

# Reactions to Messages About a Nicotine Reduction Policy: A Focus Group Study Among People Who Use Little Cigars and Cigarillos

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## Abstract

**Introduction:** The U.S. Food and Drug Administration (FDA) has proposed rulemaking to reduce the nicotine content in cigarettes and other combusted tobacco products to non-addictive levels. This qualitative study documents reactions to messages communicating this policy among people who use little cigars and cigarillos (LCCs).

**Aims and Methods:** We conducted eight focus groups with participants from four populations with the highest prevalence of cigar use (African American males and females, white males and females). Participants described their reactions to eight messages about the policy: Three messages about the equal risk of LCCs with regular and low nicotine levels; three quit efficacy messages about low nicotine LCCs being easier to quit; one “compensation” message to correct misperceptions about the policy causing people to smoke more to get desired nicotine; and one message about using alternative nicotine sources (eg, e-cigarettes).

**Results:** Participants perceived risk messages as the most motivating to quit, whereas efficacy messages made some participants feel that the policy would cause former users of LCCs to relapse. Many participants expressed favorable responses to the compensation message. The message about using alternative nicotine sources sparked intense responses, with many participants expressing outrage and mistrust of the message. Participants’ beliefs that they were not addicted to LCCs dampened their perceptions of the effectiveness of the policy.

**Conclusions:** Perceptions of the addictiveness and relative harms of LCCs influenced responses to policy messages. The FDA should consider using different messages to communicate with people who use LCCs because they perceive LCCs as different from cigarettes.

**Implications:** This is the first study to document affective and cognitive responses to the FDA’s reduced nicotine policy among people who use LCCs. The false belief that cigar products are less harmful than cigarettes may be influencing people’s lack of support for the reduced nicotine policy and difficulty in understanding its potential positive impact. To maximize the public health benefit of the reduced nicotine policy, the FDA should include LCC products in the policy; however, it is crucial that they use educational messaging to clarify misperceptions regarding nicotine and harm as it applies to LCCs.

## Introduction

In 2018, the U.S. Food and Drug Administration (FDA) issued a proposal to reduce the nicotine in cigarettes to minimally addictive levels with the goal of reducing smoking, aiding in smoking cessation, and preventing those who experiment with cigarettes (mainly youth and young adults) from becoming established smokers.<sup>1</sup> Implementing a reduced nicotine content (RNC) policy that focuses only on cigarettes may drive people who smoke cigarettes to other combusted products (ie, cigars or cigarillos) to get the nicotine they desire, potentially undermining the policy’s effectiveness.<sup>2</sup> In FDA’s Advanced Notice of Proposed Rule Making, the FDA indicated a possible expansion of the rule to cover other combusted tobacco products. Thus, the FDA is considering

including other combustible products, such as cigars, in the RNC rulemaking.<sup>2</sup>

Cigars are the second most popular combustible tobacco product among adults after cigarettes in the United States (with a usage rate of 11.5% for cigarettes and 3.5% for cigars).<sup>3</sup> Cigars have the same health risks as cigarettes,<sup>4</sup> and share many characteristics with cigarettes. Cigar use is prevalent in a number of vulnerable demographics, including African Americans, low literacy, and low-income populations.<sup>5</sup> Furthermore, use was highest among non-Latinx African American males (AAM) (9%), followed by non-Latinx white males (WM) (7%). Past month cigar use doubled over the last 15 years among non-Latinx African American females (AAF) (from 2% to 4%) while remaining unchanged

among non-Latinx white females (WF) (2%).<sup>6</sup> Some cigars are the same size and use the same filters as cigarettes, but to avoid being taxed and regulated as cigarettes, manufacturers modified their products to meet the definition of little cigars and cigarillos (LCCs).<sup>7,8</sup> The cigarette-like features of LCCs, their lower price, and the availability of flavors that are banned in cigarettes make them an appealing substitute for cigarettes,<sup>9</sup> particularly in the context of the implementation of a nicotine reduction policy aimed solely at cigarettes.

There are significant challenges associated with communicating about nicotine in tobacco products, including widespread but inaccurate perceptions of nicotine. People who smoke believe that RNC cigarettes are less carcinogenic<sup>10–12</sup> and that reducing nicotine will not remove the addictiveness of cigarettes.<sup>13</sup> There are also misperceptions specific to LCCs, including beliefs that LCCs are more natural, contain less nicotine, and are less addictive than cigarettes because they are frequently used with only the LCC wrapper, while marijuana is substituted for the tobacco filler.<sup>14</sup> In fact, many people who smoke LCCs do not consider themselves addicted,<sup>15</sup> believing that they do not smoke them frequently enough to cause health effects or that they can quit before becoming addicted.<sup>16–18</sup> Given these misperceptions, effective communication strategies could promote accurate understanding of the risk of nicotine in combusted tobacco products in the context of a new FDA policy.

The goal of this study was to assess cognitive and affective responses to messages about the RNC policy among people who use LCCs. Because of the scarcity of research about communicating lowering nicotine in LCCs, we used a qualitative approach, which helps develop an in-depth understanding of the best way to communicate about lower nicotine policy to people who use LCCs.

## Methods

### Message Development

This study tested eight messages (see [Supplementary Figure 1](#)): Three risk messages (*Pros & Cons*, *Chemical list*, and *Blunt wrappers*) focused on the harms of combusted tobacco products, including RNC LCCs; three efficacy messages (*Beat the cravings*, *Break the bond*, and *Reason to quit*) emphasized self-efficacy to quit smoking LCCs and were positively framed to motivate people who smoke LCCs to quit; one message (*Compensation*) corrected the misperception that people who use LCCs would smoke more RNC products to achieve their desired nicotine level; and one message (*Alternatives*) informed smokers about alternative sources of nicotine (eg, nicotine gums, e-cigarettes). The efficacy message *Break the bond* was created in two versions, Version A featured an African American hand and Version B featured a white hand, which were presented to the corresponding racial groups. Seven messages were print, and one was an animatic video (*Pros & Cons*).

These messages were adapted from a prior study<sup>19</sup> and provided general information about the RNC policy to participants. In developing these messages, we reviewed existing campaigns and messages and the current literature on health effects of nicotine and comparative risks of different tobacco products. Working with a social marketing agency (The Research Associates) and in consultation with the team's members who are experts in tobacco control, communication, advertising, and public health, we developed message

concepts. These messages were informed by theories such as the Extended Parallel Process Model,<sup>20</sup> Protection Motivation Theory,<sup>21</sup> and the Health Belief Model<sup>22</sup> that identified perceived risk as a key determinant of risky behaviors like tobacco use and highlighted the importance of efficacy.

### Participants

Inclusion criteria were: 18–44 years old, identify as white or African American, used an LCC in the past 30 days, and being a U.S. resident. We recruited participants from four populations that have the highest prevalence of cigar use:<sup>6</sup> AAFs, AAMs, WFs, and WMs. We recruited participants using a marketing research company with expertise in message development (The Research Associates, 2021). A total of 975 individuals were screened for eligibility, interest in participation, and sufficient access to technology to participate in virtual focus groups. Of the 76 people scheduled to participate, 43 took part in 8 focus groups that were stratified by race and sex.

### Procedure

In August of 2021, we conducted two focus groups for each of the four populations ( $n = 8$  total), using a virtual platform (Adobe Connect). Moderators used a focus group guide adapted from our previous work.<sup>13,19</sup> Participants viewed messages about the RNC policy for LCCs in randomized order that varied across groups. After viewing each message, moderators elicited message responses (eg, “What do you think this message is trying to tell you?”). Each focus group lasted 75–90 minutes and included 3–8 participants (median = 5.5). All participants gave their permission for the focus groups to be recorded, and recordings were transcribed for analysis.

### Data Analysis

Transcripts were analyzed in NVivo 12.0 using a thematic analysis approach.<sup>23</sup> The first two authors (C.N. and E.H.) reviewed the transcripts and created a preliminary codebook, which was then distributed to all authors. Then, it was discussed and revised. The first two authors then randomly selected two transcripts to code independently and reviewed their coding with the last author (L.P.) to discuss any discrepancies until consensus was reached, which produced a master codebook. From there, the two first authors randomly divided the remaining transcripts and coded them independently. Narrative segments with specific codes were distributed to all research team members who wrote memos for specific codes. The first author then reviewed all memos and synthesized the results.

## Results

### Participant Characteristics

Participants were 53% male, 56% white, and 46% had a college degree. The mean age was 32 ([Table 1](#)).

### Reactions To Risk Messages

Risk messages elicited strong emotional responses from participants, who described them as “scary” and “stressful,” particularly among AAF. Many mentioned that they were not aware of the chemicals in LCCs. Risk messages were perceived as effective, with multiple participants characterizing them as “attention-grabbing,” “eye-opening,” and “in your face.”

**Table 1.** Participant Characteristics Total Sample  $n = 43$ 

	$n$ (%)
Race and Ethnicity (%)	
Non-Latinx white males (WM)	14 (33%)
Non-Latinx white females (WF)	11 (26%)
Non-Latinx African American males (AAM)	9 (21%)
Non-Latinx African American females (AAF)	9 (21%)
Education (%)	
Less than high school	0 (0%)
High school	8 (19%)
Some college	13 (30%)
College graduate	20 (46%)
Graduate degree	2 (5%)
Age (y)	
18–29	21 (49%)
30–44	22 (51%)
# of days of LCC use in past month (%)*	
10 days or less	27 (63%)
11–29 days	6 (14%)
30 days	8 (19%)
Mean # of days of LCC use in past month	11.2 days (range: 1–30)
Predominant type of LCC use (%)	
With tobacco	16 (37%)
With marijuana	11 (26%)
With both marijuana and tobacco	16 (37%)
Past 30-day use (%)	
Cigarettes	28 (65%)
Marijuana	26 (61%)
Large cigars	25 (58%)
E-cigarettes	18 (42%)
Hookah	15 (35%)
Smokeless tobacco	9 (21%)
Heated tobacco products	3 (7%)

\*Numbers do not add up to 100% due to missing data ( $n = 2$ ).

When compared to the other message themes, risk messages were consistently perceived as the most motivating to quit. In particular, the *Chemical list* message, which showed various chemicals in LCCs, caused participants to spend a significant amount of time discussing the toxic chemicals in LCCs with a few participants referring to cigarettes rather than LCCs. Most participants in the WM and WF groups were motivated to quit when the message described how the nicotine reduction policy would result in removing the pleasure they get from nicotine. For example, one WM participant explained, “once you have lower nicotine, what’s the pleasure in it? . . . You’re just getting the bad chemicals, which are causing cancer, heart disease, infertility . . . And it just stinks too.” Participants in the AAM and AAF groups were motivated to quit by the harms, specifically the remaining chemicals in RNC LCCs. One AAF participant explained: “I thought nicotine was the worst thing in [LCCs], and [now] I’m coming [to] realize it’s not. [It’s] an eye-opener, [and] that makes me feel like it’s time to quit.”

There were some negative responses to the risk messages. Several participants expressed anger and confusion in response to the *Pros & Cons* and *Blunt wrapper* messages, questioning why the FDA would only remove nicotine if it’s not the most harmful chemical in LCCs and felt that the nicotine reduction policy restricted their “freedom of choice.” Many believed that they would switch to consuming marijuana without tobacco leaves in response to the *Blunt wrapper* message, because they only smoked LCCs for the marijuana and not nicotine. Others stated that the message would not change their behavior and they would continue to smoke blunts because nicotine was not a big factor.

### Reactions to Efficacy Messages

Efficacy messages were considered positive when focused on how the policy will help young people avoid becoming addicted (*Reason to quit*) or explicitly expressed the benefits of less nicotine (*Beat the cravings*). Some participants thought that the *Beat the cravings* message would be motivating for people who wanted to quit because it was encouraging: “I think if it’s someone who’s trying to quit, it’s kind of like a positive message” (WM). Some also expressed that the *Beat the cravings* message gave them hope that they themselves would be able to quit smoking LCCs and that the *Reason to quit* message was good because it was also aimed at young people. When asked if the message would make participants consider quitting all tobacco products, an AAF participant responded that the *Beat the cravings* message convinced her that smoking is bad for her health and would consider quitting all tobacco products.

Some participants, however, had negative reactions to the efficacy messages. The *Beat the cravings* message led some participants to believe that the policy would cause them to relapse or would promote smoking LCCs because RNC LCCs would make it easier to quit later. Others felt that the message was irrelevant and would not “make an impact on anyone,” especially, for those who considered themselves not addicted to LCCs because they were a “weed smoker and a social Black & Mild smoker.” In response to the *Break the bond* message, some participants expressed that the policy targets people who use LCCs and puts cigarillos in the same category as cigarettes. One WM participant argued, “It seems to be pulling cigarillos into the same category as cigarettes, which personally I don’t feel are as addictive. Even if they do have the same amount of nicotine, I don’t feel like they’re as addictive. And so, I kind of feel like the message itself is not accurate.” Several individuals questioned the FDA’s honesty and commitment to public health in response to the *Reason to quit* message, expressing a desire to see more evidence. For instance, one WM participant explained, “Where’s the proof? Where’s the study behind it that says there was a study that proves this? I mean, there’s no data to back it up.”

Some participants made comments about the images used in the efficacy messages. The image of a black person in handcuffs in the *Break the bond* message evoked an inflammatory response from several participants in the AAM groups. The message, according to one participant, “should utilize a better image that isn’t tailored to black people. People smoke cigarettes and nicotine, whether they are White or not.” On the other hand, one WF participant expressed that the white person in handcuffs was effective: “I think visually, it grabs your attention, and it just shows how connected people are and it rules them a little bit with

the chains and stuff.” Some participants were also perplexed by the people portrayed in the efficacy messages and believed that the positive images used in *Beat the cravings* and *Reason to quit* overshadowed the seriousness of the message.

### Reactions to Compensation Message

Many participants expressed positive responses to the *Compensation* message, with both WF and AAF groups describing the visual as believable and credible. The message addressed some AAM and WM participants’ concerns that the policy would lead to compensatory smoking: “This one grabbed my attention because the one thing I was thinking was ‘am I going to smoke more because it’s less nicotine?’ They pretty much answered my question. Making me feel all right. I guess the FDA did their research” (AAM). Participants in the WF group expressed concern that the policy could lead to initiation or refusal to quit smoking because a reduction of nicotine would imply, they would smoke less.

Some AAM and WM groups were skeptical of the *Compensation* message and expressed distrust of the FDA while wanting the message to include more facts. One AAM participant further explained: “[The message] made me feel less trusting [of the FDA] . . . it’s not based on fact.”

### Reactions to Alternatives Message

Many participants expressed outrage and mistrust of the *Alternatives* message, believing that it advocated use of e-cigarettes, which they perceived as equally harmful as cigarettes. Some felt the message was “a whole contradiction” to the policy and another way to attract new smokers and make them dependent on nicotine. One WF participant explained: “It just feels extremely hypocritical because the whole first part of [the message] is ‘nicotine [is] bad’ . . . But then, in the end, they say that it’s fine if you consume it in certain ways.” A few others stated that the message made them think about quitting since RNC LCCs “don’t seem as appealing now,” especially, among those for whom nicotine is the primary motivation for purchasing tobacco products. Some participants, particularly in the WM groups, mentioned they would be inspired to switch to e-cigarettes or another alternative if LCCs no longer contained nicotine. One WM participant explained: “Yes, I would say I would no longer be interested in cigarillos if they had no nicotine. So, I would seek out an alternative, but it would [not] be a tobacco product, [it] would most likely be just marijuana.”

### Reactions to the RNC Policy

After viewing and evaluating the messages, participants were asked what they thought about the FDA’s intent to reduce nicotine in all combusted tobacco. Participants in all the groups were perplexed as to why the FDA would “remove nicotine” but “keep ammonia, acetone, and hydrogen cyanide.” Furthermore, they thought it was illogical because the FDA should “care about the other substances other than nicotine,” and simply removing nicotine would not inspire people to switch to alternative products like nicotine gum or e-cigarettes.

Several participants, particularly in the WM groups, expressed dissatisfaction with the policy, claiming that it limited their freedom of choice. One WM participant described his understanding of the policy: “Don’t smoke cigarillos’ is what it’s trying to say. This to me is a control thing. Trying to

stop people from smoking cigarillos.” A WF participant was angered by the policy, claiming that it was “forcing them to buy another product.”

Some participants in the African American groups expressed support for the policy, stating that it is moving in the right direction, especially by considering how to prevent future generations from becoming addicted in the first place. When nicotine is removed from the equation, smoking becomes more of a choice rather than an addiction, according to one person. Others said that without nicotine, they wonder “what’s the point” of smoking, and cigarillos would no longer be appealing.

Several participants provided reasons why they believed the policy would be ineffective. Many believed they were not addicted to cigarillos or that it would be useless for those who use cigarillo wrappers for blunts. They reasoned that the policy would be more appropriate for people who use LCC products without modifying them. Others anticipated that there would be efforts to circumvent the policy, such as people adding nicotine to RNC products themselves. One WM participant explained further: “I think they are going to end [up] selling nicotine separately, like you can do with vapes. You can get stronger nicotine levels. You can just buy a tiny squeeze bottle of nicotine, and dip [your RNC] cigarette [in the nicotine liquid].”

Participants raised concerns regarding the policy’s aim and perceptions of the FDA, including that the FDA is untrustworthy, making it hard to believe that “they’re truly worried about public health.” Others called the policy a “joke” and “stupid,” claiming that the FDA was not being objective and was sending confusing signals by encouraging e-cigarettes and other nicotine alternatives while simultaneously promoting the message that nicotine is “bad.” “They just doing it for show. That makes literally makes no sense,” one AAM participant remarked.

## Discussion

The perceptions of RNC LCCs among people who use LCCs in our focus groups varied, as did their responses to information about the RNC policy. Risk messages generated strong emotional reactions, with participants generally describing them as the most effective messages for motivating them to quit. These results are consistent with earlier qualitative research testing similar messages among people who smoked cigarettes.<sup>19,23</sup> Risk messages also revealed differences in quit motivation across racial and sex groups. For WF and WM participants, information that the policy would take away the pleasure they received from nicotine was motivating to quit. By contrast, for AAM and AAF groups, knowledge about remaining chemicals in the RNC LCCs was motivating to quit. These findings echo prior research about people’s motivations for LCC use: Whites prefer them for the flavors, which they believe are pleasurable; African Americans prefer LCCs primarily because they are affordable,<sup>24</sup> but also because they believe they are less harmful than cigarettes.<sup>24,25</sup>

Our participants perceived blunts (LCCs with marijuana) as less harmful than LCCs with tobacco, which is consistent with other qualitative studies.<sup>14,17,25,26</sup> Exposure to risk messages did not seem to change our participants’ perceptions about blunts, as some believed that nicotine was not a major reason for smoking blunts. Instead, some of our participants stated that the RNC policy would be more



effective for LCCs that have not been modified with marijuana. This rationale could be influenced by differences in how LCCs are perceived and used. Little cigars have historically been regarded, promoted, and used like cigarettes,<sup>27,28</sup> whereas cigarillos are nearly synonymous with marijuana use.<sup>14,29,30</sup> Modification of LCCs (to make blunts) is common among people who smoke cigars,<sup>31</sup> and some people do not perceive blunts as a form of cigar use.<sup>32</sup> As a result, people who modify their LCC products may regard a policy targeted at lowering nicotine in LCCs as ineffective. However, even when the tobacco is removed, blunts include residual tobacco, and the LCC tobacco wrapper contains nicotine.<sup>33</sup> Cigar use can lead to dependence and has been shown to increase heart rates and carbon monoxide levels.<sup>4</sup> Although some people may perceive blunts to be somewhat harmful, their perception of the limited effectiveness of the RNC policy is likely because they do not view the residual tobacco and wrapper as addictive.<sup>17</sup>

Efficacy messages were viewed as encouraging for some people who wanted to quit, but some participants also believed that RNC LCCs would encourage relapse or initiation because people would view RNC LCCs as easier to quit. This finding is consistent with a previous study, which found that former smokers who had successfully quit held similar concerns about RNC.<sup>19</sup> Furthermore, participants were critical of the images used in the efficacy messages, believing that positive images overshadowed the seriousness of the message content. Concerns about depicting people from a single racial group were raised in the *Break the bond* message. Messages tailored to specific racial or ethnic groups can have unintended consequences.

The responses to the *Compensation* and *Alternative* messages revealed a dichotomy in correcting misperceptions. Despite assurances that compensatory smoking would not be a problem, some of our participants were skeptical about the message's accuracy due to their distrust of the FDA. Similar to what other research has found,<sup>13,19,34</sup> previously held beliefs about harms from e-cigarette use coupled with negative personal experiences with e-cigarettes prevented some participants from considering alternative nicotine sources.

Overall, the RNC policy for LCCs did not resonate well with our participants who use LCCs, despite its potential to reduce smoking and prevent addiction. Some participants were concerned that most harmful chemicals would remain in the RNC cigars while others were concerned that the policy would infringe on their personal freedom—these findings are consistent with previously research on perceptions of RNC policy.<sup>19,35,36</sup> The ways in which people use LCCs appeared to influence how participants perceived the potential effectiveness of the policy. Participants believed that the policy would be ineffective for those who used LCCs as blunts because they did not smoke them for the nicotine, and that consumers would find ways to get around the policy itself. Some participants also questioned the policy's intent, with many wondering why the FDA would promote e-cigarettes, which they believed were as harmful as cigarettes.

## Implications

Our findings are generally consistent with survey research showing that many U.S. adults are unaware of most of the harmful chemicals found in tobacco products<sup>37</sup> and that

people who use LCCs have limited understanding of the role of nicotine in their products.<sup>18,38,39</sup> People's lack of support for the RNC policy and difficulty in understanding its potential positive impact may have been influenced by the false belief that cigar products are less harmful than cigarettes—although these perceptions may be linked to the generally lower frequency of using these products compared to cigarettes. To maximize the public health benefit of the RNC policy, the FDA should include LCC products in the policy; however, it is essential that they simultaneously use educational messaging to correct misperceptions about nicotine and harm as it relates to LCCs.

Pre-policy media campaigns should emphasize the benefits of the RNC policy to both people who currently use tobacco products and future generations. Efficacy messages were perceived as effective by our participants when they described how the policy can help people who currently use LCCs quit and prevent youth from becoming addicted. However, because participants in our study and earlier research<sup>19</sup> criticized the consistency between the images and text, care should be taken when choosing images to support efficacy messages. As part of their strategy to promote smoking cessation, communication campaigns are likely to need to emphasize the equivalent risk of regular and RNC-combusted tobacco products. Risk messages have been shown to be effective in anti-tobacco campaigns,<sup>40,41</sup> and our participants found them motivating.

The concurrent use of marijuana and tobacco among people who use cigars presents an additional challenge in the context of a RNC policy. People who use blunts are exposed to nicotine via LCC wrappers, which can lead to addiction and tobacco use.<sup>42,43</sup> The evolving changes in the landscape of marijuana policy may have an impact on perceptions of risk, alter patterns of cigar use, and complicate the FDA's efforts to promote cessation messages, particularly among people who use cigars. There has been little research into the long-term health effects of concurrent use of marijuana and tobacco which can have implications for both tobacco and marijuana regulation.<sup>44</sup> Additional research should focus on effective communication strategies about concurrent marijuana and tobacco use to promote cessation, particularly in the context of a RNC policy.

## Limitations

The present study has a few limitations. Even though the participants in the focus groups were purposefully selected from the four populations with the highest frequency of cigar use, the sample may not reflect the perspectives of all the people who use LCCs in the United States. Data collection were conducted virtually because of coronavirus disease and only those with internet access and appropriate equipment (laptop) were allowed to participate. Nevertheless, the virtual format of the focus groups allowed participants to participate regardless of geographic location, avoiding common barriers to traditional focus groups such as transportation and childcare. Although the virtual format limited our ability to observe participants' full body language and may have restricted group interactions, studies have shown that participants may provide more candid responses if they participate from the comfort of their own homes.<sup>45</sup> In future studies on this topic, researchers should prepare debriefing materials to distribute to participants after the focus groups to answer the questions and correct the misperceptions we

documented (eg, why other toxic chemicals are not being removed).

## Conclusion

Participants' reactions to messages about RNC LCCs were influenced by their personal use of tobacco products as well as perceptions about the addictiveness and relative harms of LCCs. These findings suggest that the FDA should address the widespread misperception that LCCs are less harmful than smoking cigarettes and promote accurate communications about nicotine in combusted tobacco products. To promote cessation, new strategies are needed to better communicate how reducing nicotine levels lowers the frequency with which people smoke, which reduces exposure to tobacco constituents that are still present in the new products, therefore reducing the likelihood of disease.

## Supplementary Material

A Contributorship Form detailing each author's specific involvement with this content, as well as any supplementary data, are available online at <https://academic.oup.com/ntr>.

## Funding

Research reported in this publication was supported by the National Cancer Institute of the National Institutes of Health and the Food and Drug Administration (FDA) Center for Tobacco Products (R01CA239308). The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health or the FDA.

## Declaration of Interest

David L. Ashley has received funds for work done for the World Health Organization Tobacco Free Initiative, as a Special Government Employee of the U.S. Food and Drug Administration, as a consultant for Pfizer, as an employee of Cherokee National Operational Systems and as an independent contractor for McKing Consulting.

## Author Contributions

Charity Ntansah (Formal analysis [Lead], Investigation [Lead], Project administration [Lead], Writing—original draft [Lead]), Emily Loud (Formal analysis [Equal], Writing—original draft [Supporting], Writing—review & editing [Equal]), Katherine Henderson (Writing—review & editing [Equal]), Reed Reynolds (Writing—review & editing [Equal]), Bo Yang (Writing—review & editing [Equal]), David Ashley (Writing—review & editing [Equal]), Hue Duong (Writing—review & editing [Equal]), James Thrasher (Conceptualization [Lead], Funding acquisition [Lead], Supervision [Lead], Writing—review & editing [Equal]), and Lucy Popova (Conceptualization [Lead], Funding acquisition [Lead], Supervision [Lead], Writing—review & editing [Equal]).

## Data Availability

The data underlying this article will be shared on reasonable request to the corresponding author.

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