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Point-of-sale cigarette purchase patterns among U.S. adult smokers—National Adult Tobacco Survey, 2012–2014

Judy Kruger[a,*], **Amal Jama**[b], **Joseph G.L. Lee**[c], **Sara Kennedy**[d], **Asha Banks**[a], **Saida Sharapova**[a], and **Israel Agaku**[a]

[a]Office on Smoking and Health, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, Atlanta, GA, United States

[b]DB Consulting Group, Atlanta, GA, United States

[c]Department of Health Education and Promotion, College of Health and Human Performance, East Carolina University, Greenville, NC, United States

[d]RTI International, Division of Biostatistics and Epidemiology, Atlanta, GA, United States

Abstract

Tobacco products are ubiquitous inmost U.S. retail environments. Given that data on preferred point-of-sale purchase locations among U.S. adult tobacco users are limited, an enhanced understanding of tobacco purchase locations can help inform tobacco control policy, planning, and practice. We investigated prevalence and sociodemographic characteristics associated with cigarette purchase location among U.S. adult smokers. Pooled data came from the 2012–2013 (N = 60,192) and 2013–2014 (N = 75,233) National Adult Tobacco Surveys. Current cigarette smokers (n = 18,005) aged ≥ 18 were asked if they purchased cigarettes within the previous 30 days (n = 15,182) and, if so, where they last purchased cigarettes. In 2016, logistic regression adjusted for sex, age, race/ethnicity, education level and annual household income was used to assess characteristics associated with purchase location. Among current smokers, 90.2% reported purchasing cigarettes in the past 30 days. The most common purchase locations were convenience stores/gas stations (69.1%), tobacco discount stores (9.9%), drug stores (5.0%), supermarkets (4.9%), and liquor stores (3.6%). The odds of purchasing cigarettes at convenience stores/gas stations were higher among men (adjusted odds ratio (AOR)= 1.4; 95% confidence interval (CI) = 1.2–1.5) than women; and among adults aged 18–24 (AOR = 3.1; 95% CI = 2.4–3.9), 25–44 (AOR = 3.1; 95% CI = 2.7–3.7), and 45–64 years (AOR = 1.8 95% CI = 1.6–2.1) than adults aged ≥ 65 years. Over two-thirds of U.S. smokers last purchased cigarettes from convenience stores/gas stations. Understanding the relationship between purchase location and smoker characteristics may inform tobacco control strategies in the retail environment.

[*]Corresponding author at: 4770 Buford Hwy NE, Mailstop F-79, Atlanta, GA 30341, United States. jkruger@cdc.gov (J. Kruger).

Conflict of interest statement

The authors have no conflicts of interest to report.

Transparency document

The Transparency document associated with this article can be found in online version.

Keywords

Tobacco; Purchase locations; Point-of-sale

1. Introduction

Tobacco use causes significant disease and death in the U.S., with cigarette smoking alone causing about 480,000 premature deaths annually (U.S. Department of Health and Human Services, 2014). Tobacco products are ubiquitous in places where people shop for everyday items, including gasoline, food, alcohol, and medicine, and places where tobacco products are available to consumers represent an important environment for tobacco prevention and control interventions. Moreover, while tobacco point-of-sale purchase locations vary, tobacco industry advertising and marketing also differ depending on where tobacco products are sold (Henriksen, 2015). Minimizing how and where tobacco products are sold has emerged as a core tobacco control strategy, coupled with proven population-based interventions: raising cigarette excise taxes, establishing smoke-free air policies, encouraging cessation and developing counter-marketing campaigns (ChangeLabSolutions, 2016).

Accordingly, the retail environment is an important area for tobacco control policy interventions (Chapman and Freeman, 2009). As part of the blueprint to reduce tobacco use, the Institute of Medicine recommended that tobacco outlets be licensed, monitored and restricted (Institute of Medicine, 2007). Some U.S.-based retailers have voluntarily stopped selling tobacco; for example, the retailers Target and CVS stopped selling tobacco products in 1996 and 2014, respectively. Additionally, other smaller retailers and independent pharmacies have done the same (McDaniel and Malone, 2014).

With a growing interest in public health policies to regulate the U.S. tobacco retail environment, it is important to have an enhanced understanding of tobacco purchase locations among smokers. Additionally, tobacco retailers and places where tobacco products are sold are disproportionately located in neighborhoods with low income and racial/ethnic minority persons (Rodriguez et al., 2012); identifying sociodemographic variations in tobacco products sales can be helpful for informing strategies to address longstanding disparities in tobacco use (Hill et al., 2014; Chapman and Freeman, 2009; Myers et al., 2015).

However, recent data on preferred point-of-sale purchase locations among U.S. adult tobacco users is limited. Cornelius et al. (2014) reported on a range of tobacco outlets used by U.S. adult smokers by a limited number of sociodemographic characteristics. Moreover, Golden and colleagues (Golden et al., 2016) reported differences in where cigarettes are purchased on and off Indian reservations by racial/ethnic groups, but did not assess other purchase locations. To address this gap in the literature, this study used recent data from the National Adult Tobacco Survey (NATS) to assess patterns of cigarette purchase by retail locations and sociodemographics among a nationally representative sample of U.S. adults.

2. Methods

2.1. Data source

Data were pooled from the 2012–2013 (N = 60,192) and 2013–2014 (N = 75,233) NATS, a landline and cellular telephone survey of U.S. adults aged ≥ 18 years (Centers for Disease Control and Prevention, 2016). The 2012–2013 and 2013–2014 NATS were intended to produce a nationally representative sample; both surveys were sampled and weighted in a manner to provide nationally representative estimates for the assessed indicators and a complete description of NATS methodology is available elsewhere [http://www.cdc.gov/tobacco/data_statistics/surveys/nats/]. Overall response rates were 36.3% and 36.1%, respectively.

2.2. Measures

2.2.1. Current tobacco use—Current cigarette smokers were respondents who reported smoking ≥ 100 cigarettes during their lifetime and who smoked ‘every day’ or ‘some days’ at the time of survey. Average number of cigarettes smoked per day (CPD) among current cigarette smokers in the past 30 days was categorized as 1–9; 10–19; 20–29; or >30 CPD.

Current cigarette smokers were further classified as exclusive cigarette smokers or concurrent users of cigarettes and ≥ 1 other tobacco product (cigars/cigarillos/filtered little cigars, regular pipes, water pipes/hookahs, chewing tobacco/snuff/dip, snus, dissolvable tobacco products, and electronic cigarettes).

2.2.2. Purchase location—Current cigarette smokers who purchased cigarettes in the past 30 days were asked to select the location of their *last* purchase from the following mutually exclusive response options: ‘at a convenience store or gas station’; ‘at a supermarket’; ‘at a liquor store’; ‘at a drug store’; ‘at a tobacco discount store’; ‘at another discount store, such as Wal-Mart or Costco’; ‘on an Indian reservation’; ‘from a vending machine’; ‘on the Internet’; ‘from another person’; or ‘other’. Because of small sample sizes, ‘vending machine’, ‘from another person’, and ‘other’ were collapsed into a single ‘other’ category. Internet sales were not included in the analysis because these sales are illegal.

2.2.3. Sociodemographics—Sociodemographic characteristics included: sex, age, race/ethnicity, education, annual household income, and U.S. region.

2.2.4. Analysis—Data were weighted to yield nationally representative estimates. Prevalence for point-of-sale purchase locations was calculated overall and by sociodemographics and tobacco use characteristics. Multivariable logistic regression was used to assess characteristics associated with purchase location, including sex, age, race/ethnicity, education, annual household income, U.S. census region, and current tobacco use. Separate logistic regression models were constructed to predict cigarette purchase in the past 30 days among each respective location category (i.e., convenience store or gas station, supermarket, liquor store, drug store, tobacco discount store, another discount store such as Wal-Mart or Costco, Indian reservation, or other), each of which adjusted for sex, age, race/

ethnicity, education level and annual household income. Data were analyzed using SAS-callable SUDAAN (version 10).

3. Results

Overall, 90.2% of current cigarette smokers reported purchasing cigarettes for themselves in the past 30 days (Table 1). A large proportion (91.5%) of non-Hispanic whites purchased cigarettes for themselves and a lower proportion (84.2%) of Hispanics purchased cigarettes for themselves. The most common locations for last purchase were: convenience stores/gas stations (69.1%), tobacco discount stores (9.9%), drug stores (5.0%), supermarkets (4.9%), and liquor stores (3.6%) (Table 2).

3.1. Convenience store/gas stations

The odds of purchasing cigarettes at convenience stores/gas stations were significantly ($p < 0.05$) higher among men (adjusted odds ratio [AOR] = 1.4) compared to women; among persons aged 18–24 (AOR = 3.1), 25–44 (AOR = 3.1) and 45–64 years (AOR = 1.8) compared to persons aged ≥ 65 years; among those with General Education Diploma (GED) (AOR = 1.5) compared to those with a college or higher degree; and among those residing in the Northeast (AOR = 2.0), Midwest (AOR = 2.0) and South (AOR = 2.0) compared to the West ($p < 0.05$). Conversely, Hispanics (AOR = 0.8) and non-Hispanic other races (AOR = 0.8) had lower odds of purchasing cigarettes at convenience stores/gas stations compared to non-Hispanic whites (Table 2).

3.2. Supermarkets

The odds of purchasing cigarettes at supermarkets were lower among adults aged 18–24 (AOR = 0.3), 25–44 (AOR = 0.4), and 45–64 years (AOR = 0.5) compared to adults aged ≥ 65 years (Table 2).

3.3. Liquor stores

The odds of purchasing cigarettes at liquor stores were higher among non-Hispanic blacks (AOR = 2.5), non-Hispanic other races (AOR = 2.4), and Hispanics (AOR = 3.4) compared to non-Hispanic whites. Conversely, the odds were lower among current smokers who smoked 10–19 CPD (AOR = 0.6) and 20–29 CPD (AOR = 0.4) compared to 1–9 CPD; as well as among adults residing in the Northeast (AOR = 0.2), Midwest (AOR = 0.4), and South (AOR = 0.2) compared to those in the West (Table 2).

3.4. Drug stores

The odds of purchasing cigarettes at drug stores were higher among Hispanics (AOR = 1.6) compared to non-Hispanic whites. Odds were lower among men (AOR = 0.6) compared to women; among adults aged 18–24 (AOR = 0.4), 25–44 (AOR = 0.5), and 45–64 years (AOR = 0.6) compared to adults aged ≥ 65 years; among those with a GED (AOR = 0.4), high school diploma (AOR = 0.6) and associate degree and/or some college (AOR = 0.7) compared to those with a college degree or higher; and among those with incomes of < $20,000 (AOR = 0.6) compared to those earning ≥$100,000 (Table 2).

3.5. Tobacco discount stores

Those with annual household incomes of <$20,000 (AOR = 1.6) had higher odds of purchasing cigarettes at tobacco discount stores compared to those earning ≥$100,000. Men (AOR = 0.8) compared to women; adults aged 18–24 (AOR = 0.3), 25–44 (AOR = 0.4), and 45–64 years (AOR = 0.7) compared to adults aged ≥ 65 years; non-Hispanic blacks (AOR = 0.6) and Hispanics (AOR = 0.5) compared to non-Hispanic whites; and adults residing in the Northeast (AOR = 0.4), Midwest (AOR = 0.7), and South (AOR = 0.6) compared to residents in the West had lower odds of purchasing cigarettes at tobacco discount stores (Table 2).

3.6. Other discount stores

Odds of purchasing at discount stores were lower among men (AOR = 0.7) compared to women; adults aged 25–44 (AOR = 0.5) and 45–64 years (AOR = 0.6) compared to adults aged ≥ 65; and adults residing in the Midwest and South (AOR = 0.3) compared to those in the West (Table 2).

3.7. Indian reservations

Odds of purchasing cigarettes at Indian reservations were higher among current smokers who smoked 20–29 CPD (AOR = 1.8) compared to those who smoked 1–9 CPD and concurrent users of cigarettes and other tobacco products (AOR = 2.0) compared to those who exclusively smoked cigarettes. Odds were lower among men (AOR = 0.7) compared to women; adults aged 18–24 (AOR = 0.1), 25–44 (AOR = 0.3), and 45–64 years (AOR = 0.7) compared to adults aged ≥ 65 years; non-Hispanic blacks (AOR = 0.1) compared to non-Hispanic whites; and adults residing in the Midwest (AOR = 0.3) and South (AOR = 0.3) compared to those in the West (Table 2).

4. Discussion

We found that nearly 6 in 10 smokers last purchased cigarettes from convenience stores/gas stations; these smokers were more likely to be male, young adults, have a GED, and reside in the Northeast, Midwest and Southern part of the U.S. The second most common location where current smokers purchase tobacco products is tobacco discount stores. We also found that smokers with lower incomes (e.g., <$20,000) have a higher likelihood of purchasing from tobacco discount stores, which may suggest that price-minimization strategies are being used by low-income smokers.

One study found that convenience stores account for 4.1 million weekly teenager visits (Sanders-Jackson et al., 2015), and a recent study found that over 75% of stores displayed one tobacco price promotion, 50% had exterior marketing and 95% had interior marketing (Ribisl et al., 2017). The most common displayed price promotion by retail type was: gas/convenience store, pharmacy/drug store, tobacco store, convenience store (no gas station), supermarket, warehouse discount stores and liquor stores (Ribisl et al., 2017). In a systematic review of neighborhood disparities in point-of-sale tobacco marketing, there was consistent evidence of more point-of-sale tobacco advertising in neighborhoods with lower incomes and neighborhoods with fewer non-Hispanic white residents (Lee et al., 2015).

Given our findings of demographic differences in retail type used to purchase cigarettes, further research should examine the potential for differential impact of tobacco marketing by retail type, and if restrictions on sales and marketing at certain retail types would have an impact on reducing disparities.

These findings underscore the importance of tobacco control strategies in the retail environment (e.g., retailer licensing, density caps, and limits on sales at certain store types such as drug stores). Limits on licensing and zoning strategies can restrict the location of tobacco retail outlets; however, some states do preempt or prohibit local governments from enacting tobacco control policies related to the retail environment (Griffin et al., 2011). Licensing laws require businesses to obtain a license to sell tobacco, and zoning laws can regulate land use (e.g., tobacco retailing) through caps on licenses, distance caps and conditional use permits (Center for Public Health Systems Science, 2014). As of 2014, 78% of states reported some policy activity related to licensing or retailer density, including planning to reduce or restrict the type, location, or density of tobacco retailers (Center for Public Health Systems Science, 2015). For example, in 2010, Santa Clara County passed an ordinance that required tobacco retailers to be licensed and prohibited any new retailers from opening within 1000 ft of a school or 500 ft of another tobacco retailer (County of Santa Clara, 2010). Moreover, in San Francisco, CA, drug stores have been prevented from selling tobacco in 2008 (San Francisco Board of Supervisors, 2008).

Findings from our study indicate that although most smokers purchase their cigarettes from a convenience stores/gas stations, older smokers have a preference for grocery and drug stores. Given that younger and middle aged smokers have lower odds of purchasing cigarettes from supermarkets and drug stores, it is possible that policies that focus only on grocery and drug stores may have less impact on younger smokers. This study also found racial and ethnic disparities in purchasing cigarettes at liquor stores, suggesting the need for more research on how policies affecting different retailer types might impact racial and ethnic disparities in tobacco use in the retail environment. Accordingly, addressing the retail environment overall and focusing on all channels as part of a comprehensive tobacco control strategy are critical to reducing smoking rates (U.S. Department of Health and Human Services, 2014). Previous studies have found an association between access to tobacco outlets and tobacco use. Chuang and colleagues found that convenience store density and distance were associated with smoking (Chuang et al., 2005) and Henriksen found that tobacco retailers located near schools with high smoking prevalence generally have lower cigarette prices (Henriksen, 2015). In addition to health gains, there is growing evidence showing no financial losses after stopping tobacco products sales by drug stores and pharmacies (Woodward et al., 2012).

4.1. Strengths and limitations

Strengths of this study include the use of a nationally representative sample to capture a large and varied tobacco outlet purchase locations by sociodemographic characteristics and tobacco use behaviors. However, at least three limitations should be noted. First, the sampling frame did not include institutionalized populations or military personnel; therefore, findings are not generalizable to these subpopulations. Second, the NATS questionnaire was

not designed to assess cross-border purchases or illegal product sales (e.g., counterfeit, smuggled, or bootlegged cigarettes). However, illegal sales may be an important issue in the U.S. as it represents 8.5% to 21% of the total U.S. tobacco market (Institute of Medicine, 2007). Finally, the questionnaire only assessed the place of last purchase, which may not necessarily reflect usual purchasing patterns. Despite these limitations, this study provides new data that could help inform the implementation of tobacco control strategies in the retail environment.

5. Conclusion

Findings from this study show that the majority of U.S. smokers purchased cigarettes from convenience stores/gas stations and tobacco discount store; moreover, sociodemographic differences existed according to locations where cigarettes were purchased. These findings underscore the importance of identifying the retail location where tobacco products are frequently purchased. Information on preferred point-of-sale purchase location can help jurisdictions implement tobacco control strategies in the retail environment. Efforts to enhance knowledge on the relationship between purchase location and smoker characteristics could inform the implementation of tobacco control strategies in the retail environment and reduce tobacco-related disparities (U.S. Department of Health and Human Services, 2014). Continued adoption of proven population-based tobacco control interventions, in coordination with targeted efforts in the retail environment, could help reduce tobacco use, decrease initiation, and increase tobacco use cessation efforts.

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Table 1

Characteristics of current smokers[a] ≥ 18 years who purchased cigarettes for themselves in the past 30 days by selected characteristics—National Adult Tobacco Surveys, 2012–2014.

Current smokers who reported a cigarette purchase in past 30 days[b]		
Characteristics[c]	N	%, (95% CI)
Overall	15,182	90.2 (89.6–90.8)
Sex		
Male	7498	89.8 (88.9–90.7)
Female	7563	90.7 (89.8–91.5)
Missing	121	–
Age (years)		
18–24	1257	90.0 (87.6–91.9)
25–44	4583	89.6 (88.5–90.6)
45–64	6704	91.4 (90.6–92.2)
≥65	2638	87.9 (86.3–89.4)
Race/ethnicity		
Non-Hispanic white	10,661	91.5 (90.8–92.1)
Non-Hispanic black	1570	91.2 (89.3–92.8)
Non-Hispanic other race[d]	1632	88.5 (86.4–90.3)
Hispanic	1101	84.2 (81.5–86.6)
Missing	218	–
Education		
0–12 years (no diploma)	1991	89.9 (88.0–91.6)
General educational diploma	744	90.7 (87.7–93.0)
High school graduate	4124	91.4 (90.4–92.4)
Associate degree or some college	5433	90.8 (89.8–91.7)
Undergraduate degree and higher	2553	86.0 (84.2–87.6)
Missing	68	–
Number of cigarettes smoked per day (CPD)		
1–9	2203	93.0 (91.5–94.2)
10–19	4588	95.5 (94.7–96.2)
20–29	3588	95.7 (94.7–96.5)
≥30	1331	94.5 (92.9–95.8)
Missing	3472	–
Annual household income		
<$20,000	2518	87.0 (85.1–88.7)
$20,000–$49,999	5197	91.6 (90.6–92.5)
$50,000–$99,999	3424	92.0 (90.7–93.1)
≥$100,000	1383	88.4 (86.0–90.4)
Missing	2660	–
US census region		
Northeast	2549	89.5 (87.8–91.0)

Current smokers who reported a cigarette purchase in past 30 days[b]		
Midwest	3423	90.7 (89.4–91.9)
South	5699	91.5 (90.6–92.4)
West	3369	87.5 (85.9–88.9)
Missing	142	–
Tobacco use status		
Concurrent tobacco use	1274	84.3 (81.7–86.6)
Current cigarette smoker-only	13,709	90.8 (90.2–91.4)
Missing	199	–

Abbreviations: CI, confidence interval. Concurrent tobacco user refers to current cigarette smoker who also reported using other tobacco products.

[a] Respondents who smoked at least 100 cigarettes in their lifetime and smoked every day or some days at the time of the survey.

[b] Current smokers who answered 'yes' to the question: "Have you bought any cigarettes for yourself in the past 30 days?"

[c] Some strata do not sum to 15,182 because of missing data for cigarette use, concurrent tobacco use, those who reported a cigarette purchase in the past 30 days, or any of the sociodemographic characteristics.

[d] Non-Hispanic other races refer to non-Hispanic Asian and American Indian/Alaska native.

Table 2

Percentage and odds ratios of reporting a cigarette purchase in the past 30 days at specified locations—National Adult Tobacco Surveys, 2012–2014.

	Location[a] of last cigarette purchase among those who purchased cigarettes in the past 30 days[b] (n = 15,068)															
	Convenience store/gas station (N = 9628)		**Supermarket (N = 943)**		**Liquor store (N = 505)**		**Drug store (N = 864)**		**Tobacco discount store (N = 1813)**		**Another discount store (e.g., Walmart, Costco) (N = 448)**		**Indian reservation (N = 531)**		**Other[c] (N = 336)**	
Characteristics	%	AOR (95% CI)	%	AOR (95% CI)	%	AOR (95% CI)	%	AOR (95% CI)	%	AOR (95% CI)	%	AOR (95% CI)	%	AOR (95% CI)	%	AOR (95% CI)
Sex																
Male	72.2	1.4 (1.2–1.5)	4.4	0.8 (0.7–1.0)	3.8	1.0 (0.8–1.3)	3.9	0.6 (0.5–0.8)	8.8	0.8 (0.7–0.9)	1.9	0.7 (0.5–0.9)	2.4	0.7 (0.6–0.9)	2.5	1.2 (0.8–1.6)
Female	65.3	1.0	5.6	1.0	3.3	1.0	6.3	1.0	11.2	1.0	3.0	1.0	3.2	1.0	2.0	1.0
Age (years)																
18–24	75.5	3.1 (2.4–3.9)	2.5	0.3 (0.2–0.5)	4.3	1.8 (1.0–3.3)	4.3	0.4 (0.3–0.7)	6.6	0.3 (0.2–0.5)	1.9	0.6 (0.3–1.0)	1.6	0.1 (0.1–0.4)	3.3	1.2 (0.6–2.4)
25–44	75.6	3.1 (2.7–3.7)	4.0	0.4 (0.3–0.6)	3.3	1.1 (0.7–1.8)	4.1	0.5 (0.4–0.7)	6.9	0.4 (0.3–0.5)	2.1	0.5 (0.3–0.7)	2.0	0.3 (0.2–0.5)	1.9	0.6 (0.4–1.0)
45–64	63.8	1.8 (1.6–2.1)	5.7	0.5 (0.4–0.7)	4.0	1.5 (1.0–2.4)	5.5	0.6 (0.5–0.8)	12.7	0.7 (0.6–0.9)	2.5	0.6 (0.4–0.8)	3.5	0.7 (0.5–0.9)	2.3	0.8 (0.5–1.2)
≥65	49.5	1.0	10.3	1.0	2.6	1.0	7.8	1.0	17.3	1.0	4.4	1.0	5.3	1.0	2.8	1.0
Race/ethnicity																
Non-Hispanic black	72.7	1.1 (0.9–1.3)	4.3	0.9 (0.6–1.3)	5.2	2.5 (1.7–3.6)	4.8	1.2 (0.8–1.6)	7.2	0.6 (0.5–0.8)	2.6	1.0 (0.6–1.6)	d	0.1 (0.0–0.2)	2.9	2.1 (1.33.3)
Non-Hispanic other race[d]	66.8	0.8 (0.7–0.9)	6.2	1.3 (0.9–1.8)	4.5	2.0 (1.3–3.0)	4.3	1.1 (0.7–1.6)	9.7	0.9 (0.7–1.2)	3.0	1.3 (0.8–2.0)	3.5	1.4 (0.9–2.0)	2.0	1.1 (0.7–1.9)
Hispanic	67.3	0.8 (0.6–0.9)	4.4	1.0 (0.7–1.5)	8.5	3.4 (2.3–4.9)	6.2	1.6 (1.1–2.4)	4.9	0.5 (0.3–0.7)	2.1	1.0 (0.6–1.7)	2.3	0.9 (0.5–1.5)	4.3	3.0 (1.9–4.9)
Non-Hispanic white	69.1	1.0	5.0	1.0	2.4	1.0	4.8	1.0	11.3	1.0	2.4	1.0	3.2	1.0	1.7	1.0
Education																
0–12 years (no diploma)	68.1	1.1 (0.9–1.4)	4.4	0.9 (0.6–1.4)	5.3	1.2 (0.7–1.9)	4.8	0.7 (0.4–1.0)	9.2	1.1 (0.8–1.4)	2.4	0.8 (0.5–1.3)	2.9	1.6 (1.0–2.7)	2.7	0.6 (0.3–1.2)
General educational diploma	73.4	1.5 (1.2–2.0)	4.4	1.0 (0.6–1.7)	3.6	0.7 (0.4–1.3)	3.0	0.4 (0.2–0.7)	8.3	1.1 (0.9–1.5)	*e*	0.4 (0.2–1.0)	3.1	1.4 (0.7–2.8)	2.8	0.5 (0.3–1.3)
High school graduate	70.1	1.2 (1.0–1.4)	5.2	1.0 (0.7, 1.3)	3.3	0.9 (0.5–1.3)	4.1	0.6 (0.4–0.8)	10.2	1.3 (1.0–1.6)	2.2	0.8 (0.5–1.3)	2.8	1.3 (0.9, 2.1)	2.3	0.6 (0.3–1.0)
Associates degree or some college	69.9	1.2 (1.0–1.3)	4.8	0.9 (0.6, 1.1)	2.8	0.7 (0.5–1.1)	5.2	0.7 (0.5–0.9)	10.5	1.3 (0.9–1.9)	2.8	1.1 (0.7–1.6)	2.7	1.4 (0.9, 2.1)	1.6	0.5 (0.3–0.8)
College and higher	65.1	1.0	6.0	1.0	3.6		8.2	1.0	8.8	1.0	2.5	1.0	2.4	1.0	3.3	1.0
Number of cigarettes smoked per day (CPD)																
≥30	67.5	1.0 (0.8–1.3)	4.9	0.8 (0.5–1.3)	2.7	0.6 (0.4–1.1)	3.6	0.8 (0.5–1.2)	12.4	1.3 (0.9–1.8)	2.3	0.9 (0.5–1.8)	4.1	1.9 (1.0–3.4)	2.3	0.8 (0.4–1.5)
20–29	69.1	1.1 (1.0–1.4)	5.3	0.9 (0.6–1.3)	2.1	0.4 (0.3–0.6)	3.9	0.7 (0.5–1.1)	11.3	1.2 (0.9–1.5)	3.0	1.3 (0.8–2.0)	3.6	1.8 (1.1–2.9)	1.7	0.6 (0.4–1.0)
10–19	67.8	1.0 (0.9–1.2)	4.6	0.8 (0.6–1.1)	3.0	0.6 (0.4–0.9)	5.6	1.1 (0.8–1.5)	11.2	1.3 (1.0–1.7)	2.6	1.0 (0.7–1.6)	2.9	1.3 (0.8–2.1)	2.3	0.8 (0.4–1.3)

	Location[a] of last cigarette purchase among those who purchased cigarettes in the past 30 days[b] (n = 15,068)															
	Convenience store/gas station (N = 9628)		Supermarket (N = 943)		Liquor store (N = 505)		Drug store (N = 864)		Tobacco discount store (N = 1813)		Another discount store (e.g., Walmart, Costco) (N = 448)		Indian reservation (N = 531)		Other[c] (N = 336)	
1–9	67.9	1.0	5.4	1.0	5.6	1.0	5.4	1.0	8.2	1.0	2.4	1.0	1.7	1.0	3.3	1.0
Annual household income																
<$20,000	64.6	0.9 (0.8–1.1)	5.9	1.0 (0.7–1.5)	4.0	0.8 (0.5–1.5)	4.5	0.6 (0.4–0.9)	11.4	1.6 (1.1–2.1)	3.5	1.2 (0.7–2.1)	2.9	0.9 (0.5–1.6)	3.1	1.5 (0.7–3.1)
$20,000–$49,999	70.2	1.1 (0.9–1.3)	4.7	0.8 (0.6–1.2)	4.0	0.9 (0.6–1.5)	4.8	0.7 (0.5–1.0)	9.5	1.4 (1.0–1.8)	2.1	0.8 (0.5–1.3)	2.6	0.9 (0.6–1.5)	2.0	0.9 (0.4–1.8)
$50,000–$99,999	70.7	1.1 (0.9–1.3)	5.0	0.9 (0.6–1.4)	2.7	0.7 (0.4–1.2)	5.1	0.8 (0.5–1.1)	9.5	1.3 (1.0–1.7)	1.9	0.7 (0.4–1.2)	2.9	1.0 (0.6–1.7)	2.1	1.0 (0.5–1.9)
≥$100,000	69.7	1.0	5.5	1.0	3.8	1.0	6.7	1.0	7.2	1.0	2.8	1.0	2.6	1.0	2.1	1.0
US census region																
Northeast	70.4	2.0 (1.6–2.3)	5.3	1.1 (0.7–1.5)	2.1	0.2 (0.1–0.4)	4.6	0.7 (0.5–1.1)	6.3	0.4 (0.3–0.6)	1.1	0.4 (0.2–0.7)	5.8	1.2 (0.9–1.7)	4.2	1.6 (1.011–2.6)
Midwest	71.8	2.0 (1.7–2.3)	4.8	1.0 (0.8–1.4)	3.6	0.4 (0.3–0.6)	4.7	0.9 (0.6–1.3)	10.7	0.7 (0.6–0.9)	1.2	0.4 (0.2–0.7)	1.4	0.3 (0.2–0.5)	1.8	0.7 (0.5–1.2)
South	73.2	2.3 (2.0–2.6)	4.9	1.0 (0.8–1.3)	1.6	0.2 (0.1–0.2)	4.8	0.8 (0.6–1.1)	9.2	0.6 (0.5–0.8)	3.4	1.2 (0.8–1.6)	1.3	0.3 (0.2–0.4)	1.5	0.5 (0.3–0.9)
West	55.1	1.0	4.9	1.0	9.4	1.0	5.9	1.0	13.5	1.0	3.0	1.0	5.2	1.0	3.0	1.0
Tobacco use status																
Concurrent tobacco use	73.6	0.9 (0.8–1.2)	3.4	0.9 (0.6–1.4)	3.7	1.0 (0.7–1.7)	5.2	0.6 (0.4–1.0)	9.1	1.2 (0.9–1.6)	1.5	0.7 (0.4–1.4)	3.1	2.0 (1.2–3.1)	3.1	1.4 (0.8–2.5)
Current cigarette smoker-only	68.6	1.0	5.1	1.0	3.6	1.0	5.2	1.0	10.0	1.0	2.5	1.0	2.7	1.0	2.2	1.0
Overall	69.1	–	4.9	–	3.6	–	5.0	–	9.9	–	2.4	–	2.8	–	2.3	–

Abbreviations: CI = confidence interval; AOR = adjusted adds ratio (adjusting for sex, age, race/ethnicity, education level and annual household income).

Note: Number 15,068 used in the logistic regression.

[a] Defined by the selection of one purchase location response to the question: “The last time you bought cigarettes for yourself, did you buy them…”.

[b] Defined as a ‘yes’ response to the question: “Have you bought any cigarettes for yourself in the past 30 days, that is, since [DATE FILL]?”

[c] Composite group including four purchase locations collapsed because of small sample size (‘vending machine’, ‘from another person’, and ‘other’). We excluded ‘Internet’ responses (n = 12) from this analysis.

[d] Non-Hispanic other races refer to non-Hispanic Asian, American Indian/Alaska native.

[e] Estimates excluded due to relative standard error (RSE) > 30.