### Title

The Reach and Impact of Direct Marketing via Brand Websites of Moist Snuff




### Journal

Tobacco Regulatory Science, 2(2)

### ISSN

2333-9748



### Authors

Timberlake, David S
Bruckner, Tim A
Ngo, Vyvian
et al.



### Publication Date

2016-04-01

### DOI

10.18001/trs.2.2.6

Peer reviewed

HHS Public Access

Author manuscript

*Tob Regul Sci*. Author manuscript; available in PMC 2017 April 01.

Published in final edited form as:

*Tob Regul Sci*. 2016 April ; 2(2): 153–165. doi:10.18001/TRS.2.2.6.

# The Reach and Impact of Direct Marketing via Brand Websites of Moist Snuff

**David S. Timberlake, PhD**,
Associate Professor, Program in Public Health, University of California, Irvine, CA.

**Tim A. Bruckner, PhD**,
Associate Professor, Program in Public Health, University of California, Irvine, CA.

**Vyvian Ngo, MPH**, and
Program in Public Health, University of California, Irvine, CA.

**Dmitriy Nikitin, BA**
Project Specialist, Program in Public Health, University of California, Irvine, CA.

## Abstract

**Objective—**Restricting tobacco marketing is a key element in the US Food and Drug Administration's (FDA) public health framework for regulating tobacco. Given the dearth of empirical data on direct marketing, the objective of this study was to assess the reach and impact of promotions on sales through snuff websites.

**Methods—**Nine brands of snuff, representing more than 90% of market share, were monitored for content of coupons, sweepstakes, contests, and other promotions on their respective websites. Monthly sales data and website traffic for the 9 brands, corresponding to the 48-month period of January 2011 through December 2014, were obtained from proprietary sources. A time-series analysis, based on the autoregressive, integrated, moving average (ARIMA) method, was employed for testing the relationships among sales, website visits, and promotions.

**Results—**Website traffic increased substantially during the promotion periods for most brands. Time-series analyses, however, revealed that promotion periods for 5 of 7 brands did not significantly correlate with monthly snuff sales.

**Conclusions—**The success in attracting tobacco consumers to website promotions demonstrates the marketing reach of snuff manufacturers. This form of direct marketing should be monitored by the FDA given evidence of adolescents' exposure to cigarette brand websites.

### Keywords

snuff; direct marketing; brand websites; sweepstakes

Correspondence Dr Timberlake; dtimberl@uci.edu.

**Human Subjects Statement**
This study did not entail the use of human subjects.

**Conflict of Interest Statement**
None declared.

The rise in consumption of moist snuff, illustrated by a 66% increase in sales between 2005 and 2011,[1] is the likely function of a change in product design,[2] targeted marketing,[3] and differential taxation of tobacco products. Many of these changes, which coincide with the decline in cigarette sales, reflect the tobacco industry's efforts to market snuff to smokers and a broader demographic of consumers. It is tempting to attribute the growth of snuff sales to the traditional media channels, such as magazine advertising, because traditional channels are easy to monitor and are well documented in the literature.[4–6] The Conwood Company, for example, increased its expenditures for magazine advertising by tenfold from 1998 ($.4 million) to 2005 ($4.0 million).[7] This increase in advertising expenditures is one factor that may have led to the unprecedented growth in popularity of the brand Grizzly from 5$^{th}$ in 2004 to 1$^{st}$ in 2009.[8] Other factors such as low price, the 2006 acquisition of Conwood (manufacturing company of Grizzly) by R.J. Reynolds, and use of other media channels may have contributed to the increase in Grizzly's market share.

Whereas the consumer magazine continues to be a prominent media channel for Grizzly, it is complemented by other forms of advertising.[9] Richardson et al reported that $1.5 million was spent on direct mail for the discount brand (27 mailings) from June 2012 through August 2012. According to the Federal Trade Commission,[10] smokeless tobacco advertising expenditures on direct mail exceeded the advertising expenditures on consumer magazines in the year 2011 ($7.5 million vs $4.8 million, respectively). Direct mail sent from the tobacco company to the tobacco consumer is one form of direct-to-consumer marketing, referred to as direct marketing. The $7.5 million spent on direct mail in 2011 underestimates total spending on direct marketing because the figure does not include expenditures on coupons, sweepstakes, entertainment events, brand loyalty programs, and other promotions.[11] The intent of direct marketing is to build relationships with customers and maintain brand loyalty through a variety of promotional events, disseminated through the mail and tobacco brand websites.[12]

The various forms of direct marketing are increasingly being propagated through tobacco brand websites. This expansion is evidenced by the website marlboro.com,[13] which attracts over one million visitors each month. Visitors to the website provide product and brand preferences so that marketing can be customized to the individual consumer. Once a consumer enters identifying information on a brand website (usually name, birthdate, and address), the consumer is entered into a database and is subsequently mailed giveaways, coupons, and information about sweepstakes. Brock et al reported that upon registering for various tobacco websites, they received over 600 marketing pieces by mail in one year.[12]

The dearth of empirical data on online tobacco marketing is a key research gap in the current era of tobacco regulation.[14] Ribisl noted the importance of surveying consumer exposure to online marketing and its potential impact on tobacco use.[14] Thus, the first objective of this study was to track changes in website coupons and other promotions on brand websites of moist snuff. The premise of the study is that consumers are drawn to the websites during sweepstakes that are advertised through direct mail and communicated via other sources (eg, social media). If the coupons appear frequently on the websites, then consumers may be enticed to download and redeem the coupons, subsequently leading to greater snuff sales. Without data on coupon redemption, we indirectly tested this hypothesis by examining the

promotion periods of sweepstakes and contests with respect to website traffic and monthly snuff sales. The study is intended to assess the reach and impact of website promotions for the purpose of monitoring and restricting tobacco marketing. This objective is a key element in the US Food and Drug Administration's (FDA) public health framework for regulating tobacco,[15] particularly in light of adolescents' exposure to tobacco marketing on cigarette brand websites.[16]

## METHODS

### Website Selection and Content

A convenience sample of 9 brand websites was selected to account for most of the market share of smokeless tobacco in the United States (US) (92% in 2014).[17] The websites were skoal.com, mygrizzly.com, freshcope.com, timberwolfsnuff.com, longhornsnuff.com, redman.com, snus.tobaccopleasure.com, goredseal.com, and generalsnus.com. The 9 websites were selected to represent premium snuff brands (Skoal, Copenhagen), discount snuff brands (Grizzly, Timber Wolf, Longhorn, Red Man, Red Seal), and snus brands (Camel Snus, General Snus). These brand websites differ from corporate websites (eg, ussmokeless.com) because they engage in direct marketing and attempt to restrict website access to adult tobacco consumers. Five of the 9 websites state that a website visitor must be a tobacco user over the age of 20, whereas the remaining 4 websites state that a visitor must be a tobacco user over the age of 18. In an attempt to block entry to underage visitors, the brand websites utilize age verification systems that vary in disclosure of personal identifiable information.[18] All 9 websites require name, mailing address and date of birth, but only 2 websites (ie, mygrizzly.com and snus. tobaccopleasure.com) require the last 4 digits of an individual's Social Security number.

A research staff member logged in and tracked the websites weekly from November 2013 through December 2014. The adult staff member gained access to the websites by creating an account based on his/her own personal information. The weekly tracking of the websites entailed the creation of archival copies of coupons, sweepstakes, and other promotions that were entered into a database. This process allowed the research team to document changes in the promotions that occurred throughout the observation period. Most of the promotions applied to all website visitors and were not customized to the individual consumer. Coupons, for example, indicated savings on a can/tin, tub or roll without restrictions on the type of tobacco leaf-cut (eg, fine-cut) or flavoring. Searches on the websites trinketsandtrash.org and online-sweepstakes.com were then conducted to document promotions (excluding coupons) from an earlier period, January 2011 through October, 2013. The starting date of January, 2011 was chosen on the basis of cost and availability of data on sales and Internet traffic. The website online-sweepstakes. com is considered one of the largest online listings of sweepstakes,[19] and includes expired sweepstakes dating back to 2002. TrinketsandTrash.org, a website supported by the School of Public Health at Rutgers University, has an engine for searching for marketing materials from the tobacco industry by tobacco brand, item date, keywords, etc. Searches from the online sources yielded descriptions, start dates, and expiration dates of the sweepstakes for each of the 9 brands. The searches completed data

collection for a time-series analysis of promotions, Internet traffic, and snuff sales from January 2011 through December 2014.

## Internet Traffic and Sales

Unique visitors to the 9 websites, aggregated monthly from 2011 through 2014, were estimated from the proprietary firm Compete, a Kantar Media Company. The estimates were derived from a multisource panel of more than 2 million Internet users composing a nationally representative sample of adult Internet users in the US.[20] The weighted estimate for unique visitors represents the number of adult Internet users who made one or more visits to a given snuff website within the month. Compete utilizes a sophisticated algorithm for integrating the data sources (ie, panel data, clickstream data), followed by normalization techniques for weighting and projecting metrics (eg, website visitation) from the panel to the population of adult Internet users in the US.

The sales data for this study were obtained from the Nielsen Company's Convenience Track System.[17] This data source was chosen because snuff purchases, assessed from barcode readings and in-store audits, were obtained from a nationally representative sample of US convenience stores. These stores, which account for 93% of smokeless tobacco sales nationwide,[1] include independent stores, chain and non-chain stores. The sales data were reported as sale units aggregated every 4 weeks from 2011 through 2014. Because the sales data (N = 52 4-week periods) did not exactly correspond to the website traffic (N = 48 months), sales data from one 4-week period (late December to mid-to-late January) were excluded from each year. This adjustment yielded a total of 48 data points with a slight lag between website traffic and sales data for the earlier part of a given year. For example, website traffic for January 1 through January 31, 2011 preceded sales data for the 4-week period spanning January 22 through February 19, 2011.

## Time-Series Analysis

We applied autoregressive, integrated, moving average (ARIMA) methods, recommended in the epidemiologic literature,[21] to test the relation among promotions (excluding coupons), website traffic, and sales. The 4 types of online promotions included in the time-series analysis were games, contests, sweepstakes, and giveaways. Coupons were excluded from the analysis because of their ever presence on the websites (Table 1). Positive associations with monthly snuff sales (or website traffic) occur when the volume of sales (measured in cans of snuff) exceeds the volume expected from periods when promotions were not held. Snuff sales, however, may exhibit temporal patterns such as a rising or declining trend in sales, seasonality, or the tendency for low values to be followed similarly by low values. These patterns, collectively referred to as autocorrelation, complicate correlational tests because the expected value of snuff sales is not the mean of sales from earlier months.

Time-series methods, developed by Box and Jenkins,[22] address the issue of autocorrelation by empirically identifying and removing patterns in the dependent variable. The time-series routines include autocorrelation parameters via an ARIMA error term such that the residual sales exhibit no autocorrelation and have a monthly expected value of 0. The ARIMA approach uses autoregressive (AR) and moving average (MA) parameters to model the

tendency to remain elevated, be depressed, or oscillate. AR parameters best describe patterns that persist for relatively long periods, whereas MA parameters parsimoniously describe less persistent patterns. The integrated (I) parameter serves as a "differencing" operator if a series exhibits a strong trend (ie, non-stationary mean).

The 2 panels in Figure 1 illustrate the ARIMA process by plotting the sales of Grizzly snuff before (top panel) and after (bottom panel) removal of autocorrelation. The top panel shows strong trend and seasonality in sales. By contrast, the bottom panel shows no such patterns; sales in each month are serially independent. We use this "residual" data as the dependent variable series when examining the relation between promotions (or web traffic) and sales volume.

After applying time-series routines to each of the 9 dependent variables (ie, sales of the 9 brands), we inserted the promotions variable into the equation to determine whether it correlated positively with a concurrent rise in sales. The variable had a binary response denoting the presence or absence of any promotion, which most often was a contest or sweepstake. Contests and sweepstakes were treated the same in the analysis because there was no reason to believe that they differed regarding website traffic or snuff sales. Multiple promotions occurred concurrently for some brands, but were too infrequent to model on a continuum. Furthermore, unlike the coupons, the contests and sweepstakes occurred intermittently throughout the observation period, thereby facilitating analysis of the binary variable for most of the brands. For example, the brands Skoal and Grizzly held promotions for 13 and 24 months, respectively, of the 48 total months observed in the study. We also examined the relationship between the promotions and website traffic in a separate set of models. Furthermore, we repeated the analysis of snuff sales using website traffic as the independent variable to examine whether website activity, more generally, corresponded with an increase in snuff sales. For all analyses, we specified a concurrent relation (ie, lag of 0 months) due to the slight lag already induced by the exclusion of 4 data points (see section Internet traffic and sales). All analyses were conducted with software from Scientific Computing Associates (version 6.0; Oak Brook, IL).

## RESULTS

### Website Coupons

Eight of the 9 websites offered a coupon at the beginning of the observation period (Table 1). A change in coupon represents the replacement of the coupon for either a recycled or new coupon (dollar value or coupon type). The change does not represent the removal of a coupon that was not replaced. Hence, a coupon appeared on the majority of snuff websites throughout the observation period. Premium brands like Skoal and Copenhagen infrequently changed the type or value of their online coupons. In contrast, websites for the discount brands like Longhorn, Red Man, and Timber Wolf frequently changed their coupons from week to week. However, Swedish Match, the company of the 3 discount brands, often recycled the coupons from prior weeks without having posted coupons with new values.

Some brands offered a straight discount coupon[12] such as a $1 off one can of Grizzly. Another type of coupon was the floor price which specified a certain dollar value for the

product (eg, $1/can of General Snus). The third type of coupon, the buy-one-get-one-free coupon, was observed less frequently than the other coupon types. Some brands offered multiple coupons at a given time, such as 2 straight discount coupons that varied in value. The predominant marketing theme in the coupons was savings, exemplified by such phrases as “Bag a Buck or Two” and “Save some coin on your favorite can.”

### Sweepstakes and Other Promotions

Te online promotions were a common form of direct marketing, as evidenced by 7 of 9 snuff brands that held at least one non-coupon promotion from 2011 through 2014; Red Seal and Longhorn were the exceptions. Emerging snuff brands like Camel Snus utilized this form of marketing more frequently than established brands like Copenhagen. The former and latter brands held promotions on 39 and 21 months, respectively, of the 48 months of observation. Most promotions lasted several months and sometimes overlapped for a given brand. They were often held in the summer, but did occur in the other seasons. As Table 2 illustrates, games and giveaways yielded nominal prizes and gifts (eg, bottle of hot sauce), in contrast to the substantial prizes awarded in contests and sweepstakes (eg, Timber Wolf’s $100,000 grand prize). The latter promotions highlighted themes or notable events, such as Skoal’s 80 Days of Saturdays celebrating the company’s 80$^{th}$ birthday. Grizzly sponsored creative promotions centered on the theme of masculinity, exemplified by Writing the Man Rules Challenge Contest, which required contestants to write their “man rules” on each week’s theme. Like other promotions, this contest ran for multiple weeks with weekly grand prizes and instant-win prizes. Restrictions on online entry into the various promotions varied from one entry per day to one entry per promotion.

A descriptive analysis of the marketing reach of the promotions revealed that the promotion dates coincided with the number of unique visitors to the snuff websites. This was evident for the 3 featured websites in Figure 2, particularly Redman. com which experienced a substantial decline in Internet traffic following termination of its 2 promotions in 2011 and 2012. The dates for skoal.com and mygrizzly.com correspond to peak website traffic during the online promotions.

### Promotions, Website Traffic and Sales

For most products, time-series methods revealed seasonality in monthly website traffic as well as other effects (Appendices A through G). After removal of these patterns, website traffic increased substantially during months of active sweepstakes, contests or other promotions (Table 3). This finding held for 5 of the 7 snuff brands that sponsored the online promotions. For instance, promotions for Skoal corresponded to an additional 88,695 “hits” above the level expected from the non-promotion periods, representing an increase of more than 2 standard deviations. By contrast, Camel Snus and General Snus exhibited no association between the promotions and website traffic.

Sales of several snuff brands also demonstrated a strong trend (eg, Skoal), thereby requiring us to render the trend mean-stationary. For the majority of snuff products (5 of 7), the association between promotions and sales was not statistically significant as demonstrated by the second column in Table 3; the exceptions were Red Man and Timber Wolf. The

regression coefficients for Red Man (β = 46,301) and Timber Wolf (β = 44,072) indicate a substantial increase in snuff sales corresponding to a promotion period. As shown in the last column of Table 3, website traffic in general was not associated with snuff sales.

## DISCUSSION

These findings indicate that the brand websites are successful in attracting tobacco consumers during sweepstakes and other promotions. The success in reaching consumers was evident for the popular brands like Skoal and Grizzly, as well as the less popular brands like Red Man. The observation that coupons were a central feature of the websites provided rationale for testing associations among snuff sales, website traffic, and the promotions. The premise was that consumers would visit the brand websites during sweepstakes/contests, download the coupons, and redeem the coupons during promotion periods. The null association between promotions and snuff sales for 5 of 7 brands raises the question of whether direct marketing is primarily intended to enhance brand loyalty in the long term or boost sales in the short term. The latter is supported by the notion that sales promotions aim to stimulate behavior, as opposed to advertising which has a long-term effect from conditioning a consumer's perception of a product.[23] Redmond reported that during the rapid expansion of sales promotions for cigarettes (1983–1992), expenditures for such promotions were highly correlated with the initiation of daily smoking among ninth graders.[23]

The absence of a short-term impact of promotions on sales is not what we had expected. Tough, it is plausible that the substantial increase in website traffic during promotions could increase customer satisfaction and brand loyalty over time.[11] Without having measured these outcomes, it would be unfounded to reach such a conclusion. On the other hand, it would be premature to conclude that the promotions were a failure based on the null associations observed between promotions and sales. Unfortunately, any long-term effect of promotions would be undetected in the current study. It can be argued that momentary increases in sales may not occur because marketing tactics (ie, couponing) originate from the tobacco industry's efforts to offset the decline in sales resulting from increases in cigarette taxes/prices.[24] Empirical evidence of the effect of direct marketing comes from a pre- and post-assessment of the 1998 Master Settlement Agreement (MSA).[25] Loomis et al reported that following the MSA, the proportion of promoted cigarette sales increased substantially and correlated with the imposition of state excise taxes. The overall decrease in cigarette consumption, resulting from the increase in cigarette prices, may have been partially offset by the rise in marketing expenditures that led up to the 1998 MSA.[26]

Our assessment of the reach and impact of direct marketing was limited by a number of factors. First, the impact of promotions on sales, via the redemption of website coupons, could be assessed only indirectly through enumeration of website visits during the promotion periods.

The alternative of measuring coupon use directly through a proprietary marketing panel would have yielded few affirmative responses due to the low prevalence of snuff use. The second limitation was the lack of a metric for assessing brand loyalty and customer

satisfaction. Without such a metric, we could only speculate that direct marketing through brand websites increases customer retention. The third limitation was the use of 2 online resources, online-sweepstakes.com and trinketsandtrash. org, for identifying sweepstakes and other promotions that predated our weekly tracking of brand websites. However, the chance of not identifying a major sweepstake was relatively small given the breadth of the 2 online resources. The fourth limitation was the inability to characterize the website visitors, such as demographics (eg, adolescent vs adult), history and extent of snuff use, and smoking status. The fifth limitation was the discrepancy in the reporting of sales data in 4-week periods versus the monthly reporting of website traffic. This discrepancy required us to exclude arbitrarily one 4-week period (ie, late December to mid-to-late January), which created a slight lag between website traffic and sales data for the earlier part of a given year. The sixth limitation was the potential for a type II error arising from analysis of fewer than 50 data points.[22] Increasing the sample size for greater statistical power was not feasible because sales and Internet traffic data were unattainable for the years prior to 2010, and exorbitantly expensive for the 12 months in 2010 (ie,12 data points). Lastly, the ARIMA models did not include variables that could have affected snuff sales, such as state excise taxes for cigarettes and snuff. Unlike us, Dave and Saffer were able to obtain and model state-level measures in estimating an elasticity of .06 for exposure to smokeless tobacco advertising.[6]

Despite the limitations, we demonstrated that brand websites are a significant source of direct marketing for snuff manufacturers. Promotions such as sweepstakes and contests draw a large number of website visitors who are exposed to coupons and other forms of direct marketing that could strengthen consumers' brand loyalty. Thus, it is important for tobacco control advocates to track the brand websites for identifying emerging practices in marketing that are being directed to snuff consumers.

## IMPLICATIONS FOR TOBACCO REGULATION

Restricting tobacco marketing is one of 8 elements in the FDA's public health framework for regulating tobacco.[15] Ashley et al note the importance of researching marketing via the emerging media channels, such as tobacco brand websites.[15] Our study demonstrates that consumers are drawn in large numbers to snuff websites during contests and sweepstakes. The 2009 Tobacco Control Act does not restrict the marketing content of adult-only tobacco websites in the same manner as other media channels. Yet, some data have challenged the notion that adult-only tobacco websites are impervious to adolescents who attempt to enter them,[16] suggesting that age-verification methods are fallible. Soneji et al report that 6% of 15-to-17-year-olds had visited a cigarette brand website, possibly through the creation of a bogus identity or the login information of an adult family member.[16] Either way, the finding indicates that adolescents are being exposed to online tobacco marketing. If the snuff websites are proven to be a threat to public health, notably adolescents,[15] then the websites could be regulated by the FDA as authorized by the 2009 Tobacco Control Act.

## Acknowledgments

This work was supported by the National Institute of Drug Abuse and the Family Smoking Prevention and Tobacco Control Act (R03DA027950). We thank the reviewers for their helpful suggestions.

## References


1. Delnevo CD, Wackowski OA, Giovenco DP, et al. Examining market trends in the United States smokeless tobacco use: 2005–2011. Tob Control. 2014; 23(2):107–112. [PubMed: 23117999]
2. Alpert HR, Koh H, Connolly GN. Free nicotine content and strategic marketing of moist snuff tobacco products in the United States: 2000–2006. Tob Control. 2008; 17(5):332–338. [PubMed: 18669556]
3. Mejia AB, Ling PM. Tobacco industry consumer research on smokeless tobacco users and product development. Am J Public Health. 2010; 100(1):78–87. [PubMed: 19910355]
4. Morrison MA, Krugman DM, Park P. Under the radar: smokeless tobacco advertising in magazines with substantial youth readership. Am J Public Health. 2008; 98(3):543–548. [PubMed: 17600263]
5. Curry LE, Pederson LL, Stryker JE. The changing marketing of smokeless tobacco in magazine advertisements. Nicotine Tob Res. 2011; 13(7):540–547. [PubMed: 21436294]
6. Dave D, Saffer H. Demand for smokeless tobacco: role of advertising. Health Econ. 2013; 32(4): 682–697.
7. Alpert HR, Koh HK, Connolly GN. After the master settlement agreement: targeting and exposure of youth to magazine tobacco advertising. Health Aff. (Millwood). 2008; 27(6):w503–w512. [PubMed: 18826968]
8. Timberlake DS, Pechmann C. Trends in the use and advertising of discount versus premium snuff. Nicotine Tob Res. 2013; 15(2):474–481. [PubMed: 23024245]
9. Richardson A, Ganz O, Stalgaitis C, et al. Noncom-bustible tobacco product advertising: how companies are selling the new face of tobacco. Nicotine Tob Res. 2014; 16(5):606–614. [PubMed: 24379146]
10. Federal Trade Commission. [Accessed February 6, 2016] Federal Trade Commission Smokeless Tobacco Report for 2012. 2014. Available at: https://www.ftc.gov/system/files/documents/reports/federal-trade-commission-smokeless-tobacco-report-2012/150327-2012smokelesstobaccorpt.pdf
11. Lewis MJ, Yulis SG, Delnevo C, et al. Tobacco industry direct marketing after the Master Settlement Agreement. Health Promot Pract. 2004; 5(3):75S–83S. [PubMed: 15231100]
12. Brock B, Schillo BA, Moilanen M. Tobacco industry marketing: an analysis of direct mail coupons and giveaways. Tob Control. 2015; 24(5):505–508. [PubMed: 25052861]
13. Ilakkuvan V, Cantrell J, Vallone D'Action. Adventure. Special offers.': How Marlboro engages consumers on its website. Tob Control. 2014; 23(5):455–456. [PubMed: 23853251]
14. Ribisl KM. Research gaps related to tobacco product marketing and sales in the Family Smoking Prevention and Tobacco Control Act. Nicotine Tob Res. 2012; 14(1):43–53. [PubMed: 21690316]
15. Ashley DL, Backinger CL, van Bemmel DM, et al. Tobacco regulatory science: research to inform regulatory action at the Food and Drug Administration's Center for Tobacco Products. Nicotine Tob Res. 2014; 16(8):1045–1049. [PubMed: 24638850]
16. Soneji S, Ambrose BK, Lee W, et al. Direct-to-consumer tobacco marketing and its association with tobacco use among adolescents and young adults. J Adolesc Health. 2014; 55(2):209–215. [PubMed: 24661738]
17. Nielsen Company. [Accessed August 15, 2015] Available at: http://www.nielsen.com/us/en/links/service_descriptions.html
18. Williams RS, Derrick J, Ribisl KM. Electronic cigarette sales to minors via the Internet. JAMA Pediatrics. 2015; 169(3):e1563. [PubMed: 25730697]
19. Grauschopf, S. [Accessed June 3, 2015] Online-Sweepstakes.com: Pros and cons. Available at: http://contests.about.com/od/sweep-stakeslisting1/gr/OLS.htm
20. Compete. [Accessed February 6, 2016] Overview of Data Methodology and Practices. 2010. Available at: https://media.compete.com/site_media/upl/img/Compete%20Data%20Methodology.pdf
21. Catalano R, Serxner S. Time series designs of potential interest to epidemiologists. Am J Epidemiol. 1987; 126(4):724–731. [PubMed: 3631061]
22. Box, G.; Jenkins, G.; Reinsel, G. Time Series Analysis: Forecasting and Control. 3rd. London, UK: Prentice Hall; 1994.

23. Redmond WH. Effects of sales promotion on smoking among U.S. ninth graders. Prev Med. 1999; 28(3):243–250. [PubMed: 10072741]
24. Chaloupka FJ, Cummings KM, Morley CP, et al. Tax, price and cigarette smoking: evidence from the tobacco documents and implications for tobacco company marketing strategies. Tob Control. 2002; 11(Suppl 1):I62–I72. [PubMed: 11893816]
25. Loomis BR, Farrelly MC, Nonnemaker JM, et al. Point of purchase cigarette promotions before and after the Master Settlement Agreement: exploring retail scanner data. Tob Control. 2006; 15(2):140–142. [PubMed: 16565464]
26. Keeler TE, Hu TW, Ong M, et al. The US National Tobacco Settlement: the effects of advertising and price changes on cigarette consumption. Applied Economics. 2004; 36:1623–1629.

## Appendix A

### Skoal

Full Time-Series Results, Including ARIMA Parameters, over the 48 Time Points Examining Website Traffic and Snuff Sales as a Function of Sweepstakes, Contests, and Other Promotions

| Brand: Skoal | Promotions predicting Website traffic "hits" | Promotions predicting snuff can sales | Website traffic predicting snuff can sales |
|---|---|---|---|
| **Differencing** | - | First differences[a] | -- |
| **Constant** | 35,267 (12,740)* | -- | 11,778,600 (557,890)*** |
| **Promotions or website traffic** | 88,695 (11,176)*** | 77,914 (70,678) | .79 (.43)[b] |
| **MA Parameters** | - | - | MA(1): −.84 (.11)*** |
| **AR Parameters** | AR(1): .68 (.11)*** | AR(1): .35 (.16)*<br>AR(12): .35 (.13)* | AR(1): −.85 (.09)***<br>AR(12): −.36 (.06)** |

*p < .05;
**p < .01;
***p < .001 (all tests 2-tailed)

Note.

[a]First differences refers to the use of a difference operator at lag 1 month which indicates that we differenced the non-stationary series (ie, value at t-1 subtracted from value t) to render it mean-stationary.

[b]p < .10

## Appendix B

### Grizzly

Full Time-Series Results, Including ARIMA Parameters, over the 48 Time Points Examining Website Traffic and Snuff Sales as a Function of Sweepstakes, Contests, and Other Promotions

| Brand: Grizzly | Promotions predicting Website traffic "hits" | Promotions predicting snuff can sales | Website traffic predicting snuff can sales |
|---|---|---|---|
| **Differencing** | -- | -- | -- |
| **Constant** | 55,462 (22,335)* | 270,383,000 (688,580)*** | 273,784,000 (775,750)** |
| **Promotions or website traffic** | 46,746 (11,397)*** | −27,680 (71,466) | −1.01 (.79) |
| **MA Parameters** | -- | -- | -- |
| **AR Parameters** | AR(1): .72 (.10)*** | AR(1): .56 (.13)*** | MA(1): .57 (.12)*** |

| Brand: Grizzly | Promotions predicting Website traffic "hits" | Promotions predicting snuff can sales | Website traffic predicting snuff can sales |
|---|---|---|---|
| | | AR(12): .64 (.05)*** | MA(12): .66 (.05)*** |

* p < .05;
** p < .01;
*** p < .001 (all tests 2-tailed)

## Appendix C

### Copenhagen

Full Time-Series Results, Including ARIMA Parameters, over the 48 Time Points Examining Website Traffic and Snuff Sales as a Function Of Sweepstakes, Contests, and Other Promotions

| Brand: Copenhagen | Promotions predicting Website traffic "hits" | Promotions predicting snuff can sales | Website traffic predicting snuff can sales |
|---|---|---|---|
| **Differencing** | -- | -- | -- |
| **Constant** | 71,409 (14,310)*** | 26,359,500 (679,530)*** | 26,334,900 (716,600)*** |
| **Promotions or website traffic** | 52,863 (23,368)* | −116,230 (103,680) | .03 (.46) |
| **MA Parameters** | -- | - | -- |
| **AR Parameters** | -- | AR(1): .71 (.11)***<br>AR(12): .57 (.07)*** | AR(1): .72 (.11)***<br>AR(12): .58 (.08)*** |

* p < .05;
** p < .01;
*** p < .001 (all tests 2-tailed)

## Appendix D

### Red Man

Full Time-Series Results, Including ARIMA Parameters, over the 48 Time Points Examining Website Traffic and Snuff Sales as a Function Of Sweepstakes, Contests, and Other Promotions

| Brand: Red Man | Promotions predicting Website traffic "hits" | Promotions predicting snuff can sales | Website traffic predicting snuff can sales |
|---|---|---|---|
| **Differencing** | -- | First differences[a] | First differences[a] |
| **Constant** | 5633 (497)*** | -- | −9169 (3,389)** |
| **Promotions or website traffic** | 17,511 (1,284)*** | 46,301 (15,971)*** | .73 (.61) |
| **MA Parameters** | -- | -- | -- |
| **AR Parameters** | AR(6): −.38 (.11)*** | AR(3): −.39 (.14)** | AR(3): −.32 (.14)* |

* p < .05;
** p < .01;
*** p < .001 (all tests 2-tailed)

Note.

[a]First differences refers to the use of a difference operator at lag 1 month which indicates that we differenced the non-stationary series (ie, value at t-1 subtracted from value t) to render it mean-stationary.

## Appendix E

### Timber Wolf

Full Time-Series Results, Including ARIMA Parameters, over the 48 Time Points Examining Website Traffic and Snuff Sales as a Function of Sweepstakes, Contests, and Other Promotions

| Brand: Timber Wolf | Promotions predicting Website traffic "hits" | Promotions predicting snuff can sales | Website traffic predicting snuff can sales |
|---|---|---|---|
| **Differencing** | -- | First differences[a] | First differences[a] |
| **Constant** | | 18,179 (5,924)*** | −29,460 (11,956)*** |
| **Promotions or website traffic** | 14,536 (2,952)*** | 44,072 (20,308)* | .55 (.50) |
| **MA Parameters** | -- | -- | -- |
| **AR Parameters** | AR(1): .95 (.04)*** | -- | -- |

*p < .05;
**p < .01;
***p < .001 (all tests 2-tailed)

Note.

[a]First differences refers to the use of a difference operator at lag 1 month which indicates that we differenced the non-stationary series (ie, value at t-1 subtracted from value t) to render it mean-stationary.

## Appendix F

### Camel Snus

Full Time-Series Results, Including ARIMA Parameters, over the 48 Time Points Examining Website Traffic and Snuff Sales as a Function of Sweepstakes, Contests, and Other Promotions

| Brand: Camel Snus | Promotions predicting Website traffic "hits" | Promotions predicting snuff can sales | Website traffic predicting snuff can sales |
|---|---|---|---|
| **Differencing** | -- | First differences[a] | First differences[a] |
| **Constant** | -- | 14,472 (4,580)** | 15,478 (4,959)** |
| **Promotions or website traffic** | 29,683 (19,813) | 53,569 (34,898) | .13 (.16) |
| **MA Parameters** | -- | MA(2): .59 (.11)*** | MA(2): .62 (.12)*** |
| **AR Parameters** | AR(1): .83 (.07)*** | -- | -- |

*p < .05;
**p < .01;
***p < .001 (all tests 2-tailed)

Note.

[a]First differences refers to the use of a difference operator at lag 1 month which indicates that we differenced the non-stationary series (ie, value at t-1 subtracted from value t) to render it mean-stationary.

# Appendix G

## General Snus

Full Time-Series Results, Including ARIMA Parameters, over the 48 Time Points Examining Website Traffic and Snuff Sales as a Function of Sweepstakes, Contests, and Other Promotions

| Brand: General Snus | Promotions predicting Website traffic "hits" | Promotions predicting snuff can sales | Website traffic predicting snuff can sales |
|---|---|---|---|
| **Differencing** | -- | First differences[a] | First differences[a] |
| **Constant** | 4496 (1,070)*** | 5468 (2,468)* | 5421 (2445)* |
| **Promotions or website traffic** | 2185 (1,451) | 928 (5,811) | .36 (.26) |
| **MA Parameters** | - | MA(1): −.42 (.13)*** | MA(1): −.45 (.13)*** |
| **AR Parameters** | AR(3): .50 (.13)*** | -- | -- |

*p < .05;
**p < .01;
***p < .001 (all tests 2-tailed)

Note.

[a]First differences refers to the use of a difference operator at lag 1 month which indicates that we differenced the non-stationary series (ie, value at t-1 subtracted from value t) to render it mean-stationary.

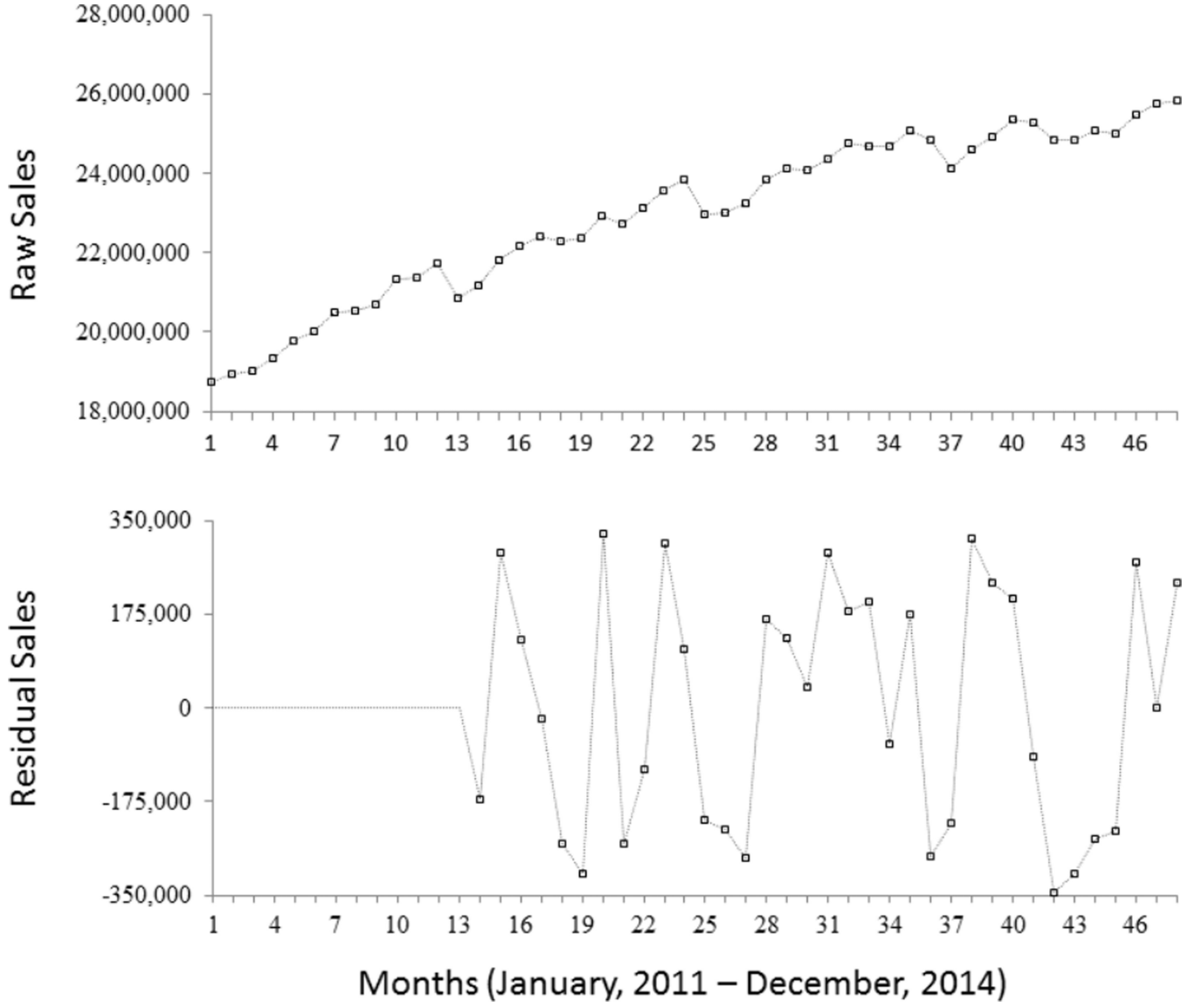


**Figure 1.**

Plots of Grizzly Raw Sales and Residual Sales across 48 Months Following the Detection and Removal of Autocorrelation

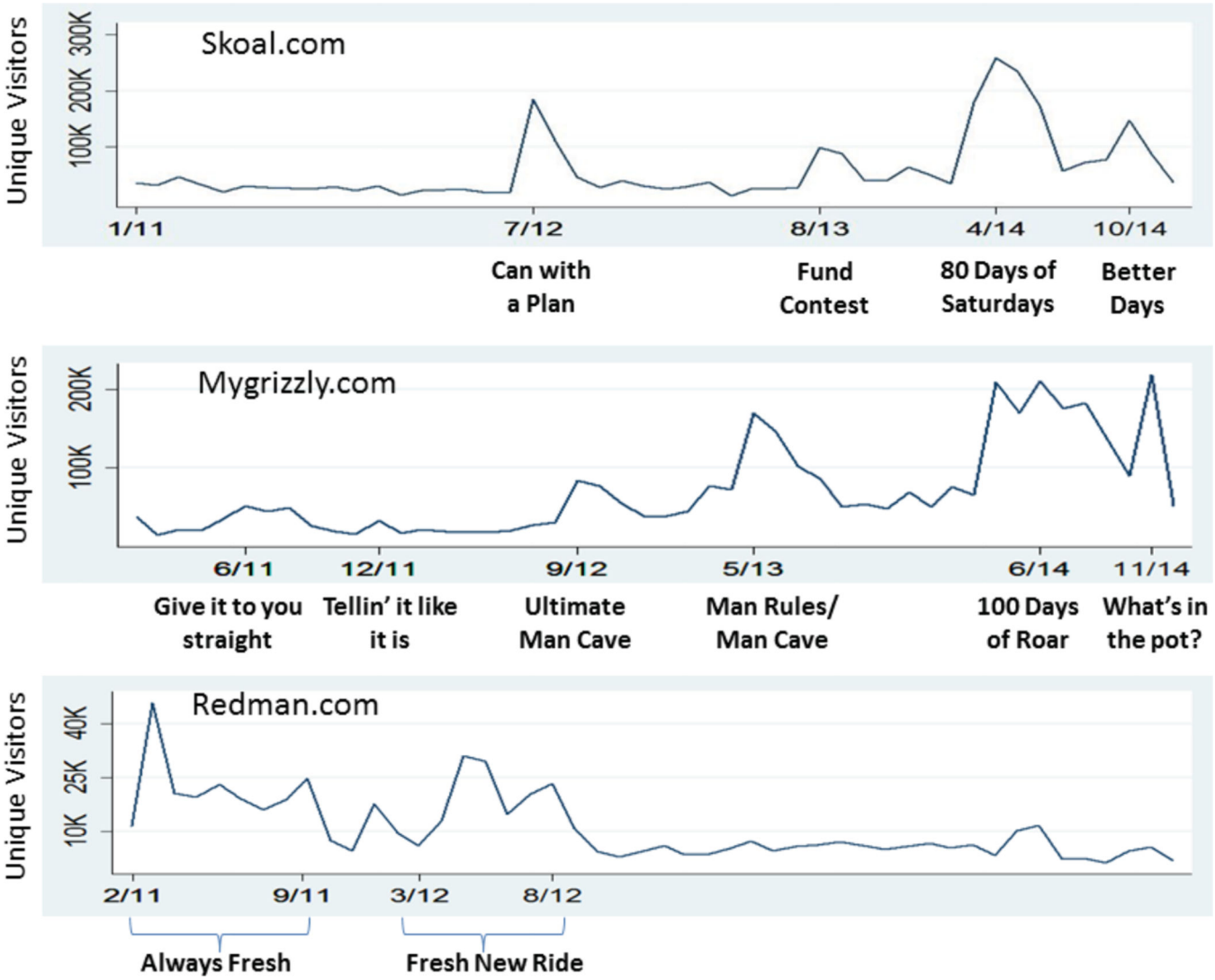


**Figure 2.**

Temporal Relationship between Number of Unique Website Visitors and Promotion Dates (1/2011 – 12/2014)

## Table 1

Characteristics of Online Coupons for 9 Snuff Brands, Tracked Weekly from November 2013 through December 2014

| | | No. Coupon Changes | | |
|---|---|---|---|---|
| **Brand** | **Coupon(s) on 11/1/13** | **Total[c]** | **New $[d]** | **Advertising phrase in coupon** |
| **Camel Snus**[e] | $1 off one tin | 0 | 0 | Coupon Me |
| **Copenhagen**[f] | $3.50 off roll[a] | 2 | 2 | Weekly coupon to mobile phone |
| **General Snus**[g] | $1/can; $2 off any can | 1 | 0 | Saving has never been so satisfying |
| **Grizzly**[e] | $1 off one can | 1 | 1 | BAG A BUCK OR TWO! |
| **Longhorn**[g] | $2.50 off roll or tub | 14 | 2 | Real Dip. Real Deal. |
| **Red Man**[g] | $1 off 1 can; $3 off 2 cans | 17 | 2 | Fresh Red Man Savings |
| **Red Seal**[f] | $1 off 1 can; $3.75 off roll | 3 | 0 | The Red Seal Monthly Deal |
| **Skoal**[f] | Buy one get one free[b] | 3 | 3 | Save some coin on your favorite can |
| **Timber Wolf**[g] | None | 11 | 4 | Claim your Timber Wolf coupon |

Note.

[a] Contains 5 cans

[b] Applies to Skoal Classic (also $1 off Skoal Xtra)

[c] Total number of replacements for either a recycled coupon or a new coupon (type or value) from 11/1/13 through the period 11/6/13 −12/31/14

[d] Number of new coupons with a new coupon value ($)

[e] Reynolds American (Parent Company)

[f] Altria Group,Inc. (Parent Company)

[g] Swedish Match

## Table 2

Examples of Online Promotions in the Form of Games, Contests, Sweepstakes, and Giveaways

| Type of promotion | Sponsor; Name of promotion | How to play/win | Prize examples |
|---|---|---|---|
| Game | Camel Snus; Family Flavor Shuffle Game | Shuffle the Camel Snus tins | $15 MasterCard gift card |
| Contest | Grizzly; Writin' the Man Rules Challenge | Write your own "man rule" on a weekly theme (≤50 words) | Trip to Vegas poker championship |
| Contest | Camel Snus; Ad Maker Contest | Create advertisement using graphics, colors in website tool | $250 and publication of ad |
| Sweepstake | Timber Wolf; Welcome to Owensboro, KY | Claim plot of land on virtual map of Owensboro, KY | Hunt for $100,000 (grand prize) |
| Sweepstake | Copenhagen; American Craftsmanship Sweepstakes | Choose one of 13 drawings to participate in | Poker table, grill, flashlight, etc. |
| Giveaway | Grizzly; Hot sauce giveaway | Select type of hot sauce and create your own custom label | Hot sauce |

## Table 3

Time-series Results over the 48 Time Points Examining Website Traffic and Snuff Sales as a Function of Sweepstakes, Contests and Other Promotions

| | Promotions predicting Website traffic "hits" | Promotions predicting snuff can sales | Website traffic predicting snuff can sales |
|---|---|---|---|
| **Brand** | **β (SE)** | **β (SE)** | **B (SE)** |
| **Skoal** | 88,695 (11,176) *** | 77,914 (70,678) | .79 (.43)[a] |
| **Grizzly** | 46,746 (11,397) *** | −27,680 (71,466) | −1.01 (.79) |
| **Copenhagen** | 52,863 (23,368) * | −116,230 (103,680) | .03 (.46) |
| **Red Man** | 17,511 (1,284) *** | 46,301 (15,971) ** | .73 (.61) |
| **Longhorn** | n/a[b] | n/a[b] | −4.03 (2.55) |
| **Red Seal** | n/a[b] | n/a[b] | −3.01 (.52) **[c] |
| **Timber Wolf** | 14,536 (2,952) *** | 44,072 (20,308) * | .55 (.50) |
| **Camel Snus** | 29,683 (19,813) | 53,569 (34,898) | .13 (.16) |
| **General Snus** | 2185 (1,451) | 928 (5,811) | .36 (.26) |

* p < .05;

** p < .01;

*** p < .001 (all tests 2-tailed)

Note.

[a] p < .10

[b] Not applicable because sweepstakes/contests were not held during the observation period.

[c] 2 positive web traffic outliers at end of series, when sales are quite low, drive negative result.