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Posted Date: 11 July 2023

doi: 10.20944/preprints202307.0725.v1

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Article

Assessing Brigada Digital de Salud Audience Reach and Engagement: A Digital Community Health Worker Model to Address COVID-19 Misinformation in Spanish on Social Media

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Abstract: U.S. Spanish-speaking populations experienced gaps in timely COVID-19 information during the pandemic and disproportionate misinformation exposure. Brigada Digital de Salud was established to address these gaps with culturally-tailored, Spanish-language COVID-19 information on social media. From May 1, 2021-April 30, 2023, 495 Twitter, 275 Facebook, and 254 Instagram posts were published and amplified by 10 trained community health workers. A qualitative content analysis was performed to characterize topics and formats of 251 posts. To assess reach and engagement, page analytics and advertising metrics for 287 posts were examined. Posts predominantly addressed vaccination (49.45%), infection risks (19.12%), and COVID-related scientific concepts (12.84%). Posts were educational (48.14%), and aimed to engage audiences (23.67%), promote resources (12.76%), and debunk misinformation (9.04%). Formats included images/text (55.40%), carousels (27.50%), and videos (17.10%). By June 9, 2023, 394 Facebook, 419 Instagram, and 228 Twitter followers included mostly women aged 24-54. Brigada Digital reached 386,910 people with 552,037 impressions and 96,868 engagements, including 11,292 likes, 15,240 comments/replies, 9,718 shares/retweets, and 45,381 video play-throughs. The most engaging posts included videos, trending topics, and music or audio-narration. This community-based model to engage Spanish-speaking audiences on social media with culturally-aligned content to counter misinformation shows promise for addressing public health threats.

Keywords: COVID-19; misinformation; social media; Spanish; community health workers; vaccines; health promotion

1. Introduction

U.S. Spanish-speaking populations experienced major gaps in timely, accurate COVID-19 information throughout the pandemic,¹⁻⁶ combined with disproportionate exposure to COVID-19 misinformation, conspiracy theories and hoaxes, and targeted disinformation efforts on social media platforms.⁷⁻¹⁰ Swells in COVID-19 misinformation and growing mistrust during the pandemic prompted healthcare providers, community leaders, and government agencies to coordinate outreach and education initiatives, yet efforts to reach Spanish-language audiences through trusted, culturally- and ethnically-concordant messengers often lagged behind.^{2,4,11}

An information vacuum in the early days of the pandemic gave way to an “infodemic,” whereby information and media environments were flooded with COVID-related content, which included evolving messaging, conflicting messages by authorities, and politicization of government mitigation and response measures.¹²⁻¹⁵ This created ideal conditions for the emergence of rumors and

misinformation without adequate mechanisms in place to flag and remove misleading Spanish language content from social media platforms.^{16–18} Even with those mechanisms in place, efforts to counter misinformation have not kept pace with the quantity of false COVID-19 information circulating online in Spanish.^{19–21} The increased vulnerability to misinformation among Latino individuals with lower literacy and health literacy levels has also been described.^{4,22,23} This confluence of factors, combined with anti-immigrant and sociopolitical rhetoric,^{24,25} fueled growing Latino community uncertainty and mistrust of public health agencies, government institutions, scientists, and health professionals.^{22,26,27}

With U.S. Latinos increasingly using social media as an important source of health information and as a tool for information sharing,^{28,29} there has been an emphasis on examining the influence of this digital environment on COVID-19 social norms, perceptions, and attitudes, especially related to vaccination.^{30–32} At the same time, numerous studies and efforts have also outlined the importance of community-based strategies that leverage local leaders and trusted, culturally-aligned messengers to disseminate COVID-19 information.^{2,3,6,33,34} However, there is a paucity of work examining the application of community-based approaches for Spanish language COVID-19 messaging and outreach to social media networks, in particular as strategies to address misinformation.

The Brigada Digital de Salud in May of 2021 to address the proliferation of COVID-19 misinformation in Spanish on social media by leveraging community health workers (CHWs) as trusted sources of health information. The Brigada Digital aims to disseminate credible, science-based, and culturally-relevant COVID-19 information in Spanish, including through CHW social media networks. This study presents the process of developing and implementing the Brigada Digital model, examines this effort's reach and audience engagement over a 2-year period, and provides lessons learned for future projects that aim to replicate this model to engage digital audiences in health promotion and education about COVID-19 or other health topics.

2. Materials and Methods

Development of the Brigada Digital Model and Collaborators.

The Brigada Digital was launched in May of 2021 in response to the dearth of timely, credible, and culturally-relevant COVID-19 information in Spanish and the overabundance of misinformation on social media platforms. Adapted from the George Washington University (GW) Health Communication Volunteer Corps concept,³⁵ which coordinated social media fact-checking and messaging by public health students on COVID-19 prevention and vaccination, the Brigada Digital effort leveraged community-based clinics and CHWs as trusted messengers for outreach and engagement of Latino audiences in Spanish. The long-term objective of this initiative was to address COVID-19 disparities by increasing prevention measures, testing, and vaccine uptake among Latinos in the Washington, DC metropolitan area through improving access to quality, audience-tailored information from trusted messengers.

The Brigada Digital effort was funded by the National Institutes of Health Community Engagement Alliance Against COVID-19 Disparities initiative (NIH-CEAL) and the GW Institute for Data Democracy and Politics. The Brigada Digital model was developed in collaboration with two community-based clinical partners in Washington, DC and Maryland – La Clínica del Pueblo and Proyecto Salud. A partnership was also formed with Dr. Elmer Huerta,³⁶ host of the weekday Spanish-language radio program, *Consultorio Comunitario*, on Radio America (1540 AM), to support cross-platform COVID-19 messaging. This paper discusses the development and implementation of Brigada Digital from May, 1, 2021 to April 30, 2023, which included the conceptualization of the Brigada Digital model and CHW member role, recruitment and training of CHWs, message frame and social media content generation, publication of posts across Facebook, Instagram, and Twitter platforms, audience engagement strategies, and page/profile management.

Brigada Digital Member Role Development, Recruitment, and Training.

A total of 10 CHWs, including health promoters and community health educators, were recruited in October, 2021 by our 2 community-based partners, Clínica del Pueblo and Proyecto Salud, to be trained as Brigada Digital members who would disseminate Spanish-language messaging in their social media networks and in local, public Facebook groups. They were identified from within the organizations' cadres of health outreach workers based on their interest in the Brigada member role, fluency in Spanish, use of at least one of the social media platforms (Facebook, Instagram, Twitter), and viewpoints in support of COVID-19 vaccination. Brigada members received a 2-hour training in November, 2021 on the Brigada Digital model, the process for sharing posts across social media platforms, considerations for digital health promotion and audience engagement, and how to navigate conversations involving COVID-19 misinformation. Trained members were asked to follow Brigada Digital pages, share weekly posts with their networks and in public groups, engage with network members to answer questions and provide resources, conduct in-person outreach to expand their digital networks, and submit weekly reports on their digital health promotion activities.

Theoretical Basis and Messaging Strategies.

Initially, a message frame was developed, informed by a cultural adaptation of the Theory of Planned Behavior (TPB), whereby COVID vaccination depended on intention to vaccinate, which was influenced by beliefs about vaccination, social norms, perceived control to vaccinate, and attitudes about vaccination.³⁷ TPB was operationalized to include underlying cultural values and culturally normative social norms, including expectations of social closeness (i.e., *personalismo*) and the importance of family relationships (i.e., *familismo*), which have been widely applied in health promotion and communication interventions with Latinos.³⁸⁻⁴³

Given the rapidly evolving nature of the pandemic and the need for specific, sometimes unpredictable, messaging to be developed quickly, weekly content development for Brigada Digital also evolved to incorporate messages that were responsive to contextual factors and salient phenomena in the information environment. For example, when public health policies and guidelines changed, results of a new vaccine trial were released, child vaccines were approved for certain age groups, free COVID-19 tests were newly available, or there was news coverage of a new variant, messaging would immediately pivot to prioritize dissemination of this information (See Figure 1).



Figure 1. Post Announcing COVID-19 Vaccine Availability for Children Under Age 5 .

We also synchronized messaging to align with topics of social relevance, such as upcoming holidays, the start of the school year, and current events (i.e., World Cup, holiday travel, inflation). Furthermore, to promote audience engagement, posts incorporated humor where appropriate, easily recognizable references to Latino culture and experiences, popular and trending Latin music artists and songs, and connections to cultural celebrations (See Figure 2a and 2b).



Figure 2. (a) Post Engaging Audience for World Cup; (b) Post Engaging Audience for Christmas Holiday.

Messaging was also responsive to online conversations that included COVID-19 misinformation, whereby posts were developed to directly address incorrect information that was widely circulating on social media platforms. Our team used a number of tactics to counter COVID-19 misinformation on social media, including disseminating credible, evidence-based information with links to original information sources; directly addressing/debunking specific pieces of misinformation; dissemination using trusted sources as messengers (CHWs) and with trusted sources portrayed in content (i.e., Latino pediatricians or health professionals); and tailoring content to be accessible by Spanish-language audiences and those with varying levels of literacy and science literacy.⁴⁴⁻⁴⁶

Culturally- and Contextually-Tailored Content, Formats, and Accessibility.

Approximately 2-4 COVID-19-related posts were published per week across accounts on all platforms. Spanish-language content was developed to communicate across the following topic domains: COVID-19 transmission and risk/severity in adults and children; the science of COVID-19 variants and immunity; COVID prevention measures (masking, types of masks, social distancing, ventilation, handwashing) and testing (when to test, obtaining free tests); COVID-19 vaccine and booster contents, safety and efficacy for adults, children, and pregnant/breastfeeding individuals; overcoming barriers to obtain vaccines and boosters; and COVID-19 treatment options.

Content was developed to be delivered in a range of formats, from narrated slide carousels and animated images with text, to video interviews and observational tutorials. The intent was to create engaging digital content that resonated with Latino audiences and was accessible to individuals with diverse educational backgrounds and health literacy levels.⁴⁷⁻⁴⁹ All video content portrayed Latino physicians, CHWs, public health professionals, and community leaders. Complex scientific concepts were simplified and explained, visual illustrations were used, text length was minimized, font size was increased, and some longer texts were audio-narrated in Spanish (See Figure 3a and 3b).

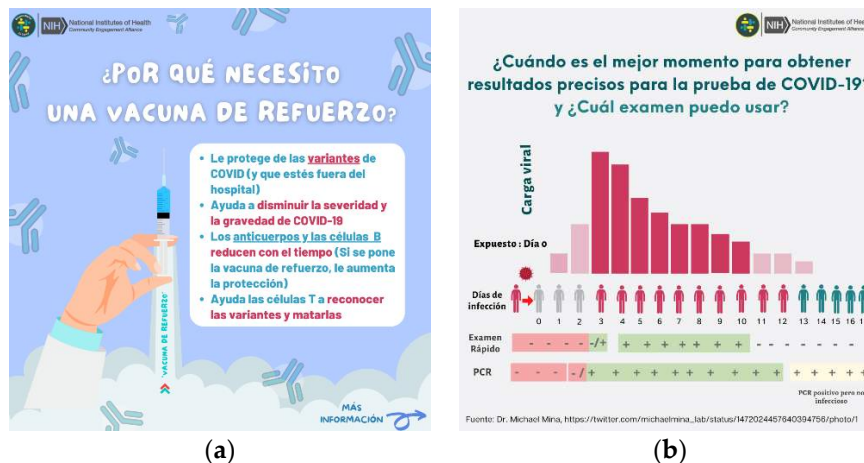


Figure 3. (a) Post Educating About How Booster Doses Work; **(b)** Post Educating About When to Test for COVID-19.

Brigada Digital content also acknowledged the multiple structural, socioeconomic and political factors that shape options for diverse Latino communities with respect to implementing COVID-19 prevention and mitigation recommendations. Standard messages, even when translated into Spanish, do not always take such factors into account, thus diminishing their potential impact. Messages were developed to be realistic given potential contextual barriers and focused on feasible behavior changes within these contexts.

Implementation Process – Content Development, Dissemination, and Audience Engagement.

Given the challenges of communicating about COVID-19 in the pandemic context, including rapidly evolving (and often conflicting) messages and complex scientific topics, we wanted to ensure that any messaging coming from the Brigada Digital had been thoroughly researched, fact-checked, and vetted, was accurate and up-to-date with the last public health guidance, was consistent with the current scientific evidence, and most importantly, was (accurately) simplified and accessible to broader community audiences. We also wanted to ensure that messaging disseminated by Brigada Digital CHW members to their social networks was concordant with messages conveyed by the principal Brigada Digital accounts on Facebook, Instagram and Twitter. In order to support digital community outreach with consistent, up-to-date COVID-19 information in this saturated media environment, we centralized the process of weekly message and content curation, and all content was created by a bilingual, bicultural research team with public health crisis and emergency risk communication expertise from the GW Milken Institute School of Public Health. Messaging and content development were guided by the aforementioned theoretical framework and message frame, and with input from community partners and Brigada Digital CHW members.

Each week, the team met to discuss the following to guide content development: 1) the latest COVID-related news developments, scientific updates, and changes to public health guidance; 2) predominant misinformation topics that had emerged or were being actively discussed on social media; 3) COVID-specific concepts that were relevant at that time and were often misunderstood (i.e., how to correctly wear masks, when to test, eligibility for booster doses); 4) upcoming social or cultural events/days (i.e., holidays, International Women’s Day, Hispanic Heritage Month); and 5) trending topics in current events or popular culture with which we could align our content or messaging strategy (i.e., Minions movie, music artist Daddy Yankee announcing retirement, inflation). After identification of key topics to address each week, messages were developed, target audience segment identified (i.e., young adults, parents of children under 18), and post creative concepts were decided, including media/format to be used (i.e., static or animated post, video, tutorial, narrated carousel). We also decided on communication tactics (i.e., use of anecdotes, emotional appeals, culturally-informed alignment with family values or community solidarity), and audience engagement strategies (i.e., storytelling, use of music, humor, celebrity).

The majority of social media content, including the main post, caption, and source reference links, was developed by our team in Canva.⁵⁰ Tools available in Canva were relatively low-cost and user-friendly, and facilitated elaboration of post content, including branded visual elements and media. Given that Canva did not have features that directly supported Spanish language content generation, posts were developed in English and externally translated using Spanish that avoided regional colloquialisms or included terminology that would be widely understood by audiences of different backgrounds. After review and completion, posts were downloaded as high-resolution image or video files and then uploaded to Brigada Digital platforms with corresponding captions and source links. To coordinate content curation across the team, we used the organizational tool, Trello, which enabled us to monitor post development from concept to completion, and integrate appropriate team members at each stage.⁵¹ To begin this process, we added post concepts from our weekly meeting, which were then approved by the principal investigator, and claimed by a lead developer. Once a draft post was developed, the concept was tagged as ready for review, and once reviewed, it was tagged as ready for posting, then boosting. This process incorporated multiple review checkpoints and ensured high-quality content prior to publishing.

The Brigada team developed content on a weekly schedule, whereby our team would aim to have content published on Mondays, Wednesdays, and Fridays of every week. We deviated from this cycle in the case of breaking news, such as the announcement of a shift in COVID-related public health guidance, in which case we would aim to share this information as soon as possible. We sought to have at least one post per week that was educational, one that included news updates/explained scientific news, and one that was intended primarily for engagement. All content was cross-posted on our Facebook page and Instagram and Twitter profiles. The majority of posts were boosted with approximately \$10-15 in paid advertising per post for a 5-day period on the Facebook and Instagram platforms. Audience selection varied by post (i.e., young adults, parents of children under 18), and we selected audience targeting of individuals living in the U.S. who were “expats” from countries in Central and South America as proxy for reaching Latino, Spanish speaking individuals.

Posts on our principal accounts were also shared by Brigada Digital CHW members to their social media networks throughout the week and to public Spanish-language Facebook groups in the Washington, DC area. CHWs connected with their networks to elicit engagement, answer questions, and refer individuals to additional resources, services, and events. Each Brigada member submitted a weekly report via Google Forms, in which they reported on their number of posts, audience engagement, and relayed any questions or challenges. We also created a WhatsApp group chat to cultivate a space where Brigada CHWs could connect with our team and each other to collaborate, exchange ideas, and seek assistance. This also served as a channel through which CHWs could suggest ideas for post content based on interactions with their clients and audience. This enabled us to incorporate diverse, community-based perspectives to ensure that content resonated with our audiences.

In addition to weekly posts, we also created additional audience engagement opportunities. For example, in early 2022, we collaborated with Dr. Elmer Huerta, host of the Spanish-language radio program, *Consultorio Comunitario*, to arrange a series of six radio interviews with pediatricians and Brigada Digital member health promoters from our community-based clinical partner organizations. The interviews intended to convey key messaging about COVID-19 vaccination for adults and children, and to correct predominant misinformation about the vaccines. The interviews were aired live on the radio program and simultaneously livestreamed on the Brigada Digital Facebook page, with brief interview clips with concise messaging later disseminated as posts across all Brigada platform accounts.

Our team continually monitored all Brigada Digital accounts to reply to direct messages, acknowledge comments, respond to inquiries, provide links to additional resources, and flag comments that were inappropriate or contained misinformation. Generally speaking, in cases where misinformation was identified in comments, our overall approach was to acknowledge the user’s perspective or concern, find common ground when possible (i.e., we also value transparency, or as parents we also prioritize the health of our children), maintain a respectful and helpful tone, and

request that the user provide links to support their claims so we could assess the reliability of their information sources. Our team also responded to comments/replies containing misinformation within 24 hours or less, and never left any comment/reply containing misinformation without a response from our team. To counter misinformation, we researched and fact-checked all claims and formulated a response with links to credible sources of information or prior relevant Brigada Digital posts (always cited) to support the counter-claims. We initially aimed to maintain all comments containing misinformation as publicly viewable, but with our counter-responses so as to maintain the appearance of transparency and open dialogue, as well as to provide a “teachable opportunity” to others regarding how to identify misinformation and which information sources should be trusted instead. There were, however, a limited number of cases where we had to remove/hide comments or block certain users due to the aggressive nature of their comments or the large quantity of their comments that our relatively small research team could not effectively manage without compromising the integrity of our page.

Data Collection and Analysis.

A total of 275 Facebook posts, 254 Instagram posts, and 495 Twitter tweets were published between May 1, 2021 and April 30, 2023. Within these totals, 251 posts were original educational/engagement posts created by Brigada Digital, which were supplemented by shared/retweeted COVID-19 related content from other accounts, and a small number of posts were for the recruitment of evaluation study participants (discussed elsewhere). To characterize Brigada Digital post content, we completed a qualitative content analysis for the original 251 posts published during this same time frame using categories for post topic, media/format type, and post purpose. A priori categories were selected by one of the PIs who oversaw content development, and were informed by the Brigada Digital message frame that guided the selection of educational topics (i.e., COVID-19 vaccination, testing, masking), and the weekly content development process in which we decided post formats (i.e., slide carousels, videos, images), purposes (i.e., address specific misinformation, engage audiences, or providing a COVID-related news update) and engagement features to be used for each post (i.e., animation, music, audio narration). All posts in the Brigada Digital Facebook feed for the 2-year period (which were cross-posted across platforms) were reviewed by one coder, and a categorical code was applied for post topic, primary and secondary purpose, and format/media types. Codes for each category were entered into an Excel spreadsheet, and then frequencies for each category were produced using the STATA software, version 17.

To characterize Brigada Digital audience members, we also used insights available in the Meta Business Suite. These insights provided basic user demographic profiles for Brigada followers on the Facebook and Instagram platforms. Frequencies for audience age groups, gender, and country are reported from platform analytics as of June 9, 2023.

To assess audience reach and engagement, we used Facebook, Instagram, and Twitter page/profile insights (representing all posts) as well as analytics from the Ad Reports tool available through the Meta Business Suite (representing all boosted posts on Facebook and Instagram). Cumulative summary metrics are reported for the period of May 1, 2021 through April 30, 2023. The following metrics were used: page/profile followers, reach, impressions, post/tweet engagements, likes, comments/replies, shares/retweets, video play throughs, page/profile visits, and link clicks (See Table 1 for metrics calculations by platform).

Table 1. Metrics Calculations by Twitter, Facebook, and Instagram Platforms.

Metrics	Twitter	Facebook	Instagram
Reach	--	Number of accounts that saw a post, story, or ad at least once (organic and paid)	Number of accounts that saw a post, story, or ad at least once (organic and paid)
Impressions	Number of times a tweet was seen	Number of times a post was seen (organic and paid)	Number of times a post was seen (organic and paid)
Post Engagement	Sum of likes, replies, retweets, 2-sec media views, detail expands, profile clicks, hashtag clicks, link clicks, and new followers gained	Sum of post shares, reactions, saves, comments, likes, interactions, 3-sec video plays, photo views, and link clicks while ad is running	Sum of post shares, reactions, saves, comments, likes, interactions, 3-sec video plays, photo views, and link clicks while ad is running
Likes/ Reactions	Number of tweet likes	Number of post likes	Number of post likes
Comments/Replies	Number of tweet replies	Number of post comments	Number of post comments
Shares/Retweets	Number of retweets	Number of shares to timelines, groups, or pages	Number of shares
Video thru plays	--	Number of times video was played to completion, or for at least 15 seconds	Number of times video was played to completion, or for at least 15 seconds
Detail Expands	Number of clicks on tweet to view more details	--	--
Page/Profile Visits	Number of profile visits	Number of page visits	Number of profile visits
Link Clicks	Number of link clicks in tweet	Number of link click in post	Number of link click in post

In order to assess the most engaging Brigada Digital content, we created a report for Facebook and Instagram posts using the Meta Ad Reports tool, and identified posts with the highest values for the Post Engagement metric, which is a composite measure of post shares, reactions, saves, comments, likes, interactions, 3-second video plays, photo views, and link clicks. The top 6 educational posts with the highest Post Engagement values were identified, as were the top 6 engagement posts. The topics, formats, and features of these posts, as well as communication tactics used (i.e., tagging social media influencers, selected advertising audience, timing of post) were then examined to identify characteristics that may potentially explain higher levels of achieved audience engagement.

3. Results

3.1. Content Overview.

Original Brigada Digital posts (n=251) covered a wide variety of topics related to COVID-19, and there was also a small subset of topics that were not directly related to COVID-19, which were typically included to update audiences with other related news (i.e., Mpox or bird flu outbreaks) or to engage audiences in current events (i.e., sympathy for Hurricane Fiona victims or solidarity with Ukraine) (See Table 2).

Table 2. Brigada Digital Social Media Post Topics.

Post Topic	Posts with Primary Topic (N)	Posts with Secondary Topic (N)	Total N (%)
Brigada Promotion	8	0	8 (2.18%)
COVID Science & Variants	4	43	47 (12.84%)
Masking	9	9	18 (4.92%)
Multi-prevention	1	8	9 (2.46%)
Non-COVID	19	0	19 (5.19%)
COVID - Pregnancy/Breastfeeding	1	4	5 (1.37%)
COVID Risk Communication	69	1	70 (19.12%)
Social Distancing/Air Quality	1	2	3 (0.82%)
COVID Testing	5	1	6 (1.64%)
COVID Boosters	9	13	22 (6.01%)
COVID Vaccination – Child/Adolescent	30	10	40 (10.92%)
COVID Vaccination – General	81	11	92 (25.14%)
COVID Vaccination – Safety/Efficacy	14	13	27 (7.38%)
	Total = 251	Total = 115	Total = 366

Across the 251 original posts, topics were covered a total of 366 times, including 115 posts that addressed more than one topic. For example, a post may have primarily discussed risk of infection with a new COVID-19 variant (primary topic), and promote vaccination as the best way to protect oneself (secondary topic). The topics most commonly included in Brigada Digital posts were: COVID-19 vaccination, COVID-19 risks, and the science of COVID-19. Approximately half of post topics (49.45%) addressed COVID-19 vaccination and booster doses for adults and children, including vaccine safety and efficacy. About one-fifth of topics (19.12%) conveyed COVID-19-related risks, such as the risk of transmission and the risks associated with infection for different population subgroups, and just over one-tenth of topics (12.84%) explained the scientific concepts behind COVID-19 transmission and virus variants.

Brigada Digital posts were developed with different purposes in mind, ranging from educating or promoting specific protective behaviors, addressing specific misinformation, updating audiences about changing public health guidelines or revised vaccine eligibility criteria, connecting people to resources or events, or simply engaging audiences (See Table 3).

Table 3. Brigada Digital Social Media Post Purpose.

Post Purpose	Posts with Primary Purpose (N)	Posts with Secondary Purpose (N)	Total N (%)
Address Misinformation	5	29	34 (9.04%)
Educational/Health Promotion	175	6	181 (48.14%)
Engagement/Entertainment	33	20	53 (14.10%)
Popular Culture/Current Events	14	22	36 (9.57%)
Link to Resource/Service/Event	11	37	48 (12.76%)
News Update	13	11	24 (6.38%)
	Total = 251	Total = 125	Total = 376

A total of 125 posts were developed with more than one purpose. For example, a post may have had the primary purpose of educating audiences, while also debunking misinformation about the COVID-19 vaccine that was circulating online. The most common post purpose was health education and promotion regarding COVID-19 risk and mitigation, with almost half of posts having this purpose (48.14%). The next most common post purposes were to engage/entertain audiences with content related to COVID-19 (14.10%) or current events (9.57%), link individuals to resources, services, or vaccination/educational events (12.76%), and to address COVID-19 misinformation (9.04%).

Brigada Digital posts were also developed to be varied in terms of formats and media types (See Table 4).

Table 4. Brigada Digital Social Media Post Formats and Media Types.

Post Format	Total N (%)
Carousel	62 (24.70%)
Carousel – Music	3 (1.20%)
Carousel – Narration	4 (1.60%)
Image & Text	127 (50.60%)
Image & Text – Animation	6 (2.40%)
Image & Text – Music	6 (2.40%)
Video	38 (15.14%)
Video – Music	5 (2.00%)
	Total = 251

Approximately half of posts consisted of images with text (55.40%), including 4.8% with animation and/or music. Just under one-third of posts were carousels (27.50%), with 2.8% containing music or Spanish audio narration. Finally, almost one-fifth of posts (17.10%) were videos, with 2% of videos including music.

3.2. Brigada Digital Audience, Reach and Engagement.

As of June 9, 2023, Brigada Digital had 394 Facebook, 419 Instagram, and 228 Twitter followers. Approximately three-quarters of Facebook and Instagram audience members have been women, with women ages 25-54 representing 61.8% and 67.6% of Facebook and Instagram followers, respectively (See Table 5).

Table 5. Brigada Digital Facebook and Instagram Followers, by Gender and Age*.

Platform	Facebook (N=394)		Instagram (N=419)	
	Women (%)	Men (%)	Women (%)	Men (%)
Age Group				
18-24	3.6	2	5.7	1.8
25-34	15.7	3.8	27.1	8.1
35-44	27	6.3	27.8	8.4
45-54	19.1	4.6	12.7	1.5
55-64	9.1	4.3	4.2	0.9
65+	3	1.5	1.5	0.3
Total (%)	77.5	22.5	79	21

*Audience profile as of 6-9-2023.

Audience members have also been predominantly from the U.S. and Puerto Rico (90.8% and 73.5% for Facebook and Instagram, respectively). Information on the Brigada Digital audience on Twitter is unavailable.

A total of 295 posts were boosted during the 2-year period. About half of the advertisements were placed on Facebook (n=147, 49.83% of ads) and almost half were placed on Instagram (n=140, 47.46% of ads), with the remainder being placed on messenger or other placement (n=8, 1.71% of ads). Half of the advertisements had the specific objective of increasing post engagement (n=149, 50.51% of ads), video views (n=106, 35.93% of ads), or link clicks (n=40, 13.56% of ads). The total spent on advertisements during the 2-year period was \$2,813, with an average of \$9.54 spent per post.

Across the three platforms, the Brigada Digital de Salud effort was able to reach 386,910 people and elicit 96,868 engagements during the 2-year period, which included 11,292 likes, 15,240 comments/replies, 9,718 shares/retweets, 45,381 video play throughs, and 741 link clicks (See Table 6).

Table 6. Brigada Digital Engagement Metrics (5/1/2021 – 4/30/2023).

Metrics	Twitter (N=493 tweets)	Facebook (N=275 posts)	Instagram (N=254 posts)	Total (N=1,022 posts)
Reach	--	336,427	50,483	386,910
Impressions	37,809	431,018	83,210	552,037
Post Engagements	3,287	77,965	15,616	96,868
Likes	825	7,969	2,498	11,292
Comments/Replies	242	14,879*	119	15,240
Shares/Retweets	411	7,833*	1,474	9,718
Video thru plays	--	40,251*	5,130*	45,381
Detail Expands	590	--	--	590
Page/Profile Visits	134	5,593	3,827	9,554
Link Clicks	51	460	230*	741

3.3. Brigada Digital's Most Engaging Content.

A summary of the most engaging Facebook and Instagram posts are presented in Table 7. These posts include the top 6 most engaging posts with a primary educational purpose and the top 6 most engaging posts with a primary purpose of eliciting audience engagement.

Table 7. Brigada Digital Most Engaging Facebook and Instagram Posts (5/1/2021 – 4/30/2023).

Post Topic	Format	Reach	Impressions	Engagement	Thru Plays	Features
<u>Many vaccines require multiple doses, like routine child vaccines</u>	Narrated video	6,243	7,165	2,205	949	Addressed misinformation, audio-narrated
<u>Recap: 2 years since first COVID vaccine administered</u>	Video with text & music	4,684	2,815	1,595	1,209	Music, typewriter text, visual appeal
<u>Radio host interview with pediatrician - 1</u>	Video expert interview	2,892	6,721	1,565	273	Behind scenes of radio show with Latino celebrity Dr. host; credible expert

<u>Radio host interview with pediatrician - 2</u>	Video expert interview	1,666	3,608	1,108	220	Behind scenes of radio show with Latino celebrity Dr. host; credible expert
<u>Six things to know about COVID vaccine safety for children</u>	Narrated Video	2,124	2,319	1,104	968	Addressed misinformation, audio-narrated; timed with start of school year
<u>When to get booster dose</u>	Narrated video tutorial CDC tool; link to website	1,737	1,902	925	670	Step-by-step, narrated instructional video on how to use online CDC resource in Spanish
<u>Did you remember Mother's Day?</u>	Video dramatization	22,173	25,738	6,943	3,125	Social media influencer portrayed; repurposed humorous video with COVID messaging; trending topic – holiday
<u>How to get free COVID-19 tests</u>	Video - animated gif; link to website	7,861	10,461	4,898	1,553	Portrayed well-known Latino comedic actor with engaging expression; promoted free resource
<u>Booster dose provides best protection</u>	Image with music; link to website Engagement	7,953	4,633	2,805	1,496	Popular Latina music artist; trending topic - gossip of romantic breakup; upbeat dance music
<u>How to order free COVID tests and masks</u>	Video with music; link to website Engagement	3,099	3,445	1,497	1,274	Popular Latino music artist; music
<u>Real life story of boosters reducing COVID transmission</u>	Animated text with music Engagement	4,173	4,470	1,294	972	Storytelling; typewriter text; music; rhyming poem

<u>Inflation prices are high, but COVID vaccines are still free</u>	Video with text & music Engage-ment	1,597	1,856	826	736	Current events - price increases for popular items juxtaposed against free vaccine; upbeat music from popular artist
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The 12 most engaging posts covered a variety of topics, including COVID-19 vaccine safety, efficacy, and cost, booster doses, COVID-19 tests, and masks; however, one quarter of the most engaging posts addressed child vaccination, specifically. Four out of the 6 most engaging educational posts addressed common COVID-19 vaccine misinformation, specifically as it relates to child vaccination (i.e., that a multi-dose vaccine series was unusual, that the vaccine wasn't tested adequately). Three out of the 6 most engaging posts that were designed specifically to increase engagement promoted free resources for COVID-19 mitigation (i.e., how to obtain free tests and masks). All 12 of the most engaging posts were delivered in video-based formats, including video interviews, tutorials, narrated slides, animated images, or videos with text and music. Eleven of the 12 posts included audio, with 5 posts including music (3 of which were by celebrity artists), 3 posts including an audio-narration feature in Spanish, 2 being delivered in an interview format, and 1 containing comedic narration by a social media influencer. The engaging post without audio included an animated gif of a well-known Latino actor. Six of the 12 posts portrayed widely-recognized social media content creators, popular music artists, and actors, and 2 posts included renowned and trusted health experts.

4. Discussion

The Brigada Digital model for digital community outreach and health promotion was overall well-received by audience members, partners, and CHWs, and shows considerable promise as an approach that can leverage the strong, extensive Latino community networks and the adaptability and reach of digital platforms. Not to mention, this approach reaches individuals on platforms where Spanish speaking audiences are interacting with large quantities of misinformation, and efforts to counter this misinformation by trusted, culturally-aligned sources are lacking. The Brigada Digital model for digital community-based health promotion also has the potential to be applied to address other important health disparities and public health priorities beyond COVID-19.

The approach we used for content generation was guided by a theoretical framework and overall message frame, yet was flexible enough to determine messaging priorities on a weekly basis. This allowed for a highly adaptable strategy that could shift messaging rapidly to align with evolving public health guidelines, deliver timely information with breaking news and scientific developments, and capitalize on attention surrounding novel or trending topics. At the same time, while offering a highly adaptable strategy for health messaging, this approach also required a great deal of continual investment of time and resources from a relatively small research and content development team. Given the nature of the pandemic digital information environment and the polarization of COVID-19-related topics, there were added demands on the team to maintain audience trust by delivering the highest quality content that was thoroughly researched, accurately translated, and adequately adapted for accessibility. There were also great demands on the team to manage very active commentators spreading misinformation in response to some of Brigada Digital's posts, which required constant monitoring, prompt attention to address comments, research and fact-checking to counter the misinformation, response formulation, and repeated follow-up interactions with these audience members. Future similar efforts must consider these factors when planning project scope and determining personnel inputs.

One continued barrier was the limited availability of informational resources in Spanish to which we could refer audience members who would like to learn more on a particular topic. This also presented challenges in substantiating scientific claims about COVID-19 when relevant literature

or reports could not be provided in Spanish because they were not available. If public health and scientific communities aim to build trust with language minority communities, there need to be more credible, science-based information sources that are accessible to community members and that are also appropriate for individuals with a wide range of literacy, science literacy, and health literacy levels. We often found it to be the case that Spanish language information available on government websites consisted of dense, lengthy, text-heavy content, and had few images and reading levels that were too high for general audiences. When aiming to address this disconnect by providing audience-tailored Spanish language educational content, we also experienced barriers creating content in Canva, which did not fully support Spanish text and had limited options for Spanish-language graphic features or Latino-oriented stock photos. Applications and services should expand culturally- and ethically-relevant design features to support the creation of educational materials that represent diverse audiences. This barrier could also likely be addressed with more resources to add a professional graphic designer to the team or to procure a more advanced design software.

Decisions related to the selection of CHWs based on their digital network and which social media platforms to use are important ones when using this model. The initial concept for this model was to have CHWs use their existing personal accounts for outreach given the evidence that individuals are more likely to trust information sources they already knew and trusted at the outset of a crisis – in this case, the pandemic.⁵²⁻⁵⁵ However, some CHWs preferred to establish new accounts dedicated to this role, and other CHWs had initially limited local network contacts because they had immigrated to the U.S. relatively recently. Since the Brigada Digital effort was primarily focused on reaching Latino audiences in the Maryland and DC areas, these CHWs had to build their digital networks from the ground up. Building these networks involved engagement of some of their existing contacts to follow a newly established social media account, as well as recruitment of new network contacts during their in-person community outreach and health promotion activities. Future efforts with CHWs in roles that involve digital community-based health promotion can either select CHWs with existing networks that include the intended audience, or select CHWs who can build these networks; however, the latter option will necessitate greater emphasis upfront on building trust with new network members and on expanding network reach.

Program decision-makers should also consider which types of social media accounts to use if CHWs are creating new accounts for their health promotion activities. For example, we initially planned to track the dissemination of posts by Brigada Digital CHWs using a social media tracking software, which was unable to track personal accounts unless they were added as users to the software (and the price increases drastically with multiple accounts added). If CHWs create accounts that are pages instead of personal profiles, they can be more easily tracked to document implementation and audience engagement. Another alternative that we have considered for future efforts is to have CHWs all help to manage one main page and centralize audience engagement to one account. This would foster a team effort, would be easier to manage and document, and would create an audience that is ultimately sustainable beyond the tenure of any individual CHW.

Furthermore, while the Brigada Digital effort concept centralized content development to ensure accurate, updated health information and consistency during an “infodemic,” a next step that would continue to build community capacity for digital health promotion would be to extend the role of CHWs into content creation, including additional training to facilitate this next step and processes to support and quality-check content for scientific accuracy and consistency across content creators. This strategy would expand the team of linguistically-appropriate and culturally-competent messengers who can create content that increases their visibility and opportunities for audience engagement, such as through the use of videos, vlogs, and platform-based live sessions.

At the start of this effort, we anticipated that Facebook and Instagram platforms would be the most conducive for reaching the intended audience, and these platforms did prove to be appropriate channels. The Brigada Digital effort was able to achieve substantial reach across these platforms, which was further supported by CHW outreach, including to local, public Facebook groups, and by paid advertising through post boosting. According to Brigada Digital Facebook page and Instagram profile analytics, the audience segments who followed our accounts were predominantly young and

middle-aged adults, with the Instagram audience being slightly younger than the Facebook audience. Additionally, while Brigada Digital outreach and advertising strategies did not specifically target female audience segments, our content appeared to resonate with women in particular. If future efforts aim to achieve greater representation of Latino men among audience segments, they should consider modifications to content, as well as alternative outreach or advertising strategies. Furthermore, while Brigada Digital content was disseminated on Facebook, Instagram, and Twitter initially, we also expanded to include TikTok and LinkedIn (results not included here). These platforms, as well as WhatsApp, have become increasingly popular among Latino audiences, and should be considered as channels for future digital health outreach initiatives.

The Brigada Digital effort resulted in substantial audience engagement overall, which was supported by the incorporation of cultural elements in content, leveraging of current events and breaking news topics, and through the use of humor to make the COVID-19 education more attractive, especially after pandemic fatigue set in and audiences became increasingly tired of this topic. Overall, content that was delivered in video formats, whether as animated text/gifs or elaborate dramatizations, tended to result in more audience engagement overall than simple text with images. Another feature that appeared to result in higher levels of engagement was audio-narration, which we primarily implemented to make content more accessible to lower literacy populations, but discovered that this feature may have also boosted engagement. This feature seems to be particularly appealing when animated typewriter text features are also used, where text scrolls across the page as it is read aloud. If future initiatives have limited resources to produce more elaborate video content, using audio narration or scrolling text features can be a potential strategy to increase engagement.

Some features and communication tactics that also tended to result in higher levels of audience engagement included information delivery by trusted messengers, such as a pediatrician or a well-known radio/tv personality and physician; temporal alignment of post content with trending topics unrelated to COVID-19, but of great interest to users; the inclusion of imagery and references to famous music artists or actors, and collaborations and/or tagging of social media influencers or content creators. While a greater investment of resources and personnel are required to foster these collaborations and implement these engaging features and formats, future interventions should prioritize these strategies to optimize audience engagement.

While offering excellent reach and opportunities for audience engagement, digital health promotion outreach about COVID-19 on social media also created opportunities for “negative” engagement by individuals who were actively spreading COVID-19 misinformation and conspiracy theories online. We most commonly encountered these individuals with our boosted posts when we had selected advertising goals to “get more engagement.” The advertising algorithm seemed to target individuals who were actively “engaged” in the dissemination of false narratives on social media. These individuals also appeared to have already adopted tactics to evade platform-based content moderation by misspelling common key words, such as “v@kuna” or “k@kuna” instead of “vacuna,” or vaccine, in Spanish. This increased our team’s responsibility to continuously and carefully monitor post comments to identify and address misinformation in real time. Additionally, on a few occasions, some disgruntled users reported our page to content moderation, which resulted in temporary suspension of some posts, even though they contained no misinformation and did not violate platform rules. Projects seeking to implement community-based digital outreach with CHWs must have sufficient personnel and capacity to monitor, fact-check, and correct misleading and false comments, which can be created by users who are very active communicators on social media and who we found to employ complex and manipulative communication tactics that can be difficult to navigate (experiences and lessons learned in this area discussed in depth elsewhere). Digital CHWs who may encounter and/or manage this kind of engagement on social media platforms should receive enhanced training on how to recognize and respond to these tactics and effectively counter misinformation.

There are some limitations that should be considered when interpreting study results. In terms of assessing audience reach and engagement, analysis was limited to what was available from platform page/profile analytics and advertising report metrics, with advertising reports usually

offering more detailed results. While Facebook and Instagram tended to provide more detailed page/profile analytics, Twitter had more severe limitations; for example, audience reach metrics were unavailable for Twitter. Furthermore, relatively limited platform-based information about audience demographics made it difficult to fully characterize Brigada Digital audience segments, and Twitter audience metrics were also unavailable. This presents challenges with regards to interpreting the generalizability of study findings to Latino and Spanish-speaking audiences; however, since women between the ages of 25-54 were overrepresented among Brigada Digital followers, it could be inferred that study results may not be generalizable to other gender and age subgroups. Additionally, audience reach tends to be determined to a great extent by paid advertising on platforms. Given that this effort was implemented with a relatively small advertising budget and advertisements were not placed on Twitter during the study period, results in terms of audience engagement should be interpreted with these factors in mind. Finally, this study entailed digital outreach in Spanish implemented across 3 social media platforms, and results may not be comparable with outreach on other social media platforms.

Author Contributions: Conceptualization, E.L.A., L.C.A., A.I.G., M.C.E.; Methodology, E.L.A., L.C.A., M.C.E.; Software, E.L.A.; Validation, E.L.A., XXX; Formal Analysis, E.L.A., C.F.; Investigation, E.L.A., XXX Resources, E.L.A., L.C.A., A.I.G.; Data Curation, E.L.A., A.I.G., C.F.; Writing—Original Draft Preparation, E.L.A.; Writing—Review and Editing, L.C.A., A.I.G., C.F., V.G., M.D.R., C.P., M.C.E.; Visualization, E.L.A., A.I.G.; Supervision, E.L.A., L.C.A., A.I.G., M.C.E.; Project Administration, E.L.A., L.C.A., A.I.G., C.F., V.G., M.D.R., C.P., M.C.E.; Funding Acquisition, E.L.A., L.C.A., M.C.E. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by the National Institutes of Health Community Engagement Alliance Against COVID-19 Disparities (NIH CEAL), grant #1OT2HL156812-01 (MPIs Edberg, Andrade), and the George Washington University Institute for Data, Democracy, and Politics (internal grant, MPIs Abrams, Andrade).

Institutional Review Board Statement: All study protocols were reviewed and approved by the George Washington University Committee on Human Research (FWA00005645) - Institutional Review Board (IRB), study #NCR213842 on October 14, 2021. All study procedures were performed in accordance with IRB guidelines for the protection of human subjects and ethical principles outlined in the Declaration of Helsinki.

Informed Consent Statement: Not applicable.

Data Availability Statement: The data presented in this study are available on request from the corresponding author. Data are not publicly available due to the current regulation on privacy.

Acknowledgments: Not applicable.

Conflicts of Interest: The authors have no conflicts of interest to declare.

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