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COVID-19 vaccine policy implementation and differential vaccine uptake trajectories in Chicago communities

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Abstract

Background: Since the onset of the COVID-19 pandemic, multiple public health interventions have been implemented to respond to the rapidly evolving pandemic and community needs. This paper describes the scope, timing, and impact of coordinated strategies for COVID-19 vaccine uptake in Chicago for the first year of vaccine distribution.

Methods: Using a series of interviews with public health officials and leaders of community-based organizations (CBOs) who participated in the implementation of the city-wide COVID-19 vaccine outreach initiatives, we constructed a timeline of vaccine outreach initiatives. The timeline was matched to the vaccine uptake rates to explore the impact of the vaccine outreach initiatives by community area. Finally, we discussed the nature of policy initiatives and the level of vaccine uptake in relation to community characteristics.

Results: The Chicago Department of Public Health (CDPH) implemented myriad vaccine outreach strategies, including mass vaccination sites, improved access, and community-level vaccine campaigns. Protect Chicago+ was the primary vaccine outreach effort initiated by

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CDPH, which identified 15 highly vulnerable community areas. More than 2.7 million (67%) Chicagoans completed the vaccine regimen by December 2021. Black (51.3%) Chicagoans were considerably less likely to be vaccinated compared with Asian (77.6%), White (69.8%), and Hispanic (63.6%) Chicago residents. Additionally, there were significant spatial differences in the rate of COVID-19 vaccine completion: predominantly White and Hispanic communities, compared to Black communities, had higher rates of vaccine completion.

Conclusions: The community outreach efforts to improve COVID-19 vaccine uptake in Chicago have shown the importance of community-engaged approaches in pandemic responses. Despite city-wide efforts to build community infrastructure, Black communities had relatively lower levels of vaccine uptake compared to other communities. Broader social restructuring to mitigate disinvestment and residential segregation and to ameliorate medical mistrust will be needed to prepare for future pandemics and disasters.

Keywords

COVID-19; Vaccine acceptance; Policy implementation; Racial disparity; Vaccine uptake

Introduction

By the end of 2022, more than 10 million residents (79%) in Illinois had received at least one COVID-19 vaccine dose, and 9 million residents (71%) were fully vaccinated.¹ In Chicago, the most populous and the most racially/ethnically diverse city in the state of Illinois, 79.6% of residents received at least one dose and 70.5% completed the primary series.² However, the vaccination rate was far lower for Black residents than for White and Hispanic residents.³ Racial and ethnic minority communities have been slower to reach the overall state level of COVID-19 vaccination rates.^{4–6} While higher rates of COVID-19 infection and deaths in racial/ethnic minority communities may reflect structural inequalities,⁷ disparities in COVID-19 vaccine uptake, particularly for Black residents in Chicago highlight the need to further understand the impact of living conditions, residential segregation, and experiences of historical injustice, on levels of mistrust and barriers to care.

When the first COVID-19 vaccine was made available to the public, the economic fallout from the pandemic had already devastated disadvantaged communities,⁸ and vaccination was expected to provide a level of protection to help people return to economic activities and social life. However, a range of barriers has contributed to the vaccination gap. Since December 2020, the city of Chicago implemented multiple vaccine outreach initiatives to address anticipated COVID-19 vaccine disparities.⁹ These initiatives were designed to enhance community engagement, build trust, support community decision-making, and mitigate economic burdens.^{10–12} Public health responses to the pandemic in Chicago particularly targeted neighborhoods that had experienced the greatest burden of the disease. These neighborhoods had experienced poor health outcomes, such as diabetes, obesity, and cardiovascular disease,¹³ even before the pandemic, which contributed to greater risk for COVID-19 severity and mortality.¹⁴

The City of Chicago COVID-19 vaccine rollout plans were implemented primarily by the Chicago Department of Public Health (CDPH), beginning with long-term care residents and

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healthcare workers on December 15, 2020. The second phase started on January 25, 2021, and included older adults over the age of 65, congregate settings, and essential workers. By April 19, 2021, all city residents were included in the COVID-19 vaccine rollout.¹⁵

The CDPH's main vaccine outreach program, Protect Chicago+, was launched in February of 2021. Equity is the core of Protect Chicago+, with the goals of providing consistent access to vaccines, making vaccine access convenient, and directing resources to the lowest vaccinated communities.¹⁶ Based on the city's COVID vulnerability index (CCVI), the CDPH identified the 15 most vulnerable Chicago community areas.¹⁷ The Protect Chicago+ communities were primarily Hispanic and Black communities located on the Northwest, West, and South sides of the city. Protect Chicago+ provided additional resources to these communities to implement community-engaged vaccine strategies that aimed to address barriers to vaccine acceptance, such as difficulty accessing vaccine sites, lack of knowledge about the vaccine, and medical mistrust.

In this article, we aim to explore how the city's vaccine outreach initiatives unfolded throughout the early months of the COVID-19 vaccine rollout in 2021 and the trajectory of vaccine uptake in Chicago communities. We map out the timeline of Chicago's COVID-19 vaccine outreach initiatives implemented by the CDPH since December 2020 and compare changes in vaccine uptake between the 15 Protect Chicago+ communities and the rest of the Chicago community areas. We then explore the difference in the vaccination rate by community racial/ethnic composition.

Material and Methods

COVID-19 vaccine outreach timeline

To create a city-wide COVID-19 vaccine outreach timeline, we conducted interviews with the CDPH officials and community partners who were involved in the vaccine initiatives. Two key CDPH personnel were chosen for their leadership role in implementing Chicago vaccine outreach initiatives. We also interviewed leaders of six community-based organizations (CBOs) that were part of the CDPH COVID-19 Response Corps (CRC) that received funding to engage in vaccine outreach. From the interviews with the CDPH personnel, we established the overall timeline for the city's official outreach programs. We then asked CBO leaders to describe their own timelines for the outreach programs. Findings from the two sets of interviews were then compared for consistency and completeness of outreach initiatives and timelines. In addition, we obtained relevant documents related to vaccine outreach programs from CDPH and the participating CBOs. Interviews lasted approximately one hour.

Interview recordings were then transcribed. Two research staff mapped out a timeline for the COVID-19 vaccine outreach activities using the interview transcripts. The timeline was then shared with the interviewees to verify the accuracy and completeness of the activities and time periods. Documents provided by CDPH and CBOs included event flyers, calendars, and data from the events including the number of participants and evaluation. These documents were used to further ensure the validity of the timeline that we established. The study

protocol was reviewed and approved by the University of Illinois Chicago Institutional Review Board (IRB: #2021-0737).

Community-level vaccine uptake

We utilized the COVID-19 vaccination data which was publicly available from the Chicago Data Portal to assess daily vaccine uptake at the zip code level³ and Chicago Health Atlas to obtain data at the Chicago community area level.¹⁸ Chicago Data Portal is an open data portal that has been managed by the City of Chicago since 2012.¹⁹ The COVID-19 vaccination data were reported daily by zip code, including the daily doses administered, total cumulative doses, daily and cumulative number of vaccine series completed, and % of the population completed vaccine series. The Chicago Health Atlas is a health data portal established in 2012 and managed by the CDPH and the Population Health Analytics, Metrics and Evaluation (PHAME) Center at the University of Illinois Chicago.²⁰ The Chicago Health Atlas includes data from 77 communities across the city of Chicago. community area level vaccine series completion data were available on the Chicago Health Atlas.¹⁸

Using the daily COVID-19 vaccination data, we computed the rate of vaccine uptake per 100,000 residents for 56 zip code areas within the City of Chicago from January 2021 when the COVID-19 vaccine was first available to the end of December 2021. We also utilized the % residents who completed the vaccine series from the dataset to compare different zip code areas. Using the Community Area vaccine completion data, we compared the Protect Chicago+ community areas with all other community areas. First, we matched the vaccine outreach timeline and the vaccine uptake rates to examine the impact of the vaccine outreach efforts on vaccine uptake. Second, we visualized the community level geographic distribution of vaccine series completion by the end of 2021 and changes in the zip code level vaccine uptake over time between January 1, 2021 and December 31, 2021.

Results

Vaccine outreach initiatives

Overall, the city-wide vaccine outreach programs can be grouped into three strategies: mass vaccination sites (e.g., United Center and Wrigley Field), initiatives around improved access (e.g., homebound program and mobile vaccination programs), and community-level vaccine campaigns (e.g., Protect Chicago+, CRC, and faith-based initiative). These strategies reinforced each other by targeting the multifaceted barriers to vaccine uptake. Community-level campaigns deployed trusted messengers to overcome mistrust of government agencies and skepticism around COVID-19 vaccines. This improved people's willingness to get vaccinated, while strategies to improve access reduced travel and wait time to ensure people who wanted to receive vaccines were able to get the vaccine in a timely manner. The timeline of Chicago's city-wide COVID-19 vaccine outreach initiatives is summarized in Figure 1 (also Supplemental Table 1).

Regarding mass vaccine sites, the City opened five vaccination points of dispensing (POD) sites at City Colleges of Chicago locations in January, 2021. These PODs focused on

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distributing vaccines to non-hospital health workers and community health workers.²¹ In March of 2021, the city utilized the United Center, a large sports arena, to make vaccines available, initially to anyone in the state. When the first shipment of vaccines from the federal government arrived, most of the United Center appointments were taken by online users from outside of Chicago. This led CDPH to limit future appointments to residents of select zip codes in Chicago. To increase appointment accessibility, CDPH also set aside some appointments for phone bank operators rather than the online platform to support older adults and individuals with limited internet access. As vaccines became more readily available, Wrigley Field, a baseball stadium, was also converted into a mass vaccine site.

As part of efforts to improve access, vaccines were distributed via walk-in clinics in pharmacies and big-box stores, such as Walgreens, CVS, and Walmart in April of 2021. In May of 2021, the city further expanded access to COVID-19 vaccines through “vaccination stations” in Chicago Public Schools for students and their families. Mobile vaccine units delivered the vaccine to “home-bound” residents who were unable to go to vaccine sites or those who did not want to leave their homes. Beginning in May 2021 and throughout the summer of 2021, the city of Chicago collaborated with various music venues and other performances to promote vaccination. The city provided incentives to be vaccinated, including free tickets to events, such as Lollapalooza, one of the largest music festivals in the world. Although Lollapalooza did not require individuals to be vaccinated for admission, those who were not vaccinated were asked to show proof of a negative COVID-19 test. Vaccine ambassadors utilized these arts performance events to reach out to wider groups of Chicago residents. Chicago residents could also receive other incentives for getting vaccinated, including cash payments or gift cards. The Protect Chicago “at-home” program was implemented in June 2021, involved over 200 staff, and delivered an additional 5,000 vaccines. More than 25,000 appointments were made through the at-home programs.

Protect Chicago+ the CDPH’s main vaccine outreach program, was launched in February of 2021. CDPH collaborated with 31 CBOs to set up the COVID-19 Response Corps (CRC), which was a set of strategies to disseminate educational material addressing the importance of vaccination, safety concerns about COVID-19 vaccines, and different ways to access the vaccine. CBOs led messaging and hosted events within their communities.

One specific strategy for the community vaccine campaign was to establish the Vaccine Ambassador program in May 2021.²² Vaccine ambassadors were CRC members who were embedded in the community who provided trusted sources of information. Vaccine ambassadors received additional training on effective communication about COVID-19 vaccines, addressing misinformation, and connecting community members with other social resources. The city provided hyperlocal data on vaccine uptake at the census tract level to CBOs, which informed the ambassadors to target specific areas with the lowest vaccine uptake.

Protect Chicago+ also established the Chicago COVID-19 Call Center along with the Resource Hub. The Call Center was staffed by CRC members who fielded incoming calls about vaccine questions and helped community members find vaccination sites, schedule appointments, and serviced requests including food, housing, and utility assistance

programs. The Call Center navigators connected those who needed help with service organizations through the Resource Hub.^{17, 23}

Protect Chicago 77 was launched in September 2021. This initiative aimed to have at least 77% of residents aged 12 and over receive at least one dose of the vaccine by the end of 2021. A marketing campaign, “Vax-Chi-Nation”, was part of the Protect Chicago 77, which targeted social media to spread the message. In addition, campaigns to engage youth and senior Chicagoans were launched in October 2021. The city-wide Senior Campaign included several outreach efforts.²⁴ Greeting cards were sent to seniors in low-vaccine communities and seniors were encouraged to schedule at-home appointments for vaccination. Furthermore, “Neighbors for Life” was a media marketing campaign that highlighted local seniors who shared their experience with the vaccine, and emphasized Chicago’s strong sense of community to encourage neighbors to get vaccinated.

Vaccine uptake by community area

Table 1 summarizes the overall distribution of vaccine uptake between January 2021 and December 2021. Over 1.7 million (70.6%) Chicagoans completed a two-dose (Pfizer or Moderna) or one-dose (Johnson & Johnson) vaccine regimen by the end of 2021. Female residents (71.5%) were more likely than male residents (68.9%) to complete the COVID-19 vaccine. Older adults aged 60 years and older were vaccinated at a higher rate (72.7%) than adults aged between 18 and 59 years (71.8%). Asian Chicagoans had the highest vaccine completion rate (80.3%), followed by White (71.7%) and Hispanic (70.0%) Chicagoans. Black Chicagoans were vaccinated at a substantially lower rate (55.2%).

Figure 2-a depicts the 15 Protect Chicago+ community areas and Table 2 summarizes the community area numbers and names, % vaccine uptake, and racial/ethnic distributions of the 15 community areas. By the end of 2021, the vaccination rates increased substantially for all communities. North Lawndale, Englewood, and West Englewood continued to have the lowest vaccination rates, below 45%. Austin and Roseland also had a vaccination rate of below 50%. These areas were predominantly Black communities with an average of 84.2% of residents being Black. In addition, Montclare had 48.2% vaccine completion rate, which was predominantly Hispanic community with 55.1% of residents being Hispanic. On the other hand, three Protect Chicago+ communities reached a higher vaccination rate than Chicago overall, over 62.5%. These communities were Gage Park, Archer Heights, and Belmont Cragin, which were predominantly Hispanic communities with 83.4% of residents being Hispanic.

Some community areas with the lowest vaccination rates that were not part of Protect Chicago+ (Table 2). There were 16 community areas with the vaccine completion rates below 50%. These community areas were predominantly Black communities with % Black residents over 70%, except for Hegewisch which was a predominantly Hispanic community.

Substantial differences in the spatial distribution of vaccine completion were shown in Chicago. For the most part, the South and West sides of the city showed lower rates of vaccine uptake (Figure 2-b). Generally, predominantly White and Hispanic communities had

higher rates of vaccine completion, compared with predominantly Black communities on the West and South sides of the city (Supplemental Figure 1).

Vaccine uptake over time

Figure 3 shows the vaccine uptake rates by zip code from January 2021 through December 2021. The black lines indicate the Protect Chicago+ zip codes the light gray lines indicate the rest of the Chicago zip codes. The average vaccine completion rates for both Protect Chicago+ communities and the rest of the communities were below 10% in March. The vaccine completion rate exceeded 50% in July and 60% in October. However, for the Protect Chicago+ communities, the vaccine completion rates continued to be below the average rate for the city. The Protect Chicago+ areas reached over 50% vaccine completion rate in October.

Overall, the vaccine completion rate in predominantly Black communities (>75% Black residents) was consistently lower than other communities (Supplemental Figure 2). On the other hand, the vaccine completion rate for the predominantly Hispanic communities (>50% Hispanic residents) began to exceed the rate for the predominantly Black communities in April and this trend continued until the end of December 2021.

Discussion

This paper reviewed city-wide vaccine outreach efforts in Chicago during the early days of the COVID-19 pandemic and explored changes in vaccine uptake in 2021. The vaccine outreach initiatives included several mass vaccine sites, home delivery of vaccines, and community vaccine campaigns. These outreach strategies particularly aimed for equity, thus allocating additional resources to vulnerable communities. By May 2021, vaccine uptake rates in Protect Chicago+ communities began to increase. During May and October, many Protect Chicago+ communities reached vaccine uptake rates at the Chicago average. Five Protect Chicago+ communities reached vaccine uptake rates above the Chicago average by the end of 2021. Notably, all of these communities were predominantly Hispanic communities. On the other hand, four Chicago Protect+ communities had vaccine uptake levels of less than 50%, all of which were predominantly Black communities. Overall, these findings may suggest that some existing barriers could not be mitigated by targeted community outreach programs implemented during the pandemic, in particular, mistrust of government and medical research in Black communities.^{25, 26} The city of Chicago and CDPH attempted to address the issue of mistrust from the beginning of the pandemic by engaging local CBOs and community members for community outreach. And yet, the gap in vaccine uptake persisted, primarily in Black communities. Just over 55.2% of Black residents were fully vaccinated, while 70.0% of Hispanic residents were fully vaccinated which was compatible to the rate for White residents (71.7%) in Chicago. The lower rates of vaccine uptake among the most vulnerable Black communities may indicate that deep-seated mistrust that has built up over decades could not be entirely overcome. Medical mistrust is an issue that we will need to continue to grapple with.²⁷

Protect Chicago+ worked with 31 CBOs, from which over 400 COVID-19 Response Corps (CRC) members were trained to disseminate vaccine information and broader health

knowledge through community events and canvassing.¹⁶ However, Black communities in Chicago had fewer or less resourced CBOs, which may have limited the reach or impact of the Protect Chicago+ and other vaccine promotion initiatives. Community capacity could not be improved rapidly enough even with an “all hands on deck” approach, to compensate for decades of disinvestment. This finding suggests that wider social and economic investment in highly segregated Black communities is required to build stronger communities to tackle health and/or other disaster events, such as the COVID-19 pandemic.

Limitations

First, this study was primarily descriptive and observational, thus any causal links cannot be made concerning the city-wide COVID-19 vaccine initiatives and changes in vaccine uptake rates over time. Furthermore, because we did not evaluate each vaccine outreach program separately, we were not able to make any conclusive assessments of the different strategies implemented simultaneously. Situations like the COVID-19 pandemic obviously occur unexpectedly and conditions change rapidly. Within such real-world emergencies, well-organized research may not be part of response and preparedness plans. However, we were able to maximize existing public data platforms that were built for transparency and accountability in city governance. CDPH has several established data sources and dissemination mechanisms that were fully utilized during the pandemic.

Second, we utilized two different COVID-19 vaccination datasets, one was at the zip code level that were updated daily, and the other one was at the community area level that were cumulative vaccine uptake at the end of 2022. This data availability issue limited our analysis on community level time trends, while the city’s vaccine outreach efforts were based on Chicago’s community areas. The 56 zip code areas and 77 community areas within the City of Chicago do not perfectly match. Thus we explored the proportions of Black and Hispanic residents within zip code to examine how predominantly Black and Hispanic areas fared concerning vaccine uptake over time.

Third, we constructed the policy timeline using interviews with CDPH officials and community partners who directly participated in the city’s vaccine initiatives. Findings from the two sets of interviews were then cross-referenced to understand the local implementation of the city initiatives. In addition, we supplemented relevant documents related to these outreach programs that we obtained from the CDPH and CBOs. Consequently, the timeline we created might have excluded small-scale local vaccine activities that were not funded by the CDPH. This limitation might have contributed to the overestimation of funded city-run initiatives by absorbing hyper-local efforts.

Conclusions

The experience of implementing vaccine outreach initiatives during the COVID-19 pandemic in Chicago offers important insights for future public health responses to large scale pandemics and other public health disasters. The city anchored all vaccine initiatives to the goal of advancing equity. Identifying vulnerable communities early on made it possible to prioritize resource allocation and targeted interventions in the most vulnerable communities, which is critical in any emergency response to protect vulnerable populations.

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and minimize negative consequences.²⁸ The health department took advantage of a wide range of data that were already available to identify social, economic, and epidemiological vulnerabilities of Chicago communities. Accurate and up-to-date data would be a key element of successful public health emergency planning and response. And for data-driven public health programs, building data infrastructure should be a priority for preparedness.²⁹

Community engagement has been considered fundamental to health equity in recent years.³⁰ And yet, achieving an authentic partnership with the community is difficult. The city of Chicago promoted community engagement and provided funding to local CBOs throughout the COVID-19 pandemic, and now finding ways to guarantee the sustainability of community engagement within local public health infrastructure is a vitally important task for public health practitioners, researchers, and policymakers.

The COVID-19 pandemic exposed existing inequities and vulnerabilities. Mitigating the consequences of disinvestment and social exclusion may be beyond the scope of public health. But public health depends on broader social policies to improve inequalities in our city. Mistrust of government and healthcare cannot be overcome simply by deploying community members as “trusted messengers” to deliver public health messages, rather it may call for building a just society.³¹

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

References

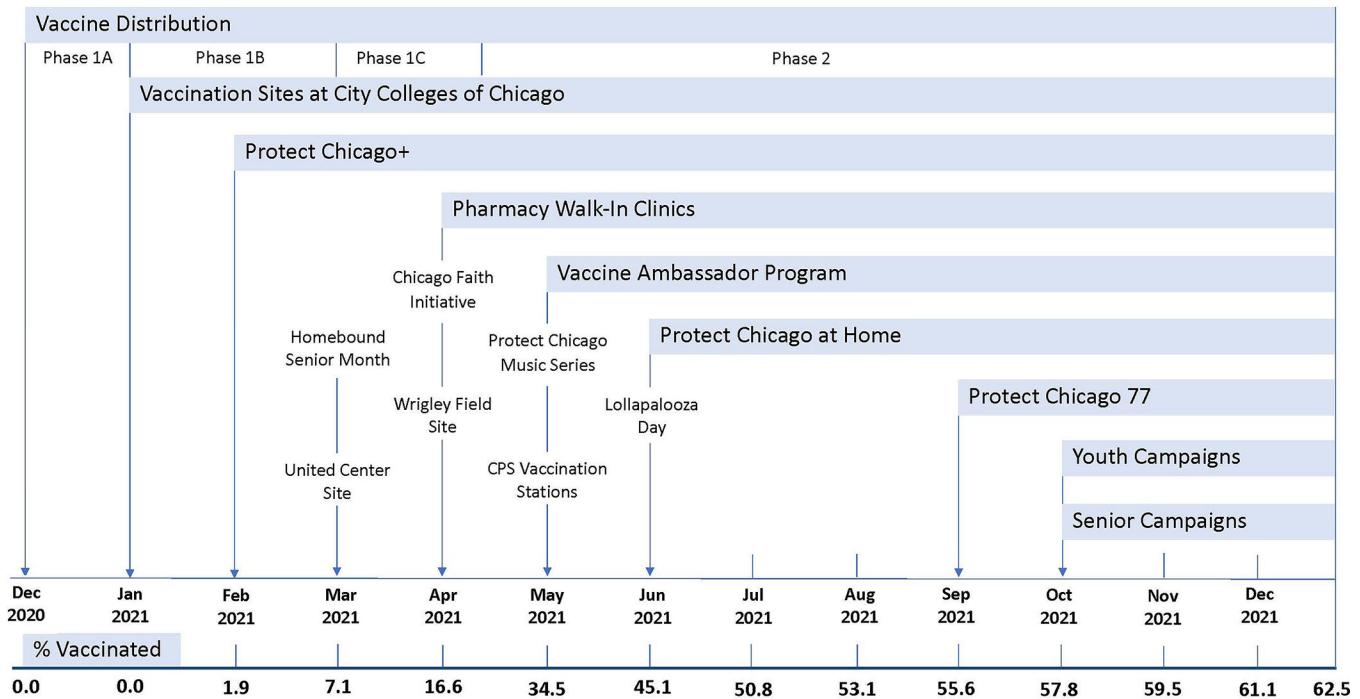
1. USAFacts. US Coronavirus vaccine tracker. USAFacts. 2023. April 20, 2023. <https://usafacts.org/visualizations/covid-vaccine-tracker-states>
2. City of Chicago. Covid-19 Vaccine Coverage. Chicago Department of Public Health. 2023. July 30, 2023. <https://www.chicago.gov/city/en/sites/covid-19/home/covid-19-vaccine-coverage.html>
3. City of Chicago. COVID-19 Daily Vaccinations - Chicago Residents - Cumulative Doses by Day. City of Chicago. 2022. Accessed April 29, 2022, <https://data.cityofchicago.org/Health-Human-Services/COVID-19-Daily-Vaccinations-Chicago-Residents-Cumu5-2pgy>
4. Centers for Disease Control and Prevention. COVID-19 Vaccinations in the United States. Centers for Disease Control & Prevention. 2022. Accessed April 29, 2022, <https://covid.cdc.gov/covid-data-tracker/#vaccinations>
5. Majee W, Anakwe A, Onyeaka K, et al. The Past Is so Present: Understanding COVID-19 Vaccine Hesitancy Among African American Adults Using Qualitative Data. *J Racial Ethn Health Disparities*. 2022;10(1):462–474. doi:10.1007/s40615-022-01236-3 [PubMed: 35182372]
6. Office of Science & Data Policy. Disparities in COVID-19 Vaccination Rates across Racial and Ethnic Minority Groups in the United States. Issue Brief. Office of Science & Data Policy. 2021. <https://aspe.hhs.gov/sites/default/files/private/pdf/265511/vaccination-disparities-brief.pdf>
7. Centers for Disease Control and Prevention. Health Equity Considerations and Racial and Ethnic Minority Groups. Centers for Disease Control and Prevention. 2022. Accessed January 25, 2022, <https://www.cdc.gov/coronavirus/2019-ncov/community/health-equity/race-ethnicity.html>
8. Bartik T. Helping America's distressed communities recover from the COVID-19 recession and achieve long-term prosperity. Brookings Institute. 2020. https://www.brookings.edu/wp-content/uploads/2020/09/20200923_BrookingsMetro_Distressed-Communities-COVID19-Recovery_Bartik_Report.pdf

9. Mayor's Press Office. City of Chicago Announces Protect Chicago 77 Initiative to Get Entire City Engaged in COVID-19 Vaccine Campaign. City of Chicago. September 24, 2021. June 26, 2022. <https://stateofreform.com/news/illinois/2021/09/illinois-state-of-reform-vaccine/>
10. Centers for Disease Control and Prevention. 12 COVID-19 Vaccination Strategies for Your Community. Centers for Disease Control and Prevention. 2021. Accessed November 3, 2021, <https://www.cdc.gov/vaccines/covid-19/vaccinate-with-confidence/community.html>; <https://www.chicago.gov/city/en/sites/covid-19/home/protect-chicago.html>
11. Chicago Department of Public Health. Protect Chicago. Chicago Department of Public Health. 2021. February 15, 2022. <https://www.chicago.gov/city/en/sites/covid-19/home/protect-chicago.html>
12. Partners in Health. Chicagoland Vaccine Partnership Brings Vital Health Services, and Trust, to Neighborhoods Partners in Health. 2021. Accessed August 25, 2021, <https://www.pihs.org/article/chicagoland-vaccine-partnership-brings-vital-health-services-and-trust-neighborhoods>
13. Kim S, Bostwick W. Social Vulnerability and Racial Inequality in COVID-19 Deaths in Chicago. *Health Education & Behavior*. 2020;47(4):509–513. doi:10.1177/1090198120929677 [PubMed: 32436405]
14. Hacker K, Briss P, Richardson L, et al. COVID-19 and Chronic Disease: The Impact Now and in the Future. *Prev Chronic Dis*. 2021;18:210086. doi:DOI: 10.5888/pcd18.210086external
15. City of Chicago. COVID-19 vaccine phases and rollout. City of Chicago. 2020. June 26, 2022. <https://www.chicago.gov/city/en/sites/covid19-vaccine/home/vaccine-distribution-phases.html>
16. City of Chicago. Protect Chicago. City of Chicago. 2021. December 1, 2022. <https://www.chicago.gov/city/en/sites/covid-19/home/protect-chicago.html#:~:text=Protect%20Chicago%20Plus%20was%20a,connect%20them%20with%20vaccine.>
17. Chicago Department of Public Health. Chicago COVID-19 Community Vulnerability Index. Chicago Department of Public Health. 2021. https://www.chicago.gov/content/dam/city/sites/covid/reports/012521/Community_Vulnerability_Index_012521.pdf
18. Chicago Health Atlas. COVID-19 Primary Series Vaccine Completion Rate. Chicago Health Atlas. 2023. April 15, 2023. <https://chicagohealthatlas.org/indicators/CHAPYEB?topic=covid-19-primary-series-vaccine-completion-rate>
19. City of Chicago. Open Data Executive Order (No. 2012–2). City of Chicago. 2012. August 20, 2023. https://www.chicago.gov/city/en/narr/foia/open_data_executiveorder.html
20. PHAME Center. The Population Health Analytics, Metric and Evaluation (PHAME) Center. PHAME Center. 2023. January 15, 2023. <https://phame.uic.edu/>
21. Chicago Department of Public Health. Mayor Lightfoot and the Chicago Department of Public Health announce opening of new mass vaccination sites for healthcare workers at City Colleges of Chicago. Chicago Department of Public Health. 2021. August 15, 2023. https://www.chicago.gov/city/en/depts/cdph/provdrs/health_protection_and_response/news/2021/january/mayor-lightfoot-and-the-chicago-department-of-public-health-anno.html
22. Chicago Department of Public Health. City Colleges of Chicago and the Chicago Department of Public Health launch free Vaccine Ambassador course to allow Chicagoans to become trusted vaccine ambassadors in their communities. Chicago Department of Public Health. 2021. August 30, 2023. https://www.chicago.gov/city/en/depts/cdph/provdrs/health_protection_and_response/news/2021/may/city-colleges-of-chicago-and-the-chicago-department-of-public-he.html
23. City of Chicago. Protect Chicago: Chicago's Ongoing Equity Strategy. City of Chicago. 2021. May 1, 2023. <https://www.chicago.gov/city/en/sites/covid-19/home/protect-chicago.html#:~:text=Protect%20Chicago%20Plus%20was%20a,connect%20them%20with%20vaccine>
24. City of Chicago. For Seniors. City of Chicago. 2023. August 30, 2023. <https://www.chicago.gov/city/en/sites/covid-19/home/for-seniors.html>
25. Singh Bajaj S, Cody Stanford F. Beyond Tuskegee - Vaccine Distrust and Everyday Racism. *New England Journal of Medicine*. 2021;384:e12. doi:DOI: 10.1056/NEJMpv2035827 [PubMed: 33471971]

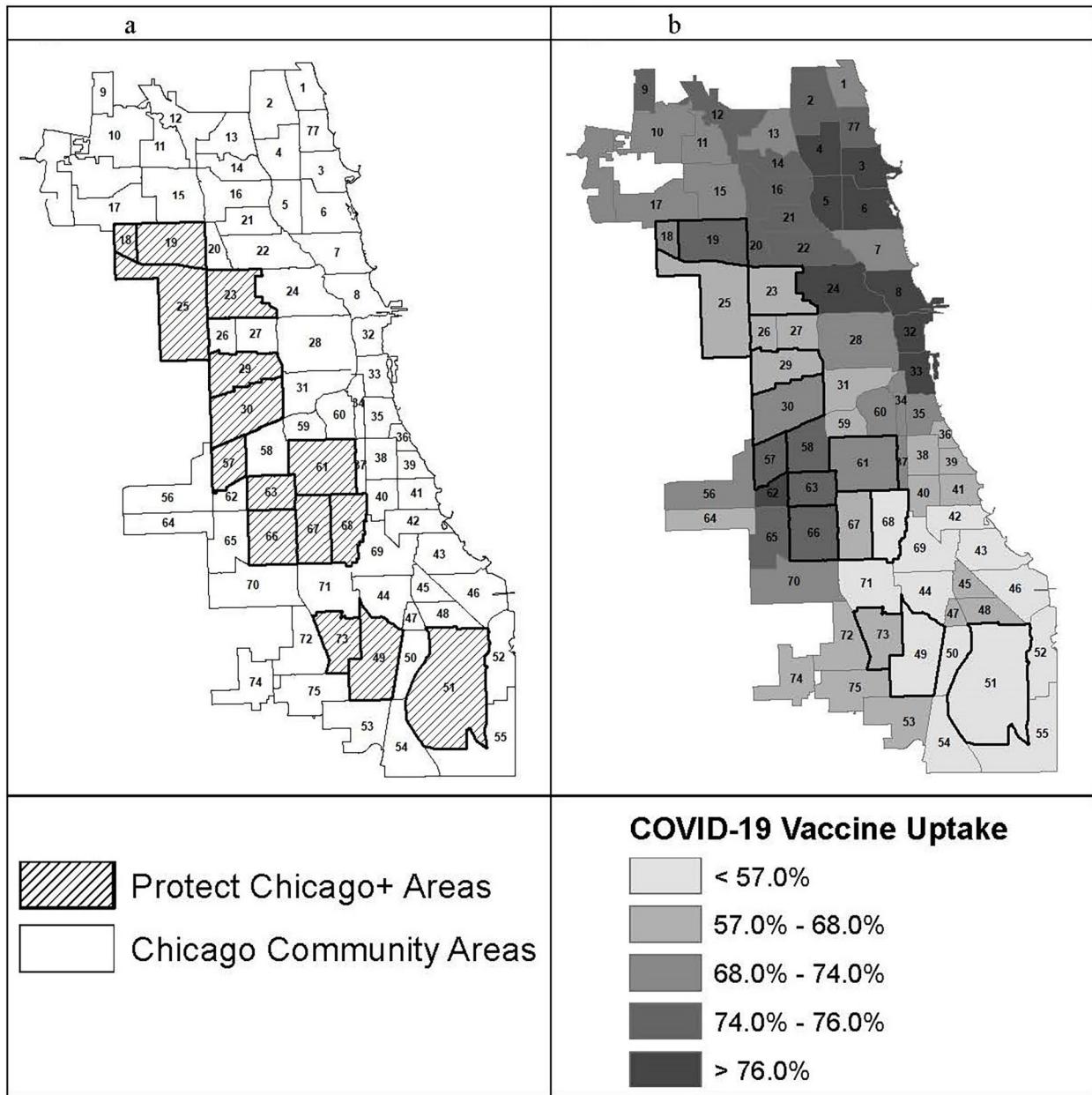
26. Martin K, Stanton A, Johnson K. Current Health Care Experiences, Medical Trust, and COVID-19 Vaccination Intention and Uptake in Black and White Americans. *Health Psychology*. 2022;doi:DOI: 10.1037/hea0001240
27. Rusoja E, Thomas B. The COVID-19 pandemic, Black mistrust, and a path forward. *Lancet*. 2021;35:100868. doi:DOI:10.1016/j.eclinm.2021.100868
28. Centers for Disease Control and Prevention. Planning for an Emergency: Strategies for Identifying and Engaging At-Risk Groups. Centers for Disease Control and Prevention. 2015. <https://www.cdc.gov/nceh/hsb/disaster/atriskguidance.pdf>
29. Lemiale V, Prakash M, Cruz AM. Data-Driven Approaches to Integrated Disaster Risk Management. *International Journal of Disaster Risk Science*. 2020;11:693–695. doi:10.1007/s13753-020-00324-4
30. Hudson D, Gilbert K, Goodman M. Promoting Authentic Academic—Community Engagement to Advance Health Equity. *Int J Environ Res Public Health*. 2023;20(4):2874. doi:doi: 10.3390/ijerph20042874 [PubMed: 36833570]
31. Rudolph L, Ben-Moshe K, Caplan J, et al. Health in All Policies. American Public Health Association. 2013. https://www.apha.org/-/media/Files/PDF/factsheets/Health_inAll_Policies_Guide_169pages.ashx

Implications for Policy & Practice

- Public health interventions aiming to improve health equity may require community outreach strategies to allocate additional resources to vulnerable and underserved communities, along with public health messaging and education.
- Despite the city-wide outreach efforts, the COVID-19 vaccine uptake rate was lower in predominantly Black communities. Black residents' participation in public health programs may be influenced by existing barriers and mistrust that could not be addressed with COVID-19 vaccine outreach initiatives. Broader social and health policies may need to tackle the consequences of historical disparities in Black communities
- Spatial clusters of lower rates of COVID-19 vaccine uptake occurred in highly segregated communities that were also affected by a myriad of chronic health conditions including diabetes, hypertension, and cardiovascular diseases. Public health programs to improve primary care for chronic illnesses will be needed to prepare for future pandemics.

**FIGURE 1.**

Vaccine Outreach Initiatives in Chicago, January 2021 – December 2021

**FIGURE 2.**

Vaccine Uptake Rates by Zip Code in Relation to Racial/Ethnic Composition and Protect Chicago+ Designation

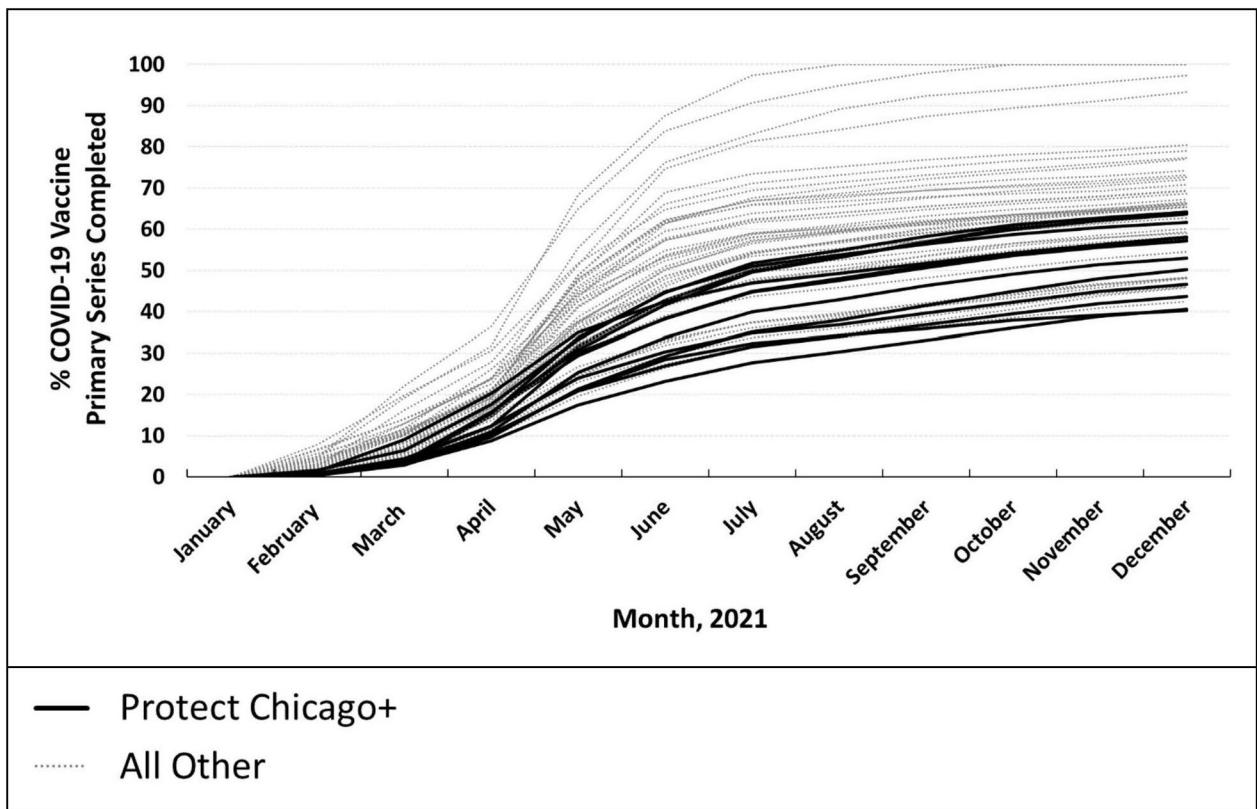


FIGURE 3.
Weekly Vaccine Uptake Over Time by Zip Code

TABLE 1.

Summary of the composition and vaccine uptake in the City of Chicago, December 2021

	Population	Vaccine Completed	Reported Cases	Deaths
	N	% population	% distribution	
Total	2,696,561	1,715,859	459,818	6,627
Gender				
Female	1,387,010	71.5	52.3	42.0
Male	1,309,551	68.9	47.4	58.0
Age (years)				
0–17	539,303	30.3	12.1	0.1
18–59	1,636,337	71.8	61.4	21.3
>=60	519,969	72.7	11.8	78.6
Race/Ethnicity				
White	887,130	71.7	24.8	16.6
Black	757,971	55.2	23.5	36.1
Hispanic	777,744	70.0	30.5	26.7
Asian	184,263	80.3	3.4	15.8

Note: City-wide vaccine data came the City of Chicago COVID-19 Vaccine Coverage Trends site: <https://www.chicago.gov/city/en/sites/covid-19/home/covid-19-vaccine-coverage.html>.

TABLE 2.

Protect Chicago+ Community areas and % vaccinated, ordered by December 2021 lowest to highest.

	% Completed primary vaccine series	CCVI* Score	% Black	% Hispanic	% White
Overall Chicago	62.5	38.2	28.8	28.7	33.1
Protect Chicago+ Communities					
29. North Lawndale	40.6	58.5	83.1	11.1	4.7
68. Englewood	41.2	55.3	91.7	4.4	1.3
67. West Englewood	44.1	63.7	85.9	10.6	1.1
18. Montclare	48.2	52.8	3.0	55.1	34.5
25. Austin	48.8	52.9	76.0	16.7	5.6
49. Roseland	48.8	54.7	95.3	1.4	1.6
61. New City	52.1	59.7	23.9	61.8	10.9
51. South Deering	52.5	52.5	64.4	30.4	4.9
73. Washington Heights	55.4	53.2	95.4	1.6	1.5
66. Chicago Lawn	56.7	57.8	39.1	56.2	2.2
30. South Lawndale	58.2	58.2	8.6	85.6	5.4
23. Humboldt Park	60.1	52.4	32.7	55.6	10.4
63. Gage Park	64.5	58.8	4.7	90.8	3.8
57. Archer Heights	64.6	53.3	0.8	79.8	15.0
19. Belmont Cragin	65.1	52.4	2.6	79.5	15.1
Communities with the vaccine rate below 50% but were not part of Protect Chicago+					
54. Riverdale	20.2	35.6	95.2	2.9	0.4
40. Washington Park	33.9	41.2	94.2	2.1	1.7
69. Greater Grand Crossing	38.9	46.0	94.8	2.2	1.0
26. West Garfield Park	39.4	47.4	92.0	4.1	2.8
43. South Shore	42.5	45.6	93.3	3.0	2.2
42. Woodlawn	42.6	37.8	79.2	2.8	10.1
46. South Chicago	45.1	43.8	72.9	21.4	4.3
27. East Garfield Park	45.2	47.9	85.9	4.9	5.6
44. Chatham	46.7	43.0	96.8	0.8	0.7
71. Auburn Gresham	47.3	48.2	94.2	3.6	0.9
53. West Pullman	47.6	49.2	89.8	7.2	0.6
55. Hegewisch	47.8	35.8	7.7	52.3	39.7
37. Fuller Park	48.3	50.1	80.2	13.7	4.1
38. Grand Boulevard	48.7	41.3	88.1	3.3	4.3

* CCVI: COVID-19 Community Vulnerability Index