# HEALTH IMPACT ASSESSMENT
## of Transportation and Land Use Planning Activities

GUIDEBOOK

metrovancouver





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Development of this guidebook was directed by a core team and steering committee, all of whom contributed considerable time and experience to the project. The core team consisted of:

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# 1.0 Guidebook Use and Organization

**WHY IS THIS GUIDEBOOK NEEDED?**

Planning, land use, and transportation decisions have **public health consequences. Health Impact Assessment (HIA)** is a process that provides a more structured approach for planners and policy-makers to objectively **evaluate the potential health-related outcomes** of an activity (i.e., projects, plans, or policies) before it is built or implemented. An HIA helps bring public health issues, both adverse and beneficial, to the attention of decision makers at the planning stage so that solutions can be generated to address public health issues.

A survey of local planners, health professionals and engineers conducted as part of this project confirmed that familiarity and use of HIA is limited in BC and the Lower Mainland[1]. While a number of guides and resources from other jurisdictions exist to assist in carrying out HIA, the same survey identified **the need for a locally specific guide** to encourage the integration of health issues into local and regional transportation and land use decisions and planning.

The project partners hope this guidebook will act as a catalyst to increase use of HIA in the Lower Mainland and other parts of BC. In the longer term, as HIA becomes more common, it will be possible to create an online repository of HIAs, resources and data to further assist practitioners.

## HEALTHY COMMUNITY DESIGN: The Big Picture

Numerous studies from Canada and around the world demonstrate a relationship between the physical design and layout of cities and towns—also known as the **"built environment"**—and the health of people living in them. Community form is associated to varying degrees with physical activity, diet, safety and injury rates, exposure to pollutants, and how easily people can access work, shops, services and schools.

Research on the associations between health and the built environment is expanding and becoming increasingly sophisticated. While much work remains to unravel the complex relationships between health outcomes and the built environment, the research is at a point where the broad planning implications are clear—**healthy community design matters**.

HIA provides an important tool to assess the potential impacts of developments on achieving healthier built environments.

1 A survey was conducted with local transportation planners, community planners and public health professionals as part of the HIA Guidebook project in November 2014. Fifty-five local professionals participated in it.

### WHAT'S IN THIS GUIDEBOOK?

This guide provides an introduction to, and overview of, HIA in transportation and land use planning. The guidebook also provides a step-by-step planning process to support different levels of HIAs (i.e., desktop, intermediate, comprehensive), identifies common issues and challenges that can be expected in the HIA process, and highlights lessons from the field to successfully address them.

### WHO IS THE INTENDED AUDIENCE FOR THIS GUIDEBOOK?

This guidebook is **intended for multiple users** and stakeholders working in the wider field of healthy community design, including: urban, transportation and social planners, engineers (transportation, civil), policy analysts, public health professionals and others.

### HOW CAN THIS GUIDEBOOK BE USED?

Recognizing both the limited application of HIA in the Lower Mainland at present and the competing priorities of guide users, this guidebook is designed, like the HIA process, to be both **flexible and accessible**.

Practitioners who are new to HIA can use the guidebook to gain a better understanding of HIA, where it may **fit into and complement existing work**, and to help **build a case for HIA** with colleagues and stakeholders. More experienced users can use the guidebook as a **step-by-step planning tool** or to support individual HIA steps.

All users can also use the guidebook to help identify which level of HIA complexity could best fit their needs and resources, generate support for HIA within an organization, or help build organizational capacity for undertaking one.

The guidebook can also be used to support HIA-related stakeholder/community consultation processes.

### GUIDEBOOK ORGANIZATION

The guidebook is divided into three main sections.

The first, ***Introduction and Background***, provides an overview of HIA and where it can fit in existing project planning and development processes.

The next section, the ***Health Impact Assessment Process***, provides a step-by-step overview of the five essential steps in the HIA process.

The final section, ***Tools and Resources***, provides a series of useful tools that can be used during each step of the HIA process, along with links to additional HIA resources. The planning tools are provided in a companion document, *Health Impact Assessment of Transportation and Land Use Development Activities: Toolkit*. The guide illustrates how these tools can be used and integrated with existing project planning and development processes.

Other features include:

**CASE-IN-POINTS** provide examples from other jurisdictions to illustrate HIA steps.

**BUILDING-THE-CASE** illustrates a fictional Lower Mainland transit-oriented design, urban development project and how it would go through an HIA process using the process and tools outlined in the guide.

**Q&A** text boxes provide concise answers to common questions associated with HIA planning steps and tools.

**A RANGE OF APPROACHES** text boxes provide guidance on how the HIA process can be scaled up or down to fit an organization's budget and resources available.

# 2.0 Introduction and Background

## 2.1 What is HIA?

Health Impact Assessment (HIA) is a process that provides a more structured approach for planners and policy-makers to objectively **evaluate the potential health-related outcomes** of an activity (see text box) before it is built or implemented. It is particularly helpful for assessing potential health impacts from activities that are outside of the health care realm and where health is not the focus of the project. An HIA helps bring public health issues, both adverse and beneficial, to the attention of decision makers early in the planning stage so that solutions can be generated to address public health issues.

Using both quantitative and qualitative information, as well as participatory techniques, HIA provides decision makers with a clear understanding of an initiative's overall potential health consequences. It also helps identify related opportunities to **minimize health risks** while **enhancing potential health benefits**.

From transportation to housing, and from energy to economic development, HIA supports more informed decision making across a broad range of sectors. It helps decision makers to understand the complex relationships between health and a proposed activity. HIA also **encourages collaboration** between urban, transportation and social planners, engineers, policy analysts, public health professionals, elected officials and other important planning, project development and policy stakeholders.

Q+A

### Q&A: WHAT IS AN "ACTIVITY"?

In this guidebook, the term **activity** is used for all the types of **projects, plans** or **policies** that an HIA could consider.

## 2.2 Why undertake HIA?

HIA provides a way for health to be considered, perhaps more formally, as part of a broader planning and decision making process. Research on HIA here in Canada, the United States and abroad demonstrates that when HIAs contribute to the decision-making process they help **achieve measurably better outcomes** for community health and wellbeing[2]. HIA can:

- Identify and illustrate **the relationships between, and consequences of**, an activity and the health of a population;
- Support more **informed and transparent decision making** regarding the potential effects and impacts of an activity on health;
- Help **engage community stakeholders** in the decision making process and contribute to public and stakeholder awareness of the health implications of plan, project and policy decisions;
- Identify **options to maximize the positive and minimize the negative** impacts of an activity.

### Q&A: WHAT IS "HEALTH"?

Q+A

As defined by the World Health Organization, health is *"a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity."*

This definition places health beyond service provision or clinical care, which is often how it is understood, towards a more comprehensive view that also considers the social and economic considerations of health and the more general, often qualitative considerations of wellbeing.

**HIA considers the full spectrum of health.**

## 2.3 What does an HIA consider?

An HIA identifies and considers three things: **activity impacts, health determinants**, and, perhaps most importantly, potential **health-related outcomes**. Each of these elements is reviewed briefly below.

### ACTIVITY IMPACTS

Every activity (i.e., project, plan, or policy) **generates impacts**, which could potentially **have an influence on health determinants**. These activity impacts can be both direct and indirect, and beneficial or adverse. Direct activity impacts can include such things as pollutants that an activity could release in the air, water or soil. Indirect activity impacts can include how a project might influence people's transportation choices, the local job market, or access to public spaces and amenities (which then in turn may have consequences on health-related outcomes).

### HEALTH DETERMINANTS

The driving concept behind HIA is that individual and community health is not simply determined by health services or biological factors (e.g., age). It is also shaped by wider social, economic and environmental influences and factors. These so-called **health determinants are the factors that lead to health outcomes** and include:

- Physical environment factors (e.g., air quality, water quality, hazards)
- Built environment factors (e.g., buildings, public spaces, roads, bike lanes)
- Livelihood factors (e.g., income, employment)
- Social and community factors (e.g., social support, family structure, access to services)
- Lifestyle factors (e.g., diet, exercise, alcohol and tobacco use)

2 *Do health impact assessments make a difference? A national evaluation of HIAs in the United States*, Center for Community Health and Evaluation, April 2014

**Health professionals, planners and engineers all have some influence** on each of the determinants of health.

### HEALTH-RELATED OUTCOMES

Health outcomes refer to the **health status** of both individuals and groups within a population or community, and **can include both positive and negative outcomes**. The health determinants—as impacted by an activity—contribute to health outcomes in various ways, either directly or indirectly. Health outcomes can include things like morbidity rates (injuries), mortalities, asthma, diabetes, cardiovascular disease, and other diseases.

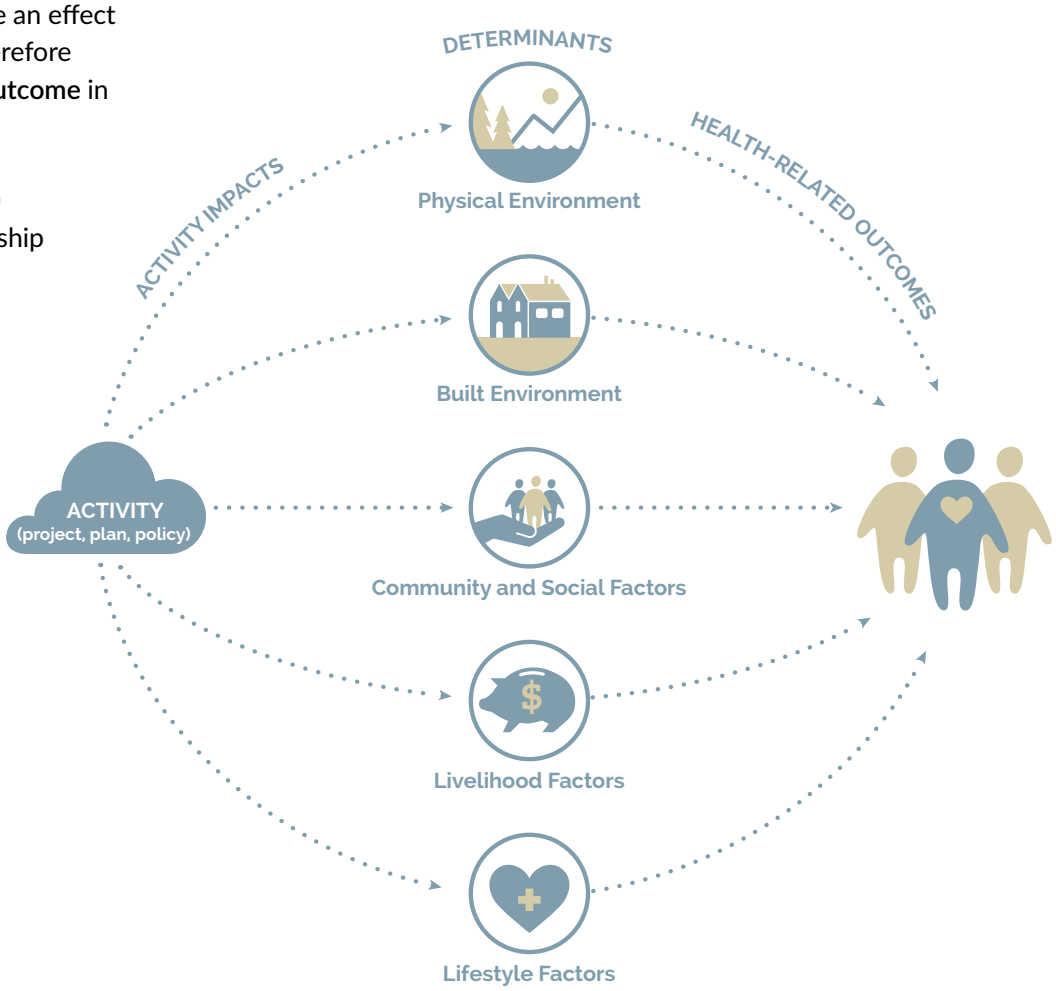
This guidebook uses a broader definition of health outcomes that **includes the behaviours and contributing factors** that contribute to health status. For example, while physical activity is not specifically a health outcome, it does have an effect on health outcomes and is therefore considered a **health-related outcome** in this guidebook.

The process diagram (*Figure 1*) illustrates the general relationship between an activity, the impacts activities can have on health determinants, and the resulting influences and changes to health-related outcomes.

*FIGURE 1: Activity impacts, health determinants and health-related outcomes*

### Q&A: WHAT ARE HEALTH INEQUITIES?

**Health inequities are avoidable differences in health-related outcomes between different socioeconomic groups.** They are **shaped by health determinants**, but are often associated with unequal economic and social conditions. Ethnicity, race, culture and gender are equally important equity considerations. These unequal conditions can include such things as access (e.g., through transit or land use) to places to recreate, learn, work, shop, get medical care and buy healthier food.



## 2.4 What forms can HIA take?

HIA can take many forms, from simple, desk-based approaches to broader, more complex approaches depending on the activity under review and the time and resources available to the organization conducting the HIA. This guide outlines three levels of HIA—**desktop, intermediate,** or **comprehensive** that fall on the spectrum of approaches.

**A desktop HIA** is primarily a rapid exercise that can take between two days to one week. It can be undertaken independently, or can involve a small group of stakeholders, and will typically use existing knowledge and evidence to assess an activity. Desktop HIAs are the least detailed approach, but can help **build the case** for a more comprehensive approach or evaluation, should significant potential health consequences be identified.

**An intermediate HIA** can take between one to three months to carry out and typically includes the establishment of a small stakeholder group representing core sectors (e.g., community and social planning, health, engineering). The process usually includes one or two workshops during which the stakeholder group carries out a **brief investigation** of potential health impacts, including a short literature review of quantitative and qualitative evidence and the gathering of knowledge and further evidence from other local stakeholders. As an intermediate HIA should be completed with minimal cost (e.g., staff time, data acquisition, consulting fees) and relatively small stakeholder time commitments, it often relies on readily available data and basic qualitative input.

**Comprehensive HIAs** are more in-depth and can take several months to complete. They may be time intensive and costly given staff time required, stakeholder and public engagement costs and, sometimes, consulting costs. They also may require an **extensive literature review and the collection of primary data**. This type of HIA is suited to larger, complex proposals, such as major infrastructure or transportation projects. Increasingly, comprehensive HIAs are also used to supplement formal environmental impact assessment processes.

The categories are not rigid, and a particular HIA may end up fitting anywhere along the continuum. The final approach used will be determined by the nature of the project being reviewed and the capacity (human, political, organizational, financial, technical) available to undertake the process.

Regardless of their size and scope, all HIAs should still consider the five standard steps in the HIA process. These steps are addressed in Section 3.0.

Look for the 'Range of Approaches' text boxes to find tips on how each step can be adapted to a desktop, intermediate or comprehensive HIA approach.

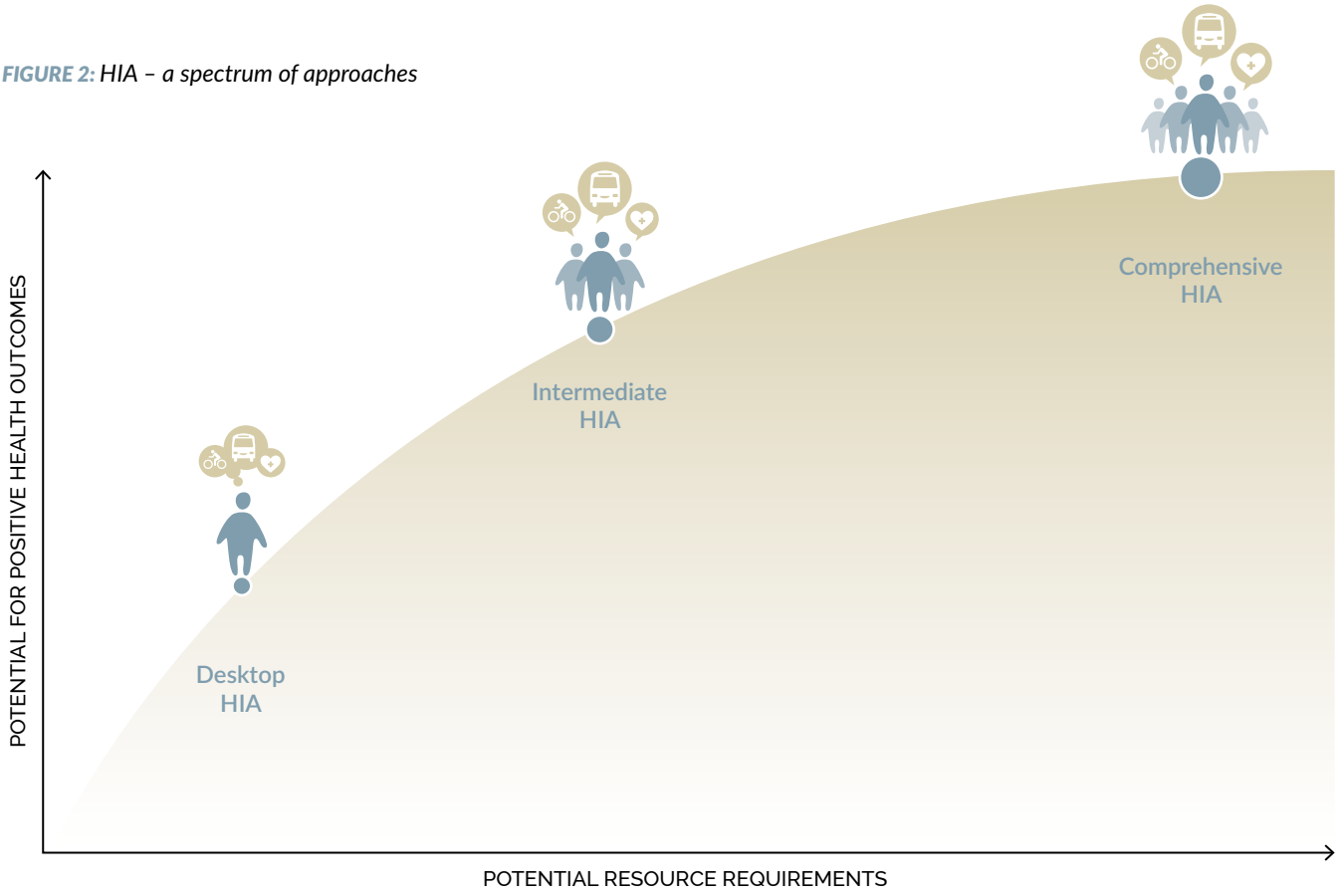
## 2.5 Where does HIA "fit" with planning and development?

From a local and regional planning and transportation perspective, HIAs have been used to support and assess a wide variety of **land use, infrastructure, transportation, and community development activities**. These include citywide plans (e.g., Official Community Plans), neighbourhood or sub-area plans, individual development proposals (e.g., larger scale mixed-use developments and town centre redevelopment initiatives), infrastructure development projects (e.g., liquid waste facility expansion and new construction) and transportation facility projects (e.g., road expansion, rapid transit).

From the formal plan referral process outlined in the *Local Government Act* to the development of project proposals, HIA components can be integrated into existing planning and development review processes, such as:

- **Official Community Plans (OCPs)/Regional Growth Strategies:** As public interest in healthy community planning continues to grow, OCPs and regional growth strategies provide a framework to address these issues along with a community's or region's long term needs around land use, infrastructure and transportation. Numerous municipalities in the Lower Mainland have formally recognized the links between the built environment and public health and are increasingly incorporating community health objectives in their OCPs (e.g., supporting healthier built environments, facilitating more active forms of transportation, like walking and cycling). For example, the City of North Vancouver recently partnered with Vancouver Coastal Health Authority to update their OCP and its health sections, while the City of Chilliwack reframed their entire OCP to reflect the importance of planning in determining community and individual health outcomes.

***FIGURE 2:*** *HIA – a spectrum of approaches*



- **Development Planning and Review:** Larger developments requiring a rezoning and/or an OCP amendment are required to undergo a formal review process, as outlined in the *Local Government Act*. Such large mixed-use or residential developments are typically assessed for environmental and health-related components using sustainability checklists and healthy built environment design guidelines. Some developers now market the "healthy living" features of their projects (e.g., access to nature, traffic calming, connections to bike and pedestrian routes) to a public increasingly interested in healthy design.

  In BC, Interior Health uses a health checklist to evaluate the large development and subdivision applications that are referred to them. More sophisticated review and assessment tools for urban development are currently being designed that incorporate local data, GIS analysis and scenario modeling to convey and assess the potential health impacts of different activities. Such a tool was piloted locally on the development plan for the Surrey Central Station as well as in the West Don Lands area in Toronto.

- **Transportation Planning:** From SkyTrain extensions to new highways to major bridge projects, there have been and will continue to be a number of complex, large-scale transportation projects in the Lower Mainland. Use of the HIA process in the region has been limited to date (e.g. TransLink's Patullo Bridge investment project, which looked at bridge upgrading and replacement options and their potential health-related outcomes, as well as in their Strategic Investment Plan). However, there are numerous opportunities to enrich the analysis and detailed planning for upcoming transportation projects by including HIA.

These examples illustrate the growing interest in bringing health perspectives and analysis into planning, development and transportation processes. This trend opens the door to opportunities for integrating HIA in a wide range of city, transportation and development planning practices and, ultimately, for achieving better health outcomes across projects, plans and policies in the region.

## PLANNING AND PUBLIC HEALTH
### A Shared Beginning

Growing out of disease prevention, sanitation, and slum eradication in Victorian England, **public health and land use planning were historically closely allied professions**. Over time, as the two professions continued to evolve and develop, they began to diverge widely.

It's only within the last decade or so with the growing recognition of connections between the built environment and health, and the rise of broader-based planning approaches (e.g., sustainable communities) that the two have begun to converge again. Still, despite the natural and historical alliances and crossovers, the need to better understand and collaborate remains.

*Map of cholera cases in the London epidemic of 1854 and their proximity to the communal water pump that was determined to be the cause of the spread.*

## 2.6 Who leads HIAs?

HIAs are generally undertaken by the approving agency for the activity. In jurisdictions with regulatory HIA requirements and/or a history of practice, municipal public health departments, state and regional transportation agencies, county or regional governments, city planning and social planning departments, and even non-profit organizations have all led HIA processes of varying scales. For larger urban developments, project proponents have undertaken HIAs.

In the Lower Mainland, similar organizations and agencies could all lead an HIA, including, but not limited to, **municipal government** (social planning and city planning departments), **regional districts** (Metro Vancouver, Fraser Valley Regional District), or **transportation authorities** (e.g., TransLink, BC Transit).

The defined mandates, expertise and focused resources of the two regional Health Authorities (i.e., Fraser Health and Vancouver Coastal Health Authorities) and the Provincial Health Services Authority, make these health agencies important stakeholders to collaborate with in an **advisory, consultative and research support role**.

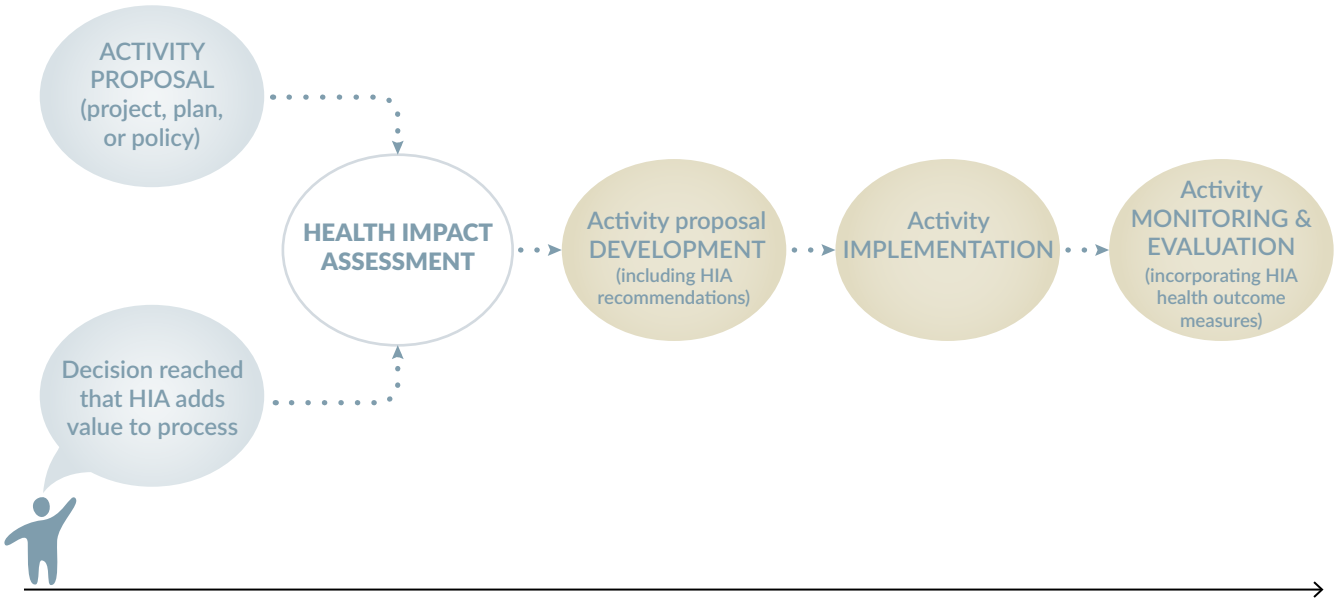
Activities warranting an HIA that involve Crown lands (e.g., Port Metro Vancouver) or provincial transportation corridors should be led by the senior government agency responsible for the activity. For applications by industry the proponent is generally responsible for the HIA. For large urban housing or mixed-use developments, the project proponent or developer would be responsible for the HIA as a condition of development.

## 2.7 When is HIA conducted?

HIAs can be completed before an activity commences, concurrently during the development of a project, or after a project is implemented (if the intent is to monitor and evaluate related health-related outcomes). HIAs are more likely to have tangible effect when they are **conducted early in a project planning cycle** while there is still an opportunity to influence decision making as illustrated in *Figure 3*.

The rationale for conducting an HIA towards the beginning of the project or planning cycle comes from recognizing that land use, development and transportation decisions influence individual and collective behaviours, which in turn ultimately influence health-related outcomes. Planning and public health researchers sometimes refer to this phenomenon as the "ripple effect[3]" between planning decisions and investments in community health.

***FIGURE 3:*** *HIA and the Project Planning Cycle*




3 See Frank, L. and K. Raine. *Creating a Healthier Built Environment in BC*. September 2007

## 2.8 What is the HIA policy context?

As the body of research and evidence linking health-related outcomes to decisions concerning the built environment grows, so has the use and awareness of applying a "health lens" to land use and transportation activities. Canadian health professionals and health authorities have started to more actively engage with transportation, community and land use planners, seeking more involvement in project reviews, plan referrals and proposal developments.

In BC, the *Local Government Act* and the *Public Health Act* give broad provisions for local governments and Medical Health Officers to address a range of issues directly related to their community's health and wellbeing. While HIA is not identified by name in these acts and other legislation, it is clearly a tool that can help local governments and Medical Health Officers to fulfill their respective mandates even under the current legislation.

The *Public Health Act* gives the authority to Medical Health Officers to advise health authorities, school boards and local governments within the designated area on public health issues, including "health protection" and "bylaws, policies and practices respecting those issues" (*Public Health Act*, Division 3, s 73(3)(a)(b)).

The *Local Government Act* provides equally broad authorities for planning for health, including the right to "regulate and prohibit for the purposes of maintaining, promoting or preserving public health" and to "undertake any other measures it considers necessary for those purposes" (*Local Government Act*, s 523(1)(a)(b)). The provisions for the development of Regional Growth Strategies (s 849) and related provisions for Official Community Plans (s 875) also support HIA as a tool for improving community health and wellbeing.

### HIA IN CANADA

With clear potential for broader HIA use in BC, other Canadian regions and provinces provide useful examples and benchmarks for planners here.

Q+A

### Q&A: WHERE'S HIA USED IN OTHER PLACES?

Other countries and international agencies have used HIA in a range of sectors and developed supportive legislative and policy environments at the local, state, provincial and national levels.

**UNITED NATIONS:** The World Health Organization is a leading supporter of HIA and works to ensure its use throughout the UN system (e.g., UN Habitat, UN Development Programme, UN Environment Programme).

**UNITED STATES:** Beginning in San Francisco in 1999, HIA has been commonly used at local, state and federal levels across the US. In 2006, Congress adopted a law making HIA a requirement for certain types of federal projects. Locally, HIA has been used in a number of large metropolitan areas and medium-size communities for a variety of land use, housing, and transportation planning initiatives. HIA has also been used to gauge the health impacts of proposed changes in local zoning ordinances.

**EUROPE:** In the EU, HIA is well established and recognized at various government levels. Numerous EU members, including England, Finland, Holland, Sweden, Scotland and Ireland have established national-level budgets for HIA and have institutionalized them through various policies, legislation and capacity building initiatives.

**AUSTRALIA:** The Australian government developed guidelines for implementing HIA into Environmental Impact Assessments in 2001, but the responsibility for HIA was later defined to be a matter of state and local jurisdiction. Some states have established HIA legislation, while others have worked to develop awareness and capacity to undertake HIA at the local level.

### Québec

Québec's HIA policy environment is the most advanced in Canada. HIA has been institutionalized in the province since the 2002 adoption of the *Public Health Act*, which obliges all government departments and agencies to ensure that their laws and regulations minimize adverse impacts on the health of the Québec population.

Each government ministry is responsible for carrying out the majority of the HIA process for its own projects, plans and policies; however, the Ministère de la Santé et des Services Sociaux (MSSS) / Ministry of Health and Social Services provides tools, resource guides, support (in the form of two full-time coordinators) and research into HIA. MSSS also provides expert input in the 'analysis' step of HIA. A 2006 planning and practice guide by MSSS outlines the foundation and process for HIA across all government departments.

### Ontario

The City of Toronto and nearby Region of Peel have been active in HIA development. In 2009, the Region of Peel developed a Healthy Development Index to evaluate development applications in a consistent manner and provide health-based rationale to inform planning decisions. The Index looks at seven elements of the built environment (including density, service proximity, street connectivity) and identifies quantifiable health measures for each one.

Building on this work, the Region of Peel and Toronto developed a "Health Background Study Framework and Toolkit" that incorporates the Index, and provides users with guides and tools to conduct a Health Background Study. The Health Background Study is similar to HIA. The process has been applied to a number of projects in the Toronto Metro Area (which includes the Region of Peel), though it is not mandatory at this time.

### Alberta

The Ministry of Health has developed the "Health Lens for Public Policy" (HLPP), a voluntary program for all government ministries to participate in when developing policy. The HLPP is similar in form to HIA, but a new name was chosen in order to make the process more accessible and less technical. The HLPP framework includes a locally produced guidebook, planning and capacity support from the Ministry of Health, and training on the determinants of health for employees across the provincial government.

Q+A

## Q&A: WHAT'S THE DIFFERENCE BETWEEN HIA AND ENVIRONMENTAL IMPACT ASSESSMENT (EIA)?

While assessing environmental impacts of major projects is mandatory in BC, examining potential human health impacts remains optional. Even when included, as it was with the recent Fraser Surrey Docks proposed expansion project, there are no requirements for the scope and depth with which potential human health impacts must be assessed.

In general, the steps of HIA (see Section 3) parallel the general steps of Environmental Impact Assessment (EIA), which allows for **integration of the two processes**.

Following the basic pattern of an EIA, HIA starts with an analysis of existing conditions in a community and, in particular, identifies special sub-populations who may be particularly vulnerable, or in which there are significant baseline health inequities.

By integrating HIA and EIA, redundancy in data collection and analysis can be avoided, as information collected in the EIA process provides inputs into the health analysis.

# 3.0 The Health Impact Assessment Process

# The Health Impact Assessment Process

This section provides step-by-step guidance for conducting HIA. The HIA process is organized around a well-tested methodology that follows **five general steps**. These steps align with, and build on, HIA best practices from around the world, but are also tailored to meet the needs of Lower Mainland planners and health practitioners.

Throughout this section, specific 'tools' are referenced that are designed to help guidebook users complete each of the five HIA steps. Some of the tools, including the analysis matrices, are used to illustrate a hypothetical project in the Lower Mainland that is introduced in the first "Building-the-Case" planning step illustrations.

Tools are provided in companion document, *Health Impact Assessment of Transportation and Land Use Development Activities: Toolkit*, along with detailed instructions, and time and resource requirements.

## A RANGE OF APPROACHES

HIA can be scaled up or down to fit the complexity of the activity being analyzed, as well as the available budget, resources and planning capacity.

*Step 2: Scoping* provides guidance on choosing an appropriate level of HIA, while each step includes a text box with tips on how to adapt the step to a desktop, intermediate or comprehensive HIA.

For those with time constraints, the 'bare minimum' would be to complete *Tool 2-C Influence Diagram* and *Tool 3-A HIA Matrix*, if possible with input from and consultation with a health professional from your local Health Authority.

## 3.1 An overview

There are five main steps to HIA. While it is often presented as a linear process, HIA is an **inherently iterative process** where planning steps and tasks may be revisited as new information and evidence emerges, or as new stakeholders with different insights enter the process.

These steps are briefly summarized below with more detailed information for each step provided in subsequent sections.

1

### STEP 1: SCREENING

Screening is used to determine if an HIA is appropriate, required and feasible. Questions at this stage include:

- *Are there potential activity impacts, which may ultimately affect health-related outcomes?*
- *How significant could the activity impacts be?*
- *Is there a need for more detailed assessment and is HIA the most effective way to do it?*

2

### STEP 2: SCOPING

If screening determines a need for further appraisal, scoping determines:

- *Which activity impacts and health-related outcomes should be evaluated and how?*
- *What stakeholders should be involved and how will they participate?*
- *What level of HIA (desktop, intermediate, comprehensive) is most appropriate?*

3

### STEP 3: ASSESSMENT & ANALYSIS

The core of the HIA, this step involves answering a number of important questions, including.

- *What baseline information exists on community health and wellbeing?*
- *What are the community health values and objectives?*
- *How significant are the potential health-related outcomes?*
- *How could positive health-related outcomes be leveraged?*
- *How could negative health-related outcomes be mitigated?*

4

### STEP 4: RECOMMENDATIONS & REPORTING

This decision making step involves answering a number of important questions, such as:

- *How can HIA recommendations best address assessment and analysis findings?*
- *Do HIA recommendations support community health objectives and values?*
- *What other communication tools, beyond writing a final report that documents the process, findings, and recommendations, can be used to help communicate HIA recommendations to stakeholders, decision makers and the general public?*

5

### STEP 5: MONITORING & EVALUATION

This follow-up step involves answering these important questions:

- *How can HIA implementation be effectively monitored and tracked?*
- *How can resulting changes to health outcomes due to HIA recommendations be monitored and tracked?*
- *How can these results best be communicated?*

As illustrated in *Figure 4*, HIA is an iterative process. With new information and stakeholders entering into the process at each step, earlier planning steps may need to be revisited.

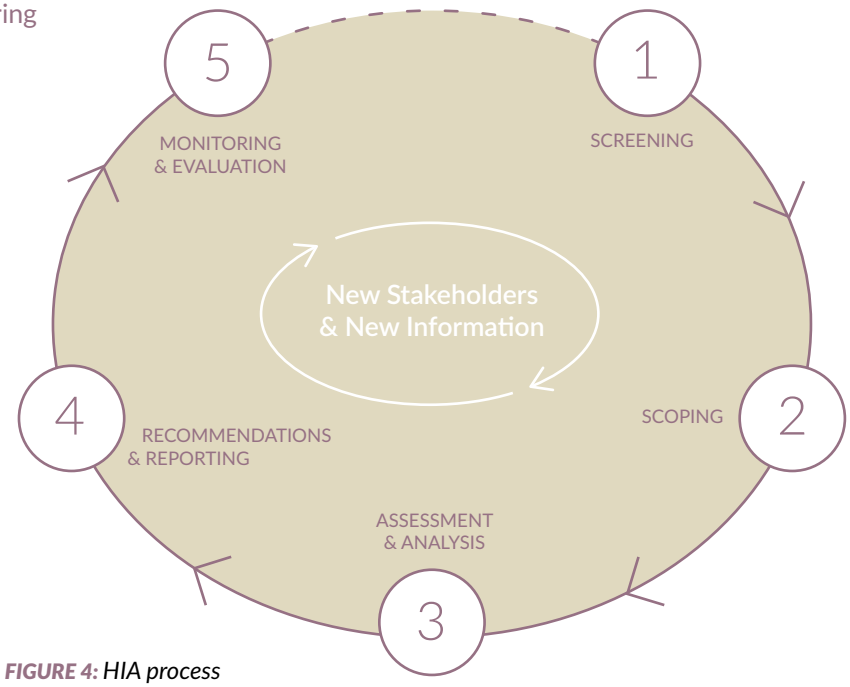



***FIGURE 4:*** *HIA process*

## BUILDING THE CASE

**A FICTIONAL LOWER MAINLAND HIA**

*Throughout the guide we will be illustrating each step of the HIA by applying them to a **fictional** situation, in this case a proposed transit exchange and transit oriented development in a municipality located in the Lower Mainland. In the fictional example, the regional transportation authority has developed a proposal for a major new regional transit exchange that will include:*

- *A Park & Ride facility with up to 700 parking spaces*
- *High Occupancy Vehicle/transit only lanes to and from an adjacent arterial road*
- *New pedestrian and bicycle connections to and through the site*
- *Retail kiosks*

*As part of the project, the city is considering rezoning the area to create a new Comprehensive Development zone with higher density residential, including 350 units of rental and market housing, retail units, and office space. The proposed development is located in the municipality's downtown area and would involve the demolition (and partial replacement) of some rental apartments, small retail shops and municipal parkland.*

STEP 1

# STEP 1: Screening

Screening determines whether an HIA is appropriate and feasible. It involves a high-level examination of the activity to gauge its potential impacts on the health of a population using informed opinions and evidence already available. The screening step also examines organizational capacity to carry out HIA.

The screening step involves the following three tasks:

- *TASK 1.1: Form a core planning team*
- *TASK 1.2: Identify context and organizational capacity*
- *TASK 1.3: Review relevant health determinants and potential impacts*

Screening is an important first step. Practitioners advise others to **screen and carefully choose the activities on which an HIA should be conducted**. HIAs, particularly more comprehensive ones, require a significant investment of time, resources, attention, and often social and political capital, so this step will be vital to understanding whether a more detailed HIA is or is not necessary.

## TASK 1.1: Form a core planning team

A small, core team should undertake the screening process, ideally involving representatives from the approving agency or project proponent (e.g., municipal government, regional district, Health Authority, TransLink, Ministry of Transportation and Infrastructure). Not all individuals in this group may be familiar with HIA process, so it may be necessary to prepare and distribute background materials in order to procure their participation and/or prepare them for the process.

## TASK 1.2: Identify context and organizational capacity

With the core planning team in place, the group's first task is to assess the general planning context around the proposed activity. At this stage, the group's readiness and organizational capacity for undertaking an HIA should also be assessed.

### A RANGE OF APPROACHES

Screening is a fast step, and **should be completed for all levels of HIA**. A single individual can complete *Step 1: Screening* if resources and time are very limited (as opposed to a small team, as recommended in Task 1.1).

*Tool 1-A HIA Readiness Checklist* is a series of questions to help the HIA Team clarify the goals of the HIA, and gain a better understanding of the organizational context that the HIA will be conducted within. The checklist looks at things like urgency, resources, and level of public interest. It helps ensure that the core team is 'on the same page' with regard to the purpose of the HIA, whether or not the HIA is likely to have any impact on decision making, and other important criteria.

**TOOL 1-A**
*HIA Readiness Checklist*

STEP 1

## TASK 1.3: Review relevant health determinants and potential impacts

*Tool 1-B Screening Checklist* provides questions to guide the group through an initial assessment of potential links between the activity and the most relevant determinants of health. This checklist also offers an opportunity to consider the distribution of impacts.

**TOOL 1-B**
*Screening Checklist*

If, after completing the checklists and coordinating with other experts, screening indicates negligible potential health-related outcomes (positive or negative), or lack of other reasons to proceed, an HIA is likely not necessary. If, however, screening indicates potentially significant health-related outcomes that an HIA would help better identify and assess, the group should proceed to *Step 2: Scoping*.

Even if no HIA is required, the explanation of how that decision was reached should be documented, including the screening results and other project materials. This brief should be presented to decision makers and made available to interested project stakeholders.

## A CASE-IN-POINT

**STEP 1: SCREENING**

**HIA Pilot and the Application of Screening Tools**
*Location: Montérégie, Québec*

Between 2007 and 2008, a pilot project initiated by Quebec's Montérégie Direction Santé de Publique (Department of Public Health) assessed the value of applying an HIA process at the municipal level. In partnership with local health organizations, the Department selected three projects to screen for undertaking an HIA process:

1. The construction of a community multi-service facility
2. An age-friendly municipal policy initiative targeting seniors
3. The construction of a household waste compost facility

Each project independently underwent HIA screening. Project committees were created for each that consisted of a project manager, one or two public health professionals, and designated municipal representatives. All three projects were screened using a Screening Table developed by the World Health Organization that assessed potential physical, societal, and environmental health impacts.

The screening process revealed the following:

1. Construction of the multi-service centre would have virtually no negative health-related impacts, and therefore did not require an HIA.
2. The age-friendly policy initiative was subject to strict time constraints that precluded a full HIA.
3. Development of a composting facility raised significant health concerns including plant workers' exposure to dust, bio-aerosols and noise, potential impacts for the general population involved, an increase in road traffic, and a greater economic burden on households living in rental housing. A comprehensive HIA was deemed necessary for the project.

More information:
www.ncchpp.ca/54/Health_Impact_Assessment.ccnpps

STEP 1

## BUILDING THE CASE

**STEP 1: SCREENING**

*Planners from the municipality and the regional transportation authority have been in discussions for several months about a large new transit exchange as part of a larger transit oriented development project in the downtown area of the city. The project site is located on land owned by the municipality and is being touted as an opportunity to help improve transit connections, bring new residents downtown, bring new shoppers, employers and visitors, and help revitalize the area and municipality's downtown in general.*

*At the development application stage, a citizens group called "Residents for a Livable Downtown" contacted the city with concerns about the development. Their concerns include:*

- ***The loss of some affordable housing** – some older rental apartments would be demolished and the number of rental units in the new development would only partially offset the loss of rental housing.*
- ***The displacement of some small retail stores** – while the new development would include kiosks and retail space, the proposed retail format would not work for existing small businesses.*
- ***Air and noise quality concerns** – the transit exchange would increase traffic to the area and the group had some concerns about exhaust from bus idling.*
- ***Public safety concerns** – that the transit exchange could be unsafe for some users and attract undesirable social uses.*
- ***Consistency with the new OCP** – the municipality recently updated its OCP, which placed a high priority on community health.*

*The group also requested that the project be subject to an HIA. In response to citizens' concerns, the municipality and the regional transportation authority met with "Residents for a Livable Downtown" to conduct an HIA screening to determine if there was a need for an HIA. The Medical Health Officer responsible for the municipality was invited to attend the meeting.*

*Using Tool 1-A HIA Readiness and Tool 1-B Screening Checklist, the group determined the following:*

- ✔ *The project **could influence health determinants**, including housing, air quality and access to services.*
- ✔ *The planning process was at an **early enough stage** that an HIA could lead to recommendations to modify the development proposal.*
- ✔ *There was some **funding** that the regional transportation authority's development partner could put towards supporting meetings and limited analysis.*
- ✔ *As the approving agency, the **municipality could lead the project** through the Planning Department and the coordinator of the municipality's recently adopted Healthy Community Action Plan.*
- ✔ *There was **interest from community stakeholders**, including the local university's School of Health Studies, to participate in the project and commit student researchers to it.*
- ✔ *The HIA would need to be completed within **six months** to align with the approvals process and timeline for the project.*

*At the end of this discussion, the group determined that an HIA would be appropriate for this project, and that they would discuss Step 2: Scoping in two weeks time.*

STEP 2

# STEP 2: Scoping

Scoping lays the groundwork for the HIA and generates a roadmap for carrying it out. Effective scoping can help save time, work and resources in future steps by clearly **establishing the health impacts to be assessed, identifying the stakeholders to be engaged** (and how), and **determining the level of effort required** (i.e., which HIA approach to take—desktop, intermediate, or comprehensive).

The scoping step involves the following five tasks:

- TASK 2.1: *Determine the appropriate level of HIA*
- TASK 2.2: *Establish the HIA Team*
- TASK 2.3: *Initial identification of activity impacts and health-related outcomes*
- TASK 2.4: *Develop a stakeholder engagement plan*
- TASK 2.5: *Create an HIA workplan*

As an iterative process, scoping activities continue through the other HIA steps as new information emerges, new stakeholders become involved, and political and/or planning contexts change.

## TASK 2.1: Determine the appropriate level of HIA

The level of HIA will be based on a number of factors, including organizational capacity, resources, and the degree of assessment required. *Figure 5* provides a comparison of the level of HIA and its time requirements, resource needs, stakeholder participation needs, and analysis methods[4].

TOOL 2-A *Scoping Checklist*

## TASK 2.2: Establishing the HIA Team

The size and time commitments of an HIA Team will vary **depending on the level of HIA undertaken**. The same core team established in *Step 1: Screening* can likely carry out desktop HIAs with one or two additions where necessary (i.e., if a particular skill or capacity is missing). Intermediate and comprehensive HIAs typically require a larger HIA Team representing a broader range of relevant skills and experience, with its actual size depending upon the anticipated length and complexity of the HIA. The HIA Team is the group that will actually lead the HIA process and direct the support of other project partners (e.g., agency staff, consultants).

### A RANGE OF APPROACHES

The level of work required for *Step 2: Scoping* **varies depending on the HIA approach** chosen in *Task 2.1 Determine the appropriate level of HIA*.

For **desktops HIAs**, it is likely that the HIA Team (*Task 2.2*) will be small, potentially a single person. It is important to identify health impacts and outcomes (*Task 2.3*) in a desktop HIA, hopefully with a representative from your local Health Authority (e.g., Fraser Health Authority or Vancouver Coastal Health Authority) in an advisory or consultative role helping to review potential health-related outcome and activity impacts. Stakeholder engagement (*Task 2.4*) will be quite limited in a desktop HIA, except for conversations with health professionals and decision makers as needed. The HIA workplan (*Task 2.5*) will also be relatively brief and simple.

For **intermediate and comprehensive HIAs**, a broader range of participants would be involved. More members would be involved on the HIA Team for a comprehensive HIA than an intermediate HIA. The initial analysis of potential health impacts can be completed by the HIA Team in an intermediate HIA, but may require broader stakeholder engagement in a comprehensive HIA. The Stakeholder Engagement Plan will likely include more engagement with key stakeholders and, for comprehensive HIAs, would likely include broader public outreach and engagement (e.g., open houses, town hall meetings, community surveys).

4 Figure adapted from *Health Impact Assessment: A practical guide*, University of New South Wales and NSW Health, August 2007

***FIGURE 5:*** *HIA Levels - methods and resource requirements*

| | DESKTOP | INTERMEDIATE | COMPREHENSIVE |
|---|---|---|---|
| Time Requirements | Between two days to one week for one person full time. | Between one to three months for one part-time coordinator. HIA Team participation and meetings. Stakeholder meetings and engagement. | 6 to 12 months for one full-time project coordinator. HIA Team meetings and participation. Stakeholder meetings and engagement. |
| Level Of Assessment | Provides a broad overview of potential health impacts | Provides a more thorough assessment of potential health impacts, and more detail on specific predicted impacts. | Provides a comprehensive assessment of all potential health impacts using both quantitative and qualitative data. |
| Resources | Typically used where time and capacity are limited | Requires some time, capacity and resources | Requires more significant time, capacity and resources |
| Data Requirements | Typically an "off-the-shelf" exercise with an emphasis on collecting and using existing accessible data. | Involves collecting and analyzing existing data, as well as gathering new, primarily qualitative data. | Involves collecting and analyzing both qualitative and quantitative data from multiple sources. |
| Stakeholders And Participation | Typically limited input from experts and key stakeholders. HIA Team, or steering committee often not established. | Requires HIA Team (steering committee) participation and external stakeholder engagement, including key informant interviews, focus groups, and surveys to provide qualitative data. | Requires active HIA Team (steering committee). Broad stakeholder engagement, including key informant interviews, focus groups, surveys, expert elicitations and the like to provide both qualitative and quantitative data. |
| Methods, Tools And Capacity | Typically limited to accessing off-the-shelf resources and synthesizing and appraising information. A focus group meeting and/or core group meeting may be organized. Limited technical capacity requirements. | Participatory assessment of existing data, collection of and analysis of new data. A broader range of methods used to generate new qualitative data. | Requires structured collection and participatory assessment of existing data and new qualitative and quantitative data. A broad range of methods used to generate new qualitative and quantitative data. Can include original research and modeling (environmental, epidemiological). |

*KEY:*

- ***High*** *(e.g. Extensive stakeholder engagement)*
- ***Medium*** *(e.g. Medium amount of time)*
- ***Low*** *(e.g. Low technical capacity required)*

*Increasing resource requirements*

STEP 2

In addition to representatives from the approving agency or project proponent (e.g., municipal government, regional district, Health Authority, TransLink, Ministry of Transportation and Infrastructure), the group should bring together **a mix of skills and expertise**. This means including people with content expertise in health and in the project area (e.g., transportation, urban land development) and, ideally, a person with some level of HIA experience. Public health research and policy development, land use planning, community engagement, research and project management are typical areas of expertise to look for on a well-rounded HIA Team. The group should be inclusive of other key project stakeholders (e.g., representatives from academia, potentially affected/most vulnerable populations) to reflect a diversity of opinions and also promote wider participation in, and ownership of, the process.

**TOOL 2-B**
*HIA Team Terms of Reference*

Established at the outset of this planning step, the HIA Team should work together to complete and/or oversee other scoping activities and remaining HIA planning steps. Use *Tool 2-B* to help develop a Terms of Reference for the HIA Team, which can be used to help outline team roles and responsibilities.

Q+A

## Q&A: HOW MUCH DOES HIA COST?

A survey of Lower Mainland planners, transportation engineers and health professionals undertaken as part of developing this guidebook revealed that **costs and time were two of the biggest barriers to HIA development**.

Unfortunately, the cost of HIA are difficult to pinpoint and range widely depending on the level of HIA undertaken and a number of variables, including:

- Scope and scale of the project being evaluated
- Analytical methods used and required
- Agencies and organizations involved
- Capacity of those agencies and individuals involved (and the need for external support).

According to Human Impact Partners, a US-based HIA consultancy, intermediate HIA can cost as little as $12,000, while comprehensive HIA can cost upwards of $175,000. Figures from Europe illustrate a similar range of costs, ranging from $3,000 for a preliminary (i.e., desktop) HIA on noise, air and water pollution from a proposed industrial development in Belgium, to $15,000 for an intermediate HIA on a Local Area Plan in Ireland. In Wales, the costs for a comprehensive HIA involving a large transportation project cost $115,000, while a broad-based housing and urban planning comprehensive HIA cost $205,000*. In both cases, the cost of the HIA relative to the cost of the activity being reviewed was small.

Despite the uncertain costs, if HIA is done well and the results are incorporated into the decision making process, the costs are generally worth the investment. Several studies have found that the **benefits from HIA outweigh the costs** of undertaking them**.

The National Collaborating Centre for Healthy Public Policy (http://www.ncchpp.ca) has developed an HIA cost calculator for use in Canada, which is available online. The calculator provides guidance on how to estimate time and costs, but does not provide time or cost estimates themselves.

* http://www.euro.who.int/__data/assets/pdf_file/0003/98283/E90794.pdf

** Atkinson P, Cooke A (2005). Developing a framework to assess costs and benefits of health impact assessment. Environmental Impact Assessment Review, 25:791-798. and O'Reilly, J. et al. (2006). Cost-benefit analysis of health impact assessment. London, Department of Health.

### TASK 2.3: Initial identification of activity impacts and health-related outcomes

In this task, the HIA Team should develop an initial list of potential **activity impacts** (direct and indirect) that could be expected as a result of the proposal. These activity impacts will be further evaluated and researched in *Step 3: Assessment and Analysis*. Concentrating on those that are **most likely to occur and with the greatest potential to influence health-related outcomes** will focus the work and help make the best use of project resources.

It is important to note that **additional activity impacts may emerge during this planning step that were not identified during screening or scoping**. The entire HIA process should be **iterative**, with ongoing refinement throughout the process. In addition, some impacts may not be deemed to be technically important to the HIA Team, but they are a major concern to public stakeholders. Where possible, these "hot button" issues should be included in-scope to help maintain community support and buy-in for the HIA process.

Using *Tool 2-C Influence Diagram*, the HIA Team should work together to develop **influence diagrams** (sometimes referred to as a *causal model*) for the activity being considered. Influence diagrams illustrate what activity impacts could be anticipated as a consequence of pursuing the activity in question. As illustrated in *Figure 6*, an influence diagram illustrates:

**TOOL 2-C** *Influence Diagram*

- The activity under consideration;
- The anticipated changes to behaviours and the built environment it could drive (the activity impacts); and
- The resulting health-related outcomes that could be expected as a consequence of the activity.

Q+A

## Q&A: WHO CAN PROVIDE HEALTH EXPERTISE?

Engaging health and/or health planning professionals is a **critical component of any HIA**. These professionals contribute health expertise and should either be involved on the HIA Team and/or provide input and guidance on collecting and analyzing health information. Candidate organizations include the region's Health Authorities, universities (e.g., UBC and SFU) and social and health planning organizations (e.g., BC Healthy Living Alliance, Social Planning and Research Council of BC). Local community health experts, consultants and First Nations can also be engaged.

While the engagement of Health Authorities will likely be limited to an **advisory or consultative role**, their involvement is nonetheless important. There are three Health Authorities that provide health services in the Lower Mainland region, including epidemiological expertise as well as planning capacity. **Vancouver Coastal Health Authority** provides services in Vancouver, Richmond, North and West Vancouver and along the Sea-to-Sky Highway (and the Sunshine Coast and Bella Coola), while the **Fraser Health Authority** provides services to Burnaby, Delta, Port Moody, Coquitlam, Port Coquitlam, Pitt Meadows, Surrey, White Rock, Langley (Township and City), Mission, Abbotsford, Chilliwack and up the Fraser Valley to Hope. The **First Nations Health Authority (FNHA)** works to improve health outcomes for First Nations people across the province. The Fraser Salish and Vancouver Coastal regions of the FNHA encompass the Lower Mainland.

For both agencies, the **Medical Health Officer** or **Environmental Health Officer** team would likely be the initial point of contact. There is a Medical Health Officer designated for each municipality within Metro Vancouver and the Fraser Valley Regional District. In addition to providing input themselves, they may be able to identify other Health Authority staff that would be needed. For more information visit the websites of Fraser Health Authority (www.fraserhealth.ca) or Vancouver Coastal Health Authority (www.vch.ca).

An additional source of health input is the **Provincial Health Services Authority** (PHSA), which serves the entire province, and can be accessed through the local health authorities. PHSA has epidemiological expertise and some planning capacity, which if available and appropriate, could be a valuable resource for more comprehensive HIA processes.

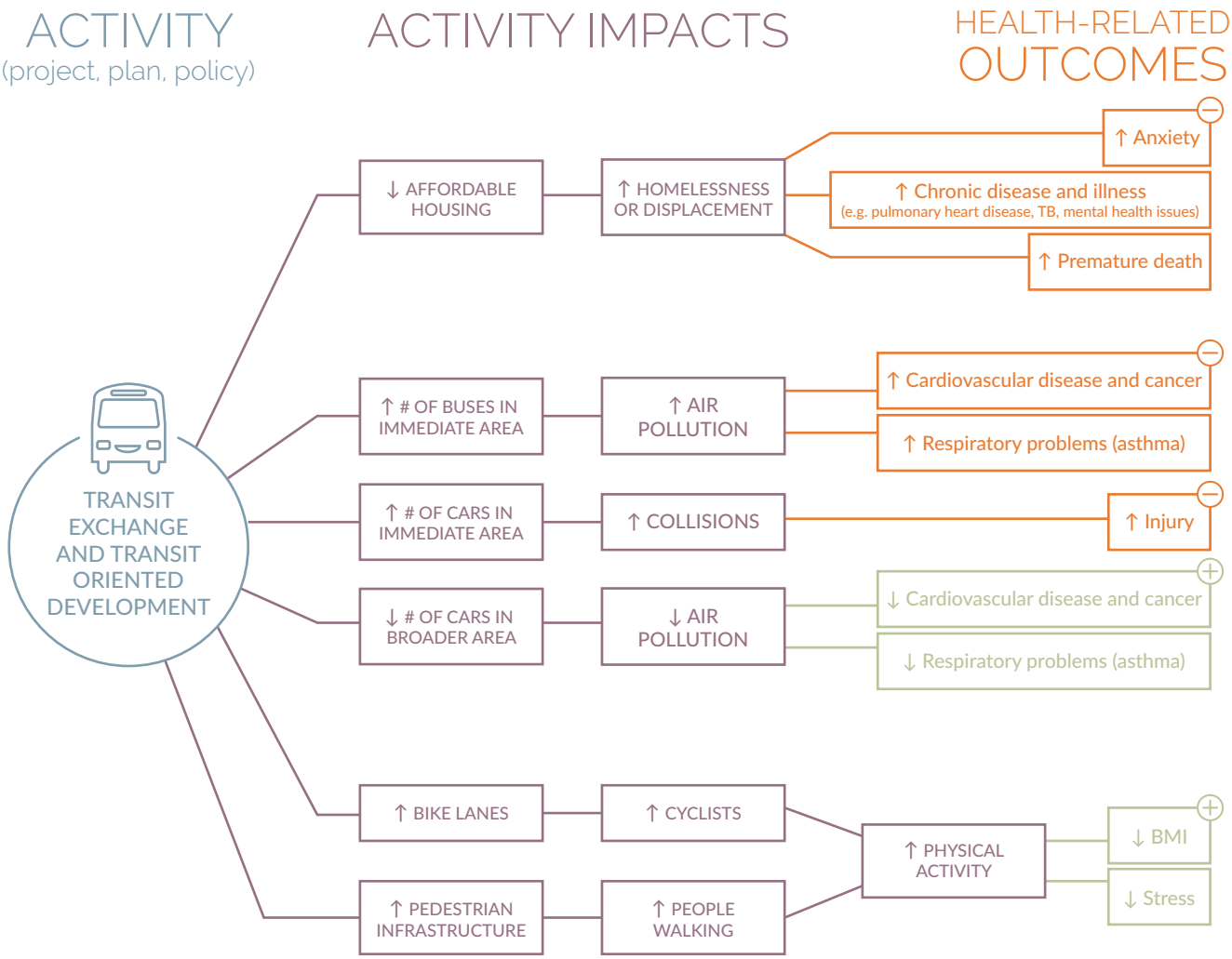
STEP 2

Depending on the complexity of the activity and the scope of assessment, the HIA Team may choose to develop a single pathway diagram or separate pathway diagrams for each category of health determinant.

An influence diagram can be used to help establish research questions for *Step 3: Assessment and Analysis* by highlighting the potential **health-related outcomes that warrant further evaluation**. It can also be used to illustrate and simplify the complex **cause-and-effect relationships** an HIA must consider. This, in turn, can help stakeholders and decision makers better understand the HIA process and the rationale behind it.

*Figure 6* provides an **illustrative influence diagram** and not a comprehensive one. It is likely that some activity impacts could generate **both positive and negative impacts**. For example, the illustrative influence diagram shows that the air quality benefits for the broader area are positive due to a overall decrease in vehicles trips though increased transit usage, car pooling to the transit exchange, and cycling. However, in the immediate vicinity of the transit exchange, there could be negative air quality impacts through increased vehicle trips to the park-and-ride and, potentially, bus idling at the exchange. In this example, and through later HIA planning steps, the HIA process should not only help participants **gain a better understanding of the activity impacts**, but also identify how to **leverage potential positive impacts**, while **mitigating the potential negative impacts**.

***FIGURE 6:*** *Tool 2-C Influence Diagram (Building-the-Case example)*



STEP 2

## Q&A: OBJECTIVES & VALUES - WHAT MATTERS MOST TO THE COMMUNITY?

At this stage, the HIA Team should consider community health **objectives and values**, and add these to the influence diagram if they are not already there. What matters most to the community (as expressed in **community plans** or through **HIA stakeholders**)? Often, objectives **align with desired health-related outcomes**.

For example, if a key community objective is improving active transportation connections in the built environment (e.g., sidewalks, trails, bike paths), ensure that the activity impacts on these connections and linkages in the built environment are included in your initial analysis of activity impacts.

The results from the pathway diagrams can be summarized in a simple matrix. *Tool 2-D Pathways and Activity Impacts Matrix* will be expanded and further developed throughout the HIA process described in this guide. The last column in *Figure 8*, regarding potential equity considerations, is included to help the HIA Team start thinking about what stakeholders might be considered to ensure equity considerations are included in the HIA during the next task.

**TOOL 2-D**
*Pathways and Activity Impacts Matrix*

Some potential health-related outcomes will be associated with multiple health determinants. The matrix can be adjusted as necessary, potentially by adding new cells or drawing lines to show connections.

A valuable local resource that can help with the development of the influence diagram and the corresponding influences and impacts matrix is **Healthy Built Environment Linkages: A toolkit for design, planning and health**. Published by the Provincial Health Services Authority (PHSA) in October 2014, the document is available through PHSA's website (www.phsa.ca) on their healthy built environment program page.

The results from the (2013-2014) **my Health my Community** survey also provides useful, recent information on health related factors of Lower Mainland and Coastal Health residents, including linkages between active transportation and health indicators (www.myhealthmycommunity.org).

Once an influence diagram (*Tool 2-C*) and corresponding matrix (*Tool 2-D*) have been developed, another useful tool is *Tool 2-E Health-related Outcome Plotting*. This tool can be used by the HIA Team to **narrow down which health-related outcomes from the influence diagram exercise should receive more detailed assessment** during *Step 3: Assessment and Analysis*.

**TOOL 2-E**
*Health-related Outcome Plotting*

STEP 2

***FIGURE 7:*** ***HIA MATRIX*** *Tools 2-D Pathways and Activity Impacts Matrix to Tool 5-A HIA Monitoring Framework collectively work to build a matrix showing all health impacts and outcomes. Each tool will add additional information to the matrix.*

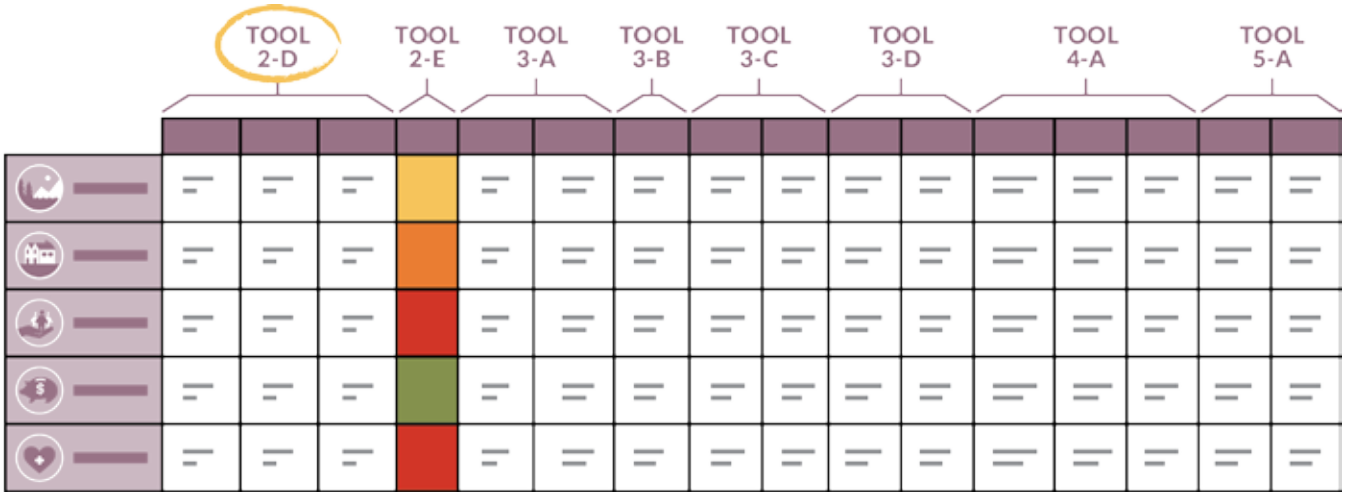



***FIGURE 8:*** *Tool 2-D Influence and activity impacts matrix (Building-the-Case example)*

| HEALTH DETERMINANTS | Influence description/health determinant impacts (from Tool 2-C) | Potential health-related outcomes and direction of change (from Tool 2-C) | Potential equity considerations? |
|---|---|---|---|
| | *How could the health determinant be impacted? Would the impact affect health outcomes?* | *What is the potential health-related outcome? What is the direction of change (positive or negative)?* | *Would any one group or population be more impacted than other (e.g., youth, seniors, low income residents)?* |
| **PHYSICAL ENVIRONMENT** *(air, water, soil, natural habitats)* | Air quality and noise concerns - the transit exchange would increase traffic to the area. Some concerns about exhaust from bus idling.<br>Reduced number of vehicles and associated air pollution in broader region. | Negative. Increase in respiratory and cardiovascular health problems (site level), and cancer for area residents, including new residents in housing portion of development.<br>Positive. Decrease in respiratory and cardiovascular health problems (regional). | Possibly low income residents and sensitive land uses (daycares and seniors homes), as new rental apartments to be clustered above transit exchange, possibly increasing exposure to emissions from idling buses and traffic on the nearby arterial road. |
| **BUILT ENVIRONMENT** *(buildings, places, streets, sidewalks)* | Additional vehicle traffic could generate additional accidents (injuries) for cars, pedestrians and cyclists. Parking garage and transit exchange entrances could impact downtown bike route. | Negative. Increase in morbidity and mortality for pedestrians, cyclists and drivers. | Unknown |
| **COMMUNITY & SOCIAL FACTORS** *(services, health care, schools)* | The loss of some affordable housing. Some public safety concerns - that the transit exchange could be unsafe for some users and attract undesirable social uses. | Negative. Loss of affordable housing options a concern. | Low-income residents, including seniors and New Canadians. |
| **LIVELIHOOD FACTORS** *(employment, investment, income)* | Displacement of some small retail stores, including green grocers. | Unknown. Loss of green grocers in area could negatively impact health incomes by reducing options for accessible, healthy foods. | Store operators and customers. |
| **LIFESTYLE FACTORS** *(exercise, diet)* | Downtown bike route would be upgraded in area of development. Improved safety and accessibility could increase number of cyclists. Pedestrian improvements in area of development, too. | Positive impact on physical activity levels and associated with decreased cardiovascular disease, diabetes, and mental health. | People with limited mobility (seniors, disabled) would not benefit. |

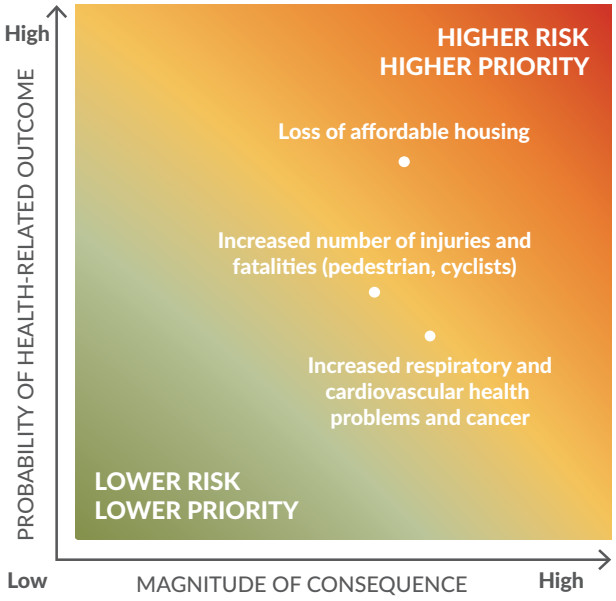
Example

*Figure 9* illustrates an example of *Tool 2-E Health-related Outcome Plotting*. The probability of an outcome occurring is noted on the Y-axis, while the magnitude of potential consequences is noted on the X-axis. Prior to additional research occurring in Step 3, the group may be unsure of the impacts. As the level of understanding of each impact changes throughout the project, priorities will likely change.

Focusing on the potential higher priority **health-related outcomes** (i.e., most probable with the greatest magnitude of consequence) **will help ensure the best use of scarce resources**.

At this point, a final column from *Tool 2-D Pathways and Impacts Matrix* can be added, using the results from *Tool 2-E Health-related Outcome Plotting*. Prioritizing the impacts, even at this early stage, will help direct resources towards the acitivity impacts that are likely to have the largest effects. See *Figure 11*.

***FIGURE 9:*** *Tool 2-E Example Health-related Outcome Plotting (Building-the-Case example)*




## BUILDING THE CASE

**STEP 2: SCOPING**

*Planners from the regional transportation authority met with representatives of "Residents for a Livable Downtown," the local Health Authority's Medical Health Officer responsible for the municipality, and a representative from the local university's School of Health Studies. Working together, the team reviewed some preliminary research conducted by the municipality's Planning Department, including Tool 2-A Scoping Checklist and Tool 2-C Influence Diagram. The team reviewed and confirmed the materials and worked through Tool 2-D Pathways and Activity Impacts Matrix, Tool 2-E Health-related Outcome Plotting, and Tool 2-F Stakeholder Assessment to determine the following:*

- ***HIA Team:*** *The municipality's Planning Department and the coordinator for its Healthier Community Strategic Plan would lead the HIA Team. Other team members would include the regional transportation authority (and their project development partner), the Medical Health Officer for the municipality, a representative from the local university's School of Health Studies, and two representatives of "Residents for a Livable Downtown." A Terms of Reference for this group was drafted using Tool 2-B.*
- ***Scope:*** *Given timing and funding concerns (i.e., limited time and limited funding) combined with the scope of potential health-related outcomes to be assessed, it was determined to carry out hybrid* ***desktop/intermediate HIA****.*
- ***Health Pathways, Impacts and Outcomes:*** *The HIA Team identified four key potential health-related outcomes associated with the development that were prioritized for further research in Step 3 Assessment and Analysis. These were captured in Tool 2-D Pathways and Activity Impacts Matrix.*
- ***Stakeholders:*** *The HIA Team formulated a plan to engage additional stakeholders and the broader public through the development review process.*
- ***Workplan:*** *The HIA Team agreed to meet monthly to go through the remaining HIA steps, and created a short workplan to guide the remaining steps. This included the establishment of a research team to support HIA work in Step 3: Assessment and Analysis. The research team would be led by the municipality's project coordinator and include research support from students at the local university's School of Health Studies. The workplan also specified the geographic area of the study (a 20 square block area around the proposed development site itself) and the methods of analysis that would be used (qualitative and quantitative data, mainly from secondary sources).*

STEP 2

***FIGURE 10: HIA MATRIX*** *You are here*

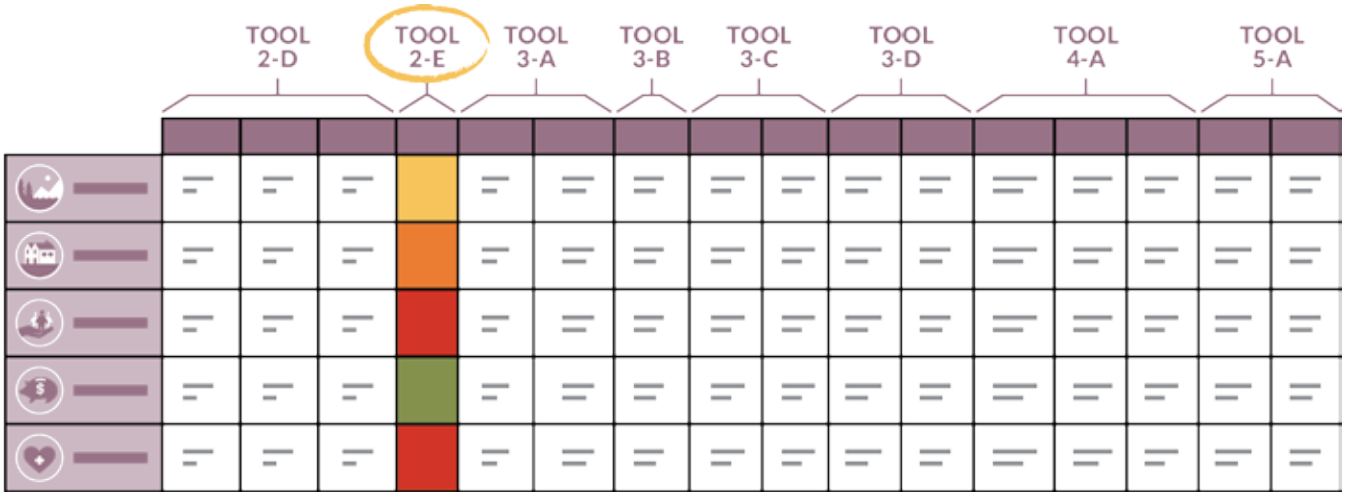



***FIGURE 11:*** *Tool 2-D Pathways and Activity Impacts Matrix with Tool 2-E Health-related Outcome Plotting column added (Building-the-Case example)*

| HEALTH DETERMINANTS | Influence description/health determinant impacts (Tool 2-D) | Potential health-related outcomes and direction of change (Tool 2-D) | Potential equity considerations? (Tool 2-D) | Priority level for further investigation (from Tool 2-E) |
|---|---|---|---|---|
| PHYSICAL ENVIRONMENT (Example) | Air quality and noise concerns - the transit exchange would increase traffic to the area. Some concerns about exhaust from bus idling. | Negative. Increase in respiratory and cardiovascular health problems (site level), and cancer for area residents, including new residents in housing portion of development | Possibly low income residents and sensitive land uses (daycares and seniors homes), as new rental apartments to be clustered above transit exchange, possibly increasing exposure to emissions from idling buses and traffic on the nearby arterial road. | MEDIUM |
| BUILT ENVIRONMENT | Additional vehicle traffic could generate additional accidents (injuries) for cars, pedestrians and cyclists. Parking garage and transit exchange entrances could impact downtown bike route. | Negative. Increase in morbidity and mortality for pedestrians, cyclists and drivers. | Unknown | MEDIUM-HIGH |
| COMMUNITY & SOCIAL FACTORS | The loss of some affordable housing. Some public safety concerns - that the transit exchange could be unsafe for some users and attract undesirable social uses. | Negative. Loss of affordable housing options a concern. | Low income residents, including seniors and New Canadians. | HIGH |
| LIVELIHOOD FACTORS | Displacement of some small retail stores, including green grocers. | Unknown. Loss of green grocers in area could negatively impact health incomes by reducing options for accessible, healthy foods. | Store operators and customers. | LOW |
| LIFESTYLE FACTORS | Downtown bike route would be upgraded in area of development. Improved safety and accessibility could increase number of cyclists. Pedestrian improvements in area of development, too. | Positive impact on physical activity levels and associated with decreased cardiovascular disease, diabetes, and mental health. | People with limited mobility (seniors, disabled) would not benefit. | HIGH |

## TASK 2.4: Develop a stakeholder engagement plan

An HIA process should engage with different stakeholders to ensure their issues, views, and values are included in the evaluation process. While the HIA Team will represent local government and agency stakeholders, intermediate and comprehensive HIA should include broader community involvement, including traditionally under-represented groups (e.g., youth, seniors, lower income residents) who may be **particularly vulnerable to potential health impacts**, as well as **project champions**.

Involving a range of stakeholders in HIA has many benefits, including:

- Identifying important stakeholder concerns
- Providing important sources of both qualitative and quantitative data
- Engaging and informing community and political leadership in the process
- Supporting ground-truthing of HIA findings and recommendations
- Sourcing innovative and locally-relevant solutions from community members
- Creating more support for the implementation of HIA recommendations
- Improving HIA process equity (i.e., engaging vulnerable populations in project decision making)
- Shaping project communication and helping disseminate information

The stakeholder engagement plan should be coordinated with any consultation plan developed for the activity that the HIA is reviewing. Integrating consultation can improve the quality of engagement and realize project efficiencies.

*Tool 2-F Stakeholder Assessment* should be used to help identify potential stakeholders, and gauge their level of involvement in the HIA. Once stakeholders have been identified, a stakeholder engagement plan should be developed, outlining who will be involved, at what stage of the HIA, and how. The level of stakeholder involvement will depend on the HIA approach taken, as well as on the preferences of the individual/group. The engagement plan should include some of the activities identified in *Figure 12*.

**TOOL 2-F**
*Stakeholder Assessment*

***FIGURE 12:*** *Potential HIA Stakeholder Engagement Methods*

LEAST RESOURCES ↓ MOST RESOURCES

| HIA SCOPE | POTENTIAL ENGAGEMENT METHODS |
|---|---|
| Desktop | • Stakeholder workshop—process review, outcome review, activity impact confirmation<br>• Referral of draft HIA to external stakeholders for review<br>• Stakeholder survey<br>• Stakeholder interviews/focus groups |
| Intermediate | • Stakeholder workshop—process review, outcome review, activity impact confirmation<br>• Referral of draft HIA to external stakeholders for review<br>• Stakeholder survey<br>• Stakeholder interviews/focus groups |
| Comprehensive | • Stakeholder workshops (at HIA Steps 2, 3, 4 and 5)<br>• Focus groups and decision workshops (activity impact prioritization, mitigation options)<br>• Referral of draft HIA to external stakeholders for review<br>• Stakeholder surveys<br>• Structured stakeholder interviews<br>• Stakeholder focus groups |

STEP 2

## TASK 2.5: Create an HIA work plan

The last task of project scoping should be to develop an **HIA project work plan**. The work plan should clearly outline the general scope and rationale for the level of HIA to be undertaken, including:

- **Potential activity impacts:** The likely activity impacts to be assessed and focused on because of their probability and potential magnitude of consequences on health determinants and associated health-related outcomes.
- **Stakeholders:** The approach and methods to be used for any broader-based consultation beyond the HIA Team.
- **Resourcing:** Who is going to work on it, when, for how long, what kinds of costs are entailed, and what types of potential funding are available.
- **Geographic focus:** The geographic area that the HIA will focus on given the health impacts and/or stakeholders concentrated within.

At this point, it may also be worthwhile to return to the priority health-related outcomes derived from *Tool 2-D Pathways and Activity Impacts Matrix* and *Tool 2-E Health-related Outcome Plotting*. What kind of information and evidence is likely available for each? As with other HIA considerations, data gathering will be closely linked to available time, resources and capacity, the level of HIA to be undertaken, and access to experts in the field.

Q+A

## Q&A: WHAT'S THE ROLE OF FIRST NATIONS IN HIA?

There are significant health disparities between First Nations and non-First Nations people in BC and across Canada. In conducting HIA, these disparities should be acknowledge and integrated into the analysis.

Additionally, some First Nations may use a broader definition of health, potentially encompassing things like access to lands, spiritual health, and intergenerational relationships. If the project would impact First Nations individuals or groups, it may be advisable to look at the impacts on these broader health factors.

The First Nations Health Authority is a province wide body that administers health programs for First Nations and is working to reduce the disparity in health outcomes. The Authority can be consulted in the HIA process (as an HIA Team member, stakeholder, or partner) to understand if and how the project would have impacts on First Nations, and provide recommendations for improving First Nations health outcomes.

STEP 2

## A CASE-IN-POINT

**STEP 2: SCOPING**

**Pagedale Avenue Redevelopment**
*Location: Pagedale, MO, USA*

This HIA investigated the potential health impacts of the redevelopment of a major road in Pagedale, Missouri, a suburban community located on the outskirts of St. Louis. The $45-million revitalization project included 175 units of residential townhouses, a grocery store, retail, office space, a bank, and 48 units of senior housing (see figure).


The comprehensive HIA was a collaborative effort between the University of Washington, the City of Pagedale, and local NGO Beyond Housing. The HIA was included as part of the revitalization project in order to ensure that health outcomes were included in the decision making process.

In the Scoping phase of the HIA, the Core Team completed the following tasks:

- **Determining the scope:** The HIA would be a comprehensive HIA, including substantial community input, qualitative data, and a two-year time line.
- **Formalizing roles:** A Core Team would direct the HIA process, collect data and community input, and draft recommendations for an HIA Steering Committee made up of eight community stakeholders and experts. The Steering Committee would identify priority impacts, provide input to the Core Team, and ultimately approve recommendations. Both groups signed Memorandums of Understanding to formalize their roles and responsibilities.
- **Identifying priority health impacts:** Members of the Steering Committee identified seven health-related impacts of the redevelopment that would be prioritized for further research in Step 3 of their HIA process, including *impacts to employment; access to goods, services, and recreation; access to healthy foods; pedestrian safety; community safety; and housing*.
- **Stakeholder engagement plan:** Community participation was identified as a priority for the HIA and was sought throughout the scoping phase at a community open house, in focus groups, and by residents serving on the Steering Committee.
- **Workplan:** The scope of the assessment was narrowed to a specific geographic area where the project's health impacts were anticipated to be felt most strongly. The Core Team agreed to meet biweekly with larger sub-team meetings occurring monthly and focusing specifically on assessment and evaluation of data collected by the Core Team. Based on available funding, the project was structured to last from April 2009 to September 2010.

More information: www.cityofpagedale.com

STEP 3

# STEP 3: Assessment and Analysis

In this step, the HIA Team will determine the health impacts of the proposed activity.

The assessment and analysis step involves the following four tasks:

*TASK 3.1:* *Initial analysis*
*TASK 3.2:* *Identify measures*
*TASK 3.3:* *Conduct baseline profile*
*TASK 3.4:* *Assess potential health-related outcomes*

As an iterative process, this step will build on the work carried out in previous steps, and may result in additional activity impacts being assessed that were not anticipated in *Step 2: Scoping*.

## TASK 3.1 Initial analysis

Understanding the nature of the relationship between health determinants and health-related outcomes helps to predict the level of activity impacts.

In this step, use expert interviews, literature reviews and empirical evidence to understand the nature of the relationship between the decision, health determinants, and health-related outcomes. Evaluate whether evidence or research demonstrates a cause-and-effect/causal relationship or other associations, and assess the relevance and transferability of the evidence to the activity under consideration.

Use *Tool 3-A HIA Matrix – Research & Findings (Figure 14)* to organize your research questions and findings. This tool will be expanded on throughout Step 3. There will be some linkages that are either difficult to study, or are under-studied. Despite the lack of research or difficulty of studying them, they are still important and should be noted.

When reviewing research, it is also important to remember that many relationships between behaviours/contributing factors and health-related outcomes are **associations and linkages, not causations**. Research can sometimes be limited, often because of the difficulty and cost to carry out detailed health studies (i.e., randomized controlled experimental trials) on entire populations to determine causation. Before removing an activity impact from further research, it is important to evaluate it with a knowledgeable health researcher from your HIA Team, so that good evidence is not get removed from further consideration because it is not strictly causal.

**TOOL 3-A**
*HIA Matrix - Research & Findings*

## A RANGE OF APPROACHES

The level of work varies depending on the level of HIA chosen. Although general guidance is provided below, every project will be different so use discretion to determine which tasks are necessary.

Generally speaking, **desktop HIA** will use estimates, expert input and qualitative data in *Step 3* (rather than quantitative data). This step will be primarily conducted as a desk exercise, with limited input from other stakeholders. It is important, however, that one or more persons with knowledge of health should be involved in Step 3. A high level assessment using *Tool 3-A HIA Matrix – Research & Findings* could likely be completed in a single afternoon if the right people are in the room, using qualitative measures like 'high medium low' impacts (described in *Task 3.2*).

**Intermediate and comprehensive HIA** will work through the tasks in *Step 3* as presented in the guidebook, but tasks will be scaled up or down depending on the HIA approach taken.

In a **comprehensive HIA**, the depth of research in *Task 3.1 Initial analysis* will be greater and there would be more opportunity to use quantitative measures in *Task 3.2 Identify measures*. The research in *Tasks 3.3 Conduct baseline profile* and *3.4 Assess potential health-related outcomes* could include primary research and the entire step would likely include greater stakeholder engagement.

***FIGURE 13: HIA MATRIX** You are here*

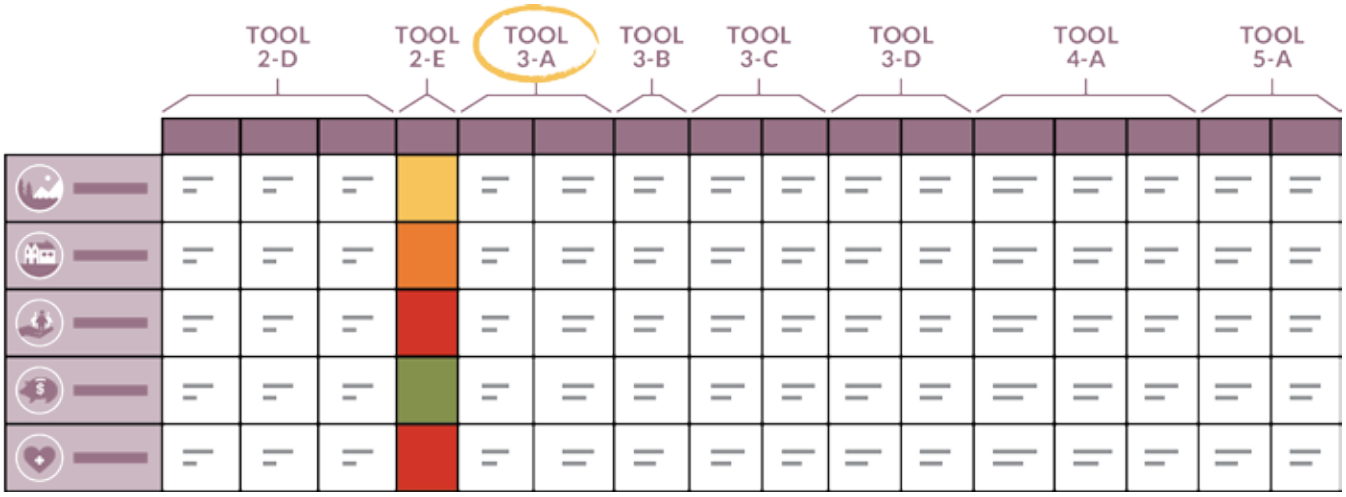



***FIGURE 14:** Tool 3-A Research and Findings (Building-the-Case example)*

| HEALTH DETERMINANTS | Priority level for further investigation (from Tool 2-D) | Health linkages and associations | |
|---|---|---|---|
| | | *Research questions* | *Research findings*[5] |
| Example<br>PHYSICAL ENVIRONMENT | Increase in respiratory and cardiovascular health problems, and cancer<br>MEDIUM | How could the activity impact emissions or ambient concentrations of traffic-related air pollutants? | · Extensive evidence showing causal association between daily airborne concentrations of fine particulate matter (PM2.5) nitrogen dioxide ($NO_2$) and respiratory and cardiovascular health problems and death.<br>· Numerous studies show an association between traffic density, increased air pollution and effects on respiratory, cardiovascular and reproductive health.<br>· Idling diesel fuelled buses emit higher concentrations of diesel particulate matter than when moving. Diesel exhaust is a carcinogen.<br>· Noise from transit operations. Elevated sound levels linked to hypertension, coronary heart disease, and sleep disturbance. |
| BUILT ENVIRONMENT | Potential increase in morbidity / mortality (pedestrians, cyclists, drivers)<br>MEDIUM-HIGH | Does an increase in traffic volume (and potential speeds) increase morbidity and mortality for pedestrians, cyclists and motorists? | · Speed has been identified as a key risk factor in road traffic injuries, influencing both the risk of collisions and severity of resulting injuries.<br>· Studies suggest that a 1 km/h decrease in travelling speed lead to a 2-3% reduction in crashes and collisions.<br>· Pedestrian accidents (morbidity / mortality) disproportionately occur with seniors.<br>· Pedestrian morbidity / mortality rates are higher on arterials with no corresponding safety features (e.g. longer pedestrian crossing lights, roadway markings, median islands, speed limit enforcement, etc.) |
| COMMUNITY & SOCIAL FACTORS | Loss of affordable housing options<br>HIGH | How important is housing as a health determinant? | · Poor quality housing and homelessness are clearly linked to poor health outcomes.<br>· Socio-economic status associated with poor quality housing and poorer health outcomes. |
| LIFESTYLE FACTORS | Positive impact on physical activity levels<br>HIGH | What's the relationship between people who walk, cycle or take transit to work or school? | · Physical inactivity and obesity are increasing<br>· People who walk, cycle or take transit to work or school are much more likely to get enough exercise in their day and have 36% lower odds of being overweight or obese<br>· Walkability and its components related to land-use mix, residential density and street connectivity are significant predictors of Body Mass Index (BMI) |

5 Key research sources for this example included the "*Planning healthy Communities Fact Sheet*" series produced by the Canadian Institute of Planners, Public Health Agency of Canada, Heart & Stroke Foundation of Canada and the Canadian Institute for Health Information, and "*Healthy Built Environment Linkages: A toolkit for design, planning and health*", Provincial Health Services Authority.

STEP 3

## TASK 3.2: Identify measures

In this task, the project team will determine what health-related outcomes to measure, and how to measure them. For each potential outcome, the HIA team should come up with a way of estimating or measuring the changes to them from the activity.

Predicting health-related outcomes with **absolute certainty is not possible**; however, using the best available evidence, an HIA should present reasoned predictions of potential health-related outcomes. Examine potential sources of evidence, including:

- Empirical research
- Experts
- Available social, economic, environmental and health measures
- Surveys, focus groups and public engagement
- Environmental Impact Assessments and other regulatory reports

From these sources, use *Tool 3-B HIA Matrix - Measures* to determine which measures will be used to evaluate health-related outcomes. Several examples of measures are shown in *Figure 16*, which is a continuation of the matrix from *Tool 3-A HIA Matrix - Research & Findings*.

**TOOL 3-B**
*HIA Matrix - Measures*

Q+A

### Q&A: WHEN DEVELOPING MEASURES, SHOULD QUANTITATIVE OR QUALITATIVE DATA BE USED?

Qualitative data is descriptive and quantitative data is measurable. However, it is not a simple dichotomy and often times, especially when dealing with something as complex as health, information will fall on a spectrum between fully qualitative and fully quantitative data.

While all types of data can be used in conducting HIA, several broad-based evaluations of HIA in the US and abroad have determined that it is **very difficult and time consuming** to quantify health impacts. Given the resource and capacity challenges associated with a more quantitative approach, more qualitative analysis should be used in most cases.

***FIGURE 15: HIA MATRIX*** *You are here*

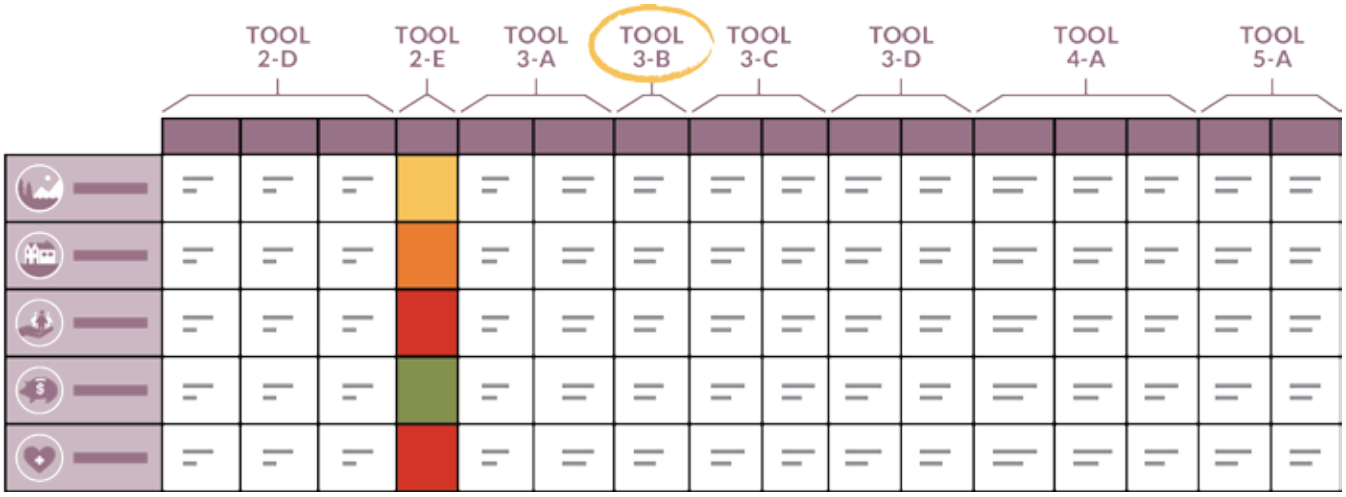



***FIGURE 16:*** *Tool 3-B HIA Matrix - Measures (Building-the-Case example)*

| HEALTH DETERMINANTS | Health linkages and associations *Research findings (from Tool 3-A)* | Measure |
|---|---|---|
| PHYSICAL ENVIRONMENT | Example<br>· ...ve evidence showing causal association between daily ...ne concentrations of fine particulate matter (PM2.5) nitrogen dioxide ($NO_2$) and respiratory and cardiovascular health problems and death.<br>· Numerous studies show an association between traffic density, increased air pollution and effects on respiratory, cardiovascular and reproductive health.<br>· Idling diesel fuelled buses emit higher concentrations of diesel particulate matter than when moving. Diesel exhaust is a carcinogen.<br>· Noise from transit operations. Elevated sound levels linked to hypertension, coronary heart disease, and sleep disturbance. | · Ambient concentrations of fine particulate matter (PM2.5) and nitrogen dioxide ($NO_2$) at residences (measured or modeled)<br>· Ambient community noise (dBA) |
| BUILT ENVIRONMENT | · Speed has been identified as a key risk factor in road traffic injuries, influencing both the risk of collisions and severity of resulting injuries.<br>· Studies suggest that a 1 km/h decrease in travelling speed lead to a 2-3% reduction in crashes and collisions.<br>· Pedestrian accidents (morbidity / mortality) disproportionately occur with seniors.<br>· Pedestrian morbidity / mortality rates are higher on arterials with no corresponding safety features (e.g. longer pedestrian crossing lights, roadway markings, median islands, speed limit enforcement, etc.) | · Morbidity (injury) and mortality (death) rates on Transit Exchange Road (by age) |
| COMMUNITY & SOCIAL FACTORS | · Poor quality housing and homelessness are clearly linked to poor health outcomes.<br>· Socio-economic status associated with poor quality housing and poorer health outcomes. | · Number of affordable (as defined by City) rental housing units in development area |
| LIFESTYLE FACTORS | · Physical inactivity and obesity are increasing<br>· People who walk, cycle or take transit to work or school are much more likely to get enough exercise in their day and have 36% lower odds of being overweight or obese<br>· Walkability and its components related to land-use mix, residential density and street connectivity are significant predictors of Body Mass Index (BMI) | · Cyclist traffic counts, pedestrian counts<br>· Transit mode share |

STEP 3

Where feasible and when data allows, HIAs can use **quantitative data** to increase the precision of analysis and to support findings with greater confidence. Where an estimation of the size of an impact is measurable and desirable then quantitative methods may be most appropriate. Quantitative data can be particularly useful for communicating results to the public or decision makers, and for comparing alternative projects, plans or policies.

Health Authorities (e.g., Vancouver Coastal Health or Fraser Health Authorities), regional districts (e.g., Metro Vancouver or Fraser Valley Regional District) and municipalities may already be tracking some useful quantitative measures (e.g., disease rates), while others may require working with stakeholders to develop (e.g., Quality Adjusted Life Years - *see text box*). There are also some well-known national sources of data, including the Canadian Community Health Survey, which gathers health-related data at the sub-provincial levels of geography (health region or combined health regions).

There are also other agencies and ministries, such as the Ministry of Environment and Ministry of Social Development, who collect and track data that may be useful for HIAs (e.g., air and water quality, social equity and wellbeing measures). See the *Resources* section in this guide for data sources and literature review sources.

**Qualitative analyses** also provide valuable data, particularly in those cases where a more holistic view of impacts that considers stakeholders' experiences and perspectives is required.

Qualitative data is often more realistic for an HIA to gather, particularly for desktop and intermediate HIAs. One method for collecting qualitative data would be to develop a scale for the level of impact, and then work with experts to come up with predictions for each impact. The scale should be clearly defined so that experts are using the same one when making predictions.

Q+A

## Q&A: WHAT'S THE DIFFERENCE BETWEEN PRIMARY AND SECONDARY DATA COLLECTION?

Depending on the level of HIA undertaken, two types of data will likely be collected: primary and secondary.

**Primary data** is data collected solely for the purpose of the HIA. Examples of primary data include local air or water quality sampling, or external stakeholder consultations. Comprehensive and intermediate HIAs will typically collect some primary data. Some preliminary HIAs might collect a limited amount of primary data through stakeholder interviews.

**Secondary data** is evidence collected for another purpose, but has relevance to the HIA and the health-related outcomes it is investigating. Secondary data can include peer reviewed articles, health and socio-demographic data collected by local, regional and senior government agencies, and data captured in local area plans, strategies, surveys and studies (e.g., land use, transportation, economic development). Preliminary, intermediate and comprehensive HIAs will all include secondary data.

### TASK 3.3: Conduct baseline profile

Understanding the baseline conditions of health determinants and outcomes is necessary in order to predict activity impacts, and to have a baseline against which to measure changes. An additional benefit of this step is to identify groups that may be particularly vulnerable to activity impacts, and that should be focused on during subsequent steps.

The profile does not need to be exhaustive, and should focus on using available information (e.g., existing BC Stats community profiles, existing municipal community information, Community Health Atlas, etc.).

The baseline community health profile should cover the following components, as applicable to the specific project:

- General information and trends on **health determinants**, including housing, employment status, environmental conditions, socio-economic status, employment and unemployment levels, transportation infrastructure, social support and access to services (including health care services and sport and recreation facilities).
- General **population characteristics and any associated demographic trends** (size, density, age, gender, income and employment, socio-economic status etc.).
- Health status of the population **likely to be affected by the activity**, including at-risk and more vulnerable groups like children, youth, seniors and lower income communities.
- Baseline conditions for the specific health-related outcomes included in the HIA.

*Tool 3-C HIA Matrix – Baseline Conditions (Figure 18)* is a continuation of the matrix from *Tool 3-A HIA Matrix – Research & Findings*, with the last columns to be used to track baseline conditions.

**TOOL 3-C**
*HIA Matrix - Baseline Conditions*

## USING QUALITY ADJUSTED LIFE YEARS (QALY)

QALY is a calculation based on the number of years of life and quality of life that would be added by the intervention. Each year in perfect health is assigned the value of 1.0 down to a value of 0.0 for being dead. If the extra years would not be lived in full health, for example if the patient would be in chronic pain, then the extra life-years are given a value between 0 and 1 to account for this.

QALY can be useful because it produces a single number that can be compared between interventions. However, QALY can be difficult and time consuming to calculate, often requires value judgments that may not be replicable, and may 'hide' equity issues.

The findings from HIA could potentially be converted into QALY, but care must be taken to ensure that it does not overly simplify the equity considerations and qualitative findings of HIA.

STEP 3

***FIGURE 17: HIA MATRIX*** *You are here*

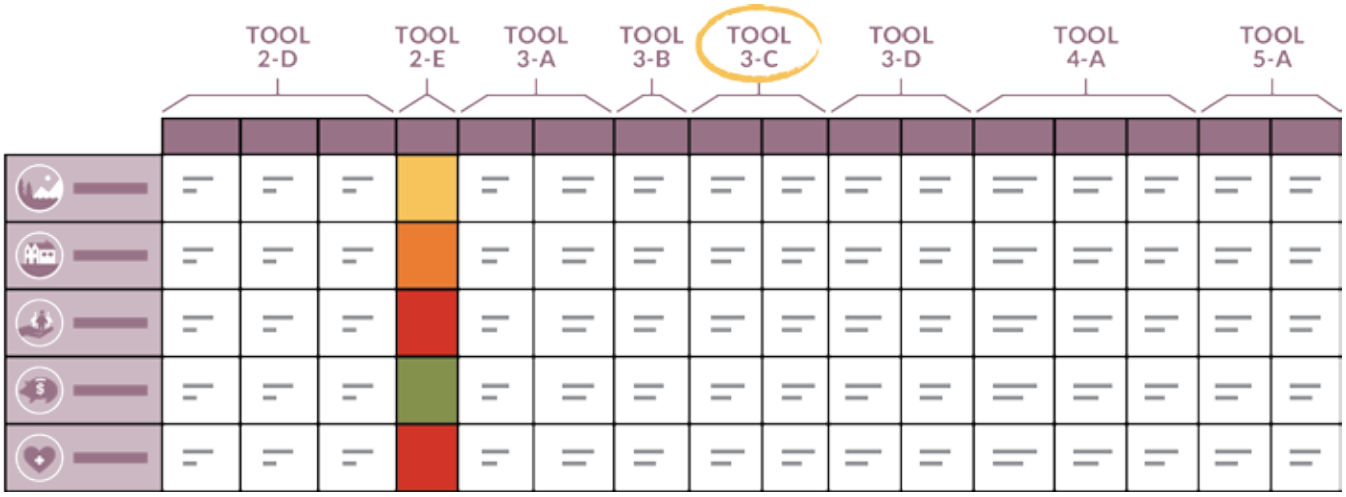



***FIGURE 18:*** *Tool 3-C HIA Matrix - Baseline Conditions (Building-the-Case example)*

| HEALTH DETERMINANTS | Measure (from Tool 3-B) | Baseline conditions | Data sources, assumptions, etc. |
|---|---|---|---|
| PHYSICAL ENVIRONMENT | Example<br>· ncentrations of fine particulate matter (PM2.5) and nitrogen dioxide ($NO_2$) at residences (measured or modeled)<br>· Ambient community noise (dBA) | · Monthly average of 6.4 µg/m³ of PM2.5 | · Metro Vancouver<br>· City |
| BUILT ENVIRONMENT | · Morbidity (injury) and mortality (death) rates on Transit Exchange Road (by age) | · No baseline conditions for development area<br>· 50 collisions (vehicles, vehicle - pedestrian, vehicle - bike) annually<br>· 12.5 injury + fatality collisions | · City Transportation Department and Transportation Master Plan<br>· City Police |
| COMMUNITY & SOCIAL FACTORS | · Number of affordable (as defined by City) rental housing units in development area | · 40 affordable rental units, existing apartments within the 20 block zone examined for this HIA | · City threshold for affordability uses BC Housing/Census Canada definition of 30% of a pre-tax family income |
| LIFESTYLE FACTORS | · Cyclist traffic counts, pedestrian counts<br>· Transit mode share | · Summer daily average of 345 cyclists using downtown bike lanes<br>· Winter daily average of 175 cyclists using downtown bike lane<br>· No pedestrian counts<br>· Transit mode share regional trips (4%) | · City Engineering Department<br>· BC Transit/TransLink |

The level of HIA undertaken will dictate the amount of detail in the baseline profile. A desktop HIA profile will likely skip this step, or only look at a small number of the most important determinants using readily available data, whereas a comprehensive HIA profile could be a larger research project involving neighborhood specific data.

## Q&A: WHAT ARE HEALTH GEOGRAPHIES AND HOW CAN THEY BE USED FOR HIAS?

The **health status of people living in BC varies geographically**. People living in Richmond have different levels of asthma, for example, than those living in Chilliwack. It cannot be assumed that the activity impacts will be the same across and between municipalities. Available research and data should also be considered in light of local contexts. For example, the findings from research literature will have different applicability for different municipalities and even different neighbourhoods within municipalities.

The delivery of health care in BC is divided up into five administrative regions called Health Authorities. Fraser Health and Vancouver Coastal Health Authorities are together responsible for delivering health services in the Lower Mainland – Fraser Valley region.

The geographic boundaries of Fraser Health and Vancouver Coastal Health Authorities do not exactly match the boundaries of the Lower Mainland. However, both Health Authorities are divided into health service delivery areas (HSDAs) and further divided into local health areas (LHAs). The boundaries of these smaller sub-regions may be configured to more closely align with the boundaries of the Lower Mainland.

Much of the publicly available health information is available not just at the level of the Health Authority but also at the HSDA and LHA levels. This fine-level information can assist those carrying out intermediate and comprehensive HIAs.

- www.health.gov.bc.ca/socsec/provmap.html
- www.bcstats.gov.bc.ca/statisticsbysubject/geography/referencemaps/health.aspx

BC also has two non-geographic Health Authorities - the Provincial Health Service Authority (PHSA) and the First Nations Health Authority. PHSA is responsible for delivering programs and services throughout the province, and includes services provided by the BC Cancer Agency, BC Centre for Disease Control, and BC Women's and Children's Hospitals (among others). The First Nations Health Authority is a partnership between BC First Nations, the Province of BC and the Government of Canada to improve health outcomes for First Nations peoples in BC.

In the example shown in *Figure 18*, ambient community noise has been left off as measure in the physical environment health determinant row given the lack of data (baseline and ongoing collection).

### TASK 3.4: Assess and analyze health-related outcomes

Using the measures identified in the previous steps, collect qualitative and quantitative data to understand the potential health-related outcomes from the proposed activity. Use *Tool 3-D HIA Matrix – Health-related Outcomes* to record research findings (*Figure 20*).

**TOOL 3-D**
*HIA Matrix - Health-related Outcomes*

Make informed judgments of effects based on available information, analysis, expertise and experience. Be cautious with generalizations. Acknowledge assumptions as well as strengths and limitations of data and methods used. Identify data gaps that prevent an adequate or complete assessment of potential outcomes. Describe the **uncertainty** in predictions. Explicitly state assumptions or inferences made in the context of modeling or predictions.

Once data has been collected, there is a need to ensure that it is valid, reliable and credible. Data should be reviewed and confirmed by external community and expert stakeholders in Intermediate HIA and Comprehensive HIA.

STEP 3

## A CASE-IN-POINT

**STEP 3: ASSESSMENT & ANALYSIS**

**Road Pricing in San Francisco**
*Location: San Francisco, CA, USA*

In 2011, the San Francisco Department of Public Health initiated an HIA to analyze the potential health effects of a proposed San Francisco Transportation Authority program that would charge $3 to travel into or out of the congested downtown quadrant of the city during rush hours. The HIA examined impacts on active transportation, air pollution, traffic noise, pedestrian and cyclist injuries, economic values, and equity. The HIA report presents a highly technical and comprehensive, yet clear, quantitative analysis with data effectively presented through the use of multiple maps and data tables.

The HIA assessed the road pricing scheme's impacts on active transportation, air pollution, traffic noise, pedestrian and cyclist injury, associated economic value, and implications for equity. To conduct the analysis, the Department of Public Health reviewed existing transportation reports and demographic and epidemiological trends. Seven separate reports were also compiled for each health determinant outlining health outcome pathways and specific metrics for evaluating these outcomes.

The Department of Public Health created a baseline profile of the current status of each priority health impact. They then looked at how each of these may change in the next ten years under the proposed road pricing scenario, and also under a 'business as usual' scenario (i.e., in the next ten years if no road pricing was put in place). Finally, the Department of Public Health also provided confidence level measurements for each of their estimates, to provide information on the level of uncertainty in the estimate.

More information: www.sfhealthequity.org

| Health Impacts in Northwest Quadrant (Annual Estimates) | 2005: Existing Conditions | Change: 2005-2015 Business as Usual | Change: 2005-2015 Road Pricing | Change: 2015 Business as Usual - Road Pricing | Confidence in Quantitative Estimate |
|---|---|---|---|---|---|
| Early Death from Air Pollution | | | | | |
| | 24 | 8% | -4% | -12% | High-Moderate |
| Residents Stressed from Traffic Noise | | | | | |
| | 36,800 | 10% | 10% | 0% | High |
| Heart Attacks From Traffic Noise | | | | | |
| | 18 | 11% | 11% | 0% | Moderate |
| Pedestrians Injured by Motor Vehicles | | | | | |
| | 360 | 10% | 0% | -9% | Moderate-low |
| Cyclists Injured by Motor Vehicles | | | | | |
| | 135 | 15% | 11% | -3% | Moderate-low |
| Cycling Benefits - Lives Saved | | | | | |
| | 8 | 13% | 13% | 0% | Moderate |
| Walking Benefits- Lives Saved | | | | | |
| | 69 | 10% | 12% | 1% | Moderate |

***KEY:*** *Red: Increases in Negative Health Impacts* • *Green: Increases in Health Benefits* • ***Black: Neutral/Flat Impacts***

***FIGURE 19: HIA MATRIX** You are here*

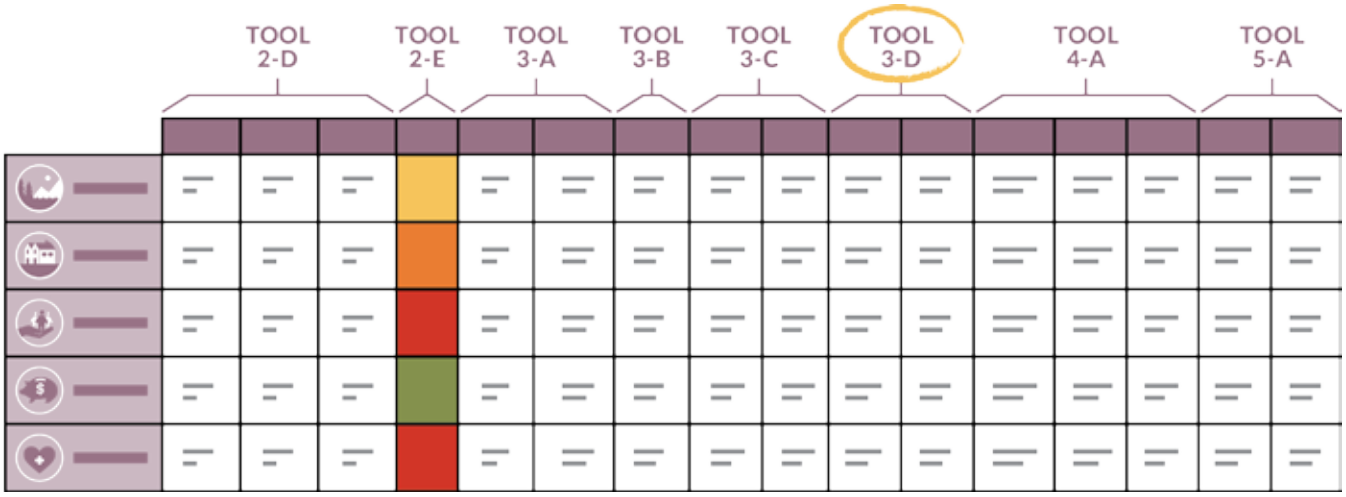



***FIGURE 20:** Tool 3-D HIA Matrix – Health-related Outcomes (Building-the-Case example)*

| HEALTH DETERMINANTS | Measure (from Tool 3-B) | Baseline conditions (from Tool 3-C) | Health-related outcomes | Data sources, assumptions, etc. |
|---|---|---|---|---|
| Example<br>PHYSICAL ENVIRONMENT | · ...ient concentrations of fine particulate matter (PM2.5) and nitrogen dioxide ($NO_2$) at residences (measured or modeled)<br>· Ambient community noise (dBA) | · Monthly average of 6.4 µg/m³ ) of PM2.5 | · Potential increase in bus-related emissions at site<br>· Potential increase in automobile-related emissions at site<br>· Potential elevated exposures for low-income residents and sensitive land uses (daycares and seniors homes) at site<br>· Improvement of ambient air quality in broader area | · Interviews with Fraser Valley Regional District/Metro Vancouver, BC Transit/ TransLink<br>· City |
| BUILT ENVIRONMENT | · Morbidity (injury) and mortality (death) rates on Transit Exchange Road (by age) | · No baseline conditions for development area<br>· 50 collisions (vehicles, vehicle - pedestrian, vehicle - bike) annually<br>· 12.5 injury + fatality collisions | · No increase in collision and injury / fatality rates with project road improvements (complete streets approach), despite increased vehicle traffic | · Traffic and injury modeling by City Engineering Department with support from BC Transit/ TransLink, ICBC, and City Police Department |
| COMMUNITY & SOCIAL FACTORS | · Number of affordable (as defined by City) rental housing units in development area | · 40 affordable rental units, existing apartments within the 20 block zone examined for this HIA | · Loss of 20 affordable rental housing options | · Preliminary development concept plan |
| LIFESTYLE FACTORS | · Cyclist traffic counts, pedestrian counts<br>· Transit mode share | · Summer daily average of 345 cyclists using downtown bike lanes<br>· Winter daily average of 175 cyclists using downtown bike lane<br>· No pedestrian counts<br>· Transit mode share regional trips (4%) | · Increase of 5-10% in cyclists (year round)<br>· 5% increase in regional trip transit mode share | · Interviews with BC Transit planners, City Engineering Department, journal articles related to similar projects |

STEP 3

All three levels of HIA should consider the following, to the extent that they can within available resources:

- ***Distribution* of health-related outcomes:** What proportion of the population is likely to be affected? Are there any specific sub-populations impacted more than others (e.g., low income residents)?

- ***Significance* of health-related outcomes:** Can the negative impacts be quickly and easily managed? Are there outcomes that necessitate treatment or medical management and are reversible? Are there impacts that are chronic, irreversible or fatal?

- ***Likelihood* of health-related outcomes:** How likely is it that the anticipated outcomes will occur? Potential health-related outcomes can be characterized as being definite, probable or speculative.

All outcomes should be prioritized based on these considerations, especially their distribution, which speaks to equity.

Q+A

## Q&A: WHO TRACKS HEALTH INFORMATION ABOUT THE LOWER MAINLAND?

Information about health outcomes (e.g., death by car accidents, rates of asthma, rates of diabetes) and factors contributing to health (e.g., smoking rates and obesity rates) is key to conducting HIA.

For desktop HIA, quick "snapshot" information about health status and related factors is available from the Health Authorities:

**FRASER HEALTH AUTHORITY** publishes an annual regional health profile and community profiles that includes information on health determinants, healthy behaviours, and health status:

- www.fraserhealth.ca/media/Health_Profile_2012.pdf
- www.fraserhealth.ca/about_us/reports

**VANCOUVER COASTAL HEALTH AUTHORITY** also publishes a regional profile and community profiles that includes information on health status:

- www.vch.ca/media/VCH-Profile_VanSummary-Nov-2013.pdf
- www.vch.ca/your_health/population-health/community-health-profiles

**THE PROVINCIAL HEALTH SERVICES AUTHORITY (PHSA)** also produces community health profiles for local governments. Fraser Health Authority makes the profiles available on their website, while profiles from Vancouver Coastal Health Authority communities can be found here:

- www.phsa.ca/our-services/programs-services/population-public-health/community-health-data/bc-community-health-profiles

BC's Ministry of Health, Vital Statistics, BC Stats and Statistics Canada routinely collect and publicly report on health and demographic information. This information is available through different sources and in different formats.

**BC VITAL STATISTICS** reports death rates and deaths from specific causes in its annual reports: www.vs.gov.bc.ca/stats/annual

**BC STATS** regularly reports demographic information (e.g., the population size, and age and sex composition of a specific area): www.bcstats.gov.bc.ca/StatisticsBySubject/Demography/PopulationEstimates.aspx

**STATISTICS CANADA** provides information about health status and health behaviours (both from self-reported surveys and from Vital Statistics) in its interactive Health Profiles: www.statcan.gc.ca/health-sante

**THE PROVINCIAL HEALTH SERVICES AUTHORITY (PHSA)** has an on-line interactive tool which combines information from the above sources: http://maps.gov.bc.ca/ess/sv/cha

See the ***resources*** section for more information on health measures and sources.

STEP 3

## BUILDING THE CASE

**STEP 3: ASSESSMENT & ANALYSIS**

*The HIA Planning Team convened a meeting to review and discuss work that had been conducted by the municipality's project lead supported by municipality's Planning Department and student researchers from the local university's School of Health Studies. Working together, this research team had filled out a number of assessment and analysis tools, including Tool 3-A Research and Findings, Tool 3-B Measures, Tool 3-C Baseline conditions, and Tool 3-D Potential future outcomes.*

*Some of the planning step's findings included:*

- ***Research and findings:*** *Recently published Canadian health-related outcome research provided high quality data, including a recent survey conducted by Vancouver Coastal Health and Fraser Health Authorities that found that people who walk, cycle or take transit to work or school are much more likely to get enough exercise in their day and have 36% lower odds of being overweight or obese.*
- ***Measures and baselines:*** *Clear and available measures were found for most impacts, although two determinants would likely require new information and study, particularly for longer-term monitoring. Local ambient air quality, in particular, may require periodic post-development monitoring.*
- ***Potential future health-related outcomes:*** *The HIA Team identified a number of both positive and negative future potential outcomes. It was determined during initial discussions that positive outcomes could likely be leveraged, while negative outcomes could be mitigated.*

*During the workshop, participants discussed and prioritized future potential health-related outcomes based on their **distribution**, their **significance**, and their **likelihood** or probability of occurring. From this discussion, it was decided that the activity's impacts could be disproportionately distributed to low-income renters in the project area through the anticipated loss of rental apartments. Both the significance and likelihood of this impact occurring, and the relatively straightforward means of addressing it, highlighted this issue for further discussion in Step 4: Recommendations and Reporting.*

STEP 4

# STEP 4: Recommendations and Reporting

In this step, the HIA Team will develop recommendations to address, mitigate and manage potential activity impacts identified during Step 3. If necessary, the HIA Team will compare alternative recommendations to understand their relative influence on health-related outcomes.

The planning step involves the following three tasks:

- *TASK 4.1: Developing high-level HIA recommendations*
- *TASK 4.2: Conducting alternative analysis (where required)*
- *TASK 4.3: Project reporting*

## TASK 4.1: Developing high-level HIA recommendations

Recommendations provide strategies to manage identified adverse activity impacts to maximize benefits to health-related outcomes.

**TOOL 4-A**
*Recommendations Worksheet*

Use *Tool 4-A Recommendations Worksheet (Figure 22)* to capture potential recommendations. Intermediate and Comprehensive HIA should involve varied stakeholders in the development of recommendations.

## A RANGE OF APPROACHES

The level of work required for *Step 4: Recommendations and Reporting* varies depending on the level of HIA undertaken. Although general guidance is provided below, every project will be different so use discretion to determine which tasks are necessary.

All levels of HIA can develop recommendations (*Task 4.1*), however, in a **desktop HIA** they would be developed by an individual or small HIA Team, whereas an **intermediate and comprehensive HIA** would engage with stakeholders, public, and experts to develop (*Task 4.1*) and assess (*Task 4.2*) recommendations.

Project reporting (*Task 4.3*) would be limited in a **desktop HIA**, but could include detailed reports and communications materials in an **intermediate** or **comprehensive HIA**.

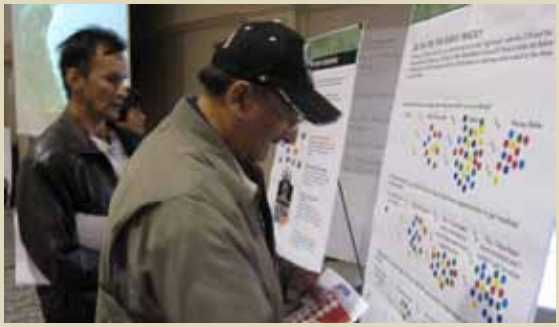


***FIGURE 21: HIA MATRIX*** *You are here*

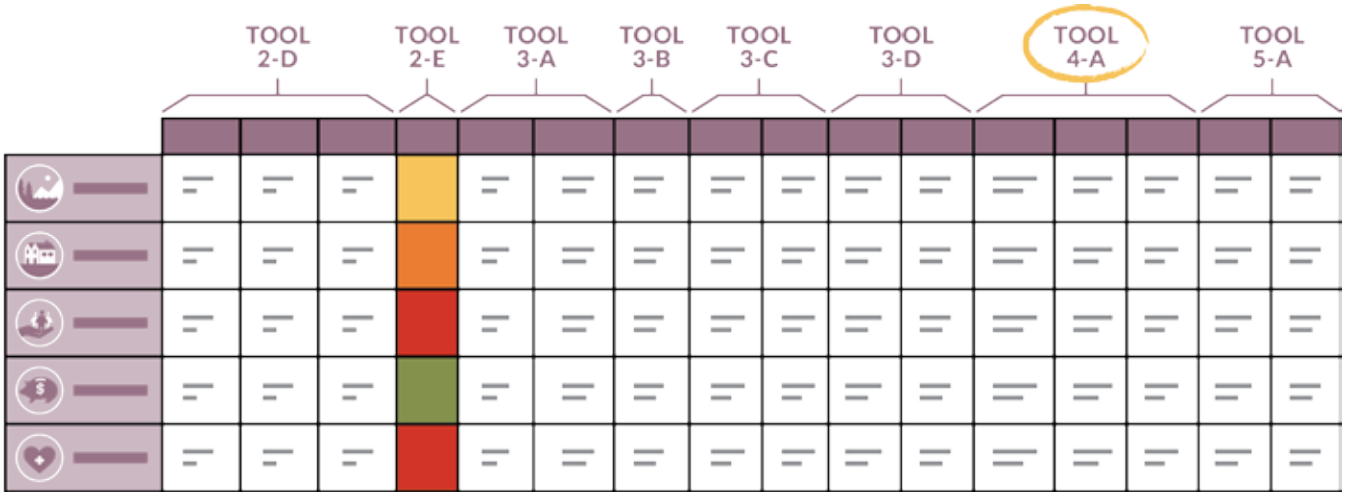



***FIGURE 22:*** *Tool 4-A Recommendations Worksheet (Building-the-Case example)*

| HEALTH DETERMINANTS | Desired health-related outcome | Recommendations to improve health-related outcome | Implementation partners | Implementation considerations (cost, risk, capacity, timing, etc.) |
|---|---|---|---|---|
| Example | | | | |
| PHYSICAL ENVIRONMENT | · Ambient fine particulate matter (PM2.5) and nitrogen dioxide ($NO_2$) concentrations below regional air quality objectives at residences | · Reduce parking rates for carpools at parkade<br>· No idling policy for buses at the facility<br>· Require high efficiency filtration in residential portion of the development | · Transportation authority, municipality, development partner | · Requires baseline data and periodic monitoring |
| BUILT ENVIRONMENT | · Safer pedestrian and bicycle environment | · Move parkade and transit exchange entrances and exits to not intersect an existing bike route/path<br>· Provide a separate bicycle entrance to the facility along with secure bicycle parking facilities | · Municipality, transportation authority, development partner | · Coordinate with planned street improvements to development area |
| COMMUNITY & SOCIAL FACTORS | · Net gain affordable rental housing units | · Increase the number of affordable rental units to ensure "no net loss" of affordable apartment rentals | · Municipality, development partner | · Increased Floor Space Ratio (FSR) and building requirements to be included in CD zoning for project site |
| LIFESTYLE FACTORS | · Increased active transportation mode share and regional transit mode share | · Improve existing bike route by providing a separating it from traffic on arterial road in vicinity of development<br>· Discounted transit passes for development residents | · Municipality, transportation authority, development partner | · Coordinate with planned street improvements to development area |

STEP 4

Some of the identified recommendations will be low cost, and/or low risk, and should be recommended to decision makers as methods for modifying the activity to improve health outcomes.

However, other recommendations **may require further analysis** to understand their effects on health-related outcomes, or to understand the trade-offs and relative merits between several alternative recommendations. For intermediate and comprehensive HIAs, these alternative recommendations can be evaluated in more detail in *Task 4.2*.

### TASK 4.2: Conducing alternative analysis (where required)

TOOL 4-B *Alternatives Evaluation*

In some cases, it may be necessary or beneficial to ***compare*** the potential health-related outcomes of distinct activity alternatives or recommendations. Situations that might warrant such a comparison include:

- When there is **more than one distinct activity alternative** being considered. For example, a transportation project may be comparing different alternatives for a new river crossing where options include a new bridge, a tunnel, or retrofitting an existing bridge. Another scenario would be for an urban development that could be located in two different and distinct locations.

- When there are several recommendations coming out of *Task 4.1* that are **mutually exclusive**. For example, in a development project where a new bike lane could be built *or* new park space, but not both.

- When there are constraints (time, money, capacity) on how many recommendations could be implemented, and there is a need to prioritize the most impactful (i.e., which recommendation would address the most important, or valued, health-related outcomes.)

- When there are significant uncertainties, consequences and/or trade-offs (e.g., costs vs. potential psychological health benefits) that might require more robust and defensible rationale for implementing health related recommendations.

Q+A

## Q&A: WHAT ADDITIONAL ANALYSIS METHODS ARE AVAILABLE?

The use of evaluation matrices (or consequence tables) as illustrated in *Tool 4-B Alternatives Evaluation* is broadly derived from the field of structured decision analysis, which in turn has roots in the discipline of decision science and behavioral decision research.

For some activities, specifically those requiring a comprehensive HIA, there may be situations where the **consequences are high**, the **trade-offs are complicated**, and you need a more **analytical approach to evaluate alternatives**. In such cases—and provided you have the expertise and resources available—you can draw on additional tools from these disciplines, using your evaluation matrix as the launching point. In general, these tools may involve methods for more explicitly ranking and weighting the relative importance of each health-related outcomes using well established methods (e.g., swing-weighting, pairwise comparisons). Application of these weighting methods aids in generating single measure scores that assist with understanding how trade-offs effect overall alternative recommendations and priorities.

Using your evaluation matrix as a launching point, more familiar cost-benefit or cost effectiveness analysis can be generated. These analyses seek to compare costs and benefits in a simple form, often as a single measure (e.g., dollars), or to find the least cost alternative to achieve a specified target benefit.

The results from these more complex tools can be used as inputs into your evaluation matrix. For example, the results from market-based cost benefit analysis, which measures impacts that can more readily be monetized, could be used in the evaluation matrix alongside other impacts that cannot be monetized.

In these cases, *Tool 4-B* (see *Toolkit*) can be used to compare how each alternative would affect health-related outcomes. This tool provides a simple evaluation matrix that illustrates the potential performance of each alternative against each prioritized health-related outcome, using the measures developed in *Tool 3-B (Figure 16)*.

The additional level of analysis can help identify and make trade-offs between activity alternatives, giving planners, decision makers, and stakeholders more confidence in generating improved alternatives and specific mitigation actions.

This type of analysis requires additional time and will likely only be used in intermediate and comprehensive HIAs, or in those cases where there are definitive project, plan or policy alternatives to evaluate.

Sometimes referred to as a consequence table (see *Additional Analysis Methods* text box), a well-constructed evaluation matrix should convey all of the information needed to understand and compare alternatives. It is a deliberative decision support tool, not a decision making tool, and will help to guide discussions on choosing between alternatives, prioritizing actions and to identify potential trade-offs and better understand uncertainties between the alternatives. The evaluation matrix can also help to make discussions between stakeholders and decision makers more transparent and objective, and help ensure that the final selection of alternatives is based on a common understanding of their expected outcomes (i.e. how well each alternative meets each priority health outcome).

When using *Tool 4-B Alternatives Evaluation* (see *Toolkit* for example), the cells can be populated with qualitative or quantitative data. In many cases, a qualitative High-Medium-Low scale could be used by the HIA Team to evaluate alternatives, although it is important to create clear definitions for each level (High-Medium-Low).

STEP 4

## A CASE-IN-POINT

**STEP 4: RECOMMENDATIONS & REPORTING (ALTERNATIVE ANALYSIS)**

**Strategic HIA –**
**TransLink: Weighing the alternatives**
*Location: Metro Vancouver*

In 2014, TransLink, the regional transportation authority for Metro Vancouver, was developing a new Regional Transportation Strategy (RTS). With the linkages between health and transportation well understood, TransLink initiated development of an HIA to aid in the evaluation of the strategic alternatives under consideration for the region's transportation system.

The goal of the project was to develop an evaluation tool that could be used to compare high-level, strategic policy alternatives. The project team worked with planning consultants, transportation planners, health professionals from regional Health Authorities, and population health researchers to develop a concise list of relevant transportation/health objectives and corresponding indicators that were supported by the best available evidence. Assembled in an evaluation matrix (shown below), the list was further refined during expert interviews and a workshop involving numerous health professionals, researchers, and transportation planners. Workshop discussion was given context by applying the matrix to four illustrative RTS alternatives, offering different levels of investment and combinations of policy (i.e. demand management). The final version of the tool employed meaningful, evidence-supported, measures that were understandable to a broad range of potential stakeholders.

| | HEALTH OBJECTIVE | INDICATOR | METRIC (2045) | BASE CASE | ALT. 1 | ALT. 2 | ALT. 3 |
|---|---|---|---|---|---|---|---|
| 1 | Increase physical activity | *Contribution of active transportation to the recommended 150 min/week of activity* | Number of new users (from base) achieving 80% or more of the 150 min/week of activity through active transportation | 0 | 67,533 | 70,255 | 177,598 |
| 2 | Promote safety | *Exposure to traffic injuries/ fatalities from collisions* | Number of fatalities per year | 91 | 89 | 89 | 77 |
| | | | Number of injuries per year | 37,501 | 36,717 | 36,698 | 31,815 |
| 3 | Improve air quality* | *Exposure to NOx and PM* | Percent reduction of hospital admission from respiratory and cardiovascular illness | 0% | 4% | 6% | 16% |
| 4 | Increase social cohesion and life opportunities (live, work, learn, and play) | *Access to services (education, shopping, and recreational areas)* | Number of jobs accessible within 30 min by selected industry | 309,296 | 318,608 | 321,537 | 364,000 |
| | | *Access to jobs* | Number of jobs accessible within 30 min | 409,496 | 454,523 | 468,373 | 527,800 |
| 5 | Increase personal well-being** | *Journey time* | Percent of population spending less than 60 min commuting to work (one way) | L | ML | M | H |
| 6 | Improve equity | *Low income neighborhood access to jobs and services* | Percent of low income neighborhoods with access to transit | ? | ? | ? | ? |

* Future measures could be: a) Premature deaths; b) Quality adjusted life years
** Placeholder, based on average journey time (min.)

Two important outcomes resulted from this process. First, it pointed to areas of key uncertainty that would benefit from additional health-related research. Second, transportation alternatives that clearly showed positive health benefits as a result of the HIA were strongly supported by local health authorities. Several of the region's Medical Health Officers sent letters of support for the RTS to the Mayor's Council (TransLink's governing body). The use of a structured approach employing meaningful measures demonstrated how an HIA process can give confidence to decision makers and other stakeholders working towards better public health outcomes.

## TASK 4.3: Project reporting

In this task the HIA Team will report the results from HIA to stakeholders and decision makers. The scale of reporting will depend on the level of HIA undertaken.

As illustrated in *Tool 4-C* (see *Toolkit*), the HIA report should include specific and clear recommendations to manage the identified activity impacts, including alternatives to the decision, modifications to the proposal, or mitigation/avoidance measures. Individuals can further screen and rank identified recommendations, mitigations, and alternatives based on:

**TOOL 4-C**
*HIA Report Template*

- Health-related outcomes of highest concern (i.e., based on magnitude and certainty) to lowest concern; and/or
- The feasibility of implementing the recommendation.

For each recommendation, provide descriptions of how health-related outcomes would be improved, as well as relevant details that would aid in implementation, like funding sources, timelines, and responsible agencies.

In writing recommendations, pay attention to the legal and policy context in which they will be implemented. To increase the likelihood of implementation, recommendations need to:

- Respect the capacity (technical, financial and governance) of the organization(s) assigned with the responsibility of implementing the recommendation(s);
- Address recommendation timelines and phasing; and,
- Be transparent about whether there was consensus about the recommendation(s), and how decisions were made.

Q+A

### Q&A: HOW ARE RECOMMENDATIONS BEST COMMUNICATED?

In addition to reporting to decision makers, the HIA Team should also be reporting to the stakeholders engaged in the process and, for more comprehensive HIAs, communicating results to the broader pubic.

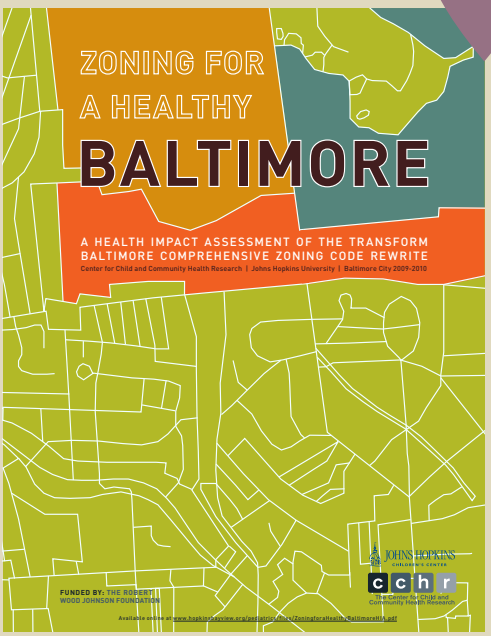
While clear and regular project communication is important through all HIA Steps, it is particularly important in *Step 5: Monitoring and Evaluation*. Consider using **multiple communication channels** (e.g., social media, project website, e-mail updates, and traditional media press releases) and tailor communications to the needs of different audiences (e.g., decision makers, elected officials, business audiences, community members).

STEP 4

## A CASE-IN-POINT

**STEP 4: RECOMMENDATIONS & REPORTING**

**The Health Outcomes of Zoning Policy**
*Location: Baltimore, MD, USA*




The Baltimore City Health Department launched the TransForm Baltimore Health Impact Assessment in 2010. This HIA examined how the proposed Baltimore comprehensive **zoning code rewrite** would impact obesity-related illnesses and other health outcomes including crime, physical activity, pedestrian safety, and diet and nutrition. The well-written and well-designed report gives a highly detailed description of the decision context and its connection to health through multiple pathways, as well as clear explanations of the methodology used.

The analysis revealed a number of ways that the new code would improve health outcomes (such as expanding mixed use areas, pedestrian oriented design, transit oriented development zones) and several potentially negative health outcomes and missed opportunities (such as increased exposure to alcohol outlets, and a lack of consideration for crime prevention through design).

Recommendations for how to improve the draft code (by building on the health promoting aspects of the code and mitigating the negative aspects) were developed based on the literature review, comparison of the current code and the draft code, impact assessment and expert opinions.

Policy makers divided the recommendations into three categories for ease of use:

1. Recommendations that support current initiatives in the new code;
2. Recommendations that support small revisions to the code; and,
3. Recommendations that support larger changes to the code.

Within each of these categories, recommendations were grouped under the themes of:

| THEME | EXAMPLE OF RECOMMENDATIONS IN THIS THEME |
|---|---|
| Creating walkable environments | Defining “pedestrian oriented” |
| Improving food access | Expanding where farmer’s markets are allowed |
| Clarifying the link between health and zoning | Modernizing the purpose statement |
| Developing a code that is easy to use | Adding diagrams of development process |
| Creating healthy neighbourhoods | Prevent concentration of off-premise alcohol sales outlets in certain districts |

The HIA results and recommendations were disseminated through numerous presentations to the city Planning Department, city solicitor and Zoning Advisory Committee, a publicly released report, and stakeholder meetings.

More information: www.rewritebaltimore.org

STEP 4

## BUILDING THE CASE

**STEP 4: RECOMMENDATIONS & REPORTING**

*The HIA Team developed a full report for the Transit Exchange HIA. The concise, illustrated document provided a detailed description of the decision context, its connection to health-related outcomes, and the methodology used. The report presented the HIA Team's findings and corresponding recommendations in detail.*

*The HIA process resulted in a series of specific recommendations to be incorporated in a revised development proposal and design for the facility. Recommendations included:*

- *Moving the park-and-ride parking lot entrance and transit exchange entrances and exits to a street that would not intersect an existing bike route/path.*
- *Improving the existing bike route by separating it from traffic and providing a separate bicycle entrance to the facility along with secure bicycle parking facilities.*
- *Increasing the number of affordable rental units in the residential portion of the development to ensure "no net loss" of affordable apartment rentals (this increase was facilitated by allowing the developer to increase overall floor space ratio of the project and to develop an additional 40-units of market housing.*
- *Providing residents and renters with reduced rate transit pass options to encourage transit use.*
- *Incorporating additional public space and green space in the development (for social well-being and recreation opportunities)*
- *Installing high efficiency filtration in units, especially those with sensitive users (e.g., daycares or seniors homes) to reduce exposure to air pollutants, or orienting air intakes so they draw air from the side of the building with the cleanest air (away from the arterial road and idling buses).*
- *Adding additional green space and gathering spaces to enhance social cohesion*
- *Providing reduced parking rates for carpools at the parking facility.*
- *Mandating a no idling policy for buses at the facility.*
- *Including a community policing station at the exchange.*
- *Encouraging displaced food stores/green grocers to return to the new development through the provision of two rental commercial units designed specifically for such businesses.*

*In addition to the full project report, a two-page "snap shot" report was prepared for presentation to the municipal Council and other decision makers. Project information was also summarized on information posters, which were shared with the general public and other stakeholders at a series of public open houses that were part of the re-zoning application for the Transit Exchange project.*

*The municipality also made all project materials available on its website and engaged both traditional media and social media outlets through news releases, and updates on the municipality's social media channels. "Residents for a Livable Downtown" also shared project materials on their website, as did the regional transportation authority.*

STEP 5

# STEP 5: Monitoring and Evaluation

Often overlooked or downplayed, monitoring and evaluation is an important part of the overall HIA process. It is used to track whether or not the recommendations made in Step 4 are having the desired effects on health-related outcomes.

The planning step involves the following two tasks:

*TASK 5.1: Prepare a monitoring program*
*TASK 5.2: Evaluate and report results of monitoring*

## TASK 5.1: Prepare a monitoring program

Monitoring programs will help determine what will be monitored, how, when and by whom. It will also identify how this information is shared with the HIA Team and HIA stakeholders, including those stakeholders involved with the implementation of its recommendations.

Using *Tool 5-A Monitoring Framework (Figure 24)*, the health-related outcomes and corresponding measures developed in *Step 4: Recommendations and Reporting* should be used to form the basis of the monitoring framework. In developing a monitoring plan, keep the following considerations in mind:

TOOL 5-A *Monitoring Framework*

- **Be systematic:** Information not collected in the same manner (i.e., at different times, using different information sources, etc.) may not be comparable over time.
- **Ease of collection:** Because data collection can be resource-intensive, it can be best to use data already being collected, either by the implementing agencies or by Health Authorities, local governments, or the federal government.
- **Partnerships:** Monitoring can involve external organizations and stakeholders who were involved in the HIA, particularly in comprehensive HIAs.
- **Documentation:** Deciding how often to monitor and how and when to communicate results is key. It is important to share monitoring results with decision makers, the HIA Team and potentially other stakeholders.

### A RANGE OF APPROACHES

Although general guidance is provided below, every project will be different so use discretion to determine which tasks are necessary.

**Desktop HIA** may not include a monitoring and evaluation component.

**An intermediate HIA** may include a limited monitoring and evaluation process, while a **comprehensive HIA** would likely include a broad-based monitoring and evaluation process.

### Q&A: WHAT IS MONITORING AND EVALUATION?

**Monitoring** is a continuous process of collecting information and using indicators to gauge the progress and outcomes of the activity. Regular monitoring allows the timely identification of successes or failures.

**Evaluation** uses the information gathered from monitoring to determine if there are opportunities for changes and improvements to an activity. Evaluation, like monitoring, should promote learning. Evaluation is used to determine if the activity is achieving the health outcomes, which the recommendations from *Step 4: Recommendations and Reporting* of the HIA were meant to address.

In 2014, the US Center for Community Health and Evaluation conducted an in-depth national study of 23 completed HIAs to evaluate their impacts and identify factors that maximize effects. As the first US-wide study of HIAs to emphasize the perspective of decision makers, the project included 166 interviews with federal, state, and local elected and appointed officials, high-level department staff, and private sector leaders, and a web-based survey of 144 HIA practitioners. According to the study, only **one HIA had established a detailed monitoring and evaluation program.**

***FIGURE 23: HIA MATRIX** You are here*

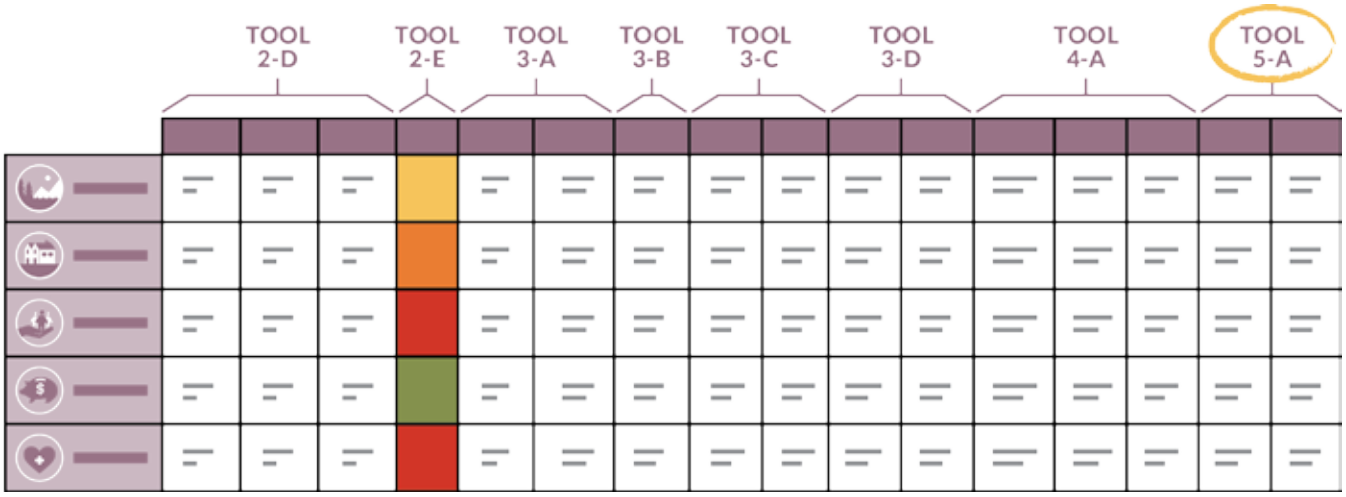



***FIGURE 24:** Tool 5-A Monitoring Framework (Building-the-Case Example)*

| HEALTH DETERMINANTS | Desired health-related outcome (from Tool 4-A) | Measure (from Tool 3-B) | Baseline conditions (from Tool 3-C) | Monitoring 2017 | Monitoring 2018 |
|---|---|---|---|---|---|
| PHYSICAL ENVIRONMENT (Example) | · Minimized ambient fine particulate matter (PM2.5), ozone (O3) concentrations at roadside | · Ambient fine particulate matter (PM2.5) nitrogen dioxide ($NO_2$) concentrations at residences | · Monthly average of 6.4 µg/m³ of PM2.5 | · Monthly average of 6.8 µg/m³ of PM2.5 | · Monthly average of 6.3 µg/m³ of PM2.5 |
| BUILT ENVIRONMENT | · Safer pedestrian and bicycle environment | · Morbidity / mortality on Transit Exchange Road (by age) | · No baseline conditions for development area<br>· 50 collisions (vehicles, vehicle - pedestrian, vehicle - bike) annually<br>· 12.5 injury + fatality collisions | · 3 injuries (bicycle), 5 injuries (pedestrians) | · 1 injury (bicycle), 2 injuries (pedestrians) |
| COMMUNITY & SOCIAL FACTORS | · Net gain affordable rental housing units | · Number of affordable rental housing units | · 40 units, existing apartments within the 20 block zone examined for this HIA | · 40 units | · 40 units |
| LIFESTYLE FACTORS | · Increased active transportation mode share and regional transit mode share | · Cyclist traffic counts, pedestrian counts | · Summer daily average of 345 cyclists using downtown bike lanes<br>· Winter daily average of 175 cyclists using downtown bike lane<br>· No pedestrian counts<br>· Transit mode share regional trips (4%) | · Cyclist summer daily average: 390<br>· Cyclist winter daily average: 200<br>· Transit share: 5% | · Cyclist summer daily average: 430<br>· Cyclist winter daily average: 210<br>· Transit share: 7% |

STEP 5

## TASK 5.2 Evaluate and report results of monitoring

Unlike monitoring, evaluation is not a continuous process. Instead, it occurs at strategic points during the implementation process (e.g., with project phases; at the end of the planning period, or several years after the implementation of the plan, project or policy). An evaluation conducted three to five years after the activity has been implemented can provide knowledge about the longer-term results and benefits and help build the case for the value of HIA locally.

Evaluation, like monitoring, should promote learning. The evaluation process is used to determine if HIA recommendations are achieving the desired health-related outcomes, how efficiently and effectively the recommendations are achieving them, and whether or not any of the recommendations need to be revised.

**TOOL 5-B** *Evaluation Framework*

Evaluation can re-engage the HIA Team in the process by asking two principal questions:

1. ***Were HIA recommendations implemented? Why or why not?***
2. ***Are HIA recommendations achieving the expected results? Why or why not?***

To answer the first question, a simple **process monitoring** checklist can be created using the list of recommendations from *Step 4: Recommendations and Reporting*. The HIA Team can work through the recommendations to see if they are being implemented.

*Tool 5-B Evaluation Framework* (see *Toolkit*) can be used as a framework for answering the second question. Evaluation results should be communicated to the HIA Team, project stakeholders and, for comprehensive HIA, to the community in general.

### BUILDING THE CASE

**STEP 5: MONITORING AND REPORTING**

*The monitoring and evaluation process for the new park and ride facility and development was led by the municipal Planning Department and supported 'on the ground' by Residents for a Livable Downtown. The process included:*

- **Checklists to be used by planning staff each month to evaluate whether or not recommendations were being implemented as planned.** By using these checklists, planning staff were able to identify a problem with the reduced rate transit passes early on (discussions around who would pay for the subsidy had stalled), work with the regional transportation authority and the developer to come to an agreement, and move forward.
- **HIA monitoring and evaluation reports made public on the municipality's website.** In the first year, the municipality found a number of positive changes to the health-related outcomes, including a small increase in the mode-share from transit and a reduction in cycling and bicycling injuries. However, they also found that ambient air quality deteriorated slightly post-project, which led to an investigation of bus idling and increased enforcement. In the second year of the evaluation, the positive trends continued and the ambient air quality improved slightly.
- **An annual presentation to municipal Council to discuss health-related outcomes of this project.** This eventually became a standing quarterly agenda item to discuss health impacts of all municipal activities and projects.

STEP 5

## A CASE-IN-POINT

**STEP 4: RECOMMENDATIONS & REPORTING**

**London Congestion Charging**
*Location: London, UK*


In 2004, shortly after the implementation of London's original congestion charge program, an expansion to the congestion charge zone was considered. Transport for London (TfL) and the London Health Observatory conducted an HIA of the proposed western extension of the congestion-charging scheme.

The HIA identified a need for TfL to collect comprehensive baseline data before implementation of the extension and to develop a monitoring strategy for post-implementation. They also identified the following health related impacts posed by the expansion of the program that would be monitored post-implementation.

- Increased physical activity (walking and bicycling)
- Reduced road traffic collisions and personal injury
- Decreased air pollution
- Decreased noise
- Reduced access to goods, services, jobs and education
- Reduced access to health and social services

In 2008, one year after the extension was introduced, TfL published an impacts monitoring report.


TfL found that walking and cycling generally increased in the extension zone, road traffic collision and personal injuries were reduced, and accessibility to services was largely unaffected. Air pollution and noise levels declined only marginally. The report identified an ongoing concern that a small minority are being disadvantaged by the charging scheme and expressed the need for continued monitoring of these groups.

More information:
www.lho.org.uk
www.tfl.gov.uk

# 4.0 Tools and Resources

## 4.1 Tools

The following tools are designed to help the HIA Team work through this guidebook's HIA planning framework. The tools are provided in a companion document, *Health Impact Assessment of Transportation and Land Use Planning Activities: Toolkit*.

While the tools are best used in conjunction with the planning framework, every HIA process will be different and may not require the use of every tool. The tools can also be used to support discrete steps or smaller planning projects (e.g., Stakeholder Assessment, Monitoring and Evaluation).

**HIA GUIDEBOOK TOOL LIST**

### Step 1: Screening

Tool 1-A HIA Readiness Checklist

Tool 1-B HIA Screening Checklist

### Step 2: Scoping

Tool 2-A Scoping Checklist

Tool 2-B HIA Team Terms of Reference

Tool 2-C Activity Impact Influence Diagram

Tool 2-D Influences and Activity Impacts Matrix

Tool 2-E Health-Related Outcome Plotting

Tool 2-F Stakeholder Assessment

### Step3: Assessment and Analysis

Tool 3-A HIA Matrix – Research & Findings

Tool 3-B HIA Matrix – Measures

Tool 3-C HIA Matrix – Baseline Conditions

Tool 3-D HIA Matrix – Health-Related Outcomes

### Step 4: Recommendations and Reporting

Tool 4-A: Recommendation Worksheet

Tool 4-B: Alternatives Evaluation

Tool 4-C: HIA Report Template

### Step 5: Monitoring and Evaluation

Tool 5-A Monitoring Framework

Tool 5-B Evaluation Framework

## 4.2 Glossary of Terms

**Active transportation:** Active transportation is any form of human-powered transportation. Walking and cycling are the most popular forms of active transportation.

**Activity:** A project, plan, or policy that could result in positive and/or negative health-related outcomes.

**Activity impacts:** Impacts from an activity (such as a project, plan, or policy) that have an influence on health determinants. Activity impacts can be both direct and indirect. An example of a direct activity impact includes exposure to pollutants that a development project could release into the air, water, or soil. An example of an indirect impact includes how a project might influence people's transportation choices, the local job market, or access to public spaces and amenities.

**Built environment:** The built environment refers to the human-made surroundings that provide the setting for human activity, ranging in scale from buildings and parks or green space to neighborhoods and infrastructure.

**Comprehensive HIA:** An in-depth HIA that can take several months to complete. They may be time intensive and costly given staff time required, stakeholder and public engagement costs and, sometimes, consulting costs. They also may require an extensive literature review and the collection of primary data. This type of HIA is better suited to larger, complex proposals, such as major infrastructure or transportation projects.

**Desktop HIA:** A rapid, desk-based exercise that can take between two days to one week. It can be undertaken independently, or can involve a small group of stakeholders, and will typically use existing knowledge and evidence to assess a proposal, policy or plan.

**Engagement (or stakeholder engagement):** The process by which an organization involves people/groups in the decision making process, if the decision has the potential to impact those people/groups, or if those people/groups have the potential to impact the decision or its outcomes.

**Health Authority:** A governmental health organization that governs, plans, and delivers health care services. In BC, there are five regional health authorities (including Vancouver Coastal Health Authority and Fraser Health Authority), two non-geographic Health Authorities - the Provincial Health Service Authority (PHSA) and the First Nations Health Authority.

**Health determinants:** Wider social, economic and environmental influences and factors that contribute to individual and community health outcomes. Health determinants include natural environment factors, built environment factors, livelihood factors, social and community factors, and lifestyle factors, among others.

**Health Impact Assessment (HIA):** Health Impact Assessment (HIA) is an analysis process used to explore the potential health consequences (benefits and risks) of an activity traditionally considered outside the health sector domain, such as a transportation project, urban development or land use plan.

**Health inequities:** Avoidable differences in health outcomes between different socioeconomic groups. They are shaped by health determinants, but are often associated with unequal economic and social conditions. Ethnicity, race, culture and gender are equally important equity considerations. These unequal conditions can include such things as access (e.g., through transit or land use) to places to recreate, learn, work, shop, get medical care and buy healthier food.

**Health-related outcomes:** The health status of both individuals and groups within a population or community. Health-related outcomes can include things like morbidity rates (injuries), mortalities, asthma, diabetes, cardiovascular disease, and other conditions, like obesity, which is associated with poorer health status. It can also include behaviours, like cycling or walking, that are associated with better health status.

**Intermediate HIA:** A mid-level HIA that likely takes between one to three months to carry out and includes the establishment of a small stakeholder group representing core sectors, one or two stakeholder group workshops, and a short process of qualitative and quantitative evidence gathering. An intermediate HIA should be completed with minimal cost (e.g., staff time, data acquisition, consulting fees) and relatively small stakeholder time commitments. It often relies on readily available data and basic qualitative input.

**Measures:** Chosen qualitative or quantitative data used to evaluate health-related outcomes. In HIAs, measures are used to estimate the changes to health-related outcomes occurring from activity impacts. Examples of measures include: cyclist or pedestrian counts, morbidity and mortality rates, asthma rates, and ambient concentrations of fine particulate matter.

**Medical Health Officer:** Provincial government health officials who serve as the first point of contact for engaging health and/or health planning professionals at Health Authorities in BC. All municipalities in Metro Vancouver and the Fraser Valley Regional District are assigned a Medical Health Officer.

**Morbidity:** The state of being diseased or the incidence of disease in a specific population. Data is usually collected according to the disease type, gender, age and area.

**Mortality:** The number of people who have died in a specific population. Mortality rates are generally expressed as the number of deaths per 1000 individuals per year.

**Official Community Plan (OCP):** A statement of community development objectives and policies to guide land use management and development within a given area. The Local Government Act directs OCP requirements. The City of Vancouver is governed by its own Charter and does not have an OCP.

**Qualitative data:** Data that is descriptive rather than numerically measureable. It provides a holistic view of activity impacts and can incorporate stakeholders' experiences and perspectives. Qualitative data can be derived from methods such as interviews, focus groups, texts, images, or sound. Due to the difficulty of numerically measuring health impacts, most HIAs rely on qualitative data for their analysis.

**Quantitative data:** Data that is numerically measureable. Quantitative data includes metrics and statistics that quantify the occurrence, scale or magnitude of an activity impact or health-related outcome. Examples of quantitative data include disease rates, measures of air quality, or Quality Adjusted Life Years. Quantitative data is particularly useful in communicating results to decision makers or to the public, and for comparing alternative projects, plans, or policies.

# 4.3 Resources

| HEALTH-RELATED OUTCOMES - DATA SOURCES | | | |
|---|---|---|---|
| **Measure** | **Source Name** | **Level of Geography** | **Data source** |
| Chronic obstructive pulmonary disease (COPD) | BC Community Health Atlas http://maps.gov.bc.ca/ess/sv/cha/ | LHA | BC Ministry of Health |
| Diabetes Mellitus | BC Community Health Atlas http://maps.gov.bc.ca/ess/sv/cha/ | LHA | BC Ministry of Health |
| All causes of mortality standardized mortality rates | BC Community Health Atlas http://maps.gov.bc.ca/ess/sv/cha/ | LHA | BC Vital Statistics Agency |
| All causes of mortality potential years of life lost standardized rates | BC Community Health Atlas http://maps.gov.bc.ca/ess/sv/cha/ | LHA | BC Vital Statistics Agency |
| External causes of death age standardized mortality rates | BC Community Health Atlas http://maps.gov.bc.ca/ess/sv/cha/ | LHA | BC Vital Statistics Agency |
| External causes of death potential years of life lost standardized rate | BC Community Health Atlas http://maps.gov.bc.ca/ess/sv/cha/ | LHA | BC Vital Statistics Agency |
| Heart failure age standardized incidence rate | BC Community Health Atlas http://maps.gov.bc.ca/ess/sv/cha/ | LHA | BC Ministry of Health |
| Heart failure age standardized prevalence rate | BC Community Health Atlas http://maps.gov.bc.ca/ess/sv/cha/ | LHA | BC Ministry of Health |
| Heart failure incident cases | BC Community Health Atlas http://maps.gov.bc.ca/ess/sv/cha/ | LHA | BC Ministry of Health |
| Heart failure prevalent cases | BC Community Health Atlas http://maps.gov.bc.ca/ess/sv/cha/ | LHA | BC Ministry of Health |
| Hypertension age standardized incidence rate | BC Community Health Atlas http://maps.gov.bc.ca/ess/sv/cha/ | LHA | BC Ministry of Health |
| Hypertension age standardized prevalence rate | BC Community Health Atlas http://maps.gov.bc.ca/ess/sv/cha/ | LHA | BC Ministry of Health |
| Hypertension incident cases | BC Community Health Atlas http://maps.gov.bc.ca/ess/sv/cha/ | LHA | BC Ministry of Health |
| Hypertension prevalent cases | BC Community Health Atlas http://maps.gov.bc.ca/ess/sv/cha/ | LHA | BC Ministry of Health |
| Death and Death Rates, Diabetes Mellitus 1986-2011 | Selected Vital Statistics and Health Status Indicators www.vs.gov.bc.ca/stats/ | LHA | BC Vital Statistics Agency |
| Death and Death Rates, Motor Vehicle Accidents, BC 1986-2011 | Selected Vital Statistics and Health Status Indicators www.vs.gov.bc.ca/stats/ | BC-wide | BC Vital Statistics Agency |
| Perceived mental health | Canadian Community Health Survey www12.statcan.gc.ca/health-sante/ | HSDA | Statistics Canada |
| % Obese | Canadian Community Health Survey www12.statcan.gc.ca/health-sante/ | HSDA | Statistics Canada |
| Arthritis | Canadian Community Health Survey www12.statcan.gc.ca/health-sante/ | HSDA | Statistics Canada |
| Diabetes | Canadian Community Health Survey www12.statcan.gc.ca/health-sante/ | HSDA | Statistics Canada |
| Asthma | Canadian Community Health Survey www12.statcan.gc.ca/health-sante/ | HSDA | Statistics Canada |

*HSDA = health service delivery areas LHA = local health areas*

| HEALTH-RELATED OUTCOMES - DATA SOURCES | | | |
|---|---|---|---|
| **Measure** | **Source Name** | **Level of Geography** | **Data source** |
| High Blood Pressure | Canadian Community Health Survey www12.statcan.gc.ca/health-sante/ | HSDA | Statistics Canada |
| Mood disorder | Canadian Community Health Survey www12.statcan.gc.ca/health-sante/ | HSDA | Statistics Canada |
| COPD | Canadian Community Health Survey www12.statcan.gc.ca/health-sante/ | HSDA | Statistics Canada |
| Injuries within the past 12 months causing limitation of normal activities | Canadian Community Health Survey www12.statcan.gc.ca/health-sante/ | HSDA | Statistics Canada |
| Injury hospitalization (per 100,000) | Canadian Community Health Survey www12.statcan.gc.ca/health-sante/ | HSDA | Statistics Canada |
| Lung cancer | Canadian Community Health Survey www12.statcan.gc.ca/health-sante/ | HSDA | Statistics Canada |
| Current smoker (daily or occasional) | Canadian Community Health Survey www12.statcan.gc.ca/health-sante/ | HSDA | Statistics Canada |
| Current smoker, daily | Canadian Community Health Survey www12.statcan.gc.ca/health-sante/ | HSDA | Statistics Canada |
| Leisure-time physical activity | Canadian Community Health Survey www12.statcan.gc.ca/health-sante/ | HSDA | Statistics Canada |
| Fruit and vegetable consumption, 5 or more per day | Canadian Community Health Survey www12.statcan.gc.ca/health-sante/ | HSDA | Statistics Canada |
| Second hand smoke exposure at home | Canadian Community Health Survey www12.statcan.gc.ca/health-sante/ | HSDA | Statistics Canada |
| Second hand smoke exposure in vehicles and or public places | Canadian Community Health Survey www12.statcan.gc.ca/health-sante/ | HSDA | Statistics Canada |
| CRIME DATA | | | |
| Serious crime rate | BC Statistics - Socio-Economic Profiles www.bcstats.gov.bc.ca/statisticsbysubject/SocialStatistics/SocioEconomicProfilesIndices/Profiles.aspx | LHA | BC Stats |
| Serious property crime rate | BC Statistics - Socio-Economic Profiles www.bcstats.gov.bc.ca/statisticsbysubject/SocialStatistics/SocioEconomicProfilesIndices/Profiles.aspx | LHA | BC Stats |
| Non-cannabis drug offences | BC Statistics - Socio-Economic Profiles www.bcstats.gov.bc.ca/statisticsbysubject/SocialStatistics/SocioEconomicProfilesIndices/Profiles.aspx | LHA | BC Stats |
| Illicit drug deaths (Deaths per 100,000) | BC Statistics - Socio-Economic Profiles www.bcstats.gov.bc.ca/statisticsbysubject/SocialStatistics/SocioEconomicProfilesIndices/Profiles.aspx | LHA | BC Stats |
| Motor vehicle theft | BC Statistics - Socio-Economic Profiles www.bcstats.gov.bc.ca/statisticsbysubject/SocialStatistics/SocioEconomicProfilesIndices/Profiles.aspx | LHA | BC Stats |

*HSDA = health service delivery areas LHA = local health areas*

## LOCAL AND PROVINCIAL RESOURCES

### BC Healthy Living Alliance (BCHLA)
www.bchealthyliving.ca/

The BC Healthy Living Alliance (BCHLA) was formed in 2003 and is made up of a group of organizations that came together with the intent to improve the health of British Columbians. BCHLA has information on many health determinants including health inequities, healthy eating, physical activity, tobacco reduction, community capacity building, alcohol consumption, and mental wellness.

### BC Recreation and Parks Association (BCRPA)
www.bcrpa.bc.ca/

The BC Recreation and Parks Association (BCRPA) is a not-for-profit organization dedicated to improving the quality of life of British Columbians. BCRPA maintains resources relating to physical activity such as reports on active aging, physical activity and transportation benefits of walkable communities, and active workspaces.

### my Health my Community Survey
Vancouver Coastal Health Authority, Fraser Health Authority, University of British Columbia
www.myhealthmycommunity.org

This survey of almost 40,000 Lower Mainland and coastal residents provides valuable information on health related factors, including associations between transportation and health.

### PlanH
http://planh.ca/

PlanH supports local government engagement and partnerships across sectors for creating healthier communities, and provides learning opportunities, resources, and leading-edge practices for collaborative local action. PlanH is a partnership between BC Healthy Communities Society and Healthy Families BC, the province's health promotion strategy.

### Provincial Health Services Authority (PHSA)
www.phsa.ca/populationhealth

The Population and Public Health Program (PPH) of Provincial Health Services Authority works in collaboration with various partners to prevent chronic disease and create healthier populations throughout British Columbia. Key tools and resources are available to support building healthier communities and HIA practice, which include Healthy Built Environment Linkages: A toolkit for design, planning and health, and BC Community Health Profiles.

### Union of British Columbian Municipalities (UBCM)
www.ubcm.ca/

UBCM provide a unified voice for local government, by advocating their common interests in policy development and implementation, government relations, external communications, and liaisons with other groups. The organization also has a library of policy documents and resources.

## CANADIAN RESOURCES

### Canadian Institute of Planners (CIP)
http://cip-icu.ca/

CIP works to promote the physical, economic, and social wellbeing of communities across Canada through the profession of planning. CIP supports healthy communities initiatives and maintains a library of guides, case studies, reports, and policy statements relating to healthy communities, including a series of fact sheets profiling the most recent peer reviewed Canadian research on planning and health.

### Canadian Public Health Association
www.cpha.ca

The Canadian Public Health Association (CPHA) has a program titled Frontline Health: Beyond Healthcare that addresses the social determinants of health. CPHA maintains a HIA resources section, which includes links related to the social determinants of health, public health economics, and health equity assessment.

**Heart and Stroke Foundation of Canada**
www.heartandstroke.ca/

The Heart and Stroke Foundation is one of Canada's largest health charities. The organization has a healthy living program that includes many resources relating to health determinants and public health. Among these resources are the Neighbourhood Active, Healthy Design Checklist, Active Transportation, Health & Community Design Factsheet, and Healthy Community Design Research Projects.

**National Collaborating Centre for Healthy Public Policy**
www.ncchpp.ca/54/Health_Impact_Assessment.ccnpps

The National Collaborating Centre for Healthy Public Policy (NCCHPP) is located in Quebec and works to increase expertise in public health though the development, sharing, and use of knowledge among public health institutions. The NCCHPP has a wealth of information concerning HIAs including latest news, publications, presentations, videos, online courses, and case studies.

**Region of Peel – Peel Public Health**
www.peelregion.ca/health/

The Region of Peel Public Health program serves 1.3 million residents in Brampton, Caledon, and Mississauga Ontario. Peel Public Health publishes HIAs reports on the Peel website that can be found by searching "Health Impact Assessment" in the search window.

**Toronto Public Health**
www.toronto.ca

Toronto Public Health monitors, protects, and promotes public health of Toronto residents. HIA reports carried out by the organization can be found by searching under the website's Research and Reports Library.

## US AND INTERNATIONAL RESOURCES

**Active Living Research**
http://activelivingresearch.org

Active Living Research is a research, support and advocacy organization administered by the University of California, San Diego with technical expertise in the fields of public health, planning, transportation and parks and recreation. Their website includes a six-part HIA training course, introductory tools, and links to additional resources.

**HIA Clearinghouse Learning and Information Center (HIA-CLIC)**
www.hiaguide.org/

Developed through the UCLA Health Impact Assessment Project and supported by the Robert Wood Johnson Foundation, this website includes summaries and copies of completed HIAs, methods and resources for conducting HIAs, sector specific information and casual pathways to affect health, training opportunities, and current HIA legislation.

**Health Impact Project**
www.pewtrusts.org/en/projects/health-impact-project

This collaboration of Robert Wood Johnson Foundation and The Pew Charitable Trusts provides HIA resources, including a map of all HIA's in the US, and funding opportunities.

**Health Economic Assessment Tool (HEAT)**
www.heatwalkingcycling.org

The World Health Organization and European partner agencies developed the Health Economic Assessment Tool (HEAT) to help organizations conduct an economic assessment of the health benefits of walking or cycling by estimating the value of reduced mortality that results from specified amounts of walking or cycling. The tool can be used to provide input into more comprehensive economic appraisal exercises, or prospective HIAs.

**HIA Gateway**
www.apho.org.uk/default.aspx?QN=P_HIA

Managed by the West Midlands Public Health Observatory on behalf of the Association of Public Health Observatories, the website includes full-text PDF's of HIA reports, guides and evidence, and additional links.

**Human Impact Partners**
www.humanimpact.org/

This website has good answers to many commonly asked HIA questions as well as multiple HIA resources in a searchable library.

**The Society of Practitioners of Health Impact Assessment (SOPHIA)**
http://hiasociety.org

SOPHIA was established in the autumn of 2011 and now has 0ver 500 members in 18 countries, including eight Canadian provinces and 42 US States. The organization provides resources for practitioners, including model HIA reports, training tools, and HIA workshops and courses.

**International Association for Impact Assessment**
www.iaia.org/default.aspx

This global network of impact assessment practitioners develops approaches and practices for integrated impact assessments and offers its members a variety of publications. The website contains a list of conferences, networking opportunities, trainings, and publications that may be of interest to those conducting impact assessments.

**The Urban Land Institute (ULI)**
http://uli.org/

The Urban Land Institute (ULI) launched the "Building Healthy Places Initiative" in 2013. To date, they have developed a toolkit, produced other resources and are working on pilot projects across the US. ULI's toolkit, *Building Healthy Places Toolkit: Strategies for Enhancing Health in the Built Environment*, outlines evidence-supported opportunities for enhancing health outcomes in real estate developments. The report outlines 21 recommendations for promoting health at the building or project scale.

**World Health Organization Health Impact Assessment**
www.who.int/hia/en/

This website provides basic HIA information, a list of HIA networks, tools and methods for conducting an HIA, HIA and policy making, and examples of HIA across sectors.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www.ecoplan.ca