Final Research Paper

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Abstract

This study utilizes a descriptive comparative analysis in order to investigate whether poverty rate and asthma prevalence are associated wiht acces to school-based health centers (SBHCs) and school-based mental health clinics (SBMHCs) in the Bronx. Usining publicly available data 2023-2024 school year (SY, 2023-24) from the six Bronx districts, this study calculates SBHCs per 10,000, student-level access rates, and relationship between poverty and SBHCs/SBHMCs. The outcomes of the study suggest access is equity aligned through the association between poverty rates and SBHC density (R=0.77); however, no district exceeded 52% SBHC coverage, indicating that access gaps remain prevalent. SBMHC access was higher across each district showcasing positive access improvements, yet also demonstrating the need for coordinated service expansion.

Introduction and Literature Review

Transportation issues, lack of insurance, and availability are all barriers that students in high-poverty urban communities face in accessing health care (Witting, 2023). In New York City (NYC), some students face chronic conditions like asthma and unmanaged mental health diagnoses, all of which have adverse impacts on students' attendance and academic achievement (Nauer et al., 2014; Taras & Potts-Datema, 2005). SBHCs are designed to address gaps in access in the public school system by providing services to students during school hours. Access to comprehensive mental health services through SBMHCs is essential for addressing the youth mental health crisis in NYC (McGorry et al., 2025).

The literature shows that SBHCs provide access to primary care, oral, and other health services to 6.3 million students across 10,000 schools nationwide, and they have grown substantially in urban communities since their origins in the 1960s (Love et al., 2019). SBHCs are funded through a mix of federal grants, Medicaid reimbursement, state funds, and hospital sponsors, making them vulnerable to budget instability when any one funding stream is reduced or eliminated (Love et al., 2019; Dreslin, 2024). Many schools with access to SBHCs are eligible for Title I funding and have higher student populations who receive free and reduced lunch compared to schools without SBHCs (Sullivan et al., 2022).

The literature generally supports the positive role of SBHCs in student health and academic outcomes, though the strength of evidence varies across studies. A study published in the Journal of Adolescent Health examined attendance data from 17 SBHCs in a large urban district, comparing SBHC users to non-users, and found that school attendance improved after students received care at a SBHC (Lim et al., 2023). Importantly, this study uses a before-and-after comparison with a large non-user control group, strengthening its ability to isolate the association between SBHC use and attendance outcomes. Limited evidence on academic outcomes and reliance on quasi-experimental design that cannot rule out selection bias, affirms the need for stronger research designs in this area (Arenson et al., 2019; Bersamin et al., 2016).

The literature regarding health burdens in the Bronx presents a particularly urgent case for examining SBHC access. The Bronx borough has one of the highest poverty rates in New

York state, and this is directly linked to student health burdens (NYC DOHMH, 2021). Children have the highest asthma-related emergency room visits and deaths in the Bronx area compared to other areas of NYC (Gabbay et al., 2025). The South Bronx neighborhood, including Mott Haven and Hunts Point, has some of the most heavily trafficked highways and is filled with pollution from industrial facilities (Columbia University Mailman School of Public Health, 2022). For students managing chronic health conditions without reliable access to primary care, SBHCs represent a critical safety net.

Research Questions

This study seeks to address two related questions, examining SBHC access and student need across six Bronx school districts. These questions emerge directly from the literature, which establishes that SBHCs have historically been concentrated in high-need communities, yet there is still the question of whether that equity-driven pattern holds at the district level in one of the most under-resourced boroughs of NYC.

The research question asks: Do Bronx districts with the highest indicator of need (poverty and student health prevalence) also have the greatest access to SBHCs and SBMHCs? This question builds directly on Love et al. (2019) and Sullivan et al. (2022), who document that SBHCs are disproportionately located in high-need communities. This research study uses descriptive, non-experimental methods to examine the relationship between need and access, rather than establishing that one causes the other.

Based on the literature, the hypothesis for the research question is that districts with higher poverty rates and greater student health burden will also have greater SBHC and SBMHC access per 10,000, which is consistent with the equity-driven placement model that Love et al. (2019) describe.

Setting and Intervention

This study focuses on New York City Public Schools (NYCPS), which serves approximately 906,248 public school students across more than 1,597 schools (New York City Public Schools, n.d.). NYCPS is organized into 32 geographical districts, but this study focuses on the six geographic districts located within the Bronx: districts 7, 8, 9, 10, 11, and 12. The six districts vary considerably in size and geographic character. For example, District 10 covers the neighborhoods Kingsbridge, Riverdale, and Norwood, and has the biggest enrollment and number of schools, with 48,016 students and 98 schools (New York City Department of Education, n.d.). While District 7, covering the neighborhoods of Mott Haven and Hunts Point, is among the smallest, with 16,032 students and 74 schools (New York City Department of Education, n.d.). These districts represent NYC's most underresourced borough, serving the city's most low-income student population. Thus, making this a proper unit of analysis with which to examine equitable student health access (Wemmlinger, 2025).

Data Sources and Sample

This study uses secondary, district-level data from three sources to examine SBHC and SBMHC access across the six Bronx school districts. The first data source is the NYCPS School-Based Health Centers Directory for SY 2023-24, which provides a comprehensive list of

all operating SBHCs, including the school name, borough, address, district number, and sponsoring organization. The second data source is the New York City Council's School-Based Health Center Closure report, which draws on student health reports submitted to the Council under Local Law 12 of 2016 and the NYC Department of Education's Demographic Snapshot dataset. It provides district-level data on SBHC and SBMHC locations, student health prevalence indicators, including poverty rate and asthma prevalence. Additionally, an interactive map accompanying the report identifies the number of schools with SBMHC access in each of the six districts. The third data source used in the study is the NYC Department of Education Demographic Snapshot, SY 2023-24, which provides annual enrollment data, including the total number of schools and poverty rates as measured by the percentages of students eligible for free and reduced lunch.

The independent variables in this study are the district-level need indicators, poverty rate and student asthma prevalence. The dependent variables are the access outcome measures: the number of SBHCs per district and 10,000 students, the number and percentage of schools with an SBHC, and the number and percentage of schools with an SBMHC. Additionally, a gap metric was calculated for each district, representing the difference between the percentage of schools with an SBHC and the percentage of schools with an SBMHC, to examine the relative distribution of physical versus mental health service access.

Analytic Method

All data collection and analysis were conducted using Microsoft Excel, and no inferential statistical tests were performed, since the goal of this study was to highlight and compare patterns of access across districts rather than to make generalizations to a broader population.

I manually compiled data from each source into a single Excel dataset filtered to reflect Districts 7 through 12, with one row per district and columns representing each variable of interest. For each district, I recorded total student enrollment, total number of schools, poverty rate, student asthma prevalence, number of SBHCs, number of schools with an SBHC, and number of schools with an SBMHC. I then calculated the number of SBHCs per 10,000 students, calculated by dividing the number of SBHCs in each district by total enrollment and multiplying by 10,000. I then calculated the percentage of schools with an SBHC by dividing the number of schools with an SBHC by the total number of schools in the district, with an equivalent method applied to SBMHCs. I also calculated a gap metric for each district by subtracting the percentage of schools with an SBHC from the percentage of schools with an SBMHC, which represents the difference in coverage between physical and mental health services at the school level.

Using poverty rate and asthma prevalence as need indicators and SBHCs per 10,000 students as the primary access outcome, I compared districts to identify patterns in service distribution. I created visualizations in Excel, including a bar chart of SBHC density, a grouped bar chart illustrating the distribution of need indicators across the sample, and a scatter plot to illustrate the relationship between the poverty rate and the number of SBHCs per 10,000 students. Then I used Excel to create a Table which includes a descriptive statistical

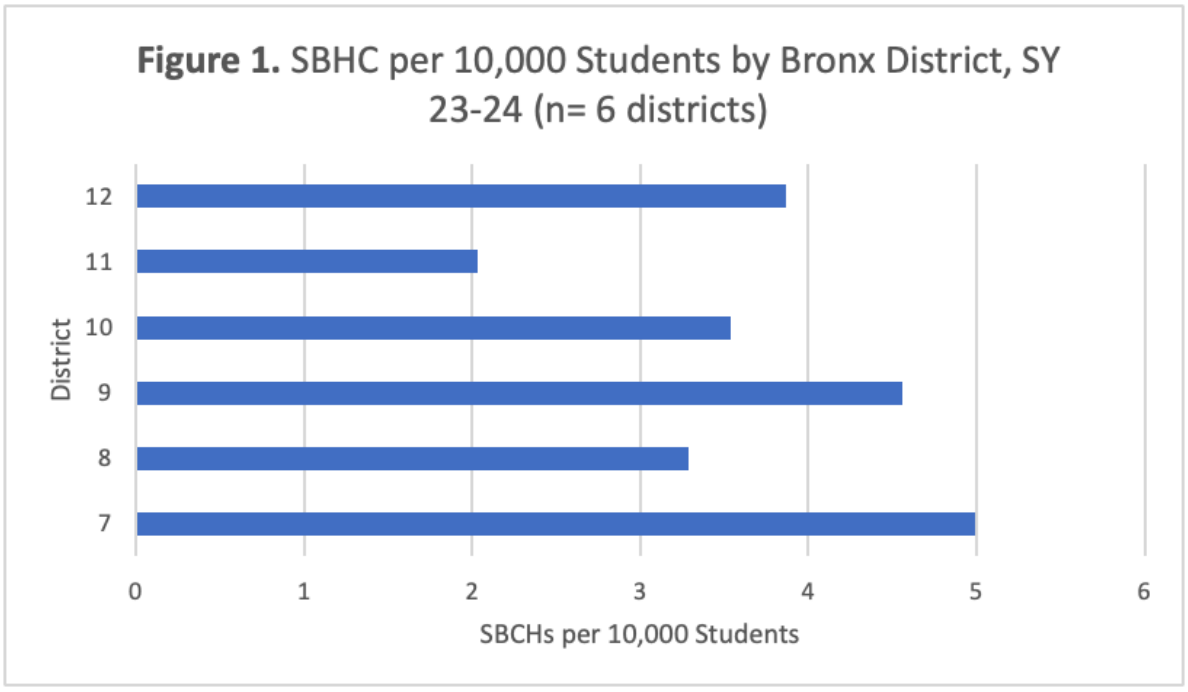
representation of the sample and a comparative summary of SBHC and SBMHC access by district, including the gap metric.

Findings

The findings of this study focus on the research question regarding whether districts with the highest indicator of need also have the greatest access to school-based health and mental health services.

SBHC Access Across Districts

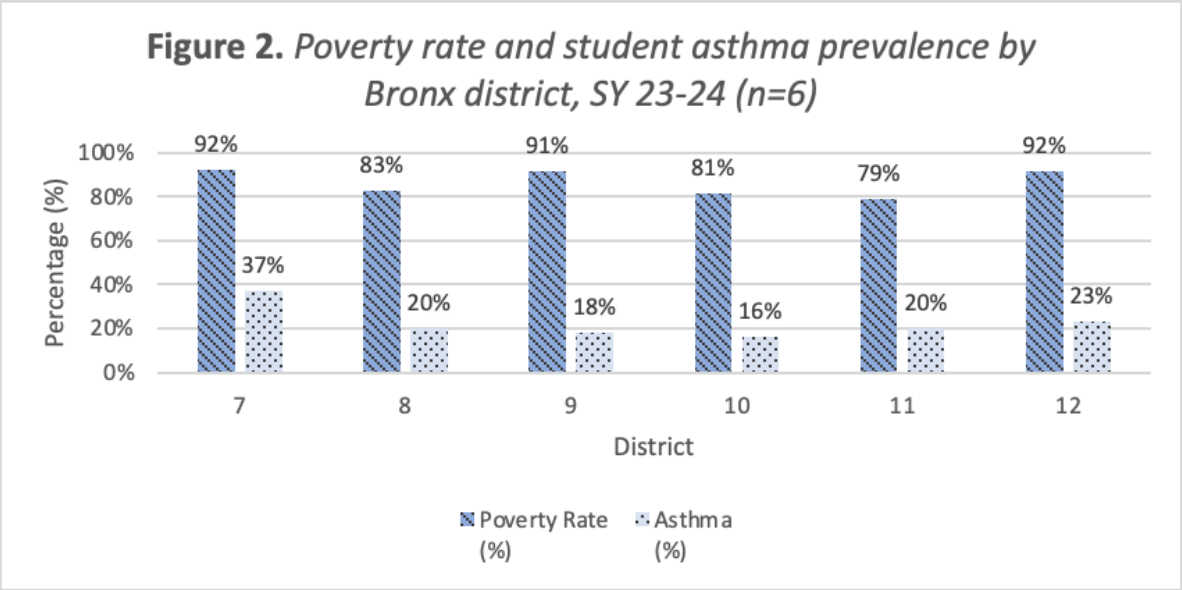
Figure 1 represents SBHCs per 10,000 students for each of the six Bronx districts. SBHC density ranges from 2.03 centers per 10,000 students in District 11 to 4.99 centers per 10,000 students in District 7. There is a borough-wide average of 3.54 centers per 10,000 students. District 7 has the highest density, followed by District 9 at 4.56, District 12 at 3.87, District 10 at 3.54, District 8 at 3.29, and District 11 at 2.03. District 10 had the highest SBHC access overall with 52% coverage, while District 7 had the lowest at 27% despite having the highest SBHC density per 10,000 students. This finding reflects District 7's smaller total number of schools relative to its SBHC count.



Need Indicators Across Districts

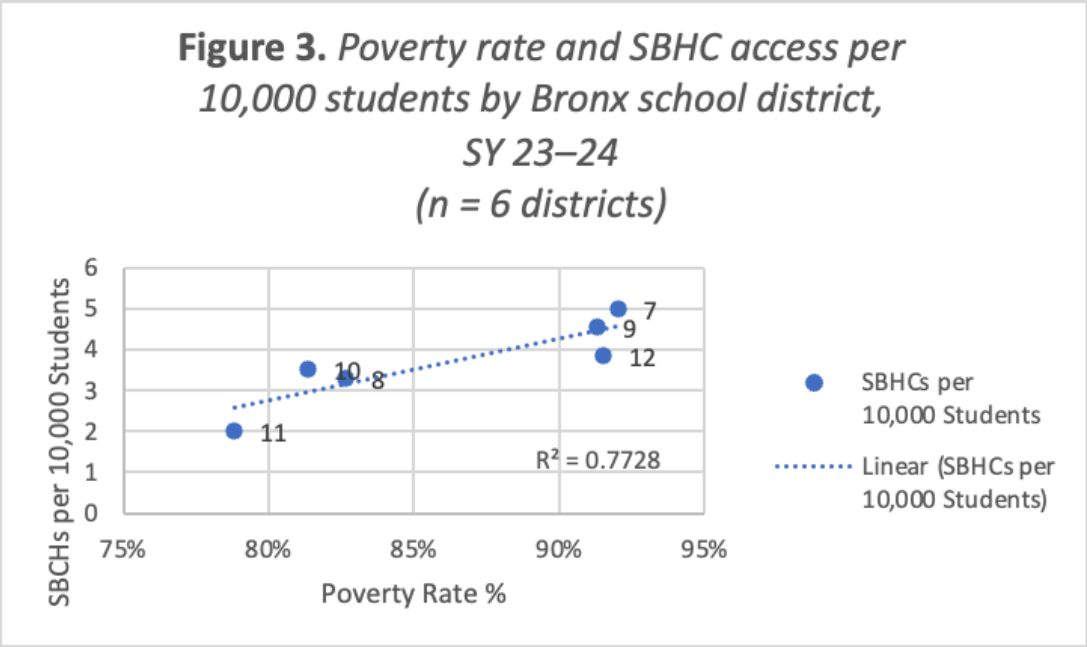
Figure 2 presents poverty rates and student asthma prevalence across six Bronx the districts. Poverty rates are consistently high across each district, ranging from 78.8% in District 11 to 92.0% in District 7, with a borough-wide average of 86.3%. Student asthma prevalence shows greater variation across districts, ranging from apprixiamtely 16% in District 10 to 37% in District 7. Notably, while Districts 7, 9, and 12 show comparable poverty rates above 91%, their asthma prevalence rates differ considerably. District 7 has the highest asthma rate at 37%, while District 9 has a rate of 18%, and District 12 has a rate of 12%. These findings indicate that poverty alone does not uniformly predict student health burden across districts, and that

environmental factors, particularly in the South Bronx neighborhoods of Mott Haven and Hunts Point, may contribute independently to asthma prevalence in District 7.



Association Between Need and Access

Figure 3 represents a scatter plot examining the relationship between poverty rate and SBHC access density per 10,000 students in the Bronx's six districts. There is a positive association with an R^2 value of 0.77, indicating that approximately 77% of the variation in SBHC density across districts is associated with differences in poverty rate. This is a strong association for a sample of six districts, demonstrating that SBHC placement in the Bronx has generally followed an equity-driven pattern by concentrating resources in the highest-need communities. However, with only six data points, the R^2 value must be interpreted cautiously, and the association does not establish a causal relationship between poverty rate and density.



SBHC and SBMHC Access Compared

Table 1 shows that in each district, the percentage of schools with access to an SBMHC exceeds the percentage of schools with an SBHC, with a borough-wide average of approximately 40% of schools, while SBMHC coverage averages approximately 60%. In District 8, physical and mental health coverage were very close, differing by just 6 percentage points. In District 11, the gap was much larger: mental health clinics reached 57% of schools, while physical health centers only reached 29%, a difference of 28 percentage points. Overall, these findings show that although mental health clinic coverage is more generally distributed throughout the Bronx schools than physical health centers, there are significant portions of schools in every district that lack access to at least one type of school-based health service.

Table. 1

SBHC and SBMHC Access by Bronx School Districts , SY 2023-24

District	Neighborhoods	# of SBHCs	# of Schools with SBHCs	% of Schools with SBHCs	# of Schools with SBMHC	% Schools with SBMHC	Gap %
7	Mott Haven, Hunts Point	8	20	27%	36	49%	22%
8	Morrisania, Melrose	8	28	44%	32	51%	6%
9	Fordham, University Heights	13	37	42%	59	67%	25%
10	Kingsbridge, Riverdale, Norwood	17	51	52%	65	66%	14%
11	Pelham Parkway, Throgs Neck, Co-op City	7	25	29%	49	57%	28%
12	Soundview, Castle Hill, Wakefield	7	29	48%	37	62%	13%
Bronx total / average		60	190	40%	278	59%	18%

Note. SBHC data from NYCPS SBHC Directory, SY 2023-24. SBMHC data from NYC Council SBHC Closure Report. Gap (%) = % Schools with SBMHC minus % schools with SBHC

Discussion and Conclusion

First, the SBHC access across the six Bronx districts is positively associated with student need. This finding is consistent with the literature showing that SBHCs are disproportionately located in Title 1 eligible schools, which points to an equity-driven model (Love et al., 2019; Sullivan et al., 2022). Additionally, despite positive equity findings, significant coverage gaps remain across the Bronx. District 10 had the highest percentage of schools with access to an SBHC at 52%, yet still left nearly half of its schools without physical health center access. These

findings imply that while resources have been concentrated in the right places, the overall level of SBHC coverage across the Bronx remains insufficient.

Moreover, a borough-wide average gap of 18% shows that mental health clinic coverage is more broadly distributed than physical health center coverage. This likely reflects Governor Kathy Hochul's investment of approximately $5.1 million to support 82 SBMHCs in high-need NYC schools, illustrating that leaders are recognizing the mental health crisis as urgent (New York State, 2023). Although SBMHC expansion represents an advancement, it creates an uneven landscape where mental health access is growing and physical health center access is stagnant.

Collectively, policymakers and NYCPS leaders should prioritize expanding SBHC access in District 11, which represents the greatest concentration of unmet student need. Existing SBMHC infrastructure elucidates an opportunity to leverage mental health services as a foundation for expanding SBHCs through partnerships with hospitals in the community.

Limitations

This study includes several limitations that shape the interpretation of the findings. Importantly, this study uses descriptive methods and does not include a randomly assigned control group, so the findings should be interpreted as associations rather than causal relationships. Additionally, the sample size is relatively small (n=6), which narrows the scope of generalization and limits the reliability of statistical measures like R^2; a limit of using density as a sole measure of access is evident in District 7; although it has the highest SBHC density per 10,000 students, only 27% of schools are served by an SBHC, likely due to its school-to-enrollment ratio. Also, I intended to include an additional research question regarding the effect of recent SBHC closures on student outcomes since SY 2023-24, but there isn't enough publicly available data to support the findings. Examining closure trends would have strengthened the equity focus by highlighting areas with the greatest need for targeted policy advocacy and funding.

AI Declaration

I used AI as a grammar and organizational support tool to help with the clarity and flow of this paper. Specifically, I used Grammarly throughout the drafting and editing process.

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