

Cigarette Advertising in Popular Youth and Adult Magazines: A Ten-Year Perspective

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Cigarette advertising for youth brands delivered sufficient impressions to reach youths at high reach and frequency levels during the 1993–2002 period. However, a precipitous drop in such advertising is also found at the end of the period. The authors reconcile the findings with those of previous studies and examine the efficacy of guidelines that have been used to evaluate cigarette advertising in publications with high youth readership.

Cigarette advertising in popular magazines that reach young people is an area of concern that has generated a great deal of policy discussion accompanied by a series of research studies. The purpose of the current study is to help clarify what constitutes adolescent exposure to cigarette advertising in magazines and to provide insight into the procedures used to make such a determination. We analyze cigarette advertising in popular magazines from 1993 to 2002 as it relates to adolescent readership. This ten-year period enables us to examine a series of questions about adolescent exposure to cigarette advertising in magazines.

We begin with a brief discussion of two key marking points for examining magazine readership among young people: the Federal Drug Administration's (FDA's) guideline and the Master Settlement Agreement (MSA). Next, we review a series of studies used to determine cigarette advertising spending and youth readership in popular magazines. We then employ Mediamark Research Inc. (MRI) data to categorize popular magazines as adult or youth oriented, and we use TNS Media Intelligence/Competitive Media Reporting (CMR) data to examine industry spending patterns. We combine these two data sets to develop reach and frequency estimates for cigarette advertising to understand what exposure took place among youth audiences.

We discuss findings within the context of other studies to understand youth exposure to cigarette advertising in popular magazines and which approaches are most appropriate to determine such exposure. We offer suggestions for rethink-

ing the process by which adolescent exposure to cigarette advertising is defined. We also discuss whether arbitrary or numerical guidelines, such as the FDA standard, are the best way to ensure that cigarette advertising in magazines has limited exposure to young people.

Two Key Marking Points: The FDA Proposal and the MSA

The FDA proposal and the MSA have been used to examine whether popular magazines with cigarette advertising reach young people. In an effort to limit cigarette advertising to young people under the age of 18, the FDA proposed that advertising in any publication with more than 15% readership or more than two million readers under the age of 18 should be limited to a text-only, black-and-white format (also known as a "tombstone" format; *Federal Register* 1995). The FDA designed its regulations to eliminate advertising appeals to people under the age of 18 but retain the informational aspects of advertising useful to adults (Wilkenfeld 2001). The proposal never passed, but the 15% readership/two million portion of the standard created a clear criterion for researchers to investigate whether magazines containing cigarette advertising reach young people.

The November 1998 MSA between 46 states and five territories (Florida, Minnesota, Texas, and Mississippi settled their tobacco cases before the MSA and separately) and the major cigarette producers Phillip Morris Companies (now Altria), R.J. Reynolds Tobacco, Lorillard Tobacco, and Brown & Williamson placed restrictions on cigarette marketing that went into effect in 1999. Specifically, the settlement called for the elimination of outdoor advertising that was not at a retail establishment, transit advertising, cartoons (in any tobacco advertising, marketing, or packaging), product placement in the media, and tobacco merchandising (brand names cannot appear on any nontobacco items). At that time, there was a concern that limiting marketing practices in these areas would drive increased spending in venues such as magazines that were not specifically mentioned in the MSA. Therefore, 1999 became a clear marking point to determine whether cigarette manufacturers altered their magazine advertising practices in terms of reaching young people. Alternatively, although the MSA did not directly address magazine advertising, it contained specific

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language that no participating manufacturer may take any action, directly or indirectly, to target youths. Indeed, the youth-targeting phrase has been a key element in lawsuits that claimed that cigarette advertising in certain magazines violates the MSA (e.g., *California v. R.J. Reynolds Tobacco Company* 2002).

Magazine Advertising and Youth Studies

Several studies have examined cigarette advertising in magazines with high youth readership levels. Much of this work has been conducted using the MSA as a benchmark period and the 15% readership/two million teen readers criterion as the basis on which to classify youth publications. In general, studies examine (1) spending to understand where cigarette advertising was placed and (2) reach and frequency levels to understand the number of young people exposed to magazines that carry the advertising, or the number of young people exposed to the advertising itself, and the level at which young people were exposed. In almost all cases, the studies are based on current industry data, which capture readership of teenagers between the ages of 12 and 17, not readers under the age of 12. Therefore, readers under the age of 12 are not taken into account.

Spending Studies

King and colleagues (1998) examine Simmons Market Research Bureau (SMRB; MRI's direct competitor) readership data and Leading National Advertisers (which later became CMR) expenditure data for 39 magazines in 1994. They find that cigarette brands that are popular among teenagers were more likely than adult brands to be advertised in magazines with high youth readership. In a follow-up study, King and Siegel (1999) expand the period to cover 1986–1994. The results across this nine-year period also reveal that cigarettes brands that are popular among young people were more likely than adult brands to be advertised in magazines with high youth readership.

Turner-Bowker and Hamilton (2000) find that cigarette advertising in 19 magazines increased substantially after the first year of the MSA. In part, this is attributed to MSA's ban on other media options, such as outdoor advertising.

Chung and colleagues (2002) analyze magazine readership and cigarette advertisements for three cigarette manufacturers in U.S. magazines from 1997 to 2000 in an effort to track changes pre- and post-MSA. The magazines included in the analysis were similar to those that other researchers identified as having high youth appeal. The results suggest that in 2000, all three manufacturers failed to comply with the MSA's youth-targeting ban and increased their advertising to youth.

Hamilton and colleagues (2002) examine the response by the tobacco industry to the MSA and accusations of marketing to youths for three separate periods: January–November 1998, December–June 2000, and July 2000–November 2001. They find that in following the MSA, major tobacco companies initially increased expenditures and then substantially decreased expenditures. The decrease is attributed to public pressure.

Exposure Studies

Krugman and King (2000) analyze 1998 MRI data on teen readership and construct media schedules to examine the extent to which popular consumer magazines that contain cigarette advertising reach teenagers. Exposure to the magazine containing the advertisements is often referred to as "opportunity to see" (OTS). Readership estimates derived from SMRB data are used to estimate the number of teenagers 12–17 years of age who might be reached by cigarette advertisements. Findings indicate that tobacco marketers would reach nearly two-thirds of teenagers 12–17 years of age by placing a single advertisement in each of the 14 magazines identified as having a high youth readership. Krugman and King argue that the study is a starting point, and they examine only a limited media schedule; they note (p. 187) that follow-up work with larger and more realistic media schedules is "necessary and quite feasible."

King and Siegel (2001) use a wider and more realistic data set to investigate trends in advertising expenditures for 15 brands of cigarettes in 38 magazines during the 1995–2000 period. Although their work assesses spending in a vein of the studies we cited previously, they also examine exposure. Cigarette brands are divided into youth and adult brands, and the magazines are also classified as either youth or adult oriented on the basis of the FDA guideline. The analysis focuses on 20 youth and 18 adult magazines over a six-year period; one of the more basic contributions of this study is the development of a method for classifying what constitutes youth- and adult-oriented magazines. The results reveal that, in general, cigarette advertising expenditures for youth brands increased in magazines classified as youth oriented. King and Siegel then use a media planning program to determine OTS. They find that more than 80% of U.S. teenagers were exposed to magazines carrying cigarette advertising an average of 17 times in 2000. Findings also indicate that a substantial number of youth readers would be reached even if advertising were restricted to magazines with predominantly adult readers. For example, in 2000, advertising for Marlboro would reach 57.1% of young people an average of 8.3 times, Newport would reach 41.2% of young people 9.3 times, and Camel would reach 35.8% of young people 5.8 times. King and Siegel also employ the concept of effective reach, which argues that a person needs to be exposed three times (sometimes referred to as "3+") for effective communication. The proportion of young people reached at the 3+ level between 1995 and 2000 ranged from 69.4% to 77.6% for youth brands (Camel, Marlboro, and Newport) and from 40.9% to 66.9% for adult brands. Although King and Siegel use 3+ as one of their measures, they also state that exposure at the 3+ level is not necessarily needed to be effective. Among their other conclusions, they note that more stringent policies are required to reduce youth exposure to cigarette advertising in magazines and that an arbitrary criterion based on the percentage of young readers may not be the soundest approach. Ultimately, they argue that the 15%/two million guideline is not a good approach.

Lancaster and Lancaster (2003) argue that it is not important whether teenagers read certain magazines but rather whether teenagers actually see advertisements for cigarettes.

These authors contend that both reach and frequency are essential measures because multiple exposures to a message are needed to communicate the content of the message. Using the same limited set of 14 consumer magazines that Krugman and King (2000) use, Lancaster and Lancaster examine both magazine and cigarette advertising reach and frequency. The data were weighted using readership estimates from STARCH Adnorms, an industry source that, among other items, reports average “noted” (i.e., saw an advertisement) scores for adults across 44 consumer magazines. Using a noted average, Lancaster and Lancaster estimate that 48.1% of all adults will actually see an advertisement in a magazine. For cigarette advertisements specifically, this percentage drops to 41.3%. Although this noted score of 41.3% is calculated only for adults, Lancaster and Lancaster use it to estimate teen exposure to cigarette advertising. They find that though two-thirds of teenagers are likely to be exposed to at least 1 of the 14 magazines, only 41.4% are likely to see an actual cigarette advertisement. Furthermore, at the 3+ level, exposure to a cigarette advertisement is estimated at only 2.7% of all teenagers 12–17 years of age. Lancaster and Lancaster conclude that adolescent exposure to cigarette advertising in magazines may be minimal.

Current Study

Several issues are raised by the spending and exposure studies. Basic spending questions center on (1) methods of classifying magazines as youth or adult, (2) the relative spending for cigarette brands among youth and adult magazines, and (3) whether such spending has increased since the implementation of the MSA. Exposure questions center on the number of youths exposed to magazines and cigarette advertising and what really constitutes meaningful exposure in this particular setting. An overarching issue is whether arbitrary numerical criteria, such as the 15% readership/two million FDA guideline, are useful in limiting cigarette advertising exposure directed at young people.

Our study analyzes a more recent ten years of industry data from MRI and CMR to assess advertising for youth-oriented cigarettes in popular magazines. We examine the constitution of adult and youth readership, expenditures, and exposure to cigarette advertising. The ten-year time frame allows for an examination of readership and spending trends. We analyze 28 youth and 25 adult magazines from 1993 to 2002, which at the time of this writing was the most recent data available and the farthest back we could go to obtain a complete set of both MRI and CMR data for the same period.¹ Specifically, we examined three research questions. Subsequently, we identify the questions and the rationale on which they are based.

Krugman and King (2000) and King and Siegel (2001) help identify which magazines would fall into either youth or adult magazine categories as determined by the 15% readership/two million FDA guideline by applying the standards to one year in the former study and a six-year average

in the latter study. We further define youth-oriented and adult-oriented magazines:

RQ₁: What magazines, past and present, fall into the categories of youth or adult oriented as measured under the FDA guidelines of either reaching at least two million readers or having at least 15% of their readership be between the ages of 12 and 17?

Expenditures and placement of cigarette advertisements in magazines remain a concern. King and colleagues (1998) and King and Siegel (1999, 2001) find that cigarette advertising has retained a strong presence in youth magazines. A particular concern is the spending for the leading youth brands, Marlboro, Newport, and Camel. We examine spending patterns for these three brands for several years both before and after the MSA:

RQ_{2a}: What is the estimated cigarette advertising spending for the leading youth brands in youth and adult magazines?

RQ_{2b}: Are youth brands advertised more heavily in magazines that reach a higher percentage or higher absolute number of readers between the ages of 12 and 17?

We extend previous work on OTS (King and Siegel 2001; Krugman and King 2000) and exposure advertising (Lancaster and Lancaster 2003) by analyzing a larger number of magazines over a longer period.

RQ_{3a}: In terms of reach and frequency, what is the estimated exposure among youths (12–17 years of age) when cigarette advertisers use youth-oriented magazines, adult-oriented magazines, or a combination of youth- and adult-oriented magazines?

RQ_{3b}: In terms of reach and frequency, has estimated exposure among youths (12–17 years of age) changed since the implementation of the MSA?

Method

Data from two syndicated sources regularly used in the advertising industry—MRI and CMR—formed the basis for the analysis. We then analyzed data from these two sources using a media planning simulation program from Telmar.

Mediamark Research Inc. is one of two widely used syndicated resources for magazine readership data (the other is SMRB). It includes readership of select magazine titles for people age 12 and above; readership data for people under the age of 12 is not measured by MRI or SMRB. Mediamark Research Inc.’s readership data are compiled by combining MRI’s teen and adult studies, which are national in nature and generalizable to the public (see <http://www.mediamark.com/MRI>).

We obtained MRI readership data on youth 12–17 years of age for the 1992–2002 period because 1992 represents the earliest data available for the combined MRI database, and at the time we purchased the data, 2002 was the most recent full-year period available.² In total, we gathered data for 82 magazines (all the magazines in the MRI teen database) over the designated period.

¹Both MRI and CMR data were necessary to complete the analysis. Although MRI data were available as far back as 1992, CMR data were available only as far back as 1993.

²Neither SMRB nor MRI data on teen readership were available before 1992.

Competitive Media Reporting is a leading provider of marketing communication and advertising expenditure information for advertising agencies, advertisers, broadcasters, and publishers. The firm measures advertising expenditures and the amount of space purchased by national or regional advertisers in approximately 700 magazines (see <http://www.tnsmi-cmr.com/products/adspender.html>). Publications must be members of the Publishers Information Bureau to be measured, and each member publication is required to supply a current rate card to CMR. Expenditures reported by CMR are based on current gross one-time rates, excluding commissions and frequency or volume discounts but including premium charges. We purchased and analyzed CMR cigarette advertising expenditure data for consumer magazines for the January 1993–December 2002 period.

Telmar is a supplier of computer-based advertising media information services. Telmar's clients include leading advertising agencies, publishers, and advertisers (<http://www.us.telmar.com/about.html>). One of Telmar's main products is its Adplus software for media planning, which enables planning for individual and mixed media. In this study, we used the latest version of Telmar's Adplus software.

Findings

RQ₁: Classifying Magazines as Youth or Adult

We used the average of the percentage or actual number to classify a magazine as adult or youth oriented. Several issues become clear when using this type of data over a ten-year period. An inherent problem is that not all magazines elect to or are available to participate in MRI or other syndicated services every year. Magazines might not have ten years' worth of data because they no longer participate in the MRI study or have not been in existence during all the years. In our data set, 21 magazines lack MRI readership data for all ten years (Tables 1 and 2) but were not excluded from the study. This approach enabled the analysis of a larger number of magazines because it did not require a magazine to be in the data set for all ten years. We contend that it is unlikely that policy makers can realistically rely on industry data sources to provide comprehensive information for magazines across time if the magazines need to be in a data set for all years.

We used averages for the years that a magazine participated in the MRI study. Tables 1 and 2 show magazines that have been categorized as youth or adult oriented, respectively. To be classified as youth oriented, a magazine needed to average at least 15% or at least two million readers between 12 and 17 years of age during the years that the magazine participated in the MRI study.

In some cases, overall averages present a skewed picture. Tables 1 and 2 also note the specific year that a magazine is at either 15% or two million youth readers. For example, *The Cable Guide*, which is classified as a youth magazine, fails to meet either criterion in 1998 and 2000–2002. Table 2 shows that *Cosmopolitan* is curvilinear, with high youth readership at the beginning and end of the ten-year period. *Glamour* exceeds both the 15% and the two million standards before tapering off.

RQ₂: Spending for Youth Brands in Youth and Adult Magazines

Table 3 shows information for the top three cigarettes brands among youth ages 12–17 and other age groups. The data represent National Survey on Drug Use and Health findings that measure the “brand most often used during the last month” (U.S. Department of Health and Human Services 2001). Marlboro, Newport, and Camel, the most heavily promoted brands, are the major brands in the 12–17-year-old age group. Dramatic differences occur when comparing the 12–17 age group brand preferences with adults age 26 and older in that youths are much more apt to prefer the three leading brands.

An analysis of CMR data in conjunction with MRI data allowed for a comparison of advertising spending and pages in the magazines classified as youth and adult. Table 4 shows advertising expenditures and total advertising pages for the three leading youth brands in youth and adult magazines from 1993 to 2002. Total spending in youth-classified magazines was approximately \$495.5 million for the ten-year period, compared with approximately \$297.4 million for spending in adult-classified magazines. The proportional difference is significant ($Z = 160, p < .001$). In addition, there were approximately 6165 pages of cigarette advertising in youth-classified magazines over the same ten years, compared with approximately 3785 pages of cigarette advertising in adult-classified magazines. This proportional difference is also significant ($Z = 14.0, p < .001$).

We also examined post-MSA expenditures. Because the MSA was signed in November 1998, we examined expenditure data for the 1999–2002 period. In total, the three youth brands spent \$174,259,700 for 1749.4 pages of advertising in youth-classified titles over the four-year post-MSA period (see Table 4). Spending ranged from \$80.0 million (834 pages) in 1999 to \$565 thousand (14.5 pages) in 2002. Spending levels were similar (\$80 million versus \$74.4 million) in 1999 and 2000. Starting in 2001, however, spending levels dramatically decreased.

Cigarette advertising by the three leading youth brands appeared in 27 of the 28 youth magazines in Table 1. Although *Popular Science* contained advertising for other cigarette brands for this period, it did not contain advertising for Marlboro, Newport, or Camel. Cigarette advertising by the three leading youth brands appeared in 24 of the 25 adult magazines found in Table 2. *Ladies Home Journal* contained advertising for other cigarette brands for this period but did not contain advertising for Marlboro, Newport, or Camel.

RQ₃: Reach and Frequency

We analyzed readership and estimated insertion data for 1993, 1997, 2000, 2001, and 2002 (for a discussion of how we derived estimated insertions, see the Appendix). This enabled us to review an early, a middle, and a late point in the decade as well as the last two full years of data. It also enabled us to make comparisons of pre- and post-MSA reach and frequency levels. Similar to other studies, reach equals the number of different people who read the magazine that carries the advertisement and have an opportunity to see the advertisement (i.e., OTS; Krugman and King

Table 1. 1993–2002 Readership (in Thousands) for Teenagers 12–17 Years of Age and Percentage for All Youth-Classified MRI Magazines in the Age-12-and-Over Database

Youth Magazine	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Average
<i>Allure</i>				844.8 (30.51%)	814.2 (28.04%)	1283.0 (34.49%)	1427.0 (32.92%)	1018.2 (23.48%)	997.8 (19.30%)	978.6 (17.54%)	1051.94 (26.61%)
<i>Cable Guide, The</i>	3599.2 (17.17%)	3357.8 (19.18%)	2961.9 (20.02%)	2567.3 (18.78%)	2175.9 (16.41%)	1765.5 (14.03%)	1961.7 (16.77%)	1446.7 (11.69%)	1215.1 (11.94%)	1099.7 (11.11%)	2215.08 (15.91%)
<i>Car and Driver</i>	1700.0 (20.64%)	1465.3 (18.31%)	1307.1 (16.51%)	1391.9 (16.83%)	1196.5 (14.60%)	1225.8 (14.82%)	1455.8 (16.98%)	1783.0 (18.68%)	1732.1 (16.49%)	1621.7 (14.95%)	1487.92 (16.88%)
<i>Elle</i>	1042.9 (21.54%)	819.2 (17.76%)	975.4 (19.37%)	1098.4 (22.38%)	798.8 (17.47%)	649.8 (13.82%)	699.0 (14.52%)	588.3 (12.86%)	535.5 (11.50%)	467.1 (9.51%)	767.42 (16.07%)
<i>ESPN</i>										2177.7	2177.70
<i>Hot Rod</i>	2368.3 (29.43%)	2294.9 (28.15%)	2316.5 (26.83%)	2271.4 (25.45%)	2035.1 (22.57%)	2068.5 (23.33%)	2214.6 (26.98%)	1909.6 (24.56%)	1577.7 (19.32%)	1431.7 (17.16%)	2048.83 (24.38%)
<i>In Style</i>								1219.4 (22.29%)	1199.9 (16.97%)	1091.4 (13.44%)	1170.23 (17.57%)
<i>Jet</i>	1875.7 (17.99%)	1724.3 (16.72%)	1709.7 (16.78%)	1645.6 (16.98%)	1575.6 (15.69%)	1629.0 (15.18%)	1640.1 (15.24%)	1446.5 (14.39%)	1281.1 (13.02%)	1303.4 (12.89%)	1583.10 (15.49%)
<i>Life</i>	2847.0 (13.09%)	2665.2 (12.91%)	2479.2 (12.93%)	2286.1 (13.24%)	2003.7 (11.59%)	1950.4 (11.04%)	2150.5 (12.39%)				2340.30 (12.46%)
<i>Mademoiselle</i>	1560.6 (20.88%)	1369.1 (19.73%)	1277.2 (18.31%)	1326.9 (20.64%)	1150.3 (18.08%)	1108.2 (16.66%)	927.4 (14.91%)	755.8 (12.73%)			1184.44 (17.74%)
<i>Marie Clare</i>										527.1 (13.97%)	576.20 (17.18%)
<i>Motor Trend</i>	1652.8 (24.82%)	1393.2 (22.12%)	1374.3 (19.78%)	1288.1 (18.44%)	1074.5 (16.60%)	1141.3 (16.26%)	1379.4 (18.86%)	1359.7 (18.19%)	1161.1 (14.85%)	1229.8 (14.74%)	1305.42 (18.47%)
<i>Outdoor Life</i>	1477.2 (15.53%)	1579.3 (18.00%)	1508.0 (18.60%)	1309.8 (18.76%)	1048.9 (15.79%)	954.0 (14.18%)	1237.1 (18.49%)	1147.5 (17.67%)	758.9 (11.13%)		1224.52 (16.46%)
<i>People</i>	3194.3 (8.34%)	3019.7 (7.80%)	2952.2 (7.41%)	3094.3 (8.01%)	2973.9 (7.82%)	3346.9 (8.29%)	3888.8 (9.60%)	3763.4 (9.71%)	3222.2 (8.34%)	3098.1 (7.92%)	3255.38 (8.32%)
<i>Popular Science</i>	1950.9 (21.26%)	1906.0 (20.80%)	1740.7 (18.76%)	1651.5 (18.56%)	1475.4 (18.51%)	1565.7 (20.09%)	1571.5 (19.92%)	1225.3 (16.73%)	1246.4 (16.18%)	1301.9 (15.29%)	1563.53 (18.61%)
<i>Premiere</i>	635.8 (28.68%)	616.8 (25.82%)	628.3 (24.57%)	559.1 (20.73%)	412.0 (16.36%)	407.6 (17.97%)	377.3 (17.19%)	304.1 (14.73%)	397.7 (19.19%)	261.0 (13.19%)	459.97 (19.84%)
<i>Road & Track</i>	1515.3 (22.58%)	1233.9 (20.63%)	1277.3 (20.97%)	1331.2 (21.55%)	1126.9 (17.59%)	959.8 (15.13%)	1072.7 (18.83%)	1026.5 (18.40%)	927.0 (15.65%)	810.9 (12.87%)	1128.15 (18.42%)
<i>Rolling Stone</i>	1951.8 (20.01%)	1868.8 (18.50%)	1899.9 (18.38%)	2176.5 (20.67%)	2216.6 (20.22%)	2185 (20.27%)	2565.3 (23.73%)	2405.1 (22.85%)	2122.6 (18.94%)	1784.4 (15.30%)	2120.95 (19.89%)
<i>Ski</i>	772.1 (25.01%)	827.4 (26.44%)	834.8 (27.26%)	703.8 (24.18%)	589.5 (22.15%)	580.7 (24.66%)	481.1 (22.31%)	373.7 (19.51%)	403.1 (20.25%)	307.1 (14.60%)	587.33 (22.64%)
<i>Skating</i>	813.6 (31.31%)	789.2 (30.87%)	749.9 (26.58%)	647.5 (23.30%)	591.8 (22.43%)	607.6 (26.11%)	517.1 (26.99%)	273.6 (18.71%)	312.4 (21.49%)	326.0 (21.85%)	562.87 (24.96%)
<i>Spin</i>			892.9 (27.03%)	1050.5 (29.98%)	1132.3 (31.57%)	1189.2 (30.46%)	1077.3 (27.38%)	886.4 (24.07%)	701.5 (19.67%)	511.2 (15.62%)	930.16 (25.72%)
<i>Sport</i>	2319.4 (34.69%)	2274.1 (33.82%)	2365.4 (36.05%)	2482.4 (38.40%)	2137.2 (33.46%)	2011.0 (31.50%)	2095.1 (35.34%)				2240.66 (34.75%)

Table 1. Continued

Youth Magazine	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Average
<i>Sporting News</i> ,	1412.7	1393.6	1356.1	1434.0	1207.9	1040.0	1091.3	788.4	812.1	807.9	1134.40
<i>The</i>	(26.69%)	(27.79%)	(28.46%)	(30.77%)	(28.33%)	(24.62%)	(25.09%)	(19.11%)	(18.11%)	(17.17%)	(24.61%)
<i>Sports</i>	5105.4	5201.4	5280.7	5309.1	5064.6	5069.0	4961.4	4040.8	3680.3	3483.1	4719.58
<i>Illustrated</i>	(17.78%)	(17.99%)	(18.64%)	(19.38%)	(18.00%)	(17.09%)	(17.26%)	(15.64%)	(14.96%)	(14.25%)	(17.10%)
<i>True Story</i>	827.8	739.9	593.3	593.3	425.7	582.1	713.9	499.0	494.4	609.51	609.51
	(16.21%)	(14.82%)		(13.40%)	(10.87%)	(13.87%)	(18.39%)	(17.57%)	(18.66%)		(15.47%)
<i>TV Guide</i>	6623.4	6738.8	6678.9	6304.1	5933.9	5529.8	5475.3	4579.4	3934.2	3398.1	5519.59
	(13.13%)	(13.23%)	(13.17%)	(13.00%)	(12.82%)	(12.51%)	(13.22%)	(12.02%)	(10.99%)	(10.19%)	(12.43%)
<i>Vibe</i>						2369.5	2722.3	2391.9	2085.5	1695.8	2253.00
						(43.60%)	(38.57%)	(31.95%)	(26.72%)	(20.71%)	(32.31%)
<i>Vogue</i>	2602.8	2236.9	2031.6	1863.3	1698.4	2032.5	1871.9	1527.8	1401.9	1333.2	1860.03
	(21.50%)	(17.97%)	(17.07%)	(17.88%)	(16.74%)	(18.96%)	(17.53%)	(14.58%)	(12.86%)	(11.94%)	(16.70%)

Notes: If a magazine does not appear for a year, it was not listed in the MRI database. Bolded cells indicate years for which teen readership was more than two million or for which teen percentage of audience was more than 15%.

Table 2. 1993–2002 Readership (in Thousands) for Teenagers 12–17 Years of Age and Percentage for All Adult-Classified MRI Magazines in the Age-12-and-Over Database

Adult Magazine	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Average
<i>Better Homes and Gardens</i>	2078.1	2042.5	1741.6	1463.3	1407.7	1486.1	1698.5	1446.3	1380.5	1252.1	1599.7
	(5.76%)	(5.49%)	(4.62%)	(3.99%)	(3.86%)	(4.07%)	(4.75%)	(4.13%)	(3.81%)	(3.22%)	(4.37%)
<i>Cosmopolitan</i>	2348.7	2279.3	1947.3	1715.9	1597.5	1845.9	1858.2	1787.4	2105.5	2010.9	1949.7
	(13.77%)	(12.80%)	(11.15%)	(10.11%)	(9.52%)	(10.61%)	(10.47%)	(10.40%)	(11.49%)	(10.49%)	(11.08%)
<i>Ebony</i>	2290.7	2111.1	2113.0	1987.4	1766.9	1522.0	1736.1	1662.0	1459.5	1394.0	1804.3
	(16.86%)	(15.82%)	(15.94%)	(15.12%)	(13.15%)	(11.26%)	(13.26%)	(13.35%)	(11.82%)	(11.12%)	(13.77%)
<i>Entertainment Weekly</i>		1251.1	1317.4	1358.8	1352.8	1527.6	1808.4	1620.8	1140.9	934.6	1406.5
<i>Essence</i>		(16.85%)	(17.27%)	(17.62%)	(16.89%)	(15.50%)	(18.47%)	(16.97%)	(12.01%)	(9.74%)	(14.54%)
		(16.85%)	(17.27%)	(17.62%)	(16.89%)	(15.50%)	(18.47%)	(16.97%)	(12.01%)	(9.74%)	(14.54%)
<i>Family Circle</i>	1464.4	1210.4	1146.7	1031.9	978.1	979.9	980.7	910.4	728.1	583.4	1001.4
	(5.12%)	(4.21%)	(4.12%)	(3.94%)	(3.93%)	(4.11%)	(4.20%)	(4.03%)	(3.26%)	(2.51%)	(3.94%)
<i>Field & Stream</i>	1872.7	1760.1	1743.1	1738.7	1537.0	1309.5	1250.2	1158.8	963.8	812.5	1481.5
	(11.77%)	(11.06%)	(11.37%)	(11.86%)	(10.86%)	(9.87%)	(10.18%)	(9.67%)	(8.12%)	(6.66%)	(10.53%)
<i>Glamour</i>	2278.2	2215.5	2109.6	2101.2	1879.9	1987.4	1861.7	1777.0	1786.9	1606.5	1960.4
	(17.55%)	(17.13%)	(16.11%)	(16.37%)	(14.27%)	(14.01%)	(13.38%)	(13.74%)	(13.53%)	(11.92%)	(14.80%)
<i>GQ</i>	1039.0	1036.7	1030.3	1051.1	888.3	871.5	836.0	779.2	710.5	484.9	878.8
	(15.98%)	(15.12%)	(14.88%)	(15.28%)	(12.62%)	(11.67%)	(11.67%)	(11.46%)	(10.16%)	(7.18%)	(12.60%)

Table 2. Continued

Adult Magazine	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Average
<i>Harper's Bazaar</i>	717.7 (18.18%)	754.2 (20.88%)	701.1 (17.10%)	523.6 (16.34%)	405.0 (11.76%)	441.8 (13.63%)	333.4 (11.22%)	248.7 (8.81%)	260.3 (11.13%)	487.3 (14.34%)	
<i>Ladies Home Journal</i>	885.8 (4.74%)	838.0 (4.36%)	850.7 (4.38%)	633.2 (3.84%)	543.3 (3.34%)	664.3 (3.92%)	626.7 (3.94%)	511.3 (3.34%)	428.8 (2.78%)	677.1 (3.89%)	
<i>Maxim</i>										948.0 (8.75%)	
<i>McCall's</i>	1373.8 (7.21%)	1274.0 (6.68%)	1308.2 (7.09%)	923.4 (5.42%)	769.3 (4.77%)	690.4 (4.63%)	580.0 (4.10%)			1017.9 (5.86%)	
<i>National Enquirer</i>	2642.2 (11.41%)	2388.3 (10.71%)	2234.8 (10.33%)	1899.8 (9.76%)	1669.6 (9.29%)	1335.1 (8.85%)	1226.1 (8.70%)	1105.9 (7.74%)	943.2 (6.34%)	1699.8 (9.25%)	
<i>New Woman</i>		684.8 (14.03%)	726.0 (15.50%)	558.9 (13.54%)	407.2 (9.62%)	465.3 (11.88%)	510.7 (10.08%)			558.8 (12.44%)	
<i>Newsweek</i>	1828.0 (8.04%)	1910.7 (8.01%)	1830.1 (7.98%)	1785.0 (8.01%)	1668.3 (7.38%)	1909.0 (8.34%)	2072.1 (9.49%)	1402.0 (6.95%)	1104.0 (5.40%)	1660.6 (7.47%)	
<i>Popular Mechanics</i>	1657.7 (15.00%)	1616.9 (14.52%)	1549.6 (13.77%)	1286.0 (12.03%)	1307.7 (12.35%)	1378.7 (12.68%)	1468.2 (13.78%)	1389.0 (13.94%)	1200.8 (12.13%)	1399.2 (13.12%)	
<i>Redbook</i>	1276.2 (8.58%)	1152.7 (7.77%)	1173.5 (7.68%)	1059.1 (7.20%)	974.4 (7.06%)	699.3 (5.56%)	581.9 (4.97%)	583.3 (5.35%)	571.8 (5.22%)	481.7 (4.37%)	
<i>Self</i>		786.4 (16.23%)	826.5 (15.88%)	784.2 (15.65%)	799.8 (16.19%)	820.6 (15.80%)	740.5 (14.47%)	632.1 (13.00%)	658.8 (12.27%)	688.4 (12.25%)	
<i>Soap Opera Digest</i>	1523.9 (17.30%)	1299.5 (14.35%)	1449.8 (15.14%)	1312.3 (14.86%)	1127.3 (12.39%)	1039.5 (11.73%)	825.6 (10.73%)	677.2 (8.72%)	548.1 (7.36%)	1072.7 (12.42%)	
<i>Star</i>	1610.5 (13.25%)	1579.0 (13.40%)	1388.3 (12.08%)	1106.9 (10.34%)	927.6 (9.48%)	974.0 (10.89%)	859.6 (11.02%)	768.2 (9.29%)	612.3 (7.48%)	1081.2 (10.94%)	
<i>Time</i>	1948.5 (7.73%)	1971.8 (7.66%)	1968.6 (7.68%)	1870.5 (7.52%)	1627.8 (6.61%)	1763.6 (6.93%)	1894.7 (7.58%)	1544.3 (6.61%)	1396.1 (6.04%)	1374.4 (5.66%)	
<i>US</i>	1122.8 (18.05%)	814.1 (13.82%)	822.1 (13.32%)	728.8 (12.60%)	557.7 (10.79%)	718.5 (14.43%)	993.4 (19.70%)			822.5 (14.67%)	
<i>US News & World Report</i>									291.8 (2.70%)	498.0 (4.17%)	
<i>Woman's Day</i>	1336.2 (5.48%)	1202.2 (4.81%)	1191.5 (4.81%)	1127.0 (4.72%)	980.1 (4.16%)	1046.5 (4.71%)	1116.1 (5.16%)	809.6 (3.83%)	632.8 (3.00%)	527.4 (2.41%)	

Notes: If a magazine does not appear for a year, it was not listed in the MRI database. Bolded cells indicate years for which teen readership was more than two million or for which teen percentage of audience was more than 15%.

Table 3. Percentages of Cigarette Smokers Age 12 or Older Reporting Three Top Cigarette Brands Used Most Often During the Past Month

	Ages 12–17	Ages 18–25	Age 26 or Older
Marlboro	55.2%	53.9%	37.6%
Newport	22.8%	17.2%	7.4%
Camel	9.4%	13.6%	4.7%
Total	87.4%	84.7%	49.7%

Source: U.S. Department of Health and Human Services (2001).

2000). Frequency represents the number of times an average person reads the magazines and has the opportunity to see the advertisement. Two different forms of reach are shown: 1+, which indicates the number and percentage of people who are reached at least one time, and 3+, which indicates the number or percentage of people who are exposed three or more times. Advertising and media planners routinely rely on 3+ exposure levels as a standard criterion to assess the effectiveness of a media plan (Advertising Research Foundation 1994; Naples 1979). We present the 3+ data primarily because it enables us to make comparisons with other studies. However, we caution that 3+ is considered a standard for products that are not well known (Krugman 1972) and does not usually apply to well-known products, for which one exposure is often sufficient (Jones 1997). Using a 3+ score for well-known products, such as Marlboro, Camel, and Newport, is conservative and has the potential to underestimate effective exposure levels.

Table 5 shows reach and average frequency estimates for 1993 among the 12–17-year-old age group. Exposure rates for 1993 are extremely high. For example, the 1+ reach for youth-designated magazines in this year is 97.6%. For the 3+ reach, it is 93.1%, meaning that this percentage of all teenagers was exposed to at least three tobacco advertisements from Marlboro, Camel, or Newport (or some combination thereof). Among magazines designated as adult, the 1+ reach among teenagers is 86.7%, and the 3+ reach is 72.3%.

Although reach is a standard measure of media effectiveness, an equally compelling statistic is frequency. The average frequency for the combination of youth and adult magazines used by the three brands in 1993 is 89.7. This means that teenagers who were exposed to the combination of magazines in which the three brands placed advertisements had the opportunity to see cigarette advertisements from the brands an average of 90 times (71.1 times in youth-designated magazines and 22.9 times in adult-oriented magazines). In short, the average 12–17-year-old who read these magazines had the opportunity to see a large number of image-based messages for cigarette brands most used by that age group. Table 5 shows 1+ and 3+ reach and average frequency estimates for the other years examined (1997, 2000, 2001, and 2002).

It is noteworthy that the impact of the MSA and/or other pressures on magazine cigarette advertising begin to take hold in 2001, when average frequency drops to 25, even though 1+ reach remains above 90%. In 2002, we observe a

precipitous decline in both average frequency (8.5) and 1+ reach (64.0%).

As we noted previously, exposure data reveal the opportunity to be exposed to an advertisement in a magazine as opposed to actually seeing the advertisement. To estimate actual ad exposure, we applied a weight of .413 to the Telmar media planning model. In essence, this weight suggests that of the people who read a magazine, 41.3% actually report seeing a particular advertisement. This type of weighting accounts for the notion that not everyone who reads a magazine sees or remembers all the advertisements contained in it. Weighting factors vary by product category, but Lancaster and Lancaster (2003) report that .413 is the average weighted Starch score for cigarette advertisements among adults; this is also the same weighting factor that Lancaster and Lancaster use in their study of teenage exposure to cigarette advertising in popular consumer magazines. As Table 6 shows, even with the .413 weight, in 1993 the combination of advertising insertions by Marlboro, Camel, and Newport in youth magazines measured by MRI reached 92.7% of all teenagers at the 3+ level an average of 29.4 times. For both youth and adult magazines during 1993, the weighted combined 3+ reach for the three brands among teenagers was 97.5% at an average frequency of 37.1. For 1997 and 2000, 3+ reach and frequency estimates are similarly high, whereas comparable estimates for 2001 and 2002 decrease each year.

Discussion

The ten-year average method enabled us to examine 51 magazines (28 youth and 23 adult). King and Siegel (2001) examine 38 magazines (20 youth and 18 adult) over a six-year period. The key difference is that we used a more inclusive standard. A magazine did not need to have readership data for all ten years for us to calculate an average. King and Siegel (2001) include only magazines that had readership data for all six years. Although either method is defensible, we elected to keep a magazine in the data set even though it may not have all ten years of readership data because it allowed for a more realistic reach and frequency analysis. Note, however, that a magazine would be included in our reach and frequency analysis *only* if there were advertising insertions in that particular year. Therefore, our approach likely resulted in a more realistic picture of magazines that contain cigarette advertising for any particular year because it did not exclude a magazine that was missing data in the other years.

During the period from January 1993 to December 2002 in MRI-measured magazines, three brands of cigarettes (Marlboro, Newport, and Camel) spent \$792,814,900 to purchase 9949.9 pages of advertising. Of these totals, approximately 62% of both expenditures and pages were allocated to youth- (teen-) classified titles (Table 4). For almost all the ten-year period we examined, cigarette advertising expenditures were extremely high in magazines that reached either a large number or a high percentage of youth ages 12–17, especially when compared with adult-oriented magazines that reached a lower number or percentage of these same youths. These findings are consistent with those of King and Siegel (2001).

Table 4. Advertising Expenditures and Total Pages in Youth and Adult Magazines by Three Leading Brands

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Total
Youth-Classified Magazines											
Marlboro ^a	25,280.3	31,937.8	42,226.2	34,876.1	32,396.0	40,712.1	49,929.7	42,037.6	492.9	0.0	299,888.7
Pages	416.8	504.9	567.5	472.2	378.2	480.1	514.4	415.4	6.3	0.0	3,755.8
Newport ^b	8,000.0	5,145.8	5,459.8	4,519.1	4,167.3	5,785.0	6,347.5	7,081.6	4,870.1	565.4	51,941.6
Pages	122.4	80.5	82.7	35.0	32.7	43.1	63.4	78.1	53.0	14.5	605.3
Camel ^c	11,508.1	13,671.1	8,198.6	13,350.7	13,861.9	20,106.5	23,746.5	25,260.8	13,927.6	0.0	143,631.8
Pages	162.7	192.4	106.4	177.5	240.3	320.6	256.0	248.0	100.3	0.0	1,804.2
Total	44,788.4	50,754.7	55,884.6	52,745.9	50,425.2	66,603.6	80,023.7	74,380.0	19,290.6	565.4	495,462.1
Pages	701.9	777.8	756.6	684.7	651.2	843.8	833.8	741.5	159.6	14.5	6,165.3
Adult-Classified Magazines											
Marlboro ^d	10,255.8	18,211.3	22,239.7	20,241.5	15,722.2	25,197.8	26,622.6	28,586.3	15,631.0	164.5	182,872.7
Pages	153.4	264.3	332.2	243.0	177.9	307.0	241.6	267.0	92.2	2.0	2,080.6
Newport ^e	5,682.4	2,073.9	2,182.0	1,175.5	932.9	3,713.3	4,510.3	7,147.3	8,712.7	8,574.4	44,704.7
Pages	93.1	44.0	44.7	22.7	22.0	42.0	78.1	101.0	118.7	108.7	675.0
Camel ^f	5,682.4	4,976.7	4,616.6	7,316.9	7,521.5	9,043.6	9,955.2	12,879.9	7,782.6	0.0	69,775.4
Pages	117.2	101.4	68.1	135.7	119.9	152.0	114.6	140.0	80.1	0.0	1,029.0
Total	21,620.6	25,261.9	29,038.3	28,733.9	24,176.6	37,954.7	41,088.1	48,613.5	32,126.3	8,738.9	297,352.8
Pages	363.7	409.7	445.0	401.4	319.8	501.0	434.3	508.0	291.0	110.7	3,784.6

^aMarlboro advertised in the following MRI youth-classified magazines: *Allure*, *Cable Guide*, *Car and Driver*, *Elle*, *ESPN Magazine*, *Hot Rod*, *In Style*, *Life*, *Madmoiselle*, *Marie Claire*, *Motor Trend*, *Outdoor Life*, *People Weekly*, *Premiere*, *Road & Track*, *Rolling Stone*, *Spin*, *Sport*, *Sporting News*, *Sports Illustrated*, *TV Guide*, and *Vogue*.

^bNewport advertised in the following MRI youth-classified magazines: *Car and Driver*, *Elle*, *ESPN Magazine*, *Hot Rod*, *In Style*, *Jet*, *Madmoiselle*, *Marie Claire*, *Outdoor Life*, *People Weekly*, *Premier*, *Road & Track*, *Rolling Stone*, *Spin*, *Sport*, *Sporting News*, *Sports Illustrated*, *True Story*, *TV Guide*, *Vibe*, and *Vogue*.

^cCamel advertised in the following MRI youth-classified magazines: *Allure*, *Cable Guide*, *Car and Driver*, *Elle*, *ESPN Magazine*, *Hot Rod*, *In Style*, *Jet*, *Life*, *Madmoiselle*, *Marie Claire*, *Motor Trend*, *Outdoor Life*, *People Weekly*, *Premiere*, *Road & Track*, *Rolling Stone*, *Ski*, *Skating*, *Spin*, *Sport*, *Sports Illustrated*, *TV Guide*, *Vibe*, and *Vogue*.

^dMarlboro advertised in the following MRI adult-classified magazines: *Allure*, *Cable Guide*, *Car and Driver*, *Elle*, *ESPN Magazine*, *Hot Rod*, *In Style*, *Jet*, *Life*, *Madmoiselle*, *Marie Claire*, *Motor Trend*, *Outdoor Life*, *People Weekly*, *Premiere*, *Road & Track*, *Rolling Stone*, *Ski*, *Skating*, *Spin*, *Sport*, *Sports Illustrated*, *TV Guide*, *Vibe*, and *Vogue*.

^eNewport advertised in the following MRI adult-classified magazines: *Better Homes & Gardens*, *Cosmopolitan*, *Entertainment Weekly*, *Family Circle*, *Field & Stream*, *Glamour*, *GQ*, *Maxim*, *McCall's*, *New Woman*, *Newsweek*, *Popular Mechanics*, *Redbook*, *Soap Opera Digest*, *Time*, *US News & World Report*, *US Weekly*, and *Woman's Day*.

^fCamel advertised in the following MRI adult-classified magazines: *Better Homes & Gardens*, *Cosmopolitan*, *Ebony*, *Entertainment Weekly*, *Essence*, *Family Circle*, *Field & Stream*, *Glamour*, *GQ*, *Harper's Bazaar*, *Maxim*, *McCall's*, *National Enquirer*, *New Woman*, *Popular Mechanics*, *Redbook*, *Soap Opera Digest*, *Star*, *US Weekly*, and *Woman's Day*.

Source: See <http://www.imsi-cmr.com/products/adspender.html>.

In 1999–2000, the first years after the MSA was approved, high spending levels by the three brands in youth magazines were documented. Of all the years studied, 1999, the year immediately after the MSA went into effect, had the

largest expenditures and the second-highest number of pages of cigarette advertising in youth magazines. The data also reveal a tapering off of reach and frequency beginning in 2001 and the eventual precipitous decline in 2002. Much

Table 5. Gross Rating Points, 1+ and 3+ Reach, and Average Frequency Estimates for Marlboro, Camel, and Newport Cigarettes in Youth and Adult Magazines

Brand/Designation ^a	1993					
	Gross Rating Points	1+ Reach (in Thousands)	1+ Reach (%)	3+ Reach (in Thousands)	3+ Reach (%)	Average Frequency
Marlboro/youth	3583.9	19,923.8	94.8	18,256.1	86.8	37.8
Camel/youth	2046.6	19,252.7	91.6	16,662.2	79.3	22.3
Newport/ youth	1307.6	17,826.0	84.8	14,759.7	70.2	15.4
Youth total	6935.0	20,516.7	97.6	19,563.0	93.1	71.1
Marlboro/adult	622.9	14,704.2	69.9	10,728.8	51.0	8.9
Camel/adult	834.8	14,717.1	70.0	11,127.8	52.9	11.9
Newport/adult	523.9	14,219.5	67.6	9601.2	45.7	7.7
Adult total	1984.2	18,225.6	86.7	15,194.3	72.3	22.9
Marlboro/youth and adult	4207.1	20,522.8	97.6	19,363.1	92.1	43.1
Camel/youth and adult	2881.4	20,223.6	96.2	18,476.9	87.9	30.0
Newport/youth and adult	1831.5	19,404.3	92.3	16,848.1	80.1	19.8
Youth/adult total	8919.2	20,901.5	99.4	20,505.4	97.5	89.7
Brand/Designation ^a	1997					
	Gross Rating Points	1+ Reach (in Thousands)	1+ Reach (%)	3+ Reach (in Thousands)	3+ Reach (%)	Average Frequency
Marlboro/youth	2329.9	20,776.8	92.3	18,428.7	81.9	25.2
Camel/youth	1344.3	18,315.1	81.4	18,315.1	65.8	16.5
Newport/ youth	545.9	15,164.4	67.4	11,513.1	51.2	8.1
Youth total	4217.2	21,478.7	95.5	19,903.9	88.5	44.2
Marlboro/adult	608.4	15,135.8	67.3	10,600.6	47.1	9.0
Camel/adult	424.9	12,558.3	55.8	8831.0	39.2	7.6
Newport/adult	133.4	6977.7	31.0	4232.6	18.8	4.3
Adult total	1166.7	17,374.9	77.2	13,492.6	60.0	15.1
Marlboro/youth and adult	2938.3	21,665.3	96.3	19,964.0	88.7	30.5
Camel/youth and adult	1769.1	20,067.8	89.2	17,026.2	75.7	19.8
Newport/youth and adult	679.3	16,590.8	73.7	12,708.4	56.5	9.2
Youth/adult total	5386.8	22,137.3	98.4	21,241.8	94.4	54.8
Brand/Designation ^a	2000					
	Gross Rating Points	1+ Reach (in Thousands)	1+ Reach (%)	3+ Reach (in Thousands)	3+ Reach (%)	Average Frequency
Marlboro/youth	1773.8	20,428.7	88.8	17,404.4	75.6	20.0
Camel/youth	1656.8	19,640.2	85.3	16,215.0	70.4	19.4
Newport/ youth	619.2	15,561.7	67.6	11,480.9	49.9	9.2
Youth total	4048.9	21,756.0	94.5	19,895.9	86.4	42.8
Marlboro/adult	739.5	14,764.6	64.1	11,182.7	48.6	11.5
Camel/adult	521.1	11,852.5	51.5	8723.6	37.9	10.1
Newport/adult	458.3	13,827.0	60.1	9805.5	42.6	7.6
Adult total	1718.9	18,251.7	79.3	15,131.4	65.7	21.7
Marlboro/youth and adult	2513.3	21,742.1	94.5	19,566.3	85.0	26.6
Camel/youth and adult	2177.9	20,946.3	91.0	18,147.7	78.8	23.9
Newport/youth and adult	1077.5	19,121.2	83.1	15,238.4	66.2	13.0
Youth/adult total	5767.8	22,624.0	98.3	21,693.5	94.3	58.7

Table 5. Continued

Brand/Designation ^a	2001					
	Gross Rating Points	1+ Reach (in Thousands)	1+ Reach (%)	3+ Reach (in Thousands)	3+ Reach (%)	Average Frequency
Marlboro/youth	13.9	1941.7	8.4	61.0	.3	1.7
Camel/youth	831.5	17,532.5	75.6	13,576.6	58.6	11.0
Newport/ youth	381.6	12,519.8	54.0	7655.1	33.0	7.1
Youth total	1227.0	18,621.5	80.3	15,062.7	65.0	15.3
Marlboro/adult	287.4	5318.7	22.9	3845.8	16.6	12.5
Camel/adult	273.4	11,834.8	51.0	7350.1	31.7	5.4
Newport/adult	518.9	13,942.0	60.1	9961.7	43.0	8.6
Adult total	1077.4	16,581.2	71.5	13,072.9	56.4	15.1
Marlboro/youth and adult	301.4	6688.3	28.8	3940.3	17.0	10.4
Camel/youth and adult	1104.9	19,532.7	84.2	15,623.5	67.4	13.1
Newport/youth and adult	900.5	18,169.0	78.4	13,698.5	59.1	11.5
Youth/adult total	2304.4	21,361.7	92.1	18,829.1	81.2	25.0
Brand/Designation ^a	2002					
	Gross Rating Points	1+ Reach (in Thousands)	1+ Reach (%)	3+ Reach (in Thousands)	3+ Reach (%)	Average Frequency
Marlboro/youth	.0	.0	.0	.0	.0	.0
Camel/youth	.0	.0	.0	.0	.0	.0
Newport/ youth	88.8	5292.2	22.7	1991.7	8.6	3.9
Youth total	88.8	5292.2	22.7	1991.7	8.6	3.9
Marlboro/adult	2.1	489.1	2.1	.0	.0	1.0
Camel/adult	.0	.0	.0	.0	.0	.0
Newport/adult	454.1	13,022.8	55.9	9204.7	39.5	8.1
Adult total	457.1	13,033.4	56.0	9218.9	39.6	8.2
Marlboro/youth and adult	2.1	489.1	2.1	.0	.0	1.0
Camel/youth and adult	.0	.0	.0	.0	.0	.0
Newport/youth and adult	542.9	14,902.1	64.0	10,310.5	44.3	8.5
Youth/adult total	545.0	14,910.7	64.0	10,323.4	44.3	8.5

^aIn 2002, only Newport advertised in youth vehicles. Marlboro and Newport advertised in adult magazines; Marlboro used two magazines, and Newport used nine.

of the decline is attributed to Altria's decision to no longer advertise in magazines. Most likely, the pressure placed on Altria by forces such as the individual state lawsuits, the MSA, and the vigilance of the National Association of Attorneys General played an important role in its determination not to advertise in popular magazines. Our findings are consistent with the prior studies (King and Siegel 2001; Turner-Bowker and Hamilton 2000) and extends that work by finding a large drop off in expenditures in 2002.

A key area for comparison with other studies is OTS, which examines exposure to the magazine. The only other study to conduct reach and frequency estimates for a wide range of popular magazines over time was that of King and Siegel (2001). Using annual estimated advertising insertions in youth and adult magazines in 2000, they find that 80% of teenagers 12–17 years of age were exposed to cigarette advertising an average of 17 times in 2000. In comparison, our 2000 data for youth and adult magazines found that 94% of teenagers were exposed to cigarette advertisements an average of 58.7 times (see Table 5).

At least three factors account for the considerable difference. First, we used 53 magazines, and King and Siegel (2001) used 38, giving us a greater total number of insertions to start the analysis. For example, a magazine such as *Entertainment Weekly*, which is included in our analysis but not in King and Siegel's (2001), had 58.5 Marlboro, Camel, and Newport insertions in 2000. Second, our 2000 insertion estimates are higher than King and Siegel's. We compared our estimated insertions for all the 2000 magazines that were in both King and Siegel's (2001) study and our study for Marlboro, Camel, and Newport. For the 21 magazines that overlapped, our estimated insertion level was 21% higher. We believe that these first two factors account for much of the difference between the findings of the two studies.

A third factor merits consideration to reconcile our findings with those of King and Siegel (2001). Caution needs to be applied when using media models for determining reach and frequency. Although media planning models and their subsequent reach and frequency numbers appear to be sci-

Table 6. Gross Rating Points, 1+ and 3+ Reach, and Average Frequency Estimates for Marlboro, Camel, and Newport Insertions in Youth and Adult Magazines Weighted at .413

1993						
Brand/Designation ^a	Gross Rating Points	1+ Reach (in Thousands)	1+ Reach (%)	3+ Reach (in Thousands)	3+ Reach (%)	Average Frequency
Youth total	2864.2	20,483.9	97.4	19,496.2	92.7	29.4
Adult total	819.5	16,322.7	77.6	12,344.2	58.7	10.6
Youth/adult total	3683.6	20,896.5	99.4	20,498.5	97.5	37.1
1997						
Brand/Designation ^a	Gross Rating Points	1+ Reach (in Thousands)	1+ Reach (%)	3+ Reach (in Thousands)	3+ Reach (%)	Average Frequency
Youth total	1741.7	21,340.6	94.8	19,429.8	86.3	18.4
Adult total	481.8	14,808.1	65.8	10,184.2	45.3	7.3
Youth/adult total	2224.7	22,086.3	98.2	20,132.7	93.5	22.7
2000						
Brand/Designation ^a	Gross Rating Points	1+ Reach (in Thousands)	1+ Reach (%)	3+ Reach (in Thousands)	3+ Reach (%)	Average Frequency
Youth total	1672.2	21,272.2	92.4	18,645.1	81.0	18.1
Adult total	709.9	16,440.4	71.4	12,060.1	52.4	9.9
Youth/adult total	2382.1	22,501.8	97.8	21,224.9	92.2	24.4
2001						
Brand/Designation ^a	Gross Rating Points	1+ Reach (in Thousands)	1+ Reach (%)	3+ Reach (in Thousands)	3+ Reach (%)	Average Frequency
Youth total	506.8	17,137.2	73.9	12,120.7	52.3	6.9
Adult total	445.0	14,408.8	62.1	9741.8	42.0	7.2
Youth/adult total	951.7	20,807.4	89.7	17,242.1	74.4	10.6
2002						
Brand/Designation ^a	Gross Rating Points	1+ Reach (in Thousands)	1+ Reach (%)	3+ Reach (in Thousands)	3+ Reach (%)	Average Frequency
Youth total	36.7	3250.0	14.0	1202.2	5.2	2.6
Adult total	188.8	10,359.9	44.4	5661.7	24.3	4.2
Youth/adult total	225.1	11,754.5	50.5	6573.5	28.2	4.5

^aIn 2002, only Newport advertised in youth vehicles. Marlboro and Newport advertised in adult magazines; Marlboro used two magazines, and Newport used nine.

entific and have an aura of certainty, they are only estimates or approximations of the audience reached (Ephron 1992). The best use of such models is to show the relative reach of one schedule over another using the same model (Leckenby and Kishi 1982). Relative to King and Siegel's (2001) study, we used a different media model (our study employed Telmar Adplus, and King and Siegel used the Interactive Market Systems Modal model). However, experts in the field indicate that the two models will yield similar results if the data are similar (Appel 2005; Leckenby 2005), so we do not project differences due to the models. It is possible, though, that our MRI data were not exactly similar to those used by King and Siegel, who potentially used in-tab (actual) data, which more accurately account for both turnover from multiple issues of the same publication and duplication between average issue readership of different vehicles. In contrast, we used manually entered average issue readership mea-

surements, which may not fully account for these two aspects of duplication and perhaps yield higher reach. In our model, when the schedule nears optimal reach (i.e., 94%), the focus of the reach–frequency relationship shifts to the latter, thus yielding higher frequency. For the sake of argument, assume that our approach overestimated reach and frequency by 10%. Our use of 10% is arbitrary, but it is guided by a survey in which a majority of media directors perceived the accuracy of planning models as being within a 6%–10% range (Leckenby and Kim 1994). Such an assumption would reduce our previous 2000 finding from 94% to 85% for 1+ reach and from 58 to 52 for frequency (compared with King and Siegel's 80% reach and 17 frequency). Our overriding point is that even if reductions are applied, the findings still represent large reach and frequency among 12–17-year-olds.

Another key area for comparison with other studies is exposure to the advertisement. Our findings far exceed those of Lancaster and Lancaster (2003), who estimate that only 41.4% of youths are likely to see an actual cigarette advertisement and that only 2.7% of youths are likely to be exposed at the 3+ level. In comparison, our data for 2001 show that 74.4% of youths were reached at the 3+ level. Even in 2002, with a considerable drop off in spending, there was a 3+ reach of 28.2% for youth. The difference between the current study and Lancaster and Lancaster's study stems largely from the difference in the schedule sizes. Using 1998 data, Lancaster and Lancaster evaluated 14 magazines on the basis of a hypothetical schedule of one insertion in each magazine. Because of the way they conducted their study, they reached a conclusion that cigarette advertising in those magazines had a limited reach. Lancaster and Lancaster further argue (p. 73) that "if traditional media planning methods are applied specifically to teen reading of tobacco advertising in consumer magazines, potential message impact may be minimal, even when substantially larger annual schedules are analyzed." Our findings contradict their conclusion when we examine large annual schedules, suggesting that the large annual schedules of cigarette magazine advertising reached large numbers of teenagers at high levels of frequency.

Although there is no magic level of advertising exposure and each situation is different, several factors lead to the conclusion that the weight of the campaigns was significant in reaching young people. Because of robust spending levels, youths ages 12–17 were almost universally exposed to magazines that carried cigarette advertising by the three leading youth brands. Both OTS (Table 5) and the estimated exposure to advertising (Table 6) are high. Our analysis estimated advertising reach and frequency on an annual basis. However, people do not make annual distinctions or have arbitrary cutoffs when it comes to how messages are consumed. An individual remains a member of the 12–17-year-old audience for six years. An adolescent who was 12 in 1993 would likely be exposed to several hundred image-based cigarette advertisements for the six years from 1993 to 1998. Moreover, this exposure occurred in an environment that teenagers reportedly trust; a recent study by the Magazine Publishers of America (2004) notes that eight of ten 12–17-year-olds read magazines and that teenagers trust magazine advertising more than advertising in other media. In addition, Marlboro, Newport, and Camel, which are purchased by youths at disproportionate rates compared with adult smokers, have used almost exclusively image-oriented advertising. Advertisements for these brands do not require a great deal of time spent looking at the advertisements to understand them. In these cases, people need not dwell on the message, and brief exposure can communicate the allure of the product.

Looking forward from 2000, it seems that the reduction in magazine cigarette advertising presents a different picture in that youth exposure to cigarette advertising is much lower. These lower levels are a positive step as long as the marketing effort invested in magazine imagery is not shifted to other media, such as in-store promotion. For example, note that though R.J. Reynolds's Camel brand had negligible

magazine spending in 2002, it has subsequently returned to vehicles such as *Sports Illustrated*. Moreover, the most recent Federal Trade Commission (2005) data indicate an increase of 46.4% in magazine spending for all cigarette brands, from \$106.9 million in 2002 to \$156.4 million in 2003. In light of this, we do not believe that self-imposed bans will solve the problem of exposure to cigarette advertising in magazines. Furthermore, magazine expenditures are only a fraction of the overall \$15.2 billion spent on advertising and promotions in 2003, as reported to the Federal Trade Commission.

Policy makers need to consider what constitutes reach and frequency when assessing adolescent exposure to cigarette advertising in magazines. We have data that provide OTS and estimated exposure to the advertisement. The latter is a derivative of OTS based on a probability of the advertisement being seen within the magazine by a particular target. However, there is a trade-off in the two measures. That is, OTS is a more stable number because it does not require a further estimate or probability, but it is further removed from the actual standard of "seeing the advertisement." In the reported study, we used a .413 probability based on adult readership. The use of such weighting factors in commonplace in the U.S. advertising industry. The .413 weight enabled us to make comparisons with other work; however, the process of developing weights is complex, and advertising agencies often view their weighting systems as closely guarded secrets. We strongly advocate that a separate study and set of ad readership norms should be developed for adolescents before such a standard is used.

In terms of frequency, it is important to understand how many exposures are necessary to communicate a message. Cigarette advertising studies commonly report overall reach (1+) and 3+ reach, and 3+ is often used because it is an industry convention that is considered "effective exposure." The convention is based on the writing of Krugman (1972), who argues that for new products, it takes three effective exposures to convey a message. We argue that the application of a 3+ standard should *not* be the case for well-known brands, such as Marlboro, Camel, and Newport, and that a 1+ standard is suitable.

Are approaches such as the 15%/two million FDA guideline effective in terms of reducing adolescent exposure? We concur with King and Siegel (2001) and do not believe that an arbitrary criterion based on the percentage or number of young readers will solve the problem of youth exposure to advertising. Several factors from the U.S. experience influence our judgment. First, our results and others (King and Siegel 2001) indicate that limiting exposure in magazines on a 15%/two million basis does not account for exposure to advertising that would be classified as adult oriented. Second, CMR and MRI (and its major competitor SMRB) are commercially driven by market demand from marketers and their agencies. As such, the data sets are limited. Numerous small or niche magazines are not included, because there is limited demand for information about the readership of these magazines. Thus, a major limitation of syndicated services such as MRI and SMRB is that they offer only a glimpse of the magazine industry. The Magazine Publishers Association (2004) estimates that there were 6234 consumer

magazines in 2003. Yet only approximately 700 are measured by CMR, and only a few hundred titles are measured by either MRI or SMRB. Third, there is no widely used syndicated source that measures readership for youths under the age of 12. Children do not suddenly begin reading magazines at the age of 12, and no evidence exists that suggests an 11-year-old child's reading habits differ pointedly from those of a 12-year-old. Yet data that assess any readers younger than age 12 are almost nonexistent. Therefore, policy makers need to be cognizant that this piece of the puzzle is missing and, instead, rely on the logical conclusion that some cigarette advertising reaches children even younger than the age of 12. Finally, combining multiple data sources for analysis has its drawbacks. Over the ten-year period of our study, the CMR data covered 161 different magazines that contained cigarette advertising. However, combining the CMR data with magazines that were also included in the MRI database reduced this number considerably.

Although we do not believe that an arbitrary numerical guideline is a workable solution, there is merit in limiting the type of messages employed. The original FDA proposal called for standardized tombstone advertising, that is, white text on a black page with none of the visual images commonly associated with cigarette advertising. Our view is that exposure to black-and-white, text-only advertising does not pose the same problems as image-based advertising. Moreover, we advocate limiting information to factual statements, such as product characteristics, price, and location. The proposed approach is different from the original FDA proposal, which would have allowed words to portray imagery (Eriksen 2005). A black-and-white, text-based approach is sensible and would level the playing field with regard to creative strategy. This approach would certainly be more straightforward than categorizing magazines on the basis of reach and/or reach and frequency.

Finally, a limitation of our study, and most studies that rely on CMR expenditure data, is that CMR data are based on rate cards that the magazines supply. Thus, it does not factor in discounts, which are often awarded to large advertisers or any type of deal making that occurs between a vehicle and an agency/advertiser. These discounts may lead to CMR's over- or underestimations of spending. Furthermore, industry spending is captured by CMR on a monthly basis, is sold both monthly and in cumulative reports, and is priced accordingly. Data may also be purchased for both national and regional additions of a magazine. The data used in this study examined cigarette spending in magazines on an annual basis and did not discern between national and regional editions of magazines. As such, seasonal and geographical spending patterns in the data are masked. To obtain a more accurate portrayal of cigarette advertising throughout the year, data should be purchased in smaller increments (e.g., monthly, quarterly), and geographic targeting should be considered.

Appendix: Estimated Insertions

Competitive Media Reports numbers of pages of advertising for each brand served as the basis for estimating the number of insertions for each cigarette brand for each year.

Although the CMR page-number data account for all the pages of each brand's cigarette advertising in a particular magazine, insertion estimates account for all pages not being separate insertions. In other words, a two-page, four-color advertisement is equal to one insertion.

Initially, we conducted a content analysis of all the Marlboro, Camel, and Newport advertisements in three magazines (*Sports Illustrated*, *Rolling Stone*, and *Glamour*) for all the years in question. We selected these three magazines because they contained a sufficient amount of Marlboro, Camel, and Newport advertisements to enable a reasonable estimation in a given year. Several magazines did not have a sufficient amount of advertisements to determine the different types of insertions.

For each issue of the magazine in a given year, we recorded the number of Marlboro, Camel, and Newport advertisements and the number of pages for each advertisement. This provided a census of the cigarette advertisements for those brands in a given year. This procedure yielded 467 separate insertions for 1993, 1997, 1999, 2000, 2001, and 2002. As a result, we were able to determine the number of Marlboro, Camel, and Newport advertisements that were one page, two pages, and so forth, for each issue of *Sports Illustrated*, *Rolling Stone*, and *Glamour* in a particular year. In 91% of the cases, the cigarette advertisements were either one- or two-page spreads. Therefore, we classified advertisements as either one-page or two-page insertions. In other words, we considered any multiple-page advertisement a two-page insertion.

For each year, we determined the number and percentage of one-page and two-page insertions in *Sports Illustrated*, *Rolling Stone*, and *Glamour* for each brand. We used the average of the three magazines to determine a brand's number and percentage of one- and two-page insertions in each year across all magazines. There are two exceptions to this system. In 2001, there were no Marlboro advertisements in *Sports Illustrated*, *Rolling Stone*, and *Glamour*, but there were Marlboro advertisements in other magazines (e.g., *GQ*, *Time*, *Marie Claire*, *Road & Track*). In this instance, we used the average insertion percentages from prior years to determine the page-insertion relationship for magazines that contained advertisements in 2001. In 2002, Marlboro placed only two pages in *GQ*. We were able to locate the two advertisements for *GQ* to determine insertion.

We recognize that the other magazines may not contain exactly the same proportion of Marlboro, Camel, and Newport pages to insertions as the average *Sports Illustrated*, *Rolling Stone*, and *Glamour*. As we noted, many of the magazines did not have enough advertisements to determine the number of different insertions. Importantly, these magazines represent the placement of a great deal of cigarette advertising for the three brands. Thus, we content-analyzed every issue of the three magazines for ten years. It was unrealistic to content-analyze a large number of magazines because of the availability of having ten years of the magazines archived at either the university or local libraries. In the end, however, we are confident that an average of the three magazines provided a realistic reflection of the insertion status for the magazines.

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