

AIR AWARE PROMOTIONAL CAMPAIGN

CAMPAIGN SUMMARY REPORT

SEPTEMBER 2019

Prepared for
Scott Damon, MAIA
Anne Meyers, MEd
National Center for Environmental Health
Centers for Disease Control and Prevention

Prepared by
Sarah Ray, MA
Doug Rupert, MPH
Brittany Chenier, MPH
Les Pappas, MPA

RTI International
3040 E. Cornwallis Road
Research Triangle Park, NC 27709

Better World Advertising
655 Commercial Street
San Francisco, CA 94111

RTI Project Number 0215018.007

Table of Contents

1. Introduction	3
2. Campaign Overview	5
2.1 Target Audiences for the Campaign	5
2.2 Campaign Goals and Objectives.....	5
2.3 Messaging	6
2.4 Products	6
2.5 Campaign Implementation	6
3. Process Evaluation Methods	7
3.1 Advertising Media	7
Traditional and Digital Advertising Media	7
Social Media Advertising.....	8
3.2 Campaign Owned Media	10
Social Media	10
Website	10
4. Process Evaluation Outcomes	11
4.1 Advertising Media	11
Print Advertising	11
Transit Advertising	12
Digital Advertising	14
Social Media Advertising.....	15
4.2 Campaign-Owned Media	18
Social Media Activity	18
Website Activity	20
Summary	25
References.....	26

1. Introduction

Exposure to indoor and outdoor air pollutants is a significant public health concern and can have especially adverse effects on individuals with asthma, cardiovascular disease, chronic obstructive pulmonary disease (COPD), and other respiratory illnesses. Even short-term exposure to air pollution can cause symptoms, including both respiratory effects (e.g., coughing, wheezing, shortness of breath) and cardiovascular effects (e.g., chest pain, fatigue, palpitations), and prolonged exposure can lead to premature death among individuals already suffering from respiratory illnesses (Cohen et al., 2017; Johnson et al., 2017).

Several resources exist to educate and provide information about air pollution and air quality, including the Environmental Protection Agency's (EPA) AirNow.gov real-time database of air quality information and a substantial volume of tools from the Centers for Disease Control and Prevention (CDC). However, most consumers—including those with respiratory illnesses—are unaware that these tools exist or are unsure how to access them. Thus, CDC's current challenge is to ensure that vulnerable populations are aware of the tools and resources available and use these tools to adopt protective behaviors that can prevent additional respiratory symptoms (e.g., changing physical activity routine, moving activities indoors, deactivating air intake on air conditioning units).

The purpose of this project was to promote existing CDC and EPA resources for respiratory health through developing new materials and executing a dissemination plan that reaches the general public and connects them to those existing resources. By developing new communication materials, CDC can ensure that consumers take advantage of existing resources and can help vulnerable populations to reduce the negative effects of air pollution on their health.

To accomplish these objectives, CDC contracted with Better World Advertising (BWA), a creative design firm, and RTI International, a non-profit research institute. In the first phase of the project, BWA developed a series of initial messages and materials that were tested by RTI through an iterative qualitative research process in 2018. The results of that testing led RTI and BWA to recommend ways to refine the materials to address the concerns and interests of potential target audience groups (Rupert & Ray, 2018). With the refined messages and materials approved by CDC, the second phase of the project focused on developing and implementing a communication campaign plan for the *Air Aware* campaign.

Messages in the selected materials highlighted the importance of monitoring air quality for individuals with some health conditions, specifically respiratory illnesses including asthma, COPD, or heart disease, which increases their risk of adverse health conditions due to poor air quality. Advertisements featured close-up imagery of a variety of individuals with pleasant expressions, appearing to enjoy "good air." Campaign messages were positively framed, focusing on the benefits of knowing air quality in your local area, including understanding how to plan activities to avoid times and environments that pose a particular risk for people with identified respiratory illnesses.

BWA selected a media mix that emphasized efficient placements with maximum return in reach and engagement, considering the target audience. After an assessment of outdoor air quality and populations at risk for adverse health conditions related to poor air quality, Pittsburgh, PA, was selected as the location for this initial implementation. To reach the primary target audience (including adults with COPD, asthma, or heart disease), advertisements were placed in traditional, digital and social

media. The campaign leveraged existing resources as well, posting on CDC's Twitter and Facebook pages and linking consumers to the EPA's promoted AirNow.gov website. Understanding how healthcare providers (HCPs) can influence individuals' health-related decision making (especially among individuals with chronic illness), the campaign also included outreach to HCPs, targeted by geographic location and medical specialty.

This report describes campaign implementation and summarizes the data associated with the implementation of the campaign during a four-month period in 2019. Section 2 provides a general overview of the campaign by describing the target audience for the campaign and the campaign's broad goals, objectives, messages, and products. Section 3 presents the process evaluation questions posed for each campaign element and identifies the key measures and data sources for answering these questions. Section 4 describes how the campaign was implemented through details of timing, channels and activities, and summarizes the data related to the potential reach of and engagement with the campaign. Section 5 highlights the key findings from the evaluation and offers recommendations for future campaigns.

2. Campaign Overview

In this section, we describe the target audiences for the campaign and overall campaign objectives, messaging, and products. Additionally, we provide a general overview of the different strategies used to promote the campaign.

2.1 Target Audiences for the Campaign

The campaign was broadly focused to provide actionable information on air quality to the general public, with a specific focus on individuals with asthma, COPD, and heart disease. Consumer-facing advertising featured messages that are relevant for these audience segments and resources (e.g., AirNow.gov) that are designed to provide additional information. In addition, targeted social media advertising was used to reach HCPs across several specialties, including pulmonology, cardiology, allergy/immunology, primary care, and internal medicine. These specialties are most likely to work closely with patients who have the target health conditions and to be aware of how air quality can affect patients' daily functioning.

During this first phase of campaign implementation, consumers and HCPs in and around Pittsburgh, PA, were selected as the primary and secondary target audiences, respectively. Pittsburgh was selected as the location for this effort based on several criteria, including relatively poor air quality (defined by the number of poor air quality days), a population size ranging from 100,000-400,000, a variety of appropriate media channels, demographic diversity (albeit among English-speaking groups), and high rates of residents with targeted chronic respiratory illnesses. Paid advertising and social media were been geo-targeted to reach audience groups in this area.

2.2 Campaign Goals and Objectives

To understand how campaign messages and materials were designed to effect change, it is helpful to consider the overarching campaign goals, other objectives related to actions we expect the target audience to take, and the expected cognitive changes (e.g., knowledge, attitudes) needed to affect those behavioral changes.

Campaign Goal

The purpose of the pilot campaign was to increase use of AirNow.gov among individuals with asthma, COPD, and heart disease. The campaign's tactics were informed by two primary goals:

- **Air Quality Awareness.** Raise awareness among individuals with asthma, COPD, and heart disease that they are at risk from poor air quality.
- **AirNow.gov Utilization.** Prompt individuals with asthma, COPD, and heart disease to use AirNow.gov to determine their local air quality and, if appropriate, avoid poor air exposure.

Behavioral Objectives (recommended action in campaign messaging)

- Visit the AirNow.gov website and/or download the apps
- Track the Air Quality Index (AQI) in one's area

Communication Objectives (Intermediate)

- Increased awareness of AirNow.gov resources
- Increased trust in AirNow.gov as a source of information related to air quality
- Increase self-efficacy related to management of health conditions affected by air quality

2.3 Messaging

The final campaign messages—which were informed by formative research and concept testing with individuals who had the targeted health conditions—highlighted the importance of being aware of air quality, especially for groups at higher risk for adverse health effects. The results of message and materials testing indicated that participants preferred simple materials with clear calls to action, clean designs, relatable images (i.e., people that seemed like them), and positive (rather than negative) framing. During the iterative formative research, the “I’m Air Aware” advertisements received the highest receptivity scores and were preferred by participants as best representing these concepts (Rupert & Ray, 2018).

2.4 Products

The suite of campaign products promoting these messages included traditional and digital advertisements (e.g., print ads, transit ads, and digital ads placed on external websites) and social media advertisements. HCP-targeted advertising included posts and direct mailings to subscribed physicians via two tools: DMD and Epocrates. In addition, the campaign included posts tailored for placement on existing government social media accounts (e.g., CDC’s Facebook page). Campaign ads and posts also directed users to the existing *Air Now* website and tools (<https://airnow.gov/>) hosted by the EPA, where priority target groups could learn more about the impact of air quality and access real time air quality information in their area. Campaign products are further described in the results section of this report.

2.5 Campaign Implementation

CDC’s creative partner, BWA, created a comprehensive, audience-informed, multichannel social marketing campaign. BWA developed a campaign implementation plan that included a marketing strategy to place campaign products across two main areas:

- **Advertising Media.** Traditional (e.g., print, transit), digital (e.g., websites), and social media (e.g., consumer Facebook, HCP platforms) advertising paid for by the campaign or donated by the media outlet.
- **Campaign-owned Media.** Content created and published by the campaign itself. For this campaign, owned media included the *Air Now* website (<https://airnow.gov/>), hosted by the EPA, and targeted posts on CDC-owned social media platforms (Facebook and Twitter). CDC also hosted a webpage where visitors could download and print the *Air Now* materials.

3. Process Evaluation Methods

The primary aim of the process evaluation was to document the implementation and outputs of the *Air Aware* campaign in Pittsburgh between March 18 and June 27, 2019. In tracking implementation (e.g., placement timing, channels used) and summarizing process evaluation data (e.g., media buy intensity, website visits), the evaluation also sought to better understand how campaign elements were used to reach target groups and to estimate exposure to and engagement with the campaign.

To achieve these objectives, the campaign developed a Microsoft Excel tracking system to monitor paid advertising placements and social media activity. Each advertising, social media, and owned media campaign component is represented on a separate tab within the file. Specific tracking variables—corresponding with the key measures described above—provide data related to the timing and reach of campaign elements as well as the costs and opportunities for engagement.

In the following sections, we describe our approach for documenting and describing the campaign across the two main areas of campaign implementation—advertising media (Section 3.1) and campaign-owned media (Section 3.2).

3.1 Advertising Media

Traditional and Digital Advertising Media

For this campaign, three channels for traditional and digital advertising media were used to reach the primary consumer target audience:

- **Print Advertising.** Newspaper advertisements placed in the *Pittsburgh Post-Gazette* (the primary daily newspaper in Pittsburgh).
- **Transit Advertising.** Bus advertisements placed through the Pittsburgh Port Authority.
- **Digital Advertising.** Banner advertisements placed on the *Pittsburgh Post-Gazette* website.

Exhibit 1 summarizes the evaluation questions, measures, and data sources for this domain.

Exhibit 1. Evaluation Questions, Measures, and Data Sources: Advertising Media

EVALUATION QUESTION	KEY MEASURES	DATA SOURCE
PRINT ADVERTISING		
How many ads were placed in print publications? Which ad versions were used? What were the characteristics of the ads (e.g., size)?	<ul style="list-style-type: none">▪ Number of ad placements▪ Ad versions (e.g., Black female)▪ Size and other ad characteristics	Media vendors; BWA
In which publications were advertisements placed?	<ul style="list-style-type: none">▪ Newspapers or other print publications	BWA
What was the publication schedule for advertisements? On which days of the week did ads appear?	<ul style="list-style-type: none">▪ Placement and timing of print ads	BWA
What was the reach of these ads?	<ul style="list-style-type: none">▪ Impressions (i.e., number of ad views)	Media vendors; BWA
What was the cost/value of the placements?	<ul style="list-style-type: none">▪ Costs▪ Cost per thousand impressions (CPM)	Media vendors; BWA

Exhibit 1. Evaluation Questions, Measures, and Data Sources: Advertising Media (continued)

EVALUATION QUESTION	KEY MEASURES	DATA SOURCE
TRANSIT ADVERTISING		
How many transit ads were bought during the campaign? Which ad versions were used? What type of bus ads were placed (e.g., queens, tails, interior cards)?	<ul style="list-style-type: none"> Number of ad placements Ad versions Ad types 	Media vendors; BWA
On what channels/outlets were transit ads placed? Where were advertisements placed?	<ul style="list-style-type: none"> Advertisement type and locations 	Media vendors; BWA
What was the publication schedule for advertisements? For how long were they in circulation?	<ul style="list-style-type: none"> Placement and timing of transit ads 	BWA
What was the reach of these ads?	<ul style="list-style-type: none"> Impressions (i.e., number of ad views) 	Media vendors; BWA
What was the cost/value of the placements?	<ul style="list-style-type: none"> Costs Cost per thousand impressions (CPM) 	BWA
DIGITAL ADVERTISING (WEBSITE)		
How many ads were placed on websites? Which ad versions were used? What were the characteristics of the ads (e.g., size)?	<ul style="list-style-type: none"> Number of ad placements Ad versions Size and other ad characteristics 	Media vendors; BWA
On which websites were advertisements placed?	<ul style="list-style-type: none"> Websites 	BWA
What was the publication schedule for advertisements? On which days of the week did ads appear?	<ul style="list-style-type: none"> Placement and timing of web ads 	BWA
What was the reach of these ads?	<ul style="list-style-type: none"> Impressions (i.e., number of ad views) 	Media vendors; BWA
What was the cost/value of the placements?	<ul style="list-style-type: none"> Costs Cost per thousand impressions (CPM) 	Media vendors; BWA
How many people engaged with the advertisements (e.g., clicked)? Which ads generated the most engagement?	<ul style="list-style-type: none"> Click through data (to AirNow.gov), Completion rate Ad versions 	Media vendors; BWA; Google Analytics

Social Media Advertising

For the purposes of reporting, we separated social media advertising from traditional and other digital advertising because of the somewhat unique placement characteristics and associated metrics. For this campaign, one consumer platform (Facebook) was used alongside two HCP-facing social media platforms to promote CDC's new materials to providers. These platforms have been used successfully on previous CDC campaigns to reach consumers and HCPs and to encourage them to access educational resources (e.g., download education materials).

Consumer Social Media

- **Facebook Advertising.** A variety of targeted advertisements placed through the Facebook social media platform, with links to the AirNow.gov website.

HCP Social Media

- **Epocrates Doc Alert (www.epocrates.com).** Notification on the Epocrates app pushed to targeted HCPs in the Pittsburgh area. Epocrates is the number one medical reference app used by more than one million U.S. physicians and other HCPs, including more than 2,000 allergists and immunologists; 11,346 cardiologists; 3,513 pulmonologists; 56,302 family practitioners; and 62,525 general internists. The app enables physicians to check drug interactions, review clinical practice guidelines, and determine appropriate tests as well as receive alerts on relevant medical news and announcements.
- **DMD Eblast (www.dmdconnects.com).** Blast email sent to targeted DMD subscribers in the Pittsburgh area. DMD is an opt-in email marketing service for healthcare professionals. Through the DMD database, organizations have digital access to more than 90% of physicians with email addresses. DMD emails can geo-target hard-to-reach populations of HCPs.

Exhibit 2 summarizes the evaluation questions related to social media as well as the key measures and data sources used to answer those questions. See the separate social media plan for more details.

Exhibit 2. Evaluation Questions, Measures, and Data Sources: Social Media

EVALUATION QUESTION	POTENTIAL MEASURES	DATA SOURCE
SOCIAL MEDIA ADVERTISING (CONSUMER FACEBOOK)		
How many digital ads were placed on Facebook? Which ad versions were used? What were the characteristics of the ads (e.g., size)?	<ul style="list-style-type: none"> ▪ Number of ad placements ▪ Ad versions ▪ Size and other characteristics 	BWA
Which types of ads were placed (e.g., video ads, carousel, image)? Where were ads located?	<ul style="list-style-type: none"> ▪ Type of ads (including mobile vs. desktop) ▪ Page location (e.g., newsfeed, right column) 	Facebook; BWA
What are the characteristics of the audience exposed to the ads?	<ul style="list-style-type: none"> ▪ Audience data for targeted advertisements 	Facebook; BWA
What was the publication schedule for advertisements?	<ul style="list-style-type: none"> ▪ Placement and timing of ads 	Facebook; BWA
What was the reach of these ads? Which ads reached the highest portion of the target audience?	<ul style="list-style-type: none"> ▪ Impressions (i.e., number of ad views) ▪ Reach ▪ Frequency 	Facebook
How many people engaged with the ads (e.g., clicked, shared, liked)? Which ads generated the most engagement?	<ul style="list-style-type: none"> ▪ Click through data (to AirNow.gov) ▪ Click through rates (CTR), Completion rate 	Facebook
What was the cost/value of the placements? Which ads or strategies were most efficient?	<ul style="list-style-type: none"> ▪ Costs ▪ Cost per thousand impressions (CPM) 	BWA; Facebook
SOCIAL MEDIA ADVERTISING (HCPS)		
How many provider-targeted social media posts, alerts, and eblasts were placed? On which platforms?	<ul style="list-style-type: none"> ▪ Number and type of posts, alerts, and blasts ▪ Placement and timing of posts, alerts, and blasts 	Epocrates; DMD
What was the reach (or potential reach) of social media posts?	<ul style="list-style-type: none"> ▪ Total views ▪ Total deliveries ▪ Total opens 	Epocrates; DMD

3.2 Campaign Owned Media

For this campaign, campaign-owned media refers to content posted on affiliated (e.g., CDC) consumer-targeted social media pages (e.g., Twitter, Facebook) and the AirNow.gov website, which is the target for digital advertising for the *Air Aware* campaign.

Social Media

Though the campaign did not have a standalone social media presence (e.g., there was no campaign-sponsored *Air Aware* Facebook page), BWA worked with CDC to ensure that some promotion via CDC's social media platforms (Facebook, Twitter) was incorporated into the overall campaign plan.

Exhibit 3 summarizes the evaluation questions related to consumer-facing social media as well as the key measures and data sources used to answer those questions.

Exhibit 3. Evaluation Questions, Measures, and Data Sources: Social Media

EVALUATION QUESTION	KEY MEASURES	DATA SOURCE
How many posts were included on affiliated social media platforms? Which accounts and platforms were used? When were they posted? Which ad versions were used?	<ul style="list-style-type: none">▪ Number of social media posts▪ Social media platforms utilized▪ Post schedule and timing▪ Content and ad characteristics	Facebook Analytics; Twitter analytics
What was the reach of these posts? Which posts reached the highest portion of the target audience?	<ul style="list-style-type: none">▪ Impressions, Reach▪ Frequency	Facebook
How many people engaged with the posts (e.g., clicks, shares, likes)?	<ul style="list-style-type: none">▪ Reactions	Facebook Analytics; Twitter Analytics

Website

Tracking also included information related the AirNow.gov website. (All campaign materials include the website URL, and digital ads link to the website.) Although content on the website was not directly created by the campaign, the website provided additional information about air quality that is relevant for the target audience. A separate CDC webpage also allowed downloads of campaign materials for further distribution. **Exhibit 4** summarizes the evaluation questions related to the website and campaign materials as well as the key measures and data sources used to answer those questions.

Exhibit 4. Evaluation Questions, Measures, and Data Sources: Website and Materials

EVALUATION QUESTION	KEY MEASURES	DATA SOURCE
How many people visited the AirNow.gov website? What were the characteristics of visitors?	<ul style="list-style-type: none">▪ Number of website visits and page views▪ Visitor location (based on ISP address)▪ Source of website traffic▪ Time spent on website	Google Analytics (via CDC)

4. Process Evaluation Outcomes

Sections 4.1 and 4.2 describe the implementation of *Air Aware* by detailing the placement and timing of materials and describing campaign activities in Pittsburgh from March 18, 2019, to June 27, 2019. We also summarize data for campaign elements related to the potential reach of and engagement with the campaign.

4.1 Advertising Media

Advertisements were placed in both traditional (print and transit) and digital (website) media, although the timing of individual placements varied. These advertisements launched on March 18, with the first transit and digital ads appearing on March 18 and the first print advertisement running on March 20. Digital advertisements ran through June 14. The final print advertisement ran on June 19, and transit placements ran through June 21.

Print Advertising

Print ads were placed in newspapers to reach a broader segment of the target audience and to reinforce transit and digital advertisements. **Exhibit 5** shows a sample print newspaper ad.

Four print ads were placed in the *Pittsburgh Post Gazette* at key points during the media cycle. The first ad was a full-page placement that ran on March 20. Three additional ads ran at approximately monthly intervals. Ads included both full-page and half-page versions and featured each of the four versions. The ads appeared on Wednesdays and Sundays and were placed near the weather forecast pages.

Across the four placements, print advertisements generated 1.6 million impressions. All impressions were paid. **Exhibit 6** outlines the distribution of impressions for the four print placements by size and ad version.

Exhibit 5. Newspaper Advertisement

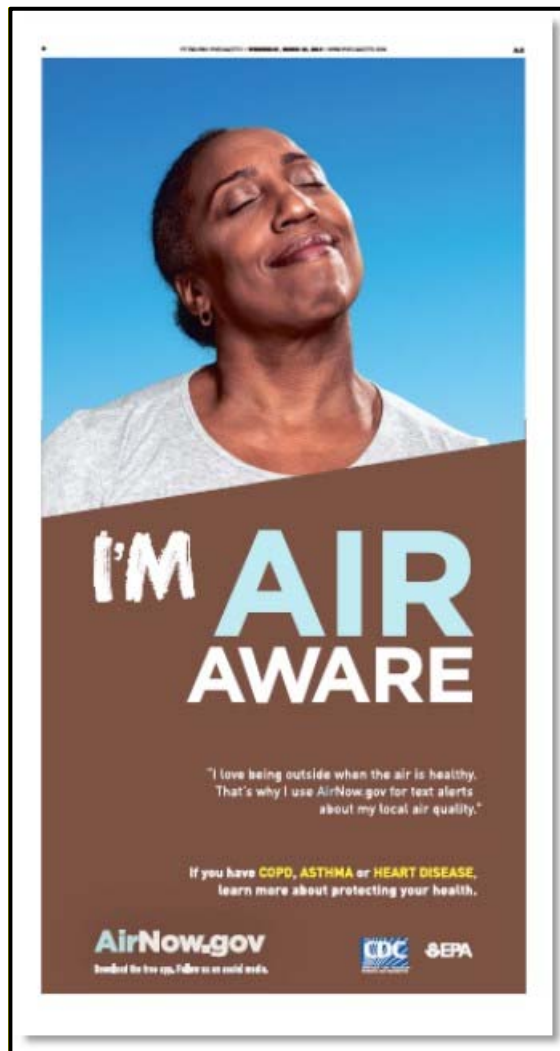


Exhibit 6. Print Media Impressions, by Size and Ad Version

Run Date	Ad Size	Ad Version	Paid Impressions
3/20/19	Full-page	African American Woman	351,164
4/28/19	Half -page	Hispanic Man	437,166
5/19/19	Half-page	White Woman	437,166
6/19/19	Full-page	White Man	351,164
Total			1,576,660

Transit Advertising

Transit advertising included bus advertisements placed through the Pittsburgh Port Authority. Placements were a combination of several ad types: 1) interior cards, placed on the inside of buses, 2) “queens,” placed on the side of buses, and 3) “tails,” placed on the back or “tail” of the bus. These ads help to reach a more geographically diverse segment of the audience, reinforce campaign messages when the target audience was away from home and potentially exposed to poor air quality, and increase awareness among those who may not be exposed to other media.

The first transit ads were placed in mid-March, and ads continued to run throughout the remainder of the campaign period. **Exhibits 7-8** show sample transit advertisements across interior (e.g., insides of buses) and exterior (e.g., bus queens) placements.

Exhibit 7. Sample Interior Card Transit Advertisement



Exhibit 8. Sample Exterior (Queen) Transit Advertisement



Across all locations and ad types, transit advertisements generated 35.1 million impressions. BWA negotiated a combination of paid and donated placements, with donated impressions making up slightly over half (51.1%; 17.9 million impressions). The remaining placements were paid. Interior card ad placements generated 15.5 million impressions over the course of the campaign period (all interior card placements were donated). “Queens” were responsible for 10.5 million impressions overall, and “tails” were responsible for 9.0 million impressions.

Distribution of transit impressions also varied slightly over the campaign period. During the seven weeks between launch on March 18 and May 6, transit advertising generated 18.4 million impressions (7 million donated). Between May 7 and June 3, transit advertising resulted in 11.6 million impressions (5.9 million donated), and between June 4 and June 21, it resulted in 5 million impressions (all were donated). **Exhibit 9** outlines the distribution of paid and donated impressions for the transit placements across bus advertisement type.

Exhibit 9. Paid and Donated Transit Advertising Impressions, by Ad Type

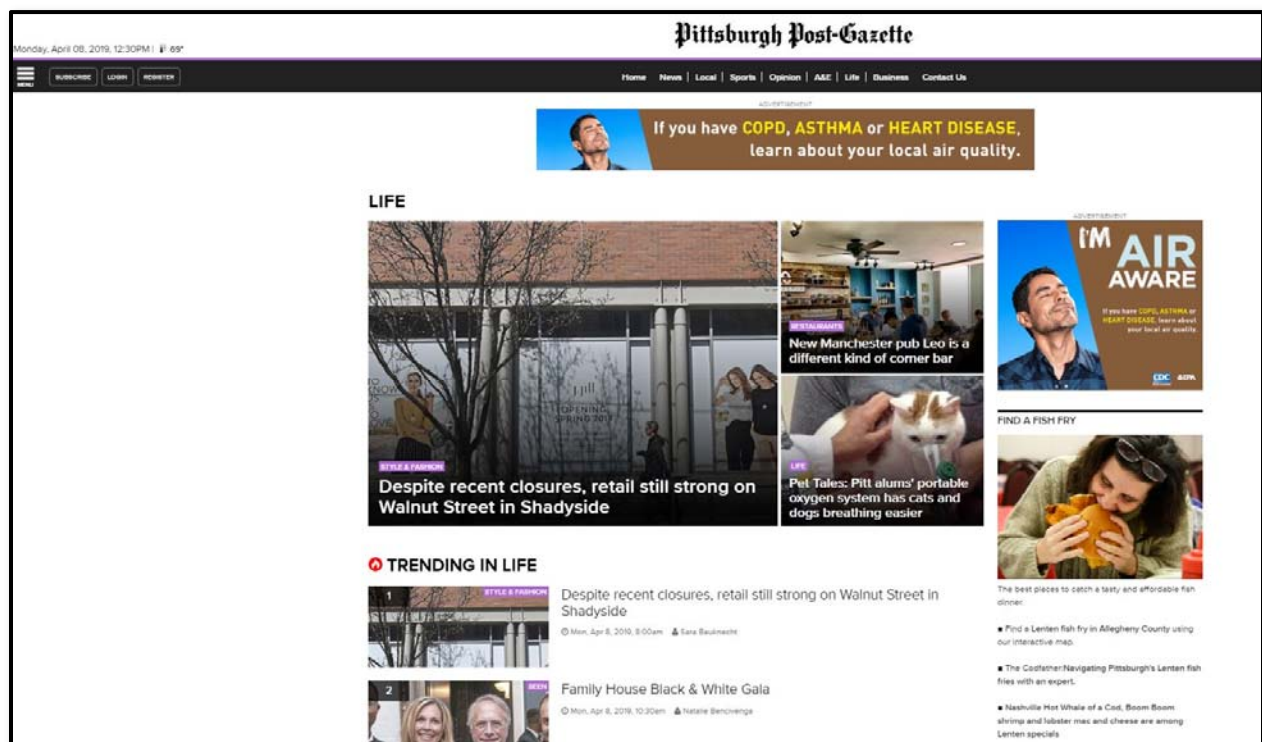
Run Dates	Ad Type (Bus)	Impressions		
		Paid	Donated	Total
3/18 – 5/6	Interior Cards	--	7,000,000	7,000,000
	Queens	6,146,298	--	6,146,298
	Tails	5,286,298	--	5,286,298
5/7 – 6/3	Interior Cards	--	5,902,468	5,902,468
	Queens	3,073,149	--	3,073,149
	Tails	2,643,149	--	2,643,149
6/4 - 6/21	Interior Cards	--	2,625,000	2,625,000
	Queens	--	1,291,650	1,291,650
	Tails	--	1,106,120	1,106,120
Total		17,148,894	17,925,238	35,074,132

Digital Advertising

Digital ads were purchased as part of an overall media package and ran on websites affiliated with the print media company (*Pittsburgh Post-Gazette*) that ran traditional advertising. Digital ads have the advantage of allowing direct access to resources for more information with just a click (e.g., website, social media profile, outside experts), which makes them particularly appealing to the *Air Aware* campaign, whose call to action includes using digital resources to get more information. **Exhibit 10** provides an illustration of two ad placements on the *Pittsburgh Post Gazette's* website.

Digital ad flights launched alongside other campaign elements in mid-March and continued through mid-June. Ads were available in three sizes optimized for desktop or mobile viewing and were distributed evenly across each of the four versions.

Exhibit 10. Sample Digital Ad Placement in the Online Pittsburgh Post-Gazette



Overall, digital advertising generated nearly 143,000 impressions during the campaign, resulting in 157 clicks. Click-through rates (CTRs), calculated as the ratio of clicks to impressions for digital advertising, ranged from 0% to 0.42%, with an overall CTR of 0.11%. A review of ad type indicates that the highest CTR (0.16%) was for 320 x 50 ads (most frequently optimized for mobile). The version of the ad that generated the highest overall CTR (0.18%) was the Hispanic Man. Total impressions, clicks, and calculated CTR across ad sizes and versions are shown in **Exhibit 11**.

Exhibit 11. Digital Advertising Impressions, Clicks, and Click-through Rate (CTR), by Ad Size and Version

Run Dates	Ad Version	Impressions	Clicks	CTR
300 x 250 Ad Size				
3/18 - 3/31	African American Woman	21,076	18	0.09%
4/1 - 4/17	Hispanic Man	19,514	23	0.12%
5/15 - 5/31	White Woman	10,908	10	0.09%
6/1 - 6/14	White Man	11,238	7	0.06%
320 x 50 Ad Size				
3/18 - 3/31	African American Woman	13,801	6	0.04%
4/1 - 4/17	Hispanic Man	7,658	32	0.42%
5/15 - 5/31	White Woman	13,071	21	0.16%
6/1 - 6/14	White Man	12,711	18	0.14%
320 x 50 Ad Size				
3/18 - 3/31	African American Woman	834	0	0%
4/1 - 4/17	Hispanic Man	8,546	8	0.09%
5/15 - 5/31	White Woman	11,735	6	0.05%
6/1 - 6/14	White Man	11,766	8	0.07%
Total		142,848	157	0.11%

Social Media Advertising

Consumer Social Media

In addition to traditional and digital advertising, the *Air Aware* campaign also purchased ads within the Facebook platform, using Facebook's algorithms to refine placement based on characteristics of the potential target audience. All Facebook ads were paid Newsfeed placements, and the four ad versions were equally distributed within each month in the campaign schedule. These placements resulted in more than 800,000 impressions across a reach of nearly 600,000.

Although exposure to the Facebook advertisements was high, engagement with the ads was somewhat limited. Approximately 1,000 clicks on the advertisements were recorded; positive reactions were 153 and the ads were shared a total of 22 times. Reach, measured through impressions and reach, as well as engagement with Facebook advertisements are shown in **Exhibit 12**.

Exhibit 12. Facebook Advertising Impressions, Reach, and Engagement

Run Dates	Ad Version	Reach		Engagement		
		Impressions	Unique Viewers	Clicks	Like/Love	Shares
3/1 – 3/31	African American Woman	20,826	18,834	31	6	1
	Hispanic Man	30,926	35,181	37	4	1
	White Woman	51,788	44,038	54	16	3
	White Man	24,881	22,308	43	5	
4/1 – 4/30	African American Woman	66,508	37,875	85	16	2
	Hispanic Man	61,461	30,596	75	6	
	White Woman	91,179	49,199	127	12	1
	White Man	64,235	31,412	100	6	
5/1 – 5/31	African American Woman	42,926	33,012	34	5	4
	Hispanic Man	53,810	37,228	40	19	
	White Woman	58,512	40,109	71	11	
	White Man	23,788	18,307	14	2	1
6/1 – 6/27	African American Woman	39,021	35,033	54	0	
	Hispanic Man	51,982	63,847	109	10	5
	White Woman	88,941	71,704	157	30	3
	White Man	31,265	28,111	55	5	1
Total		802,049	596,794	1,086	153	22

HCP Social Media

For this campaign, two HCP-facing social media platforms were used to promote CDC’s new materials to providers—Epocrates and DMD. These platforms have been used successfully on previous CDC campaigns to reach HCPs and encourage them to download education materials. In line with the with the campaign’s overarching goals, the purpose of CDC’s social media outreach was to encourage HCPs to tell their patients about AirNow.gov, thus driving the target health populations to visit the site. Specifically, we used these social media platforms to achieve three main objectives:

- 1. AirNow.gov Awareness.** Alert healthcare providers to AirNow.gov and the promotional materials that are available for use in their clinics.
- 2. Webpage Visits.** Drive visits to the CDC webpage housing the promotional materials.
- 3. Material Downloads.** Generate downloads of the AirNow.gov materials by healthcare providers.

Exhibit 13. Sample DMD eBlast

Subject: CDC Promotes “Air Aware” Tool for Patients with Respiratory Illness

Preview text: Educate and empower patients with a tool that provides local air quality alerts

Full Text:




Exposure to indoor and outdoor air pollutants is a significant public health concern with especially adverse effects on individuals with asthma, cardiovascular disease, chronic obstructive pulmonary disease (COPD), and other respiratory illnesses. Even short-term exposure to air pollution can cause symptoms, such as coughing and shortness of breath, while prolonged exposure can lead to premature death among individuals already suffering from respiratory illnesses.^{1,2}

Patient education from trusted healthcare providers can help individuals reduce exposure to poor air quality and mitigate their risk of air pollution-related health effects. CDC and EPA provide an on-demand resource, AirNow.gov, to help patients manage their illness


by checking local air quality and planning daily activities.

To educate individuals with asthma, cardiovascular disease, COPD, and other respiratory illnesses in your practice, please share the following key messages:

- Check the daily air quality for your ZIP code using AirNow.gov. EPA's AirNow.gov tool forecasts daily air quality for every ZIP code in the country.
- Use the Air Quality Index rating in your area to plan outdoor activities. Based on the air quality in your area, adjust your plans for outdoor activities (see table below).

 Reduce your risk by using the Air Quality Index (AQI) to plan outdoor activities – www.airnow.gov

AQI Levels of Health Concern	AQI Values	What Action Should People Take?
Good	0-50	Enjoy Activities
Moderate	51-100	People unusually sensitive to air pollution: Plan strenuous outdoor activities when air quality is better
Unhealthy for Sensitive Groups	101-150	Sensitive Groups: Cut back or reschedule strenuous outdoor activities Groups: People with lung disease, children and older adults and people who are active outdoors Particle Pollution: People with heart or lung disease (including diabetes), older adults and children Carbon Monoxide: People with heart disease and possibly infants and fetuses Nitrogen Dioxide: People with lung disease, children and older adults Sulfur Dioxide: Active children and adults with asthma
Unhealthy	151-200	Everyone: Cut back or reschedule strenuous outdoor activities Sensitive groups: Avoid strenuous outdoor activities
Very Unhealthy	201-300	Everyone: Significantly cut back on outside physical activities Sensitive groups: Avoid all outside physical activities



For more information on air quality and your patients' health—including free resources—visit the links below.

Visit the AirNow.gov Air Quality Index tool: www.airnow.gov

Download handouts for your patients: www.cdc.gov/air/air_health.htm

Access free CDC air quality resources for healthcare professionals: www.cdc.gov/air/resources.htm

Enroll in EPA's "Particle Pollution and Patient's Health" CME/CNE: www.epa.gov/pmcourse

Centers for Disease Control and Prevention

www.cdc.gov

Across both HCP-targeted social media platforms, total impressions—calculated as the sum of opened Doc Alerts (Epocrates) or Eblasts (DMD)—were 41,254. The total number of HCP-targeted messages distributed, delivered, and opened for both platforms are shown in **Exhibit 14**. In addition, the number of clicks on messages delivered via the DMD platform are also recorded.

Exhibit 14. Digital Advertising Impressions, Clicks, and Click-through Rate (CTR), by Ad Size and Version

Platform (Run Dates)	Ad Version	Messages Sent	Messages Delivered	Messages Opened	Clicks
DMD (4/14 – 4/17)	White Man	4,091	4,067	562	16
Epocrates (4/23 – 5/21)	African American Woman	Not tracked	529,222	40,692	Not tracked
Total			533,289	41,254	16

4.2 Campaign-Owned Media

For the *Air Aware* campaign, owned media include posts on CDC-owned Facebook and Twitter social media profiles and the AirNow.gov website managed by EPA.

Social Media Activity

The *Air Aware* campaign leveraged the opportunity to use CDC’s sponsorship and social media presence to promote campaign messages. By using CDC’s established social media presence, the campaign was able to reach a broader audience more quickly than would be possible with establishing a new profile exclusive to the campaign. Facebook and Twitter posts used campaign imagery, along with timely and relevant information, to encourage readers to visit the AirNow.gov website to get more information. Posts included a link to the website and information about the available CDC and EPA resources along with some details on protecting yourself against the dangers of poor air quality. **Exhibit 15** illustrates sample campaign posts on CDC Facebook and Twitter profiles during the review period.

Exhibit 15. Sample Consumer-Targeted Facebook and Twitter Posts

Facebook		<p>Spring is in the air, and so is #pollution! If you have a respiratory illness, check your local air quality at AirNow.gov before heading out. Or sign up for our #AirAware text alerts.</p>
Twitter		<p>It's easy to be #AirAware with our neighborhood air quality index! Just enter your ZIP code at the @CDCgov and @EPA AirNow.gov or sign up for text alerts.</p>

The timing of the first *Air Aware* post on Twitter in mid-March aligned with the launch of the print and transit advertising placements. Periodic posts continued through May 1. At the end of the review period, these posts generated more than 119,000 impressions. Posts during the early part of the campaign (in March) were associated with the majority of these impressions. Post content generated 110 retweets and 129 tweet “likes.” There were 144 clicks on URLs shared in the tweets, directing users to the AirNow.gov website.

In addition, the single *Air Aware* Facebook post on CDC’s page had a reach of nearly 26,000 individuals. The post content received a total of 72 reactions (e.g., like, love, wow), 5 comments, and 38 shares. In addition, there were 229 clicks on the posts, allowing the user to access the AirNow.gov website. Facebook post reach, along with engagement with the posts (e.g., reactions, comments, shares), are shown in **Exhibits 16-17**.

Exhibit 16. Facebook Page and Post Metrics

Post Date	Facebook Post Metrics				
	Reach	Reactions	Comments	Shares	Clicks
4/29/19	25,835	72	5	38	229

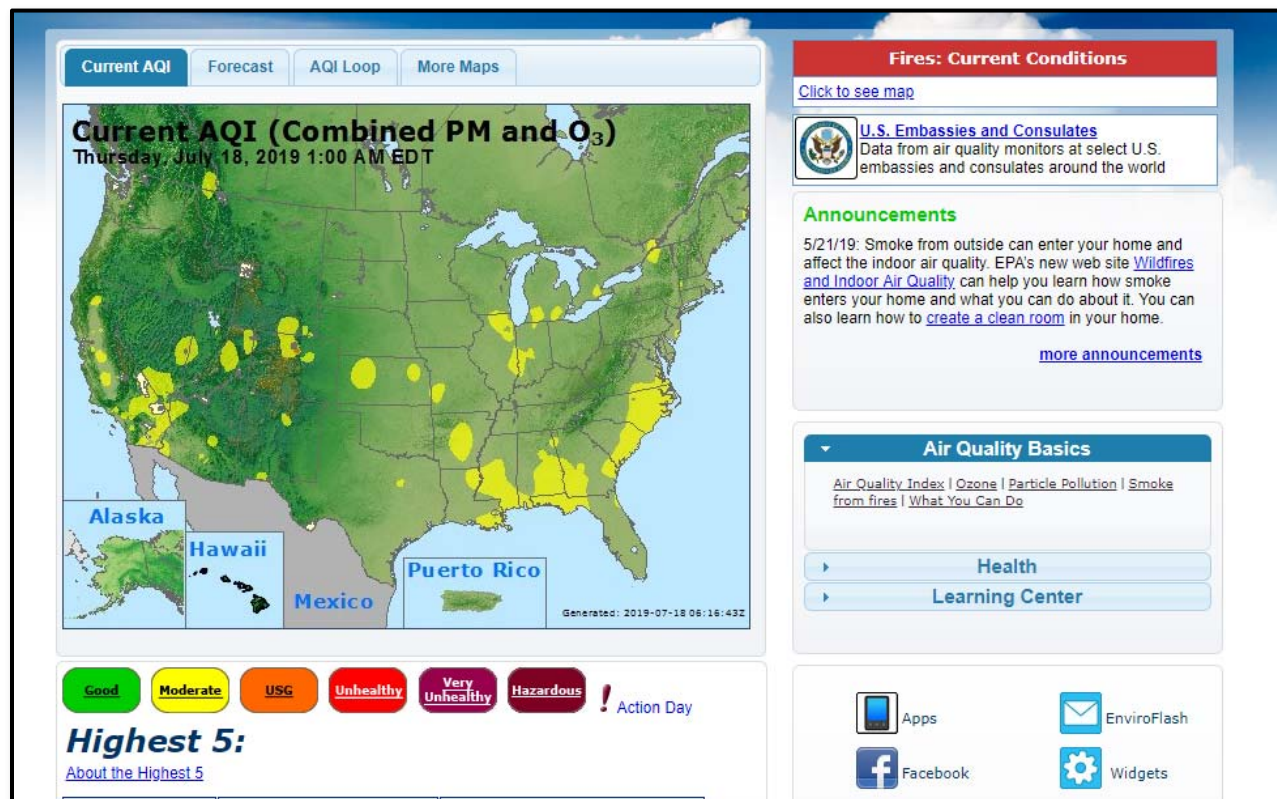
Exhibit 17. Twitter Post Metrics

Post Date	Facebook Post Metrics				
	Impressions	Retweets	Replies	Likes	Clicks
3/19/19	32,471	30	2	34	33
3/20/19	31,753	34	3	35	16
3/22/19	31,169	16	3	19	64
4/29/19	1,298	6	0	6	2
4/29/19	1,165	3	0	5	4
4/30/19	20,449	15	0	23	25
5/1/19	1,285	6	0	7	0
Total	119,590	110	8	129	144

AirNow.gov Activity

One of the *Air Aware* campaign's primary goals was to encourage individuals in the Pittsburgh area to check their local air quality on AirNow.gov, thus driving traffic to the website (**Exhibit 18**).

Exhibit 18. AirNow.gov Website Screenshot



During the active campaign period (March – July 2019), more than 6,000 unique individuals from Pittsburgh visited AirNow.gov, resulting in more than 12,000 visit sessions (**Exhibits 19 and 20**). Individuals from Pittsburgh who visited the website primarily did so on their mobile devices and desktop computers, with relatively few accessing the site via tablets (e.g., iPads) (**Exhibit 21**). More than half of the individuals from Pittsburgh who visited AirNow.gov found the site via a search engine (e.g., Google, Bing), with a sizeable proportion also entering the URL directly into their browser (**Exhibit 22**). By contrast, fewer individuals linked to AirNow.gov from another website (e.g., weather.com) or from a social media platform (e.g., Facebook). We note, however, that it is not uncommon for individuals to search for an advertised website in a new browser window rather than clicking a direct link in the ad. Thus, individuals who located AirNow.gov via search engines and direct URL entry may still have seen the resource mentioned on Facebook or other websites.

Exhibit 19. AirNow.gov Pittsburgh Unique Visitors (March – July 2019)¹

Month	Total Users	Device Type			Source Type			
		Mobile	Desktop	Tablet	Organic Search	Direct	Web Referral	Social Referral
March	1,189	605	540	44	874	192	122	39
April	1,787	957	779	51	939	587	100	188
May	974	503	436	35	686	222	57	29
June	1,448	929	475	44	1,047	253	80	98
July	1,177	740	385	52	903	228	56	14
TOTAL	6,575	3,734	2,615	226	4,133	1,347	731	361

1 Not all individual numbers add to total due to overlap in device type, sources, etc.

Exhibit 20. AirNow.gov Pittsburgh Visit Sessions (March – July 2019)¹

Month	Total Sessions	Device Type			Source Type			
		Mobile	Desktop	Tablet	Organic Search	Direct	Web Referral	Social Referral
March	2,155	950	1,069	136	1,357	545	251	39
April	2,955	1,452	1,365	138	1,518	962	466	255
May	2,165	987	999	179	1,402	565	191	30
June	2,906	1,638	1,121	147	2,006	615	279	99
July	2,672	1,448	1,081	143	1,773	725	171	15
TOTAL	12,853	6,475	5,635	743	8,056	3,412	1,358	438

1 Not all individual numbers add to total due to overlap in device type, sources, etc.

Exhibit 21. Pittsburgh Unique Visitors by Device Type (March – July 2019)

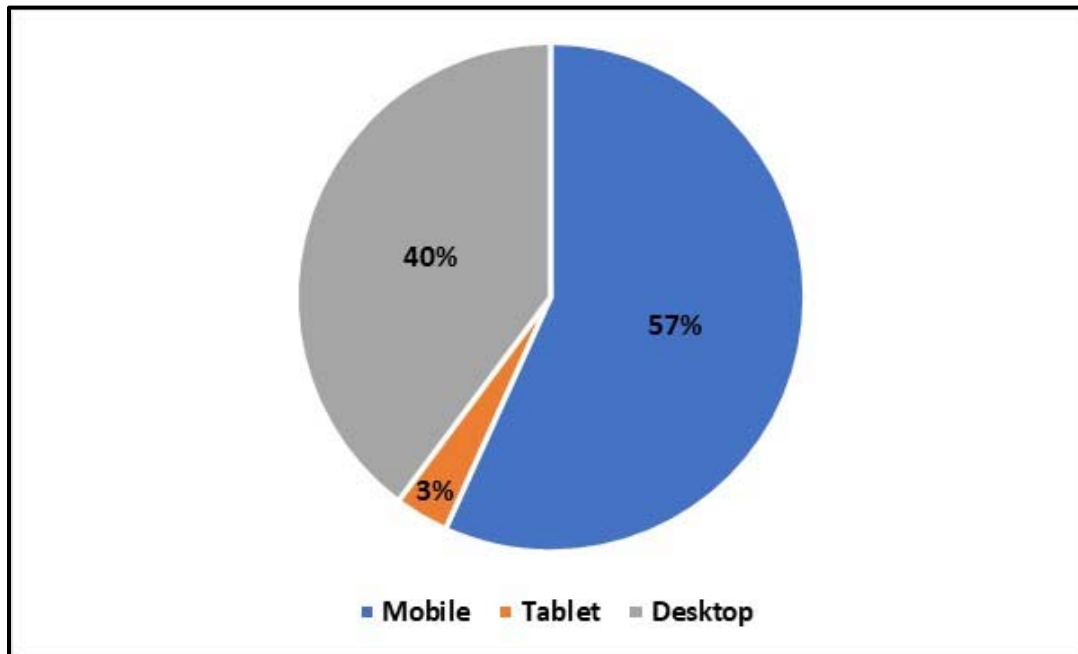
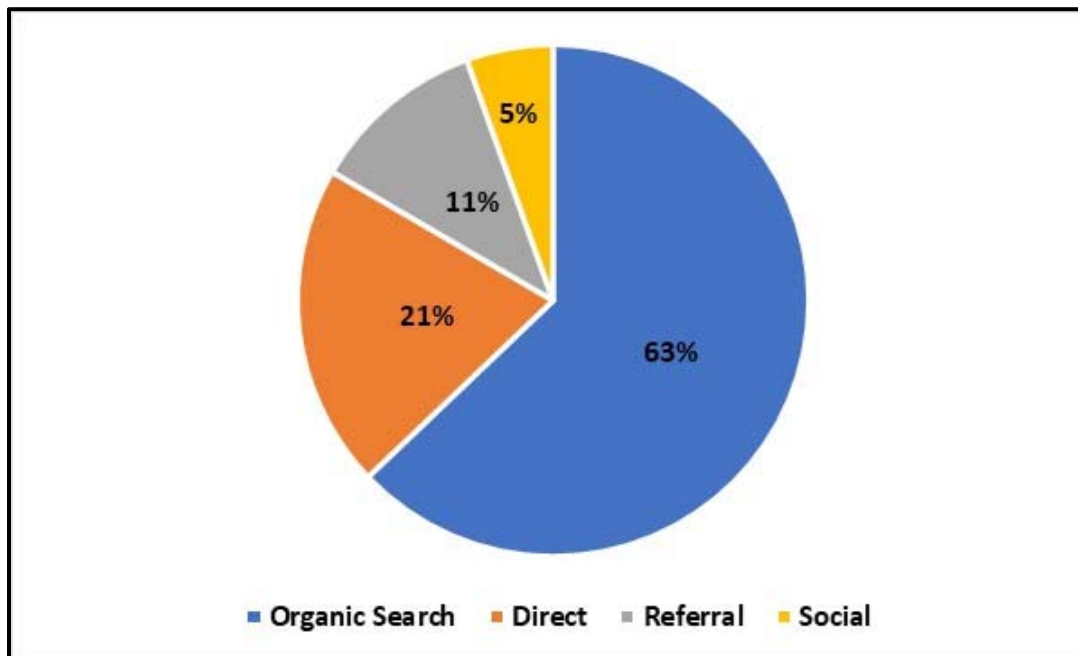


Exhibit 22. Pittsburgh Unique Visitors by Referral Source (March – July 2019)



Although we cannot directly connect campaign activities to AirNow.gov traffic, Pittsburgh-based visits to AirNow.gov appeared to rise during the campaign period and began to taper off in early July when the final campaign activities ceased (**Exhibit 23**). The highest peak in Pittsburgh-based visits to the website occurred on April 22-23, which corresponds with Earth Day activities. However, there were also noticeable peaks during periods of active paid advertising and social media outreach, including an increase in visit volume when the 2nd and 3rd rounds of transit advertising launched (**Exhibit 24**).

Exhibit 23. AirNow.gov Pittsburgh Visit Sessions and Campaign Milestones (March – July 2019)

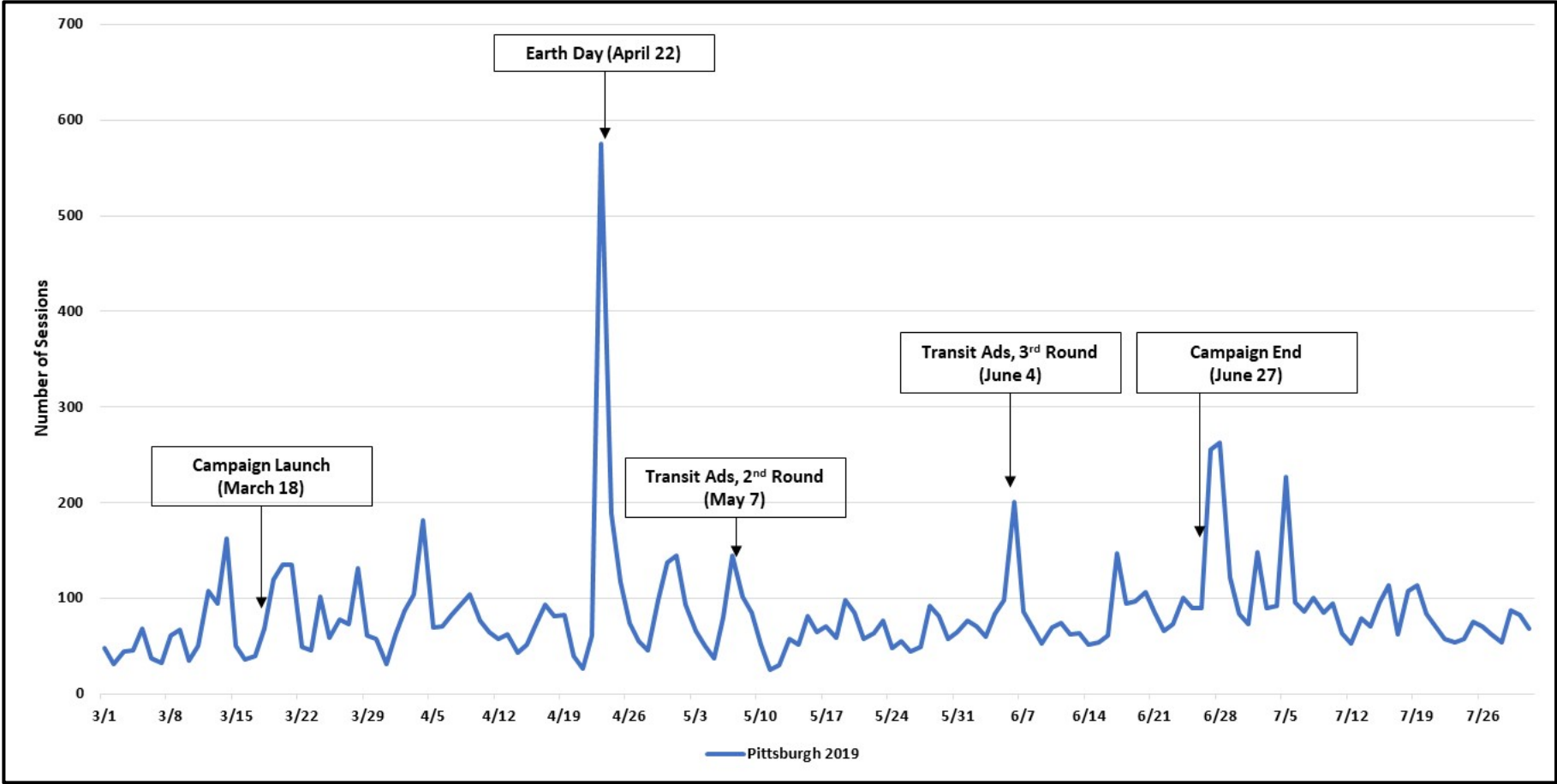
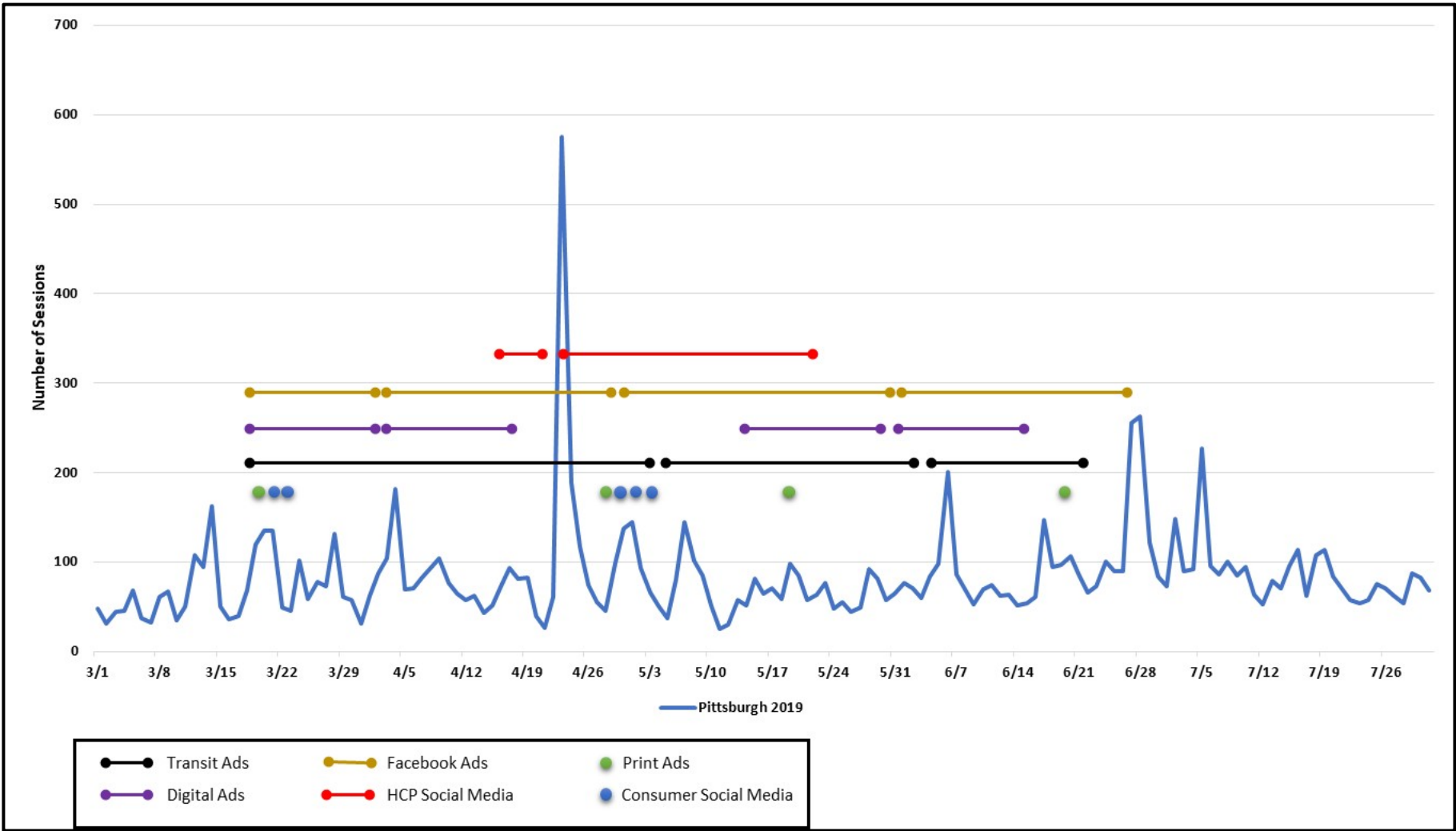


Exhibit 24. AirNow.gov Pittsburgh Visit Sessions and Campaign Activities (March – July 2019)



Finally, we tried to assess whether the increase in Pittsburgh-based visits to AirNow.gov might be attributable to the campaign by comparing website traffic during the campaign to two other benchmarks. First, we compared Pittsburgh-based AirNow.gov visits during the campaign period to Pittsburgh-based AirNow.gov visits during the previous year (March – July 2018). Second, we compared Pittsburgh-based visits during the campaign period to visits from a demographically comparable city (Buffalo, NY) during the same time period.

In both cases, the 2019 Pittsburgh-based website traffic was noticeably higher than the other two benchmarks (**Exhibits 25 and 26**). In 2018, there were close to 9,000 Pittsburgh-based visits to AirNow.gov, but the number of visits was nearly 13,000 in 2019 (representing a 46% increase in website traffic). Likewise, Buffalo had only 1,603 visits to AirNow.gov during the campaign period, compared with the 12,853 visits in Pittsburgh. These results do not conclusively prove that the campaign increased Pittsburgh-based AirNow.gov visits, but the association between campaign activities and website traffic suggests that the *Air Aware* campaign likely played an important role in encouraging individuals to visit the website and learn about their local air quality.

5. Summary

BWA and RTI coordinated and implemented a multimedia promotional campaign encouraging individuals with asthma, COPD, and heart disease to visit AirNow.gov, learn their local air quality, and—if appropriate—take measures to protect their health. The campaign ran for approximately four months and featured both paid media (e.g., newspaper advertising, transit advertising, social media advertising) and campaign-owned media (e.g., CDC Facebook and Twitter accounts). The campaign achieved more than 38,000,000 impressions during that period, reaching individuals through multiple channels. A preliminary evaluation of AirNow.gov traffic suggests that the campaign was successful in driving individuals to visit the website, boosting Pittsburgh-based website visits by more than 45% from the previous calendar year.

As CDC explores strategies for promoting AirNow.gov and encouraging individuals with health issues to protect themselves from poor quality air, the *Air Aware* pilot campaign suggests that a multimedia promotional effort can be successful in achieving those objectives. The evaluation findings also underscore the importance of continued awareness-raising activities, given that Pittsburgh-based visits to AirNow.gov began to taper off once campaign activities ended. Ideally, this campaign provides a model that CDC can implement in other cities, using a mix of paid and owned media to boost AirNow.gov visits and increase the number of individuals who protect themselves from poor air quality.

Exhibit 25. AirNow.gov Visit Sessions by City and Year

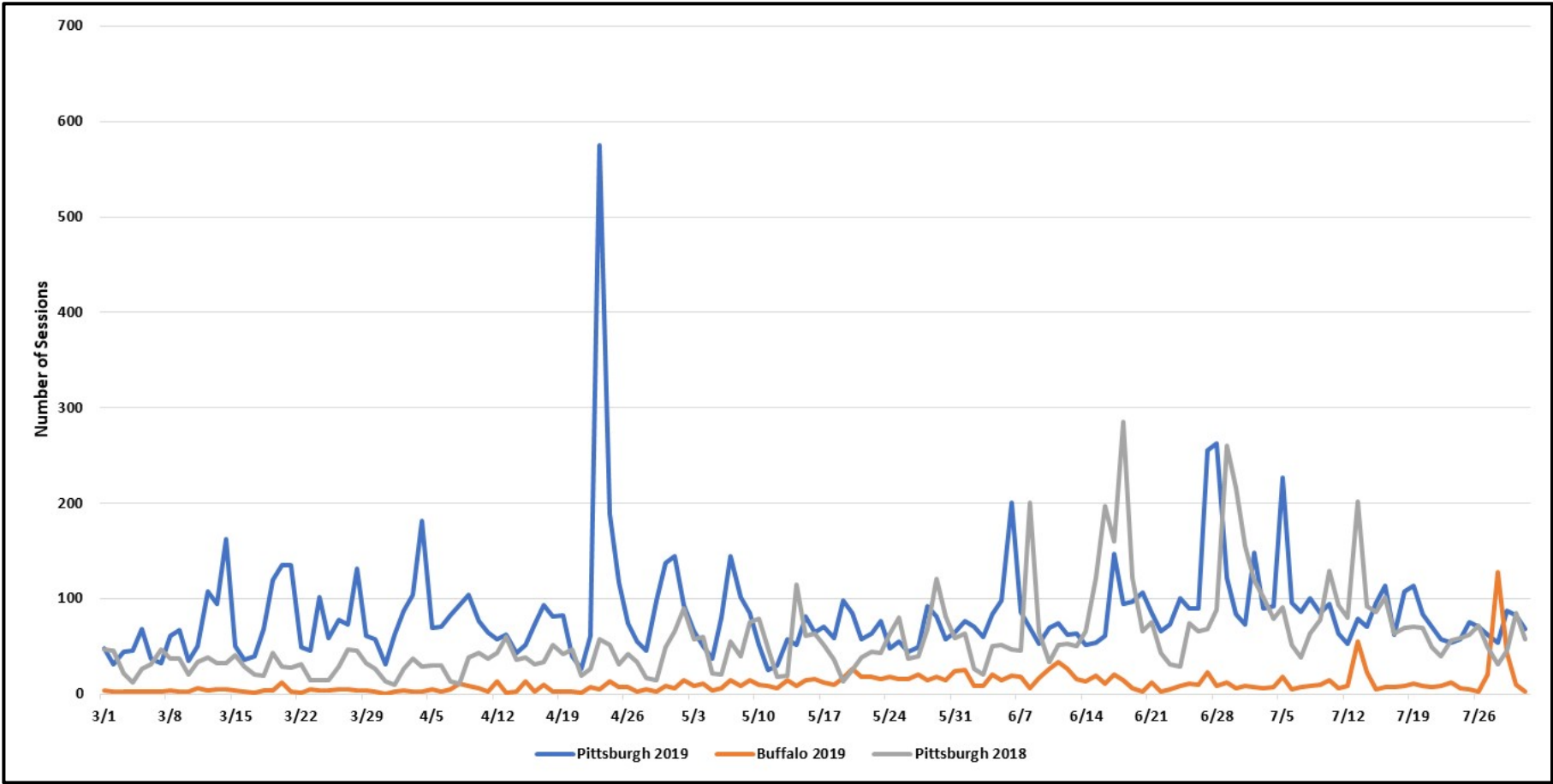
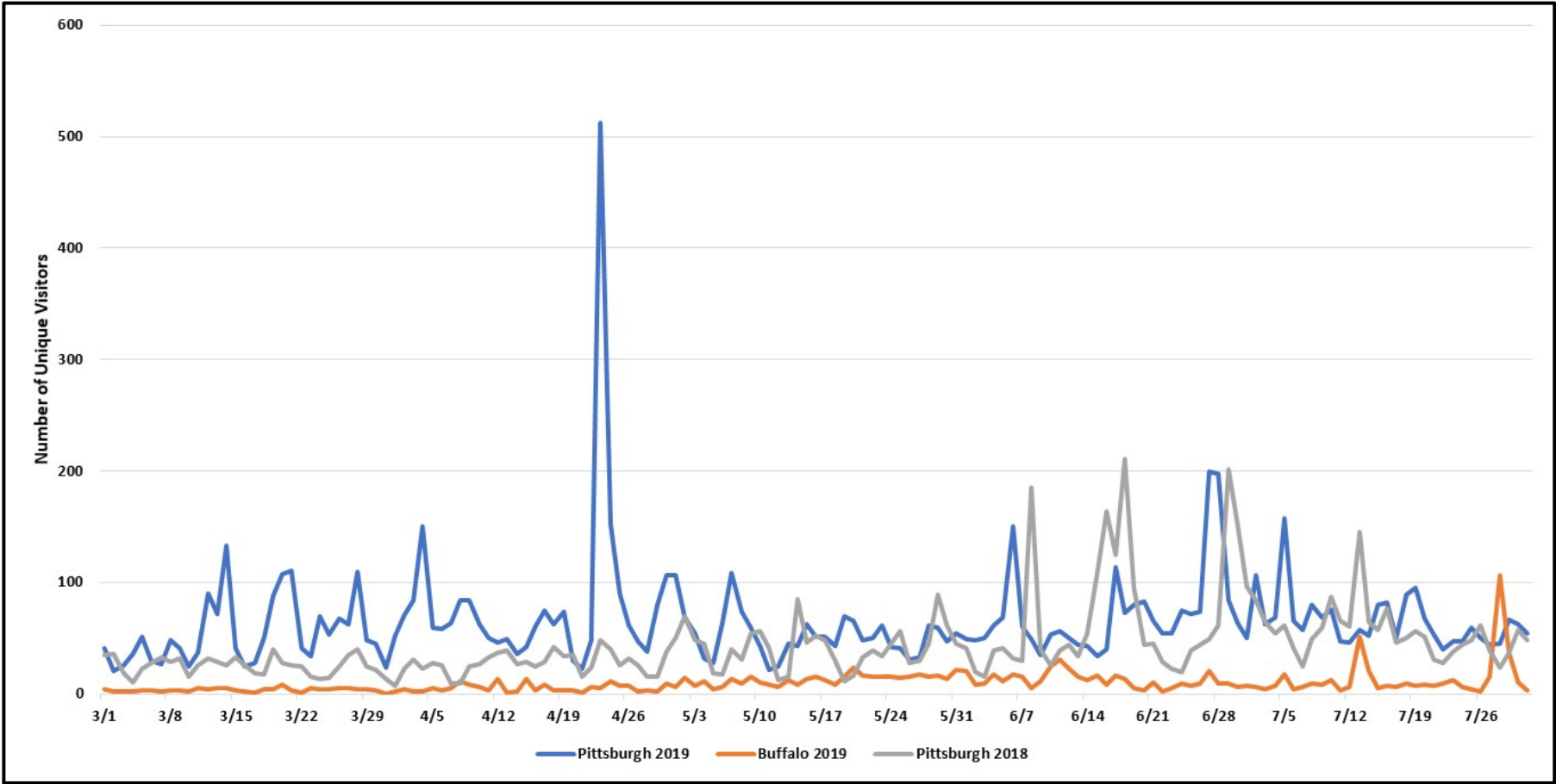


Exhibit 26. AirNow.gov Unique Visitors by City and Year



6. References

- Cohen, A.J., Brauer, M., Burnett, R., et al. (2017). Estimates and 25-year trends of the global burden of disease attributable to ambient air pollution: An analysis of data from the Global Burden of Diseases Study 2015. *Lancet*, 389(10082), 1907-1918.
- Johnson, J.E., Bael, D.L., Sample, J.M., Lindgren, P.G., & Kvale, D.L. (2017). Estimating the public health impact of air pollution for informing policy in the Twin Cities: A Minnesota tracking collaboration. *Journal of Public Health Management and Practice*, 23(Suppl 5), S45-S52.
- Rupert, D.J., & Ray, S.E. (2018). *CDC Air Quality Information Material Testing – Round 3 Summary Report*. RTI International: Research Triangle Park, NC.