Youth Exposure to Alcohol Advertising in the United States: Assessment of Two Types of Television Ratings and Implications for Voluntary Advertising Guidelines

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ABSTRACT. Objective: Do youth switch channels during alcohol advertisements at different rates than adults? This question has implications for the alcohol industry's self-regulation of its advertising placements. People may avoid television advertisements by switching channels, which can be measured by comparing two television audience metrics: commercial ratings (which measure the audience during the advertisement) and program ratings (which measure the audience during the television program). We assessed changes in youth and adult audiences during alcohol advertisements with implications for alcohol industry self-regulatory compliance. **Method:** A census of alcohol advertisements for 2010–2014 was licensed from Nielsen (New York, NY). We compared noncompliant advertisements (with youth making up >28.4% of the audience) and the percentage decline in per capita advertising exposure for youth and adult age groups using both commercial and program

ratings. **Results:** The audience during the alcohol advertisement declined by 8.48% among underage viewers ages 12–17 years and by 7.04% for viewers ages 18–20 years, compared with 8.20% for adults ages 21–24, 10.43% for ages 25–34, and 9.74% for ages 35 and older. These declines exceeded the margin of error ($\pm 2.6\%$), indicating a decline in viewership across all age groups, but we could not draw conclusions about differences between age groups. Compared with audience estimates using commercial ratings, program ratings underestimated the number of noncompliant advertisements by 8,800, leading to an underestimate of noncompliant exposure by 140 million impressions. **Conclusions:** Both underage viewers and young adults switched channels during alcohol advertisements. Using commercial ratings rather than program ratings may more accurately measure compliance with alcohol industry advertising guidelines. (*J. Stud. Alcohol Drugs*, 81, 34–38, 2020)

MORE THAN 4,300 YOUNG PEOPLE under the legal drinking age die from alcohol-related causes in the United States each year (Centers for Disease Control and Prevention, 2013). There is substantial evidence that exposure to alcohol advertising is associated with both drinking initiation and heavier alcohol consumption among youth who drink (Anderson et al., 2009; Jernigan et al., 2017; Smith & Foxcroft, 2009). Given this evidence, both the U.S. Surgeon General (U.S. Department of Health and Human Services, 2007) and the U.S. Congress (111th Congress, 2010) have called for ongoing, independent monitoring of youth exposure to alcohol advertising to measure compliance with the alcohol industry's self-regulated advertising guidelines.

The health consequences of underage drinking motivate and support a broad consensus that alcohol firms should advertise in ways that limit youth exposure to alcohol advertisements. Alcohol advertisements in the United States are

regulated by the alcohol industry itself, using a set of voluntary guidelines established by trade associations for distilled spirits, beer, and wine (Beer Institute, 2011; Distilled Spirits Council of the United States, 2011a, 2011b; Wine Institute, 2011). These guidelines specify that alcohol advertisements be placed on television programs for which the adult audience is proportional to the U.S. adult population; that is, with an adult audience composition of at least 71.6% and a youth audience of no more than 28.4%. However, since 2007, there have been two types of data available to measure audience composition for television advertising: audience measures of the program on which the advertisement was placed (i.e., “program ratings”) and audience measures taken at the time the advertisement was telecast (i.e., “commercial ratings”). Alcohol industry self-regulatory guidelines specify that advertisers use reliable, up-to-date audience measures, but the guidelines do not specify whether commercial or program ratings are to be used for assessing compliance (Beer Institute, 2011; Distilled Spirits Council of the United States, 2011a, 2011b; Evans et al., 2008, 2014; Wine Institute, 2011). The challenge to advertisers, regulators, and observers is how to measure what youth actually see.

The costs of meeting this challenge have been eased by technological advances that make it easier to measure youth exposure to alcohol advertisements. Before 2007, television advertisers relied on measures of the audience viewing the program on which the advertisement appeared, based on the average audience for the quarter-hour program segment

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containing the advertisement (“program ratings”) (Webster et al., 2006). Advertisers assumed that the audience viewing the advertisement was similar to that viewing the program (Webster et al., 2006). However, with the increased popularity of television recording devices that allow viewers to skip advertisements and the proliferation of television channels, advertisers have become interested in more precise ways to measure the audience viewing their advertisements (Atkinson, 2008).

Beginning in 2007, advertisers could use commercial ratings to learn about the audience composition at the moment the advertisement was telecast (Atkinson, 2008). Television program audiences typically decline during an advertisement, when people switch channels (Kang, 2015). Youth and adults may switch channels at different rates during the advertisement, if, for example, youth have more interest in the content of the advertisement than adults. If this occurs, the proportion of youth in the audience for the advertisement would differ from the proportion of youth in the audience during the program.

This difference in audience for the advertisement has two important public health consequences. First, it may inform whether youth are attending to alcohol advertisements more than adults. Second, it may alter the youth audience composition, which determines whether an advertisement complies with alcohol industry voluntary advertisement placement guidelines. Given that there are two possible audience measures for assessing the alcohol industry’s compliance with its voluntary placement guidelines, regulators and public health professionals may need guidance on the best methods for assessing youth exposure to alcohol advertisements. This study sought to examine the change in advertising exposure by age group between audience measures using program and commercial ratings and any associated differences in youth exposure to noncompliant advertisements (i.e., more than 28.4% youth audience composition).

Method

Data sources

Data on the occurrence of alcohol advertising and audience data for nationally televised programs (on broadcast network or cable television) were acquired from Nielsen Ad Intel (2019 © The Nielsen Company, New York, NY, data from 2010–2014 used under license, all rights reserved). Nielsen at the time of this study used a sample of approximately 20,000 households totaling 50,000 people across the United States to collect information on television viewing. Each household is supplied with “people meters” (essentially a personal remote control) for each person in the household to determine who is watching television and changing channels. The people meter data are used to project the national viewing audiences for programs and advertisements.

Two types of audience data were collected for each advertisement: program ratings and commercial ratings. Program ratings (“Live+7” ratings) reflect the average television program audience for the quarter-hour time period containing the advertisement plus any viewing of the program on recording devices for an additional 7 days. Commercial ratings (“C3” ratings) reflect the audience at the time the advertisement was telecast plus any viewing of the advertisement on recording devices for an additional 3 days. The difference between these two ratings reflects the number of viewers who switch channels during the alcohol advertisement instead of staying on the same channel. If the advertisement engages the viewers’ attention, they are less likely to switch channels. However, the difference does not account for other ways of avoiding advertisements, such as shifting focus to other media (such as a mobile phone) or leaving the room (Christensen et al., 2015).

Measures

We assessed advertising exposure using impressions, defined as a single person seeing a single advertisement, including multiple viewings of an advertisement by a single individual. We examined advertising impressions for youth under the legal drinking age, 2–20 years, and for the total audience, ages 2 and older (age 2 is the youngest age measured by Nielsen). We calculated the underage audience composition as the proportion of impressions for those age 2–20 relative to impressions for all viewers ages 2 and older. We assessed the total number of noncompliant advertisements and exposure resulting from noncompliant advertisements (referred to as noncompliant exposure). In 2010, noncompliance was defined by an underage audience greater than 30% of the total audience. The threshold was updated to 28.4% in 2011 based on the 2010 census. A gross rating point is a per capita measure of advertising exposure calculated as the total number of advertising impressions for an age group divided by the population of that age group. Because gross rating points are per capita measures, they allow comparisons between demographic age groups of different sizes.

Analysis

Advertising data were loaded into a Microsoft SQL* SERVER R8 database (Microsoft Corporation, Redmond, WA). Program and commercial ratings data for each advertisement were matched based on the date, time, and network on which the advertisement was telecast.

To assess the impact of the different audience measures on compliance with voluntary advertising placement guidelines, we calculated the underage audience composition for each alcohol advertisement using both program and commercial ratings. We summed the number of advertisements that were noncompliant by year and the noncompliant underage exposure (measured in impressions) resulting from noncompliant ads.

To assess the change in the age distribution of the audience between the television program and the alcohol advertisement by age group, we summed gross rating points by year for the following age groups using both program and commercial ratings: ages 12–17, 18–20, 21–24, 25–34, and 35 years and older. We calculated the percent change in gross rating points between program ratings and commercial ratings by age group to estimate the average change in television audience during the alcohol advertisement.

Nielsen does not report, nor do advertisers typically use, audience sampling variances for individual programs or advertisements (Nielsen, 2019). However, Nielsen provides specialized spreadsheets for approximating the standard error of the gross rating points given a schedule of advertisements (lpm_grp_ebookMS07, © 2007, Nielsen, New York, NY). This calculator was designed by Nielsen for use in individual advertising campaigns, not aggregating all advertising campaigns by all alcohol brands over an entire year. However, we used the spreadsheet to provide some guidance on the magnitude of the margin of error. Based on the size of the total advertising volume (20,000–50,000 gross rating points), the number of advertisements, and assuming a weekday advertising schedule over a 12-week period (the longest period available), we estimate the margin of error to be $\pm 2.6\%$. We will use this margin of error as a conservative estimate of the variance of the gross rating point totals.

Finally, because the program ratings use a 7-day playback period to assess the viewing audience composition and the typical commercial ratings use a 3-day playback period, we conducted a sensitivity analysis to examine whether the shortened commercial rating playback period introduced a measurement bias. To assess whether any measurement biases potentially occurred, we compared data from commercial ratings including 7 days of playback to the data from program ratings with the same playback period.

Results

A total of 1,126,073 alcohol advertisements were placed on national broadcast network or cable television programs in the United States from 2010 through 2014. Using program ratings, 96,568 (8.58%) of these 1,126,073 alcohol advertisements exceeded youth audience composition guidelines (i.e., were noncompliant), declining from 10.27% in 2010 to 7.45% in 2014. Using commercial ratings, 105,460 (9.37%) of the 1,126,073 alcohol advertisements were noncompliant, declining from 11.08% in 2010 to 8.04% in 2014.

The amount of youth exposure as a result of these advertisements also differed between the two types of audience measures. According to program ratings, youth were exposed 81.243 billion times to alcohol advertisements, of which 8.823 billion impressions (10.86%) were noncompliant with the voluntary advertising placement guidelines. The percentage of total youth exposure that was noncom-

pliant using program ratings declined over the study period from 13.19% in 2010 to 9.29% in 2014. Using commercial ratings, youth were exposed to 74.829 billion impressions, and 8.963 billion (11.98%) of those impressions were noncompliant. The percentage of total underage exposures that were noncompliant according to commercial ratings declined from 14.26% to 10.49% over the 5-year study period.

Compared with audience estimates using commercial ratings, program ratings underestimated the number of noncompliant advertisements by 8,800 fewer alcohol advertisements, which led to an underestimate of 140 million noncompliant youth exposures over the 5-year period.

Using per capita exposure measures (gross rating points) to compare exposure across age groups, we found that all age groups showed a decline in audience for commercial ratings compared with program ratings (Table 1). The television audience during alcohol ads declined by 8.48% among underage viewers ages 12–17 years, 7.04% among underage viewers ages 18–20, and 8.20% among young adult viewers ages 21–24. By contrast, exposure among older adults declined 10.43% for adults ages 21–34 and 9.74% for adults ages 35 and older. All of these differences exceed the margin of error ($\pm 2.6\%$) for a test of a null effect, indicating that the audience for all age ranges declined during the commercial. However, differences between age ranges fall within the margin of error, indicating that we cannot draw conclusions about differences between age groups. Given the higher reported youth composition point estimate using the commercial rating, it may be that youth are switching channels less frequently than adults during alcohol ads; however, we cannot know this conclusively given the limitations of the data reporting.

The sensitivity analysis using the commercial ratings with 7 days of playback yielded findings that were consistent with the analysis using commercial ratings with 3 days of playback. Comparing the program ratings to commercial ratings, both with 7 days of playback, a smaller percentage of youth left the audience during the commercial (4.5%) than adults (5.8%), although the youth difference was within the margin of error. Therefore we conclude that the youth audience was unchanged whereas the adult audience declined.

Discussion

Alcohol industry advertising voluntary placement guidelines specify that alcohol companies use the most reliable and up-to-date source of audience information when placing advertisements (Beer Institute, 2011; Distilled Spirits Council of the United States, 2011a, 2011b; Wine Institute, 2011). However, the voluntary advertising guidelines, as they are currently written, do not specifically require alcohol advertisers to use commercial ratings to assess their compliance with audience composition

TABLE 1. Change in advertising exposure between program and commercial ratings by age group, 2010–2014

Year	Rating type	Advertising exposure per capita (gross rating points) ^a				
		Ages 12–17	Ages 18–20	Ages 21–24	Ages 25–34	Ages ≥35
2010	Commercial ^b	22,220	30,071	34,106	36,880	36,318
	Program ^c	24,371	32,546	37,354	41,207	40,219
	Change %	-8.83%	-7.60%	-8.70%	-10.50%	-9.70%
2011	Commercial	19,516	28,262	31,798	34,476	33,340
	Program	21,340	30,459	34,535	38,553	36,760
	Change %	-8.55%	-7.21%	-7.93%	-10.57%	-9.30%
2012	Commercial	21,396	28,589	34,769	38,425	39,314
	Program	23,313	30,832	37,765	42,961	43,556
	Change %	-8.22%	-7.27%	-7.93%	-10.56%	-9.74%
2013	Commercial	28,088	39,377	43,904	49,620	54,354
	Program	30,683	42,046	47,905	55,515	60,212
	Change %	-8.46%	-6.35%	-8.35%	-10.62%	-9.73%
2014	Commercial	27,741	36,123	43,482	50,182	56,886
	Program	30,274	38,834	47,301	55,742	63,233
	Change %	-8.37%	-6.98%	-8.07%	-9.97%	-10.04%
Total	Commercial	118,961	162,423	188,058	209,583	220,213
	Program	129,981	174,718	204,860	233,978	243,980
	Change % ^d	-8.48%	-7.04%	-8.20%	-10.43%	-9.74%

^aGross rating points are a measure of per capita advertising exposure that is calculated by dividing the total number of advertising impressions for an age group by the size of the population for that age group. ^bCommercial ratings are so-called C3 ratings that represent the audience during the time the commercial was telecast plus the audience during the commercial for up to 3 days of playback on a recording device such as a digital video recorder. ^cProgram ratings are so-called Live+7 ratings that represent the average audience during the 15-minute time block in which the commercial was telecast plus the average audience during the 15-minute time block for up to 7 days of playback on a recording device such as a digital video recorder. ^dThe margin of error for the gross rating point was estimated to be $\pm 2.6\%$ using the spreadsheet `lpm_grp_ebook.MS07` available from Nielsen (New York, NY).

guidelines. Since commercial ratings became available in 2007, television advertisers have preferred the commercial ratings measure for evaluating the performance of their advertisements because they more precisely report the audience at the moment of the advertisement (Atkinson, 2008).

For alcohol advertisements, we found a decline in audience that exceeded our conservative estimate of the margin of error across all age groups. On that basis alone, our study suggests that measuring audience composition during the commercial would produce a more accurate measure of youth exposure to alcohol advertisements than program ratings. However, our ability to draw conclusions about channel switching differences between youth and adults based on these two types of ratings was limited by our estimate of the sample variance for the exposure measure (gross rating point).

Based on point estimates only, we found that the youth audience composition during the alcohol advertisement was greater than the youth audience composition during the television program, by an average of 28 million youth impressions per year. Thus, it is possible that youth are attending more to the alcohol advertisement than adults. However, it is also possible that youth are multitasking with other media and not changing channels during commercial breaks (Christensen et al., 2015). Given the point estimate differences in audience composition by type of audience measure used, post-audit procedures used to assess compliance with voluntary guidelines may be underestimating noncompliant

youth exposure to alcohol advertising if those procedures are using the program ratings.

This study has several limitations. First, we compared program ratings using a 7-day playback period in contrast to commercial ratings using a 3-day playback period. However, the 7-day playback has historically been the standard measure for television advertising based on program ratings, and 3-day playback has become the standard for commercial ratings. The sensitivity analysis suggested that the use of two different reference periods did not substantially change the conclusions of this analysis. Second, we were only able to assess whether viewers changed channels during a commercial break (Speck & Elliott, 1997). We were unable to assess other means by which viewers may avoid commercials, such as leaving the room during a commercial or attending to some other activity such as reading or surfing the internet (Speck & Elliott, 1997). The impact of these possible differences in the youth and adult audiences watching alcohol advertisements on attention and cognition could not be assessed. Last, using Nielsen data in the context of this large study made it difficult for us to accurately measure variance in the ratings. Therefore, we have interpreted the results using conservative interpretations of measurement variance in the gross rating point.

Given the decline in audience across all age groups during the alcohol advertisement versus during the program on which the advertisement was placed, these study findings suggest that the use of commercial ratings to assess youth

exposure to alcohol advertising may be a better measure for assessing alcohol industry compliance with its voluntary advertising guidelines.

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