Healthy Infrastructure Plan

Bronx County, New York

Project by:
Initiative for Healthy Infrastructure (iHi)
University at Albany (SUNY)
Department of Geography and Planning

www.albany.edu/~ihi

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I. Introduction

The Initiative for Healthy Infrastructure (iHi) project at University at Albany (SUNY) is designed to facilitate statewide efforts to create physical environments which fosters healthy active lifestyles. This undertaking includes a cross-disciplinary approach in addressing this issue through teaching, researching, developing policy, public outreaching and planning. The primary motivation for this project is in resolving the contradiction between the need for increased physical activity and the deficit in walkable community infrastructure. Expanding New York State’s resource and research base in this area will encourage both more walkable communities and a healthy population. This project is funded by the Healthy Heart Program in the New York State Department of Health and is supported by The Research Foundation of The State University of New York.

Since one of the goals of the Healthy Heart Program is to encourage walking as a routine activity, it is logical to connect this concept with planning, particularly in the development of sidewalks, streets and trails. Unfortunately, community ‘health’ is not currently considered a performance measure for public works infrastructure, so a new approach that brings together the issue of public health and planning communities is needed. There is increasing evidence that community supports for a heart healthy lifestyle can be effective in reducing the risk of Cardiovascular Disease (CVD). Numerous sources, including the Centers for Disease Control and Prevention, have advocated walking as a primary means of increasing routine physical activity.
The national obesity trend is illustrated in these graphics developed by the Centers for Disease Control and Prevention (CDC). Source: www.cdc.gov.
Cardiovascular disease (CVD) is the leading cause of death, disability and health care expenditures among New York State residents. In 1998, more than 70,000 New Yorkers died of cardiovascular disease, accounting for 45% of all deaths. According to data from the 2001 Behavioral Risk Factor Surveillance System, 56% of New Yorkers are insufficiently active (no activity or less than 20 minutes a day, or less than three times/week). At the same time, pedestrians and bicyclists accounted for more than 20% of New York State’s traffic fatalities and injuries, 48% of hospitalizations and 59% of injury related hospitalization costs according to data from the Statewide Planning and Research Cooperative System (SPARCS) system.  

In order to encourage people to walk or bicycle more, it is critical to provide a safe infrastructure that supports an active lifestyle.

The data for the U.S. and New York State indicate that inactivity, poor diet and obesity are serious issues.  

Graphics provided by Deb Spicer, NYS Department of Health.
The population of the Bronx is approximately 1.3 million people. The County is located north of New York County and south of Westchester County, and is bordered by the Hudson River and the western end of Long Island Sound. The median household income is $27,550 (2003), with 26.8% of the population living below the poverty level. The county land area covers 42 square miles, with a population density of 31,709 people per square mile.

*Please note: seasonal and or student population may skew these figures.*

*Source: US Census and Bronx County*
II. Community Health Data

Bronx County is fortunate to have a detailed set of data for assessing public health. The New York State Behavioral Risk Factor Surveillance System (data) provides a general overview for statistical comparisons between state, national and county data. The following sections use available local and statewide health data to identify existing conditions and issues for Bronx County.

**NYS BRFSS**

The national trends and data are reflected in the public health data provided by NYS DOH from the 2000 and 2001 BRFSS. The two charts below show levels of physical activity statewide and obesity prevalence in ethnic groups among NYS adults.

The data below indicates that more than 70% of New York State adults (1) do not meet recommended levels of physical activity and (2) that more than 50% of the State’s adults are overweight or obese.
Mortality data for Bronx County

<table>
<thead>
<tr>
<th></th>
<th>Population (2000 data)</th>
<th>Total Deaths (per 100,000)</th>
<th>Total Deaths (rate)</th>
<th>Cerebrovascular Disease (#)</th>
<th>Cerebrovascular Disease (rate)</th>
<th>Diseases of the Heart (#)</th>
<th>Diseases of the Heart (rate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NYS</td>
<td>18,976,457</td>
<td>157,425</td>
<td>829.6</td>
<td>7,935</td>
<td>41.8</td>
<td>57,924</td>
<td>305.2</td>
</tr>
<tr>
<td>Bronx</td>
<td>1,332,650</td>
<td>10,142</td>
<td>761.0</td>
<td>342</td>
<td>25.7</td>
<td>3,787</td>
<td>284.2</td>
</tr>
</tbody>
</table>

*Data above is from the New York State Department of Health. Visit http://www.health.state.ny.us/statistics/chip/bronx.htm for the complete Bronx County profile

NYC Department of Health and Human Hygiene

“The 2006 New York City Community Health Profiles capture the health of 42 New York City neighborhoods. These comprehensive reports provide detailed information on significant health issues and serve as a critical resource for improving health, community by community.” Information is available at http://www.nyc.gov/html/doh/html/data/data.shtml.

A map from the survey is to the right.
ISSUES: Crime, Social and Cultural

In a study entitled, “The Health of the Northeast Bronx,” published under Community Health Profiles by the NYC Department of Health, 2003, 30% of adults stated that they feel their neighborhood is unsafe. In addition, 26% of the resident population (age 25 years and older) did not have an education beyond high school, and 16% of the area population was living in poverty. These factors can affect the ability for residents to have access to and opportunity for physical activity as part of their daily lifestyle. In a November, 12, 2003 report called “How Healthy is our Neighborhood?,” developed at Montefiore Medical Center, M.Estaban, G.Groning, E.Jackson, A. Mays and M.Vaca looked at physical activity, obesity and diabetes in the Fordham and Bronx Park neighborhoods. They identified issues of affordability, availability, prevalence of alcohol/drugs, fast food, parks and fitness centers in the neighborhood. A similar study at Montefiore called “Community Mapping of Physical Activity Resources,” was produced by S.Nanda, C.Russell, J. de la Llana, M. Ukanwa, O. Osinusi and S. Matippa to map physical activity resources near the Williamsbridge Family Health Center, with an emphasis on gyms and public parks. Both reports noted a lack of awareness of the issue, lack of time, and safety/security of outdoor sites as limiting factors in encouraging physical activity. Neither study investigated sidewalks, crossings, trails and bikeways within the neighborhoods as opportunities for routine physical activity.

Traffic Safety Data
Health and safety are related issues. The amount that people will walk or bicycle is affected by perceived and real concerns about traffic safety. In recent years, Bronx County has been subject to considerable development pressure. The built environment that has resulted from these pressures, often presents barriers to active living. In a report entitled, “Bronx County Traffic Safety Data”, dated February 2004, the Institute for Traffic Safety and Research provides the following summary of Bronx County safety Statistics.

Please see the following page for complete traffic safety data.
New York State Department of Motor Vehicles  
Summary of Motor Vehicle Accidents  

2004 Bronx County

TABLE 1 Accident Summary Totals

<table>
<thead>
<tr>
<th>Category Totals</th>
<th>All Accidents</th>
<th>Police Reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Accidents</td>
<td>11,623</td>
<td>7,158†</td>
</tr>
<tr>
<td>Fatal Accidents</td>
<td>53</td>
<td>53</td>
</tr>
<tr>
<td>Non-Fatal Personal Injury Accidents</td>
<td>9,086</td>
<td>7,083</td>
</tr>
<tr>
<td>Reportable Property Damage Accidents</td>
<td>2,484</td>
<td>22†</td>
</tr>
<tr>
<td>Vehicles</td>
<td>22,281</td>
<td>13,263</td>
</tr>
<tr>
<td>Drivers Involved</td>
<td>18,676</td>
<td>11,634</td>
</tr>
<tr>
<td>Vehicle Occupants</td>
<td>28,943</td>
<td>19,987</td>
</tr>
</tbody>
</table>

Special Accident Series

| Pedestrian/Motor Vehicle Accidents    | 1,587         | 1,515           |
| Bicycle/Motor Vehicle Accidents      | 337           | 328             |
| Motorcycle Accidents                  | 195           | 165             |

Fatalities

| Persons Killed (1)                    | 56            | 56              |
| Drivers Killed                        | 16            | 16              |
| Passengers Killed                     | 7             | 7               |
| Pedestrians Killed                    | 30            | 30              |
| Bicyclists Killed                     | 3             | 3               |
| Other                                  | 0             | 0               |

Non-Fatal Injuries

| Persons Injured (1)                   | 13,511        | 10,794          |
| Drivers Injured                       | 6,863         | 5,037           |
| Passengers Injured                    | 4,664         | 3,872           |
| Pedestrians Injured                   | 1,556         | 1,486           |
| Bicyclists Injured                    | 327           | 321             |
| Other                                  | 101           | 78              |

† It is important to note that the data for 2004 are not strictly comparable to the data for 2001 and 2002. Changes in data collection and reporting that began during 2001 with respect to property damage crashes have reduced the total number of crashes, since the changes resulted in fewer property damage crashes being captured in the statewide Accident Information System (AIS) maintained by the NYS Department of Motor Vehicles.

(1) Includes pedestrians, bicyclists and all other non-vehicle involved persons as well as vehicle occupants regardless of seating position.

TABLE 2(P) Severity of Accident

<table>
<thead>
<tr>
<th>Total</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>7,158</td>
<td>100.0</td>
</tr>
<tr>
<td>Fatal (K) Accidents</td>
<td>53</td>
<td>0.7</td>
</tr>
</tbody>
</table>

Personal Injury Accidents

| Serious (A)                    | 577    | 8.1     |
| Moderate (B)                   | 782    | 10.9    |
| Minor (C)                      | 5,334  | 74.5    |
| Unknown Severity               | 390    | 5.4     |

Property Damage (O) Accidents   | 22     | 0.3     |

General Notes

* Some of the tables are based upon information received from police and motorist reports of motor vehicle accidents. Others are based only on the police reports; these are indicated by a (P).
* The Property Damage Accident reporting level is $1,000 or more.
* The term "vehicle" always excludes bicycles.
* The term "driver" always excludes bicyclists.
* Percentages may not total 100.0 due to rounding.

Source: NYS Department of Motor Vehicles Governor's Traffic Safety Committee
III. Infrastructure Diagnosis

For the purposes of this study, the medical term ‘diagnosis’ is applied to the county’s public works infrastructure to investigate possible connections between the built environment and public health. The ‘patient’ in this case is Bronx County, and the diagnosis looks at whether current levels of physical activity are related to the provision of built environment features such as rural roadways with paved shoulders, trails, parks and other facilities that encourage a physically active lifestyle. Note that at the county level this is a very general analysis, and precision and scope are limited to an overview of existing conditions. Additional investigations will be necessary to supplement this study with more detailed observation and data at the community and neighborhood level.

U.S Census Transportation Data

While limited in its ability to capture all travel by walking and bicycling (it focuses only on trips to work, not travel for shopping, school, or leisure), the U.S. Census Transportation data is a useful source of county level data. From 1990-2000, the census shows that walking and bicycling in Bronx County DECLINED.

Please see CTPP data on following page
### Geographic Area: Bronx County, New York

<table>
<thead>
<tr>
<th>Subject</th>
<th>1990 Census</th>
<th>Census 2000</th>
<th>Change 1990 to 2000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>POPULATION</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total population</td>
<td>1,203,789</td>
<td>1,332,650</td>
<td>128,861</td>
</tr>
<tr>
<td>In households</td>
<td>1,163,536</td>
<td>1,285,507</td>
<td>121,971</td>
</tr>
<tr>
<td>In group quarters</td>
<td>40,253</td>
<td>47,143</td>
<td>6,890</td>
</tr>
<tr>
<td><strong>HOUSEHOLD SIZE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total households</td>
<td>423,191</td>
<td>463,242</td>
<td>40,051</td>
</tr>
<tr>
<td>1-person household</td>
<td>117,030</td>
<td>126,756</td>
<td>9,735</td>
</tr>
<tr>
<td>2-person household</td>
<td>105,416</td>
<td>113,242</td>
<td>7,826</td>
</tr>
<tr>
<td>3-person household</td>
<td>76,823</td>
<td>86,003</td>
<td>9,180</td>
</tr>
<tr>
<td>4-person household</td>
<td>59,945</td>
<td>66,666</td>
<td>6,721</td>
</tr>
<tr>
<td>5-or-more-person household</td>
<td>62,979</td>
<td>70,566</td>
<td>7,587</td>
</tr>
<tr>
<td>Mean number of persons per household</td>
<td>2.75 (X)</td>
<td>2.78 (X)</td>
<td>0.03 (X)</td>
</tr>
<tr>
<td><strong>VEHICLES AVAILABLE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No vehicle available</td>
<td>257,465</td>
<td>283,236</td>
<td>25,771</td>
</tr>
<tr>
<td>1 vehicle available</td>
<td>122,180</td>
<td>134,043</td>
<td>11,863</td>
</tr>
<tr>
<td>2 vehicles available</td>
<td>35,144</td>
<td>37,011</td>
<td>1,867</td>
</tr>
<tr>
<td>3 vehicles available</td>
<td>6,766</td>
<td>5,874</td>
<td>-802</td>
</tr>
<tr>
<td>4 vehicles available</td>
<td>1,137</td>
<td>1,148</td>
<td>11</td>
</tr>
<tr>
<td>5 or more vehicles available</td>
<td>589</td>
<td>1,350</td>
<td>761</td>
</tr>
<tr>
<td>Mean vehicles per household</td>
<td>0.52 (X)</td>
<td>0.52 (X)</td>
<td>&gt;0 (X)</td>
</tr>
<tr>
<td><strong>WORKERS BY SEX</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workers 16 years and over</td>
<td>429,777</td>
<td>415,075</td>
<td>-14,702</td>
</tr>
<tr>
<td>Male</td>
<td>222,267</td>
<td>207,725</td>
<td>-14,917</td>
</tr>
<tr>
<td>Female</td>
<td>207,510</td>
<td>207,350</td>
<td>215</td>
</tr>
<tr>
<td><strong>MEANS OF TRANSPORTATION TO WORK</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drove alone</td>
<td>429,777</td>
<td>415,075</td>
<td>-14,702</td>
</tr>
<tr>
<td>Carpoled</td>
<td>107,020</td>
<td>112,159</td>
<td>5,139</td>
</tr>
<tr>
<td>Public transportation (including taxicab)</td>
<td>243,201</td>
<td>222,835</td>
<td>-20,366</td>
</tr>
<tr>
<td>Bicycle or walked</td>
<td>31,084</td>
<td>31,063</td>
<td>-21</td>
</tr>
<tr>
<td>Motorcycle or other means</td>
<td>234</td>
<td>2,536</td>
<td>2,302</td>
</tr>
<tr>
<td>Worked at home</td>
<td>5,379</td>
<td>7,756</td>
<td>2,377</td>
</tr>
<tr>
<td><strong>TRAVEL TIME TO WORK</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 5 minutes</td>
<td>4,884</td>
<td>4,560</td>
<td>-324</td>
</tr>
<tr>
<td>5 to 9 minutes</td>
<td>16,247</td>
<td>14,563</td>
<td>-684</td>
</tr>
<tr>
<td>10 to 14 minutes</td>
<td>30,206</td>
<td>25,835</td>
<td>-4,371</td>
</tr>
<tr>
<td>15 to 19 minutes</td>
<td>37,263</td>
<td>33,716</td>
<td>-3,547</td>
</tr>
<tr>
<td>20 to 29 minutes</td>
<td>49,358</td>
<td>49,579</td>
<td>221</td>
</tr>
<tr>
<td>30 to 44 minutes</td>
<td>94,577</td>
<td>89,558</td>
<td>-5,019</td>
</tr>
<tr>
<td>45 or more minutes</td>
<td>191,843</td>
<td>189,508</td>
<td>-2,335</td>
</tr>
<tr>
<td>Mean travel time to work (minutes)</td>
<td>38.9 (X)</td>
<td>43.0 (X)</td>
<td>4.1 (X)</td>
</tr>
<tr>
<td><strong>TIME LEAVING HOME TO GO TO WORK</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workers who did not work at home</td>
<td>424,398</td>
<td>407,319</td>
<td>-17,079</td>
</tr>
<tr>
<td>5:00 a.m. to 5:59 a.m.</td>
<td>93,054</td>
<td>89,152</td>
<td>-3,902</td>
</tr>
<tr>
<td>6:00 a.m. to 6:59 a.m.</td>
<td>130,275</td>
<td>130,879</td>
<td>6,604</td>
</tr>
<tr>
<td>7:00 a.m. to 7:59 a.m.</td>
<td>93,053</td>
<td>81,047</td>
<td>-2,006</td>
</tr>
<tr>
<td>8:00 a.m. to 8:59 a.m.</td>
<td>22,525</td>
<td>23,086</td>
<td>561</td>
</tr>
<tr>
<td>9:00 a.m. to 9:59 a.m.</td>
<td>12,773</td>
<td>15,460</td>
<td>2,687</td>
</tr>
<tr>
<td>10:00 a.m. to 11:59 p.m.</td>
<td>54,874</td>
<td>55,611</td>
<td>737</td>
</tr>
<tr>
<td>12:00 a.m. to 4:59 a.m.</td>
<td>7,944</td>
<td>11,372</td>
<td>3,428</td>
</tr>
</tbody>
</table>

---

1 See the entry for this item in the Technical Notes in the root directory or state subdirectories (filename: tech_notes.txt).

> Value is too near zero to display.

(X) Not applicable.

Spatial Analysis using Geographic Information Systems

Through the use of census data and geocoded locations for specific spatial attributes, it is possible to identify key features within the county. For the purposes of this phase of IHI’s project, Healthcare and Education facilities were identified as types of community destinations which can help describe the potential for walking to routine destinations as part of an active lifestyle. The potential of a resident walking to a destination can be identified as accessible within a .5 mile radius. This is the equivalent of approximately a 10 minute walk at an average pace of 3 miles per hour. Note that this distance is also a relatively short bicycle ride – approximately a 3 minute ride at a 10 mile per hour pace. The purpose of this diagnostic tool is not to specifically identify which individuals within the county walk or bicycle, but rather to provide a broad perspective on whether it is possible to walk or bike to certain key features within the area.

Examples of varying levels of pedestrian accessibility, to Parks, Schools and Healthcare: clockwise from top left: a) bicycle and pedestrian lane markings near Lehman College, b) Gun Hill road at Montefiore Medical Center, c) a neighborhood school zone and d) crossing Jerome Avenue at Van Cortlandt Park. Photo credits: J.Olson, iHi
Education

Access to schools is a part of the daily travel routine for Bronx County families. Nationally, the trend in the past several decades has been away from children walking or bicycling to school, and towards children being bused and driven to school. The data showing the lack of physical fitness in children (as well as faculty, staff and college students) is related to this change in daily routine. As a result, investigating the potential for schools to be a destination within walking distance of the local population can be an important step towards encouraging a more active lifestyle. About 93 percent of the county population lives within walking distance of schools.

*Please see Education map on following page*
Areas in Bronx County within Walking Distance of Education Facilities

- Colleges
- Schools
- 1/2 Mile Buffer Zone
- Limited Access Highway
- Major Road
- Minor Road

Legend:
- Green: Colleges
- Yellow: Schools
- Gray: 1/2 Mile Buffer Zone
- Blue: Limited Access Highway
- Red: Major Road
- Brown: Minor Road
Parks
Parks and Recreation Facilities provide locations intended for physical activity, sports and other leisure time activities. Walking, hiking and bicycling are primary activities at these locations, yet in a rural setting, it is important to determine if people are able to walk or bike to parks and recreation, or if they are limited to driving a car to reach these destinations. Bronx County is fortunate to have a significant amount of parks and public lands. Approximately 95 percent of the county population lives within walking distance of a park. It is important to note however that some of these parks may be small with limited space and facilities; a smaller percentage of the Bronx population lives within walking distance of larger parks.

*Please see Parks map on following page*
Areas in Bronx County within Walking Distance of Parks and Recreation Facilities

- **Limited Access Highway**
- **Major Road**
- **Minor Road**
- **Parks and Recreation Facilities**
- **1/2 Mile Buffer Zone**

Legend:
- Blue: Limited Access Highway
- Red: Major Road
- Orange: Minor Road
- Green: Parks and Recreation Facilities
- Light Gray: 1/2 Mile Buffer Zone

Map Scale:
- 0 to 4 Miles

North Arrow:
- N

Legend and Map Q: Areas in Bronx County within Walking Distance of Parks and Recreation Facilities.
Health Institutions

Just as schools and parks can provide walk-able community destinations, health institutions can play a similar role in being a place that encourages physical activity and fitness by being a role model as a destination. This is often not the case with large hospitals and medical centers, and there are many examples of hospitals being surrounded by large parking lots without appropriate consideration for how walking and bicycling relate to public health and the medical institution’s role in creating a healthy neighborhood environment. For the purpose of this analysis, healthcare institutions were identified and geocoded, and the same walking distance buffer was applied for the .5-mile radius around the facility. The data indicates that approximately 68 percent of the county population lives within walking distance of a healthcare facility.

*Please see Health Institutions map on following page*
Areas in Bronx County within Walking Distance of Medical Facilities

- Nursing Homes
- Hospitals
- 1/2 Mile Buffer Zone
- Limited Access Highway
- Major Road
- Minor Road

Legend:
- Nursing Homes
- Hospitals
- 1/2 Mile Buffer Zone
- Limited Access Highway
- Major Road
- Minor Road

0 2 4 1 Miles
Transportation Infrastructure (following page)
For many people, local streets and roads define access to jobs, education, healthcare and recreation. The provision of paved shoulders and sidewalks along these facilities is a key to providing a safe environment for pedestrians and bicyclists. Unfortunately however, data is not currently available to determine the percentage of all these roads that include paved shoulders, sidewalks, bike lanes or trails. An investigation of NYSDOT sufficiency file data indicated that paved shoulders and sidewalks are not systematically included in the State’s pavement management and information systems.

*The available data table for the Bronx County highway system is provided on the following page.*
## BRONX COUNTY REGION 11 COUNTY 1

<table>
<thead>
<tr>
<th>MINOR CIVIL DIVISION</th>
<th>GEO-AREA CODE</th>
<th>POP. 2000</th>
<th>TOTAL STATE TOURING ROUTE MILEAGE</th>
<th>CENTERLINE HIGHWAY MILEAGE BY JURISDICTION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>TOWN VILLAGE or CITY</td>
<td>COUNTY</td>
</tr>
<tr>
<td><strong>CITY</strong></td>
<td>New York</td>
<td>2034 043</td>
<td>1,332,650</td>
<td>41.9</td>
</tr>
<tr>
<td><strong>COUNTY TOTAL</strong></td>
<td>---- ----</td>
<td>1,332,650</td>
<td>41.9</td>
<td>734.2</td>
</tr>
</tbody>
</table>

Source: New York State DOT
Infrastructure Investment Analysis
Healthcare is a significant budget expenditure and cost for New York State and local communities. The direct and indirect costs due to medical care, workers compensation claims, and lost time related to injuries is illustrated below in a graphic provided by NYSDOH.

*Slide Source (bullets 1 & 2):* Chenoweth, “Physical Inactivity in NYS, An Economic Cost Analysis”, 1999
*Slide Source (bullet 3):* Pratt, M. “Higher Direct Medical Costs Associated with Physical Inactivity”, The Physician and Sports Medicine, October, 2000. This study used data from the 1987 National Medical Expenditures Survey.

Cost of Physical Inactivity in NYS

- Inactivity costs NYS $3 billion a year
- A 5% increase in physical activity rates in adults would save NY $180 million a year.
- Inactive adults have $330 more per year in direct medical costs than active adults (in 1987 dollars).
IV. Initiatives for Bronx County

The Bronx has a number of major initiatives underway which will provide significant opportunities for active lifestyles, recreation and physical fitness. Since these efforts were not all necessarily created for a public health purpose, they are often not presented in this context. However, taken as a whole, it is possible to envision the Bronx as a place where residents, visitors and employees have unique opportunities to enjoy a healthy infrastructure in the future.

**New York City Greenways:** In the early 1990’s, when the federal transportation legislation known as ISTEA (the Intermodal Surface Transportation Efficiency Act) was passed, Congress provided significant new resources for bicycle and pedestrian facilities. In 1993, New York City adopted its first official Greenways plan, a visionary document that called for a 350 mile interconnected system of multi-use paths throughout all five boroughs. It is important to note that the first phases of this system were developed using federal ISTEA Enhancement and CMAQ (Congestion Mitigation and Air Quality) Funds. Current phases are being built with funding from a variety of sources, including TEA-21 (the successor legislation to ISTEA), the Transportation Equity Act for the 21st Century, which is scheduled for reauthorization this year.

“In his State of the City address, Mayor Bloomberg announced that the city would complete a longstanding plan for a recreational path circling Manhattan. "The success of the Hudson River Park demonstrates the need to make our entire waterfront accessible to walkers and cyclists," he said…The mayor put his promise for a waterfront greenway in the category of "our livelihood, jobs, and development." This suggests that he will take a broader approach to economic development, and that he understands that investing in parks and recreation is a key factor in making the city a great place to live and do business in the 21st century. His focus on greenways is also pragmatic, because federal funding is available for 80 percent of greenway construction through the TEA-21 legislation that promotes alternate transportation…’


This renewed focus will hopefully extend to completion of the Greenway System in the Bronx and other boroughs. According to the January, 28, 2003 edition of Waterwire, the newsletter of the Metropolitan Waterfront Alliance,

“In the Bronx, Sustainable South Bronx and The Point CDC have been awarded funding from Empire State Development Corporation to study the feasibility of creating a greenway in Hunts Point and Port Morris along the East River. In addition to open space concerns a greenway in the South Bronx would mitigate air quality and congestion concerns for neighborhoods that have dealt with inequitable environmental justice situations for too long. Majora Carter, Executive Director of Sustainable South Bronx, notes that the community “should expect this and more.”

For the latest Greenway System Information: http://www.nycgovparks.org/sub_things_to_do/facilities/af_bike_maps.html
**Bronx Greenways**

The Greenway System in the Bronx was initially proposed in The Bronx Greenway Plan released by the Borough President’s office in August, 1993. The plan stated, “...Today a park which acts only as a “destination” is not enough. In a dense urban environment such as New York, we also need park-like areas which encourage travel, and which link our assets. The Bronx Greenway intends to do just that: create green bicycle / pedestrian paths which tie landmarks, parks, institutions and even communities into a more cohesive whole.”

The 1993 Bronx Plan has been included in the overall New York City greenways system, and the map below illustrates the status of major greenway projects, with Bronx greenways as noted below:

![New York City Greenway System Map](http://www.nycgovparks.org/sub_things_to_do/facilities/af_bike_maps.html#bronxrivergw)

**Bronx**

1) Soundview Greenway
   - Soundview Park to Ferry Point Park Greenway
   - Soundview Park Waterfront Esplanade
2) Hutchinson Greenway*
   - Pelham Parkway to Ferry Point Park*
3) Bronx River Greenway
   - Starlight Park, 172nd Street to 178th Street
   - Shoelace Park
4) Grand Concourse Greenway (Department of City Planning)
   - Grand Concourse
5) Putnam Rail-Trail
   - Harlem River to Van Cortlandt Park South Segment
   - "The Old Putnam Trail" Van Cortlandt Park Segment

Source: [http://www.nycgovparks.org/sub_things_to_do/facilities/af_bike_maps.html#bronxrivergw](http://www.nycgovparks.org/sub_things_to_do/facilities/af_bike_maps.html#bronxrivergw)
Bronx River Greenway

The Bronx River Greenway is considered a centerpiece of the regional greenway system. While the Bronx has a significant amount of park land, the majority of these parks are located in the north Bronx. The Greenways Plan seeks to equalize this distribution, and the 11.4 mile Bronx River corridor will create a new north-spine for increased mobility and physical activity across the center of the Bronx from north to south. The project is supported by the Bronx River Alliance which, “serves as a coordinated voice for the river and works in harmonious partnership to protect, improve and restore the Bronx River corridor and Greenway so that they can be healthy ecological, recreational and educational and economic resources for the communities through which the river flows.” (www.bronxriver.org). Essential to the project will be ensuring increased access to the trail from cross roads and adjacent neighborhoods – a difficult challenge at many locations where railroad lines, roadways and other barriers to access exist. A map of the central section of the Greenway is provided below, along with an image highlighting the diverse recreational opportunities the Greenway provides to Bronx residents and visitors.

Sources:


(r) The Bronx River Greenway will provide access to major destinations including the Bronx Zoo and NY Botanical Gardens http://www.lehman.cuny.edu/geography/images2/french_charley.pdf
Bicycle Network Development
Under the ISTEA CMAQ program, New York City initiated a city-wide bicycle infrastructure program called the Bicycle Network Development project. The project proposes to provide bicycle lanes and routes on an interconnected network of city streets. This system will also link with the Greenway System, and will make it possible for residents and visitors to safely reach destinations throughout the City. The Bronx section of the Bicycle Network is available at: http://www.nyc.gov/html/dcp/html/bike/cwbm.shtml

Pedestrians and Traffic Calming
New York City has a sidewalk system that is estimated at more than 10,000 miles. Unlike many communities, the majority of the streets in the Bronx have sidewalks – the greater challenges to walking are street crossings and conflicts with motor vehicles. Traffic Calming is a current term for engineering techniques which slow motor vehicle speeds and provide balanced street designs for motorists, pedestrians and bicyclists. There are a number of important traffic calming initiatives in the Bronx, including a traffic calming Demonstration Project on the Grand Concourse, and the Safe Routes to Schools initiative discussed in a following section. These projects provide the potential to make every neighborhood a place where the street is part of the public realm for all citizens, and a place where people feel safe walking or bicycling. It should also be noted that both the Bronx River Parkway and the Grand Concourse have hosted ‘car free Sundays’ – a significant opportunity for large numbers of people to spend a day walking, bicycling, skating and enjoying these facilities.

Take a Walk, New York
New York City is a great place to walk, and there are a number of guided tours and programs aimed at encouraging people to see ‘the sidewalks of New York.’ One recent program of note is “Take a Walk, New York,” which is a project of the Neighborhood Open Space Coalition and is intended to encourage walking for health and fitness. The program is described as follows:

“Take a Walk New, York!, a program of free, guided urban adventure walks taking place on weekends in all five boroughs is about to begin its third year. The program is a wonderful way for New Yorkers to walk for health while exploring their city. Take a Walk, New York! is designed and implemented by the Neighborhood Open Space Coalition, and is a component of the New York City Department of Health & Mental Hygiene’s Listen to Your Heart Campaign. The Take a Walk, New York! program is open to everyone.”

Source: http://www.walkny.org/Step1.html

Note: The ‘Take a Walk’ website is linked to President’s Council on Physical Fitness, . (http://www.presidentschallenge.org) providing an opportunity for individuals to connect their personal health to a national program.
**RWJ / Sustainable South Bronx**

In 2001, the Robert Wood Johnson Foundation (RWJ) announced a call for proposals for a new program called Active Living By Design. Of the more than 900 projects that applied for the program, only 25 were selected nationally, one of which is in the Bronx. This is evidence of the importance of providing healthy solutions in the Bronx as a model for other communities. The project is described as follows:

**Project Description:**

"The central focus of this project is the South Bronx Greenway, an urban greenway planned with a 4-mile waterfront esplanade, adjacent pocket parks and street changes that include traffic calming and 'parks outside the park' - green streetscaping along routes to the greenway. The project will encompass educational and incentive programs for physical activity based in local schools; using the expertise and reach of trained pediatric healthcare providers to promote physical activity; targeted outreach to major employers promoting the physical activity benefits of the greenway; an immense and visionary effort by a coalition of groups to decommission the underutilized Sheridan Expressway in an effort to free up 28 acres for alternative community use; a pedestrian bridge to a large island park with impressive sports facilities; and a community plan to reroute truck traffic to improve pedestrian safety in order to promote walking as well as addressing key air quality issues."


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**New York Metropolitan Transportation Council (NYMTC)**

The local MPO in Bronx County produces a long range transportation plan. This organization also develops the local Transportation Improvement Program (TIP) for Bronx County. Funded projects and projected slated for funding, or proposed infrastructure improvements/additions can be found in the TIP: [http://www.nymtc.org/](http://www.nymtc.org/) (click on the site map)
V. Community Infrastructure Prescriptions

The information gathered for this project can help in informing Bronx County and local communities about the issues and potential solutions related to physical activity, cardiovascular fitness, and the built environment. Data in the previous sections (see NYS BRFSS data) have indicated that Bronx County residents are at risk for heart disease, that physical activity is declining, and that transportation and health care costs represent a significant amount of local public expenditures. In order to translate these facts into action, it is first necessary to understand the current recommendations of the health profession in terms of change in individual behavior. Currently the Surgeon General of the United States is recommending that adults have 30 minutes of moderate physical activity on most, if not all days of the week and that children have at least 60 minutes of physical activity on most days, if not all days of the week. In many cases, this amount of physical activity can be achieved while walking to work, school, or for recreation within a local community – if these destinations are accessible in terms of pedestrian facilities. At the same time, research is beginning to show that for many people, leisure time physical activity frequently involves walking, and that roads, streets and sidewalks are important facilities for this purpose.

While it is not certain that there is a direct cause and effect relationship between providing sidewalks, paved shoulders, trails and bicycle facilities and specific improvements in the conditions of cardiovascular disease, there is sufficient evidence to indicate that Bronx County would benefit from infrastructure improvements that encourage a more active lifestyle. The following sections identify several possible policy and funding opportunities for Bronx County.
‘Street Doctor’ Residency Program
Healthcare institutions, such as Montefiore Medical Center, are among the largest employers in the Bronx. Montefiore has community outreach centers located throughout the Bronx, and training for residents at these centers presents an opportunity to encourage healthcare professionals to work towards encouraging active lifestyles. The fields of social medicine, social justice and public works infrastructure could be engaged to create a program of ‘street doctors’ – interdisciplinary teams who could diagnose streets and neighborhoods for barriers to active living.
Source: Unpublished reports by Montefiore Medical Residents, provided by staff

Bronx Arterial Needs MIS
One of the largest public works proposals in the Bronx is the Arterial Needs Major Investment Study (MIS), a long term plan for the major highways in the Bronx. The public involvement process of the Study included addressing the concerns that many arterial roads are barriers to walking and bicycling. For example, the Study identified bike lanes on fifteen potential streets which run perpendicular to the Cross Bronx Expressway. This is a good example of integrating healthy infrastructure solutions within existing public works projects.

Encouragement and Promotion Programs
Safe Routes to Schools, Take a Walk New York, Sustainable South Bronx and other programs offer significant potential to improve public health through increased physical activity. While the existing programs are good pilot projects, they are not being implemented at a scale and scope that can reach the entire Bronx community. In addition to the fiscal issues, there are potential cultural barriers to implementation that require extensive outreach, social capital and community involvement.

Walking Access Program – The Denver Model
The Trust for Public Land published a 2003 report entitled “The Excellent City Park System, What Makes it Great and How to Get There,” by Peter Harnik.
One of the ‘excellent practices’ in the report is the Denver Parks and Recreation program to ensure that 90% of Denver residents are within a six block walk of a park. This was accomplished using a G.I.S. technique similar to the radius analysis conducted by iHi for this document – with the additional step that Denver followed up with a detailed inventory of all barriers to walking access within that radius. An infrastructure program was then provided to ensure that sidewalks, safe crossings and other facilities were provided within the perimeter of each park or recreation area. In the future, Denver is working to tighten the radius down to four blocks, or about one-third of a mile.
Policy Suggestions

Safe Routes to School
There is a growing national and international movement towards encouraging children to walk and bicycle to school. Schools are a logical focal point for creating safe, healthy, physically active communities. While current conditions indicate the majority of children are being bused and driven to school, changes in the physical environment (including sidewalks, crossings and traffic calming of school zones) can be combined with encouragement programs to facilitate a return to safe routes to school in Bronx County. Please see the iHi NY Safe Routes to School document on our website here: [http://www.albany.edu/~ihi/2briefing.pdf](http://www.albany.edu/~ihi/2briefing.pdf).


Complete Streets
Benefits of Complete Streets range from improved safety conditions for pedestrians and bicyclists to less congested roadways. Numerous communities across the country have already adopted such policies. A proposed Complete Streets policy for Bronx County can be found here: [http://www.completestreets.org/index.html](http://www.completestreets.org/index.html).

Local Sidewalk Program / Winter Maintenance
The City has a commitment to its residents and visitors to provide safe and accessible pedestrian transportation networks and therefore regularly inspects sidewalks. According to City code, the owner of adjacent property is responsible for maintaining (including snow and ice removal) and repairing sidewalks unless a tree’s roots or a utility company doing construction causes the sidewalk defect. If repairs are not made, the City’s Sidewalk and Inspection Management Division fixes sidewalks at the adjacent property owner's expense. In 1994 the City also passed a law to control the placing of news stands on sidewalks to mitigate sidewalk obstruction via multiple news racks at certain locations. In addition, the City is currently updating curb ramps to comply with ADA regulations. Also, the City is installing “talking” signals to assist visually impaired pedestrians. The City sweeps and cleans crosswalks of ice and snow during winter weather. When a snow emergency is declared, special regulations take effect. Source: [http://www.nyc.gov/html/dot/](http://www.nyc.gov/html/dot/) to the greatest extent possible.
VI. Funding Options
Bicycle and Pedestrian Improvements can be made possible in Bronx County with funding through multiple avenues. There are numerous funding sources, including federal grant programs such as the Transportation Improvements Program or Congestion Mitigation Air Quality Improvement Program. Both the New York Bicycling Coalition and Parks and Trails New York (PTNY) have excellent information regarding funding.

New York Bicycling Coalition: http://www.nybc.net/programs/funding.shtml

There may also be state, local and private money available too. In addition, see the iHi website for more information on funding sources.

Conclusion
This report is part of our efforts to develop an approach for identifying connections between public health, transportation infrastructure and community decision-making. With that caveat in mind, the following discussion can provide some useful concepts both for Bronx County and for the future development of the iHi program. One way of summarizing the data collected for this document is to connect the physical activity and transportation needs of Bronx County with an image common to promoting healthy lifestyles – the food pyramid. While people may disagree on the exact proportions of carbohydrates and protein in a healthy diet, the concept of the food pyramid is that the most resource intensive food group – meat – should be eaten in moderation, and that the food group which can be produced with the least amount of energy and the greatest return to the population – grains – should form the basis of a healthy diet. The same principle can be applied to transportation. If we used the forms of transportation that consume the greatest amount of resources (petroleum), we would place automobiles and air travel at the top of the pyramid and attempt to conserve our use of these costly forms of travel. Walking and bicycling would form the foundation of a pyramid that is based on the principals of a healthy transportation diet.

Do you know how much your local school district spends on student transportation?
Many districts allocate more funding on transportation than on physical activity programming! See the NYS Comptroller’s Report and select school districts: http://www.osc.state.ny.us/localgov/datanstat/findata/index_choice.htm
The “Transportation Food Pyramid” (Olson, 2003) shows the relationship between a healthy diet and a healthy use of transportation resources.

Please Note: The USDA now has a tool online so individuals can customize their own pyramids. Go to: http://www.mypyramid.gov/

Additional Important Links
New York City Department of City Planning: http://www.nyc.gov/html/dcp/
NYS DOH: http://www.health.state.ny.us/
For additional information, please contact:
Initiative for Healthy Infrastructure – iHi
State University of New York at Albany
Department of Geography and Planning
www.albany.edu/gp/ihi
Healthy Infrastructure Action Plan / Survey

Thank you for being part of our efforts to connect public health, infrastructure and your community. We’d appreciate it if you would spend a few moments providing us with your opinion on this project.

County Name: ..................................................

1. On a 1 to 10 scale, with ‘10’ being the best score, is this document useful for your community? (please circle your response)
   No 1 2 3 4 5 6 7 8 9 10 Yes

2. On the same 1-10 scale, are you more aware of the connection between public health and infrastructure now that you have read this document? (please circle your response)
   No 1 2 3 4 5 6 7 8 9 10 Yes

3. Will you personally become and advocate for healthy infrastructure in your community as a result of this plan? (please check ☑ one)
   Yes ☐ No ☐ Not Sure

4. What plans, programs or projects should be added to the plan?
   ..................................................................................
   ..................................................................................
   ..................................................................................

5. What actions will your community implement as a result of this plan? (check ☑ all that apply)
   ☐ Formal adoption of the plan by elected officials
   ☐ Increased funding for healthy infrastructure projects
   ☐ Formation of a healthy infrastructure task force
   ☐ Safe Routes to Schools Program
   ☐ New Policy to Include Pedestrian and Bicyclist Facilities
Healthy Infrastructure Action Plan / Survey

County Name: ..............................................

6. Completion of a specific project.
   Project name: ...........................................

7. Other. Please describe:
   ........................................................................
   ........................................................................
   ........................................................................
   ........................................................................

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