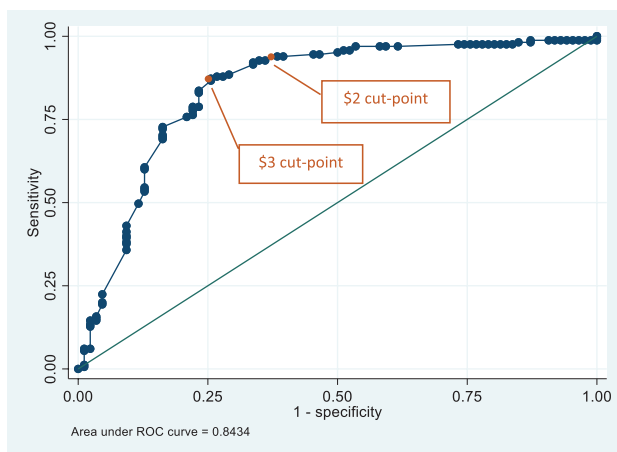

Figure 1. Unweighted receiver operator characteristics curve for determining the optimal price per stick cut-point for distinguishing premium from nonpremium cigars. Red dots on the receiver operator characteristic curve indicate the $2 and $3 cut-points. The $2 cut-point is associated with 91.5% sensitivity, 66.3% specificity, and a Youden's J Index of 57.8. The $3 cut-point is associated with 83.0% sensitivity, 76.7% specificity, and a Youden's J Index of 59.8.

behaviors and long-term health outcomes.[9] The PATH Study provides a rich resource of longitudinal cigar use behavior for traditional, cigarillo, and filtered cigars. Although the PATH Study does not collect data about premium and nonpremium cigar use separately, premium cigar use can be defined using self-report brand and purchasing price information. Using definitions consistent with analyses of Wave 1 (2014) and Wave 4 (2017) of the PATH Study, premium cigar use in the United States remained relatively stable at 0.7% from 2014[2] through 2017,[11] but increased to 0.9% in 2021 (the current analysis). This is a similar prevalence to the 2019 level for adults ≥18 years in the NASEM report from the National Survey on Drug Use and Health (1.0%, 95% CI = 0.9–1.0).[23] During this time, premium cigar users have remained predominately male; non-Hispanic, white; and educated with some college or more. Differences in cigar use patterns also persisted over this period, with the prevalence of daily cigar smoking lowest for people who use premium cigar use and highest for filtered cigar use, and only one-tenth of a premium cigar was smoked per day compared to 1 per day for filtered cigar users.[2,11]

The most popular cigar brands, by cigar type, remained relatively consistent between 2014 and 2021. Corey et al.[2] reported that the top three premium cigar brands from 2014 were Cohiba, Macanudo, and Arturo Fuente, then in 2017[11] and 2021 (the current analysis), Cohiba remained the most popular followed by Arturo Fuente and Romeo y Julieta. When looking at the combined category of traditional cigars (combines premium and nonpremium) the average price per stick was $6.91, but when separated by premium versus nonpremium status, the difference in price is more discernible ($8.67 for premium, $3.09 for nonpremium) highlighting the

heterogeneity of the traditional or large cigar category. The difference in price was also notable in 2014 and 2017, but overall prices have risen for both premium and nonpremium brands (previous premium price: ~$7 per stick, previous nonpremium price: ~$1 per stick).

Patterns around where cigar types are purchased have changed over time, with over 95% of nonpremium, cigarillo, and filtered cigars being purchased in person in 2014,[2] but now only 80–88% are purchased in person. Convenience store or gas station was the most prevalent point of purchase for cigarillo and filtered cigars, convenience store or gas station and smoke shop or tobacco specialty shop were most common for nonpremium cigars, and cigar bars was the most common point of purchase for premium cigars. However, it should be noted that over one-quarter of premium cigar users said they purchase their cigars online. This may be due to several factors. First, the 2021 data reflect the first full wave of data collection by the PATH Study during the coronavirus disease pandemic, a time when online shopping may have become more normalized with potential limited access to cigar bars. Second, data collection occurred after the passing of "Tobacco 21" (T21), federal legislation that raised the minimum legal sale age of all tobacco products to 21, which occurred in December 2019. Additional research evaluating the effect of T21 on changes in purchasing behavior by cigar type is warranted. Third, this may reflect the prevalence of online marketing of premium cigar brands, as noted by the NASEM committee who concluded that premium cigar companies have online and social media presence not captured by traditional methods of tracking marketing expenditures.[9]

Dual cigar and cigarette smoking is prevalent for users of certain cigar types (eg, cigarillos and filtered cigars),[24] but it is not associated with premium cigar use, a trend that has been consistent since 2014.[2,11] This study did not find that those who identify as non-Hispanic black/African American are at greater risk of dual cigar and cigarette use as other studies have found.[25] Use of other tobacco products remained a consistent predictor of dual use; however, daily cigar use remained protective against dual use.[2,11]

Although premium cigars typically do not have characterizing flavors the way other cigar types do, "they come in flavors I like" was endorsed by 40% of premium cigar users, compared to over 68% of other cigar-type users. This may be due to increased marketing by premium cigar brands in magazines like *Cigar Aficionado* that highlight aromas and flavors using "tasting notes" for cigars, similar to what you would see for wine,[9] even if there are no characterizing flavors added to the cigar. Menthol or other characterizing flavors would have precluded inclusion in the premium brand category based on our coding scheme, yet approximately 15% of premium brand users said their regular brand was flavored. This is likely because of the order the PATH Study questionnaire asks these questions. It asks if a respondent's "regular brand" is flavored, including menthol flavor, prior to asking about the specific brand name of their "regular brand". Respondents could have responded to the flavor question without providing a regular brand and/or selected a non-flavored brand as their "regular brand".

Using the PATH Study data, Corey et al,[2] Jeon, Mok, and Meza,[11] and this study have defined premium cigar use using self-reported brand and price information. While some brands may have expanded into producing some flavored sub-brands (ie, Acid), thus removing their premium status, the price threshold of $2 per stick remained consistent across all three analyses. This study used receiver operator characteristic analysis to determine that a price threshold of $3 per stick was able to differentiate premium from nonpremium use with increased specificity (fewer false positives), with a minimal negative impact on sensitivity (more false negatives). While the updated cut-point had a higher Youden's *J* index (the maximum difference between sensitivity and 1-specificity) there is not a definitive criterion to indicate if this increase is significant. Additional metrics to evaluate the price threshold could be explored.

Although a strength of using the PATH Study is its detailed questions about different types of cigar use, the instrument does not explicitly ask about premium cigar use. Once a formal definition is agreed upon in the tobacco control field, incorporating questions about premium cigar use would improve future research on the patterns of use, marketing, and health effects of these products.[9] An additional strength of the PATH Study is its longitudinal design; however, the current analysis does not explore longitudinal patterns of tobacco product use. This was done to provide comparable prevalence estimates to previous papers. While previous research has examined longitudinal patterns of combined cigar product use,[26–28] additional research examining longitudinal patterns of premium cigar use will be important for understanding related health effects. Finally, not all eight criteria laid out from court proceedings are easily identified through a search of public information, and so certain assumptions had to be made while coding brands.

Furthermore, because of the continued coronavirus disease pandemic, respondents were given the option to complete the interview by telephone if they did not want an in-person interview (as was done in Waves 1–5). This change in data collection protocol may have impacted our results as respondents completing an interview over the phone may be susceptible to more socially desirable responses with respect to their tobacco use (ie, under reporting) than when completing the interview on a laptop during in-person visits. We conducted a sensitivity analysis to determine if the interview mode impacted our conclusions. When stratifying by interview type, the absolute value of some prevalence estimates changes, but the overall pattern of results is consistent with our findings and did not alter our conclusions. Also, this paper focused on any current established cigar use (must use every day or some days, and fairly regularly); it does not include analysis of experimental users (those who use every day or some days, but do not indicate their use as "fairly regular"), or limit analyses to exclusive cigar users. Future research exploring experimental cigar users may provide more detail on patterns of use among occasional users.

In conclusion, premium cigar users account for a small proportion of the U.S. population but may be increasing based on the stable prevalence seen in 2014–2017. This paper supports previous research highlighting the distinct use patterns of different cigar types. Although a formal definition of premium cigar use would enhance tobacco control research and achieve the calls to action by the 1998 cancer monograph and the 2022 NASEM report, this paper shows coding by brand and price data can still provide tobacco use information by cigar type. Careful consideration of price criteria in a definition of premium cigar use may balance the protection of public

health with practical obstacles such as differing tobacco taxes between states and counties.

Disclaimer

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the U.S. Department of Health and Human Services or any of its affiliated institutions or agencies.

Data Availability

The PATH Study Restricted Use Files are available at: https://doi.org/10.3886/ICPSR36231.v31.

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