

A Holistic Approach to Addressing the Upstream Causes of Asthma

Bronx Healthy Buildings 2017–2018 Pilot Findings

Introduction

In 2017-2018, with the support of the Bronx Partners for Healthy Communities Innovation Fund, the Northwest Bronx Community & Clergy Coalition (NWBCCC) implemented the Bronx Healthy Buildings Program (Healthy Buildings), holistically addressing the root causes of morbidity among asthma patients and reducing asthma-related emergency room visits and hospitalizations.

Working together with various partners and leveraging existing resources to address poor health outcomes in residents living in “sick” buildings and provide short-term resources and investment for long-term impact. In the first pilot year, the NWBCCC:

- Outreached to over 35 buildings with high rates of asthma-related emergency room and hospitalizations, high rates of violations, and other data to explore the feasibility of the healthy buildings program intervention.
- Worked with buildings totaling 539 units including the NYCHA Bailey Public Housing Complex, 2663 Heath Avenue, 365 East 209th Street, 3347 Decatur Avenue, 1840 Phelan Place, 1850 Phelan Place, 54 East 176th Street, 1821 Davidson Avenue, and 2415 Davidson Avenue;
- Connected with over 1500 residents about the Healthy Buildings Program;
- Pre-Surveyed over 400 tenants before Healthy Buildings Interventions;
- Referred over 145 residents to AirBronx, with an additional 35 from walk-in referrals;
- Successfully secured permanent Integrated Pest Management contracts in three entire buildings, paid for by NWBCCC and the Landlord;
- Completed building infrastructure retrofits and upgrades in HB buildings;
- Launched a NYCHA Bailey Houses Organizing Campaign to bring much needed resources and investment for building infrastructure and have thus far secured \$3 million from the state to replace the roof that is causing major mold, leaks, pests and mildew in the building, severely impacting tenant health; and
- Trained over 60 tenant leaders in social determinants of health.

Healthy Buildings Approach

(1) Identify Asthma Hotspot Target Buildings

(2) Outreach and Organize Buildings

Using Electronic Medical Records (EMR) Data, NWBCCC targets "hotspotted" multifamily buildings in the northwest and central Bronx with patients with the highest rates of asthma-related emergency room and hospitalization visits. Additional datasets are used to filter and rank target buildings, including: Rent stabilization, NYC Clean Heat list, Building Indicators Project, Energy and water benchmarking data as well as estimated date of boiler retirement per Local Law 84, Deadline for auditing and retro-commissioning building per Local Law 87.

HB staff outreach to landlords around incentives and benefits of working with program.

(3) Building Analysis & Baseline Assessment

(4) Capital Improvements & Home-based Asthma Intervention

Targeted buildings undergo a full building audit incorporating health, energy, and general structural needs, including tenant-identified improvements and collecting baseline information for monitoring and evaluation. Based on the assessment, the Bronx Healthy Buildings team recommends scope of work and connects owners/operators with vetted and certified local contractors.

Capital improvements and home-based asthma interventions occur simultaneously. Capital improvements will include all cost-effective energy efficient and health upgrades, air quality improvements, and general structural repairs. The team connects owners with the NWBCCC's weatherization program and HPD's energy and health financing products for improvements.

(5) Monitor and Evaluate

(6) Synthesize Learnings & Iterate

A year after the Healthy Buildings intervention, NWBCCC analyzes health, housing, energy and economic data including EMR data, pre and post intervention surveys, and energy savings to evaluate impact. Evaluated metrics include but are not limited to: Improved asthma self-management skills, Reduction in pests in the home, Reduction in asthma symptoms, Energy and water savings to building owners and tenants, Improved quality of buildings, Increased understanding of the connections between the social, economic, and environmental factors in communities and their impact on health, and Increased understanding of tenants rights.

Document learnings and adjust next round of intervention.

Overview of Evaluation Metrics

The Northwest Bronx Community & Clergy Coalition I(NWBCCC) is committed to ensuring a comprehensive and robust evaluation that will help understand the impact of the program, drive continued investment in the program in the future and contribute to the larger body of research driving asthma prevention and treatment.

While the NWBCCC will include EMR data Electronic Medical Record (EMR) data, Pre- and post-intervention surveys, and Energy savings, this report includes only a limited amount of data available at the time of writing include:

- Electronic Medical Record (EMR) data: Changes in healthcare utilization
- Pre-intervention surveys: A questionnaire administered before the intervention providing a baseline of self-reported respiratory health and overall health, behaviors, education, conditions in the home, and residents' sense of agency when it comes to their health and environment

A more comprehensive evaluation will be provided once additional data is available including pre- and post-intervention survey comparisons, and energy savings.

Quantitative Findings

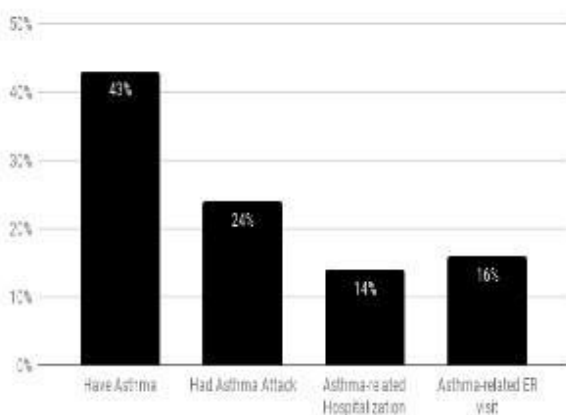
Pre-Intervention Survey Findings

The Northwest Bronx Community & Clergy Coalition I(NWBCCC) surveyed at least 60% of residents in Healthy Buildings to ensure reliability of data.

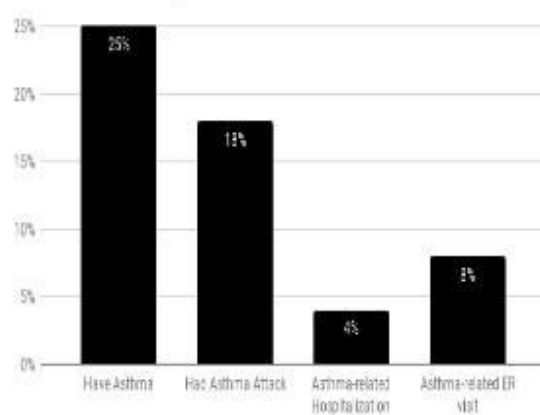
An analysis of pre-intervention surveys showed that:

- 43% of adult residents and 25% of child residents have asthma
- 24% of adult residents and 18% of child residents had an asthma attack in the last 12 months
- 14% of adult residents and 4% of child residents had an asthma-related hospitalization
- 16% of adult residents and 8% of child residents had an asthma-related emergency room visits

Pre-Survey Adult Asthma and Asthma-Related Health System Usage within the Last 12 months



Pre-Survey Child Asthma and Asthma-Related Health System Usage within the Last 12 months

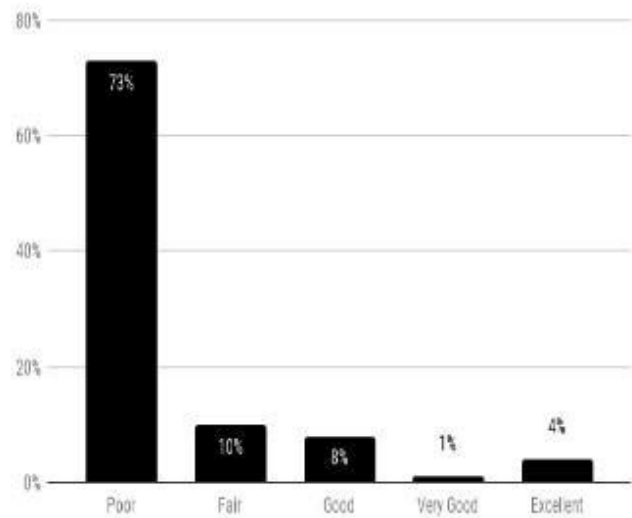




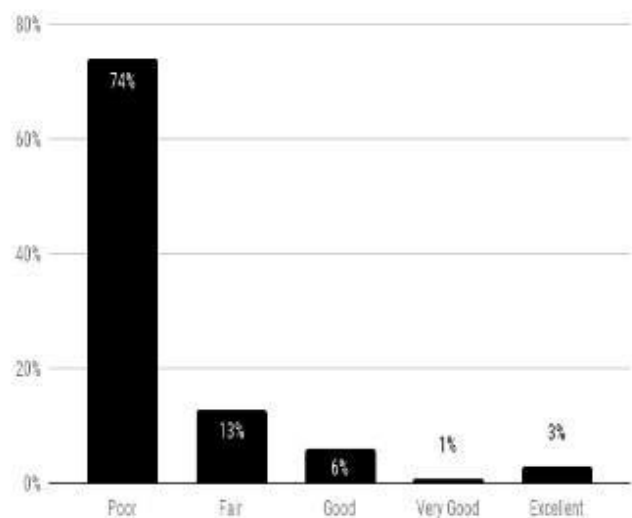
Majority of survey participants stated that they were dissatisfied with their housing conditions. 52% of participants had water leaks in their apartments and 58% had mold and mildew in their apartments. The charts below illustrate the severely poor conditions participants experienced around pest management in their apartments, with 73% having poor rat control services, 74% poor cockroach control services and 75% poor mouse control services--all of which significantly impact residents with asthma.



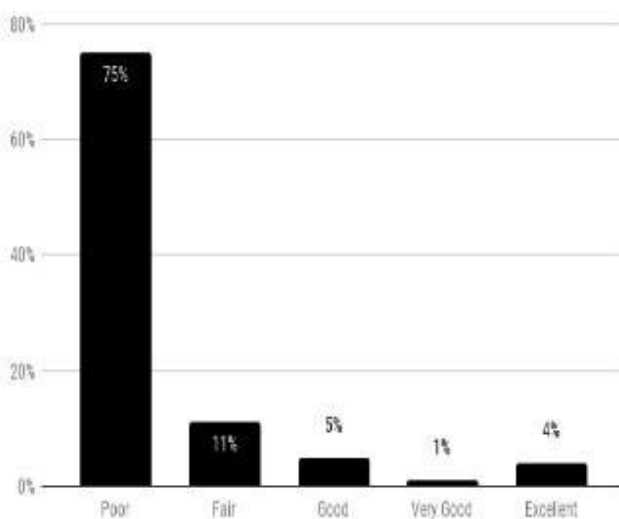
Pre-Survey Ratings of Building Rat Control Services



Pre-Survey Ratings of Building Cockroach Control Services



Pre-Survey Ratings of Building Mouse Control Services





St. Barnabas Medical System EMR Data Findings

The Northwest Bronx Community & Clergy Coalition (NWBCCC) evaluation includes electronic medical record (EMR) data, examining changes in healthcare utilization and costs over time through pre- and post-intervention comparisons. NWBCCC compared a small number of buildings reflected in St. Barnabas' EMR data and documented significant findings. NWBCCC anticipates collecting costs incurred and saved at a later date.

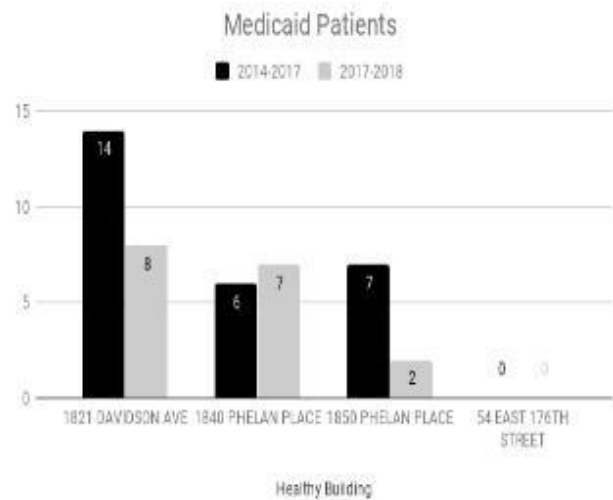
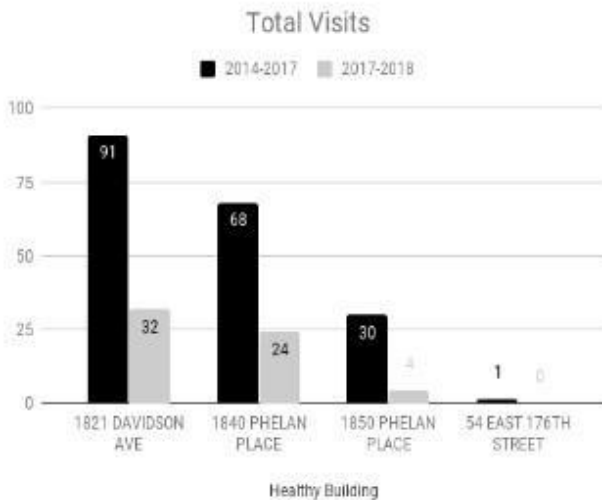
As the following graphs show below and on the following page, buildings connected to NWBCCC's Healthy Buildings Program within St. Barnabas' purview, saw a reduction in total patients with a decrease average of 68% in total patients and a 37% decrease in Medicaid patients. SBH saw a 67% decrease in total emergency department visits and a 53% decrease in emergency department visits for medicaid patients. Similar reductions were seen in inpatient hospitalizations for HB residents for both general patients and medicaid patients.

SBH Total Patients

Based on the SBH data, **total visits decreased by an average of 68%**, with 190 before the intervention and 60 after being a part of the Healthy Buildings Program.

SBH Medicaid Patients

Based on the same sampling, **medicaid patients decreased by 37%**, with 17 patients in the Healthy Buildings pilot year and 27 patients before the intervention.





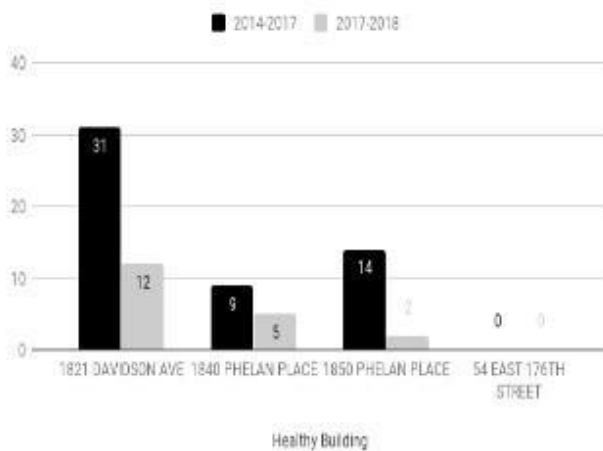
SBH Emergency Department Visits

SBH saw a significant decrease in emergency room visits after the healthy buildings intervention, with an average of 4.75 visits in 2017-2018 compared to 13.5 visits before the intervention. **This is a 67% decrease in ED visits.**

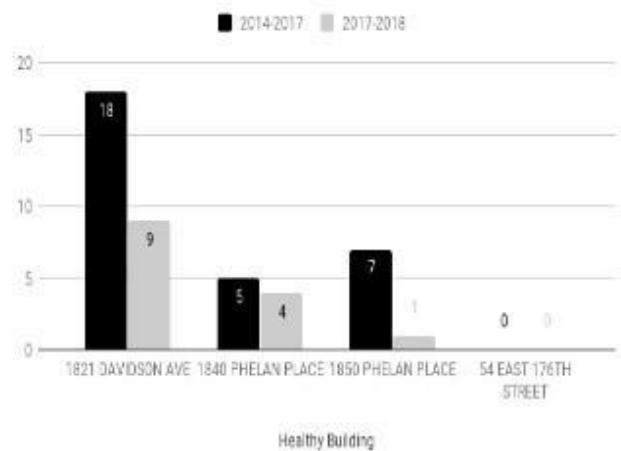
SBH Medicaid Emergency Department Visits

Medicaid Emergency Department Visits also decreased significantly in this sampling with a total of 30 in 2014-2017 and 14 in 2017-2018.

Emergency Department Visits



Medicaid Emergency Department Visits



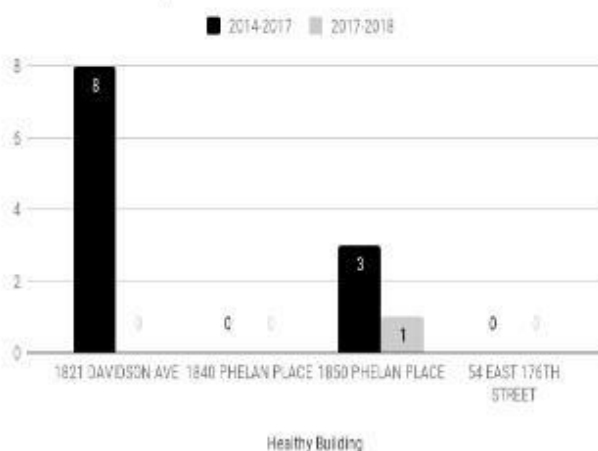
SBH Inpatient Admissions

SBH saw a 91% decrease in Inpatient Admissions, from 11 patients to 1.

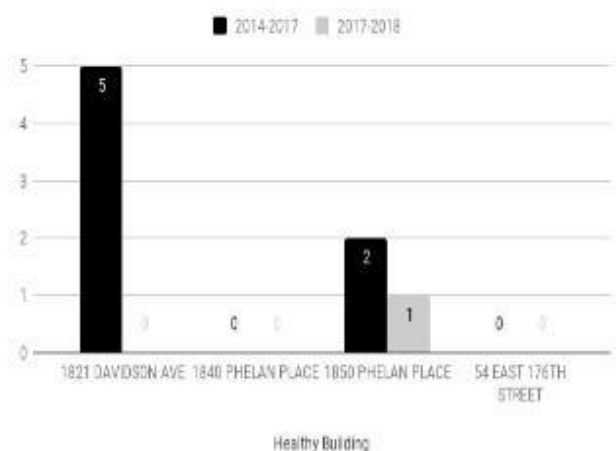
SBH Medicaid Inpatient Admissions

Medicaid Inpatient Admissions saw an 87% decrease with the healthy Buildings intervention.

Inpatient Admissions 2014-2017



Medicaid Inpatient Admissions

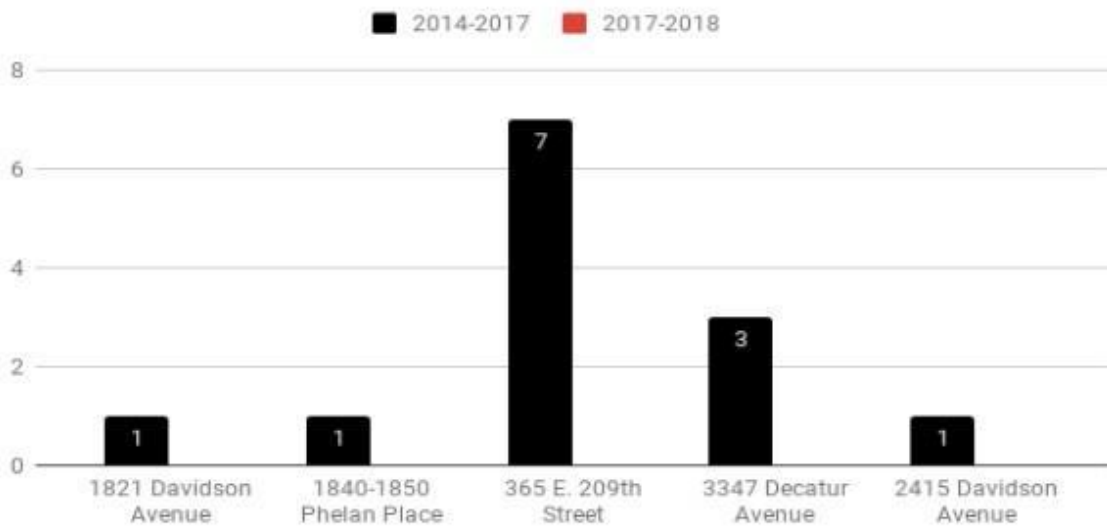




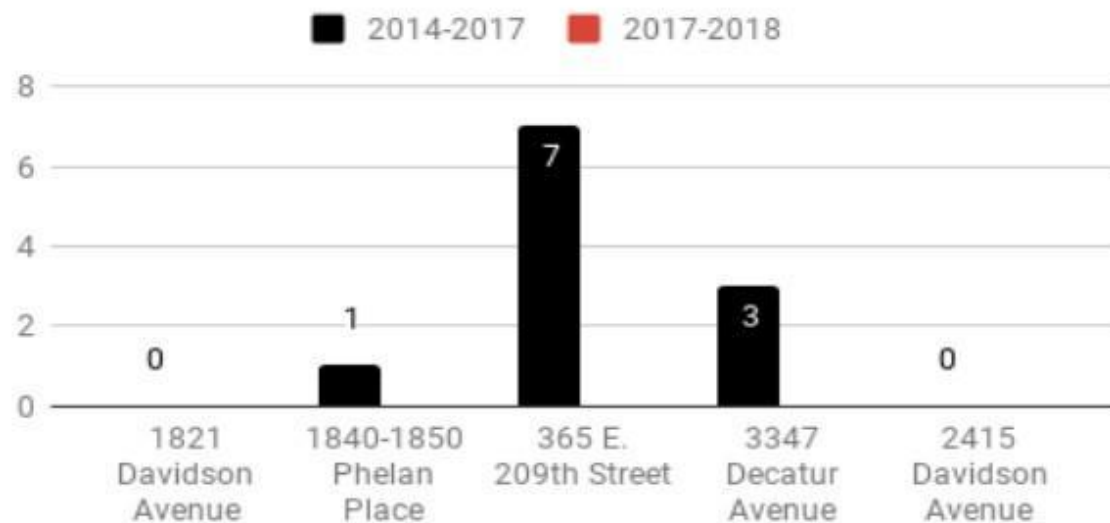
Montefiore Medical System EMR Data Findings

Montefiore Medical System's EMR data also reflected a decrease in general emergency department visits as well as medicaid emergency department visits with a 100% eradication of visits in 2018 from 2014-2017.

Montefiore Emergency Department Visits



Montefiore Medicaid Emergency Department



In addition, Montefiore's EMR data reflected a decrease in overall inpatient admissions and medicaid inpatient admissions with a decrease by a third from the 2014-2017 years compared to the 2017-2018 Healthy Buildings intervention year.

Qualitative Learnings

In addition to the quantitative learnings, NWBCCC also documented qualitative learnings from the pilot year with the BPHC Innovations Fund with the hopes of learning from and iterating the next program year.

Residents as Effective Community Surveyors

Part of the Healthy Buildings approach is to develop and leverage grassroots community leadership in identifying and documenting learnings. HB staff trained residents to conduct community surveys which have proven more efficient and successful than non-peer surveyors. NWBCCC will be training two dozen community residents to be certified surveyors in the next round to ensure the highest response rate possible.

Better Communication around Home-Based Asthma Referrals

NWBCCC identified a breakdown between asthma referrals and the actual home-based asthma intervention, with tenants not responding to referral scheduling calls naming they are no longer interested in a home visit after requesting the service from NWBCCC. NWBCCC returned to the majority of these tenants to inquire about the gap between request and acceptance of this service, learning that the Healthy Buildings Program needed to use shared language with outsourced providers so that follow up reflects recognized requested service and new concerns are not raised between the time between referral and follow up.

Delayed Impact for Public Housing Buildings

NWBCCC tested a public housing building, Bailey Houses, in the pilot year acknowledging the limitations of not having full investment to address capital needs from the first phase. Although organizing is essential in moving any building through the healthy buildings phases, it is particularly important for public housing buildings given the investment needed to be secured from various City and State stakeholders/public officials with NYCHA budget constraints. Impact of the HB intervention is expected to be delayed given these constraints, although NWBCCC is committed to staying with a building until needed investment to address root issue capital needs is secured.

Special Thanks

Special thanks goes to the Healthy Buildings Partners

including: Bronx Partners for Healthy Communities Innovation Fund, St. Barnabas Health System, Bronx Cooperative Development Initiative, MIT CoLab, the Housing Preservation and Development Department of NYC, and other stakeholders that have furthered this important collective work.