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Magazine hyped: Trends in tobacco advertising and readership characteristics, 2010–2014

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Abstract

We tracked magazine advertisements for seven tobacco products in US magazines from 2010 to 2014 and examined magazine readership characteristics that are associated with advertising placement in 2014.

Advertising data came from Kantar Media's Intelligence and readership data came from a 2014 Experian's nationally representative survey of 4,667 adult tobacco users. At magazine level, we aggregated total and product-specific number of advertisements and expenditures by year and calculated readership demographics. We used linear and Poisson regression models to examine trends in number of tobacco advertisements and expenditures and readership characteristics associated with number of tobacco advertisements in 2014. Analyses were conducted in 2015. There were 5,317 tobacco advertisements with expenditures of \$796 million that appeared in 322 magazines during 2010–2014. Cigarette advertisements accounted for 2,928 (55%), followed by e-cigarettes ($n = 862$, 16%), and snus ($n = 534$, 10%). Advertisements increased by 2.79 ad/year for cigarettes, 1.94 ad/year for e-cigarettes, and 0.78 ad/year for chewing tobacco ($p < 0.05$). In 2014, number of advertisements was associated with select readership characteristics ($p < 0.05$). For every 10% increase in 18–39 year-old readers, advertisement rate increased by 1.48 times for cigarettes, 3.44 times for e-cigarettes, and 2.15 times for chewing tobacco. For every 10% increase in readers who earn \$24,999, advertisement rate increased by 1.37 times for cigarettes and 1.70 times for e-cigarettes.

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Magazine tobacco advertising has increased especially for cigarettes and is targeted toward certain demographic subgroups. Regulating tobacco magazine advertising should be integral to tobacco control policies.

Keywords

advertising placement; disparities; magazine tobacco advertising; national trends; readership characteristics

INTRODUCTION

Tobacco use remains a leading cause of preventable death and illnesses.¹ In the US, smoking causes 480,000 premature deaths and 12.7 million medical conditions annually.¹² Health risks associated with use of non-cigarette tobacco products are also well documented. For example, in 2010, cigar use was estimated to have caused 9000 premature deaths and 140,000 years of potential life lost among adults 35 years old.³ Smokeless tobacco is associated with health problems such as mouth cancer, cardiovascular disease, and stroke.¹⁴

Despite declining prevalence of cigarette smoking among adults 18 years (20.9% in 2005 vs. 16.8% in 2014),⁵ cigarettes remain the most consumed tobacco product.⁶ Meanwhile, use of non-cigarette tobacco products is increasing. Use of smokeless tobacco increased from 3.2% in 1987⁷ to 4.3% in 2013 among adults 18 years old.⁸ E-cigarettes ever use increased from 3.3% in 2010 to 8.5% in 2013.⁹ Among current smokers, ever use of e-cigarettes increased from 9.8% in 2010 to 21.2% in 2011.¹⁰

Tobacco advertising is a primary vehicle to promote tobacco use.¹ In 2012, advertising and promotional expenditures in the US were \$9.16 billion for cigarettes¹¹ and \$435.7 million for smokeless tobacco.¹² Expenditure on e-cigarettes advertising was at \$18.3 million in 2012.¹³ With current bans on television and radio advertising, magazines remain a primary mass-media outlet for tobacco advertising.¹⁴ In 2012, expenditures on magazine advertising reached \$27.9 million for cigarettes¹¹ and \$11.5 million for smokeless tobacco,¹² which represented 52.8% and 73.4% of total advertising budgets. Magazine advertisements reached \$10.8 million for e-cigarettes in 2012.¹³ A Legacy report (2014) showed that e-cigarette magazine advertisements constituted 58% of e-cigarette advertising budget from June to November 2013, whereas national television advertisements constituted 19% and local television constituted 8%.¹⁵

Magazines are effective delivery vehicles for tobacco advertisements. Magazines are unique mass media that appeal to general and diverse (e.g., *People*) or select audiences based on their geographic location (e.g., *Philadelphia*), demographics (e.g., *Elle*), and interests or hobbies (e.g., *Golf Magazine*). They reach primary (i.e., those who purchase a magazine and members of their household) and secondary (i.e., pass-along audiences who read but do not purchase a magazine) audiences.¹⁶

Tobacco advertising increases onset and continued tobacco consumption especially among vulnerable populations.¹⁷ Tobacco companies demographically target populations with

advertisements where magazines offer advertisers opportunities to tailor advertisements to characteristics of such audiences.¹⁶ Examples of racial/ethnic targeting include more advertisements of menthol-flavored products in non-Hispanic Black magazines (e.g., *Ebony*) compared to non-Hispanic White magazines (e.g., *People Weekly*).¹⁸ Internal documents from tobacco companies prove an intentional pursuit of targeting and tailoring advertising strategies.^{18–21}

Despite the known influence of advertising,¹⁷ literature on tobacco magazine advertising is scarce and outdated. Two studies examined trends in tobacco magazine advertising: King and Siegel (2001) analyzed cigarette advertising from 1995 to 2001,²² whereas Morrison and colleagues (2008) examined smokeless tobacco advertising from 1993 to 2002.²³ Both studies were conducted prior to the introduction of new tobacco products (e.g., e-cigarettes). Further, studies focused on single (rather than all) tobacco products.^{13,22,23} Kim and colleagues (2014) examined e-cigarettes,¹³ King and Siegel (2001) examined cigarettes,²² and Morrison and colleagues (2008) examined smokeless tobacco.²³ Finally, previous studies were limited to magazines that target specific groups such as youth^{22–24} rather than examining the entirety of magazine landscape. With emerging tobacco products, no studies to date examined the allocation of advertising budgets for new (e.g., e-cigarettes) alongside traditional (e.g., cigarettes) products. Also, little is known about magazine readership characteristics that determine overall and product-specific number of magazine advertisements.

The purpose of this paper is twofold. First, we track overall and product-specific (e.g., cigarettes, e-cigarettes) number of tobacco magazine advertisements and expenditures from 2010 to 2014. Second, we examine magazine readership characteristics of tobacco users that are associated with tobacco advertising placement.

METHODS

Data

We obtained tobacco advertising data for years 2010 to 2014 from Kantar Media's Intelligence (KMI). KMI is a commercial vendor that tracks advertisements in 423 English (e.g., *People*) and Spanish (e.g., *People en Español*) magazines. For each advertisement, KMI records the year, product, brand, magazine name, and dollar amount.

Magazine readership data came from a 2014 Simmons National consumer study/National Hispanic consumer study (NCS/NHCS) by Experian's Simmons Research ($N = 4,667$). NCS/NHCS is a nationally representative survey of U.S. Hispanic and non-Hispanic 18 year-old adult tobacco users (Alaska and Hawaii are excluded). Experian uses a multi-frame probability sampling and weights the data to adjust for design-based selection rates and demographic/geographic variables. Data were collected from November 2013 to December 2014.

Participants were tobacco users who reported use of any tobacco product in response to *yes/no* questions (e.g., Cigarettes: Do you smoke them?). Magazine readership was based on recent-reading approach, a reliable measure of magazine audiences,¹⁶ where participants

viewed a list of 196 colored magazine cover pictures and reported whether they have “read or looked into the magazine in the last 6 months.” Gender, age, education, race and ethnicity, employment, and income data were also collected.

Statistical analysis

At the magazine level, we aggregated total and product-specific number of advertisements and expenditures by year. We included all tobacco products that were advertised from 2010 to 2014. These products were cigarettes, e-cigarettes, snus, chewing tobacco, cigars, snuff, and dissolvable tobacco. We added an “other” category to capture less-frequently advertised products (e.g., cannabis oil) and general tobacco advertisement (e.g., sponsored events).

We calculated weighted composition for each magazine based on readers’ characteristics: gender, age, education, race and ethnicity, employment, and income. Composition reflects percent of a magazine’s readers who belong to a specific demographic segment.¹⁶ For example, male composition of *People* (35.2%) was calculated by dividing weighted number of male participants who read *People* ($n = 2,937,400$) by total weighted number of people who read the magazine ($n = 8,352,600$). We linked data on number of advertisements from KMI with readership data from NCS/NHCS for 53 magazines for which we had data from both datasets in 2014. The 53 magazines represented 82.8% of total magazines that had tobacco advertisements ($n = 64$).

We used repeated-measure regression models to examine associations between time (year) and overall and product-specific number of advertisements and expenditures. Analyses were clustered by magazine because magazines that included tobacco advertisements in one year were likely to include advertisements in other years. To identify magazine readership characteristics that were associated with advertising placement, we used multiple Poisson regression models to examine total and product-specific advertisement rate for each 10% unit increase in weighted readers’ characteristics. Readership characteristics and total magazine readers were entered as correlates. Associations between each readership characteristic and number of advertisements were adjusted for all other correlates in the model. Data were analyzed in 2015 using SAS 9.3 (SAS Institute: Cary, NC).

RESULTS

Trends in number of tobacco magazine advertisements and associated expenditures

From 2010 to 2014, there were 5,317 advertisements with total expenditures of \$796 million (Table S1). Fifty-two brands advertised in 98 unique magazines (322 magazine-year total). The top five advertising brands were *Camel*, *Newport*, *American Spirit*, *Blu*, and *Grizzly* (Table S2). The top five magazines for tobacco advertising were *Entertainment Weekly*, *Rolling Stone*, *Star*, *Sports Illustrated*, and *Playboy* (Table S3).

Total number of tobacco advertisements and expenditures increased over time from 2010 to 2014 (all $p < 0.05$) (Table 1). Number of product-specific advertisements and expenditures increased for cigarettes, e-cigarettes, chewing tobacco, and snuff over time (all $p < 0.05$). Conversely, number of advertisements and expenditures decreased for snus, cigars, and dissolvable tobacco (all $p < 0.05$). Cigarettes ($n = 2,928$, 55%), e-cigarettes ($n = 862$, 16%),

snus ($n = 534$, 10%), chewing tobacco ($n = 494$, 9%), and cigars ($n = 353$, 7%) were the top five advertised products (Figure 1).

Associations between tobacco user readership characteristics and tobacco advertising placement

Among 53 magazines for which readership data were available in 2014, readership was lowest for *Popular Photography* and highest for *Parade* (Table S3). Magazine readership characteristics appear in Table 2.

We report increases and decreases in advertisement rate for each 10% unit increase in weighted readers' characteristics. Advertisement rate increased for chewing tobacco for male readers (compared to females, Table 3); for cigarettes, e-cigarettes, chewing tobacco, and total tobacco advertisements for 18–39 and 40–59 year-old readers (compared to 60–75+ year olds); for cigarettes, e-cigarettes, and total tobacco advertisements for readers who earn \$24,999 (compared to those who earn \$75,000); and for cigarettes for total magazine readers. Conversely, advertisement rate decreased for e-cigarettes for male readers (compared to females); for chewing tobacco and total tobacco advertisements for readers with high-school diploma or less (compared to those with more than high-school education); for cigarettes, e-cigarettes, and total tobacco advertisements for part-time employed readers (compared to unemployed readers); for chewing tobacco for readers who earn \$25,000–\$49,999 (compared to those who earn \$75,000); and for e-cigarettes and chewing tobacco for readers who earn \$50,000–\$74,999 (compared to those who earn \$75,000).

Compared to non-Hispanic Whites, rate decreased for cigarettes, e-cigarettes, and total tobacco advertisements for Hispanic readers; for e-cigarettes and total advertisements for non-Hispanic Black readers; and for e-cigarettes, chewing tobacco, and total advertisements for non-Hispanic other race readers, which included non-Hispanic Asian and non-Hispanic other race.

DISCUSSION

This is the first study to document trends in overall and seven product-specific tobacco magazine advertisements and associated expenditures from 2010 to 2014. Further, we identified readership characteristics that drive advertising placement. Overall number of advertisements and associated expenditures increased 84.63% and 152.87%. Increase in tobacco magazine advertising budget exceeded the 8.84% inflation rate during the same time period.²⁵ Results underline the importance of advertising for customer acquisition and retention.¹¹⁷

E-cigarette and smokeless tobacco magazine advertising dominated recent research efforts.¹³²³²⁶ Results, however, showed that cigarette magazine advertising warrants attention. Cigarette advertising made up 55% of total tobacco advertisements. Tobacco companies are entering emerging markets (e.g., e-cigarettes) to offset declining smoking prevalence¹⁵ and increasing social stigma around smoking.²⁷ Such products are marketed as alternatives to cigarettes that are flavorful, less harmful, lower in cost, and useful as smoking cessation aids.²⁶²⁸ However, studies show no effects of non-cigarette product use on odds of

quitting smoking.²⁸²⁹ Further, studies show that users of non-cigarette products such as e-cigarettes and smokeless tobacco progress to cigarette use instead of or in addition to non-cigarette products.³⁰³¹ Thus, in actuality, tobacco companies could be expanding their customers by recruiting new consumers and shifting single-product users to become multiple-product users where cigarettes remain their primary product.²⁶²⁸ Given the well-documented association between tobacco advertising and tobacco use,¹¹⁷ sustained cigarette magazine advertising is crucial to achieve such goals.

Product-specific advertisements and associated expenditures showed differential trends that reflected goals of tobacco companies and product use. Cigarettes were the top advertised product because they remain the primary product. Cigarettes outsold cigarette-equivalent packs of small cigars, roll-your-own, and moist snuff combined consistently from 2000 (21.1 vs. 2.5 billion) to 2007 (17.4 vs. 3.6 billion).³² Among 18 year-old adults, cigarettes remain the most consumed tobacco product (18.0%) compared to cigars, cigarillos, little cigars (2.0%), regular pipe (0.3%), water-pipe/hookah (0.5%), electronic cigarettes (1.9%), and smokeless tobacco (2.6%).⁶ Conversely, declining use of snus and dissolvable tobacco could explain the decrease in advertising. Snus use declined from 1.4% in 2009–2010³³ to 0.1% in 2012.³⁴ Delnevo and colleagues (2014) showed that dissolvable tobacco represented a negligible share of national sales of all smokeless tobacco market from 2005 to 2011.³⁵

Despite similar use patterns, results showed an increase in chewing tobacco advertising versus a decrease in cigar advertising. Smokeless tobacco use (i.e., chewing tobacco and snuff) was at 3.6%, whereas cigar use was at 5.4% among 18 years.¹ These prevalence data remained consistent from 2002 to 2012.¹ Thus, the reason for differential patterns in chewing versus cigar advertising remains unclear. One potential explanation is that tobacco companies are invested in products that overcome smoke-free policies.³⁶

Advertising is a key factor in successful launch of new products,³⁷ which explains peaks in e-cigarette and snus advertising early in these products' life cycle. E-cigarette advertising peaked after *Lorillard* acquired *Blu* in 2012 and after *Altria* launched *Mark Ten* and *RJ Reynolds* launched *Vuse* in 2013. Snus advertising peaked in 2010 when *Marlboro* snus went national. Prevalence of product-use coincides with the continued increase in e-cigarette advertising. Among adults 18 years, awareness of e-cigarettes increased from 40.9% to 57.9% and ever use near doubled from 3.3% to 6.2% from 2010 to 2011.¹⁰ Ever use of e-cigarettes increased from 9.8% and 2.5% in 2010 to 21.2% and 7.4% in 2011 among current and former smokers.¹⁰ Snus and dissolvable tobacco, on the other hand, failed to garner substantial market shares,³³³⁴³⁵ which could explain the downtrend in advertising these products.

Although our magazine readership data came from adults 18 years and older, our results on top advertised in magazines and top advertised brands echo concerns over youth exposure to tobacco advertising. Previous research documented tobacco companies' strategies to maximize youth exposure to tobacco magazine advertisements.²² King and Siegel (2001) and Krugman and colleagues (2006) classified magazines as youth oriented if 15% of their readers were youth or if they had 2 million youth readers between the ages of 12 and 17.²²³⁸ Several of these magazines appeared on our list (e.g., *Vogue*, *ESPN*, *Hot Rod*) and two of

which (i.e., *Rolling Stone*, *Sports Illustrated*) were among the top advertised in magazines (See S2 for complete list of magazines with youth readership according to previous studies). Further, adult-oriented magazines had youth readership (e.g., *GQ* and *Ebony* with 12.9% and 13.7% youth readership).²² Finally, top brands advertised (e.g., *Camel*, *Newport*) in this study are the most preferred among established middle- and high-school smokers.³⁹

Advertisement placement was associated with tobacco user readership characteristics. Media use research show that smokers read fewer magazines and newspapers than nonsmokers.⁴⁰ There is no evidence of differences in media use between users and nonusers of non-cigarette tobacco products. This suggests that tobacco advertisements reach more non-tobacco users in the demographic segments reported here.

Chewing tobacco advertisements rate increased in magazines with male (vs. female) readership. This is consistent with Curry and colleagues (2011) who found that magazines with 75% male readership (e.g., *Field & Stream*) had the highest number of smokeless tobacco advertisements.²⁶ Further, in 2012, smokeless tobacco use was at 7.1% for males versus 0.4% for females.¹ Advertisement rate also increased for cigarettes, e-cigarettes, and chewing tobacco with 18–39 and 40–59 (vs. 60–75+) year-old readers. In 2012, prevalence of daily smoking was at 9.6% for cigarettes and 1.5% for smokeless tobacco among those 65 years, the lowest compared to all other adult age groups.¹ Similarly, in 2011, e-cigarettes ever use was at 3.7% among 65 years, the lowest compared to other age groups.¹ From an economic standpoint, targeting younger consumers satisfies tobacco companies' need to recruit and retain life-long customers to maximize profits.²⁰

Advertisement rate for cigarettes and e-cigarettes increased among readers who earn \$24,999 (compared to those who earn \$75,000). In 2012, smoking prevalence was at 32.5% among those below poverty level, which was higher than prevalence among those at or above poverty level.¹ The 2011 HealthStyles Survey showed that e-cigarettes ever use was at 7.5% and 5.7% among those with an annual household income of <\$15,000 and \$15,000–\$24,999, which ranked second and third among all income brackets.¹ Conversely, high composition of readers with high-school education or less, partial employment, and racial and ethnic minorities was associated with decreased advertisement rates. One potential explanation is that tobacco companies promote tobacco use among these audiences through mechanisms other than magazine advertising. For example, point-of-sale marketing and price promotions are more prevalent in disadvantaged neighborhoods.⁴¹ Nonetheless, research is needed to explore associations between advertising placement and readership characteristics based on education level, employment status, and race and ethnicity.

Although KMI is a reliable vendor,¹³ data can be incomplete. If incomplete, then tobacco advertisements and associated expenditures reported here are underestimated. Magazine readership data were self-reported and, thus, subject to measurement and recall errors. Of 64 magazines that had tobacco advertisements in 2014, analyses of associations between readership characteristics and advertising placement excluded 11 magazines for which readership data were not available (e.g., *Details*). Excluded magazines had 123 advertisements (7% of total), which would have unlikely changed our results. Advertisement placement is a complex decision based on mixed approaches and multiple factors (e.g.,

consumer loyalty).¹⁶ Finally, we focus on tobacco magazine advertising. Other expenditures such as point-of-sale and online tobacco advertising and marketing were not examined.¹¹¹²

In conclusion, the World Health Organization recommended enforcing bans on tobacco advertising, promotions, and sponsorship to control tobacco use.⁴² We showed escalating trends of tobacco advertisements and corresponding expenditures in magazines from 2010 to 2014. We provided evidence of demographic targeting of magazine audiences in association with advertising placement. Because tobacco companies fail at self-regulation and override bans by channeling budgets to unregulated vehicles,¹⁷ a comprehensive advertising ban is superior to partial bans and would eliminate tobacco magazine advertising and reduce its effects on tobacco use.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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HIGHLIGHTS

- During 2010–2014, 5317 advertisements with \$796 million appeared in 322 magazines
- Advertisements increased over time for cigarettes, e-cigarettes and chewing tobacco
- Advertising placement correlated with readership of young, low-income tobacco users

Figure 1.
Number of magazine advertisements for top five advertised tobacco products, 2010 – 2014

Table 1

Associations between time (year) and number of tobacco advertisements and corresponding expenditures in U.S. dollars

	No of ads		Advertisement expenditures	
	<i>B (SE)</i>	<i>p</i>	<i>B (SE)</i>	<i>p</i>
Cigarettes	2.79 (0.25)	<.0001	\$457.94 (53.59)	<.0001
E-cigarettes	1.94 (0.21)	<.0001	\$336.36 (40.66)	<.0001
Snus	-1.24 (0.18)	<.0001	\$-171.96 (30.52)	<.0001
Chewing tobacco	0.78 (0.11)	<.0001	\$198.00 (34.27)	<.0001
Cigars	-0.24 (0.07)	.0013	\$-23.61 (7.80)	.0028
Snuff	0.10 (0.02)	.0001	\$22.86 (5.46)	<.0001
Dissolvable tobacco	-0.14 (0.03)	<.0001	\$-6.92 (2.20)	.0019
Multiple products	-0.004 (0.01)	.6976	\$-0.09 (1.74)	.9546
Other	0.05 (0.02)	.0234	\$4.51 (2.16)	.0377
Total	3.99 (0.48)	<.0001	\$816.61 (111.61)	<.0001

B (SE): Unstandardized coefficient (standard error).

p value.

Boldface indicates statistical significance.

Table 2

Magazine readership characteristics among adult tobacco users

	Sample characteristics		Weighted readership composition <i>N</i> = 53 magazines
	Unweighted <i>N</i> (%) <i>N</i> = 4,667	Weighted <i>N</i> ^a (%) <i>N</i> = 42,101.7	<i>M</i> (<i>SD</i>), Min - Max
Gender			
Male	2,542 (54.5)	25,534.9 (60.7)	61.23 (23.94), 17.22 – 93.86
Female	2,125 (45.5)	16,566.8 (39.3)	38.76 (23.94), 6.13 – 82.77
Age			
18–39	1,539 (33.0)	16,252.8 (38.6)	38.58 (11.49), 16.65 – 60.16
40–59	2,134 (45.7)	17,728.3 (42.1)	43.77 (6.71), 30.26 – 57.71
60–75 +	994 (21.3)	8,120.6 (19.3)	17.64 (7.74), 5.50 – 35.81
Education			
High school	2,566 (55.0)	22,701.5 (54.0)	55.01 (9.99), 37.91 – 81.51
> High school	2,101 (45.0)	19,400.2 (46.0)	44.98 (9.99), 18.48 – 62.08
Race and ethnicity			
Hispanic	1,050 (22.5)	4,669.4 (11.1)	12.81 (13.23), 3.10 – 100.00
Non-Hispanic black	508 (10.9)	5,639.3 (13.4)	22.68 (16.58), 0.00 – 83.37
Non-Hispanic other ^b	176 (3.8)	2,411.1 (5.7)	7.61 (3.48), 0.00 – 17.61
Non-Hispanic white	2,933 (62.8)	29,381.9 (69.8)	56.88 (19.11), 0.00 – 86.00
Employment			
Full-time employment	2,176 (46.6)	20,775.1 (49.3)	45.87 (10.07), 26.09 – 70.14
Part-time employment	544 (11.7)	4,570.1 (10.9)	15.37 (5.40), 6.87 – 32.36
Unemployed ^c	1,947 (41.7)	16,756.5 (39.8)	38.74 (7.99), 17.24 – 54.58
Income			
\$24,999	1,026 (22.0)	9,990.4 (23.7)	23.97 (7.93), 5.43 – 40.18
\$25,000 – \$49,999	1,139 (24.4)	10,621.7 (25.2)	28.68 (5.14), 17.97 – 39.64
\$50,000 – \$74,999	862 (18.5)	7,630.9 (18.1)	18.39 (3.72), 10.68 – 27.28
\$75,000	1,640 (35.1)	13,858.7 (33.0)	28.93 (8.43), 12.00 – 48.73

M (*SD*), Min - Max = mean (standard deviation), minimum – maximum.

Weighted readership composition was calculated at the magazine level by dividing weighted number of participants in a demographic segment (e.g., males) who read a magazine by weighted total number of participants who read that magazine.

^aNumbers are in thousands.

^bNon-Hispanic other included non-Hispanic Asians and some other race.

^cUnemployed included retired, temporarily unemployed, disabled, student, homemaker, and never worked.

Table 3

Associations between magazine readership characteristics of adult tobacco users and number of advertisements in 2014

Readership composition	Cigarettes	E-cigarettes	Chewing tobacco	Total
	IRR (LL – UL)	IRR (LL – UL)	IRR (LL – UL)	IRR (LL – UL)
Gender				
Male	0.97 (0.92 – 1.02)	0.91 (0.85 – 0.97)	2.09 (1.77 – 2.46)	1.02 (0.98 – 1.05)
Female	1.00	1.00	1.00	1.00
Age				
18–39 years	1.48 (1.33 – 1.66)	3.44 (2.75 – 4.31)	2.15 (1.58 – 2.91)	1.82 (1.67 – 1.99)
40–59 years	1.65 (1.36 – 1.99)	3.72 (2.65 – 5.23)	1.91 (1.25 – 2.94)	1.83 (1.58 – 2.12)
60–75+ years	1.00	1.00	1.00	1.00
Education				
High school	1.01 (0.90 – 1.12)	0.86 (0.74 – 1.01)	0.59 (0.45 – 0.77)	0.91 (0.83 – 0.98)
> High school	1.00	1.00	1.00	1.00
Race and ethnicity				
Hispanic	0.91 (0.85 – 0.98)	0.64 (0.51 – 0.78)	0.78 (0.59 – 1.02)	0.83 (0.78 – 0.88)
Non-Hispanic black	0.98 (0.93 – 1.04)	0.84 (0.75 – 0.94)	1.11 (0.91 – 1.35)	0.94 (0.89 – 0.98)
Non-Hispanic other race	0.86 (0.67 – 1.11)	0.49 (0.32 – 0.73)	0.36 (0.18 – 0.72)	0.62 (0.51 – 0.75)
Non-Hispanic white	1.00	1.00	1.00	1.00
Employment				
Full time employment	1.02 (0.88 – 1.17)	1.21 (0.96 – 1.54)	0.93 (0.68 – 1.26)	1.10 (0.99 – 1.23)
Part time employment	0.78 (0.63 – 0.96)	0.64 (0.46 – 0.90)	0.55 (0.29 – 1.04)	0.83 (0.71 – 0.98)
Unemployed	1.00	1.00	1.00	1.00
Income				
\$24,999	1.37 (1.14 – 1.63)	1.70 (1.29 – 2.23)	1.35 (0.95 – 1.91)	1.35 (1.19 – 1.54)
\$25,000 – \$49,999	0.98 (0.77 – 1.25)	1.22 (0.84 – 1.75)	0.44 (0.24 – 0.79)	0.92 (0.77 – 1.10)
\$50,000 – \$74,999	1.30 (0.99 – 1.70)	0.59 (0.39 – 0.89)	0.30 (0.15 – 0.58)	0.92 (0.75 – 1.13)
\$75,000	1.00	1.00	1.00	1.00
Weighted total magazine readers (in thousands)	1.0005 (1.0001 – 1.0009)	1.0002 (0.99 – 1.0009)	1.0006 (0.99 – 1.001)	1.0002 (0.99 – 1.0005)

N = 53 magazines.

IRR: Incident rate ratio.

LL - UL: 95% lower and upper confidence intervals limits.

Boldface indicates statistical significance.