



## Serving the public? A content analysis of COVID-19 public service announcements airing from March – December of 2020 in the U.S

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### ABSTRACT

The objective of this research was to examine the health messages conveyed in public service announcements (PSAs) affiliated with the U.S. federal government response to the COVID-19 pandemic in 2020. To do so, we conducted a content analysis of 132 federally-affiliated PSAs that were aired 170,820 times between March 12 and December 16, 2020. Using a quantitative coding instrument, we analyzed health behavioral guidance, messages about groups, people depicted, and other PSA features. We calculated frequencies of exposure to messages at the airing-level to account for the varying number of times each PSA was aired. Far more PSAs aired between March and June than between July and December. The most common health guidance was to stay at home (80.7%), practice social distancing (61.9%), and wash hands (54.5%); 36.1% of airings included guidance to wear masks. Few PSAs referenced group differences in risk of infection or transmission, nor did they reference scientific evidence or the future availability of vaccines. PSAs aired in 2020 missed opportunities to convey important information to the public and to center health equity in public communication.

### 1. Introduction

As the COVID-19 pandemic has continued to evolve and spread throughout the U.S., the public has faced unprecedented levels of sickness, loss, uncertainty, and disruption to their daily lives. Ideally, public information about the virus would offer information on steps people can take to reduce their risk of COVID-19 and reduce levels of uncertainty about the disease (Manganello et al., 2020). However, commentators have noted that the public health information environment throughout the pandemic has been less than optimal, rife with conflicting and polarizing messages that could threaten to dissuade individuals from behaviors that are key to mitigating the virus's negative consequences and diminish trust in agencies intending to promote the public's health. (Green et al., 2020; Nagler et al., 2020; Gollust et al., 2020) Experts in health communication suggest that transparent, coordinated, and responsive communication from government is a key component of a

successful public health response. (Kim and Kreps, 2020; Bunnell et al., 2021).

Public service announcements (hereafter, PSAs) have long been a part of government efforts (O'Barr, 2012) to communicate essential public health information, both for infectious diseases as well as for chronic conditions and risky health behaviors. (Niederdeppe et al., 2017; Kornfield et al., 2015; Zhang et al., 2017) PSAs, which air on television and radio and also now display on social media platforms, provide messages designed to inform the public and persuade them to take action to reduce risks to themselves or to others. (Manganello et al., 2020; Fuhrel-Forbis et al., 2009) PSA campaigns that achieve widespread exposure can also promote health behavior and favorable outcomes. (Kornfield et al., 2015; Wakefield et al., 2010).

They may also address communication inequities, as content can be targeted for different demographic groups or tailored for individuals with varying levels of health literacy and who speak different languages.

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(Grier and Bryant, 2005) The COVID-19 pandemic continues to disproportionately burden populations who have been systematically and historically marginalized. (Zalla et al., 2022; Karmakar et al., 2021) While health communication interventions alone are insufficient to address inequity (and in fact, could reinforce inequity if access to information is more readily available to higher-resourced groups (Viswanath et al., 2012), PSAs can be one component of an equity-centered response, by providing easy-to-understand information, to broad or targeted audiences, and to counter the spread of misinformation by conveying accurate information from trusted sources. (Wakefield et al., 2010; Viswanath et al., 2020).

In March of 2020, the White House and federal agencies launched a partnership with the Ad Council to create and disseminate PSAs that "... provide critical and urgent messages to the American public." (Ad Council) While there has been some journalistic attention to this large PSA campaign – particularly toward the fall of 2020 surrounding the U. S. presidential election (Diamond, 2020) and then in 2021 when the Biden administration invested in PSAs as part of the broader strategy around vaccination, (Facher, 2021) there has been limited scholarly attention to these PSAs (Deng et al., 2020). In fact, there has been no systematic study of the strategic health messages to which the public was exposed through these federally-affiliated PSAs. The goal of this study was thus to systematically assess the content of televised PSAs that aired in the first stage of the pandemic (pre-vaccine availability, from March 12 to December 16, 2020). We examine which individuals were shown in PSAs (and thus potentially depicted as credible sources; e.g., Dr. Jerome Adams); specific risk mitigation messages conveyed to the public and the frequency of different behaviors that were encouraged (e.g., hand washing); as well as the extent that these PSAs conveyed information relevant to disparities in the impact of COVID-19 on historically oppressed and marginalized populations, such as messages about the groups at risk of infection or transmitting the virus. We focus specifically on PSAs airing on television as existing work exploring PSAs has not focused on this medium and television remains an important source of information, including COVID-19 information, for Americans (Hamel et al., 2021) (for a recent synthesis of studies exploring COVID-19 information on social media, see Tsao, et. al, 2021 (Tsao et al., 2021). This analysis presents a look back at what messages prevailed during the early stages of the pandemic and offers evidence of gaps in messaging that should be addressed in future health communication efforts.

## 2. Materials and methods

### 2.1. Data

This study did not involve research on human subjects, so no institutional approval or exemption was required. We acquired data and video content for PSAs airing from March 12, 2020 (the first date COVID-related content was identified) through December 16, 2020 from Kantar/CMAG, a firm that collects data on advertising airings, via the Wesleyan Media Project. Kantar/CMAG searched their database of ads airing on local and national broadcast television in 2020 to identify all unique PSAs that were related to COVID-19. To do so, they searched for content sponsored by the U.S. Department of Health and Human Services (USDHHS), CDC, the Ad Council, and/or with reference to [Coronavirus.gov](https://www.cdc.gov), the CDC website that is part of the pandemic response. (CDC website) These searches generated 222 English and Spanish-language individual ads (called "creatives") that aired 235,734 times during the study period in media markets throughout the U.S. Kantar/CMAG provided a data set with a video file for each creative, as well as data on where (which media market and which network) and when (what date and time of day) it aired. A team of trained coders with health policy expertise viewed these creatives as part of the inductive work to develop a coding instrument. Initial review of the creatives revealed that many ads in the set were actually sponsored by states and local entities (e.g., Washington State Department of Health, local colleges) but we could

infer from initial spot-checking that we did not have a comprehensive sample of locally focused content. This motivated the first step in our coding process – to identify the entities sponsoring PSAs – and to limit our analytic data set to entities we coded affirmatively as associated with the federal response, as opposed to local, state, or other non-profit or private entities. After coding the sponsor of all 222 creatives (see below for inter-coder reliability information), we then restricted our analytic set to only include PSAs sponsored by the Ad Council; the USDHHS; the CDC or CDC Foundation; the Federal Emergency Management Agency (FEMA); or with branding from The White House. As a check, we confirmed that all of the PSAs in the analytic sample and sponsored by the Ad Council contained an additional signal of the federal government (e.g., reference to [Coronavirus.gov](https://www.cdc.gov)). This resulted in a final data set of 132 unique PSAs, that we affirmed were federally-affiliated, and that were aired 170,820 times.

### 2.2. Codebook development

We developed a codebook with the objective of identifying elements of PSAs that could influence public health promoting behaviors, risk mitigation, and information-seeking. Additionally, we implemented variables intended to capture the extent that PSAs included content related to health inequities, such as the populations discussed as at greater risk of COVID-19 infection or transmission. These messages could provide explicit signal of elevated risk to these groups and also provide information to the general public about the populations that are disproportionately burdened. While the specific variables included were based inductively on PSAs viewed, the coding team adapted an overall coding methodology the team has used for other video media content (Tait et al., 2021). The final version of the codebook included variables for the language of the PSA; information about people depicted (e.g., if they were health experts or celebrities); messages about how to reduce spread (i.e., wash hands, social distance, don't touch surfaces, stay at home, wear a mask, etc.); groups at greatest risk of infection and transmission; and references to resources for obtaining more information. Given the importance of science in informing the public's evolving understanding of the pandemic, we also coded for whether the PSA referenced scientific research.

The final codebook was implemented in Qualtrics and three of the study's authors (MT, JA, RB) coded all creatives. To assess inter-coder reliability (ICR), the team double-coded a subset of the English-language PSAs ( $n = 46$ ). We calculated Krippendorff's alpha, a statistic commonly used to assess ICR in content analysis studies involving more than two coders and multiple variable types (e.g., binary and categorical), (De Swert, 2012) for each variable. A single author (RB) coded all Spanish-language PSAs but was involved in each aspect of codebook development and coding of the English-language PSAs that were a part of the subset used to calculate ICR. The sponsor variables, used to originally refine the analytic sample as described above (e.g., CDC, White House, Ad Council, etc.), had alpha values that exceeded 0.97. All other variables presented in this analysis have alpha values greater than or equal to 0.71 (mean = 0.96), indicating substantial reliability (see Appendix Table 1 for ICR values).

### 2.3. Analysis

Data analysis consisted of simple descriptive statistics, calculated both at the creative-level (i.e., to assess proportions of the creatives in the data set that had certain content features) and at the airing-level. Calculations at the airing level incorporate the varying frequency with which any specific creative appeared on stations across the country. Individual ads were aired as few as 1 time for the lowest-aired creative in the sample to as many as 48,577 times for the highest. Calculations of the prevalence of key messages at the airing-level thus better approximate the content to which audiences were potentially exposed. Last, we assessed whether there was a correspondence between the state-level

**Table 1**  
Health Behavioral Messages about Preventing the Spread of COVID in Federally-Affiliated PSAs Aired from March to December 2020.

	Frequency of Creatives N (% of Creatives)	Frequency of Airings N (% of Airings)
Stay home if possible	69 (52.3)	137,923 (80.7)
Practice social/ physical distancing	57 (43.2)	105,799 (61.9)
Wash your hands	38 (28.8)	93,171 (54.5)
Wear a mask	30 (22.7)	61,725 (36.1)
Avoid touching surfaces	16 (12.1)	57,976 (33.9)
Avoid touching your face	12 (9.1)	55,570 (32.5)
Avoid health care settings	1 (0.8)	3,699 (2.2)
Do not hug others	2 (1.5)	1,146 (0.7)
Avoid sick people	1 (0.8)	1,085 (0.6)
Cover your cough	1 (0.8)	882 (0.5)
Assist with contact tracing	0	0

Note. Health behavioral messages encompasses the mention of any guidance as well as specific guidance (e.g. wash your hands *and* wash your hands for 20 s).

policy environment and health messaging to which residents of that state might have been exposed. To do so, we constructed a state variable for each airing based on the media market of that airing (for markets that cross state lines, we assigned airing to the dominant state based on population). Then we linked these data to information from a publicly available data set that tracks state-level policy (COVID-19 State Policies, or CUSP). (Raifman et al., 2022) We constructed a dichotomous variable for states that ever had a public face mask mandate policy that was initiated in 2020 (n = 41 states) versus those that never had a mask policy (n = 9 states) during that time period, and then used a Chi-squared test to assess differences in the frequency of mask-related guidance content in PSAs airing in those states.

### 3. Results

The vast majority of airings appeared in the first three months of the pandemic (March to June 2020), with daily volume of PSA airings never exceeding 500 after July 4 (Fig. 1). Of these, 15 creatives (11.4 %) and 10,064 (5.9 %) airings were in Spanish, while 117 (88.6 %) of the creatives and 160,756 (94.1 %) airings were in English. Among the 132 creatives in the sample, 35 (26.5 %) were text only (i.e., displaying images on screen with no narration) while the remainder presented on-screen text and images with narration. The ads commonly referred

audiences to websites; most of them (n = 87, 65.9 %) included a link to the CDC’s coronavirus-specific landing page ([coronavirus.gov](https://www.cdc.gov/coronavirus)). Only 1 (0.8 %) of the creatives (or 0.7 % of airings) presented explicit detail defining what COVID-19 is (e.g., a respiratory virus), suggesting ad creators believed most viewers would already know this basic detail about COVID-19. Only 1 creative, 0.8 % of the sample – which translated to 309 airings (0.2 % of the airings) mentioned “research” or a “study” in the PSA.

We also assessed the types of people who were portrayed in the ads. Celebrities and other well-known people appeared in 20.4 % of airings, including athletes, children’s entertainers (e.g., Sesame Street) or other public figures. The most commonly featured of such individuals were public health officials: Dr. Jerome Adams (shown in 14.4 % of airings), Dr. Anthony Fauci (shown in 10 % of airings), and Dr. Deborah Birx (shown in 7.8 % of airings), while the other types of celebrities appeared in <5 % of airings. No politicians (i.e., elected officials or political candidates) appeared in PSAs, although Melania Trump appeared in a single creative (shown in < 1 % of airings). Other health professionals (besides the above-mentioned identifiable health officials) were shown in 14.4 % of airings, but only a single creative portrayed a hospital setting (shown in < 1 % of airings, the only setting we tracked) (see Appendix Table 2 for more detail).

Ads commonly presented health messages offering guidance to prevent the spread of COVID-19 or engage in behaviors to mitigate risk. Table 1 displays the frequency of these references across the full time period for the creatives in the sample, as well as the frequency with which each message was aired.

More than half of all creatives, and 80.7 % of all airings, included the message to stay at home if possible. The next most common health message was to practice social or physical distancing. Guidance to wash hands was described in over half of all airings, while wearing a mask appeared in just over one-third of all airings. Guidance to avoid touching surfaces and one’s face appeared in the airings with moderate frequency. <1 % of all airings included messages about avoiding hugging, avoiding sick people, or covering a cough. While it appeared in our full set of 222 creatives from which we derived the codebook, none of the creatives in the final analytic data set included a messaging asking individuals to assist with contact tracing.

As Fig. 1 makes clear, the bulk of the PSAs in the set were aired in the early stage of the pandemic.

Fig. 2 displays the volume of health guidance messages across the time period.

While the “stay at home” message was the dominant message in the early stage of the pandemic (as reflected by the orange volume in the

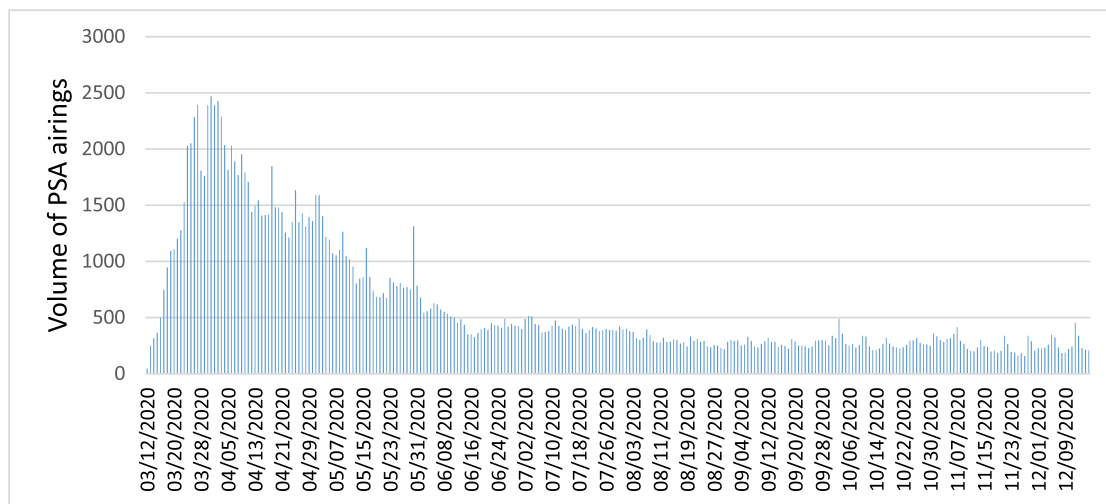
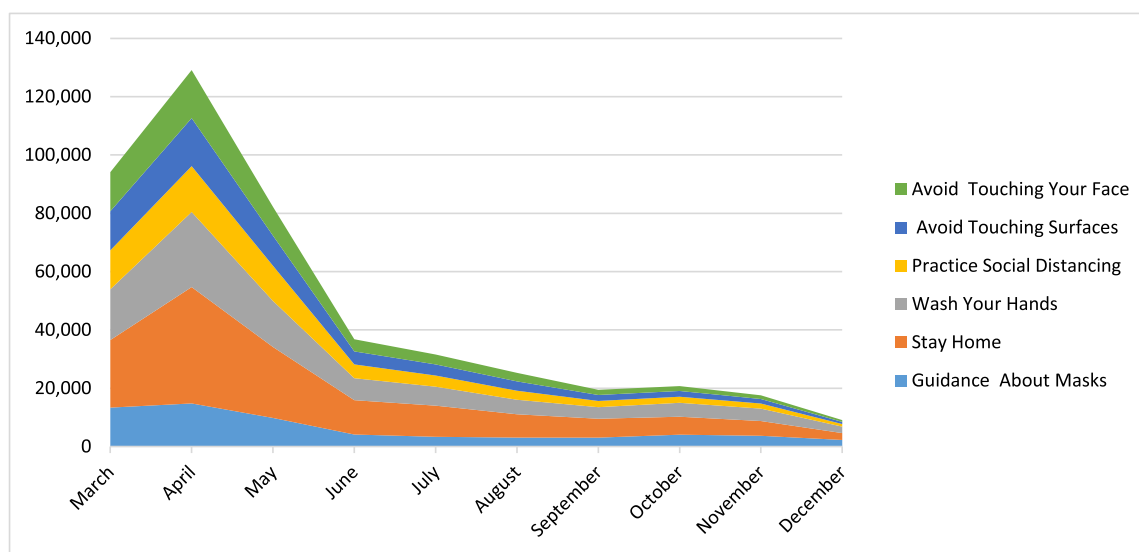


Fig. 1. Daily Volume of Federally-Facilitated PSA Airings, March 12 to December 16, 2020.

**Table 2**  
Messages about Group Risk and Spread of Infection in Federally-Affiliated PSAs aired from March to December 2020.

Group specified	Messages About Groups at Risk of Infection		Messages about Groups at Risk of Transmitting Virus	
	Frequency of Creatives N (% of Creatives)	Frequency of Airings N (% of Airings)	Frequency of Creatives N (% of Creatives)	Frequency of Airings N (% of Airings)
Children	0	0	0	0
Older adults	18 (13.6)	52,183 (30.6)	0	0
People with symptoms	0	0	1 (0.8)	3,699 (2.2)
People without symptoms	0	0	7 (5.3)	3,861(2.3)
People who are immunocompromised	17 (12.9)	45,764 (26.8)	1 (0.8)	420 (0.3)
Black people	1 (0.8)	309 (0.2)	0	0
Latinx people	0	0	0	0
Other people of color	0	0	0	0

Note: N/a means these figures were not available because the reliability of this variable was too low.



**Fig. 2.** Volume of Health Behavioral Messages about Preventing the Spread of COVID-19, by Month, from March to December 2020 Note: Figure shows the volume of each individual message, so they are not mutually exclusive (i.e., a PSA could include multiple of these messages).

figure), it was much less common later in the year. Similarly, “avoid touching face” and “avoid touching surfaces” declined in their airings over time as well, perhaps in response to emerging scientific evidence that surfaces were not a dominant mode of viral transmission. Encouragement to wear a mask increased in prevalence as a proportion of the total over the time period. Supplementary Appendix Fig. 1 displays the monthly proportion (among the total PSAs airing that month) for each of these health guidance messages, demonstrating the declining proportion of messages telling viewers to stay at home, and the increasing proportion of messages referencing mask-wearing. For instance, more than half of all PSA airings in December (55 %) included guidance for viewers to wear a mask, while only 26 % of airings in July 2020 did the same (also see Appendix Fig. 2 for more detail on the masking message over time).

Table 2 presents the frequency of messages about groups described in ads, in an effort to examine the health equity implications of this form of strategic communication.

The table demonstrates that messages about groups were not a focus of PSAs aired during this time period. When groups at risk of infection were even mentioned, they almost exclusively referred to older adults and immunocompromised people. Only a single creative, aired 309 times (0.2 % of the airings) mentioned that Black people are at greater risk of infection. Messages about groups with heightened risk of transmitting the virus were not common.

Last, we assessed whether there was a difference in the mask-related messages aired based on state policy context, by assessing the frequency

of mask guidance messaging in PSAs aired in states that did, versus did not, ever have mask-related policies in place during 2020 (this analysis was restricted to those PSAs airing on local broadcast TV, as ads on national cable and network TV are consistent across all markets). Overall, 41.5 % of PSA airings on local broadcast TV included mask guidance. There was a slightly lower proportion of airings with mask guidance messages in states with mask policies in place versus those without (41.0 % vs 43.8 %,  $\chi^2 = 70.0$ ,  $p < 0.001$ ).

While the timing of the PSAs preceded the availability of COVID-19 vaccines (the FDA issued emergency use authorization for the Pfizer-BioNTech vaccine on December 11, 2020), we coded all PSAs for whether they mentioned a vaccine, and found that not a single PSA aired in this sample between March 12 and December 16 included any reference to a future vaccine.

#### 4. Conclusions

A large number of COVID-19 PSAs affiliated with a federal partnership with Ad Council—more than 170,000 airings—aired in 2020. However, these PSAs were predominantly aired in the first three months of the pandemic, and as a result the bulk of the health messaging in the PSAs reflected early guidance – such as staying home, sanitizing surfaces, and practice social distancing. Guidance that remains critical even into 2022 – wearing a mask to prevent the spread of the airborne virus – was less common (on average appearing in about one-third of messages), although the proportion of PSAs including this message increased over

the time period.

PSAs almost never identified science or research in support of the messaging, perhaps reflecting a missed opportunity to emphasize the credibility of science-based health communication. People appearing as messengers in the ads were often official representatives of the Trump administration's COVID-19 response, Drs. Birx, Adams, and Fauci. Previous research has suggested these specific messengers were fairly well trusted in 2020, with 68 % of the public reporting a fair amount or more trust in Dr. Fauci and 53 % in Dr. Birx in September 2020 (trust in Dr. Adams was not assessed in this survey). (Hamel et al., 2020) While other research has shown that political sources have dominated over health scientist sources in news messaging about COVID-19 in 2020, (Hart et al., 2020) we did not find partisan messengers, such as elected officials, in these PSAs, a potentially positive finding given concerns about politicization of health information. (Gollust et al., 2020) Our analysis also indicates that ads almost never showed hospital settings (i.e., ICUs), signaling that the public would not have been visually exposed to the severe health consequences of COVID-19 from these PSAs. Yet, other research (i.e., on graphic health messaging in the tobacco context) has suggested such fear-based appeals can be effective. (Tannenbaum et al., 2015; Noar et al., 2016).

Another missed opportunity of the content of 2020 PSA campaigns was communicating about the disproportionate risks of both infection and transmission for certain groups. Groups that could be considered as having a *biological* risk, including older adults and those who are immunocompromised, were called out in the PSAs, but those groups bearing a *social* risk, such as essential workers, people of color, or those of low socioeconomic status, were not discussed in PSAs. (Although, the medical conditions that increase risk that were mentioned are themselves shaped by social conditions and structural racism. (Link and Phelan, 1995; Churchwell et al., 2020) Attention to, and specifically the inclusion of messengers representing these social groups, might have helped the broader public understand the health inequities that emerged rapidly at the onset of the pandemic, when public opinion research suggested lower recognition of these social and racial disparities compared to disparities by age or preexisting condition status. (Gollust et al., 2020) Further, almost all (94 %) of ad airings were in English, despite documented higher hospitalizations and mortality among Latinx populations. Research has demonstrated that Latinx and Spanish-speaking populations in 2020 had high levels of misinformation and insufficient awareness of certain aspects of risk mitigation. (Ornelas and Ogedegbe, 2021; Cervantes et al., 2021) A health equity orientation of messaging might also have been useful in laying the groundwork in the communication environment for the need for vaccines as a preventive strategy, but no PSAs even mentioned vaccines, despite their development over the course of the latter half of 2020. A preemptive effort to promote the importance of vaccination early on and to offer details about the science behind vaccines, before widespread availability, could have helped blunt the vaccine resistance that has plagued COVID-19 prevention efforts since 2021. (Omer et al., 2021) We acknowledge that depending on the message strategy and audience, there is potential for health equity-related messages about COVID-19 to elicit the opposite of their desired effect. (Skinner-Dorkenoo et al., 2022) Further research is needed to build the evidence about what strategies are effective for communicating about health disparities (Niederdeppe et al., 2008) and not promote backlash.

## 5. Limitations

Our data have some limitations. First, we only examined televised ads, not print, radio, or digital. Further, Kantar/CMAG includes all national broadcast, cable, local television but not local cable advertisements. Second, this analysis does not include all PSAs related to COVID-19 that aired in 2020. PSAs were sponsored by many entities, from non-governmental national organizations (i.e., the National Broadcasters Association), state and local health departments, local non-profit

organizations, and even by celebrities posting directly on social media. (Manganello et al., 2020) In contrast, in this study we restricted our analysis to what we defined as federally-affiliated (e.g., White House, CDC, in partnership with Ad Council) in order to describe the content of the federal government's strategic communication response. However, we note that some PSAs created by Ad Council (based on the study team's examination of both CDC and Ad Council websites) were not available in our dataset, suggesting they were potentially aired digitally-only or exclusively on local cable television and thus not captured by Kantar/CMAG. Despite these limitations, we believe this is the most comprehensive study of the content of federally-affiliated COVID-19 PSAs. Last, the codebook necessarily had to focus on a core set of variables for feasibility, and so this study is not an exhaustive assessment of all aspects of these PSAs. As an example, we report the prevalence of select individuals visualized or heard speaking in PSAs (e.g., entertainment celebrities) and the messages included in content, but our coding did not capture details about which specific individuals communicated these messages. We thus were unable to offer evidence about the characteristics of all individuals delivering messages about risk mitigation or any strategic efforts to have members of groups affected deliver these messages, but these are important concepts for future research.

## 6. Implications for preventive medicine and public health

Strategic health communication funded by the government is an important component of pandemic response. (Kim and Kreps, 2020) In 2020; the U.S. government in their partnership with Ad Council created many PSAs that were aired in high volume on broadcast and cable television. These messages included some timely health guidance – such as staying home at the beginning of the pandemic and the importance of social distancing – but the campaign also lacked some important context and messaging that might have advanced health equity, such as explicit attention to the groups that faced disproportionate burdens and more airings in Spanish. The Biden administration continued to invest federal funds into PSA campaigns in 2021 and beyond (Facher, 2021) and research is needed to assess both the content and effectiveness of these past and ongoing strategic communication efforts.

### CRedit authorship contribution statement

**Margaret E. Tait:** Conceptualization, Writing – original draft, Formal analysis. **Jake Abrahams:** Conceptualization, Writing – review & editing, Project administration. **Robert Brehm:** Conceptualization, Writing – review & editing, Project administration. **Laura Baum:** Conceptualization, Data curation, Visualization, Writing – review & editing, Funding acquisition. **Erika Franklin Fowler:** Conceptualization, Writing – review & editing, Resources, Funding acquisition. **Jeff Niederdeppe:** Conceptualization, Writing – review & editing, Funding acquisition. **Sarah E. Gollust:** Conceptualization, Writing – original draft, Supervision.

### Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

### Data availability

The data used in this analysis will be made available to academics in a method consistent with the contract from the underlying data provider. Details will be provided upon request.

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### IRB and Informed Consent

This research does not involve human subjects and did not require the institutional review board (IRB) process. Informed consent was not applicable to this study.

### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.pmedr.2022.101971>.

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