

# Appalachian Residents' Perspectives on New U.S. Cigarette Warning Labels

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**Abstract** The U.S. Food and Drug Administration revealed new pictorial warning labels in June 2011 for cigarette packages, yet little is known about how these labels are perceived by U.S. residents. We examined the reactions to and attitudes about the new labels among residents of Appalachian Ohio, a region with a high smoking prevalence. We conducted focus groups with Appalachian Ohio residents between July and October 2011. Participants included healthcare providers ( $n = 30$ ), community leaders ( $n = 26$ ), parents ( $n = 28$ ), and young adult men ages 18–26 ( $n = 18$ ). Most participants supported the addition of the new labels to U.S. cigarette packages, though many were unaware of the labels prior to the focus groups. Participants did not think the labels would be effective in promoting smoking cessation among smokers in their communities, but they were more positive about the potential of the labels to reduce smoking initiation. Participants reported positive feedback about the more graphic labels, particularly those showing a man with a

tracheal stoma or a person with severe oral disease. The labels that include a cartoon image of an ill infant and a man who quit smoking received the most negative feedback. Participants generally supported adding pictorial warning labels to U.S. cigarette packages, but only a few of labels received mostly positive feedback. Results offer early insight into how the new labels may be received if they are put into practice.

**Keywords** Smoking · Warning label · Cigarette · Appalachia

## Introduction

In 2009, the Family Smoking Prevention and Tobacco Control Act gave the United States (U.S.) Food and Drug Administration (FDA) authority to regulate tobacco products [1, 2]. One regulation involves the addition of pictorial warning labels to cigarette packages. The new labels, revealed by the FDA in June 2011 [3], represent the first substantial change to U.S. cigarette packages since 1984. One of nine warning labels will cover the top 50 % of both the front and back of cigarette packages, and each will include a toll-free number to a smoking quit line. Inclusion of the new labels was to be required on all cigarette packages starting no later than September 2012 [3]. However, tobacco companies filed a lawsuit regarding these changes [4], claiming the labels violate their free speech rights and will cost them millions of dollars in lost revenue. The FDA suggested that communicating the dangers associated with smoking to the public outweighs these claims. A federal judge recently issued a preliminary injunction against the addition of the labels [5], but there has been no further ruling at the time of this report.

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Pictorial warning labels on cigarette packages have been used for some time in other countries, and more than 30 countries currently utilize them [6]. These labels have produced encouraging public health results, with data suggesting they serve as a source of information about the risks of smoking, discourage smoking initiation, decrease cigarette consumption, and promote smoking cessation [6–9]. Therefore, the addition of pictorial warning labels to U.S. cigarette packages offers a potential strategy for decreasing smoking and smoking-related disease. This strategy may be particularly important in regions of the U.S. with high smoking prevalence, such as Appalachia.

The Appalachian region extends from New York to Mississippi and consists of more than 400 counties in 13 states [10]. Appalachian residents have higher rates of poverty, lower levels of education, and poorer health compared to the rest of the U.S. [11, 12]. Appalachia is the primary producer of tobacco in the U.S. [13], likely contributing to the higher smoking prevalence among Appalachian residents [11]. Ten of 13 Appalachian states have a smoking prevalence among adults of at least 18 % (national estimate = 17.3 %), and the Appalachian states of West Virginia (26.8 %) and Kentucky (24.8 %) have the highest prevalence estimates in the U.S. [14]. Smoking is also highly prevalent in Ohio, with 22.5 % of adults considered current smokers [14]. Smoking is more common in Appalachian Ohio (32 out of 88 Ohio counties [10]) compared to non-Appalachian Ohio (25.9 vs. 21.8 %) [15].

As the U.S. moves closer to adding pictorial warning labels to cigarette packages, it becomes important to examine residents' perspectives about their addition. Most U.S. residents support the addition of such labels to cigarette packages [16, 17], and our past research in Appalachian Ohio found general support for Canadian cigarette package warning labels [18]. Research has also shown that U.S. residents believe pictorial warning labels offer a more effective smoking deterrent compared to text-only labels [19], particularly those that are highly graphic [20]. These studies, however, occurred prior to the release of the new warning labels. To our knowledge, the only data on the new labels appear in a 2010 report prepared for the FDA to assist in label development [21]. In the current study, we examined the reaction to and attitudes toward the new warning labels among residents of Appalachian Ohio. Results represent some of the earliest feedback on the new FDA-released pictorial warning labels.

## Methods

This qualitative study was conducted with the support of the Community Awareness, Resources and Education II (CARE II) Project, one of ten NIH-funded Centers for

Population Health and Health Disparities (P50) [22]. Focus groups primarily addressed Appalachian Ohio residents' beliefs, attitudes, and acceptability of the human papillomavirus (HPV) vaccine for males. A secondary aim of the focus groups, however, was to discuss tobacco use and the new pictorial warning labels revealed by the FDA. We therefore presented images of the new labels to participants during all focus groups. The resulting feedback forms the basis of this report. The Institutional Review Board at The Ohio State University approved the study.

## Participants

We recruited participants from Appalachian Ohio with assistance from community members (e.g., individuals from county health departments), who posted flyers at various locations in Appalachian Ohio counties and sent flyers to local community-based agencies. We targeted four types of community members: healthcare providers, community leaders, parents with adolescent sons, and young adult men (ages 18–26). We conducted separate focus groups for each type of community member, with in-depth interviews used when only one person arrived for focus groups.

In total, we conducted 24 focus groups with 97 participants and in-depth interviews with five individuals. Sessions occurred in 10 of the 32 Appalachian Ohio counties with participants ( $n = 102$ ) from 12 Appalachian Ohio counties. Participants included 30 healthcare providers (e.g., nurses and physicians) in six focus groups and three in-depth interviews, 26 community leaders (e.g., church leaders, business owners, etc.) in six focus groups and one in-depth interview, 28 parents in six focus groups and one in-depth interview, and 18 young adult men ages 18–26 in six focus groups.

Most participants were female (75 %), non-Hispanic white (89 %), married (60 %), and employed (83 %) (Table 1). About 97 % of healthcare providers and 80 % of community leaders had a college degree, with fewer parents (68 %) and young adult men (11 %) indicating this level of educational attainment. About 71 % of participants self-reported being nonsmokers, 17 % were former smokers, and 13 % were current smokers.

## Procedures

One of two trained moderators led each of the focus groups with an additional staff member recording field notes and group dynamics. We held focus groups in various community locations (e.g., libraries, health clinics, etc.), with groups lasting about 1 h. Sessions were audio recorded, with recordings later transcribed verbatim and reviewed for accuracy. Participants completed written consent forms and

**Table 1** Characteristics of focus group participants from Appalachian Ohio (*n* = 102)

	Healthcare providers ( <i>n</i> = 30)	Community leaders ( <i>n</i> = 26)	Parents ( <i>n</i> = 28)	Men* ( <i>n</i> = 18)
<b>Age (years)</b>				
Mean (SD)	46 (11)	45 (14)	43 (10)	21 (3)
Range	26–66	24–65	21–65	18–26
<b>Gender</b>				
Female	30 (100)	20 (77)	26 (93)	0 (0)
Male	0 (0)	6 (23)	2 (7)	18 (100)
<b>Race/ethnicity</b>				
White, non-Hispanic	29 (97)	25 (96)	23 (82)	14 (78)
Black, Hispanic	0 (0)	0 (0)	0 (0)	1 (6)
Black, non-Hispanic	1 (3)	1 (4)	5 (18)	3 (17)
<b>Marital status</b>				
Single	2 (7)	2 (8)	4 (14)	16 (89)
Married	22 (73)	19 (76)	18 (64)	2 (11)
Separated/widowed/divorced	6 (20)	4 (16)	6 (21)	0 (0)
<b>Education</b>				
High school graduate	1 (3)	5 (20)	9 (32)	16 (89)
College graduate	21 (70)	9 (36)	17 (61)	2 (11)
Graduate or professional school	8 (27)	11 (44)	2 (7)	0 (0)
<b>Employment</b>				
Full-time/part-time	30 (100)	22 (88)	17 (65)	13 (72)
Retired/disabled	0 (0)	2 (8)	4 (15)	0 (0)
Unemployed	0 (0)	1 (4)	5 (19)	5 (28)
<b>Smoking status</b>				
Current smoker	3 (10)	2 (8)	6 (21)	2 (11)
Former smoker	4 (13)	3 (12)	6 (21)	4 (22)
Nonsmoker	23 (77)	21 (81)	16 (57)	12 (67)

This table reports *n* (%) unless otherwise indicated. Totals may be less than stated sample size due to missing data. Percents may not sum to 100 % due to rounding

*SD* standard deviation

\* Included young adult men ages 18–26

self-administered surveys that collected sociodemographic information and smoking status prior to focus groups. During each focus group, the moderator distributed images of the nine new FDA warning labels to participants and probed on participants’ reactions to and attitudes about the labels. Participants received a \$25 gift card and a \$5 gasoline gift card for travel expenses. All focus groups were conducted between July and October 2011.

**Data Analysis**

Three research team members read all focus group transcripts. One team member coded the cigarette warning label data and consulted another member on any coding issues. We used cross-group comparisons with a matrix to compare data across the four community member types [23]. Highly similar themes emerged from the different groups, so we combined all data in this report. We selected quotations to demonstrate prevalent themes.

**Results**

**General Perspectives about New Cigarette Warning Labels**

Awareness of the new cigarette warning labels was mixed, with many participants having not heard about or seen any of the labels. Most participants expressed support for the addition of the pictorial labels to U.S. cigarette packages, even though many questioned their potential effectiveness in promoting smoking cessation. These participants felt that smokers in their communities knew the health consequences of smoking but were already too addicted to nicotine. Participants were more positive about the potential of the labels to affect smoking initiation. Many thought the labels, particularly the more graphic labels, may prevent smoking initiation among adolescents. However, some participants indicated peers and peer pressure remain the major influences for smoking initiation among adolescents in their communities.

Several other issues were mentioned by participants when discussing the new cigarette warning labels. A few participants had friends who had travelled to other countries and noted that warning labels in these other countries were more graphic and may have larger effects on smoking initiation and cessation. Some participants thought that U.S. smokers would place cigarette packages in sleeves designed to hide pictorial warning labels, similar to smokers in other countries. Others were concerned that people may become immune to the warning labels over time and suggested that new labels should be introduced and rotated on a regular basis. Some participants believed the labels may be perceived by some residents of their communities as a form of government intrusion and an infringement on their rights. A few participants in the young adult male focus groups suggested that smokers (particularly younger smokers) may even try to collect all nine warning labels and/or trade the new labels, with the labels becoming “collector’s items.”

#### Individual Cigarette Warning Labels

A summary of the discussions about each label follows with additional quotes listed in Table 2.

##### *Label #1: Tobacco Smoke Can Harm Your Children*

Participants expressed mixed opinions about this label. Some participants thought the label could be potentially effective among parents and pregnant women. However, others thought it was a negative that it would only appeal to a limited segment of the population. Although most participants tended to like the baby, some thought the baby looked too healthy and suggested that a baby who appears ill may be more effective. One parent (nonsmoker) noted, “This baby is chubby faced and healthy looking, so I would almost kinda see that as a conflict, cause you’re telling me oh this is bad for me, but I see this beautiful healthy baby here...”.

##### *Label #2: Smoking During Pregnancy Can Harm Your Baby*

This label received mostly negative feedback. Although some participants liked the concept of the label, most did not think the cartoon image would have any effect and suggested replacing the cartoon with a real picture. Some individuals thought this graphic was bad “clip art,” and others commented that it looked unprofessional. One community leader (former smoker) summarized this perspective, “And this, this does nothing for me. If that was a real child, that is a whole different ballgame, but fake pictures of kids, that’s not gonna do anything.” Other

participants were concerned that some people may be confused and not know what the image depicts. As one healthcare provider (current smoker) stated, “I just thought it [baby] was in a car laying down, so that picture’s confusing.”

##### *Label #3: Tobacco Smoke Causes Fatal Lung Disease in Nonsmokers*

Participants also provided mostly negative feedback regarding this label, expressing two main criticisms. First, participants voiced their opinions that smokers generally do not think of or care about the effects that their smoking has on nonsmokers. Second, participants in several focus groups did not think it was clear that the woman on the label had been affected by secondhand smoke. They instead thought she was suffering from stress or depression, conditions which participants believed make people want to smoke more. One community leader (former smoker) noted, “...and this one and like I said I wanna give her a cigarette and I wanna smoke with her so that’s not doing anything.”

##### *Label #4: Cigarettes are Addictive*

Most participants were very positive about this label because it is graphic, and they believed its shock value has the potential to make an impact. A community leader (former smoker) voiced this opinion, “This one is huge! This is the one that I was afraid they were gonna put on the labels, if you wanna know the truth.” Participants believed the graphic nature of the label might scare children and young adolescents and discourage smoking initiation. The only criticism about this label, expressed by very few participants, was that the image may in fact be too graphic.

##### *Label #5: Cigarettes Cause Cancer*

This label was also well-received by most participants, mainly because it was graphic and stressed the negative aesthetic effects of smoking. Many participants believed this label could be very effective among adolescents. As one community leader (nonsmoker) said, “13,14, 15,16 year old kids who are there probably at the age you know where they’re gonna try it or want to and it’s like well do you wanna look like that.” Other participants thought this label may not be effective because some Appalachian residents expect to have poor oral health similar to the image. One parent group decided that the label would have more impact if the image showed someone with oral cancer but otherwise good oral health (e.g., a person with good teeth and smiling).

**Table 2** Focus group themes (bolded) and associated quotations regarding new pictorial warning labels for U.S. cigarette packages

Label	Positives	Negatives	Overall <sup>a</sup>
<p>Label #1</p> 	<p><b>Potentially effective among parents and pregnant women</b></p> <p>Community leader (current smoker): “If when, somebody’s a mother you know a pregnant teen, a young mother, it’ll get them, I think it’ll bring out their mothering instinct and their concern about their child.”</p> <p><b>The baby is likeable</b></p> <p>Healthcare provider (former smoker): “The oh the baby is so cute, the I think too as far as the secondhand smoke too. I mean you don’t even realize, I think you would think that more parents and things would realize not having their kids exposed to that...”</p>	<p><b>The child looks too healthy; a child who appears ill may be more effective</b></p> <p>Community leader (former smoker): “And this one, that baby’s just too cute, that doesn’t make me sad or feel bad at all you know that’s just a cute little baby.”</p> <p><b>May not have a wide appeal</b></p> <p>Community leader (nonsmoker): “I mean I think the kids ones are fine but then you’re only hitting one demographic, women who are considering having children.”</p>	±
<p>Label #2</p> 	<p><b>The concept is good</b></p> <p>Young adult (nonsmoker): “If not the annoyance of having this picture on there, the message might get across.”</p>	<p><b>Replace cartoon with real picture</b></p> <p>Healthcare provider (former smoker): “That one’s not so pretty. I mean can you just put the real baby on there instead of the fake baby? Have one with the you know the real tubes hooked up and everything so it’s more real.”</p> <p><b>It may not be clear what the image depicts</b></p> <p>Healthcare provider (current smoker): “Yeah the picture’s awful, what is that baby doing?”</p>	—
<p>Label #3</p> 	<p><b>Uses more definitive language (i.e., “causes” instead of “can cause”)</b></p> <p>Healthcare provider (nonsmoker): “I like the number three because it says ‘it causes’, the first two says that ‘it can’ and it has been proven that it does.”</p>	<p><b>Smokers do not think or care about the effects of smoke on nonsmokers</b></p> <p>Parent (nonsmoker): “Fatal lung disease, nonsmokers, they don’t care about nonsmokers they just bought a pack of cigarettes.”</p> <p><b>Woman looks depressed or stressed, it is not clear that she has been affected by secondhand smoke</b></p> <p>Healthcare provider (current smoker): “This woman looks more depressed and about ready to kill herself than suffer from cancer to me.”</p>	—

**Table 2** continued

Label	Positives	Negatives	Overall <sup>a</sup>
Label #4 	<p><b>Graphic and impactful</b></p> <p>Community leader (former smoker): “Oh my God! That should be on everyone. I can’t even look at that again.”</p> <p><b>Children and adolescents may be scared by label and avoid smoking</b></p> <p>Parent (nonsmoker): “But I agree the one with the hole in the neck is the strongest indicator to me that I think it would scare children.”</p>	<p><b>May be too graphic</b></p> <p>Healthcare provider (current smoker): “Now that’s a little much.”</p>	+
Label #5 	<p><b>Stresses aesthetic effects of smoking</b></p> <p>Young adult (nonsmoker): “And the teeth and the hole in your throat your appearance and nowadays appearance is pretty important to people, so that would make them think about it.”</p> <p><b>Graphic and impactful</b></p> <p>Healthcare provider (nonsmoker): “Wow, this is pretty impacting.”</p> <p><b>Children and adolescents may be scared by label and avoid smoking</b></p> <p>Parent (nonsmoker): “Right but it may affect somebody who is just a teenager that’s saying, ‘I don’t want my mouth to look like that.’”</p>	<p><b>Some people in Appalachia expect to have oral health similar to this</b></p> <p>Healthcare provider (nonsmoker): “I think so many people around here expect to have teeth to look like that.”</p> <p><b>Needs to appear on smokeless tobacco products as well</b></p> <p>Community leader (former smoker): “This is a great picture, although I don’t know how many people are gonna, I mean that’s a good picture. Are they doing this on that snuff and stuff too? No, see that’s where this needs to go, you know.”</p>	+
Label #6 	<p><b>Images are effective</b></p> <p>Healthcare provider (current smoker): “Oh there’s the lungs now see I think that’s effective looking.”</p>	<p><b>Smokers cannot see their lungs and think they are healthy</b></p> <p>Young adult (nonsmoker): “Just cause the picture of, you know a good lung, and then you’ve got a bad lung of people who smoke cigarettes, a smoker who smokes cigarettes could see that and be like, ‘Okay well, who cares, I mean, I’m still breathing today.’”</p> <p><b>Some people may not know the label is showing lungs</b></p> <p>Parent (nonsmoker): “...I don’t know that everybody knows that that’s a set of lungs...”</p>	±

**Table 2** continued

Label	Positives	Negatives	Overall <sup>a</sup>
<p>Label #7</p> 	<p><b>Shows a serious side effect of smoking</b></p> <p>Healthcare provider (former smoker): I think you need to see that ‘Oh God I’m gonna end up on a ventilator’...”</p>	<p><b>Man looks older and not healthy; could have health problems from causes other than smoking</b></p> <p>Community leader (nonsmoker): “Plus it looks like an old man and they’re thinking ‘eh so what it’s not gonna happen to me.’” ±</p> <p><b>Image looks fake</b></p> <p>Young adult (nonsmoker): “...that looks like it could have easily been photoshopped.”</p>	
<p>Label #8</p> 	<p><b>Graphic image</b></p> <p>Parent (nonsmoker): “...I like the dead body, I mean it’s graphic.”</p>	<p><b>Man looks older and could have died from many causes</b></p> <p>Healthcare provider (current smoker): “I mean you know just cause we’ve got the CSI and all that stuff on television like this person could have died of anything.” ±</p> <p><b>Everybody already knows that smoking causes death</b></p> <p>Young adult (nonsmoker): “That doesn’t look, yeah that’s bad, I’m pretty, most people do know it can kill you. So they do it anyways you know they figure, ‘Ah well it’s gonna happen eventually.’”</p>	
<p>Label #9</p> 	<p><b>Shows that it is possible to quit smoking</b></p> <p>Parent (former smoker): “...it says ‘Hey I quit and so can you’...”</p>	<p><b>Man is not relatable and does not look happy that he quit smoking</b></p> <p>Young adults (both nonsmokers):</p> <p>PPT1: “It looks like he quit and got an attitude problem.”</p> <p>PPT2: “Oh yeah, like ‘I need my cigarette!’”</p> <p>PPT1: “For real, that’s what he looks like. He like hot like, ‘I want one as soon as I quit this.’” –</p> <p><b>Will not affect smokers</b></p> <p>Community leader (nonsmoker): “I was just gonna say this picture does nothing. And I’m not a smoker but this picture, knowing somebody quit that I don’t know his face, I wouldn’t care but I don’t know.”</p>	

PPT = participant

<sup>a</sup> Overall impressions of participants’ feedback on pictorial warning labels. Participants provided mostly positive feedback (+), mostly negative feedback (–), or fairly equal amounts of positive and negative feedback (±)

### *Label #6: Cigarettes Cause Fatal Lung Disease*

Although a few participants thought the lungs were a potentially effective image, there were two main concerns regarding this label. First, participants believed that most smokers think their lungs are healthy because they cannot see them and do not have any current respiratory symptoms. These smokers may therefore be inclined to think this label does not pertain to them. Second, there was concern that not everyone would realize what the image depicts. As one parent (nonsmoker) noted, “I don’t think the majority of the population is gonna make the connection that these are lungs in all fairness...”.

### *Label #7: Cigarettes Cause Strokes and Heart Disease*

Participants were mostly ambivalent towards this label. Some liked that it showed a serious outcome from smoking that many smokers fear. However, other participants indicated that the man on the label looked older and that his health problems could be due to other factors. These participants were concerned that this may limit the effectiveness of the label among the younger population. A few participants indicated that the image on the label appeared to be fake, while others were not sure what the image depicted. One young adult (nonsmoker), stated, “Some people would probably think like, ‘Oh that’s fake’”.

### *Label #8: Smoking Can Kill You*

Participants expressed mixed opinions about this label. Some liked that the label contained a graphic image, while others believed the man on the label looks older and could have died from many causes. A healthcare provider (former smoker) was one such participant, “I don’t know about this dead guy on here. Maybe they could I don’t know, I mean really what is the cause he had cardiac bypass or I don’t know...”. Others stated that the label looked like an image from a forensic television program. Some participants also suggested this label may not be effective in promoting cessation since smokers already know that smoking causes death but continue to smoke.

### *Label #9: Quitting Smoking Now Greatly Reduces Serious Risks to Your Health*

This label received mostly negative feedback across focus groups. A few participants thought the label provided an encouraging message regarding smoking cessation, but the majority did not like this label and did not think it would have an effect. Participants voiced opinions that the man on the label did not look pleased or enthusiastic about his smoking cessation. Instead, they thought the man had an

attitude problem and was not relatable. One community leader (nonsmoker) was not supportive of this label, “Yeah they need to smile, they need to be proud that they quit smoking. That’s a big accomplishment, be proud of yourself.” Some participants suggested that this label might have a greater effect if it used a well-known celebrity who quit smoking.

### Alternate Strategies for Warning Labels

Participants provided ideas for alternate warning labels that they believed could be effective. Several participants suggested that warning labels should stress the financial costs of smoking, as they thought the increasing cost of cigarettes was a potentially important deterrent to smoking. Others suggested using bar graphs to show the increased risk of various diseases for smokers compared to nonsmokers. A few participants mentioned that warning labels should address children riding in cars with adults who are smoking, which they perceived as an ongoing problem in their communities. Lastly, participants in several focus groups suggested that pictorial warning labels (e.g., the oral disease label) should also appear on smokeless tobacco products. Participants indicated that use of smokeless tobacco products was a major health issue in their communities and were surprised that pictorial warning labels are not being added to these products.

### Discussion

As the U.S. moves closer to adding pictorial warning labels to cigarette packages, it is important to report feedback regarding the new FDA-released warning labels. It may be of particular interest to examine the perspectives of residents of Appalachia, a region that is the primary tobacco producer in the U.S. and where smoking is highly prevalent [11, 13, 14]. We examined the reactions to and attitudes about the new labels among Appalachian Ohio residents, with results providing some of the earliest reported feedback on these labels.

Most participants supported the addition of the new pictorial warning labels to U.S. cigarette packages. These findings coincide with those from past studies, where U.S. residents were supportive of pictorial warning labels from other countries [16, 17]. It is also similar to our previous research in Appalachian Ohio, where residents expressed general support for both Canadian cigarette warning labels and the smoke-free law in Ohio [18]. Although participants in the current study typically did not think the new labels would be effective in promoting smoking cessation, many were more positive about the potential of the labels to decrease smoking initiation, particularly among



adolescents. Interestingly, data suggest that pictorial warning labels not only discourage smoking initiation but also decrease cigarette consumption and promote smoking cessation [6–8]. If the new labels are put into practice in the U.S., it will be important to monitor their effects on both smoking initiation and cessation.

Participants tended to provide positive feedback for the more graphic warning labels, particularly those showing a man with a tracheal stoma or a person with severe oral disease. Our findings are similar to those from previous research, where individuals tended to report higher levels of effectiveness for more graphic labels [20, 24]. These two labels were also among those that elicited strong emotional and cognitive reactions in experiments that helped develop the new labels for U.S. cigarette packages [21]. The shocking nature of these graphic labels may evoke more fear, resulting in their greater potential to reduce smoking [24]. However, it is likely that the effectiveness of these labels would decrease over time [6, 25], so it will be important that strategies are in place to limit label “wear-out.” Wear-out may not be as problematic for graphic warning labels [26], but introducing new labels, as suggested by participants in this study, would still likely be advantageous.

The less graphic pictorial warning labels, particularly those including a cartoon image of an ill infant or a man who quit smoking, received mostly negative feedback. Results concerning the latter label are similar to those from the experiments that helped develop the new labels, where none of the smoking cessation labels elicited strong emotional and cognitive reactions [21]. Our results suggest that these labels may not be well received if they are put into practice. If this occurs, the Family Smoking Prevention and Tobacco Control Act allows for revision of the labels if changes would increase public health knowledge of the risks posed by tobacco products [2]. Participants in our study provided potential strategies for improving these labels, including replacing the cartoon image with a real infant and having a more positive-looking and relatable individual promote smoking cessation. One suggestion by participants was for labels to stress the financial costs of smoking. Although costs and taxes on cigarettes in the U.S. have indeed risen [27, 28], it may be more difficult for information unrelated to the health effects of smoking to appear on cigarette packages.

Participants were also supportive of adding pictorial warning labels to smokeless tobacco products. Such labels may reduce the appeal of smokeless tobacco products and affect perceived risks associated with use of these products [29]. However, even if the new pictorial warning labels are added to U.S. cigarette packages, there are no requirements for adding pictorial warning labels to smokeless tobacco products. Instead, the Family Smoking Prevention and

Tobacco Control Act requires the text-only warning labels on smokeless tobacco products to cover 30 % of the front and rear of packages [2]. Appalachian Ohio has a higher prevalence of smokeless tobacco use compared to the U.S. (6.7 vs. 3.5 % [15, 30]), so this may partly explain why participants perceived smokeless tobacco use as a problem in their communities and supported the addition of pictorial warning labels to these products. Future research is needed to assess whether U.S. residents from other geographic regions support the addition of such labels to smokeless tobacco products.

Our study had several strengths, including the occurrence of focus groups soon after the FDA revealed the new warning labels, a large number of focus groups conducted in a geographic area with high smoking prevalence, and targeting four types of community members. Limitations include unknown generalizability of our results since all focus groups were conducted in Appalachian Ohio with mostly non-Hispanic white participants. Participants self-reported their smoking status, focus groups contained relatively few current smokers, and we did not collect data on use of smokeless tobacco products. It is also possible that participants’ responses may have been influenced by focus group discussions.

Most participants from Appalachian Ohio were supportive of adding the FDA-released pictorial warning labels to U.S. cigarette packages. Many felt that the labels have greater potential to affect smoking initiation compared to smoking cessation. Participants provided mostly positive feedback for a few of the more graphic labels, while providing mostly negative feedback for the less graphic labels. Our results represent some of the earliest insight into how these labels may be received if put into practice.

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**Conflict of interest** None.

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