


# Awareness of “The Real Cost” Campaign Among US Middle and High School Students: National Youth Tobacco Survey, 2017

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## Abstract

**Objectives:** Monitoring awareness of a public education campaign can help to better understand the extent of sustained population-level exposure to the campaign. We examined unaided awareness (awareness that does not include a visual image to remind the respondent of the campaign or advertisement) and correlates of unaided awareness of “The Real Cost,” a national youth tobacco education campaign developed by the US Food and Drug Administration and implemented in 2014.

**Methods:** This secondary analysis examined unaided campaign awareness by using data from the 2017 National Youth Tobacco Survey, a nationally representative school-based sample of young persons aged 9-19 years (n = 17269) surveyed approximately 3 years after campaign launch. We compared unaided campaign awareness among various cigarette user groups (experimenters, susceptible nonsmokers, current or former smokers, and nonsusceptible nonsmokers). We examined associations between unaided campaign awareness and demographic and tobacco-related correlates, overall and by cigarette user group.

**Results:** Three years after “The Real Cost” campaign was launched, most middle and high school students (58.5%) still reported unaided campaign awareness. Of 17269 middle and high school students in the sample, 62.0% of susceptible nonsmokers and 64.5% of experimenters reported unaided campaign awareness. Among susceptible nonsmokers, unaided campaign awareness differed by age and race/ethnicity and was higher among students with greater tobacco-related harm perceptions (vs lower harm perceptions) and exposure to pro-tobacco marketing (vs no exposure).

**Conclusions:** Future surveillance and research could examine awareness of “The Real Cost” campaign and effects of the campaign on young persons’ knowledge, attitudes, and beliefs to further assess the public health impact of tobacco prevention campaigns.

## Keywords

tobacco, FDA, adolescent health, communications/social media/marketing, smoking

Annually in the United States, approximately 723 000 young persons aged <18 years smoke their first cigarette.<sup>1</sup> If the current trajectory of smoking rates continues, an estimated 5.6 million children aged <18 years alive today will die prematurely as a result of smoking.<sup>2</sup> Most adult daily smokers (87%) tried their first cigarette by age 18,<sup>2</sup> and adolescents can show symptoms of nicotine dependence within days of initiating occasional cigarette smoking.<sup>3</sup> Preventing initiation of smoking during adolescence is critical for reducing the number of lifelong smokers.<sup>4</sup>

Public education campaigns are effective at changing health-related attitudes, beliefs, social norms, and behaviors, especially for preventing tobacco use among young

persons.<sup>4-8</sup> These campaigns use marketing strategies to deliver content informed by scientific research on social

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behaviors and health consequences to promote health among intended audiences.<sup>7,9,10</sup> Public education campaigns are an essential component of comprehensive tobacco control programs<sup>6</sup> and play an important role in countering tobacco industry marketing efforts, which are causally related to smoking initiation and continued smoking among adolescents and young adults.<sup>4,7</sup> In addition to exposure to pro-tobacco marketing, other factors related to tobacco use among young persons include, but are not limited to, social context (ie, smoking among family and friends)<sup>11</sup> and tobacco-related harm perceptions.<sup>12-16</sup>

The 2009 Family Smoking Prevention and Tobacco Control Act<sup>17</sup> authorized the US Food and Drug Administration (FDA) to regulate the manufacture, distribution, and marketing of tobacco products and recognized the importance of educating the public—especially adolescents—about the harms of tobacco use. FDA's first youth tobacco prevention campaign, "The Real Cost,"<sup>18</sup> is designed to prevent cigarette initiation among US children and adolescents aged 12-17 years and to discourage progression to established smoking among adolescent experimenters (ie, those who have smoked <100 cigarettes). Since its launch in February 2014, "The Real Cost" campaign has aired teen-focused advertising on television, radio, and online, as well as in out-of-home displays, magazines, and movie theaters with the central theme of "Every cigarette costs you something."

The evidence-based messaging strategy for "The Real Cost" campaign includes content about 3 smoking-related themes: (1) negative health consequences, (2) loss of control and independence, and (3) dangerous chemicals in cigarettes.<sup>19,20</sup> An independent evaluation of "The Real Cost" campaign (hereinafter, the 2013-2016 evaluation), which used data from a nationally representative longitudinal cohort of young persons during 4 waves from November 2013 through March 2016, found high self-reported, aided (ie, by a visual image to remind the respondent of the campaign/advertisement) campaign awareness 8 months after the campaign launched,<sup>21</sup> followed by changes in attitudes and beliefs<sup>22</sup> and in behavior.<sup>23</sup> Overall, the campaign prevented an estimated 350 000 US young persons aged 11-18 years from initiating smoking from February 2014 through March 2016.<sup>23</sup>

Our analysis continues to monitor "The Real Cost" campaign by using data from the 2017 National Youth Tobacco Survey (NYTS) to provide new information on campaign awareness among a larger, more recent sample of young persons aged 9-19 years, as well as new information on important tobacco-related correlates of awareness of "The Real Cost" campaign.

The first objective of this secondary analysis was to assess unaided awareness (ie, awareness that does not include a visual image to remind the respondent of the campaign or advertisement) of "The Real Cost" campaign by using a nationally representative sample of middle and high school students from NYTS, stratified by campaign audiences: targeted young persons (experimenters and susceptible

nonsmokers) and nontargeted young persons (current and former smokers and nonsusceptible nonsmokers). The second objective was to assess differences in unaided, self-reported awareness of "The Real Cost" campaign and smoking-related factors, including perceptions of tobacco harm, exposure to pro-tobacco advertising, living with a tobacco user, and exposure to secondhand smoke (SHS). Information from this analysis will provide insight into factors associated with unaided awareness of "The Real Cost" campaign and could inform future tobacco prevention communication efforts.

## Methods

### Data

We conducted a secondary analysis of 2017 NYTS data. NYTS is an annual, school-based, self-administered, pencil-and-paper survey with cross-sectional samples of US students in grades 6-12 to assess self-reported tobacco-related beliefs, attitudes, behaviors, and risk factors. NYTS uses a 3-stage cluster sampling procedure to generate a nationally representative sample of US students attending public and private schools. In 2017, 17 872 students completed the survey (overall participation rate of 68.1%). More details on the NYTS sampling design can be found elsewhere.<sup>24,25</sup>

### Measures

We assessed unaided awareness of "The Real Cost" campaign by using the following NYTS question: "In the past 12 months, have you seen or heard "The Real Cost" on television, the internet, social media, or radio as part of ads about tobacco?" Answer choices were yes, no, and not sure. This was the first time that this question appeared on NYTS. We categorized respondents who answered yes as aware of "The Real Cost" campaign.

The target audience of "The Real Cost" campaign includes susceptible nonsmokers and experimenters. We categorized respondents into 4 cigarette use categories that align with target and nontarget audiences of "The Real Cost" campaign: susceptible nonsmokers, experimenters, current and former smokers, and nonsusceptible nonsmokers. Respondents were asked if they had ever tried cigarette smoking (yes/no), how many cigarettes they had smoked in their entire life (I have never smoked cigarettes, not even 1 or 2 puffs;  $\geq 1$  puff but never a whole cigarette; 1 cigarette; 2-5 cigarettes; 6-15 cigarettes [about a half-pack total]; 16-25 cigarettes [about 1 pack total]; 26-99 cigarettes [ $>1$  pack but  $<5$  packs];  $\geq 100$  cigarettes [ $\geq 5$  packs]), and the number of days during the past 30 days that they had smoked cigarettes (0, 1 or 2, 3-5, 6-9, 10-19, 20-29, or 30 days).

Among respondents who said they had tried cigarettes, we categorized those who smoked  $<100$  cigarettes in their lifetime as experimenters and those who smoked  $\geq 100$  cigarettes in their lifetime as current and former smokers. Among

respondents who said they had never tried a cigarette, we assessed cigarette smoking susceptibility with 3 questions: (1) “Do you think that you will try a cigarette soon?” (2) “Do you think you will smoke a cigarette in the next year?” and (3) “If one of your best friends were to offer you a cigarette, would you smoke it?” (answers were definitely yes, probably yes, probably not, and definitely not). We categorized respondents who answered “definitely not” to all 3 items as never smokers,<sup>26</sup> and we categorized respondents who answered “definitely yes,” “probably yes,” or “probably not” to at least 1 of the 3 susceptibility items as susceptible nonsmokers.

We assessed harm perceptions of occasional cigarette use with 2 questions. The first question was, “How much do you think people harm themselves when they smoke cigarettes some days but not every day?” (answer choices: “no harm,” “little harm,” “some harm,” and “a lot of harm”). We combined “no harm” and “little harm” into 1 category. The second question was, “How strongly do you agree with the following statement: All tobacco products are dangerous?” (answer choices: “strongly agree,” “agree,” “disagree,” and “strongly disagree”). We combined “strongly agree” and “agree” into 1 category (agree) and “disagree” and “strongly disagree” into 1 category (disagree).

We assessed any past-week exposure to SHS at home or in vehicles with 2 questions: (1) “During the past 7 days, on how many days did someone smoke tobacco products in your home while you were there?” and (2) “During the past 7 days, on how many days did you ride in a vehicle when someone was smoking a tobacco product?” We categorized respondents who selected  $\geq 1$  day to either question as being exposed to SHS at home or in vehicles in the past week. We assessed living with a tobacco user with the following question: “Does anyone who lives with you now . . . (Select  $\geq 1$ ) (a) smoke cigarettes; (b) smoke cigars, cigarillos, or little cigars; (c) use chewing tobacco, snuff, or dip; (d) use e-cigarettes (electronic cigarettes); (e) smoke tobacco in a hookah or water pipe; (f) smoke pipes filled with tobacco (not water pipe); (g) use snus; (h) use dissolvable tobacco products; (i) smoke bidis (small brown cigarettes wrapped in a leaf); (j) no one who lives with me now uses any form of tobacco.” We categorized respondents who selected any of the products as living with a tobacco user.

We assessed exposure to pro-tobacco marketing across 4 media outlets: (1) television or movies, (2) magazines and newspapers, (3) the internet, and (4) convenience stores, supermarkets, or gas stations (answer choices for each channel: “never,” “rarely,” “sometimes,” “most of the time,” and “always”). Respondents could also select that they did not use or access the channel being assessed. We categorized respondents as exposed to pro-tobacco marketing if they selected “sometimes,” “most of the time,” or “always” to exposure via any of the channels assessed. We categorized the remainder of respondents as not exposed.

We used the following demographic characteristics in the analysis: sex (male/female), race/ethnicity (non-Hispanic

white, non-Hispanic black, non-Hispanic other, and Hispanic), age (9-11, 12-17, and 18-19 years), and school type (middle school or high school).

### Statistical Analysis

We used cross-tabulations to examine unaided awareness of “The Real Cost” campaign among the entire sample and by cigarette user group (target: susceptible nonsmokers and experimenters; nontarget: nonsusceptible nonsmokers and current and former smokers). We used the Pearson  $\chi^2$  test of independence to examine differences between unaided awareness of “The Real Cost” campaign and demographic and tobacco-related variables, overall and stratified by cigarette user group. We considered  $P < .05$  to be significant. We conducted analyses by using Stata/SE version 15.1<sup>27</sup> and weighted all data to account for the complex sampling design and to adjust for nonresponse. We excluded 603 missing values for unaided awareness of “The Real Cost” campaign question, resulting in a final analytic sample of 17 269 respondents aged 9-19 years.

## Results

More than half (58.5%) of middle and high school students reported unaided awareness of “The Real Cost” campaign (Table).

### Susceptible Nonsmokers and Experimenters

About two-thirds of susceptible nonsmokers (62.0%) and experimenters (64.5%) reported unaided awareness of “The Real Cost” campaign (Table). Among susceptible nonsmokers, 62.6% of respondents aged 12-17 years, 54.7% of respondents aged 9-11 years, and 58.2% of respondents aged 18-19 years reported unaided campaign awareness ( $P = .02$ ). Among susceptible nonsmokers, unaided campaign awareness was highest among respondents identifying as non-Hispanic white (66.3%), followed by non-Hispanic other (62.1%), non-Hispanic black (57.6%), and Hispanic (57.4%) ( $P < .001$ ). Unaided campaign awareness was higher among susceptible nonsmoking high school students than among susceptible nonsmoking middle school students (64.6% vs 58.9%;  $P < .001$ ). Among susceptible nonsmokers, unaided campaign awareness was 64.5% among those reporting that occasional cigarette smoking caused a lot of harm, 62.6% among those who reported some harm, and 49.6% among those reporting no or little harm ( $P < .001$ ). Most susceptible nonsmoking respondents who agreed that all tobacco products are dangerous (63.4%) and reported exposure to pro-tobacco marketing (64.6%) reported unaided awareness of “The Real Cost” campaign (both  $P < .001$ ).

Among experimenters, unaided awareness of “The Real Cost” campaign was highest among respondents who identified as non-Hispanic other (68.6%), followed by non-Hispanic white (66.9%), Hispanic (61.5%), and

**Table.** Unaided awareness<sup>a</sup> of “The Real Cost” campaign,<sup>b</sup> by demographic and cigarette smoking–related characteristics (weighted), United States, 2017<sup>c</sup>

Characteristics	Total <sup>d</sup> (Unweighted n = 17 269)		Susceptible Nonsmoker <sup>e</sup> (Unweighted n = 3872)		Experimenter <sup>e</sup> (Unweighted n = 2517)		Current or Former Smoker <sup>f</sup> (Unweighted n = 359)		Nonsusceptible Nonsmoker <sup>f</sup> (Unweighted n = 10 108)	
	%	$\chi^2$ (P Value) <sup>g</sup>	%	$\chi^2$ (P Value) <sup>g</sup>	%	$\chi^2$ (P Value) <sup>g</sup>	%	$\chi^2$ (P Value) <sup>g</sup>	%	$\chi^2$ (P Value) <sup>g</sup>
Total awareness	58.5	—	62.0	—	64.5	—	63.0	—	56.0	—
Sex										
Male	58.2	7.3 (.001)	62.7	2.3 (.10)	65.4	1.2 (.31)	62.1	1.7 (.19)	55.0	5.6 (.01)
Female	58.7		61.2		63.5		63.3		57.0	
Age, y										
9-11	50.5	6.8 (<.001)	54.7	3.0 (.02)	64.9	2.0 (.11)	51.6	2.1 (.09)	48.9	3.1 (.03)
12-17	59.1		62.6		65.2		66.8		56.6	
18-19	58.1		58.2		61.7		53.9		57.3	
School type										
Middle school	54.6	18.0 (<.001)	58.9	9.7 (<.001)	70.3	7.4 (.001)	75.3	0.8 (.45)	51.7	16.8 (<.001)
High school	61.5		64.6		63.0		61.8		60.3	
Race/ethnicity										
Non-Hispanic white	61.7	7.1 (<.001)	66.3	5.2 (<.001)	66.9	3.0 (.01)	60.0	1.2 (.32)	58.9	— <sup>j</sup>
Non-Hispanic black	52.4		57.6		57.8		44.4		— <sup>i</sup>	
Hispanic	55.7		57.4		61.5		68.2		53.7	
Non-Hispanic other <sup>h</sup>	59.3		62.1		68.6		68.5		56.6	
Harm perceptions of occasional cigarette use <sup>k</sup>										
No or little harm	46.4	18.6 (<.001)	49.6	6.0 (<.001)	57.9	1.9 (.11)	55.2	2.0 (.11)	34.5	17.8 (<.001)
Some harm	60.8		62.6		67.3		64.3		57.3	
A lot of harm	59.1		64.5		64.4		66.5		57.0	
All tobacco products are dangerous										
Agree	59.7	20.5 (<.001)	63.4	8.0 (.001)	66.2	3.2 (.05)	62.4	1.1 (.34)	57.3	22.3 (<.001)
Disagree	50.2		54.8		59.0		63.1		40.9	
Pro-tobacco marketing exposure	63.1	189.8 (<.001)	64.6	14.5 (<.001)	67.8	17.2 (<.001)	67.1	3.3 (.049)	61.5	147.8 (<.001)
Past-week secondhand smoke exposure at home or in vehicles	65.8	20.8 (<.001)	66.3	2.3 (.10)	68.1	3.8 (.02)	66.3	3.1 (.05)	64.6	15.7 (<.001)
Lives with tobacco user	62.9	17.8 (<.001)	63.5	1.9 (.16)	67.3	5.6 (.01)	66.9	1.4 (.26)	60.5	9.7 (<.001)

<sup>a</sup>Unaided awareness assesses awareness without a visual aid to remind the respondent of the campaign/advertisement; answer choices were “yes,” “no,” and “not sure” and categorized respondents who answered “yes” as aware.

<sup>b</sup>“The Real Cost” campaign is the US Food and Drug Administration’s first tobacco prevention campaign aimed toward young persons.<sup>18</sup> It is designed to prevent cigarette initiation among children and adolescents aged 12-17 years in the United States and to discourage progression to established smoking among experimenters (ie, those who have smoked <100 cigarettes).

<sup>c</sup>Data source: 2017 National Youth Tobacco Survey.<sup>24</sup>

<sup>d</sup>Total is larger than the sum of the smoker groups because some respondents had missing data.

<sup>e</sup>Target cigarette smoker groups in “The Real Cost” campaign. Susceptible nonsmokers included never cigarette users who answered something besides “definitely not” to at least 1 of 3 susceptibility items. Susceptibility items included: (1) “Do you think that you will try a cigarette soon?” (2) “Do you think you will smoke a cigarette in the next year?” (3) “If one of your best friends were to offer you a cigarette, would you smoke it?” Answer choices included “definitely yes,” “probably yes,” “probably not,” and “definitely not.” Experimenters included ever cigarette smokers who had smoked <100 cigarettes in their lifetime.

<sup>f</sup>Nontarget cigarette smoker groups in “The Real Cost” campaign. Current or former smokers included those who had smoked ≥100 cigarettes in their lifetime. Nonsusceptible nonsmokers included never smokers who answered “definitely not” to all 3 susceptibility items.

<sup>g</sup>P values were obtained by using the Pearson  $\chi^2$  test of independence, with  $P < .05$  considered significant.

<sup>h</sup>Includes respondents who identified as non-Hispanic Asian, non-Hispanic American Indian/Alaska Native, non-Hispanic Native Hawaiian or other Pacific Islander, or who selected multiple races.

<sup>i</sup>Estimates with a relative standard error >0.30 were suppressed.

<sup>j</sup> $\chi^2$  test statistic and P value were not reported because they may be unreliable due to suppressed value of one of the estimates.

<sup>k</sup>“How much do you think people harm themselves when they smoke cigarettes some days but not every day? No harm; little harm; some harm; a lot of harm.”

non-Hispanic black (57.8%) ( $P = .01$ ) (Table). Unaided campaign awareness was significantly higher among middle school students than among high school students (70.3% vs 63.0%;  $P = .001$ ). Unaided campaign awareness was

significantly higher among respondents who reported past-week SHS exposure at home or in vehicles (compared with no past-week SHS exposure at home or in vehicles) (68.1%;  $P = .02$ ) and those living with a tobacco user (compared with

not living with a tobacco user) (67.3%;  $P = .01$ ). Unaided campaign awareness was also significantly higher among respondents exposed to pro-tobacco marketing (vs not exposed to pro-tobacco marketing) (67.8%;  $P < .001$ ).

### Current and Former Smokers and Nonsusceptible Nonsmokers

Most current and former smokers (63.0%) and nonsusceptible nonsmokers (56.0%) reported unaided awareness of “The Real Cost” campaign (Table). Among current and former smokers, unaided campaign awareness was significantly higher among respondents who reported exposure to pro-tobacco marketing than among those who did not (67.1%;  $P = .05$ ).

Among nonsusceptible nonsmokers, a significantly higher percentage of females than males reported unaided campaign awareness (57.0% vs 55.0%;  $P = .01$ ) (Table). Unaided campaign awareness was 57.3% among respondents aged 18-19, 56.6% among respondents aged 12-17, and 48.9% among respondents aged 9-11 ( $P = .03$ ). Unaided campaign awareness was significantly higher among high school students than among middle school students (60.3% vs 51.7%;  $P < .001$ ). Unaided campaign awareness was significantly higher among respondents who reported that occasional cigarette smoking caused “some harm” (57.3%) or “a lot of harm” (57.0%) compared with “no or little harm” (34.5%) (all  $P < .001$ ). Unaided campaign awareness also was significantly higher among respondents who reported exposure to pro-tobacco marketing (vs no exposure to pro-tobacco marketing) (61.5%), past-week SHS exposure at home or in vehicles (vs no past-week SHS exposure at home or in vehicles) (64.6%), and living with a tobacco user (vs not living with a tobacco user) (60.5%) (all  $P < .001$ ).

## Discussion

Our analysis of awareness of “The Real Cost” campaign found that unaided campaign awareness was highest among cigarette experimenters and lowest among nonsusceptible nonsmokers. Our findings are similar to the findings of a 2013-2016 evaluation,<sup>21</sup> which found that aided campaign awareness was higher among cigarette experimenters and susceptible nonsmokers than among nonsusceptible nonsmokers. The 2013-2016 evaluation also found that aided campaign awareness was higher among those exposed to household smoking than among those not exposed to household smoking.<sup>21</sup> However, our finding that campaign awareness was highest among non-Hispanic white respondents differs from a study by Duke et al,<sup>21</sup> which found that aided awareness of “The Real Cost” campaign was significantly higher among Hispanic and non-Hispanic black respondents than among non-Hispanic white respondents, potentially reflecting differences in the 2 samples.

We also examined differences in unaided campaign awareness by demographic and tobacco-related variables

within each cigarette use group. We found that among susceptible nonsmokers and nonsusceptible nonsmokers, unaided campaign awareness was higher among respondents who agreed that all tobacco products are dangerous (vs did not agree that all tobacco products are dangerous) and respondents who reported greater harm perceptions of occasional cigarette use (vs lower harm perceptions of occasional cigarette use). Because “The Real Cost” campaign promotes messages about the harms of tobacco products and smoking, it is possible that these respondents hold such beliefs because of campaign exposure. It is also possible that “The Real Cost” campaign advertisements resonate more and are more salient for those who report high harm perceptions of tobacco use than for those who report lower harm perceptions of tobacco use, because the messaging is consistent with their beliefs. Therefore, these respondents may be more likely than others to recall “The Real Cost” advertisement and to report unaided campaign awareness.<sup>28,29</sup> Research has shown that persons are more likely to seek out and pay attention to information with which they agree than with which they disagree.<sup>28</sup>

Overall and within each cigarette user group, a higher percentage of respondents who reported exposure to pro-tobacco marketing reported unaided campaign awareness than those who reported no exposure to pro-tobacco marketing. This finding suggests that “The Real Cost” campaign effectively reaches susceptible nonsmoking young persons who are exposed to pro-tobacco marketing and, therefore, are at a higher risk for smoking initiation than young persons who are not exposed to pro-tobacco marketing.<sup>4</sup> It is also possible that young persons who report exposure to pro-tobacco marketing pay more attention to media overall than young persons who are not exposed to pro-tobacco marketing and, therefore, report higher unaided awareness to both.<sup>30</sup> In addition, exposure to pro-tobacco marketing may prime persons to notice other messaging related to tobacco, including tobacco prevention messaging such as “The Real Cost” advertisements.

As with the 2013-2016 evaluation, most middle and high school students in our study population, as well as those within the campaign’s target audience groups (ie, susceptible nonsmokers and experimenters), reported campaign awareness. However, levels of campaign awareness were higher in the 2013-2016 evaluation than in our analysis, which found unaided campaign awareness among 58.5% of the study population overall. The 2013-2016 evaluation found that within 8 months of campaign launch, 89.0% of young persons reported aided awareness of at least 1 advertisement in “The Real Cost” campaign, with high self-reported aided campaign awareness among both target audience groups: experimenters (94.6%) and susceptible nonsmokers (90.5%). These differences in findings are potentially due to methodological differences. NYTS includes a larger sample size ( $n = 17\,872$ ) and the data are more recent (2017) than data in the 2013-2016 evaluation, which assessed aided campaign awareness using 2013-2016 data from a sample of 5761 adolescents aged 12-17 years.<sup>21</sup> The sampling strategy for NYTS also

differs from the 2013-2016 evaluation. NYTS is self-administered in the school setting, whereas the 2013-2016 evaluation was conducted online or through in-person interviews. Differences in awareness between this study and the 2013-2016 evaluation may also be due to variation in campaign expenditures and advertisement content over time.

Another important distinction between the studies is how the surveys measured awareness. NYTS did not expose respondents to advertisements and asked a single question about awareness, with response options of yes, no, or not sure. The measure in NYTS captures what is referred to as unaided recall or awareness, because the respondent is not provided with any kind of visual, such as an image from or video of the advertisement, to remind them of past advertisement engagement.<sup>31</sup> On the contrary, the 2013-2016 evaluation showed respondents multiple advertisements and asked about awareness, with response options ranging from “never” to “very often.” This type of question captures advertisement recognition, rather than recall, because it includes a visual<sup>31</sup> and can be referred to as aided awareness. Compared with recall, recognition requires less cognitive engagement.<sup>31-33</sup> Although similar, these 2 concepts capture different constructs; recognition captures whether an advertisement has ever been encoded, meaning that it has left at least a minimal memory trace, whereas recall captures salience of an advertisement.<sup>31,34,35</sup> Both measures are valid, but recall measures may lead to underreporting,<sup>36</sup> whereas recognition measures may lead to overreporting due to differences in cognitive demand.<sup>21,31</sup> Given these considerations, differences in awareness between our analysis and the 2013-2016 evaluation are likely due in part to the measurement of recall vs recognition. In addition, the advertisement awareness variable in the 2013-2016 evaluation was based on awareness of at least 1 of 4 advertisements,<sup>21</sup> providing a greater opportunity for respondents to report awareness as compared with NYTS. Lastly, unlike the 2013-2016 evaluation, the NYTS measure does not assess frequency of exposure. Message exposure via reach and frequency is critical to the success of the campaign<sup>5</sup>; whereas there is value in knowing general awareness, valuable information can be lost without the frequency measure.<sup>37</sup>

### Limitations

This study had several limitations. First, NYTS data are collected among young persons who attend public or private school and may not be generalizable to young persons outside these populations (eg, young persons who are home-schooled, who dropped out of school, or who are in detention centers). This study also lacked aided recall or confirmed awareness, both of which are validated measures for assessing advertisement awareness.<sup>31</sup>

### Conclusion

Our analysis of NYTS data provides updated information from a different context compared with previous findings

reported in the 2013-2016 evaluation on unaided awareness of “The Real Cost” campaign. Because the goal of the campaign is to sustain exposure at levels that affect knowledge, attitudes, and beliefs, additional campaign monitoring efforts using multiple data sources may be useful. Our study data not only show that “The Real Cost” campaign is still reaching many populations, including experimenters, susceptible non-smokers, and those living with a tobacco user, but that unaided awareness differs among demographic groups. A general market tobacco prevention campaign can be effective in reaching groups at risk of tobacco use, including young persons who are susceptible to or have experimented with cigarette smoking. Targeted campaign efforts may further reach populations with lower levels of campaign awareness, including non-Hispanic black adolescents and susceptible middle school students. Future research can continue to monitor campaign awareness and provide data to develop more targeted campaigns to prevent tobacco use among young persons.

### Authors' Note

The findings and conclusions in this article are those of the authors and do not necessarily represent the official position of the U.S. Department of Health and Human Services or any of its affiliated institutions or agencies.

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