Health Impact Assessment of the Atlanta BeltLine

Catherine L. Ross, PhD, Karen Leone de Nie, MCRP, Andrew L. Dannenberg, MD, MPH, Laurie F. Beck, MPH, Michelle J. Marcus, MPH, Jason Barringer, MCRP

This activity is available for CME credit. See page A3 for information.

Background: Although a health impact assessment (HIA) is a tool that can provide decision makers with recommendations to promote positive health impacts and mitigate adverse health impacts of proposed projects and policies, it is not routinely conducted on most major projects or policies.

Purpose: To make health a decision criterion for the Atlanta BeltLine, a multibillion-dollar transit, trails, parks, and redevelopment project.

Methods: An HIA was conducted in 2005–2007 to anticipate and influence the BeltLine’s effect on health determinants.

Results: Changes in access and equity, environmental quality, safety, social capital, and physical activity were forecast, and steps to maximize health benefits and reduce negative effects were recommended. Key recommendations included giving priority to the construction of trails and greenspace rather than residential and retail construction, making health an explicit goal in project priority setting, adding a public health professional to decision-making boards, increasing the connectivity between the BeltLine and civic spaces, and ensuring that affordable housing is built. BeltLine project decision makers have incorporated most of the HIA recommendations into the planning process. The HIA was cited in the awarding of additional funds of $7,000,000 for brownfield clean-up and greenspace development. The project is expected to promote the health of local residents more than in the absence of the HIA.

Conclusions: This report is one of the first HIAs to tie specific assessment findings to specific recommendations and to identifiable impacts from those recommendations. The lessons learned from this project may help others engaged in similar efforts.

Introduction

Health impact assessment (HIA) is a tool to provide decision makers with recommendations to promote positive health impacts and mitigate adverse health impacts of proposed projects and policies. Although dozens of HIAs have been conducted in the U.S. since 1999, HIAs are not routinely conducted on most major projects or policies.1–3 The current paper describes a comprehensive HIA conducted on a large redevelopment and transportation project and documents how the HIA helped integrate health objectives into project planning.

The social–ecological model of health theorizes that a wide range of policy and organizational factors interact to create the physical and social environment, which then influences personal behavior and risk exposure. Public health interventions are more effective if they are implemented “upstream” in the causal chain to address underlying policies or practices.4–6 However, many policies, such as transportation and city planning, are not under the responsibility of any public health agency.7 Tools such as HIAs for applying evidence-based health recommendations to planning and policy-making practices in sectors outside of health could greatly benefit health promotion.7–13
Health impact assessment is defined as “a combination of procedures, methods and tools that systematically judges the potential—and sometimes unintended—effects of a policy, plan, program, or project on the health of a population and the distribution of those effects within the population. HIA identifies appropriate actions to manage those effects.” HIA is a formal method to incorporate health objectives into planning and development processes and thereby generates health-promoting changes to the built environment. HIA has been institutionalized in Europe and elsewhere with varying levels of effectiveness but not in the U.S. It has been applied to many sectors including transportation, industry, natural resources, and urban development.

Health Impact Assessment Methodology

Application to the Atlanta BeltLine

Atlanta is a city of 416,000 residents (2000 census) located in a metropolitan area of more than 4 million people. Although Atlanta has one of the strongest economies in the southeastern U.S., the city and surrounding region suffer from strained infrastructure and resources, environmental justice issues, air pollution, and areas of economic segregation.

The BeltLine project will transform a 22-mile loop of mostly abandoned railroad right-of-way and surrounding property to parks, trails, transit, and residential and commercial developments near downtown Atlanta. The project uses a Tax Allocation District to issue bonds that are repaid by incremental increases in taxes from rising property values in the district. These bonds fund capital expenditures such as land acquisition and remediation, infrastructure improvements, and affordable housing programs. Project investments are expected to generate 2100 acres of new parks and park improvements; 33 miles of new multiuse trails; and 22 new miles of transit. The project is expected to generate 6500 acres of redevelopment (7% of the land in the city) including new and affordable housing; office, retail, industrial, and institutional space; and 30,000 new jobs, plus sidewalk, streetscape, road, and intersection improvements. The HIA was cited in the awarding of additional funds, approximately $7 million, for brownfield clean-up and greenspace development.

Figure 1 shows the major elements of the BeltLine plan and the HIA study area boundaries. A total of 213,920 people lived in the study area in 2000. The BeltLine has a 25-year timeline that includes a preliminary redevelopment plan for the entire area, citizen participation framework, conduct of an environmental impact assessment (EIA), corridor design planning, 5-year work plans, detailed plans for ten subareas, and a staggered implementation schedule. When the BeltLine HIA was conducted from 2005 through 2007, only the redevelopment plan and preliminary planning procedures were complete, leaving many decisions to be determined.

The Atlanta City Council approved a prescriptive blueprint for the BeltLine of transit, parks, trails, and redevelopment projects to create a new green vision for the city promoting walkability, greenspace, requirements for affordable housing, and quality urban infill to facilitate healthy communities over a 25-year period. The HIA referenced the blueprint to assess the current and future health benefits and outcomes of the BeltLine. The Tier 1 EIA began in 2008 and was scheduled for completion during 2011. Compliance with HIA recommendations was voluntary and there was no local or state mandate requiring that this HIA be conducted, nor any requirement that its recommendations be adopted. While this HIA was conducted over 2 years, many rapid HIAs can be done in weeks depending on the topic, policy, program or project and many are conducted in the private sector. As described in Figure 2, the BeltLine HIA followed the six standardized steps for conducting HIAs.

Step I: Screening

Some urban revitalization projects have undesirable consequences because of their effects on transportation, affordability, equitable access, mental health, safety, and physical activity. An interdisciplinary team including public health professionals, physicians, and planners reviewed the health literature associated with transportation and urban development, and concluded the BeltLine could substantially affect health. The team included professionals from the Center for Quality Growth and Regional Development (CQGRD) at the Georgia Institute of Technology, the Centers for Disease Control and Prevention (CDC), planners from the city of Atlanta, faculty from the Rollins School of Public Health located at Emory University, and the Fulton County (GA) Department of Health and Wellness. Staff from CQGRD and the CDC taught workshops on conducting HIA and each organization endorsed the promotion of healthy built environments in organizational objectives and recognized HIA as a strategy for pursuing these objectives.

Step II: Scoping

Scoping entails identifying the possible positive and negative health consequences of a project and sets the boundaries for the HIA. Literature review was conducted across multiple health and planning research databases. Demographic and health data were obtained from the local metropolitan planning organization (MPO), state and county public health departments, county tax records, the U.S. Census Bureau, and from project planning doc-
The BeltLine Redevelopment Plan described the funding procedures, vision, and geographic boundaries of the project and was used to define the HIA study area shown in Figure 1. Additional guidance came from an advisory committee comprising national and international experts on public health, HIA, planning, and design.

The HIA evaluated stakeholder concerns through outreach events and a survey. The survey included 23 open- and closed-ended questions to gauge respondents’ opinions on their current state of health, their environment, and their perception of potential health effects of the BeltLine project. The survey was administered via website along with paper copies distributed through public meetings in the affected neighborhoods. A total of 446 online surveys and 43 paper surveys were completed and analyzed. Survey respondents indicated concerns about traffic congestion and increased density that were already identified for assessment, and about impacts on air quality that was therefore added to the scope of the HIA.

Step III: Assessment

Health data and evidence from the literature were used to prioritize assessment topics by magnitude of health impact, size of the affected population, and severity of outcome. Survey responses and coverage from local news sources were also used to prioritize additional assessment...
topics by degree of community concern. The assessment focused on access and social equity (regarding equitable access to parks, trails, transit, housing, and food); physical activity (as influenced by parks, trails, transit, and urban form); safety (both crime and unintentional injury); social capital; and environmental quality (air quality, water resources, noise, and brownfields). Access, crime, safety, air quality, and health risks associated with brownfields offered the opportunity to estimate risk more objectively.

Investigators conducted an extensive literature review on each assessment topic, relative to the correlation of environmental conditions and health status of the affected population, particularly vulnerable subgroups. Additional health data were obtained from National Vital Statistics records, prior research, the national Behavioral Risk Factor Surveillance System (BRFSS) and Web-based Injury Statistics Query and Reporting System (WISQARS), and the Online Analytical Statistical Information System (OASIS). Crude mortality rates and health characteristics were compared against city, county, state, and national rates, and among the five BeltLine planning subareas.

Large health disparities were detected in different sections of the study area, such as causes of death reported in Table 1. Substantial age, socioeconomic, and health disparities were observed between the two northern planning areas and the other three planning areas. Investigators used these data to develop and prioritize recommendations to reduce health disparities (e.g., more parks in the southwest quadrant).

For some topics, available evidence was not sufficient for quantitative risk assessment to calculate potential changes in the number of cases of disease or injury. Within the uncertainty parameters of the available evidence, investigators made projections including the likelihood for health impact, the anticipated nature of the impact—beneficial or harmful—and the likely magnitude of the impact, as well as which populations could be affected.

Step IV: Recommendations

Recommendations to mitigate harmful impacts or increase beneficial impacts were made based on assessment projections. Investigators calculated the number of people who could be exposed to certain protective or harmful environmental conditions: parks, trails, transit, air pollution, and brownfields. Key findings and associated recommendations are listed in Table 2.

Step V: Dissemination

In 2007, investigators produced a 232-page report, including 72 specific recommendations, a finding and recommendations matrix, and five appendixes, which detailed the entire HIA process and its recommendations. Findings were presented at public meetings, at official BeltLine operation and planning meetings, and to elected officials. Press releases were distributed. For wider dissemination, investigators published a short list of priority recommendations, based on potential impact, timeliness, and feasibility, to help decision makers and stakeholders understand the HIA and its findings (Table 2).

Step VI: Monitoring and Evaluation

Investigators have stayed in contact with decision makers to promote implementation of the HIA recommendations. The impact to date of the HIA priority recommendations on the BeltLine plan is shown in Table 2. Further evaluation will be needed to track future implementation of HIA recommendations and their impact on health over the Beltline’s 25-year implementation time frame and beyond.
**Table 1. Demographics for Atlanta BeltLine planning areas**

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Lowest among five planning areas</th>
<th>Highest among five planning areas</th>
<th>All five planning areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total population (n)</td>
<td>36,872 (Northside)</td>
<td>51,080 (SW)</td>
<td>213,920</td>
</tr>
<tr>
<td>Nonwhite (%)</td>
<td>22.2 (Northside)</td>
<td>96.1 (SW)</td>
<td>62.2</td>
</tr>
<tr>
<td>Below poverty level (%)</td>
<td>11.4 (Northside)</td>
<td>30.6 (SE)</td>
<td>22.9</td>
</tr>
<tr>
<td>Per capita income ($)</td>
<td>10,604 (Westside)</td>
<td>47,055 (Northside)</td>
<td>23,925</td>
</tr>
<tr>
<td><strong>Crude death rate due to:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heart disease</td>
<td>131.6 (NE)</td>
<td>236.5 (SW)</td>
<td>186.6</td>
</tr>
<tr>
<td>Malignant neoplasms</td>
<td>96.9 (NE)</td>
<td>183.9 (SE)</td>
<td>145.0</td>
</tr>
<tr>
<td>Cerebral-vascular disease</td>
<td>32.2 (NE)</td>
<td>58.7 (SW)</td>
<td>44.4</td>
</tr>
<tr>
<td>HIV</td>
<td>10.6 (Northside)</td>
<td>52.6 (SW)</td>
<td>43.5</td>
</tr>
<tr>
<td>Homicide</td>
<td>6.3 (NE)</td>
<td>32.3 (Westside)</td>
<td>21.7</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>11.0 (NE)</td>
<td>24.0 (Westside)</td>
<td>19.6</td>
</tr>
<tr>
<td>Influenza and pneumonia</td>
<td>1.4 (SE)</td>
<td>22.3 (Northside)</td>
<td>18.3</td>
</tr>
<tr>
<td>Motor vehicle accidents</td>
<td>6.5 (Northside)</td>
<td>15.7 (SE)</td>
<td>11.3</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau, 2000 Census, SF1 and SF3.

Note: OASIS, a standardized health data repository of the Georgia Department of Human Resources, Division of Public Health; HIA Team calculations.

Five planning areas are Northside, NE, SE, SW, and Westside as shown on map in Figure 1.

Per capita income was calculated using the following method: The total population for each block group was adjusted to reflect the percentage of the block group that was in the area. This adjusted population was then multiplied by the reported per capita income to get an aggregate income for that block group. All aggregate incomes for all block groups were then summed and divided by the total adjusted population for the area in question. This yields per capita income.

Mortality rates (per 100,000 population) were obtained for each year and then averaged to obtain a mean mortality rate for the 5-year period (2000–2004 data).

HIA, health impact assessment; SF1, Summary File 1; SF3, Summary File 3

---

**Results**

**Overarching Issues**

The HIA analysis suggests that design and management of the BeltLine project would substantially influence its ability to promote better health. Recommendations included prioritizing human health outcomes in planning and implementation decisions and meaningful stakeholder involvement. This included project timing, phasing, and scale. For example, new housing development could outpace public investment in parks and transit, reducing park access or transportation choices. The HIA recommended integrating the BeltLine project into the regional planning framework to facilitate greater usage, coordinate with other initiatives, and enhance safety. The HIA recommended that, as corridor and site designs were developed, they should focus on the needs and comfort of users through multimodal transportation facilities and human-scale land use. HIA recommendations are generally based on use of best available evidence and on the professional judgment of the investigators.

A large body of literature supports the idea that community design and the built environment affect health.7 The key message is “health at the table”—having health input into decisions being made on major projects and policies outside of the health sector that affect health. Although health will not be the only factor in decisions, it should be one of the factors considered. Stakeholder involvement is also important—it allows input on issues of concern to those affected and can help increase community buy-in to a project. HIA is one of the most important tools for identifying social equity/environmental justice issues in proposed projects and policies outside of the health sector.

Social equity relates to a range of health issues such as physical activity access, injury, air pollution, and social capital. The data appearing below under social equity relate to these other health issues and are not repeated in those sections. The subsection headings in this paper were selected to match the headings in the full HIA report and to give readers a structure that may be helpful for HIAs of other large land-use projects.

**Access and Social Equity**

The literature suggests older adults, people of color, and low-income people experience adverse health effects
Table 2. Atlanta BeltLine health impact assessment: key findings, recommendations, and subsequent impacts

<table>
<thead>
<tr>
<th>Findings</th>
<th>Recommendations</th>
<th>Project impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>BeltLine will promote good health, especially physical activity, social</td>
<td>Project should go forward and be fast-tracked to realize health benefits for</td>
<td>Project has been delayed by instability in financial markets and the economy. Atlanta’s mayor has committed to completing the project in as little as 10 years. As of mid-2011, the first 22 acres of parkland and 5.5 miles of multi-use trails were open for public use, and additional parks and trails are under construction.</td>
</tr>
<tr>
<td>capital, equity, and safety</td>
<td>current city residents in &lt;25 years</td>
<td></td>
</tr>
<tr>
<td>Representation of the public health profession on key decision-making</td>
<td>Appoint public health professionals, such as officials from the public health</td>
<td>The Tax Allocation District citizen advisory committee added a public health professional to their committee, and named her chairperson of the Environment Task Force committee which provides oversight on the federal EIS. Atlanta BeltLine Inc. has named an individual holding a Master of Public Health to their board of directors.</td>
</tr>
<tr>
<td>boards can ensure that health concerns are considered throughout the</td>
<td>to the BeltLine decision-making boards</td>
<td></td>
</tr>
<tr>
<td>the project phases.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project implementation should take into account health impacts.</td>
<td>Make health protection and promotion an explicit goal in BeltLine funding</td>
<td>Health will be one of a set of metrics by which project proposals will be evaluated, and will be codified in a Decision Support Tool that will guide all implementation and funding decisions. Following the HIA, the EPA awarded $1 million to the BeltLine to clean up brownfields. In announcing the award, EPA cited the BeltLine HIA and its finding that “brownfields redevelopment can help reduce urban sprawl and lead to healthier communities by creating more greenspace and walkable areas”.</td>
</tr>
<tr>
<td>Development review process should focus on broadly distributed benefits</td>
<td>Enhance the process to explicitly include health considerations, especially</td>
<td>Health and the recommendations of the BeltLine HIA are being used in the alternative analysis phase of the federal EIS and in the Georgia EIR.</td>
</tr>
<tr>
<td>throughout the BeltLine population</td>
<td>those related to physical activity, social capital, and safety</td>
<td></td>
</tr>
<tr>
<td>Many city departments will need to work together to ensure that the</td>
<td>Establish shared, health-promoting performance measures (e.g., Active Living</td>
<td>The HIA study members convinced city leadership, including the mayor, to endorse and support “healthy built environments.” The city has not formalized or institutionalized broad health performance measures.</td>
</tr>
<tr>
<td>components of the BeltLine complement each other.</td>
<td>Goals) across city departments</td>
<td></td>
</tr>
<tr>
<td>Increased availability of affordable housing yields health benefits</td>
<td>Ensure affordable and healthy housing is provided throughout the BeltLine</td>
<td>Evidence from the HIA in support of programs that ensure affordable housing and reduce displacement has been utilized to develop an affordable housing policy for the BeltLine.</td>
</tr>
<tr>
<td>including social equity.</td>
<td>project area and establish programs and partnerships to address residential</td>
<td></td>
</tr>
<tr>
<td>Increased access to parks yields health benefits including physical</td>
<td>Add more park acres and create better connected and more-accessible parks,</td>
<td>Influenced decision makers to make greenspace the first construction activity on the BeltLine.</td>
</tr>
<tr>
<td>activity, social capital, and equity</td>
<td>especially in the southwest planning area</td>
<td></td>
</tr>
<tr>
<td>Increased access to transit yields health benefits including physical</td>
<td>Develop an integrated transit system connecting the BeltLine to other services</td>
<td>Connectivity with other transportation services and facilities has been added to evaluation criteria in the federal EIS and Georgia EIR.</td>
</tr>
<tr>
<td>activity, social capital, and equity</td>
<td>to make it an effective part of a regional transit system</td>
<td></td>
</tr>
<tr>
<td>Increased connectivity between BeltLine and destinations yields health</td>
<td>Create linkages between the BeltLine and existing civic spaces, such as</td>
<td>Connection to amenities and civic sites has been added to evaluation criteria in the federal EIS and Georgia EIR.</td>
</tr>
<tr>
<td>benefits including physical activity and social equity.</td>
<td>schools, libraries, hospitals, and other public buildings</td>
<td></td>
</tr>
<tr>
<td>Health education can support use of health-promoting components of the</td>
<td>Make health a component of BeltLine public education and outreach</td>
<td>The HIA report was adopted by members of the community as a reference document for needs assessment. Health education is not a major component of current outreach.</td>
</tr>
<tr>
<td>BeltLine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The BeltLine can serve as a national model of how the built environment</td>
<td>Conduct ongoing evaluation of levels of physical activity attributed to the</td>
<td>New research is underway to evaluate the impact of a 2.5 mile trail segment.</td>
</tr>
<tr>
<td>and local policies can improve public health.</td>
<td>BeltLine to monitor and evaluate the effectiveness of infrastructure investment and to further the field of environmental determinants of physical activity.</td>
<td></td>
</tr>
</tbody>
</table>

EIR, environmental impact report; EIS, environmental impact statement; EPA, Environmental Protection Agency; HIA, health impact assessment
from their reduced access to food markets and nutritious food, quality housing, transportation, and parks and trails. The study team appraised changes in equitable access to these features that support health. Access analysis was conducted using a GIS. Population data from the 2000 U.S. Census at census tract level and population forecasts from Atlanta’s MPO were used. Previous studies suggest a 0.5-mile radius from a facility, such as a park, best corresponded with higher levels of access to the facility, even though the local street network influences actual travel distance and safety.

For access to parks, the analysis used GIS data files to define existing and proposed parkland. Investigators calculated the number and percentage of residents who had access to parks now and in 2030, based on forecasts, and their composition by age, race, income, poverty or carless status, and planning subarea. About 26,000 people, or 13%, in the BeltLine study area did not have access to a park prior to the BeltLine project. The analysis showed that park access would increase for study area residents and for the City of Atlanta.

The same analysis was conducted for access to trails and to transit, using the proposed trail route and transit stations in the BeltLine Redevelopment Plan. These analyses indicated that nonwhite individuals, children, and those in poverty would have slightly less access. Average income was slightly higher for those with access to trails and to transit. The Southwest planning subarea had very low access levels, even taking its larger geographic extent into account.

Population health may be negatively affected by poorly maintained housing, overcrowded living conditions, or insufficient affordable housing supply relative to household income. Using GIS, the investigators identified higher-risk census tracts in the BeltLine study area based on average household income, home ownership rates, and average household size. Because access to grocery stores is associated with a healthier diet, the investigators evaluated the location of full-service chain grocery stores and found that 8% of the study area population did not have a grocery store within 2 miles. Grocery stores were more likely to be located near white and higher-income residents with access to a car. Only 53% of the study area was in walking (0.25-mile) or bicycling (0.8-mile) distance from a grocery store and nonwhite households were under-represented in this group. Based on these analyses, recommendations emphasized making parks and trails more prevalent, connected, and conducive to pedestrian access, especially in underserved areas; locating housing and businesses near trails and transit; creating programs to support affordable housing and prevent displacement; and ensuring equitable distribution of development and transportation facilities.

Physical Activity
Other research has shown that aspects of community design and the transportation environment correlate significantly with physical activity, as does the perception of safety in using an area for recreational or active transportation purposes. The literature is insufficient to make quantitative projections about physical activity from the BeltLine plans available. The HIA recommended that the BeltLine should increase physical activity by prioritizing pedestrian access to transit; incorporating universal design principles to enable and encourage the elderly, people with disabilities, and children to use the facilities; and providing a variety of recreational facilities.

The literature, including the Guide to Community Preventive Services, is fully supportive for making qualitative projections about physical activity (e.g., build trails and people will use them). But there is very little literature on which to base quantitative projections of future trail use, especially in a setting such as the Beltline where the demographics of the people who will move into the area after the Beltline project is built remains uncertain. For any trail, actual usage is a function of such features as distance, availability of desirable destinations, attractiveness, perception of safety, local demographics, and alternative places for walking, all of which remain largely unquantifiable for the proposed Beltline trails.

Safety
Unintentional injury, such as from traffic collisions or falls, and intentional injury related to crime can be correlated with environmental characteristics such as transportation mode and design, site design, and land use. Fear of injury can discourage usage of an otherwise health-promoting environmental feature. The HIA recommended appropriate designs for pedestrian and bicycle facilities to reduce the risk of crashes; safe design and maintenance for transit infrastructure; providing lighting and emergency call boxes to increase perceived safety of the facilities; and use of crime prevention through environmental design principles.

Social Capital
Social capital can be defined as the collective value of a network—social, political, and economic—whose purpose is to inspire trust in and provide support for other members of that community. Individuals with low social capital may be at increased risk for poor physical and mental health. Redevelopment projects may affect social capital by creating new settings for social interac-
tion or by disrupting existing neighborhoods. In response to redevelopment proposals in BeltLine plans, the HIA encouraged public participation in planning activities; public spaces that promote socialization; and strategies to prevent displacement of current residents and businesses.

Environment

By affecting transportation and land use patterns and generating construction projects, the BeltLine proposal could affect exposures to air and water pollution, noise, and contaminated soil. Chronic personal exposure to localized and ambient air pollution is linked to disease, and reduced exposures improve health outcomes. Investigators mapped potential sources of air pollution—high-volume road corridors (more than 100,000 vehicles per day) and two freight rail yards—and identified existing residential units located within 200 meters of them. They used projections from state and MPO agencies and BeltLine documents to forecast 2030 ambient air pollution levels and the number of housing units in local air pollution hotspots. This analysis indicated that the BeltLine could reduce air pollution emissions and exposure to near-source pollutants by offsetting motor vehicle travel, but some new buildings could be vulnerable to locally elevated air pollution levels. The HIA recommended monitoring pollution levels at suspected hotspots and relocating or mitigating effects on proposed developments there. The HIA did not explicitly address trade-offs between increased exposure to air pollution versus increased access.

By mapping areas likely to contain brownfields, investigators documented that nonwhite people were over-represented in households living within 500 feet of a brownfield. Investigators proposed that the BeltLine had the potential to improve health by remediating and redeveloping brownfields. They also recommended mitigating noise and storm water runoff from BeltLine property. The federally mandated EIA for the BeltLine project contains a more extensive analysis of environmental contaminants.

Impacts of the Recommendations

The BeltLine decision makers have acted on most of the key recommendations from the HIA (Table 2). Awareness of the BeltLine HIA is extensive among individuals involved with the BeltLine. Having a report summary improved comprehension by decision makers and helped empower community members. Decision makers were receptive to recommendations that might increase the BeltLine’s benefit to Atlanta residents. Because of the BeltLine’s extended planning and construction timeline, changes in health outcomes will not be measurable for some time. By providing baseline data and potentially testable predictions for changes in health status or determinants (e.g., that the BeltLine will increase physical activity), this HIA enables future research. Additional resources are needed to survey awareness and attitudes of decision makers about the HIA, examine confounding political and economic trends, and measure changes in health status, morbidity, and mortality in the BeltLine study area.

Discussion

The BeltLine HIA case study demonstrated application of HIA methodology and of quantitative and descriptive assessment methods to a major urban redevelopment and transportation plan. Project impact to date—adoption of key recommendations—suggests HIA can promote healthy public policy in the U.S. However, further research is needed to evaluate its impact on health and to refine HIA practice and methodology. A primary challenge is conducting HIAs in time to influence policy and health outcomes of development given the lack of predictability of scheduling and resources in planning.

Lessons Learned

Successful components of the HIA included timing, which allowed adequate time for a full, prospective HIA to be conducted. Sufficient time and resources were available to address unanticipated stakeholder concerns. Good collaboration between HIA investigators and the decision makers helped bring attention to the HIA’s recommendations. HIA process and outcome evaluation could help establish effective practices in the U.S. A formal communications plan could increase publicity and ensure that decision makers and the public are aware of HIA findings and recommendations.

The evidence regarding health determinants and their mechanisms needs further development to support more accurate and quantitative assessment. Standard practices are needed for evidence-based decision-making when scientific consensus is lacking. For many recommendations, there is an inadequate basis to provide costs, which is a factor in many policy decisions. As noted above, HIA recommendations are generally based on use of best available evidence and professional judgment of the investigators, rather than randomized controlled trials that are rarely feasible. Priority HIA research needs to include further documentation of the impact of HIA recommendations on subsequent decisions as is done here and to identify characteristics of successful HIAs, such as timeliness and buy-in from decision makers.

Further work should be done on quantitative modeling that could help support cost–benefit analyses, although
such analyses (e.g., the increase in physical activity to be expected from building a 5-mile trail) are likely to provide wide ranges of estimates. Additional detailed case studies of successful HIAs would help make HIAs more effective and convincing for decision makers. In addition, public health research that provides stronger evidence about environmental support for physical activity would help strengthen HIAs.

Future HIA projects should consider that the staff time to complete an HIA of this scope exceeded initial expectations. Participation rates of lower-income individuals, people of color, and the elderly in surveys and in public meetings were low. As a result, these vulnerable groups were under-represented in the stakeholder input, even though they are often at greater risk for negative health impacts. It was not possible to identify people who may move from other places into the affected areas in future years, so their input could not be sought. Because of resource and logistic constraints, the HIA advisory committee of national and international experts was underutilized in this project.

Conclusion

Health impact assessment can foster interdisciplinary working relationships and offer elected officials, planners, developers, designers, and communities the capacity to discuss the health implications of major public projects. In any project, the actual implementation may be a compromise among political, legal, and financial considerations. An HIA can help ensure that the final plan promotes health and prevents disease to the greatest extent possible.

This work was supported by a grant from the Robert Wood Johnson Foundation to the Georgia Institute of Technology Center for Quality Growth and Regional Development. The authors appreciate the assistance received in preparing the BeltLine HIA report from Saskia Benjamin, Jessica Harbour Doyle, Mine Hashas, and Dave Pierce from the Georgia Institute of Technology, Center for Quality Growth and Regional Development; Susan Hobson, Mary E. O’Neil, Bianca R. Perri, Candace Rutt, Sheryl Lyss, and April Vance from the CDC; and the Fulton County (GA) Department of Health and Wellness.

No financial disclosures were reported by the authors of this paper.

References


68. Houston D, Wu J, Ong P, Winer A. Down to the meter: localized
vehicle pollution matters. Los Angeles: University of California Trans-
portation Center. www.environment.ucla.edu/media/files/Houston-
69. Watson JG, Chow JC. Reconciling urban fugitive dust emissions inven-
tory and ambient source contribution estimates: summary of current
knowledge and needed research. Proceedings from Workshop: Las
70. Federal Transit Administration. Transit noise and vibration impact assess-
71. Solitaire L, Greenberg M. Is the U.S. Environmental Protection Agency
Brownfields Assessment Pilot Program environmentally just? Environ
Health Persp 2002;110(S2):249–57.
72. Atlanta Beltline Environmental Impact Assessment. beltline.org/
BeltLineBasics/TransitTrailsandTransportation/EnvironmentalImpactStudy
73. Harris-Roxas B, Harris P. Learning by doing: the value of case studies of
health impact assessment. NSW Public Health Bull 2007;18(9–10):
161–3.
74. Lhachimi SK, Nusselder WJ, Boshuizen HC, Mackenbach JP. Standard
75. Glasson J, Therivel R, Chadwick A. Introduction to environmental
76. Ross C, Leigh N. Planning, urban revitalization and the inner city: an
exploration of structural racism. In Birch EL, ed. The urban and re-
77. Ross CL. Human health burden of transportation. In Critical issues in
transportation. Washington DC: Transportation Research Board the

Did you know?
The latest AJPM news is available online.
Visit www.ajpmonline.org to see the “News from
AJPM” section on the homepage.

March 2012