EPA Tools and Resources Webinar: Health Impact Assessment: Linking Community Decisions to Public Health

August 17, 2016

Florence Fulk, EPA Office of Research and Development
ORD is the research arm of the EPA, providing scientific methods and technology to safeguard human and environmental health.

Six plans to guide ORD research:

- Human Health Risk Assessment
- Homeland Security
- Air, Climate and Energy
- Safe and Sustainable Water Resources
- Chemical Safety for Sustainability
- Sustainable and Healthy Communities
Communities make decisions everyday that affect the environment, public health and well being. For some decisions, the environmental, health and well-being impacts, both positive and negative, are not understood and rarely evaluated from a systems or holistic perspective.
Health Impact Assessment

HIA is a process that uses

*scientific data, health expertise and public input*

to factor public health considerations into the decision-making process

• HIAs can give decision makers the information they need to consider public health in pending plans, policies or projects, such as:

  – Mass transit and highway and bridge design
  – Housing and energy assistance programs
  – Comprehensive planning and growth policies
  – Energy programs and natural resource management, including fossil fuel exploration and development, renewable energy and water management policies

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Health Impact Assessment

• Both a health protection and health promotion tool

  – *Health Hazards*  
    • Exposures to pollutants  
    • Air, water, soil

  – *Health Benefits*  
    • Access to green space; walkability  
    • Local job market
What is HIA?

In a nutshell, HIAs:
Evaluate how a proposed policy, plan, program, or project...

...may affect...

- Social, Economic & Political Factors
- Living & Working Conditions
- Public Services & Infrastructure
- Individual Behaviors
- Individual Factors
- Health

...and provide recommendations for impact management.

...and lead to health outcomes...
HIAs in the U.S. mid-2015
Completed and In Progress HIAs (N=354+)

Map created through a partnership between Health Impact Project and the Centers for Disease Control and Prevention’s Healthy Community Design Initiative
Context of HIA

Who is Performing HIAs in the U.S.?

- Educational Institutions: 22%
- Non-Profit Organizations: 26%
- Government Agencies: 49%
- Other: 3%

Slide Content Courtesy of J. Dills, Georgia Health Policy Center
Context of HIA

Levels of Decision-Making Informed by HIAs in the U.S.
Context of HIA

Broad Applicability/Flexibility
HIA has been promoted throughout the world as a tool for protecting and promoting public health because of its applicability in a broad range of decision-making contexts.

Source: Health Impact Project. Data Visualization: HIA in the United States; accessed 7/17/2015

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Other includes: Community Development, Criminal Justice, Economic Policy, Gambling, Physical Activity, and Water
## Steps in the HIA Process

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screening</td>
<td>Determines the need and value of a HIA</td>
</tr>
<tr>
<td>Scoping</td>
<td>Determines which health impacts to evaluate, methods for analysis, and a work plan</td>
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</tbody>
</table>
| Assessment                | Provides  
1) A profile of existing health conditions  
2) Evaluation of potential health impacts |
| Recommendations           | Provide strategies to manage identified adverse health impacts               |
| Reporting                 | Includes  
1) Development of the HIA report  
2) Communication of findings & recommendations |
| Monitoring and Evaluation | Tracks  
1) Impacts on decision-making processes and the decision  
2) Impacts of the decision on health determinants |
HIA Current Areas of Focus in SHC

- **Strengthen the overall rigor of HIA practice**
  - Provide science based tools, data, models and approaches for use in HIA practice
  - Identify and develop HIA best practices
  - Demonstrate new HIA assessment approaches through case studies

- **Advance the use of HIA at higher decision-making levels**
  - Support consideration of HIA and elements of HIA within National Environmental Policy Act’s (NEPA) Environmental Impact Assessments (EIA) and Environmental Impact Statements (EIS).
A Review of HIAs in the U.S.

- Reviewed 81 HIAs; 4 involving federal decisions
- Focused on four sectors
  - Transportation
  - Housing/buildings/infrastructure
  - Land use
  - Waste management/site revitalization
- Identified state of the HIA practice in U.S.
  - Areas for improvement
  - Best practices in HIA
HIA Resource and Tool Compilation

- Comprehensive list of resources and tools for HIA practitioners of all levels
  - Identified through workshops, reviews of HIAs, inventory of EPA tools, databases and resources, general online search
- Organized into primary categories and subcategories for ease of use
- Includes case examples for using the compilation
- Available online – projected release September 2016

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Advance the Use of HIA at Higher Decision-making Levels

- National Environmental Policy Act

- Memorandum between EPA’s Office of Federal Activities Director and SHC National Program Director to consider the use of HIA as part of EPA’s NEPA/Section 309 reviews

- Three areas of focus:
  - *Develop screening and scoping tools* for use by Regional NEPA/Section 309 reviewers to identify proposals that would benefit from an HIA or HIA elements
  - *Develop web-based training* to educate Regional NEPA/Section 309 reviewers on HIA, the HIA process, and the role HIA can play in the NEPA process
  - *Partner with a federal agency* (or agencies) to conduct a pilot project integrating HIA into an environmental impact statement and/or assessment
HIA of Proctor Creek Boone Boulevard Green Street Project

Decision: Implementation of a green infrastructure project along Joseph E. Boone Boulevard, NW (in concert with road diet project)

Decision-Makers: City of Atlanta, Georgia

Role of HIA: Evaluate potential positive and negative health impacts of the green street project design and inform stakeholder decisions

HIA Lead: Region 4 – Office of Environmental Justice Office of Research and Development

HIA Partners:

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HIA of Proctor Creek Boone Boulevard Green Street Project

Issues Facing the Community:

- Pervasive flooding
- Impaired water quality
- Poverty
- Derelict properties
- Aging infrastructure

Potential Solution:

Boone Boulevard Green Street Project

Planter box
Bioretention cell
Permeable pavement

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What is Green Infrastructure?

• A non-traditional approach

• Purpose: To maintain healthy waters, protect the environment, promote health, and support sustainability

• Uses natural processes:
  - Vegetation
  - Soil Filtration
  - Shading
  - Water Conservation
  - Carbon Sequestration
  - Stormwater Management

Planter Boxes

Urban Tree Canopy

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Setting the Scope of the HIA

• Community Group and the Advisory Committee identified issues of interest and areas of concern in the community.

• Community Group and Advisory Committee voted on which categories the HIA should focus the assessment.

• The results of this exercise set the scope (i.e., assessment plan) of the HIA.
Setting the Scope of the HIA

Community Priorities

Advisory Group Priorities
# Health Determinants and Health Outcomes

<table>
<thead>
<tr>
<th>Sustainability</th>
<th>Health Determinant</th>
<th>Health Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment</td>
<td>• Water Quality</td>
<td>• Respiratory Disease (e.g., asthma, allergies, lung cancer)</td>
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<tr>
<td></td>
<td>• Flood Management (Exposure to Injury, Housing Quality, and Vector Control)</td>
<td>• Heat-related Illness</td>
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<tr>
<td></td>
<td>• Climate and Temperature (Exposure to Extreme Heat Events)</td>
<td>• High-Blood Pressure (i.e., hypertension)</td>
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<td></td>
<td>• Air Quality</td>
<td>• Cardiovascular Disease</td>
</tr>
<tr>
<td></td>
<td>• Traffic Safety</td>
<td>• Cancer</td>
</tr>
<tr>
<td></td>
<td>• Exposure to Urban Noise</td>
<td>• Water-borne Disease</td>
</tr>
<tr>
<td></td>
<td>• Exposure to Greenness</td>
<td>• Vector-borne Disease (e.g., West Nile Virus)</td>
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<tr>
<td></td>
<td></td>
<td>• Overweight/Obesity</td>
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<tr>
<td></td>
<td></td>
<td>• Hearing (noise-induced hearing threshold shifts)</td>
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<tr>
<td></td>
<td></td>
<td>• Motor-Vehicle-related Injury</td>
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<td></td>
<td></td>
<td>• Crime-related Injury</td>
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<tr>
<td></td>
<td></td>
<td>• Mental and/or Behavioral Disorders (e.g., anxiety, depression)</td>
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<td></td>
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<td>• Stress (acute and chronic)</td>
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<td></td>
<td></td>
<td>• Perceived Overall Health and Wellness</td>
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<tr>
<td></td>
<td></td>
<td>• Morbidity/Mortality Risk</td>
</tr>
<tr>
<td>Society</td>
<td>• Access to Goods, Services, Greenspace, and Healthcare (Active Transport)</td>
<td></td>
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<tr>
<td></td>
<td>• Crime</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Social Capital</td>
<td></td>
</tr>
<tr>
<td>Economy</td>
<td>• Cost of Living</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Employment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Business Performance</td>
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Assessment Step: The Basics

Based on outputs from Scoping, gather data and evidence to:

- **Profile** the current conditions in the study area
- **Verify** the pathways between the decision, health determinants and health outcomes
- **Characterize** the potential impact of the decision on health determinants and health outcomes
  - Quantitative or qualitative
# How does stormwater runoff impact health?

<table>
<thead>
<tr>
<th>Health Indicators Evaluated</th>
<th>Pathways Found</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure to Injury from Flooding</td>
<td>Flooding can lead to injury through slips / falls or floating debris.</td>
</tr>
<tr>
<td>Exposure to Vector-borne Disease</td>
<td>Pooling runoff promotes a reproductive habitat for disease carrying insects (mosquitoes with WNV).</td>
</tr>
<tr>
<td>Exposure to Waterborne Disease</td>
<td>Stormwater runoff can affect exposure through the transmission of pollution and pathogens in surface water.</td>
</tr>
<tr>
<td>Exposure to stress from loss / damage of property and self</td>
<td>Damage to the home, land, or self can lead to increased stress from lowered perceived safety and security, which can lead to other health outcomes (anxiety, high blood pressure, etc).</td>
</tr>
</tbody>
</table>
Where does flooding occur in the study area?
How impermeable is the surface in the study area?
Do the areas in the community more prone to flooding, also have more derelict and abandoned properties?
## Will the Green Street Project Impact Health?

<table>
<thead>
<tr>
<th>Health Determinant</th>
<th>Likelihood</th>
<th>Direction</th>
<th>Magnitude</th>
<th>Permanence</th>
<th>Distribution</th>
<th>Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Quality</td>
<td>Highly Likely</td>
<td>Positive</td>
<td>Low</td>
<td>Quickly and Easily Reversed</td>
<td>Vulnerable Populations Benefit</td>
<td>Limited</td>
</tr>
<tr>
<td>Flood Management</td>
<td>Highly Likely</td>
<td>Positive</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Vulnerable Populations Benefit</td>
<td>Limited</td>
</tr>
<tr>
<td>Climate and Temperature</td>
<td>Highly Likely</td>
<td>Positive</td>
<td>Moderate</td>
<td>Long Lasting</td>
<td>Vulnerable Populations Benefit</td>
<td>Strong</td>
</tr>
<tr>
<td>Air Quality</td>
<td>Highly Likely</td>
<td>Positive</td>
<td>Moderate</td>
<td>Long Lasting</td>
<td>Vulnerable Populations Benefit</td>
<td>Limited</td>
</tr>
<tr>
<td>Traffic Safety</td>
<td>Highly Likely</td>
<td>Positive</td>
<td>High</td>
<td>Long Lasting</td>
<td>Vulnerable Populations Benefit</td>
<td>Limited</td>
</tr>
<tr>
<td>Exposure to Greenness</td>
<td>Highly Likely</td>
<td>Positive</td>
<td>Moderate</td>
<td>Long Lasting</td>
<td>Vulnerable Populations Benefit</td>
<td>Limited</td>
</tr>
<tr>
<td>Exposure to Urban Noise</td>
<td>Plausible</td>
<td>Positive</td>
<td>Moderate</td>
<td>Long Lasting</td>
<td>Vulnerable Populations Benefit</td>
<td>Strong</td>
</tr>
<tr>
<td>Access to Goods and Services, Greenspace, and Healthcare</td>
<td>Highly Likely</td>
<td>Positive</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Vulnerable Populations Benefit</td>
<td>Strong</td>
</tr>
<tr>
<td>Crime</td>
<td>Plausible</td>
<td>Positive</td>
<td>Moderate</td>
<td>Quickly and Easily Reversed</td>
<td>Vulnerable Populations Benefit</td>
<td>Limited</td>
</tr>
<tr>
<td>Social Capital</td>
<td>Plausible</td>
<td>Positive</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Vulnerable Populations Benefit</td>
<td>Limited</td>
</tr>
<tr>
<td>Household Economics</td>
<td>Plausible</td>
<td>Both Positive and Negative</td>
<td>Moderate</td>
<td>Quickly and Easily Reversed</td>
<td>Both Benefits and Harms for Vulnerable Populations</td>
<td>Limited</td>
</tr>
<tr>
<td>Community Economics</td>
<td>Plausible</td>
<td>Positive</td>
<td>Moderate</td>
<td>Quickly and Easily Reversed</td>
<td>Vulnerable Populations Benefit</td>
<td>Limited</td>
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</table>
Example Recommendations for Climate and Temperature

• **Before construction:**
  - Select native tree species that have tall, broad canopies that could increase the shading of surface area (especially over impervious surfaces).

• **During construction:**
  - Place trees with larger canopies near bus stops or other areas where people may congregate.

• **After construction:**
  - No recommendations identified for this phase.
HIA: Benefits and Outcomes for Proctor Creek

- Demonstration project to address flooding and stormwater issues in the Proctor Creek Watershed
- Extensive stakeholder and community engagement
- Assessed health determinants in environmental, social and economic sectors
- Recommendations were prioritized by pre-construction, during construction, post-construction and long term phases
- New Local, State, Federal, and Community partnerships were developed
- Met with City of Atlanta to deliver final peer-reviewed HIA
- *City decided to double the length of the green street*
Co-Leads for BBGS HIA

• Tami Thomas-Burton – US EPA Region 4
• David Egetter – US EPA Region 4
• Lauren Adkins – Pegasus
HIA Process

HIA Guidance Documents

A number of guides and handbooks have been developed to inform and direct the HIA practice in the U.S. Two of those are highlighted below

- Available at: http://www.nap.edu/openbook.php?record_id=13229&page=1