

Assessing the Impact of FDA's *The Real Cost* Campaign in Social Media

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Health organizations and programs are increasingly turning to social media as a channel for health communication, as these platforms can serve not only as a channel for rapid and broad information dissemination but also as a test-bed for health education and promotion messages (Stellefson et al., 2020). A challenge, however, is that health programs and interventions compete in this space with product marketing and advocacy efforts. The marketing and persuasion efforts undertaken by the tobacco industry exemplify this, especially the use of digital and social media to share tobacco marketing messages and attempt to influence adoption of tobacco use. Indeed, recent data suggest that tobacco marketing remains pervasive, especially in digital media where exposure to tobacco is common (Berg et al., 2019; Czaplicki et al., 2020; Huang et al., 2019; Huang et al., 2016; Kostygina et al., 2016). Moreover, these studies have also found that there is a relationship between this exposure and subsequent tobacco use among young adults (Berg et al., 2019; Czaplicki et al., 2020; Huang et al., 2016; Huang et al., 2019; Kostygina et al., 2016).

To help address tobacco uptake and use by young adults, in 2014, the U.S. Food and Drug Administration (FDA), under the Family Smoking Prevention and Tobacco Control Act, announced its *The Real Cost* campaign, which is aimed at reducing tobacco use among 12- to 17-year-olds. A prior evaluation of *The Real Cost* campaign using a national longitudinal in-home and online survey of U.S. youth to explore its impact on awareness and perceived effectiveness showed promising results (Duke et al., 2015). However, that evaluation does not include social media data analysis in its methodology. Given the high levels of adoption of and engagement in social media by young people, this leaves a gap in the current understanding of this campaign's effectiveness.

In response to this, NORC at the University of Chicago designed an internally funded assessment to analyze Twitter conversations about *The Real Cost* campaign between February and November 2014. The following report reviews the study's design and methods, findings, and the implications of this work for future evaluations of *The Real Cost* campaign, as well as other tobacco communication initiatives.

Study Aims

This study aimed to understand:

- How aware Twitter audiences were of the campaign and its messages
- How effective Twitter audiences perceived the campaign to be
- Whether the audiences engaging with *The Real Cost* campaign on Twitter were its intended target audiences

Study Design and Measures

To achieve these aims and to help fill a perceived gap in the current evaluation methodology of *The Real Cost* campaign, NORC designed a study to better understand the campaign's

effectiveness among Twitter audiences. This study drew on three key measures from the prior evaluation (Duke et al., 2015)—brand awareness, awareness of individual advertisements, and perceived effectiveness—and adapted them for analyzing Twitter data. In addition, because this study sought to understand whether the audiences engaging with *The Real Cost* campaign on Twitter were the campaign’s intended target audiences, it added a third measure: intended audience. Table 1 breaks out the original study measures and how these were adapted for this study.

Table 1. Definitions of NORC Study Measures and Previous Study Measures

NORC Study Measure	NORC Study Measures’ Dimensions	NORC Measure Definition	Prior Study Measure(s)	Prior Study Measure Definition(s)
Awareness	Awareness of campaign	Any post that is a retweet/tweet of campaign	Brand awareness	Brand awareness
	Awareness of campaign ads	Any post that mentions an element (skin, tooth) of the campaign	Awareness of individual advertisements	Respondents’ frequency of exposure to each ad
Perceived effectiveness	Message acceptance	Posts reflecting user acceptance of/perceived threat to their own or others’ health because of the message	Perceived effectiveness (PE) scale	Youth reactions and receptivity to each ad
	Message rejection	Posts reflecting doubt about the threat of the message or inability to deal with the fear		
Intended audience	Government	An official account that represents any government agency	NA	NA
	Health-related	Any account that defines her/himself as a health-related professional, advocate, and student and/or concerned/interested in health issues		
	News media	Any account that represents a new media channel on Twitter		
	Organization	Any account that represents an organization		
	Tobacco product	Any account that states use of tobacco products in the profile		
	Organic	Any account that is not categorized into one of the previously mentioned fields and does not appear to be affiliated with another entity		

Study Methods

To achieve the study’s aims, Twitter data were collected between February and November 2014—the same time period when the campaign launched and when the prior evaluation took place. To collect these data, a comprehensive keyword list was generated by reviewing all ad content, searching for the campaign name (“the real cost”) along with “FDA” (and all its permutations), and searching for specific content features of the campaign commercials, such as “tooth,” “skin,” “bully,” and “Alison,” (which were elements in the campaign’s ads) that co-occurred with words like “ad” or “commercial.” A total of 70,603 tweets were initially collected and cleaned. The final cleaned data set contained 69,207 tweets. Each tweet was then manually coded according to one of the previously mentioned measures using two independent coders. Inter-rater reliability was 94 percent ($\alpha = 0.94$) on an overlap sample of tweets (0.1 percent of the final cleaned sample). See Table 2 for exemplar tweets by measure.

Table 2. Exemplar Tweets by Measure

NORC Study Measure	NORC Study Measures’ Dimensions	NORC Measure Definition	Exemplar Tweets/Accounts
Awareness	Awareness of campaign	Any post that is a retweet/tweet of campaign	RT @AP: .@US_FDA launching multimillion-dollar multimedia education campaign showing at-risk youth “real cost” of smoking: http://t.co/DO9R
	Awareness of campaign ads	Any post that mentions an element (skin, tooth, bully, or Alison) of the campaign	The Real Cost cigarette commercials make me squirm every time I see him pull his tooth out or her pick her skin off her face.
Perceived effectiveness	Message acceptance	Posts reflecting evidence that users experienced fear and/or perceived a threat to their own or other smokers’ health	Those Real Cost commercials are getting real! The tooth pulled one is a clincher.
	Message rejection	Posts reflecting doubt about the threat of the message or inability to deal with the fear	@KnowTheRealCost holy fucking shit nobody cares
Intended audience	Government	An official account representing any government agency	@TeenHealthGov with a profile description as “The Office of Adolescent Health, in the U.S. Department of Health & Human Services, is dedicated to improving the health and well-being of America’s adolescents.”
	Health	Any account that defines her/himself as a health-related professional,	@MonteviaHealth with a profile as “Public health physician focused on global health and development,

NORC Study Measure	NORC Study Measures' Dimensions	NORC Measure Definition	Exemplar Tweets/Accounts
		advocate, and student and/or concerned/interested in health issues	integrated disease surveillance, program evaluation, and impact at scale."
	News	Any account that represents a new media channel on Twitter	@kgun9 with a profile as "KGUN9 is Southern Arizona's station for breaking news, weather, and sports. We Are On Your Side to ask the tough questions on issues in our community."
	Organization	Any account that represents an organization	@SSLearn has a profile saying "The National Center on Safe Supportive Learning Environments provides training & support to improve the social/emotional factors affecting learning in schools."
	Tobacco	Any account that states use of tobacco products in the profile	@Ecig****on with a profile as "Electronic cigarettes, vaporizers, eliquid, ejuice, mods, provaris, ego-c twist, tanks, rda/rba's, attys, etc."
	Organic	Any account that is not categorized into one of the previously mentioned fields and does not appear to be affiliated with another entity	@edin****er has a blank profile; OR @ja****ith has a profile as "A girl with many dreams"

Results

This study sought to understand how aware Twitter audiences were of *The Real Cost* campaign, how effective these audiences perceived the campaign to be, and whether the campaign was successful in reaching its intended audiences. It sought to achieve these aims by assessing three key measures regarding Twitter data collected between February and November 2014. A total of 69,207 relevant tweets were identified. The following section documents the results from the study by measure.

Awareness. Of the posts collected, 98 percent (n = 69,207) were found to be relevant to the campaign. Of these tweets, 41,609 (60 percent) mentioned *The Real Cost* campaign by name. In addition, 37,944 tweets (55 percent) mentioned at least one element of the campaign's ads, such as "tooth," "skin," "bully," or "Alison."

Perceived Effectiveness. Twenty-eight percent of the tweets (n = 19,340) were labeled as message acceptance, meaning that the posts exhibited elements of user acceptance of and/or perceived threat from the message. Only 6 percent (n = 4,054) of the tweets were labeled as message rejection, meaning that the posts exhibited doubts about the threat of the message or users’ inability to deal with the fear. The remaining 66 percent (n = 45,813) of the tweets were not coded for this measure because they either did not include an emotional response or they lacked appropriate context.

Intended Audience. This analysis of the Twitter data revealed that the majority of the engagements with *The Real Cost*-related tweets were by the organic category users as defined in Table 2 (n = 57,325, 98 percent). These are overwhelmingly users not associated with any campaign, tobacco, or other entity, and therefore are more general Twitter users. All other user types comprised 1 percent or less of the analyzed content (see Table 3).

Table 3. Tweets by Audience Type

Audience Type	Number of Users	Percentage	No. of Tweets	Potential Reach
Government	16	0%	205	3,276,720
Health	682	1%	1,343	11,523,434
News	203	0%	441	25,042,579
Organization	13	0%	14	43,391
Tobacco	198	0%	335	258,152
Organic	57,325	98%	66,869	62,358,387

Additional analysis of the “organic” category’s Twitter profiles, where grade and age were occasionally self-reported, revealed that the majority of tweets by organic users were from youth and young adults who are, in fact, the campaign’s target audience.

Discussion and Implications

The following section discusses the study’s results, organized by aim:

1. The findings related to awareness of *The Real Cost* campaign on Twitter are reviewed.
2. The findings related to the perceived effectiveness of the campaign are discussed.
3. The results related to whether the campaign reached its intended audiences on Twitter are reviewed.

In terms of awareness, findings indicate that, over the course of the year that *The Real Cost* campaign ran (e.g., 2014), awareness of the campaign was prominent on Twitter. Of the 69,207 tweets collected, 60 percent explicitly mentioned the campaign’s name, and 55 percent

mentioned at least one element of the campaign. This content included retweeted posts, which signals further engagement with campaign messaging.

Moreover, the total reach of the campaign on Twitter in 2014 was 102,502,663. In 2014, the total population of Twitter users was 288,000,000 (Statista, 2019); therefore, the campaign reached approximately 36 percent of Twitter users in 2014, suggesting broad exposure to and awareness of the campaign and its messages.

In terms of perceived effectiveness, a majority of the 69,207 relevant tweets collected reflected message acceptance, suggesting that *The Real Cost* campaign had more message acceptance than rejection on Twitter in 2014. In fact, the number of acceptance-type posts was more than four times higher than the number of rejection-type posts.

Despite high message acceptance, we identified a few responses indicating that the audiences might have misunderstood, rejected, and/or attempted to counter campaign messages. These themes provide insight into the discourse on *The Real Cost* campaign on Twitter and show ways in which messages may boomerang or be rejected when using humor, especially among audiences who do not perceive the threat and lack efficacy to respond to the message. Message acceptance or rejection is based on the interaction between the fear elicited by a message, the receiver's level of efficacy (response or self-efficacy), and contextual factors (Witte, 1992; Emery et al., 2014). Message acceptance is more likely than rejection when the fear-based message is well-constructed, when there is high perceived threat, and when efficacy is present to act on the message (Witte, 1992; Witte & Allen, 2000; Emery et al., 2014). Therefore, message rejection of *The Real Cost* campaign posts could be attributed to the absence of perceived threat and efficacy in the messaging.

Finally, in terms of intended audience, the fact that the "organic" category of users (e.g., users not affiliated with any campaign, tobacco, or other entity) was the top category engaging with the campaign—and the fact that many of these were youth—signals how the campaign in fact reached its intended audience during its first year. This category of users was also integral in increasing the visibility of the campaign's messages among the campaign's target audience, as demonstrated by retweets.

Overall, these findings support the findings of the earlier evaluation, which were promising for the campaign in terms of awareness and effectiveness. Moreover, these findings indicate that campaign content reached and resonated with the intended audience and moved them to engage with the content as well as react to and amplify the campaign in real time on Twitter.

Limitations. The present study has several limitations. Due to limited resources and funding, data were collected and captured only from Twitter. In addition, a limited time period was assessed. With additional resources, more data could be collected from other platforms and time periods, and more analyses and more robust and rigorous testing could be done.

Conclusions

Analyses of social media data in campaign evaluations can add depth and perspective to more traditional data collection methods. Social media provide insight into how target audiences interpret, react to, and engage with messages in a natural setting (Emery et al., 2014; Abril et al., 2017), and this setting only continues to expand, with the number of Twitter users currently at almost 200,000,000 daily active users (Statista, 2021). Furthermore, although social media users are not representative of the general U.S. population, social media are used by those who are typically underrepresented in traditional research settings (e.g., young adults). This study adds to the growing body of work using social media in social science research. Future research, especially future tobacco campaign evaluations—including those that focus on newer tobacco products such as e-cigarettes—should consider building on this study and including social data analyses in their evaluations.

References

- Abril EP, Szczypka G, Emery S. LMFAO! Humor as a response to fear: decomposing fear control within the extended parallel process model. *J Broadcast Electron Media*. 2017;61(1):126-143.
- Berg CJ, Haardorfer R, Cahn Z, et al. The association between Twitter activity and e-cigarette purchasing. *Tob Regul Sci*. 2019;5(6):502-517.
- Centers for Disease Control and Prevention; National Center for Chronic Disease Prevention and Health Promotion; Office on Smoking and Health. Best practices for comprehensive tobacco control programs—2014. Available at: https://www.cdc.gov/tobacco/stateandcommunity/best_practices/index.htm.
- Czaplicki L, Tulsiani S, Kostygina G, et al. #toolittleoolate: JUUL-related content on Instagram before and after self-regulatory action. *PLoS One*. 2020;15(5):1-9.
- Duke JC, Alexander TN, Zhao X, et al. Youth's awareness of and reactions to the real cost national tobacco public education campaign. *PLoS One*; 2015;10(12):e0144827.
- Emery SL, Szczypka G, Abril EP, Kim Y, Vera L. Are you scared yet? Evaluating fear appeal messages in tweets about the tips campaign. *J Commun*. 2014;64(2):278-295.
- Farrelly MC, Nonnemaker J, Davis KC, Hussin A. The influence of the national truth campaign on smoking initiation. *Am J Prev Med*. 2009;36(5):379-384.
- Huang J, Kornfield R, Emery SL. 100 million views of electronic cigarette YouTube videos and counting: Quantification, content evaluation, and engagement levels of videos. *J Med Internet Res*. 2016;18(3):e67.
- Huang J, Zongshuan D, Kwok J, et al. Vaping versus JUULing: how the extraordinary growth and marketing of JUUL transformed the US retail e-cigarette market. *Tob Control*. 2019;28(2):146-151.

Kostygina G, Tran H, Shi Y, Kim Y, Emery SL. 'Sweeter than a Swisher': Amount and themes of little cigar and cigarillo content on Twitter. *Tob Control*. 2016;25(Suppl 1):i75-i82.

National Cancer Institute. The role of the media in promoting and reducing tobacco use (no. 19); 2012. Available at: <http://cancercontrol.cancer.gov/tcrb/monographs/19/index.html>.

Statista. Number of monthly active Twitter users worldwide from 1st quarter 2010 to 1st quarter 2019. Available at: [https://www.statista.com/statistics/282087/number-of-monthly-active-twitter-users/#:~:text=How%20many%20people%20use%20Twitter,daily%20active%20users%20\(mDAU\)](https://www.statista.com/statistics/282087/number-of-monthly-active-twitter-users/#:~:text=How%20many%20people%20use%20Twitter,daily%20active%20users%20(mDAU)).

Statista. Number of monetizable daily active Twitter users (mDAU) worldwide from 1st quarter 2017 to 4th quarter 2020; 2021. Available at: <https://www.statista.com/statistics/970920/monetizable-daily-active-twitter-users-worldwide/>.

Stellefson M, Paige SR, Chaney BH, Chaney JD. Evolving role of social media in health promotion: updated responsibilities for health education specialists. *Int J Environ Res Public Health*. 2020;17(4):1153.

Wakefield M, Flay B, Nichter M, Giovino G. Effects of anti-smoking advertising on youth smoking: a review. *J Health Commun*. 2003;8(3):229-247.

Wilson LM, Avila Tang E, Chander G, et al. Impact of tobacco control interventions on smoking initiation, cessation, and prevalence: a systematic review. *J Environ Public Health*. 2012;2012:961724.

Witte K. Putting the fear back into fear appeals: The extended parallel process model. *Communication Monographs*. 1992;59:329-349.

Witte K, Allen M. A meta-analysis of fear appeals: Implications for effective public health campaigns. *Health Educ Behav*. 2000;27:591-615.

Zhao X, Roditis ML, Alexander TN. Fear and humor appeals in "The Real Cost" campaign: Evidence of potential effectiveness in message pretesting. *Am J Prev Med*. 2019;56(2 Suppl 1):S31-S39.