

JAMA Internal Medicine | [Original Investigation](#)

Combustible and Electronic Tobacco and Marijuana Products in Hip-Hop Music Videos, 2013-2017

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IMPORTANCE Hip-hop is the leading music genre in the United States and its fan base includes a large proportion of adolescents and young adults of all racial and ethnic groups, particularly minorities. The appearance of combustible and electronic tobacco and marijuana products, especially brand placement and use by popular and influential artists, may increase the risk of tobacco and marijuana use and decrease perceptions of harm.

OBJECTIVE To assess the prevalence of the appearance and use of combustible and electronic tobacco and marijuana products, including brand placement, in leading hip-hop songs.

DESIGN, SETTING, AND PARTICIPANTS Analysis of top 50 songs from 2013 to 2017 of *Billboard* magazine's weekly Hot R&B/Hip-Hop Songs with videos that included the appearance or use of combustible tobacco and marijuana products (manufactured cigarettes, cigars, hookah or waterpipe, pipe, hand-rolled tobacco and marijuana products, marijuana buds); appearance of exhaled smoke or vapor without an identifiable source product; appearance or use of electronic tobacco and marijuana products (eg, electronic cigarettes); tobacco or marijuana brand placement; appearance or use of combustible and electronic tobacco and marijuana by main or featured artist. Data were collected from December 6, 2017, to June 4, 2018.

MAIN OUTCOMES AND MEASURES Prevalence of (1) appearance or use of combustible tobacco and marijuana products, (2) appearance of smoke or vapor, (3) appearance or use of electronic tobacco and marijuana products, (4) tobacco or marijuana brand placement, and (5) appearance or use of combustible and electronic tobacco and marijuana by main or featured artist. Probability of appearance or use of combustible and electronic tobacco and marijuana products by quartile of viewership of videos.

RESULTS The proportion of leading hip-hop videos containing combustible use, electronic use, or smoke or vapor ranged from 40.2% (76 of 189) in 2015, to 50.7% (102 of 201) in 2016. For each year, the leading category of combustible use was hand-rolled products. The appearance of branded products increased from 0% in 2013 (0 of 82) to 9.9% in 2017 (10 of 101) for combustible products, and from 25.0% in 2013 (3 of 12) to 87.5% in 2017 (14 of 16) for electronic products. The prevalence of combustible or electronic product use or exhaled smoke or vapor increased by quartile of total number of views: 41.9% (8700 to 19 million views) among songs in the first quartile of viewership and 49.7% among songs in the fourth quartile of viewership (112 million to 4 billion views).

CONCLUSIONS AND RELEVANCE Combustible and electronic tobacco and marijuana use frequently occurred in popular hip-hop music videos. The genre's broad appeal, use of branded products by influential artists, and rise of electronic product and marijuana use may contribute to a growing public health concern of tobacco and marijuana use.

JAMA Intern Med. 2018;178(12):1608-1615. doi:10.1001/jamainternmed.2018.4488
Published online October 15, 2018.

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In 2017, hip-hop (which includes rap) and rhythm and blues (R&B) surpassed rock and pop as the leading music genre in the United States.¹ With roots in African American and Latino cultures, hip-hop draws fans who are young racial and ethnic minorities, although the hip-hop fan base now transcends age group, and race/ethnicity.²⁻⁴ The contemporary hip-hop fan base is 14% adolescent (age ≤17 years), 49% young adult (age 18-34 years), and 37% older adult (age ≥35 years); 43% non-Hispanic white individuals, 24% non-Hispanic black individuals, and 28% Hispanic individuals; and 36% of listeners came from households with an annual income greater than or equal to \$80 000.⁵ Hip-hop has made many positive contributions to social change, and hip-hop artists exert substantial behavior modeling on their fans owing to their prominence and the social, cultural, and political commentary in their music (eg, police violence against minorities, substance abuse, and suicide prevention).⁶⁻¹¹ However, this influence may not always be positive, as hip-hop music videos often include misogyny, violence, and use of tobacco and marijuana products.^{12,13} The depictions of tobacco and marijuana use may increase the appeal of and desire to experiment with and continue use of these products, while decreasing perceptions of risk and harm among viewers.¹⁴⁻²⁴ Depictions of tobacco product use by prominent figures, such as popular hip-hop artists, may affect viewers' implicit associations with smoking and increase their likelihood of smoking.^{25,26}

The tobacco industry has long targeted minority populations as consumers through promotional marketing campaigns of specific cigarette brands and sponsorship of hip-hop music events and concerts.^{20,27-31} Although the 1998 Master Settlement Agreement (MSA) prohibits brand-name sponsorship of music events, the tobacco industry continues to target the hip-hop community via product placement in online music content (eg, official music video on YouTube).³²⁻³⁵ Marketing through online music content remains largely unregulated. This gap in regulation may be associated with the recent rise of e-cigarette use, which now surpasses traditional cigarette smoking among US youths.^{36,37} Furthermore, a substantial portion of youth who use e-cigarettes do so to vaporize marijuana, which has also surpassed traditional cigarette smoking among US youths.³⁸⁻⁴⁰ Limiting advertising and marketing of tobacco and marijuana products may help reduce interest among young, vulnerable populations; however, the extent to which these products appear in popular music culture remains unknown to date.⁴¹

To assess this knowledge gap, we conducted an analysis of leading contemporary hip-hop music videos over the 5 years from 2013 to 2017 to ascertain the extent to which combustible and electronic tobacco and marijuana use appeared. Moreover, we determined how often these appearances portrayed specific brands, and if combustible or electronic tobacco and marijuana use more commonly appeared in prominent and popular songs.

Methods

Data

This study considered all hip-hop songs listed on *Billboard* magazine's weekly Hot R&B/Hip Hop Songs list (a list of the

Key Points

Question How pervasive is combustible and electronic tobacco and marijuana use in popular hip-hop music videos from 2013 to 2017?

Findings In this content analysis of 796 hip-hop music videos from 2013 to 2017, the appearance of combustible or electronic product use or exhaled smoke or vapor ranged from 40.2% to 50.7%. The appearance of branded combustible and electronic products increased over time.

Meaning The frequent use of combustible and electronic tobacco and marijuana products in popular hip-hop music videos, the genre's broad appeal, and the use of branded products by prominent artists may contribute to a growing public health concern.

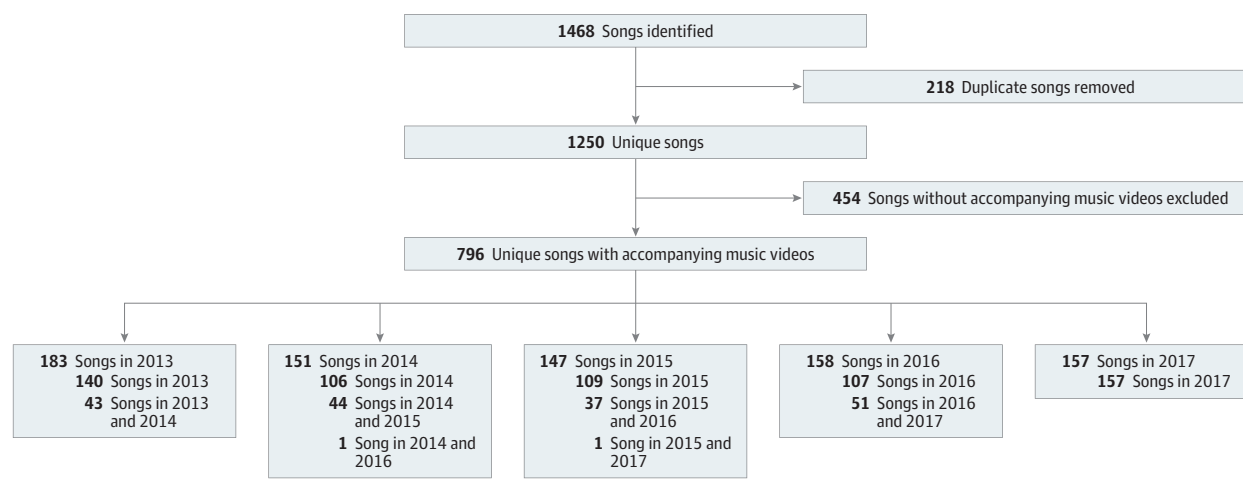
top 50 songs, hereafter referred to as top 50 list) between 2013 and 2017. Hereafter, hip-hop (which includes rap) and R&B are referred to collectively as hip-hop. *Billboard* uses Nielsen Music data tracking services for its rankings; Nielsen ranking algorithms include digital download sales, physical sales, radio airplay, online radio streaming, online audio streaming, and YouTube views. The Dartmouth College Committee for the Protection of Human Subjects deemed this study exempt from institutional review board review, as the regulatory definition of human subjects research (45 CFR 46.102[f]) did not apply.

Coding Procedure and Number of Views

YouTube, Tidal (a subscription-based music streaming service to which some artists release music videos exclusively), iTunes, Vimeo (a video-sharing website), and artists' websites were searched for corresponding music videos of all top 50 list songs. Videos described as visualizers (ie, simplified animations or visual images accompanying the audio) and visual albums (ie, extended videos that encapsulate all music videos for an entire album, often with additional footage between each song's audio) were included in analysis.

For each video, 1 author (K.E.K.) and 1 research assistant coded the appearance or use of combustible tobacco or marijuana products (hereafter referred to as combustible use). The interrater agreement among the 2 coders, measured by Cohen κ, was 85.6%. When the coders disagreed on combustible use, they rewatched the video and discussed to reach consensus. Categories of these products included manufactured cigarettes (hereafter referred to as cigarettes), cigars, pipes, hookahs or waterpipes, hand-rolled tobacco and marijuana products (including hand-rolled cigarettes, spliffs [mixture of tobacco and marijuana], blunts [hollowed out cigar, tobacco-leaf wrapper then filled with marijuana], and joints [hand-rolled marijuana]; hereafter referred to as hand-rolled products), and marijuana buds. Next, appearance of exhaled smoke or vapor without an identifiable source product (hereafter referred to as smoke or vapor) was coded. Appearance or use of electronic tobacco or marijuana products (hereafter referred to as electronic use), such as electronic cigarettes (e-cigarettes), electronic hookahs (e-hookahs), vaporizers (including herbal vaporizers for vaping cannabis), and any other

Figure 1. Inclusion Criteria for Hip-Hop Music Video Analysis



electronic nicotine delivery system was also coded. The interrater agreement among the 2 coders, measured by Cohen κ , was 81.8%; when coders disagreed on electronic use, they rewatched the video and discussed to reach consensus. Purchase of cigarettes by musical artists or other people in the videos was coded as combustible use, as were animations portraying combustible use. Appearance of specific combustible product brands (combustible brand placement) and electronic product brands (electronic brand placement) was also coded. Both combustible and electronic use were coded as use by a main or featured musical artist, or by other people in the video. As a measure of prominence and reach, the total number of views on YouTube (as of May 31, 2018) was collected for each song with an accompanying music video.

Analytic Procedure

First, annual prevalence of combustible use (overall and by product category), electronic use, and smoke or vapor in music videos was calculated. The annual prevalence equaled the number of videos with combustible use divided by the total number of videos in that year. Second, annual proportion of combustible and electronic use that was also brand placement was calculated. Third, annual proportion of combustible use, electronic use, or smoke or vapor by the main or featured musical artist was calculated. Finally, the total number of views for songs with accompanying music videos was categorized into quartiles. The proportion of these songs containing combustible use, electronic use, or smoke or vapor was calculated by quartile of total number of views.

No sampling uncertainty was reported in the outcomes because the calculations used the entire population of songs with identifiable corresponding music videos in the top 50 lists between 2013 and 2017. Songs that appeared in top 50 lists across multiple years (eg, the highly popular song “Hotline Bling” by Drake remained among the top 10 songs between September 2015 and April 2016) were included in the annual prevalence calculations of each of those years. *Billboard* publishes its

weekly top 50 list every Saturday; weekly top 50 lists that span 2 calendar years are attributed to the calendar year in which the list was published. Songs released prior to 2012 that appeared on the weekly top 50 list at any point between 2013 and 2017 were excluded from analysis.

Results

Between 2013 and 2017, 1250 unique songs appeared on the *Billboard* top 50 list; 796 of which had accompanying music videos (Figure 1). In 2013, of 191 songs, 46.6% (89) with accompanying music videos contained combustible use, electronic use, or smoke or vapor: 24.1% (46) contained combustible use only; 8.9% (17) contained smoke or vapor only; 7.3% (14) contained combustible use and smoke or vapor; 3.7% (7) contained electronic use only; 0.5% (1) contained combustible use, electronic use, and smoke or vapor; and 1.0% (2) contained combustible and electronic use (Figure 2). The proportion of songs with accompanying music videos that contained combustible use, electronic use, or smoke or vapor equaled 44.2% in 2014 (87 of 197), 40.2% in 2015 (76 of 189), 50.7% in 2016 (102 of 201), and 47.1% in 2017 (106 of 225). Overall, these songs have been viewed 39.5 billion times.

For each year, the leading category of combustible use was hand-rolled products. In 2017, 55 of the 225 songs (24.4%) with accompanying music videos contained hand-rolled products: 16 (7.1%) hand-rolled products only; 14 (6.2%) hand-rolled products and other combustible products; 12 (5.3%) hand-rolled products and smoke or vapor; 8 (3.6%) hand-rolled products, smoke or vapor, and other combustible products; 3 (1.3%) hand-rolled products and electronic products; and 2 (0.9%) hand-rolled products, smoke or vapor, and electronic products. Compared with hand-rolled products, cigarette use was less common in videos, either exclusively or in combination with other combustible products, electronic products, or smoke or vapor. In 2017, 18 songs (8.0%) with accom-

Figure 2. Proportion of Combustible and Electronic Product Use in Music Videos, by Year

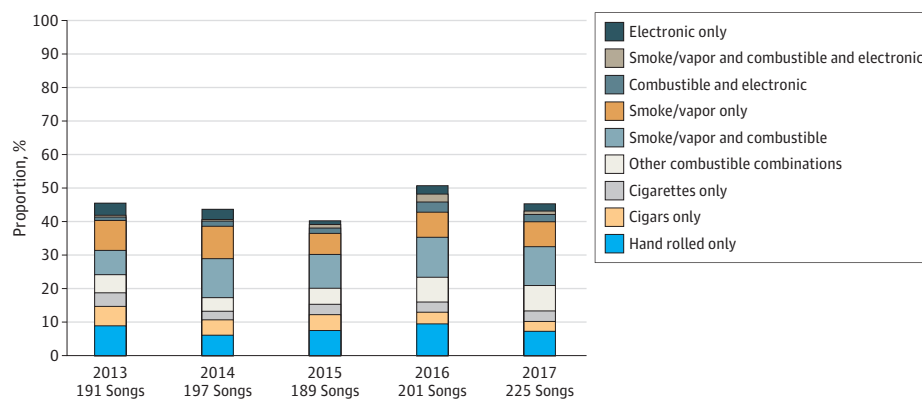
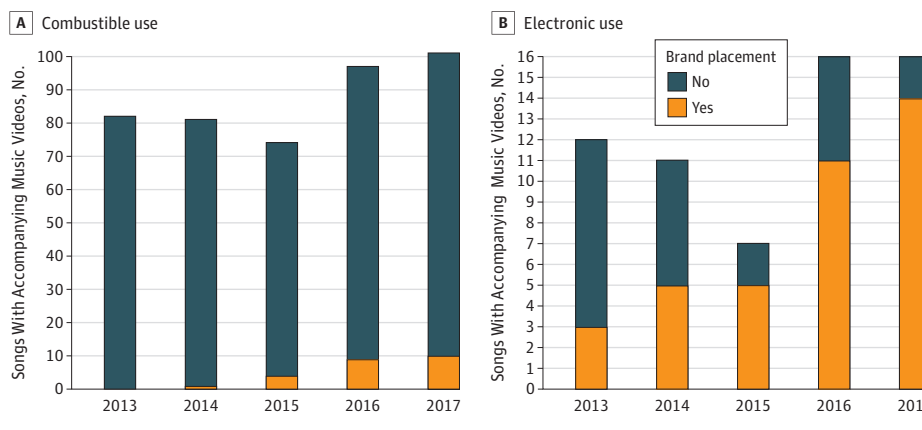


Figure 3. Proportion of Combustible and Electronic Product Use to Brand Placement in Music Videos, by Year



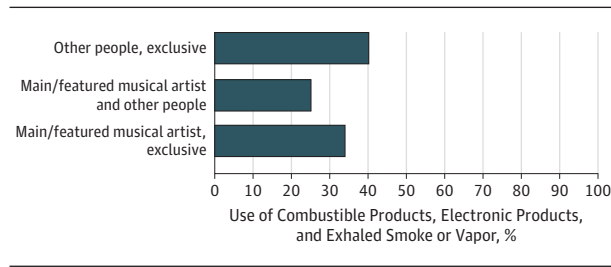
panying music videos contained cigarettes. The prevalence of smoke or vapor in songs with accompanying music videos, either exclusively or in combination with combustible or electronic use, increased from 17.8% in 2013 (34 of 191) to 21.8% in 2017 (49 of 225). Finally, electronic use in songs with accompanying music videos, either exclusively or in combination with combustible use or smoke or vapor, increased from 6.3% (12 of 191) in 2013 to 7.1% (16 of 225) in 2017.

Among songs with accompanying music videos containing combustible use, brand placement increased from 0% in 2013 (0 of 82 songs) to 9.9% in 2017 (10 of 101 songs) (Figure 3). Among songs with accompanying music videos containing electronic use, brand placement increased from 25.0% in 2013 (3 of 12 songs) to 87.5% in 2017 (14 of 16 songs). Combustible brand placement included 9 brands: 3 cigar brands (JM’s Dominican, Pom, Rich), 2 hookah brands (Habibiz, Khalil Mamoon), 2 rolling paper brands for hand-rolled products (RAW, Wiz Khalifa), and 2 marijuana brands (Caviar Gold, Weedmaps). Electronic brand placement consisted of 9 brands: BLOW, Citizen, Dr Dabber, Eonsmoke, Fantasia, KandyPen, MigVapor, Puff King, and Square E-Hookah. None of the videos with combustible or electronic brand placement contained nicotine addictiveness warning statements.

Main or featured artists exclusively used combustible or electronic products or exhaled smoke or vapor in 33.8% (123 of 364) of the songs with accompanying music videos containing combustible use, electronic use, or smoke or vapor (Figure 4). Combustible use, electronic use, or smoke or vapor by main or featured artists along with other individuals occurred in another 25.1% of these songs (91 of 364).

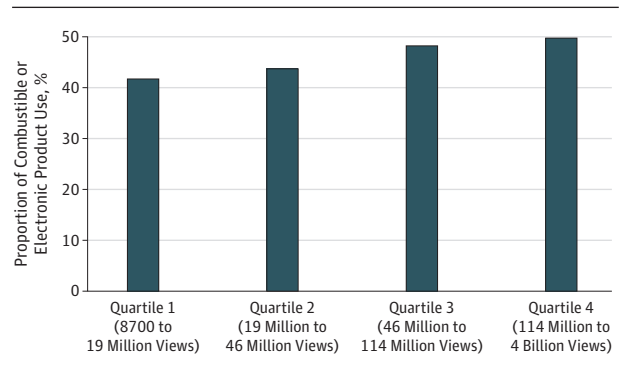
The proportion of songs with accompanying music videos containing combustible use, electronic use, or smoke or vapor increased with the popularity of these songs (Figure 5). The proportion equaled 41.9% among songs in the first quartile of viewership (8700 to 19 million views) and increased to 49.7% among songs in the fourth quartile of viewership (112 million to 4 billion views). One such song in the highest quartile, “I’m The One” by DJ Khaled featuring Justin Bieber, Quavo, Chance The Rapper and Lil Wayne, contained both combustible and electronic use, as well as electronic brand placement (KandyPen); the associated music video had been viewed over 1 billion times on YouTube as of June 2018. Similarly, the proportion of songs with accompanying music videos containing branded combustible or electronic placement equaled 3.5% among songs in the first quartile of viewership and increased to 8.5% among songs in the fourth quartile of viewership (eFigure in the Supplement).

Figure 4. Proportion of Primary and Secondary Use of Combustible Products, Electronic Products, and Exhaled Smoke or Vapor in Music Videos



The numbers for the categories are 150 of 364 for Other people, exclusive; 91 of 364 for Main/featured musical artist and other people; and 123 of 364 for Main/featured artist, exclusive.

Figure 5. Proportion of Music Videos Containing Combustible Use, Electronic Use, or Smoke or Vapor, by Quartile of Number of Views on YouTube



Discussion

In this analysis of leading hip-hop songs during the 5 years from 2013 to 2017, we report 4 central findings. First, the proportion of leading hip-hop videos containing combustible or electronic use or smoke or vapor ranged from 40.2% and 50.7% between 2013 and 2017, which corresponds to over 39 billion views to date. The most common categories of use were hand-rolled products and smoke or vapor. Second, an increasingly larger share of combustible and electronic use was brand placement. Third, nearly 60% of combustible use and 30% of electronic use were by main or featured musical artists. Fourth, the prevalence of combustible or electronic use rose with the popularity of songs.

Our study contributes to a growing body of research on regulated substances in popular music.^{12,42-47} DuRant et al¹² found the prevalence of smoking in rap music videos equaled 30% and smoking in R&B music videos equaled 11% in 1997. Our study concludes prevalence is now 44% in 2017 for the overall hip-hop music genre. Previous studies concluded popular music frequently contained lyrical reference to and visual imagery of alcohol, tobacco, and junk food.⁴⁴⁻⁵⁰ This imagery often constituted product placement.^{48,51-56}

Although no musical artists disclosed payment for brand placement, brand placement may constitute paid endorsement. Main or featured hip-hop artists used combustible and electronic products more frequently than did other people in their videos, and the prevalence of brand placement appeared to increase with greater song and artist popularity. Paid endorsement resulting from brand placement requires clear and conspicuous disclosure in accordance with the Federal Trade Commission Act when viewers would otherwise not know an artist had been paid to endorse a specific product.⁵⁷ Such a disclosure may lead viewers to perceive embedded advertising more skeptically and be less likely to believe combustible and electronic product use is concomitant with hip-hop culture.^{58,59} These disclosures may also lead viewers to perceive combustible or electronic products more negatively because viewers would know the artist endorsed the product for monetary reasons and not exclusively because of its quality.⁶⁰

Combustible and electronic use by prominent artists and overt product placement may pose public health harm to adolescents and young adults, especially among those who identify with hip-hop subculture. Hip-hop videos may be a substantial source of exposure to tobacco use, which may increase the risk of cigarette smoking initiation and sustained cigarette smoking^{14-16,20} because of their high level of viewership. When main or featured musical artists include combustible use in their videos, viewers may develop stronger implicit associations between combustible use and themselves.²⁵ These appearances could also contribute to perceptions that tobacco use is normative in hip-hop culture.⁶¹ The appearances of hand-rolled products (many of which likely contain marijuana) in hip-hop videos may contribute to or result from growing societal acceptance of marijuana.⁶² The exposure to marijuana use in music videos could operate in the same way as did exposure to medical marijuana advertising, which D'Amico et al²³ found increased marijuana use in a longitudinal study of youths. Finally, combustible or electronic brand placement may also affect youth tobacco use behavior, as such exposure may be associated with the development of favorable attitudes toward tobacco use, increased susceptibility to use, and increased initiation in adolescents.^{17-19,63}

Federal regulation of combustible or electronic use in music videos depends, in part, on whether the appearance and use of these products is truly artistic and creative expression or actually paid product placement.^{42,64,65} Under the First Amendment, the former is free speech and afforded full protection, while the latter is commercial speech and may be afforded less than full protection.⁶⁶ Additionally, brand placement in hip-hop music videos constitutes advertising and these videos will soon require nicotine addictiveness warning statements as mandated by the US Food and Drug Administration (FDA) regulation.⁶⁷ However, to our knowledge, none of the music videos with combustible or electronic brand placement currently contain such warning statements, and such warning statements could prove beneficial. Prominent text-only and pictorial warning statements help promote smoking cessation in adults and prevent smoking initiation in youths.⁶⁸⁻⁷⁰

In 2015, the FDA launched Fresh Empire, a public education campaign aimed at youths who identify with the hip-hop peer crowd, featuring hip-hop artists and aspirational messages to encourage a tobacco-free lifestyle.⁷¹ The campaign focuses on this population because its rate of tobacco use is higher than other peer crowds.^{72,73} The use of concordant peer crowds (ie, the hip-hop peer crowd and hip-hop youths) to promote antitobacco messages may increase the effectiveness of the segmented campaign.^{74,75} However, some prominent hip-hop artists featured by Fresh Empire included combustible use in their own music videos.^{76,77} Thus, the mixed messages from these artists on tobacco use may compromise the message of the campaign.

Our study found that none of the brands shown in the hip-hop music videos were brands of participating manufacturers of the 1998 MSA, likely because of the ban on nontobacco brand names. This ban prohibits participating manufacturers from paying an entertainment group or individual celebrity to use the brand name of a tobacco product. In contrast, our study found that all combustible tobacco brands featured in hip-hop music videos were from non-MSA-participating manufacturers. Additionally, none of the electronic product brands shown in hip-hop music videos were brands of tobacco companies that participate in the MSA (eg, Altria's MarkTen brand electronic cigarette). Nonparticipating manufacturers are not subject to the marketing restrictions of the MSA; however, the 2009 Family Smoking Prevention and Tobacco Control Act granted the FDA regulatory authority over tobacco marketing.

Beyond federal and state regulation, the music industry and social networking sites could reduce combustible and electronic use in hip-hop music videos. Advertisements of tobacco products are expressly prohibited by Google, the parent company of YouTube.⁷⁸ Thus, YouTube could prohibit postings of music videos with product placement in accordance with Google's advertising policies. Additionally, approximately 88% of YouTube users live in countries other than the United States, the vast majority of which ratified the World Health Organization (WHO) Framework Convention on Tobacco Control (FCTC).^{79,80} Because of the international reach of YouTube, music videos with combustible or electronic use, especially brand placement, could violate Article 13 of the WHO FCTC, which bans all tobacco advertising, promotion, and sponsorship.⁸¹ YouTube and other video-sharing websites have the ability to block content in different countries and, there-

fore, prevent videos containing tobacco advertising from becoming available in countries that have ratified the FCTC.⁸²

Previous attempts at self-regulation by the music industry have proved ineffective. The Recording Industry Association of America's parental advisory label may serve to entice, rather than detract, young listeners and viewers to music portraying violence, sex, and substance use.^{83,84} However, the music industry could follow the practice of several sports-governing bodies to self-regulate on tobacco marketing. The International Olympic Committee and the National Association of Stock Car Auto Racing have successfully divested from tobacco industry sponsorship and product placement, thereby reducing exposure of tobacco products for youth viewers.^{85,86}

Limitations

We note several limitations. First, because of the visual ambiguity of hand-rolled products, we could not distinguish among those filled with tobacco, marijuana, or a mixture of the two. Second, 36.3% of leading hip-hop songs between 2013 and 2017 did not have accompanying music videos. Only 2 of the 20 songs in the album "Views" by the chart-topping artist Drake have associated music videos, even though 19 of these 20 songs made the top 50 list. Third, we could not assess the demographic and socioeconomic characteristics or country of residence of the individuals who watched hip-hop music videos. If viewership patterns follow listenership patterns, the former spans age groups, race and ethnicity, and socioeconomic status.

Conclusions

Leading hip-hop music videos represent a considerable source of exposure to tobacco and marijuana use. The confluence of hip-hop's broad appeal, use of branded products by influential artists, and growing interest in electronic products and marijuana all contribute to the important public health concern of tobacco and marijuana use. Music videos offer largely unregulated opportunities for exposure to, and brand advertising of, combustible and electronic tobacco and marijuana products. Future regulation that directly addresses the often co-occurring appearance and marketing of tobacco, marijuana, and electronic products in music videos would limit exposure to their use and could reduce the burden of tobacco and marijuana use.

ARTICLE INFORMATION

Published Online: October 15, 2018.
doi:10.1001/jamainternmed.2018.4488

Author Contributions: Dr Soneji and Ms Knutzen had full access to all of the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.
Concept and design: All authors.
Acquisition, analysis, or interpretation of data: All authors.
Drafting of the manuscript: Knutzen, Soneji.
Critical revision of the manuscript for important intellectual content: All authors.

Statistical analysis: Knutzen, Soneji.

Administrative, technical, or material support: Soneji.

Supervision: Soneji.

Conflict of Interest Disclosures: None reported.

Funding/Support: Dr Moran's effort is supported by NIDA and FDA Center for Tobacco Products grant 5K01DA037903.

Role of the Funder/Sponsor: The funding source had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; preparation, review, or

approval of the manuscript; and decision to submit the manuscript for publication.

Disclaimer: The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH or the FDA.

Additional Contributions: We thank Sreevaishali Rajendran and Niki Cozzolino for their assistance in coding data. They received compensation.

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