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The META-Oak Project: Using Photovoice to Investigate Youth Perspectives on Tobacco Companies' Marketing of E-Cigarettes Toward Adolescents in Oakland

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Abstract

The California Adolescent Health Collaborative, a project of the Public Health Institute, in partnership with the University of California, San Francisco's Center for Tobacco Control Research and Education jointly led a community-based participatory research (CBPR) study engaging youth coresearchers to fill the critical gap in knowledge about youth's perceptions of electronic cigarette products and how they are marketed toward young people in Oakland. Youth coresearchers who were trained as journalists partnered with the adult investigators to explore the e-cigarette topic from their perspective, embedded in the context of their own experiences and those of others in their communities. The goal of this exploratory CBPR study was to improve understanding of how and why youth (ages: 14-24 years) in Oakland are adopting (or resisting) e-cigarettes, how youth respond to increasing availability of e-cigarettes in their communities, and how they perceive communications about e-cigarettes (e.g., advertising) and in turn communicate about the products to each other.

Keywords

Community-based participatory research, youth participatory action research, tobacco, e-cigarettes

Introduction

The marketing of e-cigarettes toward adolescent in Oakland (META-Oak) study was a community-based participatory research (CBPR) project that aimed to answer the following question: How are electronic nicotine delivery systems (e-cigarettes) marketed to young people in Oakland, and how do youth perceive e-cigarettes? Young journalists were recruited from a youth media organization to participate in training on research, tobacco marketing trends and tactics, and the health impacts of e-cigarettes and other alternative tobacco products. Twelve young journalists participated in initial training sessions; when the youth media organization left the partnership (see "Discussion" section for more details on this transition), five youth chose to continue to participate, joining the project leadership team as youth coresearchers. These five youths contributed to the research question, design, and data collection, but two of them moved on to college or work before they could engage in data analysis and dissemination of findings. They collected and analyzed data from their communities using multimedia participatory methodologies, photovoice, and geo-narratives. This article describes the background and significance of our research topic, details the process and methodologies of this intergenerational CBPR study, including how we disseminated our findings, and outlines the results. We incorporate lessons learned and challenges, discuss implications of our findings, and recommendations for practice, policy, and future research. This article was coauthored by the study's coprincipal investigators (Co-PIs; A.C. and P.L.), the youth coresearchers (E.M. and N.P.) and an adult ally coresearcher and program manager (R.E.L.): Throughout the article, we refer

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to our core team in the tradition of reflexive analysis (Finlay & Gough, 2003).

Background

Smoking is the leading preventable cause of death in the United States, and if smoking continues at current rates, 5.6 million young people below the age of 18 years will die of a smoking-related disease (U.S. Department of Health and Human Services, 2014). Youth smoking prevention is important, as 90% of all people who start smoking do so before the age of 18 years, and 99% start by the age of 26 years (U.S. Department of Health and Human Services, 2012). Although youth smoking has declined over the past decade, use of noncigarette tobacco products has increased. The most rapid increase has been in the use of e-cigarettes, which are battery-powered devices that heat a solution to produce an aerosol typically containing nicotine, flavorings, and other additives to be inhaled by the user (U.S. Department of Health and Human Services, 2012). Between 2011 and 2015 there was a dramatic increase in e-cigarette use among youth and young adults, and e-cigarettes are now the most commonly used tobacco product among youth (U.S. Department of Health and Human Services, 2016). Youth who use e-cigarettes are also 3 times more likely to go on to combustible cigarette smoking in the future (Primack, Soneji, Stoolmiller, Fine, & Sargent, 2015; Wills et al., 2017).

E-cigarette devices are very diverse, with considerable variations in appearance and nicotine delivery ranging from "cigalikes" (devices that appear like cigarettes) to "vape pens" or elaborate "mods" that can be built and customized by the user (Zhu et al., 2014). These devices are used for a wide variety of reasons, and these reasons can evolve over time (Hoek, Thrul, & Ling, 2017). In addition, e-cigarette advertising is increasing, including in magazines and on television (Kim, Arnold, & Makarenko, 2014), and receptivity to e-cigarette advertising among youth is associated with greater susceptibility for cigarette smoking of all types (Pierce et al., 2017).

Another important factor influencing youth smoking is the presence of flavored tobacco products. E-cigarettes are available in over 7,000 flavors, including flavors with youth appeal such as fruit flavors (e.g., strawberry, grape, cherry, blueberry), candy flavors (cotton candy, vanilla, chocolate, bubble gum), dessert and snack flavors (banana cream pie, froot loops, cheesecake, donuts, cookies and cream), and popular savory food flavors (chicken and waffles, pizza, bacon; Zhu et al., 2014). Most youth tobacco users start with a flavored product, including the majority of cigarette smokers, e-cigarette users, and cigar users (Ambrose et al., 2015). Although the 2009 Family Smoking Prevention and Tobacco Control Act prohibited the sale of cigarettes with characterizing flavors, this regulation did not include menthol cigarettes, and it did not include noncigarette tobacco products such as little cigars and cigarillos, smokeless tobacco, and e-cigarettes (Waxman, 2009).

Thus, there is an urgent need to understand youth exposure to e-cigarette advertising and their perceptions of advertising messages. In addition, it is important to gain a better understanding of the exposure to flavored tobacco products, and the impact of flavored tobacco products on youth perceptions of tobacco and use of these products. For increased understanding of both these issues, it is vitally important to have local data on the availability of tobacco products, exposure to advertising, and a youth perspective on this advertising. These data and improved understanding will enable development of educational programs for youth and the creation and passage of public policies responsive to the rapidly changing environment and product landscape. This study sets out to fill this need while developing a unique partnership between academic and community health researchers and youth in Oakland.

Context

Diversity and gentrification. Oakland is the eighth largest city in California, with a population of over 4,00,000 in 2015, and it was ranked as the most racial/ethnically diverse city in the United States in a 2017 study (Bernardo, 2017). The racial/ethnic mix of the city is 38.7% White, 30.5% Black or African American, 18.9% Asian or Asian American, 2.1% American Indian/Alaska Native, 0.9% Native Hawaiian/Pacific Islander, 15.3% Other, and 25.4% Hispanic or Latino (City of Oakland, n.d.). Within this context of racial/ethnic diversity, rising rent and housing prices have contributed to gentrification and displacement throughout the San Francisco Bay Area, with more families migrating out of Oakland to surrounding suburbs such as Antioch, Pittsburg, and Union City (Allen-Price, 2017). Moving to the suburbs may also impact tobacco use. One of our youth coresearchers (N.P.) lived in a geographically distant suburb and noted that, among youth, smoking cigarillos and flavored tobacco was not as prevalent as it was in Oakland. The tobacco products used more frequently in the suburban area seemed to be e-cigarettes and vape pens, as well as hookahs (Governing, n.d.).

Community setting and policy context. Oakland has a long history of organizing, with many grassroots organizations and youth development centers. Many youth-serving organizations and some high schools are located in Downtown Oakland (Youth Radio, Girl's Inc, Envision Academy of Arts & Technology, Oakland School for the Arts, SMAAC Youth Center, YMCA, among others), which made it a logical place to focus the study (Figure 1). In addition, the tobacco policy environment in California as well as the San Francisco Bay Area is rapidly changing. In 2016, the FDA deeming rules came into effect, exerting regulatory authority over e-cigarettes for the first time (Department of Health and Human

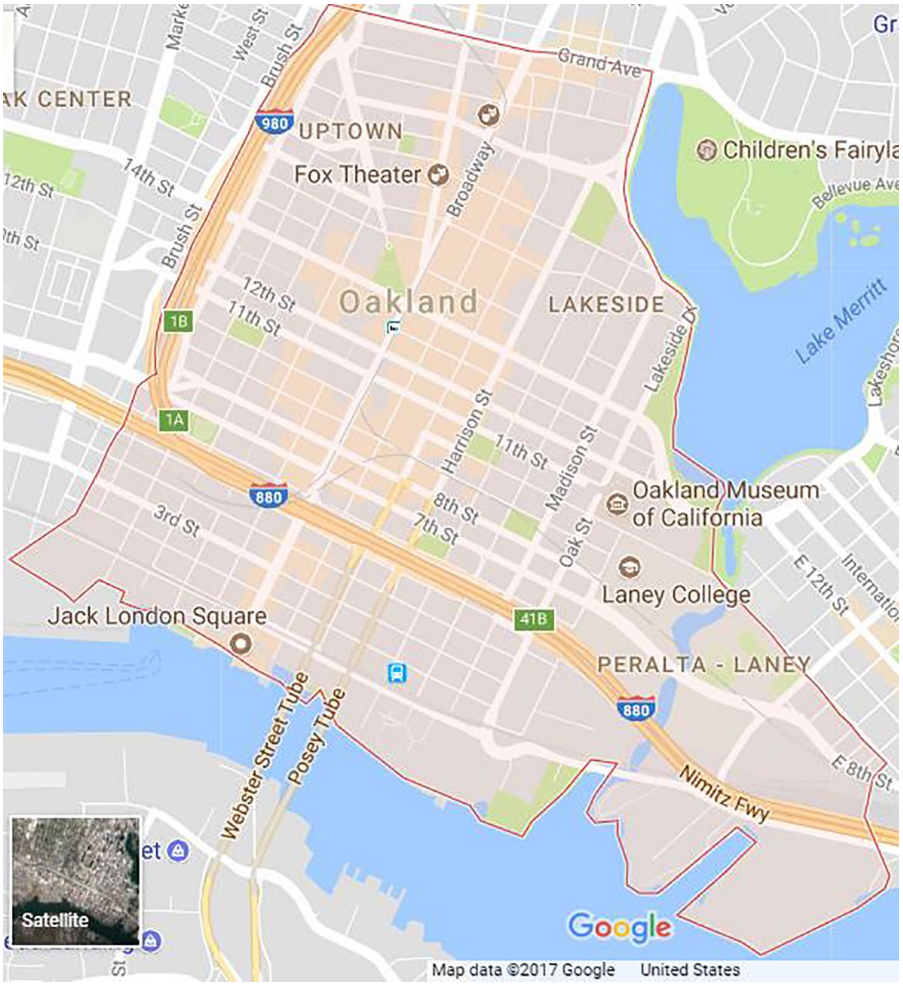


Figure 1. Study boundaries map.

Services & Food and Drug Administration [FDA], 2014). Following the deeming rule, California passed its most expansive legislative package on tobacco in decades, including raising the age of purchase to 21 years, including e-cigarettes in the definition of tobacco products, establishing licensing for tobacco products, and closing loopholes in smoke-free policies (The Editorial Board, 2016). California voters also passed the Proposition 56 ballot measure, establishing a new US$2 tax on tobacco products in 2016. In June 2017, San Francisco passed the first comprehensive ban on the sale of menthol and flavored tobacco products within the city, and similar legislation was adopted in Oakland soon after. Within this context, findings from this study were able to contribute to further advocacy efforts to limit youth access to tobacco and e-cigarette products.

Theoretical Framework

Empowerment theory is derived from Freirean pedagogical theory and posits that oppression works on many levels to keep people in their place within societal hierarchy, and that an important step in combating this ongoing assault on freedom is *conscientization. Conscientization* is the process whereby colearners gain critical consciousness, or an awareness of the ways that meanings are constructed and maintained in their world to support oppression (such as coercive and targeted advertising that undermines the health of vulnerable populations, including youth of color), the ways they are "objects" of others' will and can instead become a "subject" of their own will (Paiva, 2000). Subjects are empowered to change their environment and circumstances in the process of a listen-dialogue-action cycle (Minkler & Wallerstein, 2011).

Empowerment theory informs many aspects of the practice of CBPR, our research orientation, including the importance of coresearchers coming from the communities of interest and the necessity of including an action component as part of the investigation process. A research team of Oakland-based youth and adult researchers met weekly to make decisions, design processes and instruments, build

team cohesion and conduct the business of the project, including developing and delivering training and collecting and analyzing data, and disseminating findings. In our research team, the two (adult) Co-PIs and other adults on the steering committee positioned themselves as adult allies to their youth colleagues. This meant building the skills and knowledge of youth leaders enabling them to make meaningful decisions about the research and then connecting them to resources to carry out those decisions. Resources included content and methods training, creating a meeting and supervisory structure, food, space, equipment, and compensation via wages. Rather than having youth make all the decisions on their own, youth were a valued part of the decision-making team.

Method

Study Design

Organizational partners. Three organizations, which focused on youth empowerment and public health, came together to create this study. The California Adolescent Health Collaborative (CAHC), a program of the Public Health Institute, seeks to center youth as researchers to understand and address issues of health equity impacting adolescents. The Center for Tobacco Control, Research and Education (CTCRE), of the University of California, San Francisco, is a nexus for academic tobacco research, including active studies identifying marketing trends, patterns of use, and health effects of electronic nicotine delivery systems. Youth Radio, a media-training organization, builds capacity of youth in journalism and had recently produced a video on the burgeoning use of electronic cigarettes by young people in Oakland (Bolario, 2013). These three organizations developed and launched the study collaboratively.

Study orientation. The study was designed as a CBPR study, where the community was defined as young people ages 14 to 24 years living, working, or studying in Oakland, and those who work with or for them. CBPR is action-oriented, equitable, and serves as both an intervention and an investigation. It is ideal for marginalized and vulnerable populations such as adolescents, because by engaging members of the focus population as coresearchers, the "relevance, rigor and reach" (Morello-Frosch, Pastor, Sadd, Porras, & Prichard, 2005) of the research is improved and simultaneously the young people gain access to power and have voice in arenas where they are traditionally not present (including, in this case, academic research and policy advocacy).

A key resource for this study was the steering committee, comprised of representatives from public organizations (the Alameda County Public Health Department, the National Cancer Institute) and nonprofit organizations (California Youth Advocates Network, American Lung Association, Americans for Nonsmokers Rights, California School-Based Health Alliance) invested in tobacco-related disease research, youth health and antitobacco advocacy. The steering committee met every other month throughout the duration of the project, to participate in guiding decisions around the research question and methodology, and to participate in training and analysis, as well as supporting communication of findings and keeping the team abreast of developments in research and policy, a task especially essential while investigating such a new and fast-moving subject as e-cigarettes.

Method

CBPR is practiced on a continuum, from more community-generated to more academic-led. The team attempted to maintain a balance near the center of the continuum, so while the health issue to be studied was decided upon when the funding proposal was written, the youth participants and steering committee collaboratively refined the specific research question. First, multiple trainings on content knowledge were conducted, including on the history of tobacco consumption and sales, the state-of-the-art knowledge on e-cigarette health impacts, targeted marketing tactics of tobacco companies from the 1950s until the present, and the "triangulum" of tobacco, e-cigarettes, and marijuana. Armed with this knowledge, through a multistep process of brainstorming and pile-sorting ideas, various aspects of the larger issue of e-cigarettes and adolescents were prioritized, and refined until the following research questions were reached by consensus:

> **Research Question 1**: How are e-cigarettes marketed and promoted to youth in Oakland?
> **Research Question 2**: How are these products perceived by youth in Oakland?

Based on the questions, the team determined qualitative/exploratory methods would be most efficacious in answering the "how" questions. The group participated in training on research basics and the difference between qualitative and quantitative methods, research ethics, various research methods (including in-depth interviews, focus groups, photovoice, and geo-narratives) and how to determine appropriate methodology to align with research questions. The core research team, consisting of three to five enthusiastic and committed youth (two youth researchers left the team before the conclusion of the study in order to attend college) and three adult allies including the Co-PIs, then determined that photovoice was the best fit for research questions and skills of the co-researchers. The youth researchers collected 39 photos with narratives using photovoice. Later, there was an opportunity to pilot-test collecting geo-narratives (a novel form of data collection new to all on the team), to complement photovoice, which resulted in two narrated videos with maps. Although the team initially expressed interest in conducting in-depth interviews, the richness of the data already collected and limits on time and resources resulted in the determination that interviews would not be necessary. This allowed the team to have ample time to analyze the data in an

iterative and participatory fashion. The research questions were revisited periodically in context of our progress on data collection and analysis, and it ultimately developed into "what are youth perceptions and responses toward the electronic cigarette and tobacco product marketing and messages they encounter?"

Photovoice. Photovoice is a well-known CBPR method (Strack, Magill, & McDonagh, 2004) whereby participants are given digital photography cameras and guided through a process to identify needs and assets in their communities using photos and narratives. Photovoice draws upon empowerment theory, assuming that the people who suffer from a problem are often the best equipped to address it in a way that is appropriate to their communities, but recognizing that they can face seemingly insurmountable barriers to action that stem from being in a disempowered state (Zimmerman, 2000). The narrative analysis process that accompanies the collection of visual data by participatory researchers using the photovoice technique supports the *conscientization* process. Participants share their images and answer the following questions about them (known by the acronym SHOWeD): "What do you *S*ee here? What is really *H*appening? How does this relate to *O*ur lives? *W*hy does this problem or strength exist? What can we *D*o about it?" (Lee, Lipperman-Kreda, Saephan, & Kirkpatrick, 2013; Wang, 2006) The photovoice training was a learning-by-doing training. We conducted one training where we introduced the basics, explored other photovoice projects, and discussed the theory supporting this method of data collection, then we met weekly as the youth researchers were engaged in data collection to troubleshoot challenges and discuss their narratives. The youth researchers took photos in their daily environments as well as sought out key sites where e-cigarettes are promoted in their communities, and for each photo they took, they produced a narrative by completing the reflective questions included in the SHOWeD acronym (as above). Prior to each week's group session, the youth coresearchers chose at least one piece of visual and narrative data to share for analysis by the group.

Data analysis. We engaged in a systematic coding of all of the data in an inductive-deductive analysis process; one that incorporates social phenomenological and grounded theory approaches (Fereday & Muir-Cochrane, 2006). The core research team integrated two coding processes: (a) systematic inductive coding and (b) deductive analysis by the steering committee to triangulate findings, in effect conducting coding comparisons between research team members and steering committee members located in different spaces with regard to adolescent perspectives on e-cigarettes and tobacco marketing. This process was ideal for this CBPR project as it utilized both the *a priori* theory that informed the design of the research and the everyday theories (Furnham, 1988) that all people, including all of the coresearchers and steering committee members, hold and may reveal in the data collection/analysis/interpretation process.

Analyses of the data were first conducted by the core group involved in data collection, consisting of three youth researchers and three adult coresearcher/allies (the core research team). Two-step analysis included discussions of the narratives, followed by systematic coding and development of themes across photos and narratives. As a group, we examined each photo and narrative, writing down the codes that we saw in either the visual or written portion of the piece. We then compared notes, and asked questions or made comments to come to agreement on the predominant codes, combining similar codes and grouping subcodes under broader headings. We used sticky notes to visually manage the process with many codes, and one person was assigned as the recorder, taking note of any discrepancies and documenting the process and decisions. In this way, the team collaboratively developed an initial codebook with all the codes that emerged in the analysis process. Based on initial analyses, it was determined that saturation had been reached as themes were being repeated in multiple photos and narratives and no new themes were emerging, after 35 photos with narratives had been collected and analyzed. We then reviewed the codebook as a team, discussing each theme in depth and looking back at supporting pieces of data. In this process, we also selected images and quotes that demonstrated each theme particularly well, and revisited the broader themes, finding it necessary to develop even broader "meta" themes given that there were so many in our data.

We then asked our steering committee members to "member-check" (Beebe, 2001) our analyses by assigning each member a group of photos and narratives belonging to a specific meta theme. Steering committee members blind coded the groups of photos and identified what they felt were the common themes. We asked them to answer a set of questions (see Figure 2) that either confirmed our thinking about the themes or revealed new questions. We found the perspectives of the steering committee members affirmed and reinforced

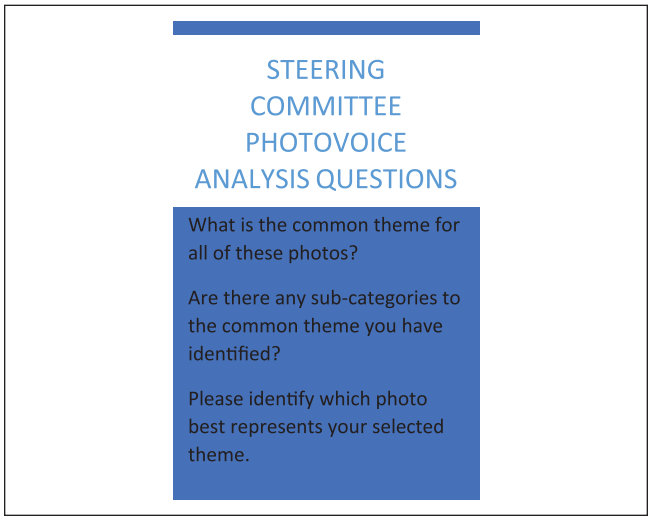


Figure 2. Deductive analysis questions for steering committee members to analyze Photovoice data.

the core group's analyses and interpretations. We then connected and compared codes across data sources to identify overarching themes and relationships between emergent concepts. This collaborative process reinforced co-ownership of the data and validated the expertise of the community researchers.

Spatial video geo-narratives. Spatial video geo-narrative is a new technique whereby an individual is stimulated by his or her environment resulting in a primarily place-specific description. Unlike other geo-narrative applications, the simultaneous video collection allows for an iterative inductive-deductive investigation of the data. A subject describes his or her environment as a series of observations, memories, and emotions, stimulated by passing sights, sounds, and smells. The narrated content typically comprises of spatially specific (an actual location is identified), spatially fuzzy (a general area that is known for activity), and spatially inspired (the conversation, or a sense that has been stimulated results in a more general insight). For example,

> . . . it's actually an elementary school down there, across the street from my high school. And, a lot of kids come in here and it's like, they're looking at it. And, it's like, they probably think it's candy. So, like, you know, are you selling it to kids? It makes you wonder, like, are you selling it to kids?

This quote contains both *spatially specific* information, and *spatially inspired* insight. After the narrative has been transcribed with media time stamps, Wordmapper software allows the text to be merged with coordinates from the global positioning system path. Key words can be entered that will generate word clouds (based on the comments containing the key word) and maps, whereby every word, or beginning of a comment, is located. Each key word or a comment containing a key word is spatially identified. In this way, it is possible to read the narrative for themes, explore those themes through key words, identify cooccurring terms (to potentially modify the key word search), see where the themes map out, and return to the video for additional visual insight. Previous research has shown that this type of environment inspired participation provides far deeper insights than in more typical "indoor" questioning. Two youth coresearchers completed spatial video geo-narrative interviews. For this article, an iterative process was used to identify themes in the narrative that reflected or complemented the themes that emerged from the Photovoice data collection.

Dissemination of findings. The first set of audience that findings were presented to was to be the members of the steering committee. The steering committee then assisted in identifying venues for dissemination that would allow us to reach both wide audiences and those with the ability to act on findings to make an impact. We communicated our findings to several audiences with different needs for research products including youth, youth-serving organizations and health care providers, school officials, technology industries, local and state legislators and advocates, community organizations, and other researchers via conference presentations, in-person meetings with policy makers, an online video webinar, and a community gallery event.

It was important that the research findings be accessible to different stakeholders and not just the scientific and public health communities. We presented our findings in various forms of multimedia including a webinar, which is located on Youtube (https://youtu.be/g3dsuwuxIwg) and on CAHC's webpage (www.californiateenhealth.org). We also used interactive technologies such as the Kahoots! game (an interactive new generation app that enables participants to test their topical knowledge by take quizzes via a mobile phone). The quiz is live and participants compete with each other in the game to make it a fun way to educate youth on tobacco awareness.

Results

Photovoice Codebook

After the photovoice codebook was created and analyzed, the research team selected the most prominent themes based on both frequency of occurrence and importance by impact. The tables below include the theme names, definitions, notes or points of significance, and a sample photo of each theme. The results are presented in two tables: meta themes (Table 1, major themes) and other themes (Table 2, minor themes). In these tables, we present some text either from the narratives that accompanied a photo related to the theme, or interpretations of the data that emerged during analytic meetings under the column marked "notes/significance," and some exemplar direct quotes matching the theme from the spatial video geo-narratives in the final column.

Colors and flavors. Two major themes that were identified repeatedly in the data are colors and flavors. Each of these themes emerged repeatedly in the coding of the data, demonstrating both that a proliferation of colors and flavors does attract the attention of young people and that the tobacco companies that own most e-cigarette companies also understand this fact and utilize it to their advantage. The variety of different flavors documented by the photos also demonstrates the proliferation of this tactic that tobacco and e-cigarette companies are using to attract (and often addict) adolescents. Furthermore, the youth coresearchers noted multiple times in their data the eye-level view at which these products are often displayed, that of a young child, and wondered whether that was part of an intentional "early indoctrination" strategy to saturate the reality of younger children who visit these neighborhood stores with images that normalize these products starting at a very early age. Similarly, the youth researchers, some of whom were caregivers for their younger siblings, noted that many of these products were almost indistinguishable from toys in their appearance

Table 1. Major Theme Occurrences in Photovoice Data.

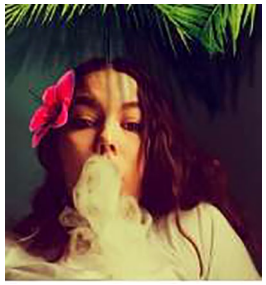
Theme name	Definition	Notes from photo narratives/significance expressed in analytic meetings	Sample photo with part of accompanying narrative	Example quote from geo-narrative
Color and flavor	Images of the colors and flavors of tobacco products or colorful displays of tobacco products (or e-juice), or colorful packages, including colorful advertisements. Colorful packages or advertisements appeal to young people because of enticing appearance, or appearing to be like other youth-oriented colorful products. Flavored tobacco products or advertising for flavored e-juice, including fruit, candy, or menthol. (Color can be used to communicate a flavor after the flavor descriptor is banned.)	Both colors and flavors increase appeal to young audiences. The increasing variety and creativity of the flavors and colors are a way to target specific groups of young people—kids are more interested in a large variety of flavors and colors. Especially things such as pizza, donuts, caramel apples, tropical blends, strawberry, blueberry muffin, cherry, cherry cola, mango, watermelon, cotton candy, peanut butter cups, pineapple, cinnamon bun, dulce de leche, honey, cappuccino, espresso.	 "This problem is bigger than people may think. Look at how the colors are the only thing that catches your eyes and how it looks."	"Swisher Sweets, they have a lot of the Newports and the Camels next to it. Back—like, that, and then like it's right next to the candy, where like, you see like, a lot of the fruity candy that has like, the colorful wrappers as well." "And, it used to be very irritating, because I used to like the e—cigarettes, because it taste—it smells—Oh, it just—it smells sweet. It just like—tastes like—I can't even say it—tastes, because I didn't taste it—but it smells like, you know, you want to—like you—know—I don't know, it's like a funny way of my body where you can smell something and then you could really taste it, how it tastes. . .."
Inventory	These photos depict large inventories in small stores.	The idea that having a large inventory shows that the store's priority is making a profit, not educating, or providing a benefit to the community. Large inventory also gives the feeling that these products are normal or that using them is OK.	 "Over 200 flavors of chemical vapor juices"	(No quotes from Geo-narratives that directly pertain to this theme.)
Product placement	Pictures demonstrating strategic placement of tobacco and e-cigarette products, including near other nontobacco products, presumably to increase sales by having certain products near each other. Products placed at a lower level, matching with children's eye view.	Kid's eye view and product placement really stood out to us because it all looks like candy, its color organized and flavors that you can only dream of attracting child-teenage audiences. Product placement should be a legal issue.	 "This relates to our lives because it's promoting you to buy tobacco product before you leave the store."	"I go in there a lot and just like the other one, where we first came out, he has like, candy, and the stuff in the back. So, in order for you to get candy, you have to look back there and then you see all of the Swisher Sweet wrappers and stuff like that, and then it's like, why would you want to put tobacco and candy next to each other? Like, do you want kids—and it's—it's actually an elementary school down there, across the street from my high school. And, a lot of kids come in here and it's like, they're looking at it. And, it's like, they probably think it's candy. So, like, you know, are you selling it to kids? It makes you wonder, like, are you selling it to kids?"

(continued)

Table 1. (continued)

Theme name	Definition	Notes from photo narratives/significance expressed in analytic meetings	Sample photo with part of accompanying narrative	Example quote from geo-narrative
Advertising	Pictures of advertisements for tobacco and e-cigarette products, including advertising location, placement of advertising, packaging design, tobacco products that look like other products because of the color, packaging, or placement	This photo is basically showing video games are the new way to communicate smoking is cool and new for kids to do because it is influencing it in child video games.	 "This relates to my life because my little brother who is 17 likes to play this game and my 2 year old brother likes to watch."	"I think like, downtown is like, big marketing. Like, you know, they're going to have like a lot—a lot to like, put out there. More than up here. Because down here, there's like, where a lot of tours come, a lot of people come, and they—you know, know a lot of people come down there, so they're going to try and do it big. And, here it's just like, oh, we're going to give you like a poster here, a poster there, but like, and like, some of the—they be having like banners of it, and like, downtown." "And, there's always like people out here smoking and as you can see it's like a lot of tobacco. Um, posters and stuff. There's Backwood's, Newport, Marlboro, Camel cigarettes. Um, a lot of stuff. Alcohol, yeah. But, point is, they're still advertising a lot of cigarettes. . .The advertising is just as much as West Oakland out here. So, it's kind of funny how a lot of people out here are smoking e-cigarettes but there's just as much tobacco, um, posters as West Oakland. So, I have yet to see a lot of people with like, swishers and stuff like that."
Marketing	Photos showing selling points or messages in the advertising that make the tobacco product seem more attractive, including normalizing, creating the impression that more and more people are using the product, labels such as organic, local, all-natural, Black Label	Tobacco companies are using new and old marketing tactics to target. One example is the product line of Black Label e-cigarette liquid.	 "The more fancy they look people want to get and try"	"Yeah, my friend don't like other cigarette brands, because Newports—because she said they're smoother. But, I wouldn't know. I know that I see a lot of black people smoking Newports and I see like other races smoking like Camel or Marlboro. . .I really don't know, maybe—maybe they are smoother than Newports and maybe the other kind have more Nicotine maybe. Who knows? I really don't know . . . "

Table 2. Minor Theme Occurrences in Photovoice Data.

Theme name	Definition	Notes/significance	Sample photo	Example quote from geo-narrative
Trash and litter	Photos of tobacco product trash and nonbiodegradable wrappers thrown in the environment.	Trash can act like an advertisement due to the prevalence of it on the street. You can see the colors or flavors on the packages (they are large too). Selling singles or two packs also generates more trash.	 "This relates to our lives because they get seen every 200 footsteps and I feel like my lil siblings may get curious"	"I just see like, a lot of—a lot of like—there's a lot of people just like, smoking cigarettes. Then you see you like a lot of cigarettes on the floor, on the ground. . . . Well, people usually—you know, smoke, you know, outside. They try to particularly stay away from the little kids, but it never works."
Policy	Photos depicting tobacco control policies, including limits or bans on advertising of tobacco products, including limits on colors, flavors, or buffer zones; age limits; includes no sales to minors, carding, telling adults not to buy for minors; nonsmoking locations includes signs about no e-cigarette use or no smokeless tobacco use. The video surveillance is how the policy is enforced.	These 21+ law stickers are not really effective in local neighborhoods because the tellers know the customers personally and refuse to lose business even if they are below-age. This is a problem because the flavored tobacco and e-cigarettes are targeted toward an adolescent audience.	 "People still go buy swishers for minors knowing it's against the law"	"Well, since they increased the law, they usually stand outside the liquor store and either—or they—not to be mean, they ask them—a homeless person, to go in there and they give them money to go buy cigarettes and stuff." "Um, I don't know. I'm hoping that we were wondering, you're under 18, they ID you. Because, it's the law."
Social media	These images were all posted on social media, found on Instagram, Facebook, Snapchat, or searching on the web.	A coresearcher used this photo because she thought it was smoke from a (nicotine) vape pen but later was told it was from a (marijuana) vape pen. This picture shows the amount of smoke that vape pens release is a massive amount of smoke and you can create the same amount of smoke using nicotine vape pens apparently.	 "she's young and she could of went to school with me"	"Like, because a lot of rappers nowadays, they smoke electronical cigarettes. I know Kanye West has one, and I know 2 Chainz has one. . . they're mostly like on social media doing that. So, I think they see a lot on social media and our generation is stuck on social media a lot. So, that's probably why e-cigarettes are so—yeah."

(continued)

Table 2. (continued)

Theme name	Definition	Notes/significance	Sample photo	Example quote from geo-narrative
Community education/ advocacy	Images depicting advocacy or a need for advocacy. Taking action against tobacco promotion and proliferation, including ways to reduce tobacco use or tobacco companies' efforts to gain or keep new customers, such as policies or education, educational campaigns, or the need for education; people who could take these actions; topics that should be included in education, such as teaching that advertising or video games are not realistic, or need for education about the effects of the products, or ways the community can address tobacco-related problems such as litter.	Make some webinars or PSA's on how the tobacco marketers are targeting our community and leaving us with nonbiodegradable product wastement and leaving us with health issues because there is no health education on tobacco.	 (This photo is not from data collected; this is used as picture for intended future.)	"once they turn 18, they all say, oh, we can go buy our own cigarettes, to have like a couple packs in the purse, with them. I'll be like, why do you smoke this? This is like, really disgusting. Like, I usually be like, you're going to die. And, I said, and I'm going to be at your funeral, laughing, because you're smoking cigarettes. Like, it—it just—it stinks and it's in your clothes. It sits in your clothes. So, you—you can just be in the car with all the windows rolled down and it sits, and it still sits, and it somehow gets in your clothes, and it stinks. And, it's just very disgusting." ". . . they may feel like e-cigarettes are better or safer because they use them a lot. I see them using them a lot, like when I go to BART or when I'm waiting for BART like on platform and stuff, there's a lot of people, like, with their e-cigarettes, like just blowing smoke and how you know they're e-cigarettes, they hold a lot more smoke like when they blow it out and stuff." "I've got like two friends that smoke cigarettes and—I'll be like throwing them. Like, when they pull it out in front of me. But—because they also—they just know I don't like that. Like, just don't pull out no cigarette in front of me. Because I'm going to throw it. But, yeah, I know a lot of friends who smoke the, um, the swishers. They're like the . . . blueberry, cigarillos."

and packaging. There was further overlap between the themes of product placement and colors and flavors, as multiple stores had a large inventory placed at the front of the stores, promoting all flavors and showcasing the many eye-catching colors. In gathering data from multiple locations in different communities, the coresearchers noted especially that the marketing strategies changed in different locations, specifically that many of these youth-targeted techniques were more prevalent in low-income communities in Downtown Oakland and East Oakland.

Specific example of marketing theme:The Black Label. A unique marketing tactic that the research team noticed was e-cigarette liquid with the "Black Label" name. Black Label is a product line of a name brand intended to make customers feel like they are purchasing an expensive, dark, and dangerous product crafted with sophistication. The "Black Label" effect was originally developed for hard alcohol. Popular brands such as Johnnie Walker, Jim Beam, Bacardi, and Captain Morgan currently have product lines with the Black Label name. This later branched out to beer, for example, Carling Black Label beer. Then the technique was picked up by soft beverage companies and applied to such products as Black Label Pure Energy Drink, Hemp Black Label energy drink, and Mountain Dew Black Label soda. Most recently, it is used for e-cigarette liquid (see Table 1 for a sample photo).

Oakland community-focused and action-oriented themes. We took special interest in themes and subthemes that were impacted the city and culture of Oakland. Themes such as trash and litter reflect the growing issue of tobacco trash that is littered on the streets, street gutters, and storm drains. Trash and litter also serves as secondary advertisement with the bright colors and enticing flavors accessible to all types of pedestrians. In this urban community, youth are very connected to social media. For this reason, the youth researchers felt it was essential to turn to their social media feeds as a site for data collection. They found that social media played an integral role in the promotion of e-cigarettes and other products as new and trending both within their own local communities and also around the world. They identified this as another adolescent-targeting advertising tactic, as the ads appeared on apps used by themselves and their peers, and often included free trials and samples, which they identified as a possible way to create new addictions/new long-term customers out of young people.

In accordance with the photovoice tradition, the youth researchers identified opportunities for community education, local advocacy with businesses, and policy ideas for tobacco reduction and community action in their analyses of multiple photos and narratives, without specifically being prompted to search for such concepts. They also collected data on evidence of policy in action, particularly around the age increase, which took effect as a new statewide policy during the time we were engaged in data collection.

Discussion

Challenges/Lessons Learned

Partnership between multiple organizations. A unique feature of the study design was the three-way partnership between CAHC, CTCRE, and Youth Radio. Each organization contributed particular strengths. However, due to organizational restructuring, the three original organizations were unable to complete the project together. CAHC and CTCRE, in partnership with a small group of youth leaders from Youth Radio, continued and completed the study after Youth Radio's leadership decided to shift the focus of the organization and discontinued their participation on an organizational level. However, Youth Radio supported their employed youth journalists to maintain involvement with the study by accommodating coordinated schedules. When Youth Radio disengaged from the partnership, the study lost one of its three Co-PIs as the Youth Radio Community Health Director was terminated as part of the reorganization. The remaining two Co-PIs explored multiple options for the study, including (a) ending the study, (b) recruiting another youth-serving organization to partner with, (c) building capacity among remaining partners to implement the study with CAHC and CTCRE only. At the time of this decision, both youth partners and steering committee members had invested considerable time in the study, training to increase tobacco marketing knowledge and research skills had been completed, and decisions had been made including honing the research question and how and where to collect data. To honor the commitment made and demonstrated by multiple stakeholders, the group prioritized continuing the study if possible. Although the possibility of working with other youth-serving organizations was explored, various barriers prevented many of the youth participants from participating as part of a new organization. A survey of all 12 youth journalists engaged in the project revealed that five were committed to continuing intensive participation and capable of making that commitment if the functions of supporting youth were moved to CAHC, these five youth became the team of coresearchers, and two who remained engaged through data analysis, findings dissemination, and writing are coauthors of this article. Importantly, CAHC is located in close proximity to Youth Radio, so geography and transportation were familiar to youth participants.

Various lessons were learned from this challenging situation. First, when developing organizational partnerships, especially between multiple organizations (as is necessary for almost all CBPR projects to equitably engage scientific/academic researchers in partnership with community members and community-based practitioners), it is important to ensure that organizational leadership is aware and supportive of the project from the beginning. One way to do this is to request a board resolution or minutes from a board meeting where they approved the partnership and affiliated the project. Active engagement of persons in leadership positions in

each organization may also enhance continuing commitment to the project. Although this can be time-consuming, and is not a guarantee against dissolution, the process of securing high-level involvement could provide insight into organizational commitment. Given that CBPR requires intensive, cross-organizational collaboration, this is an essential lesson for both academic and lay CBPR practitioners.

Furthermore, it is important when developing partnerships between multiple organizations to understand that more partners means more vulnerabilities. While partners bring particular strengths, they also complicate the structure of the study. It is a good idea to articulate contingency plans ahead of time. For example, high staff turnover and funding instability is much more a part of professional life in nonprofit organizations than it is in academic organizations, where individual faculty funding fluctuates, but the institution tends to be quite stable. For this reason, having more than two organizational partners could also strengthen the project as it creates sustainability beyond the commitment of any one organization. For example, if either CTCRE or CAHC had been partnered with just Youth Radio, neither organization would have been able to continue this study on its own, at least as a CBPR study. To ensure equity in study leadership and decision-making, it is best practice that at least one Co-PI be located at a community-based organization. However, a plan in case a Co-PI leaves a partner organization should be articulated before the study launches. In some cases, the study may go with the Co-PI to their new professional home, in other cases, the organization will be responsible for identifying and training a new Co-PI within the organization. Similarly, when more than two organizations are partnering for a CBPR study, representatives from all organizations should develop a plan for continuing or not in the case that one partner is unable to, or decides not to, continue coleading the study.

This plan should take into account the unique capacities of each organizational partner. CAHC was able to step into Youth Radio's role of supporting the youth participant-researchers because staff were interested, it was geographically close to Youth Radio, and they had some institutional knowledge about effective practices for working with youth. However, there was a learning curve and the youth coresearchers found themselves in a position where they were informing and training CAHC staff on how best to work with them. In addition, hiring youth into an organization that does not typically employ youth requires nontrivial adjustments in hiring and supervision practices.

Engaging multiple stakeholders. In this unexpected transition process, our first concern was to sustain engagement of the youth coresearchers. Because of this, we were less concerned with sustaining engagement of our adult steering committee members. Although we planned for sustained engagement by the third Co-PI with support from their new employer-organization, we were less strategic about maintaining consistent contact and structure with all steering committee members. This resulted in a marked reduction in participation by some. However, with strategic outreach asking for renewed commitment, we were happily surprised to find a new health department representative assigned to the task who became one of our most active steering committee members. The lesson we derived from this was that while it is to be expected that enthusiasm and levels of participation will wax and wane with competing workloads, different phases of the study, and life circumstances, in a CBPR study that depends on the voices and presence of multiple stakeholders, it is just as important to proactively plan to maintain engagement of adult stakeholders as it is for youth. Clarity about the expectations of steering committee members and their ability to meet these obligations may facilitate this process.

Safety planning. In CBPR, the line between participant and researcher is intentionally blurred. CBPR is based on a belief that the people who are confronting a problem are the best suited—with allies—to deeply investigate and address it. This means that people, who are conducting research come from the same community, are peers with people who are the participants. Social scientist researchers are trained to understand and consider the safety and well-being of all research participants or subjects. Furthermore, it is built into research institutions, including funders, that human subjects studies cannot be launched until an independent board—the institutional review board (IRB)—has approved the plan. We are less adept at planning for safety of participant-researchers from the community.

For our study, the youth coresearchers went with adult allies in pairs to engage in data collection. When they went into stores in particular, store owners could feel threatened about their business, which could make them unfriendly. More than once, this unfriendliness escalated to racially based psychological aggression toward youth coresearchers in the process of data collection. In one instance, someone working at a store chased the youth out of the store and called security, treating the youth coresearchers (young women of color—Latina and African American) very differently from their adult colleagues (a White man and an Asian American woman). This was a clear instance of intersectionality, the fact that these youths were both young and women of color combined so they were perceived as having low power and thus easy targets for the store employee's aggression. The fact that they were researchers employed in research activities likely did not even occur to the employee given that young women of color are often excluded from the sanctioned process of knowledge creation known as research. We debriefed as a group and decided to draft a letter to the store owner. However, legal counsel recommended against sending the letter after investigating the situation. Other steps we incorporated to improve safety for coresearchers included carrying printouts of the "elevator speech" about the study in addition to memorizing and practicing presenting it, providing youth with petty cash so that they could make a purchase and thus be classified as

customers whenever entering stores, and restricting data collection to neighborhoods where they were known or were a recurring customer. We recommend that in future CBPR studies, safety planning for community researchers be incorporated into required IRB protocols.

Evolution of the research question and flexibility in methods. The initial research question posed was focused on youth perceptions of electronic cigarette marketing, but as the research took place, the question evolved to include not only electronic cigarettes, but also a broader group of flavored and menthol tobacco products. This was consistent with our aim to allow the group to determine the most relevant aspects of the research as experience with the data collection progressed. This practice differs from research projects where hypotheses are posed *a priori* and remain static. The collaboration with youth coresearchers included integrating their views of what products were relevant and salient as part of shared decision making, which ultimately led to the inclusion of a broader array of products that originally proposed. This decision also increased the relevance of the research to local policy action, as both San Francisco and Oakland considered policies limiting the sale of flavored and menthol tobacco products following data collection; strictly limiting the research question to electronic cigarettes would have rendered the data much less relevant to these community actions. Similarly, while traditional research projects typically define data collection methods at the outset, including sample size calculations and other plans, this project allowed the team to decide on the best methods, and added and modified methods based on experience with the data collection. When faced with challenges completing photovoice assignments, an alternative geo-narrative approach was considered, and pilot tested, to allow for a more geographically driven and broader contextual approach to addressing the research question. Finally, we adapted photovoice methods to integrate with youth coresearchers' current use of mobile devices: Most data were collected on coresearchers' own cell phones, and some found it most convenient to use Snapchat to collect and confidentially store data. The team developed methods to securely collect and store data from Snapchat consistent with privacy and IRB protocols, with leadership and guidance from the young social media experts.

Youth as resources. To prepare youth to function as coresearchers, they were trained in content areas (such as the state of the science on e-cigarettes, the history of tobacco companies' marketing tactics, and social justice aspects of tobacco control research and education) in addition to research and communication skills. We found that the trained group of young people who were knowledgeable about a health issue became a valuable resource for policy and community advocacy. They naturally began advocating in their communities and families, discussing the harms of tobacco and e-cigarettes with loved ones and even local corner store owners. This is not surprising, as empowerment theory posits that when people become *conscientized*, or aware of the structures maintaining oppressive conditions, they become motivated to address them (Freire, 2000). In addition, they eagerly participated in local advocacy campaigns for restrictions on flavored and menthol tobacco and e-cigarettes. As they had learned about some of the "ridiculous" gaps in policy, such as the FDA not having authority to regulate e-cigarettes at the start of the study period, it was empowering for them to have the opportunity to voice their concerns and engage in health policy making on a local level.

An important lesson for this and future CBPR projects is that research training does not typically include training for youth (or for that matter adult) coresearchers to engage in policy advocacy. Understanding policy-making processes, and effective avenues for advocacy, is a distinct knowledge base and skillset. Some members of our core research team (two youth and two adults) were able to access an opportunity through our local health department that built their capacity for policy advocacy and connected them to seasoned advocates working on tobacco control. They quickly became a strong asset in the advocacy strategy, and the two local ordinances they advocated for both passed: groundbreaking, expansive bans on sales of menthol and other flavors of tobacco and e-cigarettes. We recommend a two-part training strategy in other youth participatory action research projects, which would enable youth to explore various avenues of change-making and embody the connection between research and action that is embedded in a CBPR orientation.

Policy and community engagement. Getting involved with the policy-making process was a struggle with no prior knowledge or training. Even though training was provided over the course of a year, the process was still challenging, especially due to the fast pace of change in the local policy environment. Two opportunities for the coresearchers allowed them to put their newly acquired skills to the test when they presented research and findings to local community members with the aim of engaging them in grassroots efforts and then communicating the same information in a different way when testifying at local city council meetings. A third opportunity enabled the youth researchers to combine presentation of our study findings with calls to action for policy advocacy at a local Oakland high school. Students were most interested in learning about how tobacco companies advertise toward people of color and the history of menthol. Students expressed that they are bombarded by messaging from tobacco companies within the places they spend time. Students were also unaware of what is considered a tobacco product. One example is the practice of using cigarillos to smoke marijuana: youth were not aware that even if the loose tobacco on the inside of a cigarillo has been removed, by mixing the marijuana with the outer tobacco wrapper nicotine is still being inhaled. Students showed an interest in learning how tobacco is affecting their health not just for them, but for their siblings, parents, other family members, and their future kids.

Limitations

There were three main limitations of our study. The first is the use of just one major methodology. By not conducting interviews, focus groups, or using surveys, we were unable to collect data from a representative sample of youth. This trade-off allowed us to train youth as coresearchers and build their capacity to not only collect data, but also to analyze it, communicate about our findings to multiple audiences, and to be activated as advocates addressing the very issue they had developed expertise in. Although we also explored the use of geo-narratives, and that methodology did complement our photovoice findings, the capacity to rigorously analyze the data collected via geo-narrative did not yet exist within our team.

Second, by collectively refining our research question in the participatory process, we moved from a more specific question to a broader one. Although this increased the scope of the study, thereby enabling the team to respond to current and unforeseen policy opportunities, it also weakened our ability to explore e-cigarettes more in-depth.

Third, the delays that required us to expand the timeline of the project exposed us to high turnover in the youth research team. As a result, much of the study resources were spent building the capacity of youth who either did not ultimately contribute to the research at all, or participated in design decisions but not collecting data, or collected data but did not engage in data analysis. While it is possible that the training was a benefit to those young people, in some cases, it did not contribute to answering the research question.

Conclusion

By its very nature, CBPR requires the participation of more people, and thus introduces more uncertainty into the study design and the timeline. In our study, various challenges resulted in a constantly changing timeline (see Figure 3), yet,

Dec 2014	Project start
Jan – June 2015	Training in research methods, tobacco marketing, health impact of tobacco, (12 youth interns)
Feb – March 2015	IRB application and approval
April 2015	Research Question selection meetings with youth and steering committee
August 2015	Youth Radio withdrew from project, along with one co-investigator (who joined the Steering Committee)
Sept 2015	Project reboot with CAHC hiring 5 of the original youth interns as co-researchers
Oct 2015 – March 2016	Additional training in research methods, human subject research, tobacco targeted marketing, photovoice methods, geonarrative methods, use of social media for data collection, and tobacco policy and advocacy
Oct 2015 – Oct 2016	Data collection – photovoice
April 2016	Youth attend Youth Tech + Health Conference
Sept 2016	Data collection - geonarrative
Nov 2016 – Feb 2017	Data analysis meetings and retreats, creating codebook, coding data, analytic discussions (3 youth, after 2 left for college/new jobs)
March 2017	Youth present results at Alameda County Teens Tackling Tobacco Conference, California Youth Advocacy Network YouthQuest Conference, and preparing a webinar
April 2017	Youth attend Oakland City Life Enrichment Committee meeting to advocate for ban on flavored tobacco products Webinar published online
May 2017	Youth present results at Youth Tech + Health Conference
May 2017	Gallery art show and closing event
June 2017 – Oct 2017	Paper writing (2 youth committed to writing, 1 graduated)
Sept 2017	Oakland City Council passes ban on flavored tobacco sales, including menthol
November 2017	Paper submitted to journal

Figure 3. Study timeline.

we were reminded of the value of a CBPR approach in two specific ways. First, the necessary flexibility allowed our focus to migrate beyond that of e-cigarettes, based on our youth researchers not experiencing e-cigarette use as a dominant problem in their circles compared with flavored tobacco products such as cigarillos. This (anecdotal) observation was re-affirmed by data that were released well into our data collection period, demonstrating that for the first time, since mass production of e-cigarettes began, e-cigarette use initiation among youth was declining (Jamal et al., 2017). Second, the membership of our steering committee enabled us to respond rapidly to newly developing opportunities for action. Youth researchers would learn about the inequitable disease outcomes caused by big tobacco companies using targeted marketing and wanted to act on it. Because one of our steering committee members was from the sponsoring organization for Youth Quest, a statewide information and education event at the state capitol, the youth researchers were invited to speak at the conference and were able to utilize their newly created knowledge for advocacy action by meeting with State legislators; and because the local public health department was represented on our steering committee, we were able to successfully apply for young people to join the local county Tobacco Control Policy Leadership Institute training and be connected to experienced, well-known, and highly skilled advocates in the African American community.

As demonstrated in our "lessons learned" section, engaging youth and community members as partners in a CBPR study is complex and requires a lot of forethought, planning, and strategy, as well as flexibility and adaptation to changing circumstances. The payoff, however, is well worth it, and IRBs, academic research centers, and antitobacco community groups, advocates, and public agencies should seek training and on-the-project practice in future studies to further this field. As tobacco companies are evolving to continuing targeting the vulnerable (including and especially youth) and marketing new products to stave off obsolescence, antitobacco researchers and activists are evolving just as rapidly and an essential step in that evolution is breaking down the walls that prevent us from collaborating closely.

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