Building an Asthma-Safe City

InvestHealth Greensboro, NC
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BUILDING AN ASTHMA-SAFE CITY

INTRODUCTION

Due to the current state of housing in Greensboro and the high incidence of pediatric asthma, our overarching vision is to create an asthma-safe Greensboro by reinvesting in healthy housing for neighborhoods affected by pediatric asthma. An investment in housing stock quality and a reduction in pediatric asthma and healthcare utilization rates, will lead to improved school attendance, housing stability, improved work attendance, better incomes, fewer health care costs, and healthier children and families.

There is a complex dynamic between housing, socio-demographic factors, and negative health outcomes. Many studies have shown that substandard housing is clearly related to increased likelihood of health concerns. Childhood asthma, lead exposure, and cancers have all been shown to be possible negative effects of living in proximity to vacant lots, boarded homes, high-density traffic areas, and in substandard housing. Indoor allergens and pollutants (mold, cockroaches, dust mites, pet dander, etc.) are likely culprits in increasing respiratory issues especially among children. Previous and ongoing studies by the Greensboro Housing Coalition, the UNCG Center for Youth, Family, and Community Partnerships (CYFCP), and the UNCG Center for Housing and Community Studies (CHCS) have found evidence to suggest a likely causal relationship between conditions found in substandard housing and increased incidences of asthma. Asthma hospitalization showed clustering in areas of town with low incomes, high rental rates, and a high proportion of substandard housing. The same areas also have the most housing code violations. Convincing evidence has linked plumbing or roof leaks, inadequate ventilation, faulty or inoperative exhaust systems, unclean floors and other surfaces, presence of rodents or cockroaches, and building structure issues to subsequent asthma incidence and morbidity.

Pediatric asthma is both a health and quality of living issue. Housing that makes children sick can often be improved by removal of sources of allergens. Our team of community partners (including Greensboro Housing Coalition, Collaborative Cottage Grove, Cone Health Systems, East Greensboro Development Corporation, UNCG Center for Housing and Community Studies, and the City of Greensboro) have been working on interrelated sub-projects to address pediatric asthma with the overarching vision of an asthma-safe Greensboro. A reduction in pediatric asthma rates will lead to improved school attendance, housing stability, improved work attendance of parents, better incomes, lower healthcare costs, and healthier children and families. We are actively addressing pediatric asthma disparities by focusing on deteriorating housing conditions and affordability with the goal of making Greensboro homes asthma-safe.
Greensboro, with a population of about 282,000; is the third-largest city by population in North Carolina and continues to grow rapid. This population growth, 25.1% since 2000, is largely driven by working-aged and retired adults moving from other US cities to North Carolina. It has created considerable pressure on the local housing market. The result is sustained (and post-recession rebounding) market values of most single-family homes, rising rental prices, and the rapid construction of new high-rent housing for students and professionals.

Greensboro has historically served as one of the major manufacturing and transportation hubs of the Southeast, and is home to five colleges and universities including the University of North Carolina at Greensboro, North Carolina A&T State University, Bennett College, Greensboro College, and Guilford College. Greensboro is unique in its diversity. In addition to being one of the most racially-diverse metro-areas in the state, it also has the designation of being a refugee resettlement area. Currently, over 100 languages spoken by students in the schools and 13% of residents speak a language other than English at home.

There is a shortfall between housing supply and demand. This demand has driven the residential vacancy rate down to just 3.04% of all residential addresses in Quarter 3 (ending in September) of 2017 (Valassis Lists). In other words, 97% of residential units are occupied at any given time, resulting in very little selection for home seekers.

At the same time, Guilford County has seen among the highest rates of growth of concentrated poverty of anywhere in the United States. For low-income families, the gap between available affordable units and the demand for those units is even worse. According to the US Department of Housing and Urban Development, there are nearly 18,000 extremely low-income renter households in Greensboro, but only about 4,400 units to fit their limited budgets. Thus, there is only enough affordable housing supply for about a quarter of low-income renters. Even with HUD assistance, half of extremely low-income renters have no options in Greensboro. This has led to families “stacking-up” or living with friends and relatives as well as an increase in homelessness, especially among those on disability or fixed retirement incomes.

The rental market has been especially strained as moderate and low-income homeowners lost their homes to foreclosures during the recession. Now nearly half of households in Greensboro are renters and, according to data from the U.S. Census Bureau, and the ability for landlords to charge a premium for their properties. With such a tight market, there is little incentive for landlords to discount rents or even spend extra on maintaining low-rent units. There is always a renter to fill a vacancy.

While recent population growth and the deficit in the number of units has spurred in-fill and downtown development and new multi-family housing throughout the city, it has also led to significant rental increases while real wages have stagnated. According to Dr. Keith Debbage, professor of urban development in the Department of Geography at the University of North Carolina at Greensboro, rents increased more than 12.6% between 2010 and 2014. As of August 2016, average (median) apartment rent within the city of Greensboro was $780. One bedroom apartments in Greensboro rent for $692 a month on average and two-bedroom apartment rents average $811. Rents continue to climb. As rents have increased, incomes have not kept pace. According to the American Community Survey (ACS), the median household income was $41,518 and growing less than 1% each year. The pressure on low and moderate-income families is to work more and divert resources away from other important expenditures. The shortage of affordable
housing forces lower-income families to shift the cost of housing to transportation living further from the places where schools, shopping, and employment are located. The impact on family spending has significant economic repercussions throughout the immediate community and beyond.

The bottom line in Greensboro is a situation in which there is too little available housing stock at an affordable price, driving renters to consider either substandard or overpriced units. In all, nearly half of renters are paying too much for housing. Nearly half (48.3%) of rental households were “cost-burdened” paying more than 30% of their income towards rent. This is well above the 33% national rate of cost-burdened households.

**Figure 1 - Cost Burdened Renters Greensboro, NC**
Housing quality is an issue for Greensboro residents. Single-family homes in Greensboro are on average over 50 years old, while multi-family homes or apartments are about 35 years old. Waves of development over the years can be seen, with homes built in the 1950s or before concentrated in the city core and the most recent development (post-1988 in the outermost suburbs). Aging housing stock itself is not an issue, if kept up. However, the trend with aging rental housing is for owners not to reinvest in maintenance, but to extract whatever rents they can while depreciating the property on their taxes and then speculating on the future resale value.

In 2016, the UNCG Center for Housing and Community Studies (CHCS), an Invest Health Greensboro partner, conducted a ‘census’ of the housing stock, assessing the structural quality of housing in Greensboro. The housing census involved a parcel-by-parcel inventory and assessment of all lots and buildings in the City, assessing the conditions and status of all structures and the property itself. CHCS found that much of the housing stock in Greensboro is aging and shows signs of disrepair.

More than 78,000 properties were assessed. Over a third (35.8%) of the properties had some sort of issue with the lot - grass or weeds over a foot high and needing mowing; shrubs obscuring the building and needing trimming; trees hanging over roof; inoperable vehicles on the lawn or drive; substantial trash or debris in the yard; building materials, tires, automotive parts, or appliances, in the yard; or dangerously low-hanging power lines. While some of these code enforcement issues are simply a nuisance, unsightly properties due impact property values of adjacent property and can lead to potential health and safety issues.

CHCS also noted a significant issue in lack of repair and maintenance. For instance, 18.7% of multi-family and 31.1% of single-family homes had fair to poor roofing conditions; 9.0% of multi-family and 11.8% of single-family had no gutters; 9.0% of multi-family and 9.0% of single-family had fair to poor windows; and 3.7% of multi-family and 5.7% of single-family had fair to poor foundations.

Poor maintenance of roofing leads to moisture inside the home, mold, rot, and structural damage creating potential health and safety hazards. Missing gutters leads to water or moisture in the crawl-space or basement as well as structural decay of the foundation. Poor windows pose an energy-use problem. Poor foundations may compromise the structural integrity of the home.

Looking at major structural conditions like roof, windows, foundations as a composite statistic of these features CHCS found 13% of properties to be a standard deviation below average and 4.2% two and a half standard deviations below the mean. Applying these figures (13% and 4.2%), back to the total number of properties in our data we calculate 9,516 of properties surveyed as being below average and 3,074 of properties surveyed as ‘well below average.’
**Figure 2 – Estimated Percentage Housing with Poor Roof Conditions Greensboro, NC**

**Figure 3 – Substandard Housing in Greensboro (UNCG CHCS Analysis)**
Studies have shown that substandard housing is clearly related to increased likelihood of health concerns and mental health issues. Specific health hazards of substandard housing including: frequent changes of residence (community instability), mold from excessive moisture, exposure to lead, exposure to allergens that may cause or worsen asthma, rodent and insect pests, pesticide residues, and indoor air pollution. Depression and self-perception of health status are higher for those living in areas of extreme poverty.

Asthma is the leading chronic illness of childhood and an increasingly prevalent disease that disproportionately affects low-income children. According to the Centers for Disease Control and Prevention, an estimated 10.5 million (14.0%) of children in the United States have been diagnosed as having asthma. According to the CDC, asthma prevalence rates are especially high in Guilford County - 15% compared with 8% nationally. The Asthma and Allergy Foundation of America (2015) shows that Greensboro’s asthma rate is influenced by higher than average poverty and uninsured rates. The NC DHHS has noted that nearly a third of children in NC visited the ER or Urgent Care in 2015 due to asthma. According to the CDC the overall rate of discharges from the hospital for Asthma was 90.6 per 100,000 residents for Guilford County. This means that for every 100,000 people 90.6 were hospitalized for the primary diagnosis of asthma. Our own analysis of data from Cone Health shows more than 8,000 pediatric hospital visits for treatment of asthma or related respiratory illness in 2016. Patients were geographically concentrated in low-income neighborhoods with high proportions of rental units.

Asthma develops through the interaction of genetic factors with environmental exposures. Substandard housing is known to have several health-related risks that increase the probability of a child developing asthma, as well as exacerbate asthma symptoms and attacks, once the condition has developed. Exposure to indoor allergens is widely recognized as a major source of asthmatic reactions. Numerous studies have linked the prevalence of asthma attacks and other asthma symptomatology to a range of indoor allergens - dust mites, mold, rodents, pets, scents, tobacco smoke, and chemical particulate matter. Environmental conditions in homes increase the presence of these asthma triggers: plumbing or roof leaks, inadequate ventilation, faulty or inoperative exhaust systems, and unclean floors and surfaces.

Over 19,000 children in Greensboro (29.3%) live in households below the poverty level. These families have few options in terms of affordable and healthy housing, which consigns over 6,000 children with asthma to live in places that make them sick. Current housing code enforcement data shows that 65% of open violations involve rental properties. With so many cost burdened renters, landlords do not have the cash flow to make necessary repairs, exposing low-income families to conditions which increase the incidence and morbidity of asthma. A recent study funded in part by the Kresge Foundation investigated the efficacy of interventions, ranging from education to home improvement projects, to address triggers among children who had recent hospital visits for asthma. The reported occurrence of asthma attacks among children in the study was associated with triggers

Affordable housing means little in terms of impact if the quantity available is not sufficient to meet individual, family, and community needs.
such as dust and mold. Past flooding or water damage, conditions that promote mold, was reported in over 40% of homes. This project documented reduction in asthma hospitalizations after housing assessments and interventions. A second study identified unambiguous evidence of asthma clustering in low-income areas with high rates of code violations, condemned and vacant housing. Other work by members of our team show that over 36.8% of homes in low-income neighborhoods are substandard. Addressing housing affordability and rental maintenance, especially in low-income neighborhoods, will be key to overcoming the barriers to positive community health.

There is an increasing understanding that medical care alone cannot reduce asthma and other ailments, and that health and wellbeing are dependent on the conditions in which people are born, grow, live, learn, work, and play. Over the last several years, research has demonstrated that the homes we live in - specifically, the physical conditions within the home, neighborhood conditions, and housing affordability - shape our behaviors and influence our health in several important ways. Most studies that report on the home environment of children with asthma note the homes often have substandard conditions, such as plumbing or roof leaks, inadequate ventilation, faulty or inoperative exhaust systems, unclean floors and other surfaces, presence of rodents or cockroaches, or building structure issues, that promote the presence of asthma triggers. This is currently the case in Greensboro, which has a long-standing need for safe, affordable housing that has increased greatly due to current economic and demographic trends.
5 Steps Building an 
Asthma-Safe City

1. Identify Health Impact Neighborhoods
2. Health System Integration: Substandard Housing & Asthma
3. Targeted Minor Repair & Housing Rehabilitation Programs
4. Leverage Public & Private Redevelopment Funds
5. Information Exchange Network

InvestHealth
Greensboro, NC
BUILDING AN ASTHMA-SAFE GREENSBORO

The 2015-2019 Guilford County Consolidated Plan - Planning for a Resilient Community - adopted three goals: (1) "Increase the supply of decent affordable housing; (2) Promote a suitable living environment; and (3) Expand economic opportunities." Concentrated poverty, as well as vacant and substandard housing, has not been adequately addressed. Neighborhoods continue to deteriorate and consequential negative health outcomes are well-documented. The need to rehabilitate the housing stock is evident and in line with the Consolidated Plan. The most successful strategies will address three areas in an integrated way: (a) housing, (b) infrastructure, and (c) business interests.

Subsequently, members of our Invest Health team have been involved in the launch of the Housing Our Community Initiative (HOCI) with a vision that, "Everyone in our community lives in safe, affordable housing" and a mission to address Greensboro's housing affordability gap through collective community action. In February 2017, at the annual Greensboro Housing Coalition Housing Summit, the president of the Community Foundation of Greater Greensboro announced plans for the Foundation to convene stakeholders and assemble the resources for the Housing Our Community Initiative and urged the Mayor and council members to also support the HOCI. The Invest Health team are key stakeholders in this initiative and have developed strategies necessary to restore deteriorating housing to asthma-safe condition, in cooperation with others in real estate, health, economic development, and human service fields. The plan is based on broad community input with the intention to build political will for policy changes and attract significant investment in making housing safe, affordable, and available.

The City of Greensboro has made clear in its master plan that investment of CDBG, HOME, HOPWA and ESG funds should be made to address the lack of affordable and safe housing our city. The Neighborhood Development Department Housing Rehabilitation Program has available funds in several housing support programs including the Citywide Rental Housing Improvement Program, a Citywide Homeowners Housing Rehabilitation Program, and the Homeowner Emergency Repair Program. These programs are designed to assist homeowners and landlords via subordinated, deferred payment loans and grants to rehabilitate eligible housing, especially those identified as threats to the health and/or safety of residents. Greensboro's recently updated code enforcement ordinance allows for the city to make repairs and place a lien on the property if the owner does not correct violations in the specified time. Moreover, last year, the City passed a 25-million-dollar affordable housing bond to be used for rehabilitation of substandard housing and development of new homes, making potentially additional funding available to the goals of Housing Our Community Initiative. Thus, our project intends to leverage local political will, foundation support, and federal dollars, to address the issues of safe and affordable housing while partnering with developer, investors, and community members to ensure sustainable, long-term success.

Our overarching vision is to build an asthma-safe Greensboro by reinvesting in healthy housing for neighborhoods affected by pediatric asthma. An investment in housing stock quality and a reduction in pediatric asthma and healthcare utilization rates, will lead to improved school attendance, housing stability, improved work attendance, better incomes, fewer health care costs, and healthier children and families.
Our business plan describes the key systems strategies to address these issues and create an asthma-safe city through the deployment of five interrelated sub-projects:

1. **Identify Health Impact Neighborhoods.**
   Action: Creation of a community-based process to identify children with asthma living in housing with addressable environmental triggers associated with incidence or exacerbation of their asthma.

2. **Health System Integration.** Action:
   Development of an educational initiative to better inform the health care system including insurers about the role that substandard housing has on the incidence and exacerbation of asthma in children.

3. **Repair and Rehabilitation Programs.**
   Action: Development of an assessment approach to increase the focus of existing minor repair / housing rehabilitation programs so that they target substandard properties in areas of high concentration of cases of pediatric asthma.

4. **Leverage Public and Private Funds.** Action:
   Creation of an initiative to produce recommendations to public and private funders for the use of public and private redevelopment funds to rehabilitate and redevelop multifamily properties that have high concentrations of substandard housing conditions that produce known environmental triggers associated with the incidence and exacerbation of childhood asthma.

5. **Information Exchange Network.** Action:
   Establishment of an information exchange network for the purposes of providing current and critical information for the purposes of informing property code enforcement and City policies that consider community health in future development plans.
1.0 IDENTIFY HEALTH IMPACT NEIGHBORHOODS

“Hotspot” Mapping

A resident’s ZIP Code can often be a better predictor of health than one’s genetic code, a principle exemplified by neighborhoods in Guilford County that are disproportionately impacted by poor housing conditions, high poverty, poor access to medical or healthy food resources, few transportation options, lack of safe recreation areas, poor environmental conditions, and high crime.

The first stage in our project was to identify neighborhoods with the co-occurrence of a high incidence of pediatric asthma, a substantial percentage of housing with likely environmental conditions associated with asthma, and a residential community association ready to engage the community in addressing asthma through supporting a program that will remove conditions producing or exacerbating asthma reactions. This was accomplished by means of mapping current health and housing data collected and shared by community partners. The address-level data was geo-tagged permitting the opportunity to aggregate information by location and to include variables such as housing type, housing condition, neighborhood, and environmental conditions. The Geographic Information System (GIS) produced provided the means to generate a proactive community response plan to address local environmental conditions related to the incidence of childhood asthma.

This “hotspot” mapping is often used for geospatial surveillance. Analyses focus on highlighting areas which have higher than average incidence of a social or health concern. Our project used local hospital and health clinic data (including all primary and secondary diagnoses for adults and children with respiratory-related illnesses in the fourth quarter of 2016). This geo-linked health data was stripped of identifiers, aggregated, and matched with housing and environmental conditions data collected by UNCG CHCS using ArcGIS. We used density estimation mapping to display these hotspots (again using ArcGIS). While prevalence maps for adult asthma are available at the census tract level (CDC 500), our mapping allowed us to isolate specific neighborhoods with pediatric patients. Over 6200 cases were mapped demonstrating where asthma was concentrated in far higher rates than should be expected, if all else were equal.
**Figure 6 - Pediatric Asthma Hot Spot Mapping**

**Figure 7 - Asthma & Poor Housing Conditions Neighborhoods**
COTTAGE GROVE

The Cottage Grove neighborhood emerged as an area with a high incidence of pediatric asthma, poor housing conditions, an active neighborhood association, as well as exciting collaborative upstream initiatives are already underway: community development; housing revitalization; preparation for employment; concern about food deserts; turnaround in low-performing public school; development of an on-site clinic for primary and mental care imbedded in the neighborhood. Thus, a phased plan for the Invest Health revitalization of the Cottage Grove neighborhood was adopted as a test-case for our process.

HISTORY OF THE NEIGHBORHOOD
Unlike many neighborhoods close to downtown Greensboro that were established in the 19th century, the founding of Cottage Grove was in more recent memory. With only four houses and a lot of farmland, Cottage Grove (named after what was then the unpaved Cottage Grove Avenue) officially became a neighborhood in 1951. By 1953, there were 61 houses and plans for even greater expansion. The 1950’s in Cottage Grove saw much development—both commercial and residential—as the area increasingly came to be seen as a middle and upper-middle class neighborhood for black Greensboro denizens. In the fall 1964, Dr. William Hampton, the first African American councilman of Greensboro and practicing physician, founded and opened Hampton Elementary on a sixteen-acre lot in Cottage Grove (Guilford County Schools). With a neighborhood school established, in addition to the economic and residential development, the area further solidified itself as a desirable locale in which to reside. Dr. Hampton played a vital role in this development of educational opportunities for residents.

Paralleling the founding and expansion of Cottage Grove was the nearby construction and opening of Morningside Public Housing across Cottage Grove Avenue (now English Street). Opened in 1952 as the first housing built specifically for low-income African Americans in Greensboro, Morningside resembled standard public housing units from that era—block, high-density apartments, with 400 units. Over the following few decades, Morningside became marked by criminal activity. In the 1980’s, permanent police neighborhood resource centers were established at several public housing locations including Morningside in response to this perception and reality (Greensboro Housing Authority n.d.).
The economic growth and comparably high standard of living from the 1950’s and 1960’s in Cottage Grove began to stagnate and even decline in the 1970’s and 1980’s. Renamed English Street by the City of Greensboro, the neighborhood saw parcel development with a new focus on high-density and multi-family housing, especially for low-income tenants. Crime began to plague Cottage Grove, along with neighboring Willow Oaks and Morningside Housing.

Adopted in 2000 by the City of Greensboro, the Willow Oaks Redevelopment Plan includes plans for northwest Cottage Grove in addition to neighboring Willow Oaks and Eastside Parks. The focus, however, was the demolishing of all Morningside homes to make way for a new Willow Oaks, with a focus on mixed-income housing. This new Willow Oaks community and its redevelopment, just across English Street from Cottage Grove, was largely funded using HOPE VI (US Department of Housing and Urban Development), the City of Greensboro, and the NC Housing Finance Agency. The main project was finished in 2006 with Senator Elizabeth Dole in attendance during the grand opening (Greensboro Housing Authority). However, while Willow Oaks and East Side Park neighborhood have received significant funding and attention for redevelopment in the past two decades, Cottage Grove has garnered little investment from any government agency (City of Greensboro and Global Green USA 2012).

According to Census data, Cottage Grove and the surroundings neighborhoods qualify for the low-Income Housing Tax Credit (LIHTC) program, intended to increase the availability of affordable rental housing. In 2012, Global Green USA in coordination with the US Green Building Council, City of Greensboro, and Cottage Grove Initiative put forth a proposal for a sustainable neighborhood assessment (rated through LEED-ND checklist) of Cottage Grove. Most notably, the proposal called for a greater focus on constructing and refurbishing mixed-income housing developments, rehabilitation of the Avalon Trace Apartments, better street connectivity, and concerted neighborhood accentuation of the natural assets available (i.e. developments that stress the aesthetics of the neighborhood’s creeks and tree canopy) (City of Greensboro and Global Green USA 2012). Cottage Grove Initiative has also partnered with the Mustard Seed Clinic, opened on English Street, to address the lack of affordable health care in the community (Mustard Seed). Further, Habitat for Humanity was awarded a $250,000 for redevelopment and outreach projects in Cottage Grove in 2011 (Green 2011). Ultimately, the focus of these and other private redevelopment plans target the need for more educational opportunities, less crime, and greater community connectivity (Panzer 2013).

Long term residents remembering the previous years, with pride call the neighborhood Cottage Grove. Today people from all backgrounds, race, culture and ethnicities are coming together with
a new-found energy and excitement to make the Cottage Grove community a vibrant healthy place to live. Residents and community members are working together to revitalize the area and create a living environment that not only reflects the vibrant days of old but one where they feel safe and able to live a healthy lifestyle.

The neighborhood is bustling with new healthy activity. Residents wanted an on-site clinic; Mustard Seed Community Health opened a primary and behavioral health care clinic. Residents wanted safe places to walk and play; the city will soon install sidewalks and new playground equipment and the state will remediate contamination of the old city landfill, now a neighborhood park. Through increased city code enforcement, media attention, legal assistance, and advocacy, residents persuaded owners of a large, poorly maintained apartment complex to sell and a responsible investor to purchase the property for rehabilitation. Neighbors planted community gardens and invited the Mobile Oasis Farmers Market to anchor a weekly market where entrepreneurs also have opportunities to sell crafts and prepared foods for additional income. Because of active community engagement, Collaborative Cottage Grove was selected for a BCBSNC Community-Centered Health grant and a BUILD (Bold, Upstream, Innovative, Local, Data-Driven) Health Challenge grant. The Greensboro Invest Health initiative has directed research, investment, and Health Impact Teams at reducing pediatric asthma in the neighborhood.

**HEALTH ASSESSMENTS**

The Greensboro Housing Coalition collected 340 surveys on health conditions among residents of Cottage Grove. The health assessment indicated that 83.3% of respondents have a doctor or health home, and 86.0% agreed that the doctor’s office easy to get to. Diabetes was the greatest health issue (44.4%), followed by heart problems (29.6%) and stroke (23.2%). Respondents were also asked what changes they would like to see in the neighborhood. Two thirds (66.3%) wanted a health clinic, 57.9% more jobs, and 52.4% a community center.

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**EXTERNAL ASSESSMENTS**

External assessments were conducted on 527 parcels in Cottage Grove in 2016. Of the 527 surveyed parcels, 459 (87.1%) had buildings—of which 390 (85%) were single family homes and 44 (9.6%) were multifamily housing. These residential buildings were assessed, in person, according to conditions of the lawn and property, roofing, exterior walls and siding, foundation, porch, and windows. 96.3% of homes were clearly occupied at the time of assessment.

Most homes in Cottage Grove were constructed on brick or block foundations (95.9%), with asphalt shingle roofing (97.9%). While 83.9% of all foundations surveyed were in good condition (364 parcels), 16.1% were in fair condition—with only 13 homes having foundations with visible holes, cracks, or damage (18.6%). A quarter of homes assessed (26.2%) were deemed to have fair to poor roofing. Of the homes with noted

**Figure 9 - Parcel Status**

464 PARCELS
vacant lot: 18%
single family: 74%
multifamily: 6%
non-residential: 2%
roofting issues, 16 homes (14%) had shingles or other material missing from the roof, 32 (28.1%) had a sagging roof, and 12 (10.5%) had visible holes in the roof. Another frequently observed issue was the state of chimneys in Cottage Grove, with only 53.4% of chimneys in good condition and 46.6% labeled as fair to poor. Gutters were observed on a majority of homes (71.9%), 24% of which were deemed to be in fair to poor condition. Of houses with gutters, 24% appeared to leak, 26.7% had leaves or vegetation in them, and 18.7% homes had inadequate drainage.

Finally, 327 houses had windows in good condition (75.3%), 95 had windows in fair condition (21.9%), and only 12 houses had windows in poor condition (2.8%). While 79.7% of homes appeared to have screens on all windows, 20.3% did not. 11 homes surveyed had broken windows (10.3%); 51 homes had visible damage of the casement or frames (47.7%).

**Figure 10 – Roof Conditions**

**INTERNAL ASSESSMENTS**

Of 51 respondents to our door-to-door canvasing, 21.6% own their home leaving 72.5% renting in Cottage Grove. 31.4% spend greater than 30% of their income on housing and housing-related expenses while another 15.7% spend greater than 50%. This means that 2/3rds of residents surveyed are cost-burdened.

Most homes had only 1 (21.6%) or two (29.4%) residents yet, a third of homes (31.3%) had between 1 and four children; 21.6% had pets. A third of residences had at least one occupant with allergies and 37.3% had someone with asthma, and 11.8% other respiratory issues. Three residences had an occupant who had fallen in the home. Nearly a quarter (23.5%) with single parents, 11.8% of homes had a veteran occupant, and 19.6% a senior citizen. A fifth of homes (21.6%) had an occupant with a physical disability, 7.8% had someone who was blind or with limited site, and 3.9% hearing impaired or deaf.

Half of the residents heat their homes with forced air (Heat Pump, Gas/propane furnace, Heating oil furnace) while the other half use radiant heat sources (Kerosene Fuel or Propane Heater, Electric baseboard, Electric space

**Figure 11 - Canvassing the Neighborhood in 2016**
heaters). Only one responded used a fireplace or woodstove.

Most homes (96.1%) had a working range or stove and (92.2%) a working oven. A quarter (25.5%) lacked a stove hood or vent fan. All had hot and cold running water in the kitchen though a third experienced Rust, discoloration, odor or bad taste in water. Nearly a third (31.4%) did not have CFGI electrical outlets in the kitchen.

One respondent indicated no working sink, shower, or toilet in the bathroom. Two thirds (62.7%) said they needed to mix hot water with cold water to keep from being burned. A quarter (25.5%) did not have a functioning bathroom fan and 17.6% had visible mold in the bathroom. A third (33.3%) did not have an anti-slip bathtub or mat. A third also did not have CFGI electrical outlets in the bathrooms.

Only half of the residents (49.0%) has an operable fire extinguisher, 13.7% have no telephone or emergency call system in case of emergency. Five respondents (9.8%) do not have windows that open in bedrooms, and 9.8% do not have smoke detectors. Only half (56.9%) have carbon monoxide detectors.

Nearly a third (29.4%) of homes have cracks in the walls, a quarter (25.5%) have peeling paint, and a third (31.4%) have leaking pipes. Nine of the 51 homes (17.6%) had water leaking from the roof or ceiling, and 13.7% ad holes in the floors, and 15.7% holes in the walls. Two-fifths (21.6%) of homes had roaches, and 39.2% had other insects or pests. Only one reported rodents. Residents indicated the needed assistance with smoke and CO2 alarms (48%), accessibility ramps and hand rails (40%), tenant workshop (40%), and help reducing asthma triggers in the home (36%).

### Table 2 - Repairs/Assistance Needs of Residents

<table>
<thead>
<tr>
<th>Do you feel that you or your home could benefit from any of the following repairs or assistance?</th>
<th>Responses</th>
<th>Percent</th>
<th>Percent of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoke alarm or CO alarm installation</td>
<td>12</td>
<td>9.0%</td>
<td>48.0%</td>
</tr>
<tr>
<td>Accessibility ramp/hang rails</td>
<td>10</td>
<td>7.5%</td>
<td>40.0%</td>
</tr>
<tr>
<td>Your rights as a tenant workshop</td>
<td>10</td>
<td>7.5%</td>
<td>40.0%</td>
</tr>
<tr>
<td>Help reducing asthma triggers in the home</td>
<td>9</td>
<td>6.7%</td>
<td>36.0%</td>
</tr>
<tr>
<td>Roofing repair</td>
<td>8</td>
<td>6.0%</td>
<td>32.0%</td>
</tr>
<tr>
<td>Plumbing</td>
<td>8</td>
<td>6.0%</td>
<td>32.0%</td>
</tr>
<tr>
<td>Pest control</td>
<td>8</td>
<td>6.0%</td>
<td>32.0%</td>
</tr>
<tr>
<td>Help developing a healthier home</td>
<td>8</td>
<td>6.0%</td>
<td>32.0%</td>
</tr>
<tr>
<td>Permanent heat source</td>
<td>7</td>
<td>5.2%</td>
<td>28.0%</td>
</tr>
<tr>
<td>Exterior Painting</td>
<td>7</td>
<td>5.2%</td>
<td>28.0%</td>
</tr>
<tr>
<td>Grab bars</td>
<td>7</td>
<td>5.2%</td>
<td>28.0%</td>
</tr>
<tr>
<td>ADA toilet</td>
<td>7</td>
<td>5.2%</td>
<td>28.0%</td>
</tr>
<tr>
<td>Electrical</td>
<td>7</td>
<td>5.2%</td>
<td>28.0%</td>
</tr>
<tr>
<td>Home maintenance/home repair workshops</td>
<td>7</td>
<td>5.2%</td>
<td>28.0%</td>
</tr>
<tr>
<td>Water conservation</td>
<td>5</td>
<td>3.7%</td>
<td>20.0%</td>
</tr>
<tr>
<td>Energy conservation</td>
<td>5</td>
<td>3.7%</td>
<td>20.0%</td>
</tr>
<tr>
<td>Landlord - tenant mediation</td>
<td>5</td>
<td>3.7%</td>
<td>20.0%</td>
</tr>
<tr>
<td>Other housing assistance (please specify)</td>
<td>3</td>
<td>2.2%</td>
<td>12.0%</td>
</tr>
<tr>
<td>Foreclosure prevention/ counseling</td>
<td>1</td>
<td>.7%</td>
<td>4.0%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>134</strong></td>
<td><strong>100.0%</strong></td>
<td><strong>536.0%</strong></td>
</tr>
</tbody>
</table>
2.0 HEALTH SYSTEM INTEGRATION

SYSTEM CHANGE AT CONE HEALTH
Cone Health is one of North Carolina’s largest and most comprehensive health networks. Cone Health serves communities in Guilford, Forsyth, Rockingham, Alamance, Randolph, Caswell and surrounding counties in more than 100 locations, including six hospitals, 95 physician practice sites and multiple centers of excellence. Cone Health is a national leader in patient safety and quality. Cone Health is in the top 1% of hospitals for preventing heart attack readmissions, its Accountable Care Organization ranks fifth in the country for quality metrics, and is ranked seventh in the country by CareChex for overall care and medical excellence (https://www.conehealth.com/awards/).

Cone Health is committed to access to care, and contributed over $350M in uncompensated care in fiscal year 2016, around 20% of its $1.7B budget.

Nonetheless, Cone Health is deeply aware of the limits of medical services alone in achieving long and healthy lives for residents of our communities. In 2014, Cone Health committed to a new strategic plan that included its first statement on “upstream” health promotion: “Recognizing the multiple factors contributing to a community’s level of health and wellness, health systems must define and pursue meaningful roles in improving those aspects of community health that can be measurably improved.” Cone Health seeks to maintain its commitment to providing access to high quality health services while identifying effective initiatives to address social determinants. The Invest Health program has prompted multiple system changes that are a direct result of the opportunities to learn and discern from our peers within Greensboro and around the country.

ADDRESSING HOUSING & HEALTH
Cone Health’s Tim and Carolynn Rice Center for Child and Adolescent Health is an 18-provider pediatrics practice with integrated mental health and a high volume of patients with Medicaid or no insurance coverage. This practice is preparing for its partnership with the Greensboro Housing Coalition to identify children at risk of asthma exacerbation due to housing, refer them to GHC for assessment and remediation, follow-up on the results of the housing intervention, and evaluate health outcomes. This work involves mindset shifts and process changes in the pediatric visit, new interfaces with the medical record system, and assistance from our Analytics team in developing patient criteria. Multiple departments are engaged in and support this work, from IT to Health Equity to Community Benefit.

Cone Health’s evolving understanding of the benefits of housing interventions led to testifying alongside other Invest Health partners to the Minimum Housing Standards Commission for the City of Greensboro on the health effects of a distressed property. Previously, the health system has not had any involvement with code enforcement and/or housing regulatory entities as a strategy for patient care.

NC Medicaid reform includes a request to use funds to develop new demonstration projects based on social determinants of health. Cone Health’s relationships with the NC Department of Health and Human Services include discussions of the Invest Health project and the possibility of scaling this as a demonstration project, with the goal of establishing housing assessment and remediation as a reimbursable service under the NC Medicaid program. Because of this work, leaders at both Cone Health and Greensboro Housing Coalition have been asked to serve on the NC Institute of Medicine Social Determinants of Health Task Force to develop recommendations for the state’s public and private health systems.

TRAINING HEALTHCARE LEADERS
Beginning in the spring of 2018, the Pediatrics Residency program at Cone Health, a
partnership with the UNC-Chapel Hill School of Medicine, will begin a rotation experience in Cottage Grove. The purpose of this initiative is to educate pediatrics residents on social determinants of health through experiential learning. Residents will tour the neighborhood, attend meetings of the Neighborhood Association to develop relationships with community resident leaders, assist with community events, and help to implement strategies to prevent asthma and diabetes. The purpose of this work is to immerse them in a community’s strengths and struggles, to allow them deeper context to understand and have compassion for patients with socio-economic burdens. They are specifically not going to be providing clinical services in the community, but rather learning other lessons about lifestyle and health drivers to incorporate into their practice.

**UNCG Work-Study Health Impact Teams**

The recent Asthma Partnership Demonstration Project Study funded by Kresge Foundation and conducted by UNCG Center for Youth, Family, and Community Partnership (CYFCP) and the Greensboro Housing Coalition (GHC), investigated the efficacy of interventions, ranging from education to actual home improvement projects, to address indoor asthma triggers for 41 children with some of the highest rates of asthma-related hospital visits. The reported occurrence of asthma in the last 30 days among children in the study was associated with trigger sources such as dust and mold (both reported by over 50% of the sample). Past flooding or water damage (a condition that promotes the growth of mold) was reported in over 40% of the homes, and over a third reported the presence of tobacco smoke. The post-intervention, matched follow-up data showed that there were notable decreases in the occurrence of asthma attacks. Our aim in this project is to build on these findings and reduce the environmental conditions associated with the incidence of pediatric asthma by: targeting neighborhoods with high incidence of pediatric asthma using geo-spatial mapping of health data; creating an intervention program in partnership with the Greensboro Housing Coalition and other community organizations, that will assist low income families of children with asthma address conditions in their housing that may be contributing to their children’s asthma.

The UNCG Center for Housing and Community Studies (CHCS) has documented housing conditions at a parcel-level producing a composite housing conditions score for each property in Greensboro. This information was mapped and combined with other municipal, state and census data and then overlaid with health indicators from Cone Health resulting in the identification of Health Impact Communities. Using these maps, Health Impact Teams comprised of university students, in partnership with neighborhood association members, are canvassing neighborhoods and attending community events in impacted areas to offer information and referral for health and housing resources. Healthy home specialists are assessing the health risks in the home, educating residents about the ways they can reduce asthma triggers, and helping residents navigate the resources available for home repairs. Funded by the UNCG Federal Work-Study Program and supervised by a Certified Health Education Specialist, the HIT members are conducting health education, community screenings, distribution of ‘green cleaning kits,’ and referrals to local resources. Referrals for professional mold remediation, modest structural repairs,
and professional health-care interventions will also be made and tracked.

We anticipate 3000+ 'contacts' in 2017-2018 including: 2000+ direct contacts through canvassing in four neighborhoods, 500 contacts at community health fairs, and 500+ contacts through materials dispersed to outreach partners such as Guilford Child Development (serving over 5,000 children and families a year), Community in Schools, school nurses, parent groups, and medical/health based partner groups including: Cone Health System, Triad Adult and Pediatric Medicine, the Partnership for Community Care (P4CC), the Congregational Nurses Program, and others.

From these ‘contacts’ we anticipate 400-600 completed screening surveys, 100 referrals to community housing agencies and health care providers, and distribution of up to 100 clean kits to those who fit criteria (children, asthma, self-identified unhealthy home).

While we have been successful in conducting canvassing in four neighborhoods, we recognize that strong partnerships and good rapport must be established with neighborhood associations and community leaders in order to have successful outreach. We also recognize that providing referral literature and material handouts are not enough – individualized follow-up is needed. Thus, we will also conduct 30/60/90-day follow-up and tracking with individuals who have been provided referrals in order to assure that contact is made with the appropriate service providers.

**Figure 13 - Health Impact Team Process**
3.0 TARGETED REPAIR & HOUSING REHABILITATION PROGRAMS

SYSTEMS CHANGE IN CITY CODE ENFORCEMENT

Most housing-related respiratory triggers are code violations—pest entry holes, roof and plumbing leaks. When property owners are unwilling to maintain housing units to minimum safety standards, code enforcement is an essential tool to hasten compliance or to sell so that a new owner can make the repairs. Greensboro updated the housing code in 2013, authorizing code enforcement inspectors to significantly improve compliance.

Recent accomplishments include:

- **Healthy homes training** for code inspectors May 2017 to recognize health risks inherent in housing conditions and to cite the underlying code violation. For example, moldy ceilings are not just “unclean unsanitary ceilings” but an indication of moisture or ventilation problems that violate code standards; owners then are required to address the causes of moldy conditions. In addition to garbage as a factor in pest infestation, check for holes in foundation walls and cite “pest entry points”.

- **Language interpretation** to facilitate communication between inspectors and residents. Greensboro is home to large populations for whom English is not a first language, delaying or confusing correction of code violations. UNCG’s Center for New North Carolinians has trained multilingual staff in healthy homes and code requirements to interpret for inspectors and to educate residents about maintenance responsibilities in their new country.

- **Preparation for use of the Order to Repair** to correct code violations when the owner has demonstrated inability or unwillingness to comply. The Minimum Housing Commission, a quasi-judicial body appointed by City Council, reviews cases where violations are not corrected in 30 days (or longer with written extension) and votes on issuing an Order to Demolish or an Order to Repair in 90 days. The city now has authority to contract for repairs on these properties, with staff and procedures in place, and is in the process of moving forward with several orders, using the approved contractor list for Rehab and Repair programs.

- **Penalties for owners renting condemned units.** The city assesses civil penalties for all violations and re-renting of a condemned unit is considered another violation subject to civil penalties.

- **Facilitating purchase/rehab** of housing on the demolition list. In the past four years, code enforcement has provided investors with public information about properties under Orders to Demolish, resulting in the restoration of 129 houses and apartments to habitability.

- **Expediting repair compliance.** Under the updated ordinance regarding extensions of time, cases are being processed more quickly and taken to the Minimum Housing Commission in as few as 4 months, but on average around 9 months.

Strong code enforcement is an essential piece of the total picture to keep housing from deteriorating to the point that it sends people to the hospital.
Workforce Development

Building an Asthma-Safe City requires a competent workforce to inspect, assess, educate, and remediate asthma triggers in homes. Currently, there is a serious shortage of skilled construction workers, posing concern in the homebuilding industries, and leaving rental property owners without competent maintenance staff. If they hire inexperienced workers to respond to tenant repair requests, the workers cannot fix the problem—may make it worse—and the owner cannot understand why the tenant calls again to complain. This is an opportunity to prepare workers to do quality repair and rehab work, qualifying them for the job opportunities and improving the efficacy of repairs.

To pilot the training of workers for Asthma Remediation, we have identified a licensed contractor to provide hands-on training in making the minor repairs that result in major difference in health for households with respiratory issues. Sealing holes to keep out pests, replacing worn carpet with smooth cleanable floors, cleaning and repairing gutters to drain rain away from foundations, and adjusting leaking faucets and drain pipes can significantly reduce asthma triggers. Tenants of Avalon Trace and other neighborhood residents interested in construction careers will be recruited, interviewed by the contractor and purchaser of Avalon Trace, and referred to Guilford Technical Community College’s construction education program for assessment.
of aptitude. We will encourage the contractor to become certified as a Journeyman apprenticeship program. As the trainees attend GTCC classes and are paid stipends for making repairs at Avalon, under strict supervision, they will prepare for their Journeyman certificate. These skills also expand the capacity of rental maintenance workers and home repair entrepreneurs to do quality preventative maintenance work, preserving the housing stock in our community, and to contract to do asthma remediation measures for the homes referred in the Invest Health process.

Public health educators will be trained in healthy home assessment, through a grant to Greensboro Housing Coalition from Cone Health, to assess the health risks inherent in housing conditions and educate residents about what they can do themselves—no smoking indoors, ventilation, garbage removal—and how to get repairs as tenants or homeowners.

**UNCG-CHCS AmeriCorps Program**

UNCG is preparing an application to AmeriCorps for training neighborhood residents in outreach skills to work with the Health Impact Teams and in minor repairs to work with the Asthma Remediation Teams. The program objective of the CHCS AmeriCorps Program will be Economic Opportunity with a focus on recruiting unemployed, economically disadvantaged community members for work in developing and repairing housing units as well as assisting disadvantaged individuals to transition into safe, healthy, and affordable housing. We will apply for 10 MSY (5 Full Time and 10 Part Time Positions). Possible service member placement will be at UNCG-CHCS, Greensboro Housing Coalition, Habitat for Humanity, Community Housing Solutions, Greensboro Urban Ministries, Interactive Resource Center, Out of the Garden Project, Collaborative Cottage Grove, Cone Health, Guilford Community Care Network, Partners Ending Homelessness, Guilford Community Care Network, the Servant Center, etc.
The literature is clear - poor upkeep of renter-occupied housing has been found to have a positive correlation with asthma prevalence. The Invest Health Greensboro partners have been attempting to address one of Greensboro’s worst apartment complexes, turning it into an asset for the Cottage Grove community. *Avalon Trace Apartments* has all of these conditions - poor upkeep and vacant units in deplorable conditions. If we applied the Chronic Disease Hospitalization rate of the 2016 report for Guilford County to the population of Avalon Trace we should have less than one admission to the hospital annually for a primary diagnose of asthma. Yet, Avalon Trace with more than 120 annualized visits to the emergency department or admissions to hospital was especially high for a population of about 500 individuals (170 units at 80% occupancy according to the real-estate listing).

In 2015 the Collaborative Cottage Grove/Greensboro partners had been working in the Cottage Grove community under funding from BCBSNC Foundation called Community Centered Health. One of our TA providers suggested that we look at submitting an application to Invest Health as it closely aligned with the work that we were doing around the intersection of health and housing. For many years, through the Greensboro Housing Coalition’s advocacy work in this community and other disinvested communities in Greensboro, GHC’s staff of healthy homes inspectors and tenant advocates knew that the Avalon Trace apartments had long been in substandard condition. As our collaboration was selected to be a part of Invest Health, it strengthened relationships between the partners in housing, healthcare, and university. Because of these connections and collaborations, we began to get more data which strongly supported what the on the ground staff already knew. Which is that these substandard apartment units were driving the health care costs for respiratory illness in the community. In effect, children were becoming sick because of hazards such as mold and moisture, pest infestations and thermal conditions.

As we progressed in our ‘Home Team’ meetings and discussions of how to have the most impact on the community we kept coming back to the notion that if we somehow were able to partner with someone capable of bringing the apartments up to a clean and healthy standard that we could have the most positive impact on the health of the community. Through robust and intentional community engagement efforts which center on the idea of having the residents
and neighborhood leaders inform the work, Avalon Trace kept coming up as the biggest issue in the neighborhood. The homeowners, rental tenants and surrounding community all kept saying that something needed to be done.

In the fall of 2016 we reached out to the owners of the property and asked to meet to discuss what resources our group could bring to the table to help with repairs through our already established relationships with local government entities and philanthropy. One of the owners met with our group in late 2016, but nothing happened from their side. We attempted again to engage with the owners in the early spring of 2017 with the help of our local Community Foundation. Following the conversation our group was hopeful that we could work with the owners, but again they disengaged. A few months later we learned that the property was listed for sale.

In April of 2017 staff of the Greensboro Housing Coalition and our partners in the Cottage Grove Neighborhood Association were part of several media pieces (local television and print) to tell the story of how bad conditions were at the apartment complex. The owners were not happy that we were doing this and attempted to have the Executive Director of GHC as well as our Program Coordinator and the President of the Neighborhood Association arrested for trespassing as we were being interviewed on the street in front of the property. A newspaper reporter from Greensboro News and Record subsequently wrote an article about the property titled: Cottage Grove Partners seek partner to improve housing; Wanted a private or nonprofit developer willing to partner with an energized community to turn an eyesore into an asset. The article highlighted the horrible conditions of the property, but also told the story of the community that wanted things to change as well as the agency partners that were willing to work with a responsible developer to turn things around.

Shortly after the article ran, we learned that the property was under contract and were disappointed that the prospective buyers did not reach out to us. The purchase offer went through a due diligence period but never closed. Upon learning that the property was back on the market, our Invest Health team contacted a local regional council of governments (PTRC) to see if they were interested in pursuing this project with our help and they began the long process of getting approval from their Board to submit an offer. Our local Community Foundation agreed to pay the earnest money deposit on behalf of PTRC.
with the intention of getting the property under contract to begin to conduct due diligence. This process took longer than expected and another potential developer emerged and already had a purchase option on the property. The company, CCI contacted the Executive Director of the Greensboro Housing Coalition because of the media attention to learn more about the property from our perspective and also wanted to explore collaborative opportunities.

During the next several months, GHC and some of the collaborative partners met with the principle of CCI, Brittany Kielhurn to work on financing options and to inform their due diligence work. It became apparent that the company is a socially conscious for-profit company. As CCI was attempting to put together it’s financing, we encouraged applications to Self Help Credit Union, a large CDFI located in North Carolina. The Executive Director of Greensboro Housing Coalition asked Dr. Stephen Sills of UNCG to make an introduction to The Reinvestment Fund with CCI for the purpose of exploring whether The Reinvestment Fund might be a potential lender for at least part of the project. Dr. Sills agreed and made the introduction.

At the same time CCI’s contract was coming up against several important deadlines that threatened to derail the deal. Most notably there was a hard deadline for the end of November where CCI’s $10,000 deposit would become hard, and that an additional $25,000 would be due and the deal will need to close by the end of the calendar year. The ED of GHC met with program staff at the Community Foundation of Greater Greensboro (CFGG) to ask if there was a possibility of them making the same offer to help CCI (a for profit developer) as they had previously made to PTRC, a non-profit. Through a series of negotiations, the CFGG housing committee agreed to grant $25,000 to GHC for the purpose of granting the money to CCI to assume part of their risk as the deadline was closing in. The $25,000 would be used to meet the escrow deadline and then would be converted into a grant if the deal closed to be used toward the many repairs needed to the property after it closes. GHC also worked with a program at CFGG called the Landlord Tenant Partnership (LLTP), a fund established several years ago to incentivize landlords/property managers to make repairs in cases where tenants are likely to be displaced otherwise due to condemnation. GHC worked to secure a commitment from CFGG to use approximately $125,000 in LLTP dollars toward improvements that improve the health and safety of the apartments. This investment from GHC and CFGG has the strong probability of leveraging an additional $450,000 loan for energy efficiency upgrades from the City of Greensboro. Simultaneously, CCI has been working with the Reinvestment Fund to secure approximately 4 million dollars for the acquisition/rehab of the property. Within 2 years of the anticipated closing date which is set for the end of this calendar year, CCI plans to move the debt to long term financing (once the rehab is complete and 90% occupancy is reached).
4.0 LEVERAGE PUBLIC & PRIVATE REDEVELOPMENT FUNDS

PASSING THE HOUSING BOND
In 2015 Mayor Vaughan and some council members began talking about a bond referendum for affordable housing. In early 2016 this was discussed in public meetings around the city and in city council briefing meetings. Council voted to put a $25 million bond referendum on the November 2016 ballot. Three other bonds—Parks & Recreation, Economic Development, and Transportation—were also placed on the ballot and all four were approved by over two-thirds of the votes cast in Greensboro.

Affordable housing has not enjoyed broad community support, without public awareness of the positive impact of stable housing on Greensboro’s economy, health and schools. Housing advocates on the Invest Health team addressed this perception by:

- **Researching** the economic impact of affordable housing and mapping an inventory of housing conditions
- **Urging** philanthropic leaders to convey to economic development leadership the connection between housing and economy—resulting in business leaders housing in their campaign for 4 Bonds 4 Greensboro
- **Reaching out** to grassroots housing advocates to spread the word with Vote YES for Housing Bonds T-shirts and yard signs
- **Writing** newspaper columns and social media messages about voting for the housing bond

The Center for Housing and Community Studies was also directly involved in the marketing and educational outreach for the #4bonds4GSO bond initiative. Research assistants at the center spoke at community events and developed marketing materials to distribute regarding the benefits of the bond. Eight short videos designed for social media distribution were also made; each video was composed of highlights from a short interview with informed bond advocates in the community - with interview participants ranging from Greensboro Mayor Nancy Vaughan to a local pediatric physician. Before elections in November CHCS also held a Housing Hangout - a monthly community discussion group on housing issues impacting residents of the Piedmont Triad - on the topic of the housing bond. Speakers at this Housing Hangout include elected city officials, housing researchers, and local housing advocate.

The purpose of the City's Housing Bond Rehabilitation Programs is to provide housing rehabilitation services to residents in need and to protect the quality of the housing stock in Greensboro neighborhoods. Highest priority is given to applicants referred from other
governmental agencies or medical providers for those with special needs due to a physical disability, or for a home that has a condition that constitutes an identified threat to health or safety. Accessibility modification program serves handicapped residents who may be restricted in accessibility and movement, inconvenienced, or endangered by the usual design of housing. A grant of up to $15,000 per housing unit not to exceed $45,000 per housing structure will be available for rehabilitation work specifically designed to make the property more accessible and safe for handicapped renters. The Multifamily Energy Efficiency Program is designed to assist multi-family property owners with funding to reduce their tenants’ energy usage. A loan will be available for energy efficiency rehabilitation work, up to $15,000.00 per housing unit not to exceed $45,000 per housing structure, specifically designed to reduce the energy consumption of the complex. Eligible work includes wall, attic and/or floor insulation; water heater tank and pipe insulation; HVAC inspections, repair and replacement; air sealing; duct repair, sealing and insulation; water flow reducer; installation of programmable thermostats; installation of new windows. The bond passed in Nov 2016 and expands resources for the development of affordable housing to “ease the persistent shortage of safe affordable housing”, crucial to address the supply-and-demand challenges that consign people to substandard housing.

**Housing Our Community Initiative**

In 2015, the Community Foundation of Greater Greensboro’s Housing Committee studied the city’s Consolidated Plan for Housing Activities, which compiled statistical data about housing needs and availability, and agreed to work with the city to get broad community input into the process of developing innovative plans and promoting collaboration. The city planned 3 Community Listening Sessions in early 2016, drawing over 200 residents city-wide, offering hundreds of practical and visionary suggestions for expanding affordable housing and increasing access. Jointly, the city and Foundation housing committee launched the “Housing Our Community” initiative and distilled the Listening Session ideas into four goals:

- Improve the quality and increase the quantity of affordable housing
- Equip people to better afford, access, and maintain housing
- Create a culture of collaboration to support long-term solutions for affordable housing
- Commit to sustainable, long-term resources for affordable housing

The Mayor and several Greensboro City Council representatives began discussing a bond referendum for affordable housing. In the Spring of 2016, to prepare for the council vote to place the referendum on the November ballot, the city and Foundation contracted to provide staffing for the planning process and to research the housing situation in Greensboro: an inventory of housing stock by UNCG’s Center for Housing & Community Studies and two white papers on the economic impact of affordable housing, by Dr. Keith Debbage and the NC Housing Coalition.

To develop plans to address the four goals, community stakeholders were invited to serve on a steering committee and task forces for “Housing Stock” (quality and quantity of residential buildings), “Access & Services” (services to assist homeowners and tenants), and “Resources” (structure and financing). The task forces worked on priorities, policy recommendations, and strategies throughout 2017. As the preliminary plan is being developed, the Invest Health plan integrates health and housing in the strategies for improving housing quality, equipping residents to maintain housing, strengthening collaboration, and investing in sustainable resources.

The Housing Our Community strategies include regulatory changes to facilitate a variety of housing types to fulfill the needs of diverse populations and to preserve affordable housing;
investment of financial resources as incentives to leverage the development and rehabilitation of affordable housing; incentives for energy efficiency measures; support for innovative collaborations to increase affordability and access; advocacy for full funding of the city’s housing fund; organizational capacity for accountability. The implementation entity will lead the “Yes in My Back Yard” campaign to build the community will for safe, affordable housing.

The final plan will be completed in 2018 to inspire and facilitate the Housing Our Community Vision (Everyone in our community lives in safe affordable housing) and Mission (To address Greensboro’s housing affordability gap through collective community action).
5.0 INFORMATION EXCHANGE NETWORK

A CULTURE OF SHARING – DATA, SPACE, AND GOALS
Recognizing that housing is a health issue, collaborations among housing advocacy organizations, municipal planning and housing departments, hospitals, public health, health insurance companies and community developers are aligning in efforts to reduce asthma and other housing-related health concerns. The focus on the role of housing as a precipitant of childhood asthma has resulted in the receipt of four funding awards (EPA funding grant, RWJF Invest Health Planning Grant, Blue Cross/Blue Shield Foundation Community Centered Health Grant and a BUILD Health Challenge2.0 Community Development Grant) that have included a focus on addressing housing conditions and pediatric asthma in a low-income community.

HOUSING HUB
The Housing Our Community initiative is convening leaders in the real estate industry, nonprofit organizations and civic arena to craft strategies for building safe, affordable housing, including: Creative design, ambitious investment, unprecedented collaboration, effective policy changes, sustainable action to help households access and retain good places to live. Initial accomplishments include: Advocacy for and approval of a $25 million housing bond by the City of Greensboro to remediate substandard housing conditions; completion of a city-wide parcel-by-parcel inventory of housing conditions; and formation of a Housing Hub to co-locate housing nonprofit organizations for greater collaboration and partnering. Six agencies will share an office building. Habitat for Humanity, Community Housing Solutions, Greensboro Housing Coalition, Tiny Houses Greensboro, Partnership Homes, Housing Consultants Group will increase efficient access for community residents seeking housing services and allow better coordination of housing services. This project has the full support of the City Council which voted to provide a match of $250,000 to up-fit a building to house the Hub. The Community Foundation of Greater Greensboro will raise the remaining $250,000 and provide an interim loan that will allow the nonprofits to immediately lease the building and start construction.

DATA SHARING NETWORKS
Data-driven approaches have guided our Invest Health work. Commitment to the utilization of data for continuous improvement is a cornerstone of the culture of health in Guilford County, where our data collection and analysis consistently reflect three key shared values: Creating local analysis that is of interest and use to real people and communities, sharing data and information across sectors to build a holistic understanding of health and well-being, and using data to unmask inequity that drives differences in health outcomes. In October 2017, Cone Health leaders in IT, legal, compliance, community health, analytics, research and electronic medical record reached consensus that Cone’s current data sharing policies restricted its ability to promote health; specifically, any aggregated health information lower than state level geography could not be released externally. Cone Health shifted from a “safe harbor” policy of de-identification to a policy that allows for expert de-identification in specific circumstances to create epidemiological intelligence while protecting patient privacy. This represents an important policy shift that allows Cone Health to use patient data to help identify hot spots of health concern, inequities in outcomes, and possibly could also be used to assess program success.

Data-driven approaches have also helped health researchers and advocates work toward healthier housing in the Cottage Grove neighborhood. A hot-spot analysis developed by the UNCG Center for Housing and Community Studies using hospital discharge data revealed that a housing complex in the neighborhood...
should be expected to generate 1-2 asthma-related hospitalizations per year. It was actually responsible for over 100 hospitalizations. The health system representative explained to the Minimum Housing Standards Commission that often a person’s landlord is more influential for health outcomes than their doctor may be. The Commissioners voted unanimously to require renovations by the landlord.

The County’s focus on neighborhood improvement is supported by the leveraging of data to drill down to the neighborhood level. When, in May 2017, the CEO of Cone Health penned an op-ed in the Raleigh, NC News and Observer to encourage the NC legislature to support expansion of access to pre-kindergarten programs in the state, he referenced data prepared by the Guilford County Public Health showing an 18-year difference in life-expectancy between residents of census tracts with lower educational attainment and residents of more affluent and better educated areas of the county. To make this level of analysis accessible to the broader public as well as health and human services professionals, the Guilford Community Assessment Team established a web-based data portal in June 2017. www.PiedmontHealthCounts.org features easy-to-use community and disparities dashboards. The data hub maintains up-to-date data for some 200 indicators of health outcomes, risk factors and social and environmental factors, with the ability to drill down to the ZIP Code and census tract levels for many indicators. A local volunteer group, Code for Greensboro, is leading a process to develop creative ways to merge health and other local data. Local researchers have also launched LEAP (Lifetime Eating and Physical Activity Practices), an initiative led by UNC-Greensboro researchers to develop common measures of physical activity and healthy eating. Our community’s culture of health includes a network of professionals and community members committed to using data to understand our community, implement true-fit, evidence-based solutions and evaluate the impact of our efforts.
GOALS AND TIMELINE

Unfortunately, as we have seen the private investment market cannot take care of all the needs for affordable housing in Greensboro. We need more low-cost housing in high opportunity neighborhoods. The evidence from a history of building assisted housing in already poor neighborhoods shows that it does not work. We need mixed income development to be encouraged by policy makers and made real by developers. It takes public-private partnerships.

As we have laid out, our plan offers a range of interventions from education about environmental triggers to proper home maintenance to assistance with making or getting small repairs made to decrease the presence of environmental conditions that may be affecting the occurrence of asthma of children living in the housing unit. The project will be operated as a collaboration with local communities, housing advocates, local university researchers, health care representatives, city and county personnel, faith-based community leaders, and local housing investment professionals. The goals of the project are to:

• Improve the safety and quality of housing in which children with asthma live;
• Reduce the incidence of childhood asthma;
• Increase housing values; and
• Create jobs relating to housing repair and renovation.

Through the previously outlined strategies (Identification, Health Systems Integration, Targeted Repair and Rehabilitation, Leveraging Public and Private funds, and developing and Information Exchange Network) we aim to reduce the number of pediatric asthma-related hospitalizations and ER visits asthma in Cottage Grove by 10-15% in the next 3 years. In addition, we expect that the proposed interventions and projects will:

• Increase income, leading to sustainability of housing.
• Increase quality of life for both children and caregivers.
• Reduce insurance usage both government & private
• Improve quality of housing stock, which will:
• Reduce exposure to environmental triggers.
• Reduce safety and health hazards that contribute to negative health outcomes and lead to the development of asthma or other respiratory issues.
• Increase the energy efficiency of homes, leading to lowered utilities, greater affordability, and greater sustainability of these homes.
• Create an innovative structure of financial incentives as well as punitive incentives as a vehicle of support for quality/code enforcement.
• Reduce the family burden associated with asthma management.
• Increase the skills and knowledge of healthy homes assessment and strategies among families affected by pediatric asthma.
• Reduce the number of Greensboro residents living in substandard housing.

To increase the likelihood success, it is essential that the target community be engaged to achieve significant parts of its implementation. It will be critical that there is community resident cooperation with enabling access to housing units, with assisting with dissemination of information, and with their participation if their housing units have conditions that pose asthma risks. To gain community trust and buy-in several community engagement actions will be employed.
<table>
<thead>
<tr>
<th>Timeframe</th>
<th>Activity</th>
<th>Potential source</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q3 2017</td>
<td>Collect &amp; Analyze Additional Geospatial Health Data</td>
<td>Cone Health/UNCG /Invest Health Planning Grant</td>
<td>$2,500</td>
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<tr>
<td>Q3 2017</td>
<td>Identify Health Impact Communities</td>
<td>Invest Health Planning Grant</td>
<td>$2,500</td>
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<tr>
<td>Q4 2017</td>
<td>Engage Neighborhood Residents &amp; Leaders</td>
<td>Invest Health Planning Grant/ additional sources</td>
<td>$1,000</td>
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<tr>
<td>Q4 2017</td>
<td>Recruit &amp; Train Health Impact Teams (HIT)</td>
<td>BUILD Grant/ Federal Work-study/ Community Foundation</td>
<td>$10,000</td>
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<tr>
<td>Q4 2017</td>
<td>Develop &amp; Launch Electronic Referral System</td>
<td>BUILD Grant/ Duke Endowment</td>
<td>$15,000</td>
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<tr>
<td>Q1 2018</td>
<td>Engage in Community Outreach/Canvasing</td>
<td>BUILD Grant/ Federal Work-study</td>
<td>$5,000</td>
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<tr>
<td>Q1 2018</td>
<td>Distribute Educational Materials &amp; Information</td>
<td>BUILD Grant/ Federal Work-study</td>
<td>$5,000</td>
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<tr>
<td>Q1 2018</td>
<td>Distribute “Green” Cleaning Kits ($35 per home x 250 homes)</td>
<td>BUILD Grant/ Federal Work-study/ Community Foundation</td>
<td>$8,750</td>
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<tr>
<td>Q1 2018</td>
<td>Housing Assessments ($50 per home x 200 homes)</td>
<td>BUILD Grant/ AmeriCorps</td>
<td>$10,000</td>
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<tr>
<td>Q2 2018</td>
<td>Develop &amp; Institute Minor Repairs Program</td>
<td>BUILD Grant/ AmeriCorps</td>
<td>$10,000</td>
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<td>Q2 2018</td>
<td>Conduct Referral for Remediation &amp; Identify Remediation Needed ($25 per home x 100)</td>
<td>BUILD Grant/ Federal Work-study</td>
<td>$2,500</td>
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<td>Q2 2018</td>
<td>Grants to Extremely Low-Income Homeowners (up to $15,000 per home x 20 homes)</td>
<td>Emergency Repair Program, Community Housing Solutions, Landlord Tenant Partnership</td>
<td>$300,000</td>
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<tr>
<td>Q2 2018</td>
<td>Grants to Landlords of Low Income Renters (up to $10,000 per home x 20 units)</td>
<td>TRF investment, Community Housing Solutions, Community Foundation Landlord Tenant Partnership</td>
<td>$200,000</td>
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<tr>
<td>Q3 2018</td>
<td>Loans to Landlords of Moderate Income Renters (up to $10,000 per home x 20 units)</td>
<td>TRF investment/ CDFI</td>
<td>$200,000</td>
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<tr>
<td>Q3 2018/ Q4 2018</td>
<td>Loans to Moderate Income Homeowners (up to $15,000 per home x 20 homes)</td>
<td>TRF investment/ CDFI</td>
<td>$300,000</td>
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<td>Q1 2018 to Q4 2020</td>
<td>Rehabilitation of Avalon Trace Apartments</td>
<td>Community Foundation Landlord Tenant Partnership/TRF investment/ CDFI/ City of Greensboro</td>
<td>$4-5 million</td>
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