Strategies for Future Preparedness: Examining the Impact of COVID-19 in Nashville
November 2021

Prepared by Avalere Health

NASHVILLE
COVID-19
RESPONSE **REVIEW**

Foreword

It is clear in the United States, the unfolding of the COVID-19 pandemic has illuminated a fragmented healthcare system that has deeply impacted vulnerable and underserved populations. As with any other public health crisis, it is evident that social determinants of health have an important influence on health equities. The pandemic has also highlighted consistent underinvestment in emergency preparedness and public health infrastructure, while highlighting the value of data-driven leadership at all levels of government. A lack of clearly defined roles and responsibilities in federal pandemic response planning impeded the rapid mobilization of emergency personnel and supplies needed for an effective national, state or local emergency response. Furthermore, as with any type of natural disaster or public health crisis, persistent inequities have placed socially vulnerable populations at the greatest risk. The zip code of an individual's residence can differentiate a six-year decrement to life expectancy, twice the rate of unemployment, and five times difference in poverty.

In the time of COVID-19, the Nashville community is experiencing a growing young and diverse population, robust healthcare industry, and a notable tourism industry footprint. The compounded challenges over the course of the COVID-19 pandemic have highlighted racial and ethnic disparities in Nashville as it relates to case rates, hospitalization rates, and mortality rates, consistent with national trends. As the nation and world continue to grapple with COVID-19, there is much to learn about how to improve public health preparedness protocols for the general public, front-line workers, and healthcare facilities of all forms; support small and large businesses in crises; implement emergency preparedness plans for schools; and coordinate testing and vaccine services. To that end, the Nashville COVID-19 Project Leadership Team and Avalere Health are proud to present the "Strategies for Future Preparedness: Examining the Impact of COVID-19 in Nashville" report.

By highlighting the imperative of addressing inequities that create unjust outcomes, the pandemic has created unprecedented momentum among a broad range of stakeholders to address pitfalls through collaborative solutions. The ideas presented here – reflecting diverse perspectives – are intended to be iterative, understanding that there are key action steps that can be taken right away, but that various activities will take place over time with consistent evaluation. This groundbreaking report can serve as a valuable resource to guide evidence-based decision-making and equity-informed actions, and we encourage its use to build partnerships and catalyze the implementation of the solutions presented.

NashvilleHealth

NashvilleHealth is a bold initiative that creates a culture of health and well-being by serving as a convener to open dialogue, align resources and build smart strategic partnerships to forge a dynamic plan to measurably improve the health of all Nashvillians.

Avalere Health

Avalere Health is a vibrant community of innovative thinkers dedicated to solving the challenges of the healthcare system. Avalere delivers a comprehensive perspective, compelling substance, and creative solutions to help you make better business decisions. As an Inovalon company, Avalere prizes insights and strategies driven by robust data to achieve meaningful results.

Acknowledgements

This project is made possible with support from the following organizations: Amerigroup, Ascension Saint Thomas, HCA Healthcare | Tri-Star Division, Meharry Medical College Center for the Study of Social Determinants of Health, Vanderbilt University Medical Center, The Frist Foundation, United Way of Greater Nashville, The Healing Trust, NashvilleHealth, Nashville Area Chamber of Commerce, Nashville Health Care Council, and the Joe C. Davis Foundation.

The Nashville COVID-19 Project Leadership Team and Avalere Health want to extend their heartfelt gratitude to the Nashville frontline workers who worked (and continue to) tirelessly throughout the pandemic to protect the Nashville communities.

Additional contributors to this project include:

- Avalere Health research and writing team support (in alphabetical order): Morenike AyoVaughan, Emily Belowich, Michelle Bruno, Jasmaine McClain, Kristi Mitchell, Mallory Yung
- Ongoing support and oversight: Former Mayor of Nashville Bill Purcell and Former U.S. Senate Majority Leader Bill Frist, M.D.
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    - Tama Van Decar, M.D., HCA Healthcare | Tri-Star Division
    - Kelly Shearin, Amerigroup
    - Kristen Keely-Dinger, The Healing Trust
    - Angela Goddard, Joe C. Davis Foundation
    - Brian Hassett, United Way of Greater Nashville
    - Wright Pinson, M.D., Vanderbilt University Medical Center
    - Gregory James, M.D., Ascension Saint Thomas
    - James Hildreth, Ph.D., M.D., Meharry Medical College
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    - Ben Eagles, Office of Mayor John Cooper
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    - Nancy Keil, Second Harvest Food Bank
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    - Steve Brophy, Dollar General
    - Brian Haile, Neighborhood Health
    - Sallie Hussey, Fifty Forward
    - TN Representative Harold Love, Ph.D., Lee Chapel AME Church
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- Caroline Young, NashvilleHealth
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Preferred Citation: NashvilleHealth and Avalere Health. (2021). Strategies for Future Preparedness: Examining the Impact of COVID-19 in Nashville.
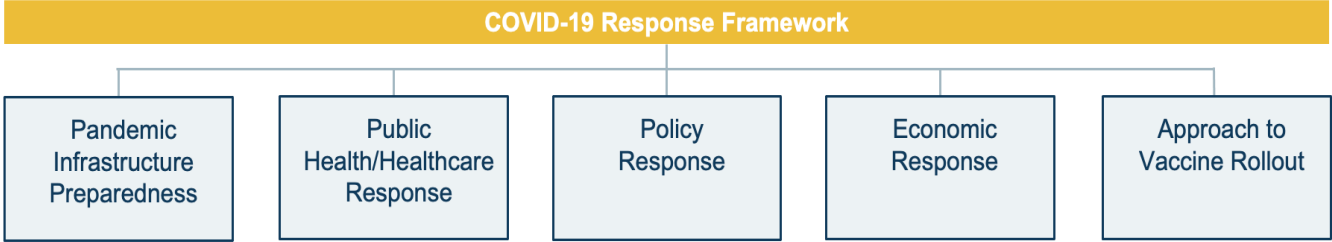
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Executive Summary

The COVID-19 pandemic has left both a public health and economic crisis in the United States. Rates of burnout and trauma have increased among medical staff. Mental health and substance use cases have skyrocketed. Children have taken on an unthinkable toll – socially, emotionally, and academically. Mass layoffs and business closures have exacerbated homelessness, along with economic and food insecurity. In cities across the U.S., individuals living in households have been faced with life-threatening health challenges, compounded with COVID-19's impact on their finances, housing, education, food security, transportation, caregiving, and well-being.

This report reviews the impact of COVID-19 on Nashville communities and offers recommendations for future preparedness. The report – told through the perspectives of various stakeholder groups – explores the responses to key questions such as:

- How were Nashville residents impacted, and what was executed in response to support them? Specifically, what was the impact to vulnerable populations and what types of targeted support was provided to these community groups?

- How did independent hospitals and large hospital systems fare, and what resources were available to them?

- What was the role of the public health department, and how did that governing body support data-driven efforts to trace infection, case, and mortality rates?

- How were public health mitigation strategies communicated, and who communicated them?

- How was testing and vaccination coordinated, and were these services available to all those who needed them?

In March 2021, the Nashville COVID-19 Project Leadership Team and Avalere Health developed a framework to organize categories of the COVID-19 response that broadly encompass the pandemic response into the following five topics for assessment:

COVID-19 Response Framework				
Pandemic Infrastructure Preparedness	Public Health/Healthcare Response	Policy Response	Economic Response	Approach to Vaccine Rollout

Note: Corresponding metrics and elements for each of these framework components to assess the pandemic response are presented in Appendix 5.

From May through July 2021, Avalere Health conducted 32 formal interviews with key Nashville leaders and reviewed relevant public reports and available documentation to obtain specific insights on city dynamics and historical approaches to decision-making. While this report highlights interviews that took place within that timeframe, further conversations were held with community leaders in later months to clarify statements made by interviewees and provide greater context to interview findings. Throughout the report, the findings shed a particular light on vulnerable populations, those disproportionately affected by the pandemic. To provide

additional context and highlight where other municipalities differed or were aligned with specific aspects of Nashville's pandemic response, the report references comparator examples across three cities that share similar demographic and population health characteristics to Nashville: : **Austin, Jacksonville,** and **Indianapolis.**

Throughout this project, Avalere Health coordinated closely with the Nashville COVID-19 Response Review project Steering Committee, who consistently provided guidance on each step of the project. The role of the Steering Committee was to provide key insights from the Nashville community to bolster the report overall, ensure accuracy of findings, and to identify key community leadership well positioned to execute the recommendations. Further, the Steering Committee also provided guidance regarding the actors who could/would/should be engaged to execute on the recommendations.

The analysis has culminated in this report – which synthesizes key findings and offers short-, mid-, and long-term recommendations for Nashville community leaders to carry forward. While the five categories of the framework initially guided interviews and themes, the findings are presented by stakeholder group, and also highlight connections between stakeholder groups and recommendations. The intent is that the short-term recommendations are immediately actionable tactics that may be utilized from now until eight months in the future, while the mid- and long-term solutions provide strategies to carry forward in the next 9-24+ months to inform future public health emergency planning.

Key Findings

- ❖ Nashville Mayor John Cooper and local leaders consistently emphasized a **data-driven approach** in pandemic planning efforts to guide decision-making and to align planning efforts across a diverse range of community leaders – in terms of perspectives, sectors, and backgrounds – to keep the city ahead of regional trends in implementing time-sensitive public health measures to mitigate the spread of COVID-19.

- ❖ From the earliest stages of the pandemic, Mayor Cooper's communications and crisis management infrastructure — created in partnership with Nashville's Convention & Visitors Corp (CVC) — was perceived as an effective vehicle for disseminating important messaging, particularly with the involvement of trusted community leaders (e.g., Drs. James Hildreth and Alex Jahangir). Throughout the pandemic, **the role of trust has played a major role** in ensuring residents' adherence to guidelines/protocols when communication was shared by trusted messengers (e.g., faith community leaders), recognizing that there remains mistrust of government authorities in certain communities.

- ❖ The Metro Public Health Department (MPHD) leveraged existing relationships and built new partnerships with community leaders who are trusted among vulnerable populations as a key strategy to increase vaccine uptake among those populations. For example, **grassroots partnerships among Nashville's community health centers and community-based organizations were critical** for conducting outreach to address immigrant and refugee communities' concerns about the vaccine. Further, some large

businesses that employ many front-line workers gave their workers financial incentives to take time off work and get vaccinated.

❖ Amidst serious disruptions to school systems nationwide that presented fluctuating enrollment rates throughout the 2020-21 school year, Nashville's main education providers – Metro Nashville Public Schools (MNPS) and Metro Action Commission (MAC) – **worked to provide innovative solutions to students and families**, including the setup of six outdoor virtual learning centers through MNPS, the establishment of a 1:1 technology-to-student policy, provision of hotspots for Internet access, and regional virtual learning support centers.

❖ Leading up to this public health emergency, **the Nashville community was uniquely experienced in coordinating responses to disasters and mobilizing volunteers** compared to other U.S. metropolitan cities given its resilience over the years (and during the pandemic) to bombings, the threat of anthrax attacks, floods, tornadoes, and other emergency situations.

❖ **Nashville's philanthropic community used a data-driven approach toward relief allocation.** The Middle TN Donors' Forum and United Way of Greater Nashville leveraged digital platforms (e.g., CharityTracker) to track funds being deployed for specific types of support (e.g., food insecurity, rental assistance). This allowed funders to visualize areas of need that were lagging in funding and allocate their dollars accordingly.

❖ Nashville's economy (and its 12 surrounding counties) lost an estimated $25.8 billion in 2020 – about 11.7% of its gross domestic product – specifically due to the impact of COVID-19 on the tourism, music, and hospitality industries.[1] **Small businesses in particular were less resilient than larger businesses** given the scale of processes, infrastructure, and scarcity of funds, despite supporting resources such as the Paycheck Protection Program and other SBA loans.

❖ Although access to individual economic relief was beneficial, **the process of applying for economic relief was reported difficult for Nashville residents to navigate**. Individuals and families applying for direct financial assistance through the Metro CARES Act Fund communicated challenges with navigating the multi-agency relief network. For many, this was their first time seeking assistance, which posed an additional barrier for individuals looking for support services with limited prior knowledge of available services.

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[1]   Nashville Chamber of Commerce and Greater Nashville Regional Council. "Nashville Region's Vital Signs 2020." https://s3.amazonaws.com/nashvillechamber.com/PDFs/VitalSigns_2020.pdf.

- ❖ Aligned with national trends, **it was challenging to contain disease spread in Nashville's homeless shelters and safely protect unhoused individuals**. Homeless shelters experienced outbreaks early, but the city worked to quickly set up housing areas for those that had exposure to the virus.

- ❖ **Testing was a key public health surveillance tool** to track and mitigate disease transmission as part of Nashville's re-opening plan. In the earliest stages of the pandemic, MPHD encountered a challenging situation with its contracted medical laboratory company to process COVID-19 testing results in a timely fashion, given limited capacity and resources. After delays, MPHD switched to two Nashville-based laboratory companies to address this concern, **but previous delays created challenges in data monitoring and consistent contact tracing**.

- ❖ **Due to Nashville's tourism footprint, Nashville faced additional challenges** in monitoring and enforcing compliance with public health measures due to its constant turnover of out-of-town visitors. These trends were also compounded by discrepancies between state and local public health measures across county lines (e.g., indoor mask mandates).

- ❖ **Vulnerable populations in Nashville were disproportionately impacted by public health measures** (e.g., stay-at-home orders, business closures, school closures) and needed diverse vehicles of support. Food insecurity was a major area of need that Metro and organizations like Second Harvest Food Bank addressed early on given the pandemic's economic impact and the loss of school free meals for many low-income families. Further, the Community Resource Center delivered food boxes and PPE/hygiene kits to homebound or highly vulnerable Metro Development and Housing Authority residents.

- ❖ As observed in federal, state, local, tribal and territorial health agencies across the U.S., **the pandemic called attention to the lack of a robust public health infrastructure**.[2] MPHD, for example, encountered barriers to obtain all of the financial (e.g., funding for community programming) and physical (e.g., COVID-19 testing) resources necessary to protect individuals, businesses and communities. The lack of sufficient resources and staffing to effectively support the demand for contact-tracing, testing, and other foundational public health capabilities placed significant burden particularly on vulnerable populations.

- ❖ Aligned with national trends, differences in **information sharing and limited interoperability between health data systems posed a major challenge** in Nashville for sending and receiving data between healthcare facilities, labs, and health departments. This finding was particularly true for race/ethnicity data.

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[2] Bailey, Susan R. "Pandemic Exposes Dire Need to Rebuild Public Health Infrastructure." American Medical Association, https://www.ama-assn.org/about/leadership/pandemic-exposes-dire-need-rebuild-public-health-infrastructure.

Recommendations

The recommendations below highlight short, medium and long-term changes that Nashville government, business and community leaders should consider – as quickly as within the next eight months – to address current concerns of the ongoing pandemic and improve readiness for future public health emergencies. The recommendations cut across all five categories of the framework and include suggested entities for leadership and partnership, as well as a specific delineation for state government involvement.

Timing	Recommendations
Short-Term 0-8 months	A. The Nashville COVID-19 Response Review project Steering Committee can continue convening to identify implementation barriers that should be addressed to make report recommendations more actionable. As part of this, the Committee should develop equity questions that must be answered by decision-makers during public health emergency planning and response efforts.
	B. Continue to update and tailor culturally responsive messaging and educational materials that communicate federal, state, or local COVID-19 updates (e.g., eligibility for booster shots) and also address community-specific concerns related to COVID-19 vaccines, relying on leaders in community health clinics, local faith and ethnic communities, community-based organizations, and local businesses to support delivery of public health messaging as trusted messengers.
	C. Utilize the Mayor's business leadership advisory committee to provide programming to educate local business leaders on establishing, maintaining, and regularly updating appropriate COVID-19 protocols in non-healthcare workplaces. The programming should align with best practices as laid out by employer groups and emerging evidence from recognized scientific bodies (e.g., Centers for Disease Control and Prevention (CDC)) on COVID-19 vaccine and testing protocols.
	D. Develop standardized COVID-19 protocols in collaboration with the Convention & Visitors Corporation (CVC) and individual venue owners that apply to conventions and other large-scale events to regularly maintain a high level of economic activity.
	E. Develop a COVID-19 testing contingency plan to establish additional testing sites that can be rapidly activated to help mitigate potential hotspot areas as cases rise, to the extent possible. This could also be accomplished by continuing to utilize a Strike Team strategy.
	F. Continue to convene the multi-sector Nashville COVID-19 Response Review project Steering Committee to identify a set of core pandemic preparedness metrics that could be used to assess the city's future performance on key aspects of Nashville's pandemic response (e.g., perception of communication, degree of community engagement). These metrics would help drive stakeholder alignment and accountability in future PHEs.
	G. Building on MPHD's new patient registry, explore the feasibility of integrating other sources of clinical data from non-MPHD healthcare providers that serve different patient populations (e.g., private health systems, community health centers).
	H. Leveraging a Social Vulnerabilities Index (SVI), identify geographic locations and communities where populations are at the greatest risk for negative socioeconomic and health outcomes associated with natural disasters (e.g., global pandemics) to inform policymaking and planning for future PHEs.

Timing	Recommendations
Mid-Term 9 months-2 years	**A.** To mitigate potential disparities in future PHEs, conduct a comprehensive resource landscape assessment in known hotspot areas. Use this information to better understand residents' perspectives on needed services/resources that are currently lacking in their communities, and to drive better decision-making and resource allocation.
	B. Create an online "Equitable Policy-Making" training module that would require mandatory participation for key Metro government employees, Metro Council members and decision-makers on an annual basis.
	C. Present findings from the COVID-19 Response Review project to Metro Nashville Public Schools (MNPS) and Metropolitan Action Commissions (MAC) officials. Offer support as needed when MNPS and MAC conduct evaluation around their COVID-19 student support initiatives (e.g., 1-to-1 technology-to-student ratio, school lunch delivery).
	D. To ease user and administrative burdens and streamline processes, create centralized, web-based portals with standardized protocols that residents and businesses can use when applying for economic relief. These portals would collect the information that is necessary to adjudicate eligibility and notify recipients of the status of their economic relief application.
	E. To strengthen future PHE preparedness, develop an inventory of pandemic contingency sites for testing, vaccination, and community-based surge capacity. Stakeholders should continuously monitor the availability of appropriate locations and focus efforts on vulnerable regions that are expected to be impacted the most.
	F. To address recommendations from Nashville's recent Digital Inclusion Assessment, strengthen and support public/private partnerships that increase access to broadband Internet and technologies in underserved areas.
	G. To ensure that MPHD has strong, long-term leadership, the Board of Health should assess mechanisms for growing the pool of qualified candidates for future MPHD Director recruitment. This could include revisiting the requirement that the Director must be a physician, or potentially improving compensation and benefits to garner broader interest.
Long-Term 2+ years	**A.** Continue to strengthen and maintain public-private partnerships at the federal, state, and local levels to establish public health and hospital-level data standards and standardized mandatory reporting requirements that indicate what data elements must be reported and the submission method that should be used.
	B. Leverage gains made in healthcare delivery during COVID-19 (e.g., expansion of access to telehealth, remote patient monitoring) to address barriers to healthcare access for populations that would benefit from receiving healthcare services virtually (e.g., working adults), with a focus on vulnerable populations (e.g., disabled, elderly, etc.)
	C. Create and maintain centralized crisis resource repositories (e.g., Personal Protective Equipment (PPE), hygiene supplies) dedicated to addressing shortages among non-profit and community-based organizations, as well as among vulnerable groups. The repository should also have associated distribution plans that incorporate a prioritization algorithm to equitably allocate resources to organizations based on degree of risk.
	D. Use COVID-19 after-action learnings to develop PHE-specific procedures and protocols (e.g., triage guidelines) for inclusion in state and local emergency management plans, hazard mitigation plans, and crisis standards of care guidelines. Ideally, these resources would incorporate the pandemic preparedness metrics identified by the COVID-19 Response Review Steering Committee in short-term recommendation F.
	E. Building on pandemic learnings, develop citywide protocols and an activation plan for streamlining the continuum of care of medically indigent populations during a PHE. (e.g., people experiencing homelessness).

Timing	Recommendations
	F. To support sustainable tourism recovery in future PHEs, develop and regularly update standardized pandemic operating protocols for businesses and hotels located in Nashville's tourist areas in collaboration with the CVC and local business owners.
	G. Publish an easily understandable online dashboard that communicates city-wide progress on the pandemic preparedness metrics identified by the COVID-19 Response Review Steering Committee in short-term recommendation F.
	H. Elevate leaders of Nashville's racial-ethnic minority faith communities and Voluntary Organizations Active in Disaster (VOAD) leadership as key components of Nashville's pandemic response infrastructure and emergency decision-making bodies in future PHEs, including the Office of Emergency Management's (OEM) Emergency Operations Committee.
	I. Involve small/local businesses, safety net entities, and community-based organizations in Metro Government's future tabletop disaster preparedness drills.
	J. Prioritize regular investments in public health infrastructure and crisis readiness to strengthen local emergency response infrastructure by assuring annual funding for MPHD, OEM and requiring local government agencies to designate a funding amount for their PHE preparedness activities as part of Metro Government's annual budgetary process.
	K. To ensure MPHD has consistent and trusted leadership that receives community buy-in, continually assess the composition of MPHD leadership and ensure that it reflects the diversity of the Davidson County population. Consider involving community leaders in future leadership recruitment processes through citizen committees comprised of membership that is reflective of Davidson County's different constituent groups.
	L. Identify metrics that would add value for residents' decision-making if publicly reported in future PHEs (e.g., testing line wait time) and identify methods of dissemination to ensure that this information is readily accessible and usable for all Nashville residents (e.g., utilizing digital highway signs).
	M. Create an ad-hoc advisory board to convene leaders from other county governments belonging to the Nashville Metropolitan Statistical Area (MSA) along with the other major TN counties that have their own autonomous health departments to ensure alignment of PHE policies and measures, to the extent possible.

Limitations

This final report was compiled using qualitative research methods, including content analysis, to conduct a review of the COVID-19 response in Nashville. Specifically, while stakeholder interviews were conducted with most community leaders, the array of large business owners that were interviewed was limited. While the perspectives represent a diverse range of community constituent groups in Nashville, it is important to note that these findings may not capture *all* perspectives of Nashville's residents. Additionally, given that interviews were held from May – June 2021, it is possible that there is some level of recall bias that may be present in the report, given that some details may have been forgotten at the time of interviews and/or some of the perceived challenges have been addressed at this current date and time.

As noted, the report reflects synthesized interview findings as well as relevant public reports and available documentation from Steering Committee members to obtain specific insights on city dynamics and historical approaches to decision-making. Qualitative research coding was used to summarize and analyze themes of the interview transcripts and available documents. This review *did not* involve leveraging any type of survey tools with close-ended questions or quantitative statistical analyses. For example, surveys were not disseminated to business owners asking them to rate their experience in navigating economic relief using a particular scale, and community stakeholders were not asked to quantify the impact of the pandemic on their livelihood. The community may seek to conduct this type of evaluation in the coming months.

Additionally, while this report represents the perspectives of various stakeholder and community groups, limited interviews were held with Nashville residents that would provide a direct perspective on the pandemic's impact on Nashville residents. Last, interviews took place between May 4 and June 29 of 2021, providing a perspective about events pertaining to the pandemic up until that timeframe.

Conclusion

This landmark report highlights the impact of the COVID-19 in Nashville, as well as strategies for future preparedness, particularly with regard to vulnerable populations. The recommendations are intended to offer immediate solutions and to solidify Nashville's existing practices that are actionable across multiple stakeholder groups. Moreover, the scale of the pandemic's impact has underscored an urgent need for collaborative action to address gaps in Nashville's pandemic response. The COVID-19 Project Steering Committee is a prime example of a multi-sector, collaborative effort that has culminated in this report. Accordingly, the recommendations enumerated in the following section are intended to be collaborative solutions that build on the foundation put in place by this Steering Committee.

Introduction

This report presents a review of Nashville's response to the COVID-19 pandemic. The overall purpose of this review is to identify best practices or key areas of improvement in Nashville's ongoing response to the COVID-19 pandemic that can be implemented immediately as this pandemic continues, as well as long-term improvements that can be implemented for future healthcare crises. This review is intended to help Nashville learn and take improvement actions, and to reflect on the early operations. It is focused on the period from January 2020 through the end of July 2021, and the multiple stakeholders' roles and responsibilities in the city's overall response.

Any stakeholder in Nashville with a vested interest in improving future responses to public health emergencies (PHEs) may benefit from reviewing this report. These stakeholders may include but are not limited to:

- ❖ Hospital administrators
- ❖ School officials
- ❖ Faith-based communities and leaders
- ❖ Public health department leaders
- ❖ Representatives (or Council Members) from the Metropolitan Council
- ❖ Nashville Mayor's Office
- ❖ State-level government leaders
- ❖ Community-based organizations (CBOs)
- ❖ Non-health care facilities, such as food banks or homeless shelters
- ❖ Assisted living leaders
- ❖ Professional societies
- ❖ Chambers of Commerce
- ❖ Philanthropy leaders

Evolution of the COVID-19 Pandemic

Since images first appeared in January 2020 showing the city of Wuhan in lockdown where officials attempted to contain a mysterious virus, the COVID-19 pandemic has evolved into an unprecedented crisis, impacting communities on a global scale. On January 30, 2020, the World Health Organization (WHO) declared the outbreak a "public health emergency of international concern," and only one day later, on January 31, 2020, the U.S. Department of Health and Human Services (HHS) Secretary Alex M. Azar II declared a nationwide public health emergency (PHE) to aid the U.S. health care community in responding to COVID-19. As infection rates and mortality grew, the WHO declared COVID-19 a global pandemic on March 11, 2020.[3] At that time, public health authorities began to recognize the risks associated with the novel coronavirus classified as SARS-CoV-2 and its associated disease, known as "coronavirus disease 2019" or "COVID-19."

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[3] Katella, Kathy. "Our Pandemic Year—A COVID-19 Timeline." https://www.yalemedicine.org/news/covid-timeline.

The highly contagious and virulent nature of this disease has led to the worldwide spread of significant illness and death. At the time of writing this report, there have been 219 million cases of COVID-19 worldwide, with over 4.55 million deaths. The dramatic loss of human life worldwide presents an unprecedented challenge to public health, food systems, and the workforce. Poor and vulnerable populations have been severely affected since COVID-19 first appeared, and the ongoing pandemic threatens to push many more into poverty. Public health restrictions that were implemented early on to slow the spread of the virus by the Centers for Disease Control & Prevention (CDC), including lockdowns, mask mandates, and social distancing, alleviated pressure on the strained and vulnerable health system. In turn, however, these restrictions have had an enormous impact on economic growth. In 2020, the COVID-19 recession saw the fastest, steepest downgrades in consensus growth projections among all global recessions since 1990.[4]

"COVID-19 has triggered a global crisis like no other – a global health crisis that, in addition to an enormous human toll, is leading to the deepest global recession since the Second World War."

Source: June 2020 Edition of Global Economic Prospects

COVID-19 has also presented a disproportionate impact on the elderly population, the immunocompromised, nursing home residents, people with disabilities, and individuals with a variety of underlying conditions, including obesity, diabetes, heart conditions, and chronic obstructive pulmonary disease. In addition, workers who have had to show up every single day since the beginning of the pandemic represent a portion of the "essential workers" who face an inordinate risk of exposure to COVID-19 – these include health care workers, first responders, meat packers, poultry workers, and public transportation employees. Additionally, members of racial and ethnic minority groups, multigenerational families, and lower income individuals are disproportionately burdened by a higher incidence of simultaneous multiple chronic diseases or conditions and a decreased capacity to maintain mitigation measures such as social distancing.[5]

The intensity of the COVID-19 impact has driven the need for leaders – across communities of all sizes – to assess in real time the effectiveness of multi-level efforts that were implemented to provide information to the public, stabilize the economy, and ultimately save lives. This particular report focuses on the Nashville metropolitan area.

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[4] Blake, Paul, and Divyanshi Wadhwa. "2020 Year in Review: The Impact of COVID-19 in 12 Charts." https://blogs.worldbank.org/voices/2020-year-review-impact-covid-19-12-charts.
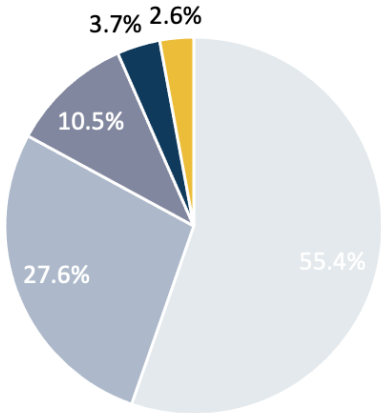
[5] FEMA. "Pandemic Response to Coronavirus Disease 2019 (COVID-19): Initial Assessment Report." January 2021. Retrieved from: https://www.fema.gov/sites/default/files/documents/fema_covid-19-initial-assessment-report_2021.pdf.
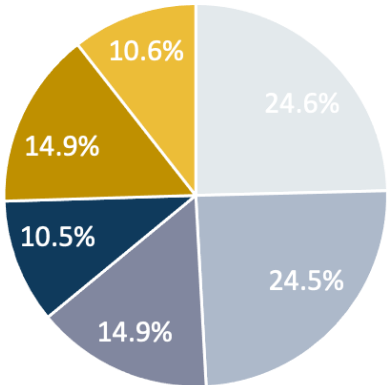
Background on Nashville

Nashville, the capital of Tennessee, is the 21st most-populous city in the United States and the third most populous in the Southeastern United States. At the time of the 2020 census, Metro Nashville's population was 670,820, representing an 11.2% population increase over the last decade. As one of the most diverse cities in Tennessee, Nashville is home to a growing number of minority residents, including the largest Kurdish population in the US, and has been projected to become a majority minority city within 20 years.[6] Figure 1 outlines the racial and age composition of residents in the Greater Metropolitan Nashville area based on 2019 data.

Figure 1: Metro Nashville/Davidson County Racial and Age Composition, 2019[7]

Metro Nashville/Davidson County Racial Composition, 2019

- 3.7%
- 2.6%
- 10.5%
- 27.6%
- 55.4%

Legend:
- White
- Black or African American
- Hispanic or Latino (of any race)
- Asian
- Other or Two or More Races

Metro Nashville/Davidson County Age Composition, 2019

- 10.6%
- 14.9%
- 10.5%
- 14.9%
- 24.5%
- 24.6%

Legend:
- 0-19 Years
- 20-29 Years
- 30-39 Years
- 40-49 Years
- 50-64 Years
- 65+ Years

Source: U.S. Census Bureau Quick Facts (see references list).

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[6]   Schmitt, Brad, and Mike Fant. "Do You Think Nashvillians Live in Cultural, Racial, and Ethnic Harmony?" *The Tennessean*, July 18, 2020. Retrieved from: https://www.tennessean.com/story/news/2020/07/18/do-you-think-nashville-has-racial-ethnic-unity-and-equal-opportunity/5390321002/.

[7]   U.S. Census Bureau. "Quickfacts: Nashville-Davidson Metropolitan Government (Balance), Tennessee." 2020. Retrieved from: https://www.census.gov/quickfacts/fact/table/nashvilledavidsonmetropolitangovernmentbalancetennessee/PST040219#PST040219.

Crisis and Public Health Planning in Nashville Prior to COVID-19

Prior to the COVID-19 era, Nashville's "crisis" planning has historically been in response to two types of emergencies: natural disasters and public health emergencies (PHE). The Nashville Ice Storm (otherwise known as the Great Blizzard) of 1951 is one of the earliest examples of a complete shutdown of transportation for two days in the Nashville area, along with prolonged power outages.[8] Over the last 60 years, Nashville has responded to anthrax attacks, floods, and tornadoes leaving a lasting impact on businesses, schools, and the local economy. In particular, the 2010 flood is cited as the seminal event that highlighted shortcomings in Nashville's emergency preparedness infrastructure and prompted improvements to the city's Comprehensive Emergency Management Plan (CEMP). The CEMP outlines plans for coordination between Metro agencies, non-profits, and other partners on the Office of Emergency Management's (OEM) Emergency Operations Committee during a crisis. These disasters have positioned Nashville as a city that carried forward new learnings and strategies from previous crises—whether it was stocking solar battery chargers and charging kits in Metropolitan Action Commission (MAC) Head Start centers or maintaining supplies of non-perishable foods on Metro Government premises.

Communicable diseases have plagued Tennessee from as early as the 19th century, with a cholera epidemic the Knoxville area in 1838, followed by outbreaks of Yellow Fever, measles, and Swine Flu, that continued to impact the state well into the 20th century.[9] However, it was not until the anthrax attacks immediately following 9/11 that the federal government began to shore up health department capacity through the CDC's Public Health Emergency Preparedness (PHEP) program to ensure that local health departments across the nation can effectively respond to public health crises. In more recent years, the PHEP program has provided additional funding to support states and localities in responding to communicable disease outbreaks, such as the Zika virus epidemic in 2017. The response to Zika and recent pandemics (e.g., H1N1) has brought forward a new age of public health emergency planning, integrating technology with new knowledge about how to treat infectious diseases.[10] In Tennessee, the HEALTHCARE Resource Tracking System (HRTS) is an example of a novel monitoring and surveillance system that allows community and health systems leaders to view critical hospital-level emergency response information such as hospital bed availability, facility status, and resource levels/capacities in real or near-real time.[11]

Coordinated learnings from these natural disasters and previous public health crises played a role in the "preparedness" that Nashville leaders carried forward into COVID-19 pandemic planning.

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8 Mark A. Rose. "The Nashville Ice Storm of 1951." National Weather Service, Retrieved from: https://www.weather.gov/ohx/1951icestorm.
9 Tennessee Department of Health. "Health Department History Pre-1900." https://www.tn.gov/health/history-of-public-health-in-tennessee/pre-1900.html.
10 Centers for Disease Control. "Public Health Emergency Preparedness Cooperative Agreement (PHEP) Program." 2017. Retrieved from: https://stacks.cdc.gov/view/cdc/56421/cdc_56421_DS1.pdf.
11 Tennessee Department of Health. "Guidance for the Ethical Allocation of Scarce Resources During a Community-Wide Public Health Emergency as Declared by the Governor of Tennessee." 2020. Retrieved from: https://www.tn.gov/content/dam/tn/health/documents/cedep/ep/Guidance_for_the_Ethical_Allocation_of_Scarce_Resources.pdf.

The Tennessee government maintains pandemic planning tools which were able to serve as guidance documents in initial COVID-19 response. Tennessee's "Standard State Hazard Mitigation Plan," developed by the Department of Military and Tennessee Emergency Management Agency (TEMA), is one example of an emergency preparedness plan to document the efforts and intentions of the Tennessee Hazard Mitigation Program in reducing the vulnerability of the state to all hazards, including communicable disease outbreaks.[12] The state's "Guidance for the Ethical Allocation of Scarce Resources during a Community-Wide Public Health Emergency as Declared by the Governor of Tennessee," which was updated in June 2020, also guides and supports decision-making for stakeholders at the state, local, and hospital facility levels when the hospital capacity is depleted to a level that requires activation of crisis standards of care.[13] As outlined in these guidelines, the decision to implement these crisis guidelines is left up to individual hospitals.

Nashville community leaders also relied on the Tennessee Department of Health's (TDH) Novel Virus Pandemic Influenza Response Plan to better understand how to provide decision-makers with actionable steps to take in response to the pandemic.[14] The detailed plan, established in January 2017, provided the foundation for some of the initial steps taken by local and state municipalities, including mitigation strategies such as the use of social distancing measures, voluntary home quarantine of household member(s) with confirmed or probable case(s), and isolation and treatment of at-risk persons with confirmed or probable exposure to the pandemic virus.

Unique Factors in Nashville that Shaped the City's COVID-19 Response

Like many other metropolitan US cities, the coronavirus pandemic has had a profound impact on Nashville's businesses and residents. As the largest metropolitan area in the state of Tennessee, there are several contextual factors unique to Nashville that have shaped the city's pandemic response:

1) **Nashville was already in crisis mode prior to the onset of the pandemic in Tennessee.** Metro's Office of Emergency Management (OEM) and volunteers had already been activated to respond to the widespread damage caused by an EF-3 tornado that hit the Middle Tennessee region on March 3, 2020. The tornado killed 25 people in Middle TN, destroyed more than 1,600 buildings—including more than 400 homes—and damaged some 2,700 others.[15] It also destroyed a Mt. Juliet warehouse that stored hospital supplies including personal protective equipment (PPE) for Vanderbilt University Medical Center (VUMC) and Nashville General Hospital.[16]

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[12] Tennessee Emergency Management Agency. "State of Tennessee Hazard Mitigation Plan." 2018. Retrieved from: https://www.tn.gov/content/dam/tn/tema/documents/hazard-mitigation-plan/Tennessee%20Hazard%20Mitigation%20Plan%202018%20FINAL.pdf.

[13] Tennessee Department of Health. "Guidance for the Ethical Allocation of Scarce Resources."

[14] Tennessee Department of Health. "State Department of Health Novel Virus/Pandemic Influenza Response Plan." 2020. https://wpln.org/wp-content/uploads/sites/7/2020/03/Final-2020-Novel-VirusPan-Flu-Plan.pdf.

[15] WPLN Staff. "The Tennessee Tornadoes of 2020, One Year Later." *WPLN*, February 28, 2021. Retrieved from: https://wpln.org/post/the-tennessee-tornadoes-of-2020-one-year-later/.

[16] Andy Humbles. "Mt. Juliet Warehouse Hit by Tornado Stored Personal Protective Equipment for Health Care Workers." *The Tennessean*, March 16, 2020. Retrieved from: https://www.tennessean.com/story/news/local/wilson/2020/03/16/mt-juliet-warehouse-hit-tornado-stored-area-hospital-supplies/5058496002/.

At the same time that the city mobilized to recover from this natural disaster, community leaders were looking ahead to prepare for the onset of the pandemic in Nashville.

2) **The high burden of chronic disease among Nashville's residents, disproportionately within Black and Hispanic communities, made them more vulnerable to developing severe COVID-19.** COVID-19 has further illuminated the burden of chronic disease disparities on minority populations. A 2017 study highlighted those impacts on productivity from workers with diabetes, hypertension, and obesity cost Nashville-area businesses $500 million annually.[17] While 64% of Nashvillians have obesity, obesity in Nashville is disproportionately prevalent among African-American and Hispanic populations at 47.8% and 31.8%, respectively (see Figure 2). These same populations also experience a disproportionately higher prevalence of other chronic conditions, including high blood pressure and respiratory conditions (e.g., chronic obstructive pulmonary disease, asthma), that put them at greater risk of hospitalization due to COVID-19.[18]

Figure 2: Burden of Chronic Disease in Nashville by Race/Ethnicity, 2019[19]

Hypertension
- 21.2% (Mixed/Other)
- 27.1% (White, non-Hispanic)
- 11.4% (Hispanic/Latino)
- 47.6% (Black or African American)

Diabetes
- 6.4% (Mixed/Other)
- 8.3% (White, non-Hispanic)
- 7.1% (Hispanic/Latino)
- 22.1% (Black or African American)

Respiratory Conditions (e.g., COPD, emphysema)
- 14.8% (Mixed/Other)
- 17.4% (White, non-Hispanic)
- 14.8% (Hispanic/Latino)
- 24.5% (Black or African American)

Obesity
- 12.7% (Mixed/Other)
- 24.1% (White, non-Hispanic)
- 31.8% (Hispanic/Latino)
- 47.8% (Black or African American)

0.0%

Legend: ▢ Mixed/Other ▮ White, non-Hispanic ▮ Hispanic/Latino ▮ Black or African American

Source: NashvilleHealth (see references list)

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17 Holly Fletcher. "Unhealthy Workers Cost Nashville Businesses $500m." *The Tennessean,* 2017. Retrieved from: https://www.tennessean.com/story/money/industries/health-care/2017/04/30/unhealthy-workers-cost-nashville-businesses-500m/100972478/.

18 Johnson, Timothy P., Karen F. Retzer, Tracy F. Buck, et al. "Nashville Community Health + Well-Being Survey." NashvilleHealth, 2019. Retrieved from: https://www.nashvillehealth.org/wp-content/upload/2019/09/Nashville-Study_Analytical-Report_final_8-6-19.pdf.

19 Johnson, Timothy P., Karen F. Retzer, Tracy F. Buck, et al. "Nashville Community Health + Well-Being Survey."

3) **Nashville's unique dynamics created challenges and opportunities for local government officials and community leaders.** The city of Nashville merged with Davidson County in 1963 to form the Nashville-Davidson Metro Government, a consolidated city-county government system. In this form of municipal government, the 40-member Metropolitan City Council serves as the city's primary legislative body and the mayor serves as the city's chief executive. Metro government agencies are overseen by multiple semi-autonomous boards and commissions appointed by some combination of the Mayor and Metro Councilmembers.[20]

The Metropolitan Public Health Department (MPHD), overseen by the Board of Health, is one of six autonomous urban county health departments that operate under local governance in Tennessee; the other 89 primarily rural county health departments are directly supervised by TDH.[21] Given the politicization of the COVID-19 pandemic, Nashville's status as a Democratic stronghold in a Republican-led state, along with its ability to independently institute public health measures, had distinct impacts on the city's pandemic response.

4) **Notable events in Nashville that were external to the pandemic, such as the Christmas Day Bombing, influenced COVID-19's impact on residents and businesses.** Since March 2020, Nashville has faced multiple challenges amidst coordinating a citywide plan for COVID-19 (see Figure 3). The unexpected departure of key Metro Government personnel, the bombing on December 25, 2020, and the occurrence of other natural disasters have influenced the response across the Nashville community.

Figure 3: Timeline of External Events in Metro Nashville, March 2020–July 2021
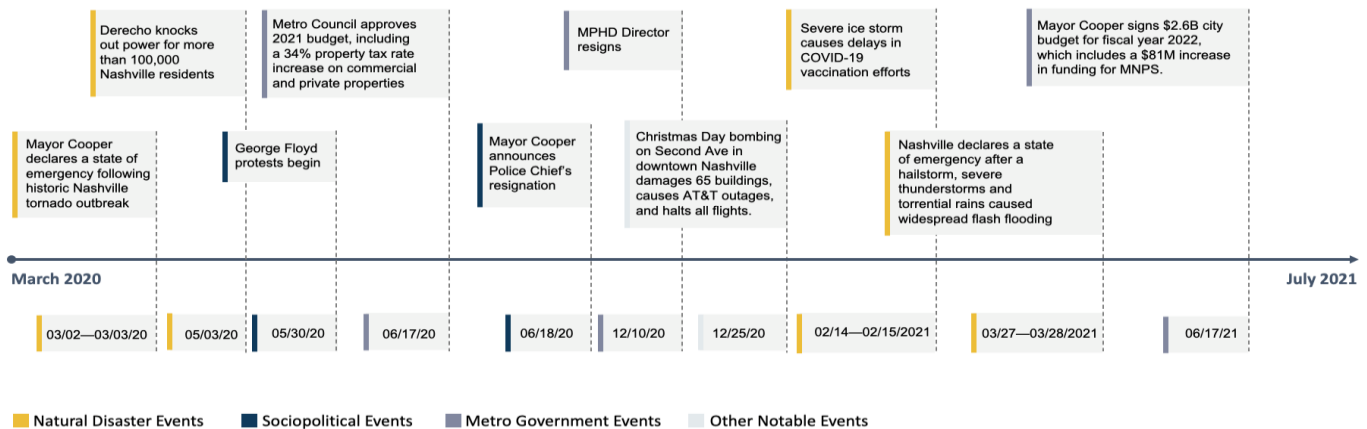
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[20] Wachter, Jeff. "Fifty Years after Merger: Nashville and Davidson County's Experience with Consolidated Government." Abell Foundation, 2019. Retrieved from: https://abell.org/sites/default/files/files/Nashville%20021119.pdf.

[21] Tennessee Department of Health. "Local and Regional Health Departments." https://www.tn.gov/health/health-program-areas/localdepartments.html.

5) **The Nashville health care industry contributes an overall economic benefit of $66.9 billion and more than 300,000 jobs to the local economy annually.**
Nashville's ability to plan and respond to a PHE is distinct given its rich healthcare landscape, which consists of organizations with a national and global footprint. Nashville is home to 500 healthcare companies, with 18 publicly traded healthcare companies (see Figure 4) headquartered in the city, including HCA Healthcare, Brookdale Senior Living, and Acadia Healthcare.[22] Nashville is also home to PathGroup, one of the largest private providers of pathology, clinical and molecular laboratory services in the United States, as well as laboratory sciences company Aegis Sciences Corporation, which recently announced a contract with the CDC to conduct next-generation sequencing analysis of SARS-CoV-2.[23] Between 2005 and 2015, more than $940 million was invested in Nashville healthcare companies by venture capital firms.[24]

Figure 4: Top 7 Nashville-Based Publicly Traded Healthcare Companies, May 2021[25]

Company Name	Global Employees*	Global Sales / Revenue
HCA Healthcare	262,000	$46,677,000,192
Community Health Systems Inc.	87,000	$14,154,999,808
Brookdale Senior Living Inc.	65,600	$4,531,425,792
Acadia Healthcare Co. Inc.	42,100	$3,012,442,112
Surgery Partners Inc.	11,100	$1,771,456,000
National Healthcare Corp.	14,891	$980,348,992
Tivity Health Inc.	500	$606,299,008
Total	**506,394**	**$75,544,475,811**

Source: Adapted from the Nashville Health Care Council (See reference list).

[22] Arik, Murat. "Health Care Industry Nashville MSA 2019: Trends, Scope, and Impact on the Regional Economy." Nashville Health Care Council, 2021. Retrieved from: https://healthcarecouncil.com/wp-content/uploads/2021/09/NHCC-Economic-Impact-Study-2019-Full-Report-1.pdf.

[23] Aegis Sciences Corporation. "Aegis Sciences Announces CDC Contract to Provide Genomic Sequencing of Sars-CoV-2 to Aid Public Health Response to Covid-19." News Release, 2021. https://www.globenewswire.com/news-release/2021/03/16/2193723/0/en/Aegis-Sciences-Announces-CDC-Contract-to-Provide-Genomic-Sequencing-of-SARS-CoV-2-to-Aid-Public-Health-Response-to-COVID-19.html.

[24] Nashville Health Care Council. "Nashville Capital Network, Nashville Health Care Council Release Report on VC Investment." https://healthcarecouncil.com/nashville-capital-network-nashville-health-care-council-release-report-on-vc-investment/.

[25] Nashville Health Care Council. "Publicly Traded Health Care Companies." http://healthcarecouncil.com/nashville-health-care-industry/industry-research/public-health-care-companies/.

History of Nashville's Progression Toward Becoming the "Health Services Capital"

The roots of Nashville's healthcare community as a "hospital town", dating back to the 1960s with the founding of Hospital Corporation of America (HCA), have helped Nashville gain recognition as an incubator of healthcare innovation and services. The city is home to three major health systems—HCA Healthcare | Tri-Star Division, VUMC, and Ascension Saint Thomas. Nashville also has a large network of safety net providers—federally qualified health centers (FQHCs), community and faith-based health centers, Meharry Medical College clinics, and Nashville General Hospital —that constitute a strong safety net system for its medically underserved population (see Figure 5). Nashville General is the city-funded primary safety net hospital that provides care to Nashville's most vulnerable populations. The hospital represents a unique public-private alliance between Meharry and the Metropolitan Government of Davidson County to care for the most vulnerable citizens of Nashville. [26] While there is competition in Nashville's concentrated healthcare markets, the Middle Tennessee Safety Net Consortium is an exemplar that showcases collaboration among all of Nashville's health systems, safety net facilities, and some CBOs. Founded in 2000, the Consortium is intended to provide access to appropriate levels of healthcare services for the uninsured population through the establishment of a system of information and care coordination.

Figure 5: CDC Social Vulnerabilities Index (SVI) Map of Davidson County's Major Hospital Locations[27]
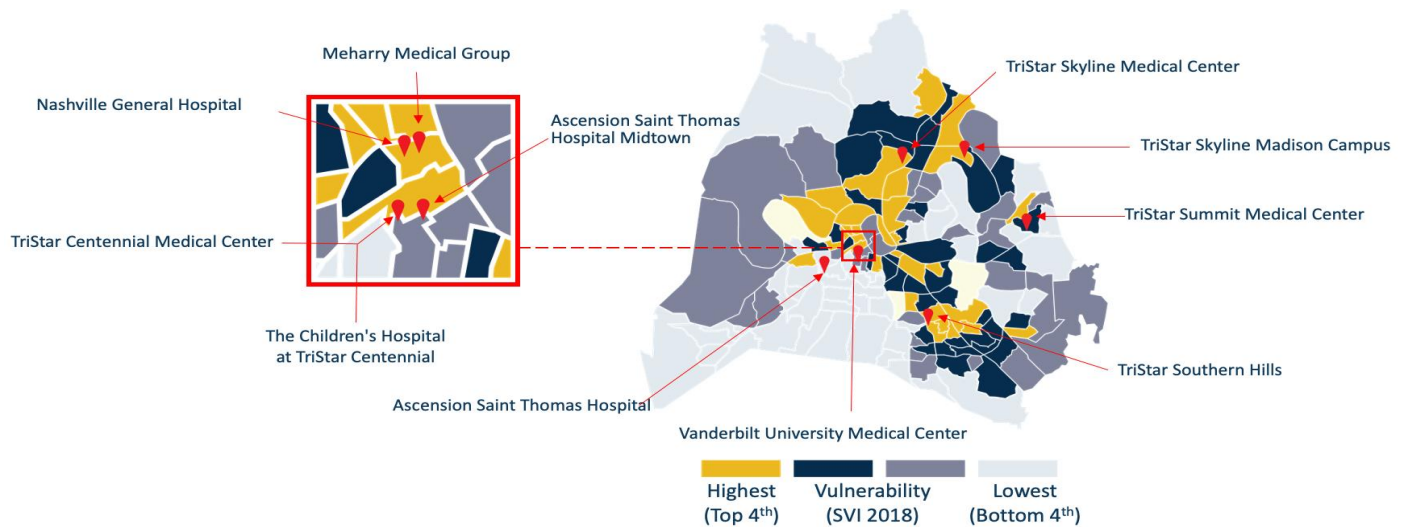
Source: Adapted from the CDC SVI Map, 2018. (see references list)

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26 Indigent Care Stakeholder Work Team. "Putting the Patient First: Recommendations for Creating a Vibrant Safety Net System for the People of Nashville." Meharry Medical College, 2019. Retrieved from: https://home.mmc.edu/wp-content/uploads/2019/03/MMC-8884-18-Stakeholder-Work-Team-Report_3-4-19-FINAL-FINAL-COMPRESSED.pdf.

27 Centers for Disease Control and Prevention. "CDC's Social Vulnerability Index (SVI)." 2018. Retrieved from: https://svi.cdc.gov/map.html.

Nashville's hospitals served as major referral hubs for patients travelling across county lines to receive COVID-19 care. In December 2020, an estimated six out of every ten COVID-19 patients hospitalized in Nashville were not from Davidson County.[28] Against the backdrop of Nashville as the "Silicon Valley of Healthcare", Nashville's communities struggled with economic instability brought by COVID-19, particularly with respect to residents and businesses located in already economically distressed neighborhoods.

The Broader Economic and Public Health Impact of COVID-19 in Nashville

The impact of COVID-19 on major segments of Nashville's economy was profound. In 2020, the Nashville Metropolitan Statistical Area (MSA) experienced an overall economic loss of just under $26 billion as the unemployment rate shot up to a peak of 15.2% in April 2020 from 2.5% a month earlier.[29] In particular, stay-at-home measures and business closures had an immediate and lasting impact on Nashville's prominent hospitality and leisure industry, which was compounded by lower demand and an estimated $4 billion in lost tourism dollars, due to restrictions on international and domestic travel.[30]

Aligned with national trends, COVID-19 also highlighted racial and gender inequities in Nashville's workforce that existed prior to the pandemic. Unemployment rates peaked twice as high among Black residents (21.8%) compared to White residents (10.3%) living in the Nashville MSA. Additionally, women faced disproportionately more job losses, comprising up to 53% of the region's unemployed population as schools and businesses began to close.[31] The proportion of unemployed women remained higher than men as of December 2020. According to a survey conducted among Nashville MSA residents by the Nashville Area Chamber of Commerce, while nearly 51% of respondents reported that childcare impacts their ability to work, only 3.1% said their employer offers childcare benefits.[32]

Much like experiences in cities across the country, the COVID-19 pandemic only compounded existing health challenges in Nashville, leading to decreases in routine care in its early stages. In particular, among low-income individuals in the southeast US, 40% of respondents in a survey conducted in the fall of 2020 reported having missed/delayed a health appointment during the pandemic—the most common reason was provider-initiated cancellation or delay (63%).[33] VUMC also conducted a study of their patient panel and found that more than half of survey respondents (55%) admitted to delaying routine healthcare during the pandemic, with the primary motivator being anxiety about contracting COVID-19.[34]

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[28] Caitlyn Shelton. "Hospital Safety Net for Millions of Tennesseans Vulnerable as Coronavirus Cases Surge." *FOX17,* 2020. Retrieved from: https://fox17.com/news/local/hospital-safety-net-for-millions-of-tennesseans-vulnerable-as-coronavirus-cases-surge-rural-counties-nashville-tennessee-covid19-2020.

[29] Nashville Chamber of Commerce and Greater Nashville Regional Council. "Nashville Region's Vital Signs 2020."

[30] Francis, Erica. "Nashville Facing $4 Billion Loss in Visitor Spending Due to Covid-19 Pandemic." *WKRN*, November 10, 2020. Retrieved from: https://www.wkrn.com/news/nashville-2020/nashville-facing-4-billion-loss-in-visitor-spending-due-to-covid-19-pandemic/.

[31] Nashville Chamber of Commerce and Greater Nashville Regional Council. "Nashville Region's Vital Signs 2020."

[32] Ibid.

[33] Ni, B., E. Gettler, R. Stern, H. M. Munro, M. Steinwandel, M. C. Aldrich, D. L. Friedman, et al. "Disruption of Medical Care among Individuals in the Southeastern United States During the Covid-19 Pandemic." *J Public Health Res* (Sep 24 2021).

[34] Patel, Shriji, Nancy Lorenzi, Terrell Smit, Brian R. Carlson, and Paul Sternberg. "Critical Insights from Patients During the Covid-19 Pandemic." *NEJM Catalyst* (2020).

VUMC's analysis using electronic health records data found that the top 10 most common inpatient surgical procedures performed during the 2019 timeframe experienced a percent reduction in the number of procedures performed ranging from 20% to 90% during 2020 compared to the previous year.[35]

Methodology

Avalere used a content analysis study design with an equity-focused lens to collect, analyze, and synthesize key quantitative and qualitative data pertinent to Nashville's pandemic response. Avalere's review focused on encompassing activities pertinent to the Nashville-Davidson-Murfreesboro-Franklin, Tennessee MSA, as specified by the U.S. Office of Management and Budget, recognizing transit/mobility trends that occurred among residents and non-residents. Where relevant, review of government directives and distribution of relief funds was focused on Nashville-Davidson County.

Avalere drafted a research framework aligned to five framework categories (the detail of the framework is outlined in Appendix 5). Building off this framework, Avalere developed a 29-question master interview guide based on the five framework categories described above. Interview questions were open-ended and further refined to specifically target the expertise of each interviewee. Avalere conducted 32 total interviews: 26 one-on-one interviews and six group interviews with 39 key opinion leaders that represented a diverse set of Nashville viewpoints. Virtual semi-structured interviews were conducted from May 4 to June 29, 2021.

Additionally, Avalere collected internal and publicly available documents from Steering Committee members between May and July 2021. Avalere reviewed documents describing internal planning and operational plans of various Nashville COVID-19 response efforts. Examples of documents reviewed include: email exchanges between organizations serving vulnerable populations and local government officials regarding COVID-19 vaccine distribution, COVID-19 needs assessment reports for Nashville residents, Davidson County population demographic data, handwritten thank you cards to the Nashville Convention & Visitors Corporation (CVC), and more. Last, Avalere prioritized three cities to use as comparison points throughout the report based on demographics (e.g., race, ethnicity, age), population health criteria (e.g., insurance coverage, COVID-19 statistics, hospital capacity), and local perceptions of peer city comparability (e.g., cultural differences). The cities chosen for comparison were Austin, Jacksonville, and Indianapolis. Further detail on the methodology of this report is described in Appendix 1.

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[35] Zheng, N. S., J. L. Warner, T. J. Osterman, Q. S. Wells, X. O. Shu, S. A. Deppen, S. J. Karp, et al. "A Retrospective Approach to Evaluating Potential Adverse Outcomes Associated with Delay of Procedures for Cardiovascular and Cancer-Related Diagnoses in the Context of Covid-19." *J Biomed Inform* 113 (Jan 2021): 103657.

Key Findings: Perspectives of the COVID-19 Impact Across Nashville Stakeholders
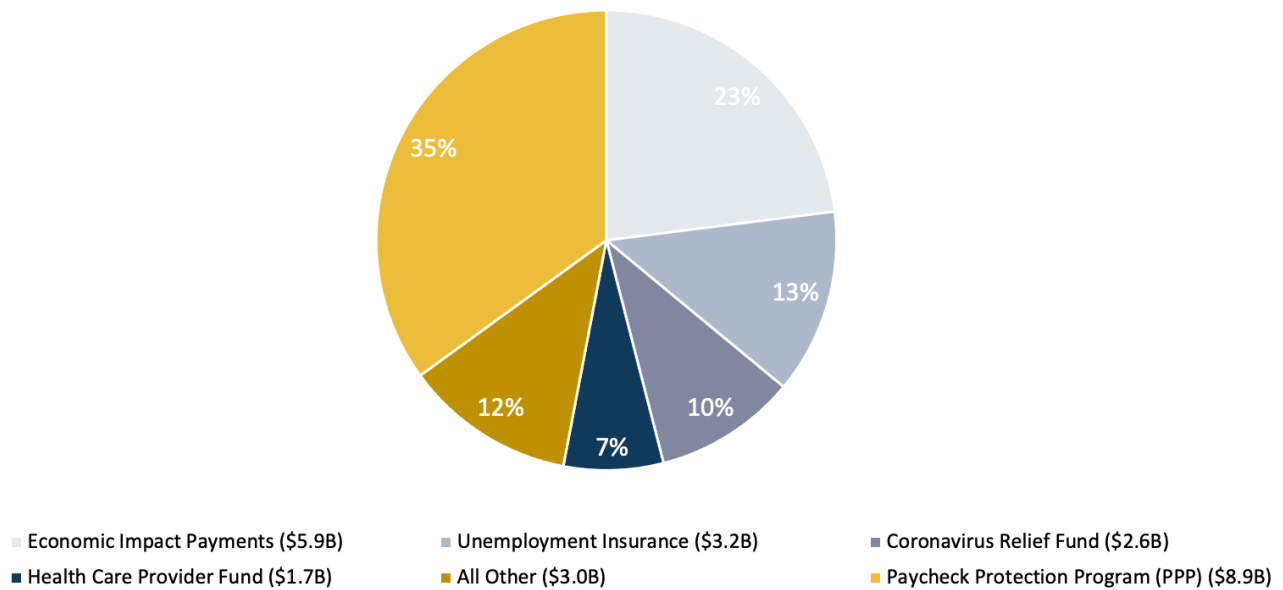
Avalere interviewed local leaders who represent a variety of stakeholder groups in the Nashville community, including faith leaders, researchers, public health agency representatives, healthcare providers, local and state government officials, CBO leaders, and small business owners. In the key findings section, you will see that the stakeholder groups below are paired with the intended audiences of the recommendations table, to ensure alignment on next steps in short, mid, and long-term PHE planning.

While the five categories of the framework initially guided interviews and themes, the findings are presented by stakeholder group, and also highlight connections between stakeholder groups and recommendations. The key findings presented below are reflective of two sets of sources: 1) the diverse set of community leaders' experiences and observations – many of whom have a pulse on the experiences of the constituents that they closely represent – as described in formal interviews and 2) the synthesized findings from relevant public reports and available documentation from Steering Committee members to obtain specific insights on city dynamics and historical approaches to decision-making.

Perspectives from the Community on Nashville's Response to the Economic Impact of COVID-19

In response to the COVID-19 pandemic's economic impact, large-scale financial relief packages were passed at all levels of government. At the federal level, the Coronavirus Preparedness and Response Supplemental Appropriations Act was the first COVID-19 relief bill to be signed into law on March 6, 2020, followed by the Families First Coronavirus Response Act (FFCRA). FFCRA contained key provisions that addressed paid sick leave, insurance coverage of COVID-19 testing, and unemployment benefits. The Coronavirus Aid, Relief, and Economic Security (CARES) Act was signed into law on March 27, 2020, providing $2 trillion in economic relief for individuals, families, and businesses. The CARES Act allocated $350 billion to help small businesses keep workers employed amid the COVID-19 pandemic and economic downturn. It created the Paycheck Protection Program (PPP) that allowed small businesses to receive low-interest loans that were potentially fully forgivable if used to cover eligible costs (e.g., eight months of payroll expenses).[36] However, PPP loan requirements were restricted in their spending ability—75% of the loan had to be spent on covering payroll costs. This was later reduced to 60% in June 2020 after the Paycheck Protection Program Flexibility Act was signed into law. Most recently in March 2021, the $1.9 trillion American Rescue Plan Act of 2021 directed $65.1 billion of federal aid to counties, of which Metro Nashville received a total allocation just under $260 million.[37]

Figure 6: Estimated Federal COVID-19 Funding Allocated to TN by Program, 2020[38]

- Economic Impact Payments ($5.9B)
- Unemployment Insurance ($3.2B)
- Coronavirus Relief Fund ($2.6B)
- Health Care Provider Fund ($1.7B)
- All Other ($3.0B)
- Paycheck Protection Program (PPP) ($8.9B)

Source: Adapted from the Sycamore Institute (see references list).

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36 Dilger, Robert Jay, and Bruce R. Lindsay. "Covid-19 Relief Assistance to Small Businesses: Issues and Policy Options." Congressional Research Service, 2020. Retrieved from: https://sgp.fas.org/crs/misc/R46284.pdf.

37 National Association of Counties. "State and Local Coronavirus Fiscal Recovery Funds: County-by-County Allocations." 2021. Retrieved from: https://www.naco.org/resources/featured/state-and-local-coronavirus-fiscal-recovery-funds.

38 Pellegrin, Mandy. "Federal Coronavirus Funding for Tennessee." https://www.sycamoreinstitutetn.org/federal-coronavirus-aid-tn/.

In Nashville, Metro launched two main funds that provided direct financial relief to individuals and families:

- **The COVID-19 Response Fund** at the United Way of Greater Nashville was established on March 15, 2020 in response to the pandemic, led by Mayor John Cooper, together with philanthropic, corporate, and government partners. Chaired by former U.S. Senate Majority Leader Bill Frist, M.D., the fund was established to rapidly deploy funding to CBOs, allocating dollars where they were needed most. Throughout the pandemic, this was an important source of immediate direct assistance for workers and families most impacted by business closures.

- **$10 million in CARES Act funding** was allocated to the United Way of Greater Nashville for disbursement to non-profit partner agencies that could provide rent, mortgage, and utility assistance to individuals and families in Davidson County. A resolution passed by the Metro Council required that selected non-profits would then directly pay the landlord, mortgage company, or utility company while prohibiting direct payment to individuals.
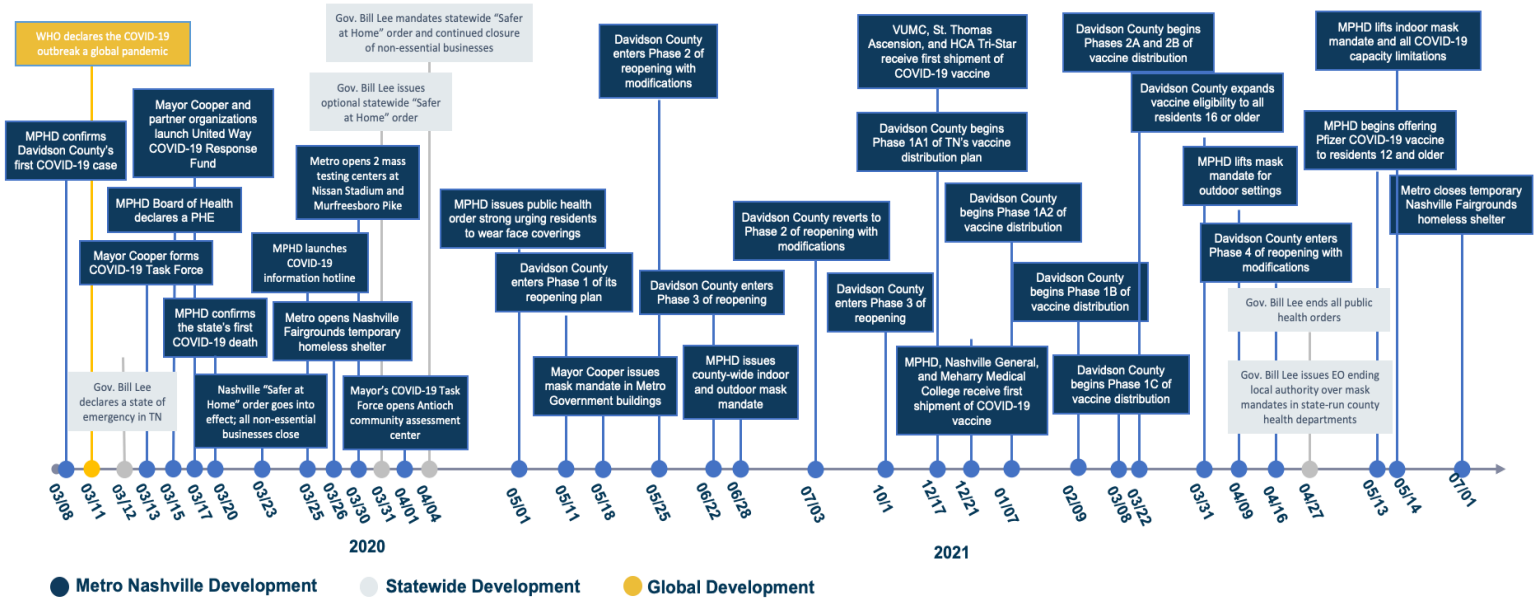
Councilmembers chose the United Way to be the administrator organization because of its unique reach and flexibility to support individuals and non-profits. Funding administered through the United Way typically followed a modified "hub-and-spoke" model, generally referring to a distribution method in which a centralized "hub" exists for distribution, with goods traveling to smaller locations (or CBOs in this case) called "spokes" for further processing and distribution. CBOs are community-directed non-profit resource centers that provide specific services to a specific community or targeted subsets within a specific community.[39]

In September 2020, the Mayor's Office and Metro Council partnered with the Equity Alliance to release the "Our Fair Share Community Needs Assessment," intended to be a snapshot in time of community needs to inform the equitable allocation of the city's $121 million share of CARES Act funds to Nashville's most vulnerable residents and small businesses.[40] A "COVID-19 Financial Oversight Committee" comprised of Metro councilmembers and community leaders representing diverse stakeholder groups was also convened by Mayor Cooper to recommend appropriate uses of federal and state COVID-19 relief and recovery funds.

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[39] U.S. Department of Health and Human Services. "Engaging Community-Based Organizations." https://www.phe.gov/Preparedness/planning/abc/Pages/engaging-CBO.aspx.

[40] The Equity Alliance. "Our Fair Share: Covid-19 Nashville/Davidson County Community Needs Assessment.", 2020. Retrieved from: https://theequityalliance.org/wp-content/uploads/2020/09/The-Equity-Alliance-Our-Fair-Share-Report-Sept-2020.pdf.

Figure 7: Timeline of COVID-19 Events in Davidson County, March–July 2021

2020

2021

● Metro Nashville Development   ○ Statewide Development   ● Global Development

Sources: A Safe Nashville. "Archive of Public Health Orders." Available here.; TN.Gov. "COVID-19 Timeline." Available here.

Perspectives from Philanthropies, Non-Profit Organizations, Faith-Based Leaders, and Community-Based Organizations

Similar to residents across the country, several factors related to the pandemic affected the economic, physical, and social well-being of Nashville residents. Philanthropies, non-profit organizations, faith-based leaders, and CBOs were key stakeholders in Nashville's pandemic planning efforts, specifically to support vulnerable populations.

As the "Our Fair Share" study highlighted, since the beginning of the pandemic, Black and brown communities were actually facing "two pandemics in one: poverty and COVID-19." [41] This was particularly relevant to Nashville's vulnerable populations, including residents in the 12 hardest-hit ZIP codes, which on average are more diverse than the city as a whole. These populations have been disproportionately impacted by COVID-19 and reported being more in need of financial assistance, rent assistance, and energy/utilities assistance than individuals living outside of those 12 ZIP codes. Thirty-five percent (35%) of Nashvillians chose receiving these forms of economic relief as their most important priority, including 45% of Black respondents, 39% of Latinx respondents and 48% of renters. [42]

The United Way of Greater Nashville served as the main administrator organization for managing relief distribution efforts to individuals and families. Key perspectives about the United Way of Greater Nashville's support during the pandemic include:

- $10 million of Metro CARES Act funding was allocated to the United Way of Greater Nashville for disbursement to non-profit partner agencies that could provide rent, mortgage, and utility assistance to individuals and families in Davidson County. However, for many residents, this was their first time seeking financial assistance, which presented challenges for residents in navigating the multi-agency COVID-19 financial relief network.
- The United Way disbursed the CARES Act dollars to 38 partner agencies working in diverse communities. Not all partner agencies were able to provide the same types of assistance, leading to confusion when applicants had to follow-up separately with multiple partner agencies to address different needs.

> **Comparison case study of local relief funds: Austin, TX**
>
> In April 2020, RISE 1.0 was established through a Council resolution to distribute $15 million in federal and state emergency funds to relief services and social service organizations to provide assistance to Austinites impacted by the pandemic. The fund awarded 20 organizations and agencies between May and June. The city expanded its original COVID-19 relief program to distribute over $10M to individuals in Austin and Travis county in September 2020.
>
> Additionally, the state of Texas also established a COVID Relief Fund in partnership with a philanthropy called OneStar Foundation. Similar to the Nashville COVID Response Fund, this Fund provided critical dollars to organizations across the state responding to the economic, social, and health impacts caused by COVID-19.
>
> **Sources:** 1. AustinTexas.gov. "COVID-19 Relief in a State of Emergency (RISE) Fund." Available here. 2. OneStar Foundation. "Texas COVID Relief Fund." Available here.

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[41] Hineman, Brinley. "'Two Pandemics': Nonprofit Research Shows How Covid-19 Is Impacting Communities of Color." The Tennessean, September 16, 2020. Retrieved from: https://www.tennessean.com/story/news/local/2020/09/16/nonprofit-details-covid-19-s-impact-nashville-communities-color/5810574002/.

[42] The Equity Alliance. ""Our Fair Share: Covid-19 Nashville/Davidson County Community Needs Assessment."

- Some community leaders expressed frustration that the money they donated to the COVID-19 Response Fund was not directly given to individuals; rather, they were being disbursed to partner agencies that would then pay the affected companies on behalf of individuals.

In order to facilitate acceptance of key public health messages and support ongoing engagement among vulnerable communities, information was relayed by trusted community leaders. Certain communities are less likely to abide by public health guidance when relayed by local government authorities due to various factors, including mistrust of government authorities and level of health literacy. Both the style of communication as well as the identity of the messenger greatly impact public perception of public health measures. According to the CDC, there are four factors that determine whether a messenger will be perceived as credible by their audience: empathy and caring, honesty and openness, dedication and commitment, and competence and expertise. These four factors can also serve to build or maintain audience trust.[43] Nashville interviewees acknowledged the efforts from community leaders to address these factors as trusted public health messengers.

Additional takeaways from community-based leaders highlight the following:

1. **Grassroots outreach efforts led by CBOs and faith-based organizations were critical for disseminating culturally competent public health messaging.**
   - CBOs and faith-based groups organized community town halls and live-streams to facilitate a safe space for constituents to ask questions and receive culturally and linguistically sensitive information.
   - Many organizations relied on social media to reach their constituents with tailored public health messaging, but acknowledged the potential danger of social media platforms as a vehicle for misinformation. Immigrant groups acknowledged this as an especially potent problem for non-English speaking residents when there were limited multilingual online resources available to combat sources of misinformation.

2. **Aligned with national trends, access to the COVID-19 vaccine lagged among vulnerable populations. CBOs and faith-based organizations played a critical role in bridging these access gaps.**
   - Lack of access to transportation and the "digital divide" were reported as barriers for many vaccine-eligible populations who wanted to schedule a vaccine appointment. The impact of the "digital divide" on vaccine access was twofold: (1) uneven access to the Internet, digital skills, and digital devices made it difficult for priority populations (e.g. seniors) to register for a vaccine appointment, and (2) the level of cultural and linguistic competence needed to navigate online resources hindered the ability of immigrant and refugee residents from scheduling a vaccine appointment.
   - In Nashville, it was reported many elderly constituents who were vaccine-eligible either did not have access to the Internet or expressed confusion around navigating the online registration portals. There was also a level of linguistic and cultural

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[43] Tumpey, Abbigail J., David Daigle, and Glen Nowak. "Communicating During an Outbreak or Public Health Investigation." Centers for Disease Control and Prevention, https://www.cdc.gov/eis/field-epi-manual/chapters/Communicating-Investigation.html.

competence that was needed to schedule a vaccine appointment and understand basic computer functions (e.g., prompts to "click here" or "scroll here").

- As an example, Conexión Américas conducted targeted outreach to eligible elderly individuals in their own client database and provided transportation to their vaccine appointments by leveraging the Neighborhood Health clinic in Casa Azafrán, its Latinx-serving community center, as a familiar vaccination site.
- In July 2020, Meharry Medical College partnered with local churches throughout Nashville to offer free COVID-19 testing services to Nashvillians and increase information-sharing around COVID-19 to the broader faith community.[44]

3. **Similar to its testing strategy, MPHD relied on community partners to identify locations for vaccination sites in diverse neighborhoods based on level of accessibility and "familiarity" to minority communities. These CBOs played an important role in addressing barriers to vaccine access for vulnerable populations, including transportation and digital literacy.**

- Statewide vaccination rates among Tennessee's Black and Hispanic residents lagged relative to White residents. In Nashville, MPHD engaged community partners to develop targeted initiatives for priority populations identified through MPHD's "special populations plan" included PEH, those living in incarcerated/correctional settings, Black and Brown communities, immigrant and refugee communities, and school-based populations.[45]
- MPHD leveraged partnerships with CBOs, faith-based organizations, and community cultural hubs such as Plaza Mariachi, a local lifestyle and entertainment center that is frequented by many Hispanic Nashvillians. These partnerships were developed through its testing outreach efforts to address barriers that limited vaccine access for vulnerable populations.
- Targeted grassroots efforts by immigrant and refugee advocacy groups were critical for reaching eligible elderly populations in Phase 1 of Nashville's vaccine rollout. MPHD's pop-up vaccination clinics located in religious institutions (e.g., mosques) or community centers were also credited with increasing access for their intended populations.
- Led by groups such as Metro's Homeless Impact Division, Neighborhood Health, and MPHD, a coalition of 19 Nashville organizations ensured that 100% of PEH had access to the COVID-19 vaccine. Their multi-pronged approach provided convenient, on-site vaccine access in locations that are frequented by PEH, including encampments and shelters. As of July 25, 2021, Nashville's vaccination rate among PEH appeared to be higher than the general adult population rate.

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[44] Taylor, Cameron. "Mobile Coronavirus Testing Begins at Nashville Churches Saturday." *WSMV*, June 5, 2020. Retrieved from: https://www.wsmv.com/news/mobile-coronavirus-testing-begins-at-nashville-churches-saturday/article_bc401044-a793-11ea-a572-c749e325fd85.html.

[45] Ramirez, Alejandro. "Officials and Community Leaders Working toward Equitable Vaccine Distribution." *Nashville Scene,* February 17, 2021. Retrieved from: https://www.nashvillescene.com/news/citylimits/officials-and-community-leaders-working-toward-equitable-vaccine-distribution/article_5b0a00e4-78ef-5809-9e32-83b237e05a02.html.

4. **In the face of a global PPE shortage, non-hospital facilities (e.g., community centers, food banks, or homeless shelters) reported less regular access to PPE supply than hospital facilities. The Community Resource Center (CRC), a non-profit providing basic household necessities to more than 80 nonprofit agencies in Middle Tennessee, led grassroots efforts to source PPE for many non-profits and vulnerable residents.**

   - Across the country, prolonged PPE shortages were acutely felt by many non-hospital facilities serving vulnerable populations as they sought to protect their front-line workers. An analysis found that while requests for PPE nationwide were split equally between hospital and non-hospital facilities in April 2020, 90%+ of PPE requests from July 2020 onwards were from non-hospital facilities, including testing facilities, homeless shelters, and social service agencies.[46]

   - For example, it was reported the Fairgrounds shelter for PEH experienced difficulties maintaining adequate supplies of PPE for front-line staff workers. For a period of time, it was reported that only staff that came into contact with individuals who tested positive were provided with PPE.[47]

   - OEM was the primary entity responsible for distributing PPE to all front-line workers in Metro's local government infrastructure. For non-hospital facilities and vulnerable residents that were struggling to buy PPE, CRC was the go-to PPE distribution hub.

5. **Community-led grassroots donation efforts and private/non-profit partnerships played a critical role in sourcing and distributing PPE to both vulnerable populations and non-profit organizations conducting on-the-ground operations.**

   - CRC conducted large-scale distribution efforts to increase access for individuals economically impacted by COVID-19 who may have been unfamiliar with assistance access points because this was their first time seeking outside assistance.

   - In coordination with city leadership and a network of diverse CBOs, CRC regularly assessed the level of PPE need among vulnerable populations and conducted targeted distribution efforts for residents that lacked the ability to procure PPE (e.g., the Metropolitan Development and Housing Authority's (MDHA) homebound residents).

   - Philanthropic donations and partnerships with private organizations were key to ensuring that CRC volunteers had the necessary resources and transportation to deliver PPE supplies directly to communities.

6. **Multi-sector partnerships were critical for addressing emergent areas of need among vulnerable residents that were negatively impacted by stay-at-home measures.**

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[46] Get Us PPE. "Get Us PPE Shortage Index: August 2020." https://v9b3g8f2.stackpathcdn.com/wp-content/uploads/2020/09/Get-Us-PPE-Data-Shortage-Index-August-2020.pdf.; Get Us PPE. "Get Us PPE Shortage Index: December 2020." https://v9b3g8f2.stackpathcdn.com/wp-content/uploads/2021/01/PPE-Shortage-Index-December-2020-Get-Us-PPE.pdf.

[47] Shelton, Caitlyn, Harriet Wallace, and Kaylin Jorge. "Hundreds Tested for Covid-19 at Nashville Rescue Mission, Fairgrounds." *FOX17,* April 29, 2020. Retrieved from: https://fox17.com/news/local/possible-covid-19-outbreak-at-fairgrounds-homeless-shelters-under-investigation.

- On March 24, 2020, Mayor Cooper formed a multi-sector Food Security working group, led by Second Harvest Food Bank of Middle Tennessee, which included stakeholders from the hospitality industry, private-sector organizations with logistics expertise (e.g., Amazon, Lyft), along with non-profit and public sector direct-service agencies. The unique partnerships created through this working group were essential for addressing the high demand for food throughout the pandemic.
- In partnership with other non-profits, the CRC held large-scale events to distribute food boxes and PPE/hygiene kits to families in need. CRC also delivered similar kits to high-risk homebound and elderly MDHA residents to facilitate compliance with stay-at-home mandates.

7. **Nashville's data-driven philanthropic response ensured that relief dollars were equitably distributed to agencies working in high-need service areas.**
   - The Middle TN Donors' Forum and United Way of Greater Nashville leveraged digital platforms to track funds being deployed for specific types of support (e.g., food insecurity, rent assistance).
   - Foundations that were part of the Middle TN Donors' Forum worked with the Donors' Forum coordinator to collect and analyze disaggregated foundations' contribution data. It was helpful to see where dollars were being allocated across agencies, along with support areas that needed additional philanthropic funding.
   - The United Way used a similar strategy, leveraging the CharityTracker platform to track funds that were being deployed by their partner agencies through the COVID-19 Response Fund. Through their experience with previous disaster relief initiatives, many partner agencies that were also part of the United Way's Financial Assistance Network were already deeply familiar with using standardized screening tools and submitting data to the centralized database. As a result, the Financial Assistance Network had the necessary infrastructure in place to roll out an effective pandemic response.

Comparison case study:
Data-driven philanthropic response in Austin, TX

To complement the tracking of philanthropic funds already in place, Nashville may want to consider analyzing public health data to further identify neighborhoods or counties with the greatest needs for support.

Challenge: In response to the pandemic, the OneStar Foundation in Austin prioritized funding for communities that were disproportionately impacted. Due to fragmented and inconsistent publicly available data, OneStar needed to analyze real-time data to see how communities were impacted disparately by the pandemic and identify gaps in local response efforts. OneStar partnered with Episcopal Health Foundation (EHF) to conduct a statewide analysis on these issues.

Solution: The OneStar/EHF analysis used both *public health indicators* (i.e., COVID-19 related deaths and COVID-19 related hospitalizations) and *resiliency indicators* (i.e., CDC's social vulnerability index, unemployment statistics, and access to a local philanthropic fund) to determine which areas of the state were already capable of raising/distributing philanthropic dollars in their communities, and where funding would be most needed. Based on these indicators, they identified 33 of the 254 TX counties as "highest need" (13%), and 92 counties as "high need" (36%). The data allowed OneStar to identify and prioritize funding for small regional organizations that cover the highest and high need areas.

OneStar identified that greater data transparency can ensure that government, philanthropic funders, and advocacy groups have a clearer picture of grantmaking to better advocate for and invest in communities. Furthermore, data-driven philanthropy can improve equity. Therefore, foundations who desire to make systematic change should use data to inform research and policies.

Source: One Star Foundation. Data-Driven Philanthropy During the COVID-19 Pandemic. Available here.

Perspectives from the Business Community

Nashville business owners were tremendously impacted by the COVID-19 pandemic, due to the various intertwined factors of the pandemic's impact on local and state economies. Aligned with national trends, specific findings from the "Our Fair Share" community assessment also highlight disparities in Nashville among business owners of color and White business owners. Sixty percent of business owners of color reported receiving no income assistance compared to 38% of White business owners.[48] Similarly, White business owners were more likely to report receiving cash stimulus payments from the government.

To address these disparities, Tennessee Governor Bill Lee and the Tennessee Financial Stimulus Accountability Group allocated $50 million to the Coronavirus Relief Fund in October 2020 for the Supplemental Employer Recovery Grant program to provide additional relief to small businesses suffering during the COVID-19 pandemic.[49] This new wave of funding included specific support for minority-owned, women-owned and veteran-owned businesses, as well as businesses owned by disabled persons.

Compared to small businesses, larger businesses had more human resources (HR) capacity and infrastructure needed to efficiently respond to the pandemic. For large businesses with a national presence, they could rely on different staff teams (e.g., HR or Government Relations) to develop standardized COVID-19 protocols and stay abreast of newly imposed restrictions or scientific evidence that would have business implications. Smaller businesses did not have these same capabilities in place and individual business owners were tasked with many responsibilities that can be decentralized across a larger business.

Additional key takeaways from Nashville businesses highlight that:

1. **Nashville's small business owners took a bigger economic hit due to their limited reserve funds and sought external guidance to inform their business's COVID-19 procedures and protocols.**
   - Community leaders involved in donating dollars to the COVID-19 Response Fund that were earmarked for direct individual assistance expressed concern that there was no similar fund for business owners who were feeling the brunt of stay-at-home measures and business closures.
   - Business owners reported that Metro's 34% property tax increase created an added burden, especially for businesses that were doubly impacted by the Christmas Day bombing in the city's downtown core.

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[48] The Equity Alliance. "Our Fair Share: Covid-19 Nashville/Davidson County Community Needs Assessment. "
[49] National Governors Association. "State Initiatives for Small Business Recovery During the Covid-19 Pandemic Economic Crisis."
https://www.nga.org/center/publications/small-business-initiatives-covid19/.

2. **Small business owners communicated challenges with accessing and applying for PPP loans and other SBA loans (e.g., the Economic Injury Disaster Loan (EIDL)) in a timely and efficient manner. Nashville's small business owners were deeply reliant on PPP loans which were restricted in their spending. While the PPP program provided stability for many small business owners by covering payroll expenses, they did not necessarily cover other required expenses necessary to keep that small business alive.**

- In particular, small business owners that employed less than 100 employees reported not being aware of the point of entry to access financial assistance. Many small business owners either did not have the necessary paperwork to apply for PPP loans or were not aware of its availability until there was a waitlist.

- Uncertainty regarding whether PPP loans would be approved for forgiveness reportedly deterred small business owners with limited financial reserves from applying. Additionally, confusion surrounding eligibility criteria for receiving an EIDL created challenges for ineligible small business owners who no longer operated on commercial property due to the Christmas Day bombing or the economic downturn.

- While larger businesses suffered economic losses, several factors such as remote-working capabilities, being able to rely on human resources partners to navigate workplace protocols, or additional revenue streams helped them navigate the challenges with slightly less burden.

> ***Comparison case study: Supporting businesses in Jacksonville, FL***
>
> Jacksonville businesses faced the same challenges that businesses across the country encountered during the COVID-19 pandemic. However, in addition to federal support programs such as PPP, EIDL, and the Shuttered Venue Operators Grant Program for hard-hit small businesses, Jacksonville initiated several local support programs to provide additional relief, particularly to small businesses. Efforts included:
>
> - City of Jacksonville Small Business Relief Program, which offered multiple rounds of financial support to those who lost revenue due to the impact of COVID-19 and was designed to encourage approved businesses to retain their employees.
> - City of Jacksonville Program, a collaboration between The City of Jacksonville and VyStar Credit Union provided additional loan support to small businesses in need
> - City of Jacksonville Eviction and Foreclosure Prevention Program, administered by the Jacksonville Bar Association, provided over $5M to prevent eviction and foreclosure of business owners and residents suffering the effects of the Covid-19 pandemic
>
> **Sources:** 1. JAX Chamber of Commerce. COVID-19 Resources for Jacksonville Businesses. Available here. 2. Florida SBDC at UNF. Coronavirus Small Business Resources. Available here. 3. City of Jacksonville, Florida. COVID-19 Update & Recovery Resources. Available here.

3. **There were three major barriers that may have deterred Nashville's high-risk workers from getting regularly tested: 1) Lack of paid sick leave due to state preemption, 2) Surprise bills due to variations in the interpretation of test coverage mandates, and 3) Major testing delays during pandemic peaks.**

- In Nashville's reopening plan, sick leave was identified as an important policy incentive for encouraging front-line workers to get tested and control disease transmission.

- The FFCRA introduced mandatory sick leave for employees of companies with less than 500 employees. This meant that an additional one million Tennesseans were now able to access paid sick leave; however, it was estimated that 1.1 million Tennesseans were not eligible due to the company size threshold.[50]
- While Nashville's Metro Council passed a resolution in May 2020 urging private employers to provide paid sick leave to employees, they were unable to enforce the resolution due to a preemptive state policy that prohibits local governments from requiring private employers to provide paid sick leave.[51]
- There was also confusion related to the applicability of COVID-19 testing coverage mandates to self-funded employer health plans—many Nashvillians were billed after receiving COVID-19 test.[52]
- For workers with limited financial support, delays in lab processing of test results meant that they were losing much-needed income while waiting for their test results, with waiting period at times lasting for up to 14 days.[53]

[50] Glynn, Sarah Jane. "Coronavirus Paid Leave Exemptions Exclude Millions of Workers from Coverage." https://www.americanprogress.org/issues/economy/news/2020/04/17/483287/coronavirus-paid-leave-exemptions-exclude-millions-workers-coverage/.

[51] Gonzalez, Tony. "Nashville's Council Urges — but Can't Enforce — Stronger Pandemic Sick Leave." *WPLN*, May 20, 2020. Retrieved from: https://wpln.org/post/nashvilles-council-urges-but-cant-enforce-stronger-pandemic-sick-leave/.

[52] Farmer, Blake. "One Nashville Hospital Braces for a Backlash as It Starts Billing for Coronavirus Testing." *WPLN*, May 6, 2020. Retrieved from: https://wpln.org/post/one-nashville-hospital-braces-for-a-backlash-as-it-starts-billing-for-coronavirus-testing/.

[53] Kelman, Brett. "They Got Tested for Coronavirus. And Then They Waited. And Waited. And Waited." *The Tennessean*, 2020. Retrieved from: https://www.tennessean.com/story/news/2020/08/04/tennessee-coronavirus-test-delays-undermine-contact-tracing-isolation/5478371002/.

Perspectives from the Public Health Department and Private and Non-Profit Healthcare Facilities

Public health departments – in Nashville and across the United States – were focused on addressing several challenges to mitigate the spread of COVID-19, including but not limited to: tracking supply of PPE, accessing and utilizing relevant data, addressing rates of new infection, and monitoring intensive care unit (ICU) bed capacity, mortality, vaccination rates, contract tracing rates, etc.

Similarly, as healthcare providers nationwide were on the front lines, they experienced severe shortages of PPE caused by disruptions to the global supply chain. Safety-net hospitals and independent clinics particularly struggled to find enough PPE supplies to adequately equip their front-line workers.[54]

Key takeaways impacting the public health department as well as Nashville's private and non-profit healthcare facilities are highlighted below:

1. **Access to PPE supply in Nashville varied across different types of healthcare facilities.**
   - In Nashville, PPE formally procured by the OEM was allocated to the local government infrastructure and not to hospital facilities. Nashville General Hospital reported that their limited purchasing power created difficulties when sourcing and maintaining an adequate supply of PPE.
   - Nashville's three major health systems (i.e., HCA Healthcare | Tri-Star Division, VUMC, and Ascension Saint Thomas) and a safety net clinic reported a significantly easier time sourcing PPE due to their supply chain capabilities and ability to spread resources among multiple locations. Similarly, one FQHC reported that having a diversified supply chain enabled them to stock up on PPE supply early on in the pandemic.

2. **There was some degree of regional inter-system collaboration put in place to alleviate resource pressure on any single facility, though this was challenging to implement.**
   - Throughout the pandemic, there was regular inter-system coordination among leaders of the three major healthcare systems (Vanderbilt, HCA Healthcare | Tri-Star Division, and Ascension Saint Thomas) to share forecasted trends and best practices. In contrast, there was a reportedly low degree of regular coordination among Nashville General Hospital and these systems.
   - In partnership with TDH, Nashville's three largest health systems set up the "Middle Tennessee Transfer Coordination Center" in January 2021 to centralize regional inter-system triage and help smaller hospitals transfer patients to larger facilities run by one of the major health systems.

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[54] Hwang, Irena. "The PPE Crisis Didn't Go Away: Across the U.S., Grassroots Supply Networks Are Trying to Fill the Void." *STAT News,* December 1, 2020. Retrieved from: https://www.statnews.com/2020/12/01/the-ppe-crisis-didnt-go-away-across-the-u-s-grassroots-supply-networks-are-trying-to-fill-the-void/.

3. **Misalignment of hospital-level data collection and reporting among federal, state, and local agencies created inefficiencies in critical pandemic response decisions.**

    - Prior to the COVID-19 pandemic, there was no federal data collection system for monitoring hospital-level utilization and supplies to inform the allocation of funding and resources for healthcare facilities in a PHE. Due to the nascency of Health and Human Services' Protect data system, the agency made frequent and significant changes to the collection of hospital-level data during the pandemic. These changes imposed an additional burden for Nashville's overwhelmed health systems as they tried to implement the necessary changes.
    - As HHS modified reporting methods and increased the types of data being collected, hospitals needed to quickly adapt their data infrastructure to collect and report additional data elements, often with limited federal operational guidance.[55]
    - As the pandemic wore on, Nashville's health systems were increasingly becoming subject to more data reporting requirements, often for data points that were difficult to track (e.g., number of unused sterile gloves).
    - Hospitals faced serious penalties if they did not adhere to federal data reporting requirements around hospital-level resources, including PPE and ICU bed capacity. A hospital could be at risk of removal from the Medicaid and Medicare programs after multiple instances of non-compliance.[56]

4. **Care for people experiencing homelessness (PEH) evolved based on guidance and real-time learnings.**

    - Universally, cities struggled to manage the care of PEH, who are among the most vulnerable populations to be disproportionately impacted by COVID-19. In Nashville, MPHD and OEM acted quickly to set up the Nashville Fairgrounds as a temporary shelter for PEH to get tested and safely self-isolate in a secure location while waiting for test results. The Fairgrounds shelter of three facilities—one for healthy individuals, one for those awaiting test results (or people under investigation (PUI)), and one for those who tested positive, with the PUI shelter and positive shelter contained in the same building. The temporary shelter was closed on July 1, 2021.

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[55] Sekar, Kavya, and Angela Napili. "Tracking Covid-19: U.S. Public Health Surveillance and Data." Congressional Research Service, 2020. Retrieved from: https://fas.org/sgp/crs/misc/R46588.pdf.; Huang, Pien. "Hospitals That Don't Report Covid-19 Data Daily Will Get Warning Letter." *WNYC*, October 7, 2020. Retrieved from: https://www.npr.org/sections/health-shots/2020/10/07/920975793/hospitals-failing-to-meet-new-covid-19-data-reporting-mandate-to-get-warning-let.

[56] Ibid.

- Prior to the Fairgrounds shelter, many PEH who were turned away from Nashville's homeless shelters after screening positive for COVID-19 symptoms ended up in the resource-strained emergency departments of safety-net hospitals and urgent care centers.
- While the Fairgrounds facility followed good practices as outlined in the CDC guidelines for congregate housing, it reportedly did not follow best practices recommending single-occupancy, non-congregate settings for sick shelters (e.g., dorms, hotel rooms).
- Metro officials emphasized that housing PEH in hotels was not a viable long-term solution. Reports of damages to hotel room property and criminal activity created challenges for finding cooperative hotels that were willing to house PEH.

> **Comparison case study:**
> **Addressing homelessness in Austin, TX**
>
> In April 2020, Austin implemented a 2-part solution to allow people experiencing homelessness to safely isolate and receive meals. First, Austin City Council approved temporary leases on three large buildings to use for COVID emergency housing, isolation, and support services for the homeless population. According to a City spokesperson, the "ProLodges" housed 312 people.[1]
>
> Furthermore, the City of Austin and community partners created the Eating Apart Together (EAT) Initiative to deliver meals, drinking water, face coverings, and other clothing and hygiene items to people experience homelessness throughout the PHE. By July 2021, EAT had served over one million meals to the homeless population of Austin.[2]
>
> These solutions avoided the need to find willing business partners (e.g., hotels, convention centers) and provided early action for this vulnerable population.
>
> Sources: 1. "COVID-19 in Austin: City council approves $15M in relief funding, buys buildings for emergency isolation." Available here. 2. AustinTexas.gov. Eat Apart Together (EAT) Serves Up One Million Meals for People Experiencing Homelessness. Available here.

5. **Early COVID-19 mass testing efforts lagged in Nashville's diverse neighborhoods and did not adequately address barriers that impacted testing access and uptake for vulnerable populations. Partnerships with CBOs have been crucial for bridging the testing access gap among underserved communities.**
   - Healthcare providers, located in majority White neighborhoods, had the necessary resources to begin testing patients exhibiting symptoms starting on March 9, 2020.[57] While MPHD Strike Teams were active, MPHD's three drive-through mass testing centers for symptomatic residents, located in more diverse neighborhoods—Nissan Stadium, Murfreesboro Pike (former K-Mart), and Meharry Medical College,— opened on March 30, 2020 (see Figure 9). These centers were delayed from opening by more than 2 weeks due to a shortage of nasal swabs.[58]
   - While Nashville led the state in setting up mass testing centers, there were reported challenges with accessing the city's three drive-through testing centers for those who needed to arrive by public transit. MPHD later partnered with WeGo and community partners to create transportation alternatives.

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[57] Clendening, Jill, and Bill Snyder. "Collaboration Key to Rapid Expansion of Lab Test Capacity." https://news.vumc.org/2020/04/23/collaboration-key-to-rapid-expansion-of-lab-test-capacity/.

[58] Farmer, Blake. "Racial Disparities Emerge in Tennessee's Testing for Covid-19." *WPLN*, April 1, 2020. Retrieved from: https://wpln.org/post/racial-disparities-emerge-in-tennessees-testing-for-covid-19/.

- Partnerships with the state to conduct targeted testing efforts among vulnerable populations did not always consider community context or receive community buy-in. For example, uniformed Tennessee National Guard members were sent to conduct testing among low-income, predominantly African-American residents in Metropolitan Development and Housing Authority (MDHA) facilities. This oversight likely acted as a barrier for African-American MDHA residents that have a deep-rooted mistrust of law enforcement due to historical and contemporary oppression.[59]
- CBOs serving Nashville's immigrant and refugee population, such as Conexión Américas and the Tennessee Immigrant & Refugee Rights Coalition provided on-the-ground translation assistance to MPHD's mobile "strike teams." They also provided guidance for locating appropriate venues that could serve as targeted pop-up testing sites in locations that would be familiar to underserved community members (e.g., Plaza Mariachi).

Figure 9: CDC SVI Map of MPHD Community Assessment Center Locations, April 2020[60]
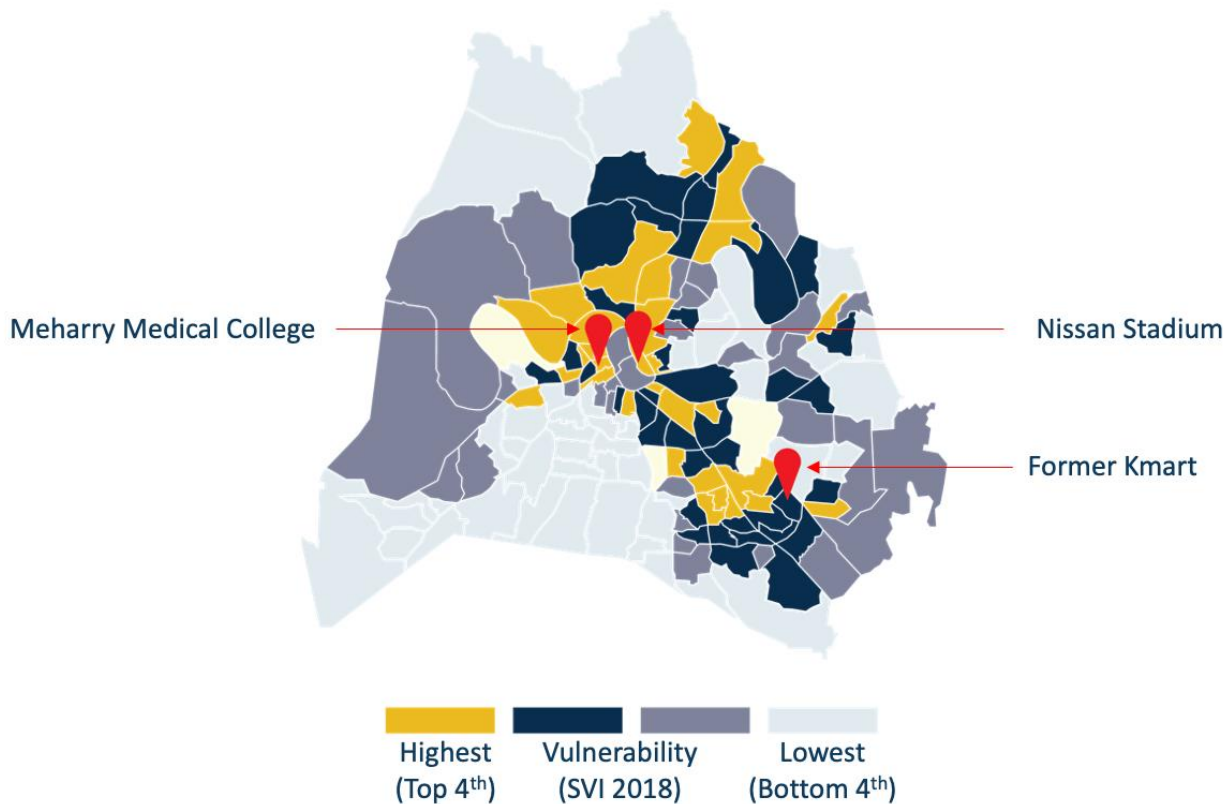
Source: Adapted from the CDC SVI Map, 2018. (See references list)

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[59] Farmer, Blake. "Tennessee's Sharing of Covid-19 Cases with Police Heightens Concern for Testing in Public Housing." *WPLN*, May 13, 2020. Retrieved from: https://wpln.org/post/tennessees-sharing-of-covid-19-cases-with-police-heightens-concern-for-testing-in-public-housing/.

[60] Centers for Disease Control. "CDC's Social Vulnerability Index (SVI)."

6. **The lack of health data collection standards and standardized metrics among different types of healthcare entities affected public reporting.**
   - Labs that were contracted to process Metro and state testing results did not have existing capabilities to receive and transmit granular race/ethnicity data in their electronic laboratory records when testing at MPHD's mass assessment centers began. This missing demographic information may have been helpful in tailoring the response in areas of Nashville in which vulnerable populations are concentrated.
   - The loss of primary language information when patient information was transferred between MPHD testing facilities and laboratories created issues when contact-tracers attempted to follow-up with non-English speaking cases.
   - In the early phases of the pandemic, there were discrepancies between case counts reported by TDH and MPHD due to their differential usage of the report date and specimen collection date, respectively, as proxy for the case onset date. These discrepancies created confusion for many Nashville residents as they were trying to understand the severity of the pandemic in real time.

7. **In Nashville, there was a high degree of coordination and collaboration among MPHD and local healthcare facilities.**
   - The COVID-19 pandemic has highlighted the importance of collaboration and alignment between the public health and healthcare sectors.
   - Notably, through the Mayor's COVID-19 Task Force, there were significant opportunities for public health and healthcare leaders to work together and develop policies that reflected the clinical reality of disease transmission.
   - All of Nashville's hospitals provided in-kind funding or "loaned" their staff to lead aspects of the city's COVID-19 response, particularly in areas that would traditionally fall under the purview of a public health department. MPHD leveraged Lean process improvement experts from VUMC to develop the city's testing strategy and relied on Meharry Medical College to staff and operate its testing centers.
   - Health systems leaders emphasized that they were unexpectedly responsible for many of the traditional public health capabilities that would typically fall under MPHD's purview, particularly with respect to testing.

8. **Hospital-based vaccine distribution created barriers to equitable allocation among eligible patients.**
   - Due to a federal policy restricting vaccine shipments to hospitals that ordered the minimum number of doses, Nashville General Hospital and Meharry Medical College were initially left off the state's vaccine distribution list, creating delays in vaccinating their front-line workers. At the time, Meharry staff had taken over running all three of MPHD's mass assessment centers.
   - Initial guidance from the state approved the limited provision of vaccines to existing patients of five Nashville hospitals—Tri-Star Centennial, Vanderbilt, Ascension St. Thomas, Nashville General, and Meharry Medical College. Given that many vulnerable populations, such as uninsured individuals, are less likely to have established relationships with a hospital provider, this policy of distributing vaccines

through hospitals reportedly had a disproportionate impact on access for those populations.[61]

- HCA Healthcare | Tri-Star Division was highlighted as an important partner for safety net entities who were initially left off the state's distribution list. HCA shared doses with Meharry clinics and conducted outreach to safety net clinics for the purposes of vaccinating their healthcare workers. It was found that both VUMC and Ascension St. Thomas could not accommodate safety net workers or patients not on their existing patient panels during early vaccination efforts.

- The state soon reversed their earlier guidance citing equity concerns and ordered hospitals to begin vaccinating all eligible Davidson County residents.[62] Health systems could schedule non-patients for a vaccine appointment if they called in by phone. Similar to situations faced by health systems nationwide, digital patient portals used by health systems to notify patients and schedule vaccine appointments did not have the necessary capabilities to notify and schedule non-patients. At the same time, the state began restricting vaccine supply that was allocated to hospitals, opting to shift distribution to local health departments and community health centers.[63]

9. **Tennessee's COVID-19 vaccine distribution plan was not aligned with national agencies' recommendations for prioritizing allocation of vaccines to certain high-risk and vulnerable populations. Recognizing the equity implications of vaccinating high-risk populations earlier, MPHD and community partners began prioritizing vaccinations for priority populations well ahead of their scheduled eligibility in the state's vaccine distribution plan.**

- In the initial phases of the vaccine rollout, the CDC and National Academies of Sciences, Engineering, and Medicine (NASEM) recommended jurisdictions to prioritize critical populations in their distribution plans to ensure that the most vulnerable would be among the first to receive the vaccine. NASEM's Equitable Allocation Framework recommends that people experiencing homelessness in congregate settings and incarcerated people be included in the Phase 2 allocation phase.[64] Despite this guidance, many states, including Tennessee, failed to prioritize both of these critical populations in their vaccine distribution plans.[65]

- The Tennessee vaccine distribution plan instructed counties to begin vaccinating incarcerated populations and people experiencing homelessness in Phase 3 (i.e.,

[61] Wadhwani, Anita. "Covid-19 Vaccine Rollout Concerns Advocates for Poor and Minority Patients." *Tennessee Lookout,* January 14, 2021. Retrieved from: https://tennesseelookout.com/2021/01/14/covid-19-vaccine-rollout-concerns-advocates-for-poor-and-minority-patients/.

[62] Farmer, Blake. "Tennessee Orders Hospitals to Stop Restricting Covid Vaccine to Their Own Patients." *WPLN*, January 24, 2021. Retrieved from: https://wpln.org/post/tennessee-orders-hospitals-to-stop-restricting-covid-vaccine-to-their-own-patients/.

[63] Farmer, Blake. "With Vaccine in Short Supply, Tennessee Favors Health Departments over Hospitals." *WPLN*, January 27, 2021. Retrieved from: https://wpln.org/post/with-vaccine-in-short-supply-tennessee-favors-health-departments-over-hospitals/.

[64] National Academies of Sciences, Engineering, and Medicine. "Framework for Equitable Allocation of Covid-19 Vaccine." 2020. Retrieved from: https://www.nap.edu/resource/25917/Major%20Elements%20of%20the%20Framework%20for%20Equitable%20Allocation%20of%20COVID-19%20Vaccine.pdf.; Centers for Disease Control and Prevention. "Covid-19 Vaccination Program Interim Operational Guidance Jurisdiction Operations." 2020. Retrieved from: https://www.cdc.gov/vaccines/imz-managers/downloads/Covid-19-Vaccination-Program-Interim_Playbook.pdf.

[65] Ness, Lindsey Van. "States Fail to Prioritize Homeless People for Vaccines." The Pew Charitable Trusts, https://www.pewtrusts.org/en/research-and-analysis/blogs/stateline/2021/03/01/states-fail-to-prioritize-homeless-people-for-vaccines.

July—September 2021). MPHD leveraged opportunities to vaccine PEH and individuals living in incarcerated/correctional settings beginning in February 2021, for example, by vaccinating elderly inmates.[66]

- February's severe ice storm delayed Nashville's COVID-19 vaccination efforts as many canceled appointments. To avoid vaccine waste, MPHD acted quickly to vaccinate hundreds of PEH at the Nashville Rescue Mission and Room at the Inn.[67]

Perspectives from Local and State Government Officials

Across the nation, COVID-19 highlighted the crucial need for close coordination among all levels of government in establishing detailed pandemic response plans. Despite the highly-politicized nature of the pandemic, Mayor Cooper consistently followed local experts' guidance, focusing on data-driven communications and decision-making throughout the pandemic. Metro's science-driven approach kept the city ahead of regional trends in implementing time-sensitive public health measures to mitigate the spread of COVID-19. According to a VUMC analysis, Tennessee counties that instituted mask mandates in the summer of 2020 had substantially lower COVID-19 death rates compared to counties without mask mandates.[68]

Additional key takeaways from local and state government:

1. **Effective health communication is a critical factor for sustaining behavior change and maintaining decision-making transparency and trust with the broader public.**
   - Trust and credibility play a major role in influencing behavior change and ensuring residents' compliance with public health mitigation strategies.
   - The inclusion of trusted leaders from Nashville's minority communities in Mayor Cooper's briefings, particularly faith community leaders, was perceived as an effective strategy for increasing engagement among minority populations.

2. **Early recognition of food insecurity among populations in most need resulted in early action for vulnerable populations**
   - Nashville leaders recognized early on that vulnerable populations would be disproportionately impacted by public health measures (e.g., stay-at-home mandates, mask mandates) and would need diverse vehicles of support (e.g., churches, schools, or CBOs). In particular, food insecurity was a major area of need that was addressed early on given the pandemic's economic impact and the loss of school free meals for many low-income families. In 2020 alone, Feeding America projected that COVID-19 would increase Davidson County's child food insecurity rate from 14% to 20%.[69]

[66] Farmer, Blake. "Nashville Vaccine 'Strike Teams' to Seek out People Vulnerable to Covid-19." *WKMS*, February 15, 2021. Retrieved from: https://www.wkms.org/health/2021-02-15/nashville-vaccine-strike-teams-to-seek-out-people-vulnerable-to-covid-19.

[67] Kelman, Brett. "As Nashville Froze, Health Officials Rushed to Use More Than 500 Vaccine Doses Due to Expire." *The Tennessean*, February 18, 2021. Retrieved from: https://www.tennessean.com/story/news/health/2021/02/18/winter-storm-nashville-rushed-covid-19-vaccine-doses/4488962001/.

[68] Vanderbilt University Medical Center Department of Health Policy. "Tennessee Areas without Mask Requirements Have Higher Death Toll Per Capita." https://www.vumc.org/health-policy/news-events/tennessee-areas-without-mask-requirements-have-higher-death-toll-capita.

[69] Feeding America. "State-by-State Resource: The Impact of Coronavirus on Food Security." 2021. https://feedingamericaaction.org/resources/state-by-state-resource-the-impact-of-coronavirus-on-food-insecurity/.

3. **Nashville's main education providers—MNPS and MAC—reportedly provided a strong level of support to address the "digital divide" and ensure that students had access to essential resources and services for virtual learning during school closures.**

- The sudden shift from in-person to virtual learning greatly impacted low-income families with school-aged children, particularly among students whose parents were essential workers who could not supervise them and keep them engaged in a virtual learning environment.

- Although procurement of laptops initially lagged, MNPS was eventually able to ensure 100% access to needed digital devices for all students by securing a 1:1 technology-to-student ratio using $24 million in CARES Act dollars that Mayor Cooper had previously committed to funding virtual learning supports. MNPS also used CARES Act funds to purchase hotspots for families that did not have access to the internet.

- Recognizing that almost 30% of MNPS students are English Learners, MNPS set up four regional virtual learning support centers, three of which are located in high vulnerability areas, to assist students with technical issues or questions.

- MAC initially worked within its own inventory to secure laptops and phones for all of its Head Start (HS) and Early HS providers, also purchasing phone hotspots for teachers who did not have access to the Internet. The agency's ability to pivot quickly enabled their teachers to stay engaged with students and families while conducting classes remotely.

> **Comparison case study:**
> **Support for schools in Indianapolis, IN**
>
> In April 2020, Indianapolis Public Schools (IPS) identified similar priority areas as Nashville's MNPS for enabling healthy and equitable remote schooling
>
> IPS announced that all students will be eligible to pick up prepackaged meals, ensuring that IPS students have 3 healthy meals per day during the week.
>
> IPS provided resources for families with unstable internet access to sign up for short-term WiFi through AT&T, Comcast, and Verizon.
>
> Additionally, the IPS Foundation launched the IPS Education Equity Fund to help eradicate educational inequities exacerbated by the digital divide. Included in the Fund are resources to cover any gaps necessary to launch and sustain 1:1 device and internet access and support districtwide teacher training.
>
> **Sources:** 1. IPS. Summer Meal Pick-Up for Families: IPS, Gleaners and Indy Parks Continue to Serve. Available here. 2. IPS. Short-Term Internet Connectivity- Marion County Schools. Available here. 3. IPS. IPS Foundation Launches the IPS Education Equity Fund to Meet the Social, Emotional and Academic Needs of Students. Available here.

- Through Metro's Food Security Working Group, MAC and MNPS addressed food insecurity for students and their families by directly delivering food baskets to students and their families.

4. **Centralized emergency response efforts through formalized Metro entities were crucial for mobilizing Nashville's key stakeholders to align their respective response efforts. In particular, the citywide food committee accelerated the city's response to pandemic-related emergent food insecurity.**

   - Early on, Mayor Cooper convened a Metro Coronavirus Task Force containing members from Nashville's hospital systems, safety net facilities, nursing homes, and CBOs, along with the Metro Board of Health, state officials, OEM, and other emergency personnel.
   - The Task Force communicated transparently with local business leaders to ensure that there was alignment in understanding why public health measures such as business closures and mask mandates were being instituted. Business leaders were crucial for messaging MPHD-aligned information throughout their organizations.
   - Prior to COVID-19, Nashville's major food providers had already been mobilized to respond to emergent food-related needs from the March 3, 2020 tornado. When the pandemic hit, this rapid response infrastructure was already in place and carried over into the pandemic response.
   - The Food Security workgroup increased awareness of each food providers' pandemic response initiatives for members. It also facilitated coordination between key entities so that resources were being optimized and there was no overlap between response efforts.

> **Comparison case study:**
> **Food insecurity challenges in Indianapolis, IN and Jacksonville, FL**
>
> Less infrastructure to address food insecurity in Indianapolis resulted in slower solutions for those in need. A report published by the Indy Hunger Network in October 2020 showed that food insecurity was a major problem in the state. In Indianapolis, the "meal gap — the estimated number of meals required to meet total need — also doubled, from around 380,000 per month in February to around 740,000 in June."
>
> While a majority of needed meals were supplied by the federal Supplemental Nutrition Assistance Program (SNAP), it was a handful of nonprofit organizations that eventually stepped in to help close the meal gap by doubling the number of meals they provided to the residents of Indianapolis by June 2020. Similarly, in Jacksonville, nonprofits led the way to address food insecurity in April and May 2020, when demand for food soared among vulnerable populations.
>
> While efforts such as these helped to close cities' meal gaps across the country, the lack of a centralized response plan left them scrambling to find solutions. In contrast, Nashville's city-supported Food Security workgroup made emergency food provision a well-organized activity early in the pandemic, and helped curb overwhelming demand.
>
> **Source:** 1. Hays, Holly V. "When The COVID-19 Pandemic Hit, Available Food Assistance Doubled- But So Did The Need." Available here. 2. Coronavirus: Farms, Florida Blue partner to get food to seniors, needy families. Jacksonvile.com. Available here. 3. Feeding Northeast Florida. Feeding Northeast Florida Receives a $70,000 Grant from Truist for COVID-19 Relief Efforts. Available here.

5. **Population compliance with public health measures was challenged by Nashville's tourism and misalignment with messaging from federal and state health departments.**

- Nationally, compliance with public health mitigation strategies (e.g., mask wearing, social distancing) was difficult to establish given the politicization of the pandemic response and conflicting guidance from the CDC. But, Nashville faced additional challenges with implementing and monitoring compliance with public health measures.
- Nashville's reopening tourist areas created a constant turnover of out-of-town visitors, making it difficult to track and address instances of non-compliance with mask mandates or social distancing measures.[70]
- As one of six autonomous county health departments in Tennessee, Metro's public health measures were often misaligned with measures instituted by state-run health departments in contiguous counties (e.g., indoor mask mandates). As a result, individuals were subject to varying guidance when travelling across Davidson County lines.
- Community leaders expressed challenges with communicating why public health measures differed between outlying counties. All stakeholders agreed that the patchwork approach to public health measures compounded resident confusion.

6. **Local government officials generally agreed that contact tracing was one of the most challenging areas of Nashville's COVID-19 response. There are three perceived barriers to implementing an effective contact tracing protocol at scale: 1) The voluntary nature of contact tracing, 2) Visitor turnover, and 3) Inadequate contact tracing workforce.**
   - Contact tracing is an important public health surveillance tool for containing the spread of COVID-19 and is looked to as an important data source to justify local policy decisions. Nationally, all levels of government struggled to find the workforce numbers needed to handle processing the large volume of daily cases.[71]
   - In the US, all contact tracing efforts relied on voluntary participation from the contact in question. Since individuals were not required to participate in contact tracing or case investigations, comprehensive exposure-based contact tracing was not possible in most cases.
   - As the city loosened capacity restrictions, many visitors from outside Davidson County frequented Nashville's downtown bars and restaurants. The frequent visitor turnover meant that contact tracers would not have been able to link the positive case back to Nashville's bars when out-of-county residents returned home.[72]
   - Similar to experiences in most of the country, it was difficult for MPHD to rapidly identify and hire qualified contact-tracers to conduct case-based investigation activities at scale. The need to rapidly scale up MPHD's contact tracing workforce may have created a decline in the quality of contacts as many contact-tracers did not have a formal public health or epidemiological background.

[70] Jeong, Yihyun. "On Lower Broadway, Partiers Ignore Nashville's Mask Mandate with Impunity." *The Tennessean*, August 3, 2020. Retrieved from: https://www.tennessean.com/story/news/health/2020/08/03/broadway-partiers-ignore-nashville-mask-mandate/5567471002/.

[71] McClain, Colleen, and Lee Rainie. "The Challenges of Contact Tracing as U.S. Battles Covid-19." 2020. https://www.pewresearch.org/internet/2020/10/30/the-challenges-of-contact-tracing-as-u-s-battles-covid-19/.

[72] Kelman, Brett. "Fact Check: Did the Nashville Mayor's Office Hide Coronavirus Stats? No. Not at All." The Tennessean, September 18, 2020. Retrieved from: https://www.tennessean.com/story/news/2020/09/18/fact-check-nashville-mayor-cooper-coronavirus-stats/3491786001/.

- During Nashville's pandemic peaks, case-based investigations became unfeasible, leading MPHD to begin conducting cluster-based investigations to focus on hotspot areas and maintain close contact with high-priority contacts. Nashville reduced its force of 125 contact-tracers by 50% in December 2020, which eventually decreased to 42 contact-tracers in January of this year as MPHD shifted to an automated contact-tracing process.[73]

7. **Integration of equity considerations in COVID-19 testing plans is important for obtaining accurate information on the differential impact on vulnerable communities.**

   - During the early development of Metro's COVID-19 testing strategy, decision-makers reportedly did not sufficiently involve perspectives from community-based partners to address important concerns for vulnerable populations that would have ensured no-barrier testing.

   - MPHD's information-sharing policy that permitted names and addresses of individuals who tested positive for COVID-19 to be shared with law enforcement reflected a lack of cultural sensitivity. MPHD later implemented an interim process in which names are only shared when a confirmed case needs to be transported to a hospital.[74] However, this may have deterred communities of color, particularly Black and immigrant communities, from getting tested at one of MPHD's mass testing centers due to fears around interacting with law enforcement.[75]

   - To increase the scale and efficiency of testing, race/ethnicity questions were not initially included in the data collection processes at its mass testing centers. These questions were later inserted when race and ethnicity became

> **Strategies for the Equitable Distribution of COVID-19 Testing**
>
> The Rockefeller Foundation and the Duke-Margolis Center for Health Policy released a report that details considerations for developing an equitable COVID-19 testing strategy. The considerations laid out in the report verify many of the tactics used in Nashville's testing strategy. For example, the report recommends engaging trusted members of the community (e.g., CBOs, faith-based organizations) and using an opt-in approach where communities with high risk of transmission or exposure self-select for locating testing in their communities. MPHD's pop-up testing location strategy has been informed by partnerships with CBOs such as Conexión Américas and is aligned with these recommendations.
>
> One opportunity for improvement is related to ensuring no-barrier testing across different communities. While wrap-around services were provided at the Fairgrounds testing location for PEH (e.g., food and housing resources), there were limited social supports to facilitate quarantining among essential and front-line workers in the event of a positive result.
>
> **Source:** "State and Local Testing Strategies for Responding to COVID-19 Outbreaks in Communities: Considerations for Equitable Distribution. Available here.

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[73] Hartnett, Kara. "Metro Health Automates Contact Tracing, Cuts 50 Staff." *Nashville Post*, January 13, 2021. https://www.nashvillepost.com/health_care/metro-health-automates-contact-tracing-cuts-50-staff/article_2b575527-0e9f-5f89-800e-3b18a641bd29.html.

[74] Morris, Chuck. "Metro Health Board Approves Sharing Limited COVID-19 Case Info with First Responders." *WSMV*, August 7, 2020. Retrieved from: https://www.wsmv.com/news/davidson_county/metro-health-board-approves-sharing-limited-covid-19-case-info-with-first-responders/article_6d7bc208-d8be-11ea-8d17-9bb983372b7c.html.

[75] Breslin, Ryan. "Metro Council Members Call on Health Department to Stop Sharing COVID-19 Patient Information." *WSMV*. May 27, 2020. Retrieved from: https://www.wsmv.com/news/metro-council-members-call-on-health-department-to-stop-sharing-covid-19-patient-information/article_7c1d4f44-a087-11ea-bde5-6714710df887.html.

germane to targeted outreach efforts, which reportedly delayed the identification of COVID-19 hotspots in Nashville's immigrant communities.

8. **From the beginning, Metro leaders understood that developing an emergency communications infrastructure through various channels would be necessary for at-scale crisis management and targeted dissemination of information to vulnerable populations. Effective health communication is a critical factor for sustaining behavior change and maintaining decision-making transparency and trust with the broader public.**
   - In partnership with the CVC, the Mayor's COVID-19 Task Force pulled together a communications team in March 2020 with professional crisis communications capabilities.
   - Mayor Cooper's daily press briefings with community leaders like Drs. Alex Jahangir and James Hildreth—101 briefings in total from March 2020 to March 2021—were an effective communication mechanism for rapidly disseminating information on a large scale.

9. **Local government leadership transitions impacted the coordination of the COVID-19 response.**
   - There were multiple mayoral transitions and a number of new Metro Council members elected months before the pandemic. New Councilmembers reported challenges with identifying key agency contacts and obtaining guidance to explain policy decisions to their constituents.
   - Stakeholders reported difficulty in coordinating response due to leadership transition at MPHD. However, Board of Health Chair Dr. Alex Jahangir and Interim MPHD Director Dr. Gill Wright were highlighted for responsiveness and leadership throughout the pandemic.

Concluding Remarks

The key findings reflect valuable insights garnered from interviews with a diverse group of community leaders that were then triangulated with findings from an assessment of relevant historical documents. Given that there were many common themes across interviewees' varying perspectives, the report recommendations offer suggestions for improvement along with suggestions to solidify Nashville's existing practices. These recommendations are actionable across multiple stakeholder groups. Moreover, the scale of the COVID-19 pandemic's impact has underscored an urgent need for collaborative action. The COVID-19 Project Steering Committee is a prime example of this type of multi-sector, collaborative effort that has culminated in this report. Accordingly, the recommendations enumerated in the following section are intended to be collaborative solutions that build on the foundation put in place by this Steering Committee.

Recommendations

At the time of writing this report, the COVID-19 pandemic is still ongoing due to the rise of the Delta variant leading to more cases and hospitalizations, as well as the fact that the U.S. has the lowest vaccination rate among the world's wealthiest nations.[76] Tennessee continues to be one of the leading states for new COVID-19 infections. In Davidson County, while more than 60% of its residents are vaccinated, there is increased demand for testing as case rates continue to surge, making the need for timely action imperative.[77] Booster shots — which are now being distributed in the US — are available to eligible individuals who received their second dose of the Pfizer-BioNTech or Moderna COVID-19 vaccine at least six months ago and meet a set of particular criteria or to adults 18 and older that received the single-dose Johnson & Johnson vaccine at least 2 months ago.[78]

The recommendations below highlight short, medium and long-term changes that Nashville should consider – as quickly as within the next eight months – to address current concerns of the ongoing pandemic and improve readiness for future public health emergencies. The recommendations cut across all five categories of the framework and include suggested entities for leadership and partnership, as well as a specific delineation for state government involvement.

Timing	Recommendations Text below bolded recommendations provides further context or explanation where needed.	Stakeholder Groups ✓ = lead/coordinating entity ✓ = partner entity					
		*Checkmarks with the ✦ designation refer to recommendations that could also apply to the TN government.					
		Hospitals/ Healthcare	Community-Based Organizations (CBOs)	Metro Gov't (and State Gov't)*	Academia/ Research Partners	Philanthropy /Large Non-Profits	Small/Large Businesses
Short-Term 0-8 months	A. **The Nashville COVID-19 Response Review project Steering Committee should continue convening to identify implementation barriers that should be addressed to make report recommendations more actionable. As part of this, the Committee should develop equity questions that must be answered by decision-makers during public health emergency planning and response efforts.** The key equity questions should be illustrative of equity concerns that include, but are not limited to: 1. How will residents of public and low-income housing get needed services or care?	✓	✓	✓	✓	✓	✓

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[76] Lukpat, Alyssa. "The U.S. Is Falling to the Lowest Vaccination Rates of the World's Wealthiest Democracies." *The New York Times*, September 11, 2021. Retrieved from: https://www.nytimes.com/2021/09/11/world/asia/us-vaccination-rate-low.html.

[77] COVID Act Now. "Davidson County, TN." October 25, 2021. Retrieved from: https://covidactnow.org/us/tennessee-tn/county/davidson_county/?s=24721387.

[78] Food and Drug Administration. "Coronavirus (COVID-19) Update: FDA Takes Additional Actions on the Use of a Booster Dose for COVID-19 Vaccines." October 20, 2021. https://www.fda.gov/news-events/press-announcements/coronavirus-covid-19-update-fda-takes-additional-actions-use-booster-dose-covid-19-vaccines.

Timing	Recommendations Text below bolded recommendations provides further context or explanation where needed.	Hospitals/ Healthcare	Community-Based Organizations (CBOs)	Metro Gov't (and State Gov't)*	Academia/ Research Partners	Philanthropy /Large Non-Profits	Small/Large Businesses
	2. How will Nashville residents who do not have access to private transportation still be able to get needed services or care? 3. How will residents of senior/disabled apartment buildings (especially those with limited mobility) get needed services/care? **4. How will PEH get needed services/care?**						
	B. Continue to update and tailor culturally responsive messaging and educational materials that communicate federal, state, or local COVID-19 updates (e.g., eligibility for booster shots) and also address community-specific concerns related to COVID-19 vaccines, relying on leaders in community health clinics, local faith and ethnic communities, community-based organizations, and local businesses to support delivery of public health messaging as trusted messengers. The Nashville Takes on COVID coalition which was recently established by the Nashville General Hospital Foundation and Neighborhood Health to increase the number of Nashville residents getting a COVID vaccine would be well positioned to take on this work. Special considerations will need to be made to develop culturally responsive COVID-19 services and resources to address the needs of new arrivals in Nashville.	✓ (partner)	✓ (lead)	✓ (lead) ✦			✓ (partner)
	C. Utilize the Mayor's business leadership advisory committee to provide programming to educate local business leaders on establishing, maintaining, and regularly updating appropriate COVID-19 protocols in non-healthcare workplaces. The programming should align with best practices as laid out by employer groups and emerging evidence from recognized scientific bodies (e.g., Centers for Disease Control and Prevention (CDC)) on COVID-19 vaccine and testing protocols. The advisory committee should be led in partnership with MPHD and local health systems who would provide public health expert guidance.	✓ (partner)		✓ (partner)			✓ (lead)
	D. Develop standardized COVID-19 protocols in collaboration with the Convention & Visitors Corporation (CVC) and individual venue owners that apply to conventions and other large-scale events to regularly maintain a high level of economic activity. This will require a great degree of coordination among the CVC, the city, venue owners, health systems, and private testing companies.	✓ (partner)	✓ (lead)	✓ (partner)			✓ (lead)
	E. Develop a COVID-19 testing contingency plan to establish additional testing sites that can be rapidly activated to help mitigate potential hotspot areas as cases rise, to the extent						

Stakeholder Groups
✓ = lead/coordinating entity
✓ = partner entity

*Checkmarks with the ✦ designation refer to recommendations that could also apply to the TN government.

	Stakeholder Groups ✓ = lead/coordinating entity ✓ = partner entity					
	*Checkmarks with the ✚ designation refer to recommendations that could also apply to the TN government.					
Timing	**Recommendations** Text below bolded recommendations provides further context or explanation where needed.	Hospitals/Healthcare	Community-Based Organizations (CBOs)	Metro Gov't (and State Gov't)*	Academia/Research Partners	Philanthropy/Large Non-Profits	Small/Large Businesses
---	---	---	---	---	---	---	---
	possible. This could also be accomplished by continuing to utilize a Strike Team strategy. As part of this plan, MPHD should continue to regularly evaluate and monitor vaccination data to stay aware of regions that have lower vaccination rates. MPHD should also regularly monitor case rates so that the contingency plan can be activated when cases exceed a pre-determined threshold level, with a focus on neighborhoods that have been disproportionately impacted by COVID-19. This contingency plan must consider potential barriers to testing access for vulnerable populations and provide alternative solutions (e.g., transportation).	✓ (partner)	✓ (partner)	✓ (lead, TN)			✓ (partner)
	F. **Continue to convene the multi-sector Nashville COVID-19 Response Review project Steering Committee to identify a set of core pandemic preparedness metrics that could be used to assess the city's future performance on key aspects of Nashville's pandemic response (e.g., perception of communication, degree of community engagement). These metrics would help drive stakeholder alignment and accountability in future PHEs.**	✓ (partner)	✓ (lead)	✓ (partner)	✓ (partner)	✓ (partner)	✓ (partner)
	G. **Building on MPHD's new patient registry, explore the feasibility of integrating other sources of clinical data from non-MPHD healthcare providers that serve different patient populations (e.g., private health systems, community health centers).**	✓ (partner)		✓ (lead)	✓ (partner)		
	H. **Leveraging a Social Vulnerabilities Index (SVI), identify geographic locations and communities where populations are at the greatest risk for negative socioeconomic and health outcomes associated with natural disasters (e.g., global pandemics) to inform policymaking and planning for future PHEs.**	✓ (partner)	✓ (lead)	✓ (partner, TN)	✓ (partner)		
Mid-Term 9 months-2 years	A. **To mitigate potential disparities in future PHEs, conduct a comprehensive resource landscape assessment in known hotspot areas. Use this information to better understand residents' perspectives on needed services/resources that are currently lacking in their communities, and to drive better decision-making and resource allocation.**	✓ (partner)	✓ (lead)	✓ (lead)	✓ (partner)	✓ (partner)	✓ (partner)
	B. **Create an online "Equitable Policy-Making" training module that would require mandatory participation for key Metro government employees, Metro Council members and decision-makers on an annual basis.**		✓ (partner)	✓ (lead, TN)			

Timing	Recommendations Text below bolded recommendations provides further context or explanation where needed.	Stakeholder Groups ✓ = lead/coordinating entity ✓ = partner entity *Checkmarks with the ✦ designation refer to recommendations that could also apply to the TN government.					
		Hospitals/ Healthcare	Community-Based Organizations (CBOs)	Metro Gov't (and State Gov't)*	Academia/ Research Partners	Philanthropy /Large Non-Profits	Small/Large Businesses
	The training would sensitize decision-makers to crucial access issues, including the importance of instilling trust in services offered and the need for culturally responsive resources that support those objectives.						
	C. Present findings from the COVID-19 Response Review project to Metro Nashville Public Schools (MNPS) and Metropolitan Action Commissions (MAC) officials. Offer support as needed when MNPS and MAC conduct evaluation around their COVID-19 student support initiatives (e.g., 1-to-1 technology-to-student ratio, school lunch delivery).		✓	✓	✓	✓	
	D. To ease user and administrative burdens and streamline processes, create centralized, web-based portals with standardized protocols that residents and businesses can use when applying for economic relief. These portals would collect the information that is necessary to adjudicate eligibility and notify recipients of the status of their economic relief application.		✓	✓	✓	✓	✓
	E. To strengthen future PHE preparedness, develop an inventory of pandemic contingency sites for testing, vaccination, and community-based surge capacity. Stakeholders should continuously monitor the availability of appropriate locations and focus efforts on vulnerable regions that are expected to be impacted the most. Criteria to identify appropriate contingency sites will vary depending on the intended purpose of the site as outlined above.	✓	✓	✓✦			✓
	F. To address recommendations from Nashville's recent Digital Inclusion Assessment, strengthen and support public/private partnerships that increase access to broadband internet and technologies in underserved areas.			✓		✓	✓
	G. To ensure that MPHD has strong, long-term leadership, the Board of Health should assess mechanisms for growing the pool of qualified candidates for future MPHD Director recruitment. This could include revisiting the requirement that the Director must be a physician, or potentially improving compensation and benefits to garner broader interest.			✓			
Long-Term 2+ years	**A. Continue to strengthen and maintain public-private partnerships at the federal, state, and local levels to establish public health and hospital-level data standards and standardized mandatory reporting requirements that indicate**	✓		✓✦	✓		✓

Timing	Recommendations — Text below bolded recommendations provides further context or explanation where needed.	Stakeholder Groups ✓ = lead/coordinating entity ✓ = partner entity *Checkmarks with the ✦ designation refer to recommendations that could also apply to the TN government.					
		Hospitals/ Healthcare	Community-Based Organizations (CBOs)	Metro Gov't (and State Gov't)*	Academia/ Research Partners	Philanthropy /Large Non-Profits	Small/Large Businesses
	what data elements must be reported and the submission method that should be used. This is a needed capability to ensure data system interoperability, using aggregated data for an accurate picture of hospital capacity and resource utilization to facilitate effective situational awareness to respond more effectively to PHEs.						
	B. **Leverage gains made in healthcare delivery during COVID-19 (e.g., expansion of access to telehealth, remote patient monitoring) to address barriers to healthcare access for populations that would benefit from receiving healthcare services virtually (e.g., working adults), with a focus on vulnerable populations (e.g., disabled, elderly, etc.)**	✓ (lead)	✓ (partner)	✓ (partner) ✦		✓ (partner)	✓ (partner)
	C. **Create and maintain centralized crisis resource repositories (e.g., Personal Protective Equipment (PPE), hygiene supplies) dedicated to addressing shortages among non-profit and community-based organizations, including vulnerable groups. The repository should also have associated distribution plans that incorporate a prioritization algorithm to equitably allocate resources to organizations based on degree of risk.**	✓ (partner)	✓ (lead)	✓ (lead)	✓ (partner)	✓ (partner)	✓ (partner)
	D. **Use COVID-19 after-action learnings to develop PHE-specific procedures and protocols (e.g., triage guidelines) for inclusion in state and local emergency management plans, hazard mitigation plans, and crisis standards of care guidelines. Ideally, these resources would incorporate the pandemic preparedness metrics identified by the COVID-19 Response Review Steering Committee in short-term recommendation F.**	✓ (partner)		✓ (lead) ✦			
	E. **Building on pandemic learnings, develop citywide protocols and an activation plan for streamlining the continuum of care of medically indigent populations during a PHE. (e.g., people experiencing homelessness).**	✓ (lead)	✓ (partner)	✓ (lead)			
	F. **To support sustainable tourism recovery in future PHEs, develop and regularly update standardized pandemic operating protocols for businesses and hotels located in Nashville's tourist areas in collaboration with the CVC and local business owners.** Standardized protocols by hospitality industry sectors would provide policy clarity and operational guidance for business owners that typically rely on tourist traffic as their main customer base. Ideally, these protocols would clearly outline epidemiological criteria (e.g., case rates, hospitalization rates) and associated containment measures that businesses should follow.	✓ (partner)	✓ (lead)	✓ (partner)			✓ (lead)

Timing	Recommendations Text below bolded recommendations provides further context or explanation where needed.	Stakeholder Groups ✓ = lead/coordinating entity ✓ = partner entity *Checkmarks with the ✦ designation refer to recommendations that could also apply to the TN government.					
		Hospitals/ Healthcare	Community-Based Organizations (CBOs)	Metro Gov't (and State Gov't)*	Academia/ Research Partners	Philanthropy /Large Non-Profits	Small/Large Businesses
	G. Publish an easily understandable online dashboard that communicates city-wide progress on the pandemic preparedness metrics identified by the COVID-19 Response Review Steering Committee in short-term recommendation F.	✓ (lead)		✓ (lead)✦	✓ (partner)		
	H. Elevate leaders of Nashville's racial-ethnic minority faith communities and Voluntary Organizations Active in Disaster (VOAD) leadership as key components of Nashville's pandemic response infrastructure and emergency decision-making bodies in future PHEs, including the Office of Emergency Management's (OEM) Emergency Operations Committee (EOC). Engaging the whole community in planning stages, especially those who are leaders among underserved or vulnerable populations, is required for future disaster preparedness. Nurturing existing partnerships improves access to information and resources when the next disaster strikes, helping to incorporate equity and agility in the emergency response.	✓ (partner)	✓ (lead)	✓ (lead)		✓ (partner)	
	I. Involve small/local businesses, safety net entities, and community-based organizations in Metro Government's future tabletop disaster preparedness drills.	✓ (partner)	✓ (partner)	✓ (lead)✦		✓ (partner)	✓ (partner)
	J. Prioritize regular investments in public health infrastructure and crisis readiness to strengthen local emergency response infrastructure by assuring annual funding for MPHD, OEM and requiring local government agencies to designate a funding amount for their PHE preparedness activities as part of Metro Government's annual budgetary process.	✓ (partner)	✓ (partner)	✓ (lead)✦			
	K. To ensure MPHD has consistent and trusted leadership that receives community buy-in, continually assess the composition of MPHD leadership and ensure that it reflects the diversity of the Davidson County population. Also, consider involving community leaders in future leadership recruitment processes through citizen committees comprised of membership that is reflective of Davidson County's different constituent groups.	✓ (partner)	✓ (partner)	✓ (lead)			
	L. Identify metrics that would add value for residents' decision-making if publicly reported in future PHEs (e.g., testing line wait time) and identify methods of dissemination to ensure that this information is readily accessible and usable for all Nashville residents (e.g., utilizing digital highway signs).	✓ (lead)	✓ (partner)	✓ (lead)✦		✓ (partner)	✓ (partner)
	M. Create an ad-hoc advisory board to convene leaders from other county governments belonging to the Nashville Metropolitan Statistical Area (MSA) along with other major TN counties that have their own autonomous health departments to ensure			✓ (lead)			

Timing	Recommendations Text below bolded recommendations provides further context or explanation where needed.	Stakeholder Groups ✓ = lead/coordinating entity ✓ = partner entity					
		*Checkmarks with the ✦ designation refer to recommendations that could also apply to the TN government.				
		Hospitals/ Healthcare	Community-Based Organizations (CBOs)	Metro Gov't (and State Gov't)*	Academia/ Research Partners	Philanthropy /Large Non- Profits	Small/Large Businesses
	alignment of PHE policies and measures, to the extent possible.						

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Appendix 1: Methodology

Study Design & Unit of Analysis

Avalere used a content analysis study design with an equity-focused lens to collect, analyze, and synthesize key quantitative and qualitative data pertinent to Nashville's pandemic response. Avalere's review focused on encompassing activities pertinent to the Nashville-Davidson-Murfreesboro-Franklin, TN metropolitan statistical area, as specified by the U.S. Office of Management and Budget, recognizing transit/mobility trends that occurred among residents and non-residents. Where relevant, review of government directives and distribution of relief funds was focused on Nashville-Davidson County.

Research Framework

Avalere drafted a research framework aligned to five framework categories (the detail of the framework is outlined in Appendix 5). Below is a definition of each of the five framework categories:

- *Pandemic Infrastructure Preparedness*: The extent to which a city's rapid response infrastructure (e.g., interagency coordination) is prepared to support residents during the pandemic, including strategies for prioritizing and engaging vulnerable populations.
- *Economic Response:* The extent to which Nashville residents' and businesses' emergent COVID-19-related economic needs (e.g., access to essential services) were met by an aligned response from local government or community-based organizations.
- *Policy Response:* The extent to which the implementation of COVID-19 policies was effectively communicated to Nashville residents and coordinated with state policies, including strategies for supporting at-risk and vulnerable populations' ability to comply with public health measures.
- *Public Health Response:* The extent to which key public health capabilities (e.g., contact-tracing) were effectively and equitably rolled out, including the degree of collaboration between community partners and healthcare entities to support public health response efforts.
- *Approach to Vaccine Rollout:* The extent to which there was equitable access and distribution of COVID-19 vaccines to Nashville residents.

Semi-Structured Interviews

Avalere developed a 29-question master interview guide based on the five framework categories described above. Interview questions were open-ended and further refined to specifically target the expertise of each interviewee. Avalere conducted 32 total interviews—26 one-on-one interviews and six group interviews with 39 key opinion leaders that represented a diverse set of Nashville viewpoints. Virtual semi-structured interviews were conducted from May 4 to June 29, 2021.

Data Collection: Document Review and Literature Search

Avalere collected internal and publicly available documents from Steering Committee members between May and July 2021. Additionally, Avalere reviewed documents describing internal planning and operational plans of various Nashville COVID-19 response efforts. Examples of documents reviewed include: email exchanges between organizations serving vulnerable populations and local government officials regarding COVID-19 vaccine distribution, COVID-19 needs assessment reports for Nashville residents, Davidson County population demographic data, handwritten thank you cards to the Nashville Convention & Visitors Corporation, and more.

Qualitative Data Analysis

Avalere abstracted interview quotes and key themes, as categorized by the research framework areas. Paired with the documentation provided from publicly available sources and the Steering Committee, Avalere analyzed key takeaways from the interviews and documents and placed into subthemes across the framework. Avalere conducted follow-up email and phone outreach with Steering Committee members and interviewees to ensure accuracy of findings.

Case Study Methodology

Avalere reviewed the 6 peer cities from the Nashville Area Chamber of Commerce's report as a starting point -- Charlotte, Louisville, Jacksonville, Austin, Denver, Indianapolis – to determine which cities to compare Nashville to throughout the report. Avalere prioritized three cities for comparison based on demographics (i.e., race, ethnicity, age), population health criteria (i.e., insurance coverage, COVID-19 statistics, hospital capacity), and local perceptions of peer city comparability (i.e., cultural differences). The final cities chosen for comparison were:
  a. *Austin*
  b. *Jacksonville*
  c. *Indianapolis*

Appendix 2: List of Interviewee Organizations

Stakeholder Group	Organizations
Local and State Government Agencies	- Metropolitan Action Commission - Mayor's Office - Metropolitan Public Health Department - Metropolitan Council - Metropolitan Nashville Public Schools - Nashville Fire Department - Office of Emergency Management - Tennessee Department of Health - Tennessee State Assembly
Healthcare Organizations	- Meharry Medical College - Nashville General Hospital - Ascension Saint Thomas - Vanderbilt University Medical Center - HCA Healthcare | Tri-Star Division - Siloam Health - Neighborhood Health - Blue Cross Blue Shield of Tennessee
Non-Profit Organizations and Philanthropies	- Conexión Américas - Fifty Forward - United Way of Greater Nashville - Community Resource Center - Joe C. Davis Foundation - Second Harvest Food Bank of Middle Tennessee
Faith-Based Organizations	- Mt. Zion Baptist Church - Lee Chapel AME Church
Business Community	- Nashville Area Chamber of Commerce - Dollar General - Convention and Visitor's Corporation - Music City Cleaners/Pivot Technology School - Vector Management - Brookdale Senior Living

Appendix 3: Glossary of Terms and Key Definitions

- ***Health Equity:*** The attainment of the highest level of health for all people. Achieving health equity requires valuing everyone equally with focused and ongoing societal efforts to address avoidable inequalities, historical and contemporary injustices, and the elimination of health and healthcare disparities.[79]
- ***Health-Related Social Needs:*** Individual- or family-level adverse social conditions that negatively impact a person's health or healthcare (e.g., food insecurity, housing instability).[80]
- ***Medically Indigent Populations:*** Refers to those who are uninsured or do not have adequate insurance to cover the cost of their medical expenses and often sacrifice food and other necessities to make ends meet.[81]
- ***People Experiencing Homelessness:*** According to the U.S. Department of Housing and Urban Development, the definition of those who are experiencing homelessness includes:
  1. An individual or family who lacks a fixed, regular, and adequate nighttime residence, such as those living in emergency shelters, transitional housing, or places not meant for habitation, or
  2. An individual or family who will imminently lose their primary nighttime residence (within 14 days), provided that no subsequent housing has been identified and the individual/family lacks support networks or resources needed to obtain housing, or
  3. Unaccompanied youth under 25 years of age, or families with children and youth who qualify under other Federal statutes, such as the Runaway and Homeless Youth Act, have not had a lease or ownership interest in a housing unit in the last 60 or more days, have had two or more moves in the last 60 days, and who are likely to continue to be unstably housed because of disability or multiple barriers to employment, or
  4. An individual or family who is fleeing or attempting to flee domestic violence, has no other residence, and lacks the resources or support networks to obtain other permanent housing[82]
- ***Public Health Infrastructure:*** Provides the necessary foundation for undertaking the basic responsibilities of public health, which are defined as the "10 Essential Public Health Services." A strong public health infrastructure includes a capable and qualified workforce, up-to-date data and information systems, and agencies that can assess and respond to public health needs.[83]

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[79] Healthy People 2020. "Disparities." https://www.healthypeople.gov/2020/about/foundation-health-measures/Disparities#6.
[80] Centers for Medicare and Medicaid Services. "A Guide to Using the Accountable Health Communities Health-Related Social Needs Screening Tool: Promising Practices and Key Insights." June 2021. Retrieved from: https://innovation.cms.gov/media/document/ahcm-screeningtool-companion.
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- ***Social Determinants of Health (SDOH):*** Conditions in the environments in which people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks.[84]
- ***Vulnerable Populations:*** Vulnerable populations include the economically disadvantaged, racial and ethnic minorities, the uninsured, low-income children, the elderly, the homeless, those with human immunodeficiency virus (HIV), and those with other chronic health conditions, including severe mental illness. The vulnerability of these populations is enhanced by various factors such as, race, age, sex, socioeconomic status, and health conditions.[85]

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[84] Healthy People 2020. "Social Determinants of Health." https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-of-health.
[85] "Vulnerable Populations: Who Are They?". *AJMC* 12, no. 13 (suppl) (November 1, 2006).

Appendix 4: List of Report Acronyms

CARES Act: The Coronavirus Aid, Relief, and Economic Security Act
CBO: Community-Based Organizations
CDC: Centers for Disease Control & Prevention
CEMP: Comprehensive Emergency Management Plan
CRC: Community Resource Center
CVC: Convention & Visitors Corp.
EIDL: Economic Injury Disaster Loan
FFCRA: Families First Coronavirus Response Act
FQHC: Federally Qualified Health Center
HCA: Hospital Corporation of America
HHS: U.S. Department of Health and Human Services
ICU: Intensive Care Unit
MAC: Metropolitan Action Commission
MDHA: Metropolitan Development and Housing Authority
MNPS: Metropolitan Nashville Public Schools
MPHD: Metropolitan Public Health Department
MSA: Metropolitan Statistical Area
NASEM: National Academies of Sciences, Engineering, and Medicine
OEM: Office of Emergency Management
PEH: People Experiencing Homelessness
PHE: Public Health Emergency
PPE: Personal Protective Equipment
PPP: Paycheck Protection Program
PUI: People Under Investigation
SBA: Small Business Administration
SVI: Social Vulnerabilities Index
TDH: Tennessee Department of Health
TEMA: Tennessee Emergency Management Agency
VUMC: Vanderbilt University Medical Center
WHO: World Health Organization

Appendix 5: Nashville COVID-19 Response Review Framework[86]

Overarching Research Questions:

- Did key stakeholders in Nashville implement **relevant** pandemic response activities for local residents?
- Were the selected response activities implemented in a **timely** fashion?
- How **effective** were the selected response activities in achieving intended objectives for local residents?
- Were available resources for pandemic response activities deployed in an **efficient** manner?
- What positive or negative **impacts** have response activities yielded for the broader Nashville community?
- How **sustainable** were the response activities in yielding long-term net benefits for Nashville?

Unit of Analysis:

This pandemic response review will incorporate activities pertinent to the Nashville-Davidson-Murfreesboro-Franklin, TN metropolitan statistical area as specified by the U.S. Office of Management and Budget, and recognizes transit/mobility trends that occurred among residents and nonresidents. Where relevant, a review of government directives and distributions of relief funds will be focused on Davidson County.

Category	Domain	Review Criteria
Pandemic Infrastructure Preparedness	Prioritization factors for allocation of relief funds by Nashville metro government to community partners, businesses, and residents	• Existing allocation for emergency funds in annual Nashville metro government budget • Availability of information on relief fund distribution criteria to the general public • Documentation of prioritization approach in relief fund efforts, including efforts to ensure equitable distribution
	Prioritization factors for allocation of relief funds by Tennessee state government to community partners, businesses, and residents	• Existing allocation for emergency funds in annual Tennessee state budget • Availability of information on relief fund distribution criteria to the general public • Documentation of prioritization approach in relief fund efforts, including efforts to ensure equitable distribution
	Resource allocation to key Nashville entities during the pandemic (e.g., available relief funds, additional personnel)	• Existing protocols in place to determine allocation of relief funds • Approach to mobilization of key healthcare, public health, and emergency personnel (e.g., Nashville Fire Department, Metropolitan Nashville Police Department)

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[76] OECD. "Better Criteria for Better Evaluation: Revised Evaluation Criteria for Definitions and Principles for Use." 2019. Retrieved from: https://www.oecd.org/dac/evaluation/revised-evaluation-criteria-dec-2019.pdf.; Warsame, A., K. Blanchet, and F. Checchi. "Towards Systematic Evaluation of Epidemic Responses During Humanitarian Crises: A Scoping Review of Existing Public Health Evaluation Frameworks." BMJ Glob Health 5, no. 1 (2020): e002109.; Teasdale, R. M. "Evaluative Criteria: An Integrated Model of Domains and Sources." [In English]. American Journal of Evaluation 42, no. 3 (Sep 2021): 354-76.; UNICEF. "How to Design and Manage Equity-Focused Evaluations." https://agora.unicef.org/course/info.php?id=1238.

(yellow)	Availability of critical healthcare resources	• Number of available ventilators at Nashville-area healthcare facilities relative to population size • Reported ICU bed capacity at Nashville-area hospitals, by month • Reported occupancy of inpatient beds at Nashville-area hospitals, by month • Reported availability of critical personal protective equipment (PPE) at Nashville area hospitals
	Approach to ongoing readiness assessments to modify pandemic mitigation strategies over time	• Accuracy of data-driven metrics to assess citywide planning efforts • Comprehensiveness of data-driven metrics to assess citywide planning efforts (e.g., impact of omitted or unavailable data, omission of relevant metrics) • Timeliness of data-driven metrics to assess citywide planning efforts • Agility in use of data-driven metrics over time
Economic Response	Impact of pandemic on key business sectors in Nashville (e.g., tourism, travel, food & beverage, music & entertainment)	• Number of layoffs, by sector • Change in percentage unemployment, by sector • Changes in fiscal revenue, by sector • Hotel volumes, conferencing, other hospitality data • Percentage of relief funds allocated to small businesses • Description and timing provided to general public in business re-opening roadmap
	Approach to philanthropic efforts to support ongoing community needs	• Number of relevant external events occurring during 2020 – 2021 review period[87] • Degree of severity of external events occurring during 2020 – 2021 review period[88] • Community perceptions of reach and impact of relevant philanthropic efforts for Nashville residents • Reported commitment of philanthropic entities to addressing needs of vulnerable populations through charitable giving • Access to grant opportunities to address the needs of vulnerable populations in Nashville
	Use of new community-led initiatives to address community needs during the COVID-19 pandemic (e.g., food insecurity)	• Number of novel community partnerships established to address specific pandemic needs resulting from pandemic-related changes in the local economy • Resident perceptions of efforts by community-based organizations to reach vulnerable populations • Reported impact of community-led initiatives to address pandemic-related needs for Nashville residents
	Degree of access to essential services for Nashville residents (e.g., public transportation, utilities and community services)	• Documentation of relevant needs assessment for Nashville residents across key essential services • Use of community needs assessment to enhance residents' access to essential services • Consistency in access to essential services throughout COVID-19 pandemic
Policy Response	Implementation of community mitigation strategies in Nashville	• Description and timing of shelter-in-place orders, mass gathering orders, and mask mandates • Degree of discrepancy in established mitigation strategies by Nashville metropolitan government and Tennessee state government
	Prioritization of at-risk and vulnerable populations in established policies or plans to support compliance with community mitigation strategies	• Reported approaches to identifying needs of specific at-risk populations through diverse community networks (e.g., elderly, multimorbidity, housing instability, etc.)

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[77] Criterion is intentionally listed under multiple domains.
[78] Ibid.

		• Degree to which the needs of vulnerable populations were reflected in planning efforts by key Nashville community leaders
	Communication of public health measures and other relevant COVID-19 developments by government leaders	• Range of public-facing channels or platforms used by government entities to communicate with residents about key public health measures • Documented strategies for engaging residents (including vulnerable populations) through culturally relevant channels • Consistency in public-facing messaging to Nashville residents on key COVID-19 developments across key government entities
	Management of ongoing city and state events impacting pandemic response planning	• Number of external events occurring during 2020 – 2021 review period[89] • Degree of severity of external events occurring during 2020 – 2021 review period[90] • Documentation of relevant risk mitigation strategies to minimize disruptions in essential resident needs • Execution of risk mitigation strategies by city and state government leaders
Public Health / Healthcare Response	Functionality of established systems in monitoring COVID-19 spread in Nashville	• Reported availability of COVID-19 testing to Nashville residents • Timeliness of data collection on COVID-19 infection rates and public-facing reporting efforts • Reach of contact tracing in Nashville MSA • Coordination between relevant public health agencies and private sector companies
	Inclusion of community feedback on needs and concerns related to the pandemic (community voice)	• Available channels for public feedback on Nashville's COVID-19 response • Integration of public feedback in Nashville's COVID-19 response efforts • Frequency of outreach to local communities on pandemic response efforts • Integration of diverse resident perspectives in approaches to outreach by key community leaders
	Level of coordination between the Nashville metro government and TN government	• Documented frequency of meetings between city and state leaders • Coordination in data collection efforts between Metro Public Health Department and Tennessee state government • Coordination in public health messaging between Metro Public Health Department and Tennessee state government
	Use of partnerships by the Metro Health Department to support its COVID-19 response (e.g., community-based organizations, social services, private sector partners)	• Announcements of multi-stakeholder partnerships through local news media • Alignment of partnerships with established community needs • Perceived impact of community partnerships by public health leaders • Documented impact of community partnerships
Approach to Vaccine Rollout	Tactics for outreach and communications to vaccine-eligible populations	• Clarity in public-facing communications on vaccine eligibility phases • Consistency in public-facing communications on vaccine eligibility phases • Number of platforms utilized for vaccine-related communications with Nashville area residents (e.g., SMS, phone, email)
	Prioritization of vulnerable and at-risk populations	• Equity considerations via validated metrics • Reported mitigation strategies for addressing key social determinants of health that impact vaccine distribution and uptake (e.g., availability of transportation, access to broadband internet)

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[79] Criterion is intentionally listed under multiple domains.
[80] Ibid.

		• Representation from key community advocacy organizations or at-risk groups on relevant vaccine planning committees • Agreement with NASEM equitable framework
	Tactics to drive access and uptake of the COVID-19 vaccine	• Assessment of complete vaccination protocol, as recommended • Collaborative partnerships with trusted messengers in the Nashville community • Number of available vaccine locations across city of Nashville relative to population density • Coordination of vaccine distribution efforts between city of Nashville and Tennessee state government
	Use of technology & relevant tools to coordinate the vaccine rollout	• Breadth of platforms used for vaccine-related communications and appointment scheduling • Reported functionality of platforms used for vaccine-related communications and appointment scheduling • Reported accessibility of platforms by Nashville residents (including accommodations for individuals with disabilities)
	Community access to COVID-19 vaccine	• Average wait time from scheduling appointment to appointment date • Availability of vaccines to minority-serving institutions (MSIs) in Nashville • Reported accommodations at available vaccine sites for individuals with physical limitations (e.g., homebound residents) • Percent of vaccine doses wasted

This effort was supported by:

NASHVILLE Health

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