

Place Matters: Access to Behavioral Health Services & COVID-19 Vaccination & Infection Rates

May 8, 2024

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Research Staff & Funding

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CDC/Kennedy-Krieger Institute, Ferguson-RISE Fellowship Program

• Partnering Organization:

- Fulton County Behavioral Health & Developmental Disabilities
- Fulton County Health Department
- Emory University

Research Site:

Morehouse School of Medicine, Prevention Research Center



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Introduction: Definitions

Mental Health: "Mental health includes our emotional, psychological, and social well-being. It affects how we think, feel, and act. It also helps determine how we handle stress, relate to others, and make healthy choices. (SAMHSA, 2023; CDC, 2022)

Behavioral Health: "Behavioral health covers everything that affects mental health including substances (alcohol and drugs) and their abuse, behaviors, and habits." (Array Behavioral Care, 2022)

COVID-19 (Coronavirus Disease 2019): a disease caused by a virus named SARS-CoV-2. It can be very contagious and spreads quickly. COVID-19 most often causes respiratory symptoms that can feel much like a cold, the flu, or pneumonia. COVID-19 may attack more than your lungs and respiratory system. Other parts of your body may also be affected by the disease. Most people with COVID-19 have mild symptoms, but some people become severely ill. Some people including those with minor or no symptoms will develop Post-COVID Conditions – also called "Long COVID." (CDC, Updated 2024)





Introduction: Social Determinants of Health

Social Determinants of Health



Social Determinants of Health
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Economic Stability - People with steady employment are less likely to live in poverty and more likely to be healthy. People with disabilities, injuries, or conditions like a mental illness may be especially limited in their ability to work.

Education Access & Quality - People with higher levels of education and health literacy are more likely to be healthier and live longer.

Health Access & Quality - Improving health by helping people get timely, high-quality health care services.

Neighborhood & Built Environment - Improving health and safety in the places where people are born, live, learn, work, play, worship, and age.

Social & Community Context - Helping people get the social support they need in the places where they are born, live, learn, work, play, worship, and age.



Background: Research Agenda

- Conducted Community Health Needs and Assets Assessment (CHNA²)
 - Engage stakeholders Community Coalition Board (CCB) and local community residents and organizations are the Stakeholders
 - 49 counties were sampled including Fulton County
 - Counties selected using social vulnerability index
 - Data collected through electronic and paper-based surveys (N=754)
 - Demographics: mainly females (62%) and 25-44 years old (58%) and Black/African Americans (49%) and non-Hispanics (89%)
 - Participants identified top 5 community health concerns and policy/system/environmental changes
 - Included COVID-19 (#2) and mental health (#3) and mental health treatment (#3)

Tables 1-2. Community Health Concerns/Issues

Top 5 Community Health Concerns				
Health Issue Most Frequently				
1. Diabetes	183 (23%)			
2. COVID-19	176 (22%)			
3. Mental Health	154 (19%)			
4. High Blood Pressure	151 (19%)			
5. Heart Disease	128 (16%)			

Top 5 Health-Related Policy, System, or Environmental Issues				
Health-Related I	Most Frequently Cited			
1. Access to Healthy Foods		236 (26%)		
2. Access to Health Insurance		218 (24%)		
3. Mental Health Treatment		172 (19%)		
4. Access to Quality Healthcare Services		150 (16%)		
5. Housing		138 (15%)		

Source: MSM PRC Evaluation & Institutional Assessment Unit



Background: Health Literacy Project

Fulton County Health Literacy Evaluation Project

PI: Tabia Akintobi, PhD, MPH Lead Evaluator: Supriya Kegley, PhD, MPH

- Goal: to assess the implementation of an evidenced-based, culturally tailored health literacy strategy to enhance the rates of COVID-19 testing, contact tracing, mitigation measures, and vaccine confidence.
 - Mixed methods approach through survey dissemination as well as focus group facilitation.
 - Community engaged approach through the development of a Community Coalition Board (CCB) comprised of both community residents and community organizations
- Study also aimed at addressing the cross-cutting urgency of behavioral health literacy and access to related mental health services among underserved racial and ethnic minoritized groups.

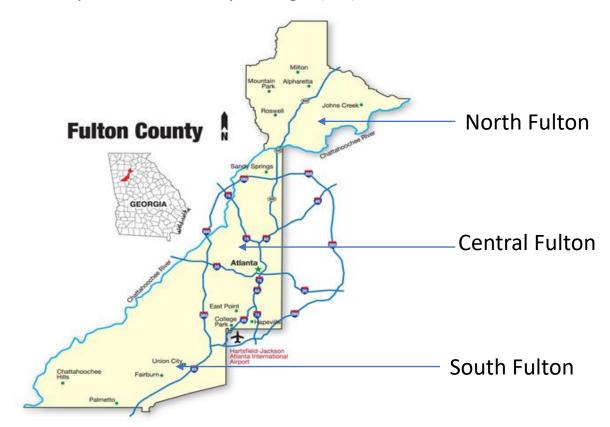






Background: Geography

Figure 1. Map of Fulton County, Georgia (GA)



Fulton County Facts:

- Lies in north-central Georgia
- Most populous county in Georgia (~10% of the total population
- 90% of the City of Atlanta lies in central region of Fulton County
- Public transportation through the MARTA – heavy rail and bus services



Background: Demographics

Table 3. Fulton County Regions and Demographics

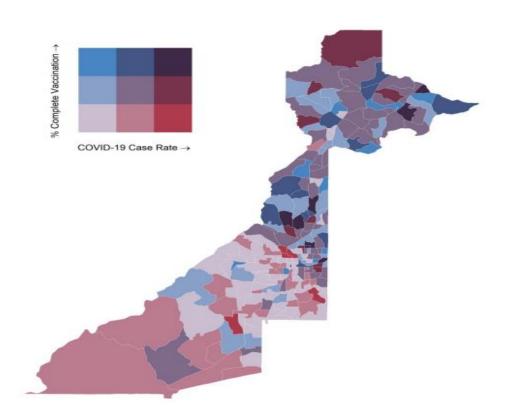
Region	City	White* (%)	Black/African	Asian (%)	Hispanic/Lati	Other Races (%)
			American (%)		no (%)	
North	Alpharetta	53.6	12.1	22.2	7.6	4.5
	Johns Creek	52.7	10.2	26.2	6.9	4.0
	Milton	61.9	11.7	17.4	5.6	3.4
	Mountain Park	44.4	21.1	22.0	9.6	2.9
	Roswell	61.9	12.5	4.1	17.1	4.4
	Sandy Springs	58.6	19.4	7.5	11.3	3.2
Central	Atlanta	39.1	48.2	5.0	5.0	2.7
South	Chattahoochee Hills	68.7	21.9	0.2	5.2	4.0
	College Park	10.1	81.5	1.4	3.9	3.1
	East Point	12.5	76.7	1.6	7.9	1.3
	Fairburn	10.3	71.7	0.5	17.3	0.2
	Hapeville	19.4	33.4	5.6	33.8	7.8
	Palmetto	25.1	60.3	4.0	6.2	4.4
	South Fulton	3.9	91.9	0.4	2.5	1.3
	Union City	4.0	90.7	0.0	3.8	1.5
All	Fulton County	38.3	45.0	8.1	7.4	1.2

^{*}The "white" demographics here reflect the "White alone, not Hispanic or Latino" category from the 2020 United States Census.



Background: COVID-19 Vaccination Rates

Figure 2. COVID-19 Infection Rates, November 8-December 5, 2021, Fulton County, GA



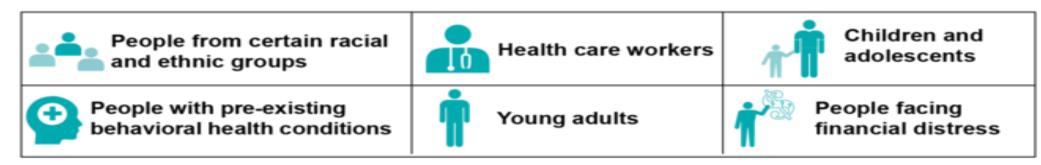
- Fulton County COVID-19 Facts (2021):
 - 580,623 (57%) fully vaccinated
 - 642,859 (63%) received at least one dose
 - Race:
 - Blacks 44%
 - Whites 61%
 - Asians 77%
 - Ethnicity:
 - Hispanics 53%
 - Non-Hispanics 58%
 - Gender:
 - Females 65%
 - Males 61%
 - Persons between 25–64-year-olds account for 63% of all residents with at least one dose.

Source: GA DPH Vaccine Distribution Dashboard: https://experience.arcgis.com/experience/3d8eea39f5c1443db1743a4cb8948a9c



Background: Research Concept

- COVID-19 pandemic increased social isolation and stress—affecting the behavioral health of many Americans. Data suggests higher rates of anxiety and depression symptoms, and more substance use among many adults
 - Increased reports of anxiety, depression, and substance use disorders among certain population groups, including members of the BIPOC community, and poor mental health
- Poor mental and emotional health has been associated with poor health compliance (e.g., COVID-19 vaccination) and negative health behaviors
 - Data suggest that people are more likely to develop mental illnesses or disorders in the months following infection, including symptoms of post-traumatic stress disorder (PTSD).
 - People who have mental illnesses or disorders that are infected with COVID-19 are more likely to die than those who do not have mental illnesses or disorders



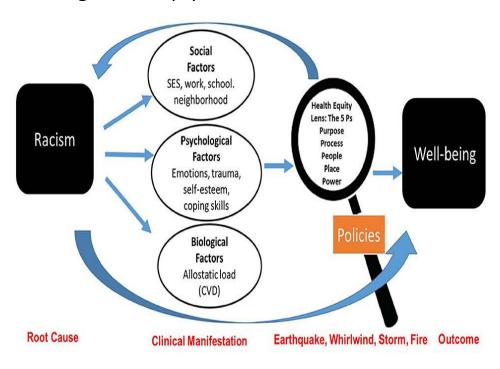
Source: GAO analysis of stakeholder input and selected research. | GAO-22-104437



Background: Research Concept

- Medical mistrust, a result of systemic racism, is prevalent among Blacks/African Americans and may play a role in COVID-19 inequities (infection and death rates).
 - According to the Biopsychosocial Effects of Perceived Racism Model, perceptions of racism result in negative physiological stress responses, which can lead to poor health outcomes
 - Blacks are more likely to be diagnosed, to be hospitalized, and to die from COVID-19
 - The death rate from COVID-19 has been reported to be 2–3 times higher among Black versus White individuals.
- Poor behavioral health can make it more difficult to engage in positive health behaviors
 - Poor behavioral health and stress have been associated with poor health compliance and poor physical health
 - Blacks were less likely to be vaccinated against COVID-19 at the onset of the pandemic

Figure 3. Biopsychosocial Model



Source: Sanders and Fiscella, 2021



Research Aim, Questions, & Hypothesis

 Research Aim: to link access to behavioral health services and COVID-19 health indicators (i.e., vaccination and infection rates) for population and place-based interventions

Research Question:

 Is access to behavioral health services associated with COVID-19 infection and vaccination rates among high-risk population groups?

Hypothesis:

 Low COVID-19 vaccination rates and high COVID-19 infection rates are associated with limited access to behavioral health services

Note: Availability is being used as a precursor to access.





Data Collection & Analysis Structure



BEHAVIORAL HEALTH

Available behavioral health resources in Fulton County

Source(s): Fulton County
Department of Behavioral Health
and Developmental Disabilities,
Substance Abuse and Mental
Health Services Administration,
Google Maps



COVID-19

Available COVID-19 vaccination counts in Fulton County (July 2021-December 2022)

Source: Fulton County Board of Health Vaccination Reports



COVID-19

Available COVID-19 incidence (infection) rates in Fulton County (July 2021-December 2022)

Source: Fulton County Board of Health Epidemiological Reports





 Research Design: observational qualitative study with a structured process evaluation approach to investigate the association between the risk (access to behavioral health services) and COVID-19 outcomes (vaccination and infection rates) in Fulton County, GA

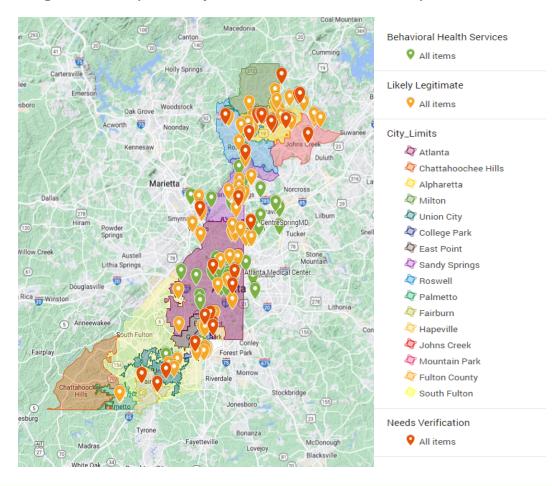
- **Process Evaluation** inductive inquiry to construct a conceptualized framework of the influence of behavioral health services on COVID-19 outcomes and to identify public health intervention strategies for addressing access to health care services
 - Obtained a list of available behavioral health services from the Fulton County Behavioral Health & Developmental Disabilities
 - Used of Google maps to identify and locate behavioral health services in Fulton County
 - Conduct website reviews of behavioral health services in Fulton County
 - Developed criteria for categorizing access to behavioral health services
 - Obtained Fulton County COVID-19 vaccination and case data from Georgia Department of Public Health





- Environmental Scan an objective analysis of behavioral health services to identify accessibility (e.g., distance from public transportation, signage, building location, and accommodation for accessibility)
 - Windshield and walking surveys systematic observations to verify and better understand physical and specific location and community dynamics of behavioral health services in the major cities in Fulton County, GA
 - Question 1: Where are behavioral health services located in Fulton County?
 - Question 2: Which areas of Fulton County (North, Central, and South) have the highest or lowest density of behavioral health services

Figure 4. Map of Major Cities in Fulton County, GA





- Behavioral Services Identification & Classification:
 - Identification:
 - Literature search of behavioral health services directory or resources from reputable sources
 - Inclusion criteria:
 - The behavioral health service must:
 - be verified as existing at a specific location
 - have an active website for online accessibility
 - open ≥5 days a week, physically or virtually
 - accept health insurance or fee for services
 - accessible via car or public transit
 - have signage indicating its physical presence
 - be wheelchair accessible

Table 4. Behavioral Health Services, Fulton County, GA

Sources	Behavioral Health Services (Unduplicated)
Fulton County Behavioral Health Network	24
Substance Abuse and Mental Health Services Administration (FindTreatment.gov)	35
Google Maps	114
Other (Environmental Scan)	8
Total (Original)	182
Total (Sample)	97



Table 5. Behavioral Health Service Scoring Metrics

Criteria	Least Accessible (0 points)	Moderately Accessible (1 point)	Most Accessible (2 points)	
Proximity to public transportation	>0.5mi of bus	0.3-0.5mi of bus	<0.3mi of bus, <0.5mi of train	
	>0.8 of train	0.5-0.8mi of train		
Wheelchair accessibility	One of the following:	Two of the following:	All of the following:	
	Wheelchair ramps	Wheelchair ramps	Wheelchair ramps	
	 Elevators 	 Elevators 	 Elevators 	
	Designated wheelchair parking	Designated wheelchair parking	Designated wheelchair parking	
Signage	Signage only visible once inside facility	External signage, not visible from the	External signage, clearly visible from	
		street	the street	
Type of building	Office buildings and complexes with	Office buildings and complexes with	Standalone business and clinics	
	multiple businesses and suites, not	multiple health-related businesses		
	health-related	and suites		
Parking availability	Paid or street parking	Small, free parking lot	Large, free parking lot	
Website availability and functionality	1-2 of the following:	3-4 of the following:	All of the following:	
	 I can quickly find what I want 	 I can quickly find what I want 	 I can quickly find what I want 	
	on this website.	on this website.	on this website.	
	 The pages on this website are 	 The pages on this website are 	 The pages on this website are 	
	very attractive.	very attractive.	very attractive.	
	 This website helps me find 	This website helps me find	This website helps me find	
	what I am looking for.	what I am looking for.	what I am looking for.	
	I can easily contact the people I	I can easily contact the people I	I can easily contact the people I	
	want to on this website	want to on this website	want to on this website	
	 Everything on this website is 	 Everything on this website is 	 Everything on this website is 	
	easy to understand.	easy to understand.	easy to understand.	
Hours of operation (including	Open only during 9AM-5PM business	Open past 5PM for extended evening	Open past 5PM and on weekends for	
telehealth)	hours on weekdays	hours during weekdays	extended business hours, has a	
		telehealth option		
Insurance and fee assistance options	Not in-network for insurance, but has	In-network for private insurance	In-network for private and public	
	a fee-assistance program	policies only	insurance policies	



Research Designs & Methods: COVID-19 Data

Table 6. Average COVID-19 Infection and Vaccination Rates in Fulton County, June-December 2021

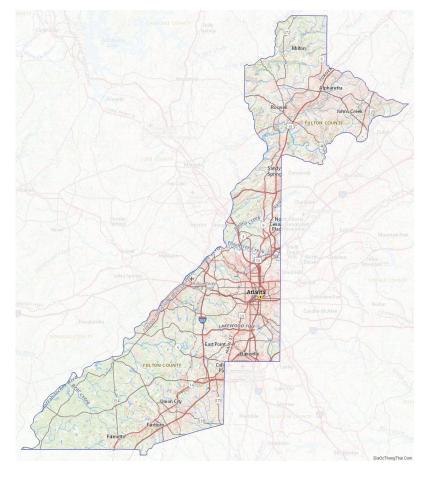
City	Average Infection Rates, per 100,000	Average Vaccination Rates (%, range)
Alpharetta	442.8	>50%
Atlanta	473.8	40.0-49.9
Chattahoochee Hills	427.0	40.0-49.9
College Park	512.8	30.0-39.9
East Point	592.8	40.0-49.9
Fairburn	626.5	>50%
Hapeville	507.9	40.0-49.9
Johns Creek	399.3	>50%
Milton	401.5	>50%
Mountain Park	163.8	>50%
Palmetto	605.7	40.0-49.9
Roswell	387.0	>50%
Sandy Springs	381.7	>50%
South Fulton	639.6	30.0-39.9
Union City	721.3	40.0-49.9

Source: Georgia Department of Public Health



- GIS Mapping:
 - Identify and select Fulton County shapefile
 - Overlay verified behavioral health services (SDOH variable) on the Fulton County map to link geographic locations ("places") to resources
 - Used dots to depict moderate to high density of behavioral health services
 - Overlay COVID-19 data (2021) on the Fulton County map to compare disease prevention and prevalence to availability of behavioral health services
 - Used color gradation to depict COVID-19 vaccination and infection rates

Figure 5. Fulton County Geographical Layout





Descriptive analysis to answer the research question - Is access to behavioral health services associated with COVID-19 infection and vaccination rates among high-risk population groups?

• Identifying trends and relationships between behavioral health services and COVID-19 indicators.

Table 6. Behavioral Health Accessibility Analysis based on Inclusion Metrics

Accessibility Inclusion Metrics	Yes (n/%)	No (n/%)
Signage	141 (97.2%)	4 (2.8%)
Wheelchair accessibility	138 (95.2%)	7 (4.8%)
Hours of operation - open at least 5 days a week or telehealth option	126 (86.9%)	19 (13.1%)
Service Payment Method - accepts insurance or fee for services	111 (76.6%)	34 (23.4%)
Website	143 (98.6%)	2 (1.4%)
Location - within a mile of public transit or parking available	145 (100%)	0 (0.0%)





Figure 6. Behavioral Health Services Selection Process & Results

Total behavioral health services (N=182)

Total verified by environmental scan (n=145)

Total based on inclusion criteria (n=97)





Table 7. Behavioral Health Services in Fulton County - Verified vs. Unverified

Region/City	Verif	rified Verified Unverified		Total			
	(DNN	IIC)	(DN	(DMIC)			
	Number	%	Number	%	Number	%	Number
North	30	34.1	46	52.3	12	13.6	88
Alpharetta	15	40.5	16	43.2	6	16.2	37
Johns Creek	1	16.7	5	83.3	0	0.0	6
Milton	2	50.0	2	50.0	0	0.0	4
Roswell	7	41.2	8	47.1	2	11.8	17
Sandy Springs	5	20.8	15	62.5	4	16.7	24
Central	9	15.0	39	65.0	12	20.0	60
Atlanta	9	15.0	39	65.0	12	20.0	60
South	9	26.5	12	35.3	13	38.2	34
College Park	4	30.8	3	23.1	6	46.2	13
Fairburn	0	0.0	0	0.0	1	100.0	1
Palmetto	0	0.0	2	66.7	1	33.3	3
East Point	2	25.0	3	37.5	3	37.5	8
South Fulton	2	40.0	2	40.0	1	20.0	5
Union City	1	25.0	2	50.0	1	25.0	4
Total	48	26.4	97	53.3	37	20.3	182

Note: DNMC = Did not meet inclusion criteria and DMIC = Did meet inclusion criteria



Table 8. Behavioral Health Accessibility Analysis Rankings, per Service

Accessibility Categories	Accessibility Ranking					
	Least Accessible (0 pt)		Moderately Accessible (1 pt)		Most Accessible (2 pt)	
	n	n %		%	n	%
Hours of operation	21	21.6	54	55.7	22	22.7
Insurance/Fee assistance	8	8.2	30	30.9	59	60.8
Parking	6	6.2	9	9.3	82	84.5
Proximity to public transportation	20	20.6	15	15.5	62	63.9
Visible signage	22	22.7	28	28.9	47	48.5
Facility type	23	23.7	23	23.7	51	52.8
Online Presence (Website)	2	2.1	27	27.8	68	70.1
Wheelchair Accessibility	3	3.1	13	13.4	81	83.5



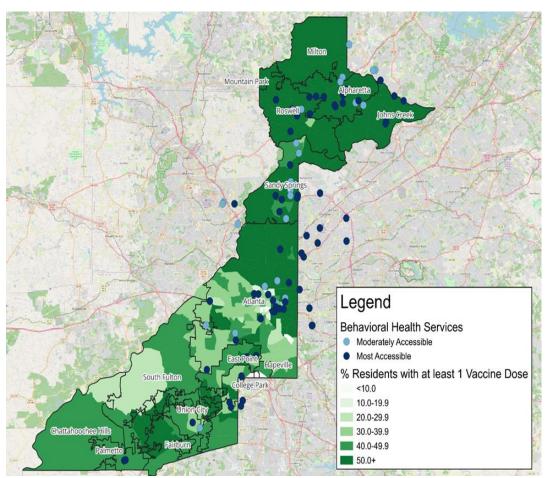
Table 9. Behavioral Health Accessibility Ranking by Region/City

	Moder	tely Accessible Most Accessible			
Region/City	n	%	n	%	Total
North Fulton	16	34.8	30	65.2	46
Alpharetta	4	25.0	12	75.0	16
Johns Creek	1	20.0	4	80.0	5
Milton	2	100.0	0	0.0	2
Roswell	2	25.0	6	75.0	8
Sandy Springs	7	46.7	8	53.3	15
Central Fulton	9	23.1	30	76.9	39
Atlanta	9	23.1	30	76.9	39
South Fulton	1	8.3	11	91.7	12
College Park	0	0.0	3	100.0	3
Fairburn	0	0.0	0	0.0	0
Palmetto	0	0.0	2	100.0	2
East Point	0	0.0	3	100.0	3
South Fulton	0	0.0	2	100.0	2
Union City	1	50.0	1	50.0	2
Total	26	26.8	71	73.2	97

Note: Least and moderately accessible were collapsed into a single category, moderately accessible.



Figure 6: Accessible Behavioral Health Services vs. Percent of Fulton County Residents with ≥1 COVID-19 Doses, July-December 2021

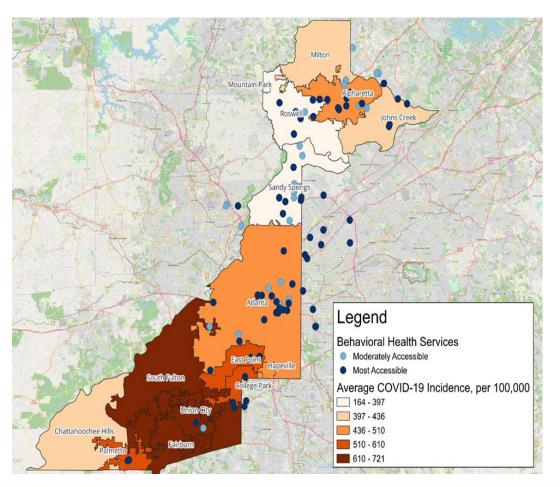


The distribution of available and accessible behavioral health services vary across the Fulton County —with most concentrated in the north and central regions.

Some "most accessible" behavioral services were located in a neighboring county (Dekalb County) and could be accessible to Fulton County residents, mostly in the central region.

In South and South-Central Fulton, the COVID-19 vaccination rates were more variable, ranging from 10% to 50% vaccinated overall. North-Central and North Fulton had the highest vaccination rates.

Figure 7: Accessible Behavioral Health Services vs. Average COVID-19 Incidence, per 100,000 in Fulton County, July-December 2021



On average, South Fulton appeared to have the highest COVID-19 infection rates, with Central Fulton having moderate incidence, and North Fulton having the lowest incidence compared to South Fulton.

Note: Blacks/African Americans mostly reside in South Fulton and Asian Americans and Whites mostly resides in North Fulton.



Research Limitations

- Reliance on publicly available data differentiated between verified and unverified
 - May not have the most updated information at the time of investigation
- Secret shopper approach could have benefited from key informant interviews of Fulton County residents and staff of behavioral health services
- Small sample size (N=97) for robust statistical testing and for accurate generalization
 - Expand beyond Fulton County to include cities within neighboring counties as residents living close to the county borders may access services outside of Fulton County
- Comparison between cities within Fulton County was limited
 - Barriers to access of behavioral services may extend beyond physical accessibility may include other factors (e.g., residents' attitudes and behaviors)





Research Implications

- Disparities existed in the distribution of behavioral health services in Fulton County,
 Georgia least number of service locations in region with high Black population
- Limited health care services increase the risk for disease onset and prevalence
 - African Americans predominantly resides in South Fulton County had the least COVID-19 vaccinated people and high rates of COVID-19 infections
 - Least distribution of behavioral health services, though most accessible
 - North Fulton with a higher percentage of Asian American populations may be well-resourced, but accessibility may be affected by other factors than availability.
 - North Fulton had higher rates of COVID-19 vaccinations and lower rates of COVID-19 infections but may not be directly associated with availability of behavioral services
- Study may provide beneficial background information for researchers who seek to assess the influence and long-term impact of behavioral health services on occurrence of infectious diseases, with consideration for advancing health equity and justice.



Public Health Intervention Fulton County Mobile Mental Health Services



Features: 3 private consultation rooms, telehealth services, interior and exterior monitors, large screen television, restroom, and wheelchair accessibility.

Resources/Services:

- Information about mental illness, substance use disorders, COVID-19
- Information about behavioral health services and assistance with accessing care
- Assistance with scheduling an appointment at a Fulton County Behavioral Health Network location
- Participation in events that promote preventive health measures, including COVID-19 and vaccine-related education

Website: https://fultoncountyga.gov/inside-fulton-county/fulton-county-departments/behavioral-health-and-developmental-disabilities/behavioral-health-mobile-unit



Public Health Intervention Mental Health First Aid Training

Mental Health Trainings, 2023

Training Date	Number of Participants
6-20-2023	14
7-31-2023	12
9-19-2023	22
12-13-2023	19
Total	67

Preliminary Results of Training Satisfaction Survey, N=57

Survey Question	Score (5)
The information presented in this training was useful to me.	50 (88%)
The content was organized and easy to follow.	47 (83%)
I will be able to apply the knowledge learned in the training.	51 (90%)



Public Health Intervention Behavioral/Mental Health Survey

Behavioral/Mental Health Survey Questions:

Q20. Please select the answer that shows how much you disagree or agree with the following statements. (5-Point Likert Scale)

- a) I think mental health is important.
- b) The COVID-19 pandemic has affected my mental health.
- c) I would feel comfortable talking about my mental health with a mental health professional.
- d) There are mental health resources that are readily available to me.

Q21. How confident are you in your ability to find mental health resources in your community?

- a) Not at all Confident
- b) Slightly Confident
- c) Fairly Confident
- d) Completely Confident
- e) I'm Not Sure





Public Health Intervention Behavioral/Mental Health Focus Group

Focus Group Questions:

- a) Have you noticed any **changes in mental/behavioral health** for you or people in your community since the start of the **Covid 19 pandemic**? (depression, anxiety, drug use, binge drinking, binge eating)
 - If so, could you please describe what changes you have seen?
- b) How have you or people you know **dealt with changes in mental/behavioral health** since the start of the **Covid 19 pandemic**?
- c) Have you or members of **your community used any mental/behavioral health services** in Fulton County since the start of the **Covid-19 pandemic**? If not, why?
 - Probe: Where they received services, Why they chose those services, Are they aware of more services?
- d) How easy do you feel it is to access mental/behavioral health resources (providers, support groups, therapy) in your community?
 - What barriers, or things that get in the way, are keeping you from accessing these resources in your community?
- e) Are there **any mental and behavioral health resources** (providers, support groups, therapy) that you would like access to in your community? If so, what type of resources and why are they important? How would you like to see services advertised?



Open Discussions





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