

November 2015

# HOW TO GUIDE: HEALTH ASSESSMENT TOOL 2

## HEALTH OPPORTUNITIES CHECKLIST (HOC) FOR SITES, NEIGHBORHOODS, AND TOWNS



Photo by Ann Forsyth

Version 1.3

The HEALTH AND PLACES INITIATIVE (HAPI) investigates how to create healthier cities in the future, with a specific emphasis on China. Bringing together experts from the Harvard Graduate School of Design (HGSD) and the Harvard School of Public Health (HSPH), it creates a forum for understanding the multiple issues that face cities in light of rapid urbanization and an aging population worldwide.

Health and Places Initiative  
<http://research.gsd.harvard.edu/hapi/>  
Harvard Graduate School of Design

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Thanks to Weishun Xu and Wei Li, and thanks to Patrick Harris and Anna Ricklin for their helpful comments.

## CONTENTS

|   |           |
|---|-----------|
| <b>Instructions.....</b>                              | <b>4</b>  |
| Tool Format and Organization.....                     | 6         |
| Filling in the Checklist.....                         | 7         |
| <b>Part 1. Basic Data.....</b>                        | <b>8</b>  |
| Part 1A. For a Plan or Proposal                       |           |
| Part 1B. For an Existing Place                        |           |
| <b>Part 2. General Questions.....</b>                 | <b>10</b> |
| Part 2A. For a Plan or Proposal                       |           |
| Part 2B. For an Existing Place                        |           |
| <b>Part 3. General Layout and Site.....</b>           | <b>11</b> |
| <b>Part 4. Law, Policies, and Activities.....</b>     | <b>15</b> |
| <b>Part 5. Public Spaces.....</b>                     | <b>18</b> |
| <b>Part 6. Transportation.....</b>                    | <b>21</b> |
| <b>Part 7. Water Systems.....</b>                     | <b>23</b> |
| <b>Part 8. Building Scale.....</b>                    | <b>24</b> |
| <b>Part 9. City, Regional, or National Scale.....</b> | <b>27</b> |
| <b>References.....</b>                                | <b>30</b> |

# INSTRUCTIONS

## USING THIS GUIDE

According to the classic Gothenburg Consensus Paper, Health Impact Assessments (HIA) are a “combination of procedures, methods, and tools by which a policy, program, or project may be judged as to its potential effects on the health of a population” (European Centre for Health Policy, 1999). We use the broader term health assessment (HA) for this tool, to indicate that it can be used in a variety of situations including evaluating existing places, not only proposed policies, programs, or projects.<sup>1</sup>

To help planners and public health officials assess the health of a potential project or existing neighborhood, the Health and Places Initiative (HAPI) has designed three interconnected tools: a screening tool, a checklist, and a workshop format.

This guide explains how to complete Tool 2: Health Opportunity Checklist (HOC) for sites, neighborhoods, and towns. It requires a moderate level of knowledge of (a) the place or proposal, (b) urban planning tools and concepts, (c) public health tools and concepts, and (d) the intersections between health and the built environment. However, for those missing one or more of these areas, this How to Guide provides instructions.

The Health Opportunity Checklist (HOC) is the second step in a suite of tools that caters to different stages of the planning and design process. It is a detailed checklist for reviewing draft plans and proposals as well as existing neighborhoods. HOC covers various aspects of the built environment that relates to health.

The first and third tools include:

**SSHIP:** Screening Survey of Health in Place (SSHIP). This is an initial screening checklist.

**HAPI Health Assessment Workshop:** The HAPI Health Assessment Workshops a community exercise, involving relevant stakeholders, where health impacts beyond those found in SSHIP or HOC may be identified. This tool is more involved than SSHIP or HOC, which can essentially be done by an individual with relevant information.

In summary:

|  | Health Assessment Type | Planning and Design Stage          | Data and Analysis Needs                                     | Time   |
|--|------------------------|------------------------------------|---|--------|
| <b>Tool 1: SSHIP</b>                           | Screening and scoping  | Review draft plan or existing area | Proposal data, data on existing area                        | Short  |
| <b>Tool 2: HOC</b>                             | Desktop                | Review draft plan                  | Proposal data, data on existing area                        | Medium |
| <b>Tool 3: HAPI Health Assessment Workshop</b> | Workshop               | Review draft plan or existing area | Proposal data, information about health context, interviews | Medium |

The most recent versions of these three health assessment tools—SSHIP, HOC, and HAPI Health Assessment Workshop—are available at: <http://research.gsd.harvard.edu/hapi/research/tools/health-impact-assessment-tools/>.

<sup>1</sup> For more information on Health Assessments or Health Impact Assessments, a detailed course is available at <http://advance.captus.com/planning/hia2/toc.aspx>.

## RESEARCH BRIEFS

In addition to these tools, a set of background research briefs are also available that can provide additional context for the survey questions: <http://research.gsd.harvard.edu/hapi/research/research-briefs/>.

In the HOC tables, there is a column titled HAPI Research Brief Topic, indicates which topical research briefs provide additional context to the survey questions. The purpose of this column is to highlight the multiple connections between health and place, how many of these topics intersect with one another, and illustrate how one aspect of a proposal, plan or place may influence or benefit other areas of health. Research Brief topics include:

### Built Environment Qualities/Exposures

1. Air quality
2. Disasters
3. Noise
4. Toxics
5. Water quality
6. Climate change
7. Housing

### Connections

8. Access to community resources
9. Geographical access to healthcare
10. Social capital
11. Mobility and universal design

### Health-related Behaviors and Outcomes

12. Physical activity
13. Mental health
14. Food options
15. Safety (accidents, crime)

### General

16. Physiology and psychology of aging
17. Chinese demographics
18. Global household changes

## TOOL FORMAT AND ORGANIZATION

The Health Opportunities Checklist (HOC) is a diagnostic tool intended to help users systematically reflect on where to make changes to a proposal or a place. It is particularly intended for work at the scale of the block, neighborhood, and town and within the domains of planning and urban design. It is designed, however, to be used by people without any particular training in planning, design, or health.

The checklist is organized in sections via domains of planning:

**PART 1 - BASIC DATA:** covers the necessary data to conduct a health assessment

**PART 2 - GENERAL QUESTIONS:** cover connections between the place or plan and health content, implementation plans, or health related organizations.

**PART 3 - GENERAL SITE LAYOUT:** questions address urban form, infrastructure, access, and buffers.

**PART 4 - LAW, POLICIES, AND ACTIVITIES:** questions include topics such as pollution, disasters and climate, social issues, behaviors, and food policy.

**PART 5 - PUBLIC SPACES:** questions relate to vegetation, connectedness, and access.

**PART 6 - TRANSPORTATION:** questions address connectivity, access to community resources, multimodal options, and traffic safety.

**PART 7 - WATER SYSTEMS:** questions relate to infrastructure, sanitation, preventing contamination, protection plans, monitoring, and clean up.

**PART 8 - BUILDING SCALE:** questions cover elements at the building-scale, such as technologies, set backs, landscaping, indoor toxics and air quality, sanitation, disaster prevention, noise, safety, and universal design.

**PART 9 - CITY, REGIONAL, OR NATIONAL SCALE:** questions cover policies and plans at the city, regional, or national scales. These policies or plans may impact the neighborhood scale, and are therefore good to know about. However, local planners and policy makers are likely unable to make changes to these plans or policies so they should remain outside the realm of the health assessment.

Depending on the nature of the plan or proposal being assessed, the health impacts may not be distributed evenly, creating many nuances. These nuances can be described further in the comment section of Tool 2. While some domains may seem less relevant to a particular project, plan or proposal than others, we encourage users to try using the whole checklist as it may help identify additional connections between health and place.

HOC is not a score sheet but rather a tool for reflection and review.

The bulk of this How to Guide addresses where to find the necessary data and information to complete the Health Opportunities Checklist (HOC) tool. This data can be used in later steps to identify which aspects of the place or plan require further attention, can inform the rapid health assessment workshop (Tool 3), health assessment analysis, and final report. Much of the information can be found at the local government level, although in some places regional or state/provincial governments may be the appropriate level.

## FILLING IN THE CHECKLIST

### Excel Version vs. Paper Version

The HOC tool can be used as either a printable paper version (.pdf), or as a modifiable Excel version. The Excel HOC tool makes adapting and sharing the tool convenient. The spreadsheet is formatted so that certain responses to each question are color coded to visually “flag” responses that require more attention.

For each question you can select whether the dimension mentioned in the question is present (yes), is partially present (sort of), is not (no), or is not applicable. A comments line allows users to reflect on dimensions of the project or place that may be particularly positive or negative, or to make notes about topics to investigate further. It is recommended that the data source, page number, or weblink used to answer the question be documented in the comment column for easy reference.

The example below demonstrates how questions may be filled out with comments.

### Example of Filled in Checklist

| IMPORTANT FOR HEALTH |   | YES                                 | SORT OF                             | NO                       | DON'T KNOW               | NOT APPLICABLE           | COMMENT<br><i>Add source, page number, or weblink details</i>   | HAPI RESEARCH BRIEF TOPIC   |
|----------------------|---|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|---|---|
| Urban Form           |   |                                     |                                     |                          |                          |                          |   |   |
| 3.1                  | Is the site part of a centralized community with town center(s) and compact urban form, part of a comprehensively planned extension at the neighborhood scale, or a comprehensive new town? | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Site is located within 0.5 miles of town center<br><br>Source: Proposal introduction, page 5; Google maps   | Climate Change, Physical Activity, Accessibility, Safety, Housing |
| 3.2                  | Does the land use plan incorporate neighborhood commercial and/or mixed-used development?   | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Site is zoned general residential, allowing for some density, but no commercial. However, it is within walking distance of commercial at the town center, and a regional commuter train stop.<br><br>Source: City's 2012 zoning ordinance map for the district, available at <a href="http://www.example.com">www.example.com</a> | Mental Health, Social Capital, Accessibility, Physical Activity   |

## PART 1: BASIC DATA

### PART 1A: BASIC DATA FOR A PROPOSAL OR PLAN

| TOPIC  | Where do you get this information? | Who would have this information? |
|--|------------------------------------|----------------------------------|
| 1A.1 Title of Project  | Project documents                  | Proponent, local government      |
| 1A.2 Type of Project<br>urban plan, urban development,<br>urban redevelopment,<br>infrastructure, program, other | Project documents                  | Proponent, local government      |
| 1A.3 Physical Area<br>of project in hectares, square miles,<br>or square meters                                  | Project plan                       | Proponent, local government      |
| 1A.4 Number of People<br>directly affected (e.g. living/working<br>in planning area, to live/work in<br>project) | Project plan                       | Proponent                        |
| 1A.5 Project Lead Organization +<br>Contact Person   | Project documents                  | Proponent, local government      |
| 1A.6 HIA Organizer<br>(if different from project lead)   | Project documents                  | Proponent                        |
|  |                                    |                                  |



## PART 1: BASIC DATA

### PART 1B: BASIC DATA FOR AN EXISTING PLACE

| TOPIC  | Where do you get this information? | Who would have this information?   |
|--|------------------------------------|--|
| 1B.1 Place Name  | Local maps                         | Local government (may have specific boundaries), community groups, GIS mapping department or company |
| 1B.2 Type of place<br>mainly residential, mainly employment, mainly open/green space, mixed use, other | Local maps                         | Local government, GIS mapping department or company  |
| 1B.3 Physical area<br>of place in hectares, square miles, or square meters                             | Local maps                         | Local government, GIS mapping department or company  |
| 1B.4 Number of people directly affected (e.g. living/working in area)                                  | Census data                        | Census bureau, local government  |
| 1B.5 Demographics of people directly affected (e.g. by age, income, cultural background, gender)       | Census data                        | Census bureau, local government  |
| 1B.6 Specific organizations that could implement changes<br>(e.g. city government, community group)    | Local knowledge                    | Local government, community groups   |

## PART 2. GENERAL QUESTIONS

### PART 2A. FOR A PROPOSAL OR PLAN

| IMPORTANT FOR HEALTH |   | Where do you get this information?                  | Who would have this information?  |
|----------------------|---|---|---|
| 2A.1                 | Is there any explicit mention of human health?  | The plan or proposal of interest, project documents | Possibly public information and available online, or may need to request from relevant company, organization, or municipality |
| 2A.2                 | Does the explicit mention of human health do more than just recite phrases like “protect health, safety, and welfare” but make a more substantial link to health, backed up by evidence and linked to the proposal? | The plan or proposal of interest, project documents | Possibly public information and available online, or may need to request from relevant company, organization, or municipality |
| GENERALLY GOOD TO DO |   |   |   |
| 2A.3                 | Is there an implementation plan?  | The plan or proposal of interest, project documents | Possibly public information and available online, or may need to request from relevant company, organization, or municipality |

### PART 2B. FOR AN EXISTING PLACE

| IMPORTANT FOR HEALTH |   | Where do you get this information?  | Who would have this information?  |
|----------------------|---|---|---|
| 2B.1                 | Are there organization(s) concerned with the health of this area? | Online nonprofit and commercial directories, public health departments, local knowledge | Online nonprofit and commercial directories, public health departments, local knowledge |
| 2B.2                 | Has a health assessment of this area been previously conducted?   | Consult with identified organizations from question 2B.1                                | Consult with identified organizations from question 2B.1                                |

## PART 3. GENERAL LAYOUT AND SITE

| IMPORTANT FOR HEALTH |   | Where do you get this information?                       | Who would have this information?  |
|----------------------|---|--|---|
| Urban Form           |   |  |   |
| 3.1                  | Is the site part of a centralized community with town center(s) and compact urban form, part of a comprehensively planned extension at the neighborhood scale, or a comprehensive new town?       | Site visit, local development plan, zoning regulations   | Local or regional government planning agency  |
| 3.2                  | Does the land use plan incorporate neighborhood commercial and/or mixed-used development?   | Local development plan, zoning regulations               | Local or regional planning agency   |
| Infrastructure       |   |  |   |
| 3.3                  | a. Are there emergency access roads and other critical infrastructure (sewage, drainage)?<br><br>b. If so, is the infrastructure designed to cope with disasters (e.g. flood zones, storm paths)? | Road maps, public works maps, disaster preparedness plan | Public safety officials, local or regional planning or public works agency, environmental agency at any level: local, regional, or national |
| 3.4                  | Are sidewalks present along busy roads?   | Site visit, street maps, transportation plans            | Local or regional transportation department   |
| 3.5                  | a. Are there existing sidewalks or plans for new sidewalks?<br><br>b. If so, are there plans to keep them well-maintained?  | Site visit   | Local or regional transportation department, bike/pedestrian advocacy organizations   |
| 3.6                  | Do the existing or planned sidewalks have accessible features (e.g. curb cuts in appropriate places)?   | Site visit   | Local or regional transportation department, bike/pedestrian advocacy organizations   |

## PART 2. GENERAL LAYOUT AND SITE

| IMPORTANT FOR HEALTH   | Where do you get this information?           | Who would have this information?  |
|--|--|---|
| <i>Access</i>  |  |   |
| 3.7 Does residential or employment density support transportation options and local services? This can be overall density or density clustered in centers (in lower density or rural areas). Research suggests that minimum density for this is 4–6 dwelling units/acre for neighborhoods; 5–8 million sq. ft. of commercial space for substantial town centers. | Local development plan, zoning regulations   | Local or regional government, planning agency, or transportation department   |
| 3.8 Are there sources of fruits and vegetables within 20 minutes (especially by walking, cycling, public transportation)?  | Project documents, maps, transportation plan | Food policy council, project proponents, local or regional transportation department                                |
| 3.9 Are community resources (e.g. healthcare, recreational facilities, shopping, food, green space) accessible from residential areas by walking, cycling, or transit? Suggested distances to community resources are walking (<300–600m), cycling (<10km) or transit stops (< 500m).  | Project documents, maps, transportation plan | Food policy council, project proponents, local or regional transportation department                                |
| 3.10 Is average travel time to healthcare facilities <30 minutes, and dental health <40 minutes away, by available transportation? In rural areas, travel times of 1 hour for emergency services, 2 hours for hospital services, and <4 hours for core speciality services may be used.  | Maps, transportation plan                    | Local or regional transportation department, health agency or authority at any level – local, regional, or national |
| 3.11 Is there accommodation for those unwilling or unable to drive to medical appointments (e.g. public or private transit service)?   | Site visit, transportation plan              | Local or regional transportation department   |

## PART 3. GENERAL LAYOUT AND SITE

| IMPORTANT FOR HEALTH  | Where do you get this information?  | Who would have this information?  |
|---|---|---|
| 3.12 Are health services comprehensive, with available emergency services, acute in-patient hospital services, and core specialty services?   | Accessibility ordinance, health code  | Health service providers, local or regional health agency, emergency services providers                             |
| 3.13 Is there adequate access to first responders: fire, police, and ambulance?   | Map of site location identifying fire and police stations, and health facilities, emergency call statistics | Local or regional transport agency, public safety officials, GIS mapping  |
| <b>Buffers</b>  |   |   |
| 3.14 a. Are residential areas, schools, day care facilities, playgrounds, and sports fields located away from highways, dusty roads, or industry? For best health outcomes, these areas should be buffered by more than 500 meters.<br><br>b. If buildings are closer, are they designed to limit dust and noise? | Zoning regulations, noise regulations, air quality regulations, observation and experience                  | Local or regional planning agency, environmental agency at any level: local, regional, or national                  |
| 3.15 a. Are schools, residences, or workplaces separated (or have noise barriers) from heavy traffic or airplane flyovers?<br><br>b. Are average noise levels at these sites below 55–60 dB(A)?   | Maps, noise regulations, zoning regulations, site visits  | Local or regional planning agency   |
| 3.16 Are potentially contaminating industrial sites, such as refineries, waste sites, and nuclear power plants separated from residential neighborhoods? For best health outcomes, these areas should be buffered by 2–3 km.  | Zoning regulations  | Local or regional government planning agency, environmental agency at any level: local, regional, or national       |
| 3.17 Are there buffers between pollutant sources (mining, landfills, etc.) and water sources?   | Zoning regulations, water quality regulations, watershed maps   | Local or regional planning agency, environmental agency at any level: local, regional, or national, planning agency |

## PART 3. GENERAL LAYOUT AND SITE

| IMPORTANT FOR HEALTH |  | Where do you get this information?   | Who would have this information?   |
|----------------------|--|--|--|
| 3.18                 | Are key city functions, public facilities, critical infrastructure, and utilities removed from disaster-prone, susceptible coastal areas?        | Disaster preparedness plan, local development plan, zoning regulations, floodplain maps, seismic maps                    | Meteorological department, local or regional government, planning or public works                                |
| 3.19                 | Is new development located away from areas vulnerable to natural, geological, and industrial disasters (e.g. flood zones, storm paths)?          | Zoning regulations, local development plan, floodplain maps, seismic maps  | Local planning, meteorological department  |
| GENERALLY GOOD TO DO |  |  |  |
| Urban Form           |  |  |  |
| 3.20                 | Are retail businesses, everyday services, and recreational activities within 10–15 minutes walking distance of residences and community centers? | Map of area (e.g. GIS, online satellite map), transportation plans, zoning regulations or maps                           | Local or regional government planning agency, transportation department, Google maps                             |
| 3.21                 | Are local food options diverse and equally accessible (e.g. urban farming permitted, farmers markets)?   | Resident interviews, site visit, food policy plans or reports, maps of area which identify grocery stores and/or markets | Local or regional planning agency health agency at any level, food policy council, local residents, GIS analysis |

## PART 4. LAW, POLICIES, AND ACTIVITIES

| IMPORTANT FOR HEALTH  | Where do you get this information?  | Who would have this information?  |
|---|---|---|
| Pollution   |   |   |
| <p>4.1 a. Are biomass fuels such as wood, charcoal, or dung used for cooking and heating?</p> <p>b. If so, are there plans to move away from the use of such energy sources in indoor settings?</p> | <p>Site visit, resident interviews, reports, news articles, websites of local or regional public health organizations, air quality regulations</p>  | <p>Neighborhood / residents' groups, local or regional government, health agency at any level, environmental agency at any level: local, regional, or national</p>  |
| <p>4.2 a. Is there a smoke free policy?</p> <p>b. If so, is it enforced?</p>  | <p>Site visits, resident interviews, zoning regulations, health code</p>  | <p>Local or regional government, health agency, environmental agency at any level: local, regional, or national, local residents</p>  |
| <p>4.3 Are there policies in place to clean up water pollutants?</p>  | <p>Water agency or public health reports, websites of local organizations concerned with water quality, waste management regulations, water quality regulations, storm water management regulations, brownfield redevelopment plans</p> | <p>Local or regional government, health agency, planning agency, environmental agency at any level: local, regional, or national, water department/commission, local water conservation organizations</p> |
| <p>4.4 Are there plans to assess, monitor, and manage the safety of the local water supply (e.g. regulation of vendors, local ecosystems, and stormwater)?</p>                                      | <p>Water agency or public health reports, websites of local organizations concerned with water quality, water quality regulations, storm water management regulations</p>   | <p>Local or regional government, health agency, environmental agency at any level: local, regional, or national</p>   |
| <p>4.5 Are there active radon air mitigation strategies in place, such as active soil depressurization?</p>   | <p>Water agency or public health reports, websites of local organizations concerned with water quality, radon management regulations</p>  | <p>Local or regional government, environmental agency at any level: local, regional, or national</p>  |
| <p>4.6 Is there pest control management infrastructure, especially for cockroaches?</p>   | <p>Site visits, resident interviews, pest management businesses, health code</p>  | <p>Local or regional government, health agency, housing authority, environmental agency at any level: local, regional, or national, local business directories</p>  |

## PART 4. LAW, POLICIES, AND ACTIVITIES

| IMPORTANT FOR HEALTH  | Where do you get this information?   | Who would have this information?   |
|---|--|--|
| <b>Disasters and Climate</b>  |  |  |
| 4.7 Are emergency preparedness plans in place that consider the needs of older persons and disabled populations?  | Reports or websites from government, health agencies, emergency management agencies, or public safety departments, disaster preparedness plan  | Local or regional government; health agency; environmental agency at any level: local, regional, or national; meteorological department, local emergency management agency; public safety officials; senior service agency |
| 4.8 Are there programs in place to improve building warmth and energy efficiency (e.g. insulation, weatherization, heating system upgrades, sealing, etc.)?   | Energy code, building code   | Environmental agency at any level: local, regional, or national; energy agency   |
| 4.9 Do local policies manage disaster risk? For example, zoning to prevent residential development in disaster prone areas, public education, or building codes that require increased resilience in building construction. | Zoning regulations, policy documents, disaster preparedness plan, local development plan, building code, reports or websites from government, health agencies, emergency management agencies, or public safety departments | Local or regional government, health agency; environmental agency at any level: local, regional, or national; planning agency; housing authority; emergency management agency  |
| <b>Social Issues</b>  |  |  |
| 4.10 Do local policies or plans include measures to improve the lives of the homeless and mentally ill?   | Local development plan, housing plan   | Local government, housing authority, planning agency, social service agency  |
| 4.11 Are there opportunities for individuals to participate in civic life (e.g. volunteer)?   | Site visits, resident interviews, websites of local organizations  | Local government, online directories   |
| 4.12 Are mobile health programs, such as vans, available?   | Site visits, resident interviews, websites of local health organizations and service providers   | Local or regional government, health agency, health service providers  |
| 4.13 Are healthcare facilities available and affordable to low income and migrant workers?  | Websites or reports from related agencies (see next column), interviews  | Local or regional government, health agency, immigration agency, social service agency   |



## PART 4. LAW, POLICIES, AND ACTIVITIES

| IMPORTANT FOR HEALTH |   | Where do you get this information?  | Who would have this information?  |
|----------------------|---|---|---|
| Behaviors            |   |   |   |
| 4.14                 | Are policies and programs in place to promote physical activity (e.g. walk to school programs)?   | Reports and websites from organizations and agencies described in the next column   | Local or regional government; health agency; environmental agency at any level: local, regional, or national; school administration; bike/pedestrian advocacy organizations |
| Food                 |   |   |   |
| 4.15                 | Are outlets for healthy food fostered (e.g. establishing supermarkets in low-income areas and the creation of local grocery cooperatives)?                  | Site visits, local resident interviews, food plans and policies, reports from planning or health agencies or community groups | Local or regional government, health agency, local food policy council, community groups  |
| GENERALLY GOOD TO DO |   |   |   |
| 4.16                 | a. Are healthy food systems goals included in comprehensive and sustainability plans?<br><br>b. If so, do these include lowering the costs of healthy food? | Websites and reports from government or health agencies and organizations   | Local or regional government, health agency   |

## PART 5. PUBLIC SPACES

| IMPORTANT FOR HEALTH |   | Where do you get this information?   | Who would have this information?   |
|----------------------|---|--|--|
| <b>Vegetation</b>    |   |  |  |
| 5.1                  | Do residents have access to a variety of green outdoor spaces (e.g. parks, wilderness, and landscaped areas)?   | Zoning maps, site visits, resident interviews  | Local or regional government, planning agency, parks and recreation department, local residents  |
| 5.2                  | Does the existing site or proposed project have outdoor recreation facilities such as parks or nature trails?   | Project plan, local development plan, local parks plan, maps of the area that include green space  | Project developer, local or regional government, planning agency, parks and recreation department, GIS departments   |
| 5.3                  | a. Is there is an off-street trail system?<br>b. If so, is it located within 400–600m of all residential areas?   | Project plan; local development plan; local parks plan; websites of planning, GIS, or recreation departments; maps of the area that include trails | Local or regional government, transportation department, planning agency, parks and recreation department, local conservation organizations, GIS                   |
| 5.4                  | a. Is there an urban forest?<br>b. If not, is there a plan to establish a vegetative ecosystem?   | Local development plan, local open space plan, websites of planning, environmental, or forestry agencies, etc.                                     | Local or regional government; environmental agency at any level: local, regional, or national; conservation agency; forestry department; transportation department |
| 5.5                  | Is a tree canopy planned in parks, open space, and streetscapes? It is recommended that tree canopies provide at least 50% canopy coverage in the area of interest.                   | Websites, maps, and reports of local agencies (see other column)   | Local or regional government, conservation agency, forestry department, planning agency, parks and recreation department, GIS                                      |
| 5.6                  | In floodable zones are there retention systems (e.g. basins, open water channels, floodable zones/ water squares, bioswales, green roofs, permeable pavements)?                       | Water management regulations, floodplain maps, websites of local agencies (see other column)   | Local or regional government, environmental agencies at any level, emergency management agency, planning agency  |
| 5.7                  | In floodable zones are there buffer zones or barriers (e.g. beach, dune and wetlands preservation, breakwaters, riparian buffers, or levees, dams, floodgates, and elevated subways)? | Floodplain maps, websites of key agencies (see other column), zoning regulations   | Local or regional government; environmental agency at any level: local, regional, or national; emergency management agency; planning agency                        |

## PART 5. PUBLIC SPACES

| IMPORTANT FOR HEALTH |  | Where do you get this information?  | Who would have this information?  |
|----------------------|--|---|---|
| <b>Connectedness</b> |  |   |   |
| 5.8                  | <p>a. Are roads, paths, parks, and public spaces clean and in good repair?</p> <p>b. Are there plans for ongoing maintenance?</p>  | Site visits, resident interviews, websites of government or transportation departments                          | Local or regional government, transportation department, local residents                                  |
| 5.9                  | Is the site accessible, with sidewalks and ways for wheelchairs to navigate hills or stairs (if present)?  | Elevation maps, accessibility ordinance, transportation plans   | Local or regional government, transportation department, GIS  |
| 5.10                 | Are there parking spots designated for disabled drivers or passengers for at least 3–5% of spots (or at least 1 spot)?   | Accessibility guidelines, local development plan, parking policies  | Local or regional government, transportation department, disability advocacy group                        |
| 5.11                 | Are there public toilets within walking distance of major public spaces and commercial centers?  | Local street maps, site visits, resident interviews   | Local or regional government, planning agency, GIS  |
| 5.12                 | Does the project have opportunities for users to socially engage with one another in public and/or “third places” (coffee shops, pubs, libraries, community centers, and dog parks)? | Site visit, zoning regulations, maps, resident interviews   | Local or regional government, planning agency, GIS, parks and recreation department, local residents      |
| 5.13                 | Is adequate lighting required in parks and other public areas? It is recommended that pedestrians have visibility of at least 200 meters.  | Websites of agencies cited in the next column, local outdoor lighting guidelines, open space plans, site visits | Local or regional government, transportation department, planning agency, parks and recreation department |
| 5.14                 | Can people perform surveillance in their neighborhood (e.g. visibility to key areas, CCTV, or silent alarms)?  | Site visit, interviews with building managers, interviews with residents  | Local or regional government project developer, building inspection department, local residents           |
| 5.15                 | Are public and private spaces clearly delineated so the boundaries are clear?  | Property maps, site visits, plan schematics   | Local or regional government planning agency  |

PART 5. PUBLIC SPACES

| GENERALLY GOOD TO DO |  |  |   |
|----------------------|--|--|---|
| 5.16                 | Are greenways incorporated to provide natural, non-motorized open space corridors (often following roadways, ridge tops, and waterways)? | Project plan, local development plan, maps of area | Local or regional government, transportation department, planning agency, parks and recreation department |

## PART 6. TRANSPORTATION

| IMPORTANT FOR HEALTH  | Where do you get this information?  | Who would have this information?   |
|---|---|--|
| 6.1 Can emergency access roads be maintained in disaster situations (e.g. if water level rises)?  | Transportation plan, disaster preparedness plan   | Local or regional government, transportation department, emergency management agency, planning agency            |
| 6.2 a. Are there a variety of nearby destinations for residents (e.g. employment, health care, grocery stores, etc.)?<br><br>b. Can these destinations be reached by a variety of reliable and regular transportation modes (e.g. bicycling, walking, automobile, transit)? | Local maps, site visits, local development plan, transportation plan                        | Local or regional government, transportation department, planning agency   |
| 6.3 Is cycling promoted through bike programs and/or infrastructure (bike lanes)?   | Transportation plan, local development plan   | Local or regional government, transportation department, planning agency, bike/pedestrian advocacy organizations |
| 6.4 Are alternative / public transport options equipped with accessible equipment (e.g. ticket machines, and low platforms)?  | Local area maps, transit maps, GIS analysis   | Local or regional government, transportation department, transit service providers, GIS departments              |
| 6.5 Do crosswalks include pedestrian safety features (e.g. adequate marking, countdown signals that can be seen and heard, stop signals)?   | Site visits, transportation maps, transportation plan                                       | Local or regional government, transportation department, planning agency, bike/pedestrian advocacy organizations |
| 6.6 For streets with high rates of pedestrian/bicyclist use, are speed limits set at or below 30 mph (optimally 20 mph)?  | Local development plan, transportation plan   | Local or regional government, transportation department  |
| 6.7 Are there plans or policies to provide adequate street lighting along all major streets?  | Websites of agencies listed in the next column, local development plan, transportation plan | Local or regional government, transportation department, planning agency   |

PART 6. TRANSPORTATION

| IMPORTANT FOR HEALTH |   | Where do you get this information?  | Who would have this information?   |
|----------------------|---|---|--|
| 6.8                  | Are there traffic-calming interventions in place (e.g. narrow roads, trees, and all way stops)? | Local maps, site visits, websites of agencies in the next column, local development plan, transportation plan | Local or regional government, transportation department, planning agency |

## PART 7. WATER SYSTEMS

| IMPORTANT FOR HEALTH   | Where do you get this information?  | Who would have this information?  |
|--|---|---|
| 7.1 Are planned or existing residential units located in areas with water and sewer infrastructure?  | Public works maps, websites of agencies listed in the next column, local development plan | Local or regional government; environmental agency at any level: local, regional, or national; public works department; planning agency                 |
| 7.2 Are sewage treatment and storm water drainage adequately separated?  | Water quality regulations, storm water management regulations                             | Local or regional government; health agency; environmental agency at any level: local, regional, or national; public works department; water department |
| 7.3 Is there a management strategy to ensure clean water availability and access in normal and disaster contingencies (through filtration, boiling, or green chemicals)?                     | Water quality regulations, disaster preparedness plan                                     | Local or regional government; health agency; environmental agency at any level: local, regional, or national; emergency management agency               |
| 7.4 Are there existing or planned vegetated buffers along all water bodies to prevent non-point pollution from impervious surfaces (e.g. riparian buffers - preferably 20m to 50m in width)? | Local maps of greenspace, water quality regulations, storm water management regulations   | Local government; environmental agency at any level: local, regional, or national   |
| 7.5 Are threshold criteria for microbial and chemical pollutants met?  | Water quality regulations   | Local or regional government, environmental agency at any level: local, regional, or national   |
| 7.6 Are water monitoring or pollutant clean up technologies employed?  | Water quality regulations, stormwater management regulations                              | Local or regional government, environmental agency at any level: local, regional, or national   |
| 7.7 Are there low impact development/ green infrastructure strategies in place (e.g. bioretention/rain gardens, permeable pavements, swale systems)?   | Storm water management regulations  | Local government, environmental agency at any level: local, regional, or national   |
| 7.8 Are measures being taken to increase ground water recharge and water conservation?   | Storm water management regulations  | Local or regional government, environmental agency at any level: local, regional, or national   |

## PART 8. BUILDING SCALE

| IMPORTANT FOR HEALTH  | Where do you get this information?                    | Who would have this information?  |
|---|---|---|
| 8.1 Are innovative technologies (e.g. improved biomass stoves) used to reduce air pollution?  | Project documents, building code                      | Local or regional government, housing authority, project architects and engineers, project developer  |
| 8.2 Are setbacks on high-rise buildings used to prevent a canyon effect in urban environments?  | Architectural plans, building code, project documents | Local or regional government, housing authority, project architects and engineers, project developer  |
| 8.3 Are there any existing impacts due to canyon wind effects?  | Wind modeling   | Project architects and engineers, project developer, other consultants  |
| 8.4 Is there adequate air conditioning available for vulnerable populations (e.g. those with respiratory health conditions, older persons)?   | Architectural plans, building code, project documents | Local or regional government, housing authority, project architects and engineers, project developer, building inspection department  |
| 8.5 Is there adequate ventilation for indoor areas that can maintain comfortable temperatures on extreme heat days?   | Architectural plans, building code, project documents | Local or regional government, housing authority, project architects and engineers, project developer, building inspection department  |
| 8.6 a. Are new buildings lead free?<br>b. For existing buildings, do redevelopment plans include lead testing of facilities used by children (dwelling units, child care centers, schools, or recreation facilities)? | Project plan, architectural plans, building code      | Local or regional government, local housing authority, project developer, building inspection department<br>environmental agency at any level: local, regional, or national |
| 8.7 a. Is the project free from asbestos and materials that give off VOC?<br>b. If not, can these toxins be removed?  | Architectural plans, building code, project documents | Local or regional government, local housing authority, project developer, building inspection department<br>environmental agency at any level: local, regional, or national |
| 8.8 Are carbon monoxide (CO) and smoke alarms present and working?  | Project plan, building code                           | Local or regional government, housing authority, building inspection department   |



## PART 8. BUILDING SCALE

| IMPORTANT FOR HEALTH |   | Where do you get this information?                    | Who would have this information?   |
|----------------------|---|---|--|
| 8.9                  | Is there access to adequate sanitation and hygiene facilities in the households within the area of interest (e.g. running water, working indoor plumbing)?  | Project plan, building codes, housing census data     | Local or regional government, housing authority, building inspection department, census bureau                                       |
| 8.10                 | a. Is there an inventory of the current housing stock and infrastructure?<br><br>b. If so, can the inventory be used to identify sites and groups that would be more at-risk in extreme weather events?           | Census data, housing data, property maps              | Census bureau, local or regional government, housing authority, planning agency  |
| 8.11                 | Are buildings structured to address/mitigate local environmental issues (e.g. seismic proofing for earthquake prone areas, elevated houses for flood prone areas, basements to protect residents from tornadoes)? | Architectural plans, building code, project documents | Local or regional government, housing authority, project architects and engineers, project developer, building inspection department |
| 8.12                 | Do the existing building codes account for environmental and human emergencies, such as earthquakes and attacks?  | Building code, project documents                      | Local or regional government, housing authority, public works department, building inspection department                             |
| 8.13                 | a. Are first aid and emergency shelters available?<br><br>b. If so, do they contain basic disaster equipment?   | Architectural plans, building code                    | Project architects and engineers, public safety officials, building inspection department  |
| 8.14                 | If located in a noisy area, are buildings soundproofed from exterior noise sources? Schools, playgrounds, homes and hospitals are particularly important to soundproof.   | Architectural plans, building code                    | Local or regional government, local housing authority, architectural/engineering associations  |
| 8.15                 | If dwellings are attached, do unit layouts and construction techniques reduce noise between units?  | Architectural plans, building code                    | Local government, local housing authority, project architects and engineers, project developer                                       |

## PART 8. BUILDING SCALE

| IMPORTANT FOR HEALTH |  | Where do you get this information?   | Who would have this information?  |
|----------------------|--|--|---|
| 8.16                 | Are buildings along the street used as a noise barrier (an uninterrupted street wall)?   | Architectural plans, building code, project documents                          | Local or regional government, local housing authority, project architects and engineers, project developer              |
| 8.17                 | Are designs friendly to children and short individuals (e.g. low washbasins, second handrails, or lower door handles)?   | Architectural plans, building code, accessibility ordinance, project documents | Local or regional government, local housing authority, project architects and engineers                                 |
| 8.18                 | a. Are buildings designed so occupants can maintain surveillance over their surroundings, such as through terraces and windows?<br><br>b. Are routes of entry limited to prevent strangers from entering the building? | Architectural plans, building code, project documents                          | Local or regional government, local housing authority   |
| 8.19                 | Are universal design principles applied (e.g. use of ramps, level surfaces, wide circulation to accommodate wheelchairs; clear way finding signage that are audio, visual, and textural)?                              | Architectural plans, building code, accessibility ordinance                    | Local or regional government, local housing authority, project architects and engineers                                 |
| GENERALLY GOOD TO DO |  |  |   |
| 8.20                 | Are HEPA filters in use to reduce indoor allergens?  | Architectural plans, building code   | Local or regional government, local housing authority, project architects and engineers, building inspection department |
| 8.21                 | Are ignition sources safe?   | Architectural plans, building code   | Local or regional government, local housing authority, project architects and engineers, building inspection department |

## PART 9. CITY, REGIONAL, OR NATIONAL SCALE

| IMPORTANT FOR HEALTH    |   | Where do you get this information?   | Who would have this information?   |
|-------------------------|---|--|--|
| General Layout and Site |   |  |  |
| 9.1                     | Are traffic pollution, road dust, and industry emissions monitored and regulated?   | Websites of local or regional public health departments or organizations, government publications, higher education and other research centers, air quality regulations, transportation plan | Local or regional government; environmental agency at any level: local, regional, or national; health agency at any level; transportation department |
| 9.2                     | Are polluting sources regulated in a substantial way (e.g. businesses that disproportionately pollute within neighborhoods like dry cleaners, automotive paint shops, manufacturing)? | Waste management regulations, zoning regulations, public health or planning reports  | Local or regional government, health agency at any level, planning agency, environmental agency at any level: local, regional, or national           |
| 9.3                     | Are universal design principles established in the local codes/ordinances?  | Building codes, websites or reports from local or regional governments, etc.   | Local or regional government, health agency, environmental agency at any level: local, regional, or national   |
| 9.4                     | Do existing programs and policies promote housing security and long-term tenancy, such as home ownership promotion or eviction prevention?  | Local development plan, policy documents, reports from government or housing authorities   | Local or regional government, housing authority  |
| 9.5                     | Is the community food system considered in the plans or policies for the area? By this we mean food production, distribution, retailing, consumption, and waste production.           | Comprehensive plans, food systems plans or policies, examples of support for local agriculture   | Food policy council, planning department, public health department   |
| 9.6                     | Are there regulations in place to ensure food safety (e.g. vendor licensing and production (farm) management)?  | Websites and reports from government, health, environmental, or agricultural agencies and organizations, health code   | Local or regional government; health agency; environmental agency at any level: local, regional, or national; agricultural agency                    |

## PART 9. CITY, REGIONAL, OR NATIONAL SCALE

| IMPORTANT FOR HEALTH   | Where do you get this information?  | Who would have this information?  |
|--|---|---|
| 9.7 Are health food promotion or policy programs in place? (e.g. as providing nutritional facts in restaurants, and regulating marketing of unhealthy foods to children) | Websites and reports from government or health agencies and organizations             | Local or regional government, health agency   |
| 9.8 Are there programs and/or regulations in place to control noise such as deed restrictions or noise control ordinances?   | Noise regulations, local government code  | Local or regional government, health agency, environmental agency at any level: local, regional, or national  |
| <b>Public Spaces</b>   |   |   |
| 9.9 Are existing regional forests, ecosystems, wetlands, and vegetative cover preserved, especially around water supplies and stream networks?                           | Websites and reports from local agencies or organizations, and maps of the local area | Local or regional government; transportation department; environmental agency at any level: local, regional, or national; conservation agency; forestry department; GIS |
| 9.10 Are there firebreaks at an urban design scale (e.g. a buffer zone between heathlands and urban areas)?  | Websites of key agencies (see other column), GIS analysis                             | Local or regional government, transportation department, emergency management agency, planning agency, GIS  |
| <b>Transportation</b>  |   |   |
| 9.11 Does the current transportation system address noise (e.g. by altering flight paths, soundproofing construction, or erecting noise barriers on highways)?           | Local development plan, transportation plan, noise regulations                        | Local or regional government, transportation department, planning agency  |
| 9.12 Is there a multimodal transportation plan that connects all residential areas to services (e.g. employment centers, grocery stores, hospitals, etc.)?               | Street maps, local development plan, transportation plan, site visits, GIS analysis   | Local or regional government, transportation department, planning agency, GIS department  |

## PART 9. CITY, REGIONAL, OR NATIONAL SCALE

| IMPORTANT FOR HEALTH   | Where do you get this information?  | Who would have this information?  |
|--|---|---|
| 9.13 Is regular transit service available (or planned) for all residential and employment areas? Research recommends that transit stops/stations be located within 800m (or 10-15 minutes) of all residential areas.   | Street maps, local development plan, transportation plan, site visits, GIS analysis | Local or regional government, transportation department, planning agency, GIS department  |
| 9.14 Are there policies/plans that prioritize the transportation needs of underserved populations (e.g. seniors, children, persons with disabilities, low-income residents, etc.)?   | Transportation plan, accessibility ordinance  | Local or regional government, transportation department, senior service agency, bike/pedestrian advocacy organizations, transit service providers         |
| 9.15 Are complete street, shared street and traffic calming concepts incorporated into the future transportation plan?   | Transportation plan, local development plan   | Local government, local or regional government, transportation department   |
| <b>Water System</b>  |   |   |
| 9.16 Are the water supply and transport systems adequately separated from contaminants that may leech pollutants into the water from sources such as agricultural pesticides/insecticides, mining activities, landfills, industrial and urban waste water, or soil and material? | Water quality regulations, storm water management regulations, zoning regulations   | Local or regional government; environmental agency at any level: local, regional, or national, public works department; water department; planning agency |
| 9.17 Are there efforts to reduce direct connections between impervious surfaces and local stream networks and water bodies?  | Storm water management regulations  | Local or regional government; environmental agency at any level: local, regional, or national; water department; planning agency                          |
| 9.18 Is there a regional watershed protection plan (e.g. buffer zones, storm water management, water quality management)?  | Storm water management regulations, water quality regulations, watershed maps       | Local or regional government; environmental agency at any level: local, regional, or national; water department; planning agency                          |

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