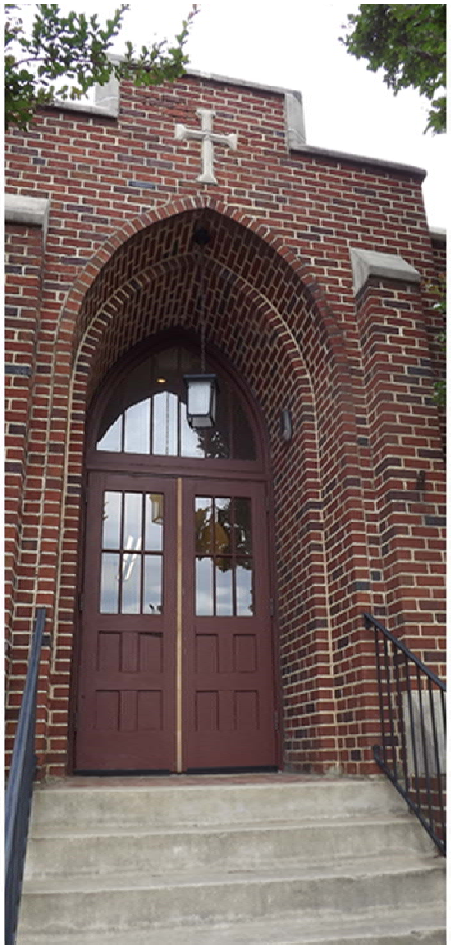
New Bern Avenue Corridor Health Impact Assessment (HIA)



Wake County Public Health
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WAKE COUNTY
NORTH CAROLINA

Acknowledgements

The compilation of this report was made possible by the contributions of several organizational representatives. The City of Raleigh along with North Carolina Department of Public Health, Wake County Human Services and Wake County Community Services completed this rapid Health Impact Assessment utilizing tools and research-based data to support its findings.

To help determine the breadth of the HIA and specific focus areas the HIA Team engaged local stake holders and other community residents. Results from community meetings and surveys helped to formulate recommendations presented to the City of Raleigh.

A special appreciation goes to this group for their hard work and dedication to this complex process and extensive project.

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Executive Summary

A Health Impact Assessment (HIA) is a process for evaluating proposed policies, projects or programs with the goal of ensuring that the health consequences of decisions are made clear. Wake County Human Services (WCHS) in partnership with the North Carolina Department of Human Services (NC DHHS) underwent a HIA as a part of the City of Raleigh's plan to redevelop the New Bern Avenue Corridor. The purpose of the New Bern Avenue Corridor HIA is to examine the comprehensive plan's impact on important health determinants including physical activity and access to healthy food. Physical activity and healthy diets protect against obesity and many chronic disease conditions including diabetes, heart disease and cancer. Physical activity can be influenced by city characteristics such as the safe access to sidewalks and parks within a community. Also, studies show that living in close proximity to a supermarket can improve health outcomes through increased fruit and vegetable consumption.

Secondary data sources provided ample evidence to support many of the recommendations made by the City of Raleigh on the basis of their likely positive impact on the health and health behaviors of local residents. The recommendations also deliver significant co-benefits in terms of the economic and cultural potential for the area. The HIA team supports these changes to the built environment because they can lead to increased physical activity and access to healthy food options for residents, and consumers along the corridor.

As designated in the Actions Table in the Corridor Study Report, responsible government agencies and community partners should:

- Extend sidewalks to improve connectivity to transit opportunities and recreational facilities.
- Install pedestrian crosswalks and islands to accommodate safe access to the New Bern Avenue corridor.
- Incorporate bike lanes to support recreational physical activity and active transportation.
- Consider an array of strategies to limit the density of businesses associated with serving unhealthy foods.
- Attract full-service grocery stores and sit down restaurants associated with serving a variety of healthier food options.
- Examine a variety of development policies and financial incentives that could spur private mixed use re-development.

Not all of the City of Raleigh's recommendations can be officially supported by the HIA team due to a lack of documented or probable evidence that they would positively impact health; however, this should not be interpreted as a rejection of those proposed changes or a conclusion that they would have a negative impact. Rather, the lack of existing evidence prevents the HIA team from recommending them as health-enhancing strategies.

Introduction

In 2010, City of Raleigh officials launched an initiative to explore options for redeveloping a section of New Bern Avenue, a key corridor and eastern gateway for the city. This initiative culminated in the **New Bern Avenue Corridor Study**, which seeks to identify specific issues, opportunities and actions to enhance the appearance and function of the corridor so that it represents a model gateway, communicating Raleigh's pride in its cultural and architectural history.

New Bern Avenue is one of Raleigh's four gateway corridors leading into downtown Raleigh and is one of the highest transit rideship routes in the Capital Area Transit system. Connecting downtown with eastern Wake County and with quick access to I-440/US 64 Bypass, the corridor is positioned as a primary regional connector with the potential to support multi-modal transit options. In addition, the corridor has been identified as a target area for economic development in Raleigh's 2030 Comprehensive Plan and offers opportunities for housing redevelopment, multi-modal transit improvements, and streetscape and infrastructure improvements. The New Bern Avenue Corridor Study will guide the evaluation of current land use classifications for New Bern Avenue to ensure consistency with the 2030 Comprehensive Plan and develop a conceptual streetscape improvement plan. The identification of realistic, short- and long-term recommendations is the intended outcome of the study.

The lead agency for this effort is the Department of City Planning, with support from technical staff in several other City Departments, including Public Works, Community Development, Public Utilities, Police, and Parks and Recreation. Additional support is being provided by staff from Wake County Human Services (WCHS) and the N.C. Division of Public Health (NC DPH), who are working together to consider the impacts that redevelopment might have on the health and health behaviors of residents in the area. That health analysis, or Health Impact Assessment (HIA), is the purpose of this report, which will be submitted to the City of Raleigh as a supporting document to the New Bern Avenue Corridor Study.

Study Area

The corridor study area generally includes properties within a 100-150 foot swath on either side of New Bern Avenue (between Swain Street to the west and Crabtree Creek to the east), Edenton Street (between Swain Street to the west and St. Augustine Avenue to the east) and those within the Wake Medical Center campus. The Norfolk-Southern Railway and Capital Area Greenway along Crabtree Creek form the eastern boundary of the study area. Most of the properties along the corridor are privately owned, which limits the opportunities for major public intervention measures. Key agencies like the NC DOT Division of Motor Vehicles, Wake Medical Center, Wake County Human Services and Public Libraries have major interests within the study area, as do numerous residents and business and property owners.

Map 1 - New Bern Avenue Corridor Study Area

The New Bern Avenue Corridor Study developed objectives and related action items for the City of Raleigh to consider, and organized these by categories that apply to the entire corridor. The action-item categories include:

Cultural Landscape -
each area of New Bern Avenue has a unique set of cultural and physical characteristics that contribute to the history and sense of place established along the corridor.

New Bern History Marker Tour -
highlighting and promoting the corridor's historical and cultural significance addresses a key need for the area.

Land Use & Redevelopment -
land use changes are recommended to better position sites for appropriate development to help maintain residential character and/or provide opportunities for commercial redevelopment.

Frontage Typologies -
guiding the orientation of buildings along a public street help define public space along the corridor.

Streetscape Design -
roadway modifications can support a "Complete Streets" design, improve pedestrian safety and enhance transit, bike and pedestrian accommodations.

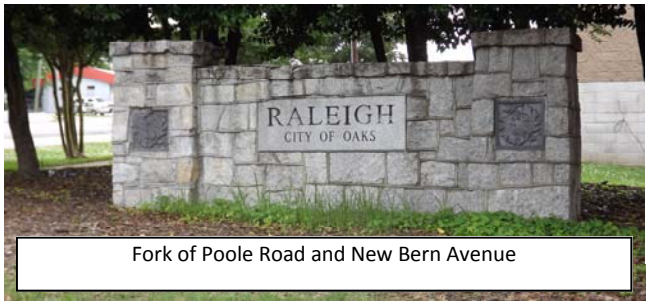
Sidewalks, Crosswalks and Street Lighting -
opportunities have been identified to extend and connect sidewalks in neighborhoods, create new crosswalks and median refuges, and improve the street lighting conditions.

Transit Patterns -
New Bern Avenue is one of the highest ridership Capital Area Transit (CAT) routes in the city, fueling discussions about facility upgrades and new rapid transit routes.

Stormwater Management -
a proactive approach to stormwater quantity and quality management is important to redevelopment efforts.

Public Realm Landscape -
a streetscape planting plan and budget will help enhance the landscape aesthetics and environmental functionality of the corridor.

Public Safety and Public Health -
public safety and health are important considerations for neighborhood business owners and residents.



Fork of Poole Road and New Bern Avenue


New Bern Avenue Corridor lacks sidewalks from Donald Ross Drive to King William Road


Historical Building - St. Monica's Teen Center at the Corner of Tarboro Road and New Bern Avenue


Intersection at New Bern Avenue and Sunnybrook Road

The Importance of Population Health

The potential for dramatic change along New Bern Avenue has a variety of implications for the residents, youth, professionals, commuters, consumers and service-users who move along the corridor every day. One of these implications is population health and related behaviors, which are heavily influenced by the *built environment*, or the man-made communities in which residents live, work and move on a daily basis.

The built environment has traditionally been judged in terms of how well it serves designated land uses (residential, commercial, industrial, etc.) and whether people can move quickly and efficiently from one place to another. However, the rise of sedentary lifestyles in the United States and explosive chronic disease rates has focused attention on how built environments often hinder healthy living and exacerbate public health concerns. This phenomenon is especially pronounced among disparate populations, such as low-income and minority groups, who tend to live in built environments that are less supportive of healthy living than elsewhere.

Chief among the nation's public health concerns is obesity, a cross-cutting risk factor for many chronic conditions. With two-thirds of adults and one-third of youth in the United States already overweight or obese, the combined burden of heart disease, stroke, diabetes, asthma, cancer, arthritis and correlated incidence with injury and tobacco use has resulted in rapidly increasing healthcare costs and adverse quality of life. Physical inactivity and poor diet, the underlying causes of obesity, are responsible for more than 200,000 preventable deaths in the United States annually.[1]

The United Health Foundation's "2010 America's Health Rankings" report reveals that North Carolina ranks 35th in the nation in overall health status (with a rank of 1 being the best).[6] Additionally, the state ranks in the bottom third for all of the following indicators:

2010 America's Health Rankings

High Cholesterol	**43rd**	**Diabetes**	**39th**	**Cancer Deaths**	**35th**
High Blood Pressure	**40th**	**Cardiac Heart Disease**	**36th**	**Cardiovascular Deaths**	**33rd**
Obesity	**39th**	**Prevalence of Smoking**	**36th**		

NC's chronic disease prevalence rates and risk factors are consistently higher than the national average, based on Behavioral Risk Factor Surveillance System Survey (BRFSS) data,[7] as shown in the table below:

	2011 Chronic Disease Risk Factors and Prevalence Rates Among Adults: North Carolina and U. S.[7]			
Indicator	US*	NC	**Wake County**	Wake County 2007 Rate
Fair or poor health status	17.2%	19.6%	**12.4%**	12.5%
Current Smokers	21.2%	21.8%	**14.1%**	17.5%
Hypertension	30.8%	32.4%	**24.7%**	22.3%
Diabetes *(2010 – U.S.)*	8.7%	10.9%	**7.6%**	6.8%
Obesity	27.7%	29.1%	**27.7%**	28.1%

Nationwide (States, DC, and Territories) data are not available for diabetes questions for 2011, but are available for 2010

Treating these conditions is very expensive and can take away resources from other areas of need, such as education and economic development. According to the 2012 Be Active Report Card, North Carolina Spent almost $54 billion on medical bills and lost worker productivity associated with the following nine risk factors none to cause chronic disease in adults:

- **Excess weight**
- **Type II diabetes**
- **Low fruit and vegetable consumption**
- **High Cholesterol**
- **Hypertension (high blood pressure)**
- **Depression**
- **Physical inactivity**
- **Hypertension (high blood pressure)**
- **Tobacco use (Smoking)**

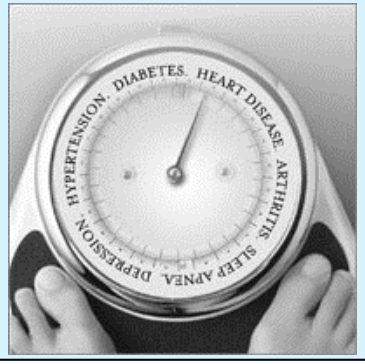
Of these conditions, overweight and obese adults account for the highest costs, amounting to more than $17.6 billion in total medical bills and lost worker productivity in 2010.

Rates of obesity and overweight are often higher among minority populations.
In 2011, the percentages of excessive weight and obesity in North Carolina adults:

- White – 63%
- Hispanic – 74%
- African-American – 74% (N.C. State Center for Health Statistics-BRFSS, 2011)

Within Wake County, the 2011 BRFSS reported:

- 63% of adults are either overweight or obese
- 17% of residents met the recommendation to consume five or more servings of fruits vegetables each day
- 18% of residents met the CDC's recommended both aerobic and strengthening guidelines



Fortunately, there is growing understanding of how communities can be designed to help reverse these trends and support healthy living by providing or promoting safety, clean air, clean drinking water, social cohesion, conditions that minimize mental stress, tobacco-free public spaces and—for addressing obesity— safe and easy access to healthy foods and opportunities for physical activity. To ensure that these concerns are addressed in public policy, health advocates have developed an analysis process known as Health Impact Assessment. This framework enables decision makers to consider the impacts of policy decisions on the health of populations that will be affected by an initiative, whether a new law, construction project or comprehensive redevelopment of a high-density, urban corridor.

Health Impact Assessment Steps:

Health Impact Assessment (HIA) is a process for evaluating proposed policies, projects or programs to ensure that the health consequences of decisions are made explicit. This process comprises a series of analytical steps, the complexity of which depends on the breadth of the proposed project. A large project might require numerous staff to invest several months and significant resources executing each step, while a ***rapid*** HIA might take a smaller team a few weeks to complete the entire process.

Large or small, HIA generally includes the following:
Screening - determining whether an HIA is appropriate for a given project or decision;
Scoping - setting parameters of assessment and identifying the most relevant health outcomes;
Assessment - describing baseline conditions and estimating future impacts;
Reporting - disseminating findings and making recommendations; and
Monitoring - evaluating the effectiveness of the HIA and impacts of the implemented proposal.

Because of resource limitations combined with the broad scope and timeframe of the City of Raleigh's development objectives, the HIA presented in this report represents a ***rapid*** HIA, which emphasizes use of secondary data and peer-reviewed literature to formulate recommendations. Although the lack of data specific to the New Bern Corridor and its residents represents a limitation, NC DPH and WCHS staff believe evidence-based public health strategies combined with analysis drawn from previous studies provide an applicable and effective basis for action within the study area.

HIA Team and Process

Wake County Human Services (WCHS) received a request from the City of Raleigh Planning Department and Wake County Planning Development and Inspections (PDI) for assistance with conducting a ***rapid*** HIA for the New Bern Avenue Corridor. WCHS in turn partnered with the Physical Activity and Nutrition Branch (PAN) within the Chronic Disease and Injury Section of NC DPH, establishing a HIA team with staff from WCHS, PAN, and PDI. This team worked together to execute the following steps:

Screening

To determine the value of conducting a HIA of the New Bern Avenue Corridor redevelopment, the team discussed the potential related health benefits and whether sufficient light could be shed on these benefits to justify the necessary time and resources. City of Raleigh's project documents make some mention of health outcomes; however, the team thought that further defining potential health benefits and demonstrating the related evidence base to inform the City's continued work represented sufficient value to warrant pursuing the HIA.

As part of this discussion, the team reviewed potential impacts of redeveloping the avenue that in turn could affect residents' health, including housing conditions, noise levels, water quality, social and economic environments, public services, physical infrastructure, etc. These and other determinants were evaluated according to their potential impact, their measurability and the availability of relevant data, which helped identify candidate topics for analysis.

Scoping

To help determine the breadth of the HIA and specific focus areas for analysis, the team collected input from local stakeholders, including members local Citizens Advisory Councils. HIA staff attended a community meeting organized by the New Bern Avenue Corridor Study group. They set up a table to introduce HIA, discuss health concerns within the community and collect feedback via survey. Survey respondents were invited to attend a HIA-specific meeting where the HIA team presented results from the screening process and surveys collected.

Based on survey results, which yielded concerns regarding healthy food access, obesity/overweight and personal safety, this report highlights two of those concerns: (1) Poor access to healthy food options and (2) limited connectivity of streets/destinations - which are major barriers to sufficient healthy eating and physical activity. The stakeholder group concluded that obesity represents a critical concern for youth and adults in the area. Participants articulated other concerns about incorporating senior citizen services in the avenue's redevelopment plan and perceptions of crime in the community - a factor that deters use of the local greenway, which is located adjacent to the corridor.

Upon identifying the primary topics for assessment, the HIA team considered how well it could quantify and qualify current conditions (physical infrastructure and residents' health and health behaviors) along the corridor and predict impacts of the City's redevelopment efforts. Unfortunately, research on the connections between (1) the built environment's connectivity and physical activity and (2) food access and healthy eating is still developing, and there is statistical uncertainty surrounding the causal nature of these relationships. Similarly, there is insufficient research to identify the relative importance of the different community design features that promote physical activity or of the demographic and attitudinal characteristics of a population related to physical activity and/or healthy eating. Furthermore, resources available to the HIA team did not permit development of primary data on health behaviors or characteristics among New Bern Avenue residents.

Thus, the HIA team determined that relying on existing literature and studies of similar environments and populations represented the most effective way to explore potential health impacts of the City of Raleigh's plans and the New Bern Avenue Corridor Study. Fortunately, this body of evidence has increased substantially in recent years and offers sufficient documentation to support recommended changes along the New Bern Avenue Corridor.

Reporting

Upon completion, this HIA report will be submitted to the City of Raleigh. The City of Raleigh maintains a web site providing information and resources on the overall redevelopment process, where the HIA will be available for download. Additionally, WCHS and Wake County Planning Department will continue to explore opportunities for dissemination as a means to communicate lessons learned and contribute to the HIA literature.

Monitoring/Evaluating

Although resources are not currently in place for in-depth monitoring or evaluating the impacts of redeveloping New Bern Avenue (a process that will unfold over several decades), the HIA team expects to monitor short-term changes occurring along the corridor. Should additional resources become available to more formally evaluate the impact of redevelopment on health behaviors and outcomes, it is recommended that the agency partners involved in the study and HIA pursue such an opportunity.

HIA Focus Areas

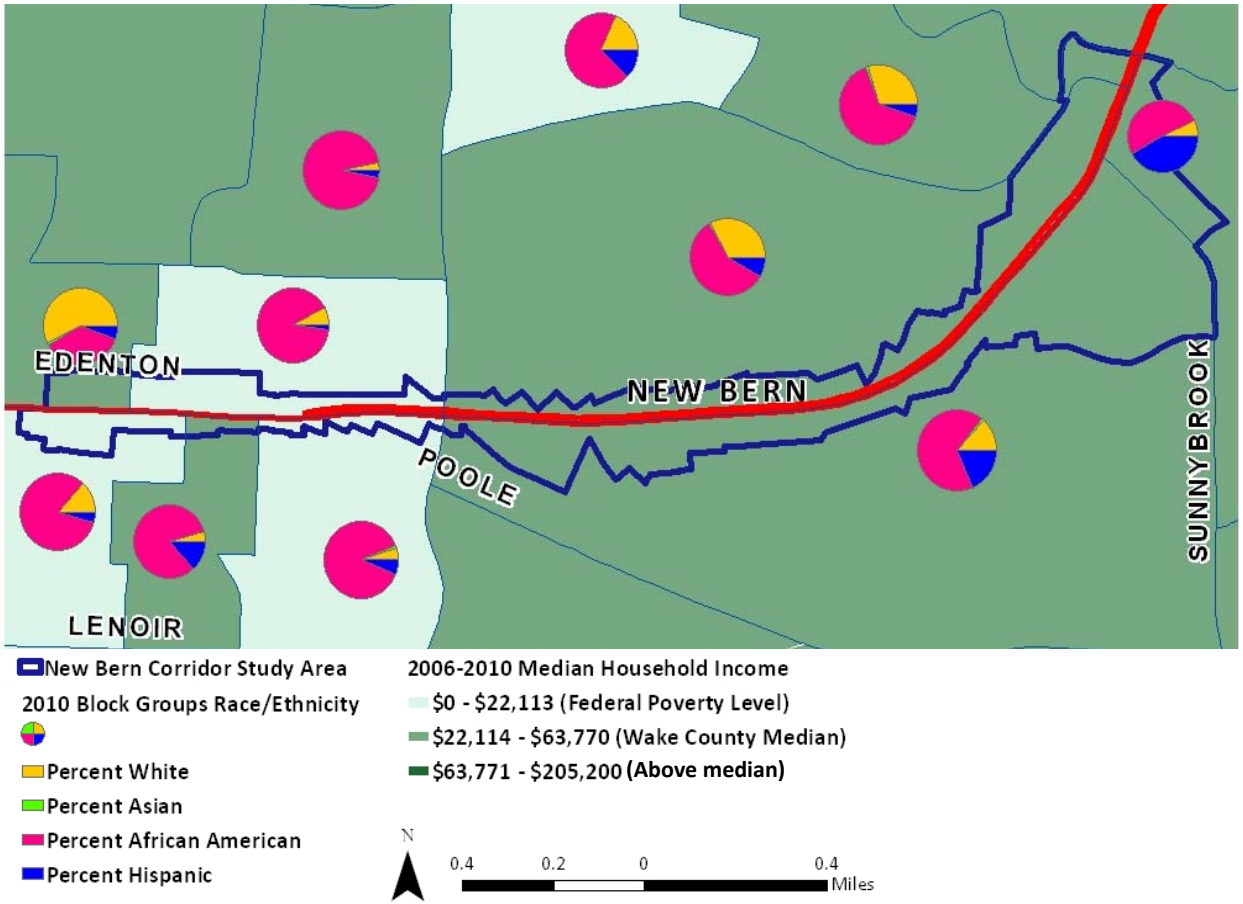
Upon completing the screening and scoping steps of the HIA process, the HIA team determined that *connectivity of walkable/bikeable infrastructure* and *access to healthy foods* represent key health determinants that could be impacted by redevelopment of the New Bern Avenue Corridor. Two additional but less robust areas of interest were also identified: *safety* related to crime/vehicular traffic and impact of the redevelopment on *senior citizens*. These topics represent the lens through which the HIA team assessed the City of Raleigh's plans for New Bern Avenue and the subsequent objectives/action items identified in the New Bern Avenue Corridor Study.

Baseline Assessment of Demographics

To better understand the health impacts of changes to the New Bern Avenue Corridor, the HIA team researched and mapped demographic and built environment data to create a baseline assessment of the area. (Map 2) illustrates the data, including race/ethnicity and household income levels, (Map 3) walkability and accessibility of key destinations via current and proposed sidewalks/greenways, and (Map 4) the retail food environment.

Map 2 shows the census tracts comprising the New Bern Avenue Corridor and surrounding Neighborhoods. The New Bern Avenue Corridor is also home to a large number of minority populations. African American and Hispanics make up approximately 78% of the area (67% and 11%, respectively) while the White non-Hispanic population comprises approximately 18%. This area of Raleigh is also characterized by lower education and income levels according to the US Census Bureau 2010 American Community Survey.

Map 2 - Demographics

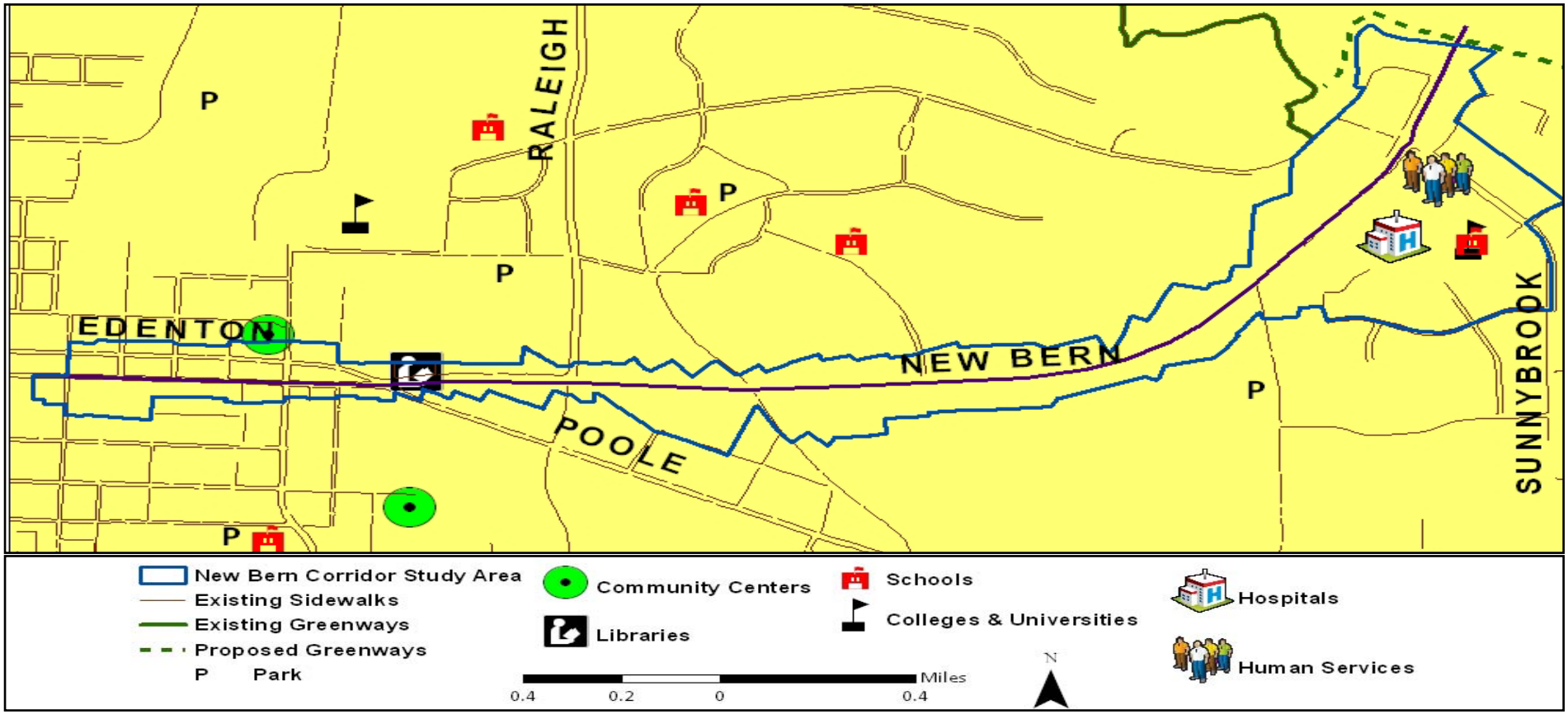


These data are significant given that minorities often experience higher rates of obesity and other chronic conditions compared with whites. Nationwide, pedestrian injuries and fatalities for African Americans and Hispanics are several times higher than those among Whites. Also, African Americans and Hispanics experience higher obesity rates than Whites in nearly every state of the US.[1]

Built Environment

Map 3 illustrates the lack of connectivity via sidewalks and greenways east of Edenton St. and along the majority of the corridor. The lack of pedestrian-supporting infrastructure means that most students and/or Raleigh residents who attend schools in the area, travel to local parks, medical facilities and colleges/universities must rely on vehicular transportation due to unsafe pedestrian and cyclist access. The pictures below illustrate the lack of connectivity between recreational sites and the surrounding community.

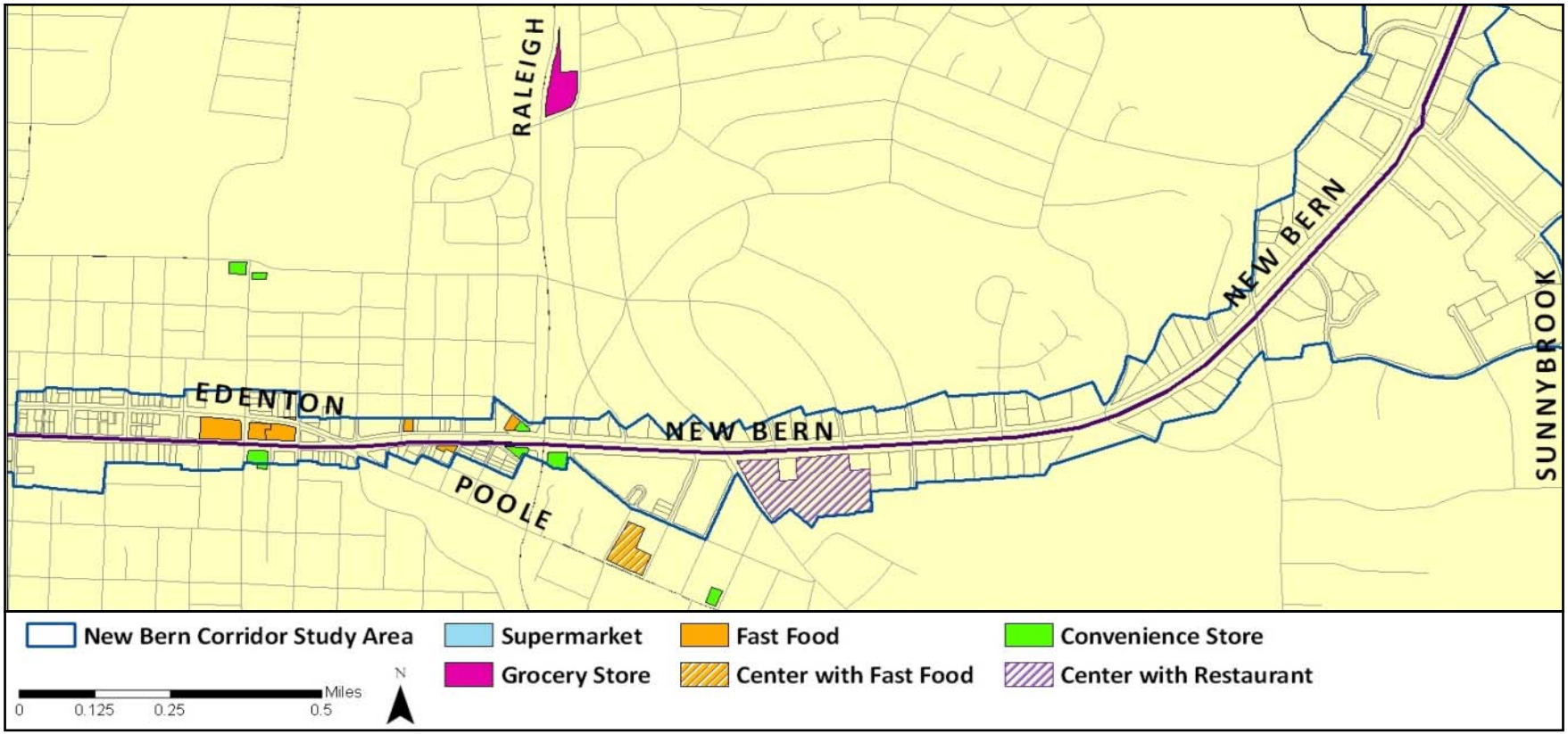
Map 3 - Built Environment/Walkability



Food Retail

Map 4 depicts the retail food environment along New Bern Avenue and the types of food outlets available. Fast food and convenience stores dominate the corridor where food retail is located, while only one supermarket/grocery store outlet is available within one mile. For many residents, this environment represents a food desert where healthier food options are disproportionately difficult to access compared with other, less healthier types.

Map 4 - Food Retail Environment



Evidence Base for Examining the Built Environment

Unhealthy diets and insufficient physical inactivity are leading causes of death in the United States [2] and prevalence of both risk factors is higher among minority and low-income groups, which characterizes much of the population along the New Bern Avenue Corridor. Inadequate access to healthy foods compounds unhealthy eating habits by making it more difficult and often more expensive for families to purchase healthy items on a regular basis. The area's relatively high prevalence of convenience stores and unhealthy fast food outlets and lack of full-service grocery stores means healthy food access is very much a facet of the built environment. Likewise, physical activity levels among residents is affected by the pedestrian and bicycle infrastructure on New Bern Avenue and how well it is connected. The prevalence of linked sidewalks, bike lanes, crosswalks, pedestrian islands, adequate signal times at crossings, greenways and desired destinations is therefore another critical aspect of the built environment that shapes behaviors and health outcomes.

Similarly, it is important to consider how specific populations might be affected differently by characteristics of the built environment. For example, there is a significant population of aging adults in the New Bern Avenue Corridor and several facilities that serve them, including St. Joseph Church, Lions Park Community Center/Roberts Park Community Center, and the Tarboro Road Recreation Center. In addition, the New Bern Avenue Corridor is home to several schools that serve children and youth who could be affected by changes that make it safer and easier to walk to and from school and home or purchase healthier foods in the area.

Map 5 - USDA Food Deserts

United States Department Agriculture (USDA) created Food Dessert maps (Map 5) encompassing Wake County and found that a food dessert extends far beyond the immediate surroundings of New Bern Avenue. By their definition— a majority of residents living further than a mile to any grocery store/market — much of the study area is blanketed by a lack of sufficient access to healthy food options.

Physical Activity Assessment

Designing communities to support physical activity is a key strategy to improve population health and well-being. The Centers for Disease Control and Prevention (CDC) recommends a minimum of 150 minutes per week of physical activity for adults, with additional health benefits gained from 300 minutes per week. Children and adolescents should engage in physical activity 60 minutes every day. In many U.S. communities, residents must drive to desired destinations—even when their goal is to be active (i.e., driving to a gym or park)—because of sprawling distances, a lack of connecting infrastructure, and/or unsafe proximity to traffic along corridors designed almost exclusively for high-speed vehicular movement.



To address this issue, decision makers should consider two forms or purposes of pedestrian and cycling activity. The first is *leisure/recreation*, in which participants are active for the enjoyment of it, and are heavily influenced by proximity, quantity, and quality of recreational paths. The second purpose is *active transportation*, in which participants walk or bike to reach a specific destination such as a place of work, school or grocery store, and are influenced by the efficiency and comfort of routes (e.g., adequately sized bike lanes along major roads). Active transportation encompasses public transit because of the walking/biking required to access stops or stations. In fact, one-third of transit users achieve the daily physical activity recommendations through this activity alone.

Communities can be designed to support both types of physical activity—leisure and active transportation—by considering the many different features of the built environment that should be woven together and mutually reinforcing. For example, presence of or access to bicycle and pedestrian infrastructure, parks [3,4] and trails [5,6] high density street networks, high residential density, and mixed land uses have been shown to help reduce obesity. [7,8,9]

Researchers have also examined the qualities that make certain features more or less conducive to activity. Sidewalk width, street width, traffic volumes, tree canopy, building height, number of people present, and weather have all been shown to influence the levels of activity in which residents might engage. Furthermore, street networks connected to destinations and other roads support increased walking and cycling, whereas closed-loop and cul-de-sac street grids tend to decrease active transportation.[10]

Another factor of the built environment's influence on physical activity is the role of pedestrian and cyclist safety and related public perception. According to the North Carolina Department of Transportation Traffic Engineering Accident Analysis report from March 2010 to February 2013 there were 6 pedestrian and 3 cyclist accidents along the New Bern Avenue Corridor. During 2012 there were a total of 122 accidents. Based on the 2011 New Bern Avenue Corridor Community Forum, residents indicated that the perceptions about the lack of safety on the local greenway discouraged use, despite reassurances from local police that incidences are rare.


Nutrition and the Built Environment

USDA has described the community around the New Bern Avenue Corridor as a food desert, meaning that many residents must travel over a mile to access healthy foods. Distance is widely used as a measure of food access and is significantly associated with Body Mass Index (BMI), consumption of produce and years of potential life lost. [11] Excessive distance translates into poor access to nutrition for many families and increased likelihood of overweight and obesity, which is critical given that healthy diets protect against many diseases, including diabetes, obesity, and leading causes of death such as cancer and cardio-vascular disease.[12] Several factors can create or exacerbate these conditions: a lack of easily accessible grocery stores, farmers markets, fruit or vegetable stands, etc., and/or overabundance of unhealthy food outlets such as convenience stores, fast food restaurants and sit-down restaurants offering menu options with low nutrition levels.

Conversely, studies show that healthier eating habits are associated with better access to healthy food. [13,14] In fact, it has been demonstrated that each additional supermarket in a census tract is associated with an 11%-32% increase in produce consumption among residents. [15]Similarly, neighborhoods/ residents with many convenience stores or fast food restaurants may face an abundance of high-calorie, energy-dense foods, which are often more convenient and less expensive than healthier alternatives and are associated with higher a BMI.[16] One study concluded that removing a fast food restaurant from a neighborhood with high fast food density could reduce residents' weight by a pound, while adding a supermarket could decrease weight by three pounds. [17]

The food retail environment in the United States should also be viewed through the lens of race and socio-economic status. Food retailers in low-income areas are more likely to operate convenience stores and fast food outlets, which are often sources of processed and energy-dense foods. During the 1970s and 1980s large supermarkets were able to out compete smaller urban grocery sores. The urban stores were smaller, paid higher property rents and offered a limited variety of products to consumers as compared to the larger supermarkets. Also, as families moved out the to suburbs, urban stores lost their customer base and had higher rates of theft.[18] Large supermarket stores are now almost four times as likely to be located in majority white census tracts than in census tracts with a majority African American Population.[19]

Finally, emerging evidence from several studies undertaken around the country have found low-income and minority neighborhoods tend to have less produce and inferior quality produce, yet higher prices when compared to wealthier neighborhoods. [20,21,22,23] These issues demonstrate the need along the New Bern Avenue Corridor for improved access to healthy foods.


Recommendations

Given these reasons and the supporting evidence base, this study recommends the City of Raleigh pursue changes to the built environment that increase safe access to opportunities for physical activity and healthy eating.

Specific action recommendations:

1. Extend sidewalks to improve connectivity to transit opportunities and recreational facilities.
2. Install pedestrian crosswalks and islands to accommodate safe access to the New Bern Avenue Corridor.
3. Incorporate bike lanes to support recreational physical activity and active transportation.
4. Consider an array of strategies to limit the density of businesses associated with serving unhealthy foods.
5. Attract full-service grocery stores and sit down restaurants associated with serving a variety of healthier food options.
6. Examine a variety of development policies and financial incentives that could spur private mixed use re-development.

Conclusion

In conclusion, secondary data sources provide ample evidence to support many of the recommendations made by the **New Bern Avenue Corridor Study** Group on the basis of their likely positive impact on the health and health behaviors of local residents. The HIA team supports these changes to the built environment because they can lead to improved safe access to physical activity and healthy food options for residents and consumers along the corridor. The City of Raleigh's recommendations deliver significant co-benefits in terms of the economic and cultural potential for the area. Not all of the recommendations can be officially supported by the HIA team due to a lack of documented or probable evidence that they would positively impact health; however, this should not be interpreted as a rejection of those proposed changes or a conclusion that they would have a negative impact. Rather, the lack of existing evidence prevents the HIA team from recommending them as health-enhancing strategies.

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