

Report on Mental Health in Health Impact Assessment

A Resource for Health Impact Assessment Practitioners

Prepared by

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This report has been endorsed by the Society for Practitioners of Health Impact Assessment. For more information on the endorsement process, please contact info@hiasociety.org

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Executive Summary

Health Impact Assessment (HIA) is a growing field, process, and method that is increasingly used to inform policy decisions in Canada and abroad. As the field expands, so too are the various ways through which HIA can be utilized (e.g., HIA, Mental Health Impact Assessment, Rapid Health Impact Assessment and Health Equity Impact Assessment). While the uptake of HIA suggests a positive shift towards improving population and public health, practitioners have expressed concern that the field has been slow to incorporate mental health.

Mental health is a widespread and complex state of wellbeing that should be considered in decisions that affect the health and wellbeing of populations. This report provides a descriptive overview of how mental health is currently included in the field of HIA, which is summarized in this section.

Key Terms and Key Concepts

Mental health is “a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community.”¹

Mental illness is an impediment to “a person’s ability to cope with daily life”² that may occur from biological, social, economic, genetic, or environmental factors. It is often considered to be a lack of mental health, identified through symptoms or presence of a diagnosable mental condition.

The **Mental Health Continuum** conceptualizes mental health as a balance between positive and negative feelings and functioning, with consideration that these may manifest as symptoms of mental health or disorder.³ This continuum allows for various individuals with mental health problems to still be considered as having mental health.

Population mental health is a perspective and field that holds mental health as a human right, endorses universal access to mental health services, and works to improve the mental health of entire populations so that each individual may enjoy life, balance its demands, and develop psychological and emotional resilience.⁴

Why is it Important to Include Mental Health in HIA?

It is important to include mental health in HIA for a number of reasons. First, the inclusion of mental health represents a comprehensive approach to health that accounts for multiple influencing factors. Second, it represents growing issues in population and public health, which may enhance the uptake of recommendations by decision makers. Third, the inclusion of mental health in HIA may represent concerns of the populations they serve, especially for subpopulations where individuals live with mental illness. Finally, HIA may be one of many components in a decision making

process; thus may be the only forum for health (mental or physical) concerns to be voiced.

How are Practitioners Working to Improve the Inclusion of Mental Health in HIA?

In recent years, HIA practitioners have become actively involved in improving the inclusion of mental health into HIA. Important advances include the creation of mental health specific forms of HIA, such as: **Mental Well-being Impact Assessment, Mental Health Impact Assessment, Mental Health HIA Toolkit**, and the **Canadian Rapid Mental Health Impact Assessment Toolkit**. Work by members of the Mental Health Working Group from the Society of Practitioners of Health Impact Assessment has resulted in a working paper mapping the current state of mental health in the field of HIA, a resource sheet with common definitions that relate to mental health, and a guide for practitioners to use when developing HIA pathways that include mental health.

What do HIAs say about Mental Health?

Many HIAs include discussion of mental health as it relates to the social determinants of health. In particular, HIAs have been interested in showing the association between mental health and the built environment, education, employment, food insecurity, income, housing, neighbourhood, social capital, social cohesion, and social support. Other factors identified as potentially impacting mental health that are discussed in this report include community conflict, commuting time, energy efficiency, gambling, industrialization and modernization, noise, physical activity, public art, and wayfinding.

How do HIAs Measure Mental Health?

Mental health outcomes varied widely by HIA, from problems related to mental health (e.g., domestic abuse) to specific mental health problems (e.g., depression). Different mental health outcomes found in HIAs varied widely, with over 100 different outcomes of interest. These provide an idea of the vast array of potential indicators available to practitioners who wish to include mental health in their HIA, from sense of wellbeing, to binge drinking, to major depressive disorder, to violence, among others.

What Data Sources do HIAs use for Mental Health?

HIAs use a number of different data sources to collect information on mental health. These included primary and secondary sources, in both qualitative and quantitative forms. Examples of primary data collected ranged from qualitative sources, such as focus groups or key informant interviews, to quantitative sources, such as economic analysis or the administration of surveys. Some examples of secondary data collected include qualitative forms such as literature review or use of community reports, to the secondary analysis of surveys or public health databases.

What are Some Examples of HIAs that Incorporate Mental Health?

Two examples of HIAs that successfully included mental health throughout their report are provided: the *HOPE VI to HOPE SF HIA*⁵ and the *Transitional Jobs Program HIA*.⁶ For each example, a description is provided for how mental health was measured, what outcomes were looked at, and what recommendations practitioners suggested to mitigate mental health impacts.

How can we Improve the Inclusion of Mental Health In HIA?

The recommendations from this report are meant to guide practitioners who aim to include mental health in their HIAs. Recommendations are posed as straightforward suggestions to increase the potential for monitoring and evaluation, improve the evidence of claims made, and encourage inclusion of mental health in HIA. Recommendations include drawing on community engagement to guide the inclusion of mental health in HIA, considering mental health in the scoping of any HIA, maintaining the consistency with which mental health is discussed throughout the HIA report, considering how mental health may change for subpopulations differently, drawing on the multiple data sources available to assess mental health, and considering the impact of mental health on physical health and of physical health on mental health.

What is the Purpose of this Report?

The purpose of this report is to provide basic information for practitioners who are considering including mental health in their HIA. An overarching and secondary purpose of this report is to support the work currently underway by HIA practitioners (see above), in their efforts to collect and compile information on HIA and mental health. While this report is comprehensive, it is not exhaustive. The findings presented in this report are derived from those reported in HIA reports. This report is therefore meant to serve as a starting document to direct practitioners to available resources and literature.

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Transitional Jobs Program HIA.....	44
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Key Terms and Key Concepts

This section provides brief descriptions for key terms and concepts used in this report; namely, the definitions for mental health and mental illness. This section also provides an orientation to concepts such as the mental health continuum, population mental health perspective, and health impact assessment.

Mental Health and Mental Illness

Understandings of mental health vary by social and cultural context; however, in population and public health it is most commonly understood in relation to mental wellbeing or mental illness.

The World Health Organization (2006) defines **mental health** as “a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community.”⁷ This definition represents a holistic conceptualization of mental health that focuses on understanding, improving, and promoting mental health by considering its complexities. Influencing factors of mental health vary from person to person but generally include one’s state of physical, emotional, and spiritual health, as well the effects from social determinants of health, such as housing or employment.⁸ Throughout this report, the terms “mental health” and “mental wellbeing” will be used interchangeably.

Aside from the holistic perspective of mental health described above, mental illness represents another way of conceptualizing mental health. The lack of mental health may be indicative of mental illness. **Mental illness** is defined by the Canadian Mental Health Association (2009) as an impediment to “a person’s ability to cope with daily life,” that may occur when biological, social, economic, genetic, or environmental factors influence one’s mental health.⁹ Mental illness is often understood according to the diagnostic criteria used by psychiatrists and psychologists, as laid out in the Diagnostic and Statistical Manual of Mental Disorders. Thus, mental illness represents a more biomedical and behavioural perspective of mental health, is narrower in scope than the holistic perspective, and operates with the primary function of identifying, preventing, and treating mental illness as a means of improving mental health. While mental health and illness are somewhat differing concepts, there remains the need to identify and discuss mental health problems for the purposes of this report. Therefore, the terms “mental illness” and “mental health problems” (i.e., a less pathologized form of “mental disorder”) will be used interchangeably.

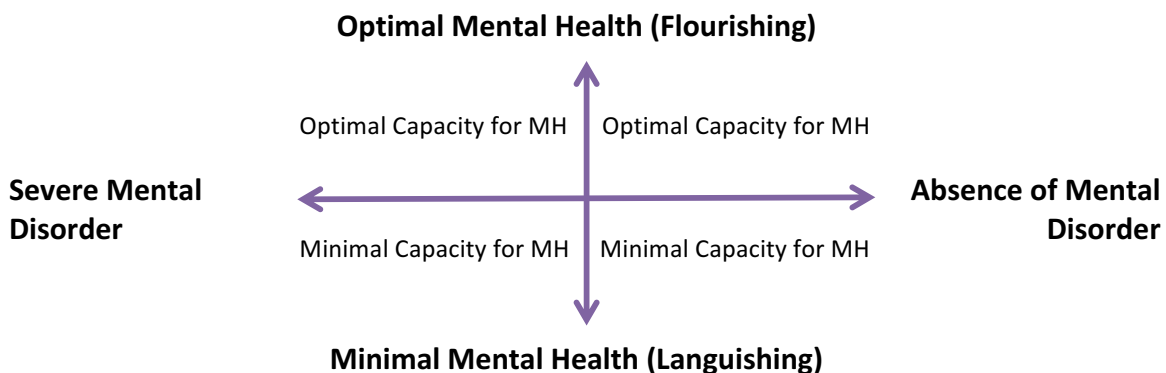
The differences between mental health and mental illness may best be understood through an illustrative example. Consider the following two mission statements for two national organizations aimed at improving mental health. The Canadian Mental Health Association aims broadly for “mentally healthy people in a healthy society” and includes no mention of illness, treatment, or disease, thus implying

a holistic approach. In contrast, the American National Institute of Mental Health describes their mission as “a world in which mental illnesses are prevented and cured.”¹⁰ This second mission statement represents a more biomedical perspective of mental health, with explicit reference of its intent to prevent and cure mental illness. What remains constant, however, is that at the root of both the holistic and biomedical conceptualization of mental health, both seek to improve health and avoid harm.

Mental Health Continuum

A third way of conceptualizing mental health is through recognition of the overlap and interplay between mental health and mental illness. A concept that has been recently adopted by the Public Health Association of Canada and others is the **mental health continuum**, which was operationalized by Corey Keyes. Keyes (2002) describes mental health as a balance between positive and negative feelings and functioning in one’s life, with consideration for the role of subjective wellbeing, which may manifest as symptoms of mental health or disorder.¹¹ **Figure 1**, reproduced with permission from a Rapid Mental Health Impact Assessment produced for PHAC, illustrates this continuum of mental health, with wellbeing ranging from flourishing to languishing, and illness ranging from severe disorder to the absence of disorder.

Figure 1. The Mental Health Continuum, adapted from Keyes (2002).



A Population Mental Health Perspective

When applied to populations, different understandings of mental health encompass a **population mental health** perspective. This perspective works to improve the mental health of the *entire* population so that each individual may enjoy life, balance its demands, and develop psychological and emotional resilience.¹²

One important component of population mental health is the surveillance of mental health over time, which allows for the assessment of mental health conditions and monitoring of changes or improvements to mental health. As will be discussed throughout this paper, this holds important implications for the field of Health Impact Assessment, particularly the scoping and assessment portions of this methodology.

What is Health Impact Assessment?

As defined by the World Health Organization, **Health Impact Assessment (HIA)** is “a combination of procedures, methods and tools by which a policy, program or project may be judged in terms of its potential effects on the health of a population and the distribution of those effects within the population.”¹³ The field of HIA emerged in the late 1990s, with methods informed by the pre-existing field of Environmental Impact Assessment (EIA) and the promotion of healthy public policy that was taking place across North America.¹⁴ Today, one of the key ways that HIA contributes to population health is by influencing decision making so that policies, programs, or projects do not damage health in populations.¹⁵ HIA helps to inform decision makers of potential physical, social, or economic consequences that a policy, program, or project may have on human health, which includes identifying groups whose health may be most affected, and offering recommendations to mitigate or avoid potential harms to their health that may occur.¹⁶

There are six steps consistent among the broad ways of conducting an HIA: screening (determines whether the HIA will succeed or add value), scoping (creates objectives and outlines steps for the HIA), assessment (describes the baseline health of population affected and predicts potential health effects), recommendations (identifies mitigation strategies that will protect and promote health based on predicted changes), reporting (disseminates findings to decision makers), and monitoring and evaluation (considers the quality, impact, and outcome of the HIA in relation to decision making).¹⁷ Adherence to these six steps helps to ensure that HIA is a systematic and rigorous process with its findings and recommendations based on evidence.

Why is it Important to Include Mental Health in HIA?

Increasingly, mental health is gaining attention by policy makers and health care systems at the regional, national, and international level. In their 2012 mental health strategy for Canada, *Changing Directions, Changing Lives*, the Mental Health Commission of Canada (MHCC) recognized that mental health is “essential to our quality of life.”¹⁸ Similar recognitions were made in the United Kingdom (UK) and the United States of America (US) in strategic plans for mental health published for their governments: the UK’s *No Health Without Mental Health*¹⁹ and the US’s Centers for Disease Control and Prevention’s (CDC) *Public Health Action Plan to Integrate Mental Health Promotion and Mental Illness Prevention with Chronic Disease Prevention*.²⁰ While each strategy differs by geographic specificity, in each case these national plans seek to promote mental health and prevent/reduce mental illness. To provide the

Canadian-specific context, a summary of the strategic directions from the MHCC is presented in **Table 1**, below.

Table 1. Strategic Directions presented in *Changing Directions, Changing Lives*.

No.	Strategic Direction
1	Promote mental health across the lifespan in homes, schools and workplaces, and prevent mental illness and suicide wherever possible.
2	Foster recovery and well-being for people of all ages living with mental health problems and illnesses and uphold their rights.
3	Provide access to the right combination of services, treatments and supports, when and where people need them.
4	Reduce disparities in risk factors and access to mental health services, and strengthen the response to the needs of diverse communities and Northerners.
5	Work with First Nations, Inuit, and Métis to address their mental health needs, acknowledging their distinct circumstances, rights and cultures.
6	Mobilize leadership, improve knowledge, and foster collaboration at all levels.

The inclusion of mental health in HIA is important for a number of reasons. First, the inclusion of mental health in HIA represents collaborative decision making for a comprehensive approach to health. As the MHCC has noted in their strategic plan, the promotion of mental health and treatment of mental illness occurs not only in the health sector. Mental health is influenced by many different social determinants, thus action meant to improve mental health or reduce mental illness requires collaboration of health and other sectors, such as employment or education. HIA facilitates cross-sector collaboration in their adoption of a **comprehensive approach to health** as a core value, as stated by the Society of Practitioners of Health Impact Assessment (SOPHIA).²¹ HIA provides an ideal opportunity to facilitate the cross-sector and collaborative decision making needed to improve mental health and reduce/treat mental illness. Increased inclusion of mental health in HIA can help those across sectors recognize how the physical, social, and economic environments influence mental health.

Second, the inclusion of mental health in HIA represents a **growing issue in population and public health**. Increasingly, it is understood that physical, social, environmental, and economic factors (i.e., the social determinants of health) can influence the mental health of entire populations, in addition to individuals. It is important that HIA understand this in order to maintain relevance to the issues and concerns that are present in the populations they serve, as well as population and public health practice. For example, HIA can highlight the potential negative influence of the social determinants of mental health and potential protective factors in ways that protect and promote population mental health. Therefore, by considering how mental health may be impacted by a project, program, or policy, HIA will remain not only remain consistent with the priority area of mental health to population and public health, but will also remain relevant to its practice by considering the population-level impacts on mental health.

In Canada, national organizations are increasingly recognizing that mental health is a far-reaching issue of growing importance. Statistics Canada reported in 2012 that approximately 10% of Canadian respondents of the Canadian Community Health Survey reported symptoms that were consistent with a mental health problem or substance abuse.²² Furthermore, 17% of Canadians reported that they perceived themselves as needing mental health care (e.g., counseling) in the past year.²³ The Canadian Mental Health Association (CMHA) has estimated that approximately 20% of Canadians will personally experience mental illness in their lifetime, with about 8% of adults experiencing major depression at some point in their lives.²⁴ They purport that mental health is a population-level concern because all Canadians (whether experiencing mental illness or not) will be affected through friends, family members, and colleagues.²⁵ As part of a comprehensive approach to health; therefore, the inclusion of mental health should be considered in HIA as a means of assessing a component of health that is often overlooked, but affects a significant proportion of our population.

Third, the inclusion of mental health in HIA may encourage increased **representation of the concerns of populations they serve**, especially those who may be unable to speak for themselves. Democracy is a core value of HIA, for the field holds that persons who will be affected by a project, program, or policy have a right to participate in the formulation of that decision.²⁶ Unfortunately, the process of participation in HIA may only extend to those who are mentally or physically able. Individuals who suffer from mental illness may not have the same connections to the community as those who may actively take part in informing the decision making process by attending community meetings, focus groups, or other community engagement forums. Related to the potential to miss the perspectives of those living with mental illness, persons with mental health problems may not seek mental health treatment for reasons related to their illness. Therefore, even where HIA includes interviews with key informants, such as doctors or mental health workers, the voices of those living with mental illness may remain unheard. Therefore, the routine inclusion of mental health in HIA may bring recognition to potential mental health impacts to these vulnerable populations, in addition to the general population. As such, HIA may be used as a preventative measure of which its recommendations could be used to promote mental wellbeing and ameliorate illness within the communities they serve.

Building on previous points, a fourth reason why HIA should include mental health is that **it may be the only opportunity for mental health to be considered** in a program, project, or policy. HIA is a versatile tool used to inform a wide array of project, program, or policy decisions. Furthermore, an HIA may be commissioned or employed as just one component amongst a number of review documents or tools (i.e., included as one component of an Environmental Impact Assessment) that are not primarily about health.

Consider, for example, the *Point Thomson Project Environmental Impact Statement*²⁷ that was completed in 2012 to inform the decision by the US Army Corps of Engineers on whether they should grant or deny a permit for Exxon Mobil Corporation's

application to place fill in US waters. The State of Alaska HIA Program conducted an HIA as one part of the final EIS (included in Appendix R of the report), in which they included an assessment of suicide and substance abuse (measures of mental health problems) and also the psychosocial factors that may influence them (e.g., employment, family). The inclusion of mental health in this HIA represents of the only area where mental health is included in the EIS, which formally reached decision makers. This is especially important considering the limited attention given to HIA among the plethora of information for other components of the project, such as oil discharge prevention, hydrology analysis, noise technical report, visual resource assessment, biological assessments, and others.²⁸

To summarize, the inclusion of mental health in HIA provides the opportunity to take a comprehensive approach to health in regard to a growing area of public health importance and represent the concerns of populations—especially where other opportunities to do so may not be readily available.

Mental Health in HIA: Specific Tools

Currently, two specific forms of HIA exist which specifically address the inclusion of mental health into this field. The first is **Mental Health Impact Assessment (MHIA)**. MHIA is a tool that was developed by the Adler School of Professional Psychology and community partners.²⁹ This tool employs the same methodological steps as HIA (i.e., screening, scoping, assessment, recommendations, reporting, monitoring/evaluation), but more explicitly integrates considerations related to mental health. According to the Adler School, MHIA “is an interdisciplinary process designed to assess the impact of public decisions on population mental health [...] by more explicitly integrating mental health considerations.”³⁰ Expected outcomes of an MHIA include increased community cohesion, awareness of non-health decisions on population mental health, and greater accountability for population mental health.

A second form of HIA specific to mental health is the **Mental Well-being Impact Assessment (MWIA)** developed by the National MWIA Collaborative in the United Kingdom. The MWIA was developed to increase focus on positive mental health, away from the illness focus that developers perceived as dominant in the field.³¹ The MWIA follows the first steps of an HIA with screening, scoping, and appraisal, but differs slightly in its next steps, which identify indicators that measure the impact of mental wellbeing, and formulate recommendations, monitoring, and evaluating of MWIA.³² The expected outcomes from an MWIA includes the development of recommendations that are specifically intended to maximize positive impacts and minimize negative impacts to mental wellbeing.

Other Tools

There are other tools or forms of HIA that are specifically tailored to mental health, yet may not be widely disseminated. One example is the two-part screening toolkit developed by the Lewisham & Lambeth Neighbourhood Renewal Fund.³³ This

Mental Health HIA Toolkit was developed in 2004 as a way of determining how projects might be suitable for an in-depth MHIA, and to improve understanding of potential mental health impacts of the Lewisham & Lambeth Neighbourhood Renewal Strategy. The toolkit consists of two components, a Screening Toolkit and Rapid Assessment Toolkit. The **Screening Toolkit** is intended for one or two persons to use in making an initial assessment of potential mental health impacts. The second tool, the **Rapid Assessment Toolkit** is meant to involve stakeholders to the project and lead to the identification of indicators that measure potential mental health impacts of a project, policy, or program.

Another relatively unknown tool developed specifically for HIA, is the **Canadian Rapid Mental Health Impact Assessment (RHHMIA) Toolkit**, which was developed by Marla Orenstein for the Public Health Agency of Canada in 2012. The objective of this toolkit was to inform decision making to improve mental health for all Canadians. It is intended to be used by those without expertise in mental health, completed within a few hours during the early stages of policy or program development, and applied to populations to identify potential benefits or harms to mental health from a project, policy, or program. It differs from other toolkits, because it is intended for application to projects, policies, or programs that do not explicitly aim to affect the mental health of a population.

These toolkits, as well as the MHIA and MWIA, are useful in identifying how mental health may be potentially impacted by a project, program, or policy. However, tools such as the MHIA and the MWIA may be more suited to situations where HIAs are conducted by those who specialize in population mental health or who are familiar with mental health and its outcomes. This paper is concerned with improving the inclusion of mental health in *general* HIA, among practitioners who are not only interested in mental health impacts or outcomes. Therefore, this report focuses on the inclusion of mental health into general HIA, herein referred to simply as “HIA.”

How Are Practitioners Working to Improve the Inclusion of Mental Health in HIA?

In recent years, HIA practitioners have become actively involved in improving the inclusion of mental health into HIA. A major step in this process has been the attempt to identify the scope of the problem regarding the status of mental health in HIA. A (2015) working paper by Lucyk, Gilhuly, Tamburrini, and Rogerson³⁴—which reviewed 156 completed HIA reports—has shown preliminary results that just 73.1% of HIAs include mental health in scoping. Of those that included mental health in the scoping of the HIA, 37.7% measured mental health problems at baseline, of which 64% made predictions regarding changes in mental health as the result of implementing a proposed policy, plan, or program.³⁵ Of the HIAs that made predictions, 50.9% suggested mitigation strategies for potential negative changes to mental health.³⁶ These findings, while preliminary, quantify the problem that **mental health is not sufficiently represented in**

HIAs. They also highlight the problem that where mental health is included, **it is not reported or followed for all steps of the HIA**. Finally, these support the observation by practitioners that it can be difficult to **identify and assess mental health** outcomes.

The problems described above were voiced in 2013 at the HIA of the Americas conference, when members of the **Society of Practitioners of Health Impact Assessment (SOPHIA)** established a **Mental Health Working Group**. The group first met to discuss the importance of integrating mental health considerations into HIAs and identify related challenges, and to explore options for addressing those challenges and moving the field forward. Two main challenges discussed at this meeting were the need for an agreed upon conceptualization of “population-level mental health” and the limitations of data and indicators available to measure mental health. Five calls were conducted with the group over the next eighteen months, during which time the group agreed to work to develop a series of resource sheets so that HIA practitioners without a background in mental health could have the resources to more confidently incorporate mental health considerations into their HIAs. This series of resource sheets could eventually be consolidated into a white paper. The series would cover the following topics:

- Common definitions HIA practitioners can utilize when incorporating mental health into their HIAs
- Sample pathways explaining the relationship between the mental health-related concepts defined in the previous resource sheet and physical and mental health outcomes,
- Resources for assessment, including indicators to use and available data sources,
- Sample recommendations that could be offered to address mental health impacts and determinants,
- Reporting and communications guidance on how to translate mental health data into accessible information for engaging decision-makers, and
- Review of the current status of mental health in HIAs.

It was decided to release all products simultaneously to enhance cohesiveness of the documents.

The Working Group then met again, with new members joining, at the 2014 HIA of the Americas. Participants continued discussions about the importance of integrating mental health considerations into health impact assessments, reviewed drafts of the work that had been completed at that point, and explored content for the remaining resource sheets identified in the 2013 session.

The first resource introduced at the Working Group was the **Mental Health Definitions for Health Impact Assessment**, which provided common definitions to the field, including common determinants of mental health. The second resource was the **Mental Health Pathways for Health Impact Assessment**, which provides practitioners

with guidance as to how mental health can be included in HIA. The tool guides practitioners to consider inputs, components of mental health, and outcomes that may be relevant to mental health when creating pathways in the early stages of an HIA. Factors included Positive Factors (Buffers) such as social connection, trust, and sleep, and also Negative Factors (Stressors) such as social exclusion, trauma, and crime. A test of the tool was undertaken by participants attending the 2014 Working Group, and applied to two examples of HIA projects. For both examples, HIA practitioners were able to successfully incorporate mental health in their consideration of health pathways. By the end of the session, participants agreed to continue work on the remaining resource sheets.

How Do HIAs Measure Mental Health?

HIAs used multiple ways to measure mental health in populations, which varied based on outcomes (i.e., measures of mental health or mental health problems) of interest to the HIA and resources available. Indicators used to measure mental health at the population level differed by form of data collection (i.e., primary or secondary), type of data collected (i.e., quantitative or qualitative), and type of outcome measured (e.g., illness, hospitalization, perception). As mentioned earlier in this report, the mapping of mental health in HIA—including outcomes, indicators, predictions, mitigations, and measures—is currently underway in a working paper by Lucyk, Gilhuly, et al. (2015). The information used in the following sections was derived from the sources used in this working paper. Specifically, this reports on HIAs that were conducted in the United States, completed between September 2013 and January 2014, listed on the Health Impact Project document library¹ and identified by authors as including mental health.

Mental Health Outcomes Included in HIAs

Mental health outcomes varied widely by HIA, from problems linked to mental health (e.g., domestic abuse) to specific mental health problems. This section summarizes different mental health outcomes found in HIAs (see [Table 2](#)). This list, while comprehensive, is not exhaustive. Rather, it is meant to give practitioners an overview of the types of mental health outcomes used by other HIAs, as they consider how they might include mental health in their own work.

Mental health outcomes in this section refer to any possible mental condition, disorder, or state that could be impacted by a project, policy, or program. As illustrated in [Table 2](#), below, there are many different ways to look at mental health. For the purposes of this report, mental health outcomes (i.e., the health impact) and mental health indicators (i.e., the measure of the health impact) are treated as one and the same. This is an attempt made to be as comprehensive as possible, within the limited

¹ Created through a partnership between the Health Impact Project (a collaboration of the Robert Wood Johnson Foundation and The Pew Charitable Trusts) and the Centers for Disease Control and Prevention's Healthy Community Design Initiative.

information provided in HIA reports. Frequently, outcomes and indicators were used interchangeably in HIAs, and no distinction was made.

Table 2. Mental health outcomes and indicators included in HIAs.

Mental Health Outcomes Included in HIAs	
Addiction	Discharge of patients with psychiatric illness (from hospital or psychiatric facility)
Admission of patients for psychiatric illness (to hospital or psychiatric facility)	Domestic abuse
Aggression	Domestic violence
Aggressive behaviours	Drinking and driving
Alcohol consumption	Drug and alcohol admissions
Alcohol or drug use/abuse	Drug dependence
Alcohol-related deaths	Drug use
Alcohol-related incidents	Drug-related hospitalizations
Alcohol-related violence	Emergency room visits for mental health-related incident
Alcoholism	Emotional distress
Anger	Employers' concerns about employee drinking and drug use
Annoyance	Feeling mentally unhealthy
Anxiety	Feeling sad, blue, or depressed
Anxiety in family member	Feelings of calmness or peacefulness
Attempted suicide	Feelings of hopefulness in the future
Attention deficit disorder	Feelings of isolation
Behavioural development	Forced to have sexual intercourse
Binge drinking	Gambling
Binge drinking in adolescents	Good mental health days
Blood pressure	Hospitalizations in Alcohol and Drug Treatment Centers
Brain function	How much stress affects residents on a daily basis
Bullying	Illegal drug use
Burden of mental health	Importance of parks in emotional and psychological health
Child abuse/neglect	Inability to work, due to mental health
Collective efficacy	Job stress
Community engagement	Life satisfaction
Control in life	Major depressive disorder
Criminal offenses, from police	Mental and behavioural disorder due to psychoactive substances
Death from self-injury	Mental conditions
Depression	Mental distress
Depression in family member	Mental fatigue
Depressive disorder	Mental functioning
Depressive episode in past year among youth	Mental health (unspecified)
Depressive symptoms	Mental health, as cause of death
	Mental health issues (unspecified)

Table 2. Mental health outcomes and indicators included in HIAs (continued).

Mental Health Outcomes Included in HIAs	
Mental wellbeing	Sense of wellbeing
Not attending school because feeling unsafe	Sexual assault
Number of alcohol-related motor vehicle accidents	Social capital
Occupational stress	Social cohesion
Outpatients receiving mental health treatment	Social isolation
Paranoia	Social participation
Parental concerns	Social-domestic problems
Pathological gambling	Staff-to-student support
Per capita alcohol consumption	Stress
Perceived community trust	Stress at work
Perceived crime	Stress from transit
Perceived discrimination	Stress-related illness
Perceived neighbourhood security	Student academic performance
Perceived safety	Students who feel nervous, worried, or upset most or all of the time
Perceived safety and crime	Substance abuse
Performing multiple jobs at work	Substance use in past months, persons 12 years and older
Political engagement	Substance use
Poor mental health	Suicidal ideation
Poor mental health by bullying	Suicide
Poor mental health days	Tension
Psychological distress	Trust
Psychological distress among teens	Trust in neighbours
Psychological distress in past month	Unhealthy coping behaviours
Psychological wellbeing	Violence
Race-related stress	Violent behaviours
Recurring discipline event	Work duties
Risky behaviours	Working for someone other than their employer
Sad or hopeless feelings among teens	Working outside job description
Self efficacy	Worry
Self esteem	Youth suicide attempts
Self-induced death	
Sense of community	

What Do HIAs Say About Mental Health?

HIAs are concerned with assessing potential health impacts from a project, policy, or program; therefore, where HIAs included mental health, they discussed potential mental health impacts from factors related to these projects, policies, or programs. Most often, this discussion of mental health and its related factors occurred in the scoping portion of an HIA, though this varied widely among different HIAs. Most claims that were made regarding potentially influencing factors to mental health were substantiated by academic literature. This section provides an overview of the types of influencing factors that HIAs explored in regard to mental health. It includes discussion of common social or other determinants named as influential to mental health, and directs readers to the sources cited for each. This section is meant to direct HIA practitioners to resources when considering the inclusion of mental health into HIA. This report should not be used in evidentiary statements on mental health or in place of citing original sources, as it is compiled from the findings reported in HIAs. Different influencing factors within a determinant are bolded in **purple**. Where definitions are included, they are bolded in **blue**.

Social Determinants of Mental Health

Built Environment

The **built environment** refers generally to “the physical environment that is constructed by human activity.”³⁷ This includes elements such as land-use patterns, transportation system, sidewalks, and urban design, among others.

Many HIAs have considered the impact that the built environment can have on mental health, for a plethora of evidence exists showing that the built environment can influence the physical and mental health of individuals and their communities.³⁸ For example, the **walkability** of a neighbourhood has been shown to result in higher community participation and social capital, which could promote mental health.³⁹

The presence of **green space** has also been shown to be beneficial to mental health. For example, the **exposure to trees and parks** has been shown to have restorative effects on the brain and may help people recover from stress, fatigue and depression, and increase attention span.⁴⁰ On the other hand, those dissatisfied with green space were reported as having 2.4 times higher the risk for mental health issues.⁴¹ Parks and green space have also been reported to facilitate the social interactions that are critical to maintaining community cohesion, community pride, and social capital.⁴² Similarly, parks and **open space** were also reported to reduce irritability and impulsivity and promote intellectual development in children and teenagers,⁴³ and improve functioning of children with Attention Deficit Disorder.⁴⁴ Positive mental health effects from **being outdoors** have been reported to potentially reduce stress, depression, anxiety, attention deficit, and hyperactivity.⁴⁵ **Time spent outdoors** was reported as reducing aggressiveness and violence⁴⁶ and benefitting children academically, socially,

and psychologically.⁴⁷ **Walking or running in nature** has been shown to improve psychological restoration and reduce mental fatigue,⁴⁸ while simply **having nature close** was shown as important to mental wellbeing.⁴⁹

Education

Education (i.e., the process of receiving systematic instruction)⁵⁰ is a social determinant of health that has been associated with mental health. This includes factors such as education level, early childhood education, and quality of education.

Higher **levels of education** have been associated with higher levels of self-rated mental health.⁵¹ Likewise school **education** has been shown to reduce levels of antisocial behaviour and improved social adjustment for children.⁵² Participation in **after school programs** may improve children's adjustment to classroom environments, and decrease the manifestation of their emotional and behavioural problems when in class, provided through social support.⁵³ Recently, psychologists have indicated that **grade retention** may predict the occurrence of dropping out of school, or developing mental health problems later in life.⁵⁴ Grade retention refers to when a student is held back to repeat a course or grade. Critics of this practice discourage retention in favour of social promotion, so that students can remain with their same-age peers to avoid potential problems with behavioural or social development.

Employment

Employment status (i.e., employed, unemployed, transitioning) and working conditions are social determinants of health that have been shown to shape mental health.⁵⁵ **Working conditions** proven to be good for mental health include **more control over decision making**, receiving **higher rewards for hard work** and **support from colleagues**.⁵⁶ Likewise, **re-employment** when an individual has experienced a period of unemployment has been shown as beneficial to mental health.⁵⁷

Conversely, **unemployment** has been related to poor psychological wellbeing⁵⁸ with negative implications for mental health.⁵⁹ Specifically, unemployment has been linked to increased anxiety, depression, substance abuse and other mental health outcomes,⁶⁰ alongside **precarious or unstable employment**.⁶¹ Unemployment has also been connected to increased **substance abuse**, which may be intensified from the distress caused by losing one's job.⁶²

Occupational stress (i.e., stress involving work and its related demands and responsibilities) may have negative physical and mental health impacts. For example, high working demands, low control in working decisions, and job insecurity may increase the risk for depression and anxiety.⁶³ Occupational stress may be caused by factors such as heavy workloads, infrequent rest breaks, long working hours, hectic or routine tasks that do not utilize work skills.⁶⁴ Another source of occupational stress may be caused by working extra hours to make up for time lost, which may generate

psychosocial stress that leads to compromised relationships or conflict.⁶⁵ Occupational stress may result in little sense of control, exclude workers' voices in decision making, foster a poor social environment at work, or result in conflicting expectations between workers and management.⁶⁶

Sleep (i.e., the state of resting body and mind for several hours where the nervous system is relatively inactive) is widely accepted as an influential factor for mental health on its own,⁶⁷ (especially where sleep deprivation occurs)⁶⁸ and is also related to occupational stress when one's work interferes with their sleeping patterns. For example, those who work **extra shifts, double shifts, or shift work** have increased risk for depression and anxiety.⁶⁹

Food Insecurity

Food insecurity, where adequate quality and quantity of diet is unavailable, has been shown to lead to behavior problems, decrease children's mental health and wellbeing, decreased educational performance, and increased aggression and anxiety.⁷⁰

Income

Personal and household **income** have been linked to mental health in a number of ways. For instance, **financial strain** has been shown to be influential in the development of depression.⁷¹ Specific effects include linkages of **financial hardship** and **low socioeconomic status** with depression.⁷² Similarly, **household income** has been shown to affect emotional wellbeing—negatively for those with less.⁷³ Negative changes to household income have also been associated with higher rates of suicide attempts and lifetime mental health problem.⁷⁴ Finally, **income inequality** at the state level has been associated with an increased risk of depression among women (especially mothers).⁷⁵

Housing

Housing was another issue that many HIAs addressed, although it was rarely tied specifically to mental health. Measures of housing may include living conditions, perceived value of property, affordable or insecure housing, or the number of persons sharing a dwelling. Perhaps predictably, **poor quality housing** has been shown to cause stress and decrease mental health.⁷⁶ Similarly, **affordable housing** has also been tied to creating conditions that influence mental health. For example, rent controlled housing may protect low-income renters from potential displacement (through high rent), which may in turn protect neighbourhoods from economic and racial segregation and avoid a potential decline of social cohesion.⁷⁷

Neighbourhood Conditions

Neighbourhood conditions are another social determinant of health that has been extensively linked to mental health. Occurrences such as **gentrification**,

displacement, or **perceived crime** may be stressful for long-term residents who feel unable to control the events around them.⁷⁸ Displacement was also found to diminish social capital,⁷⁹ which may be stressful for long-time residents.⁸⁰ Likewise, **living in poor or wealthy neighbourhoods** can have mental health outcomes.⁸¹ Girls living in **non-poor neighbourhoods** were shown to have improved mental health status.⁸² As well, parents who moved **away from high-poverty neighbourhoods** experienced fewer distress and depressive symptoms, which their children benefit from.⁸³

Crime and **perceived crime** is another factor often related to one's neighbourhood. Those who **fear crime** may have poorer mental health, in part due to reduced physical activity from staying indoors, as the result of their fear and stress of being in their neighbourhood.⁸⁴ Witnessing or experiencing **acts of violence** was also shown as potentially impacting mental health.⁸⁵

Social Capital

Social capital refers to “the features of social organization, such as civic participation, norms of reciprocity, and trust in others that facilitate cooperation for mutual benefit.”⁸⁶ Some studies have shown that people with greater social capital have more self-esteem, self-image, and self-worth,⁸⁷ improved mental health,⁸⁸ better psychological and physical health,⁸⁹ and more collective efficacy.⁹⁰ On the other hand, lower social capital may increase one's risk for poor physical and mental health.⁹¹ Social capital has been linked to factors that separate the community, such as negative effects from living on streets with high traffic volume.⁹² Additionally, social capital has been said to decrease 10% per 10-minute commute amongst workers.⁹³

Social Cohesion

Social cohesion, where present, refers to a society that is inclusive, trust promoting, fights marginalization, and works towards the wellbeing of all members, including the opportunity for upward mobility.⁹⁴ Social cohesion is concerned with elements such as social inclusion, social capital, and social mobility. **People who live in socially cohesive communities** have been shown more likely to be happy than those who do not.⁹⁵ Much like social capital, social cohesion may impact mental health through **traffic-induced social exclusion**, which could also bring cause for safety concern for community members, and can negatively affect quality of life.⁹⁶

Social Support

Social support, whether perceived or provided, has been reported as able to buffer stress, prevent feelings of isolation, and contribute to high self-esteem.⁹⁷ **Strong social ties** were reported to buffer against depression.⁹⁸ A **connected and supportive community** has also been shown to mitigate the impact of some mental health disorders.⁹⁹

Other Factors that Affect Mental Health

Community Conflict

Community conflict may result where a project, program, or policy (e.g., environmental and natural resource disputes)¹⁰⁰ creates stress within a community. Persistent **feelings of anxiety or lack of control over a project**, or repeated exposures to stressful situations could potentially manifest as long-term chronic stress.¹⁰¹ Stress has been shown to increase vulnerability to environmental stressors by lowering response rates to noise or pollution,¹⁰² trigger or worsen mental health problem (particularly anxiety and depression),¹⁰³ and affect a number of additional mental and physical health conditions discussed extensively in the corpus of stress literature. Community conflict may result from controversial **siting** of a project, tensions between **local risks and global benefits, mistrust of project developers or owners**, or **limited opportunities for community members** to influence the decision making process.¹⁰⁴ The fear of victimization from a project, policy, or program may lead to psychological distress, so too can the **fear of displacement** from a residential development or planning phase.¹⁰⁵

Commuting Time

Commuting time, that is the time spent travelling from one's home to place of work, was reported as a factor influential to mental health in many HIAs—particularly those in the transportation sector. For instance, it was reported that **shorter transit commute times** might increase social capital and improve mental health through increased community connectedness.¹⁰⁶ **Rail commuters** in New York and New Jersey were also shown to have less stress and fewer negative moods than those who did not commute by rail,¹⁰⁷ whereas **automobile commuters** experienced high levels of self-report and physiological indicators of stress.¹⁰⁸ **Long commute times** have been associated with increased stress,¹⁰⁹ whereas reductions in **motor vehicle trips** and miles travelled may decrease stress levels.¹¹⁰

Energy

Clean energy (i.e., sustainable, renewable energy such as wind energy) has been discussed in the context of potentially reducing the costs of housing and psychological stress.¹¹¹ Also, energy efficient lighting was identified as improving attention and learning.¹¹²

Gambling

Problem or pathological gambling (i.e., where gambling continues despite harmful consequences) has been linked to a number of mental health outcomes. Some that were identified in the *Southeast Kansas Casino HIA*¹¹³ were child abuse, neglect, domestic violence, suicide, unsafe sex, and alcohol abuse, which could lead to attempted suicide, depression, anxiety, or further alcohol abuse.¹¹⁴

Industrialization and Modernization

Industrialization and modernization, which refers to social and economic developments that are often related to changes in technology, have been linked to mental health in a number of ways. For example, the industrialization and modernization of a community may increase hospitalizations, mortality, alcohol and drug abuse, risk-taking, and suicidal behaviour.¹¹⁵ Similarly suicide, alcoholism, criminal activity, and divorce may potentially increase in **boomtown economies**.¹¹⁶ Disruptions in social cohesion may occur where **new-comers and old-timers** reside in the same area, which could add to levels of stress, worry, or satisfaction experienced by the individuals living in a community.¹¹⁷

Rapid economic growth in Indigenous communities has been associated with alcohol and drug abuse.¹¹⁸ **Developments**, such as mining, may contribute to different social, cultural, or economic patterns with implications for mental health. **Earned wages** from industry-related jobs may be spent on tobacco, alcohol, or illicit drugs.¹¹⁹ **Shift work** associated with these jobs could result in long periods away from home, which may cause marital discord or family dysfunction from stress brought on by re-integrating families when employees return home.¹²⁰ Specific to **natural gas development and production**, the burden of substance abuse in communities may increase,¹²¹ as well as illegal substance activity.¹²² **Economic disparities** between those earning industrial wages and others could increase, which may alter traditional sharing networks.¹²³

Noise

Many HIAs reported potential mental health impacts caused by **noise**, most often heightened during the period of a project's construction. **Noise annoyance** can occur from road traffic, a major consideration in transportation HIAs.¹²⁴ Some of the findings related to mental health associated with noise include the potential reduction of cognitive abilities, and increased amounts of stress, vis-à-vis sleep disturbance.¹²⁵ Other impacts include the annoyance caused by noise, which may also have negative implications for stress or mood.¹²⁶ Specifically, **noise pollution** has been shown to increase anxiety, stress, nervousness, nausea, headache, emotional instability, argumentativeness, changes in mood, and increased social conflicts, neurosis, hysteria, and psychosis.¹²⁷ **Excessive noise** was also found to have adverse effects on children's learning and academic performance.¹²⁸

Physical Activity

In many HIAs, **physical activity** (e.g., exercise) was named as an influential factor to mental health.¹²⁹ Some potential effects reported for mental health from physical activity were increased cognitive function,¹³⁰ prevention and alleviation of depression and anxiety,¹³¹ and lower levels of stress by **walking and cycling**.¹³² Physical activity was also reported to have positive effects on self-concept, physical self-acceptance, global

self-acceptance and self-esteem,¹³³ as well as improve children's academic performance capacity to learn, memory, attention, and general cognitive functioning.¹³⁴

Public Art

Public art was briefly mentioned as having positive mental health impacts in the *I-710 Expansion HIA*¹³⁵ in Los Angeles, California.¹³⁶

Wayfinding/Being Lost

Wayfinding refers to the ease with which one can orient themselves in a physical space and navigate their way.¹³⁷ Wayfinding was mentioned as factor that could impact mental health, for people may experience mental stress, feelings of hostility, or anxiety when feeling lost.¹³⁸ Conversely, persons in control of their surroundings may have better mental health.¹³⁹ In one HIA,¹⁴⁰ practitioners reported that transit riders experienced increased stress where routes were disconnected and less predictable.¹⁴¹

How do HIAs Incorporate Mental Health?

Mental health was incorporated in HIAs in a number of different ways. For some, this consisted of collecting primary data and analyzing it to determine baseline measures of mental health or to predict future changes in the population. Other HIAs used secondary data to derive similar findings. In this section, we review some of the methods of data collection and analysis, as well as specific tools that have been designed to measure certain concepts related to mental health. As in the section before this one, the descriptions provided are meant to be comprehensive but not exhaustive. They are intended to serve as a resource for practitioners, to direct them to different data sources, methods, and tools that can be used and where they can be found. It should also be noted that data sources and their categorizations sometimes overlap. This is due in part to the limited description of the source provided in an HIA and also because it was not always clear where data was housed, who maintained it, or what it included. It is suggested that future work explore these data sources more completely and categorize, as they deem appropriate.

Primary Data Sources

Primary data refers to the information that is collected through direct interaction with humans, such as the conduction of interviews, questionnaires, measurements, observations, or medical record abstraction.¹⁴² For projects that collect primary data, the researcher and their team collect this information themselves, and the information is unique to their project.¹⁴³ For this section, data sources are listed where information was collected solely for the HIA (as indicated within an HIA report).

Primary data (or secondary data, described in the following section) can be qualitative, quantitative, or a mix of both. **Qualitative data** refers to data that is *made* rather than *collected*. Types of qualitative data include interviews (structured,

unstructured, or semi-structured) or focus groups transcripts, observations in the format of field notes, or documents or photographs. **Quantitative data** refers to data that is collected for variables deemed relevant to a research question.¹⁴⁴ Some examples of quantitative data include rates of mortality or prevalence of a mental illness. Both quantitative and qualitative data sources are used to report and predict on research outcomes and potential mental health impacts. With quantitative data, this may include predicting potential changes regarding mental health or mental health problems through designing a statistical model with variables of interest to the project. With qualitative data, this may include drawing on findings from previously conducted studies to predict community feedback regarding an HIA.

Methods of Primary Data Collection

Community Engagement

Community engagement is integral to HIA, for it represents an opportunity for democracy among those impacted by a project, policy, or program. Community engagement is not only used for assessment, but is implemented throughout the HIA process. The knowledge and experience of the public is actively included in HIAs by practitioners, to inform their evaluation of potential impacts or policies or programs. Often, **community engagement** is an interactive process informed by qualitative research methods (e.g., focus groups, interviews), however it can also occur through other forums, such as public comment periods or online forums for community input. It provides a way for practitioners to identify previously unheard aspects of a project from residents and other community members. For example, in the *Arctic Outer Continental Shelf Oil HIA*¹⁴⁵ and *Gas Multiple Leasing Sale Environmental Impact HIA*,¹⁴⁶ practitioners identified a tension between those on opposing sides of potential offshore exploration. They anticipated that this conflict could manifest as increased stress and tension in the community further along, from rapid socioeconomic changes, altered availability of subsistence resources, and influx of outside oil and gas workers entering the community.

Focus Groups

Focus groups are one form of community engagement where persons (usually 6 to 8) gather to discuss topics chosen by a facilitator.¹⁴⁷ Focus groups are used to generate data about a topic, but also to reveal how participants relate to the topic and each other.¹⁴⁸ Focus groups help practitioners to understand the potential impacts a policy, program, or project may have on a specific group to determine if it supports or refutes findings from relevant literature. Some examples of how focus groups have been used in HIAs to shed light on mental health are provided below.

In the *California Paid Sick Days HIA*,¹⁴⁹ practitioners conducted two focus groups, each 90 minutes long, with Latina residents. This enabled them to gain a personal understanding of the effects that lost wages or job loss due to calling in sick could have for persons. In particular, residents identified job loss or lost wages as causing stress and

tension. Workers found that a benefit that protected wages if they were sick would “alleviate much of this fear and stress – as they would not be forced to choose between their income and health.”¹⁵⁰

The *Massachusetts Paid Sick Days HIA*¹⁵¹ is a related project that used focus groups to identify mental health concerns. For example, residents told HIA focus group facilitators that not going to work due to sickness could cause stress (particularly from lost wages), which could eventually lead to more sickness, like depression. While this finding is well represented in academic literature, there is great value in showing that these concerns are present in the population of interest.

Focus groups were also conducted for the *Rental Assistance Demonstration Project HIA*.¹⁵² For this project, they helped to illustrate the problems and stresses faced by residents of public housing. For example, practitioners were able to identify that even with the rental assistance program, things were not getting better for many residents in public housing. Residents reported living in their run-down neighbourhood “like a big garbage,” depressing, and stressful. They also shared that their stress was worsened from nearby crime and drug activity. Residents were also able to identify causes for stress to practitioners that were specifically tied to the project, such as new management structures within public housing, new standards, concerns with violating rules of the housing program, or potential displacement from having to move to obtain public housing.

In the *Trinity Plaza Housing Redevelopment HIA*,¹⁵³ two focus groups were held with residents who were living at the Trinity Plaza Apartments in San Francisco. Themes derived from focus group sessions gave evidence for how redevelopment would affect the social determinants of mental health, namely social cohesion. Residents expressed the importance of building networks with local merchants and services, and feeling a strong connection with the neighbourhood and community activities. However, they also expressed fear from potential displacement, which they identified could cause them hurt or stress, frustration, anxiety, or even give them a hernia.

Focus groups were also conducted as part of the *School Discipline Policies HIA*,¹⁵⁴ where students and parents spoke of their concerns related to exclusionary discipline (e.g., expulsion or suspension). This helped to shed light on how students perceived the discipline (i.e., fun) and informed the brainstorming of potential alternatives.

A youth focus group was held for the *Alcohol Outlet Density in Mendocino County HIA*.¹⁵⁵ This allowed practitioners to talk to youth about alcohol abuse, alcohol-related violence, aggravated assault, violence, underage drinking and risky behaviours in a setting that felt safe and comfortable for them (i.e., no parents).

Informal Personal Communication

Informal personal communications, such as emails, conversations, or letters can help to identify concerns that may not be captured in focus groups, or structured interviews. For example, in the *Coal and Clean Energy Options in Kentucky HIA*,¹⁵⁶ practitioners conducted interviews with community residents and found that they expressed concerns about mining explosions, which caused them psychological stress. Residents shared the fear and anxiety they experienced concerning explosions beneath their homes and potential damage to their homes.

Key Informant Interviews

Key informant interviews are interviews with select individuals, who are able to speak in-depth about a social program, problem, or interest group.¹⁵⁷ Individuals chosen for interviews are often considered community or group representatives, due to their vast understanding of a situation and the sensitivity of a topic that may prove difficult to discuss in a group setting. Some examples of how key informant interviews were used to identify mental health outcomes in HIAs are discussed below.

In the *HOPE VI to HOPE SF Housing HIA*,¹⁵⁸ practitioners used informant interviews to get at issues that were not present in the literature, or were not represented in data sources. For example, they found that residents were afraid of breaking the rules of their public housing program, which created mental stress for residents. Residents also identified community resources as a positive force in the community, where people frequently went to for assistance, and subsequently received aid. This allowed for practitioners to make concrete recommendations tailored to the community's needs that built on existing resources. These are discussed further in the section "What are some examples of mental health mitigation strategies?"

Informant interviews were also used In the *School Discipline Policies HIA*,¹⁵⁹ where interviews were held with the school superintendent and the director of restorative justice. These helped to illustrate problems, which these administrators felt, could manifest from severe discipline. These included mental health problems stemming from embarrassment, stress, rejection, or alienation from exclusionary discipline practices.

Surveys

Some HIAs conducted their own surveys regarding the health and feelings of those impacted by a project, program, or policy. While none of these specifically focused on mental health, some did include questions specific to mental health. Examples include the **computer-assisted survey of residents** conducted for the *Advanced Metering Infrastructure – Chicago HIA*.¹⁶⁰ Practitioners surveyed residents to understand the issues they faced regarding advanced energy metering infrastructure, and energy more generally. They found that residents frequently **worried about paying**

for bills, which manifest in stress that required trade-offs (i.e., closing off rooms to heat a house, going without food to pay energy bill).

Another example is the **resident survey** administered for the *HOPE VI to HOPE SF Housing HIA*.¹⁶¹ In this survey, practitioners surveyed residents and learned that residents **experienced stress when they had to move** to other housing projects during redevelopment, find new schools for their children, and live away from the community they were living in. They also found that residents experienced stress from re-integrating and **moving back into a community**, when they had been away for a period of time.

The *Concord Naval Weapons Station Reuse Project HIA*¹⁶² developed a community survey for their project, entitled the **Contra Costa Interfaith Supporting Community Organization (CCISCO): Concord Naval Weapons Station** survey. This survey contained questions directly related to mental health, such as whether **respondents or a family member had depression or anxiety**, but these findings were not included in this HIA.

Another project-specific surveys is the **Codman Square Neighborhood Development Health Impact Assessment Resident Survey in 2012**, which was administered by practitioners for the *Oasis on Ballou HIA*.¹⁶³ Residents were asked questions about **perceived safety and crime** and **trust in neighbors**. This data was then combined with data from law enforcement, comparing perceived crime with actual offenses. The **community survey** administered to a convenience sample for the *Arrest Records in Employment Decisions HIA*¹⁶⁴ in Chicago is another example of project-specific, primary data collection. This survey was conducted to gain an understanding of the demographics for those living in the area, as well as their perception of the **psychological sense of community, collective efficacy, race-related stress, perceived discrimination, psychological distress, depression, and life satisfaction**.

The **Parent Survey** conducted in Los Angeles by **Human Impact Partners (HIP)** and **Community Asset Development Re-defining Education (CADRE)** was administered to local parents with youth in grades 6 to 12. It helped to identify the issues that parents were most concerned about stemming from exclusionary discipline policies. Mental health, particularly **anxiety** and **depression**, were main areas of concern. This survey was developed for the *School Discipline Policies HIA*.¹⁶⁵

The **Paid Sick Days Survey** was conducted by the **Human Impact Project** and **San Francisco Department of Public Health**.¹⁶⁶ It was a web-based survey in Spanish and English, administered to respondents using Survey Monkey. This survey included information on self-reported stress as well to support the argument for paid sick days in in Massachusetts and across the United States.

Project-specific surveys allow HIA practitioners to ask questions directly related to their HIA, which helped them to make concrete recommendations tailored specifically to the needs of the affected population. Some examples are discussed further in the section, “What are some examples of mental health mitigation strategies?”

Methods of Data Analysis

Economic Analyses

One form of data that has been used to determine potential mental health impacts is the **economic analyses** that some HIAs have conducted. For example, the City and County of San Francisco commissioned an economic analysis by **San Francisco State University** to determine the effect of a minimum hourly wage of \$11.00 for the *San Francisco Living Wage Ordinance HIA*.¹⁶⁷ This allowed practitioners to quantify the relationship between income and mental health. The analysis found that for full-time employees with a family income of \$20,000, depressive symptoms would moderately decrease.¹⁶⁸

The *Sugarhouse Casino HIA*¹⁶⁹ also conducted an economic analysis of the estimated annual health and human services costs of additional pathological/problem gamblers associated with SugarHouse Casino. They anticipated that the estimated cost would increase \$935 annually for each problem gambler, and \$1,570 for each pathological gambler. They adapted their measurement from a report by Community Research Partners.¹⁷⁰

Spearman Rank Correlation Coefficients

This measure was used in the *New Britain-Hartford Busway Project Rapid HIA*¹⁷¹ to quantify relationship between mental health and other variables. The Spearman Rank Correlation Coefficients provides p-values and correlation measures of relationships.

Some Specific Tools

Healthy Development Measurement Tool (see: *San Francisco Indicator Project*)

Isolation Index

The **isolation index** was developed for and used in the *Humboldt County General Plan HIA*.¹⁷² It is a conglomeration of psychological distress, suicide, mental health treatment, substance abuse treatment, crime and civic engagement data. It also included information on county suicide rates, and admissions data for drug and alcohol treatment.

San Francisco Indicator Project

The **San Francisco Indicator Project** (formerly the Healthy Development Measurement Tool) is an evidence-based tool developed by the **San Francisco Department of Public Health**. It provides a way of evaluating land-use planning and urban development, to show how the built environment influences human health.¹⁷³ It has been used as a measure of social cohesion in HIAs, such as in the *Sycamore Light Rail Station HIA*¹⁷⁴ and the *Humboldt County General Plan HIA*,¹⁷⁵ as it maps community resources within a half-mile from the project site. More information can be found on the San Francisco Department of Public Health's website.¹⁷⁶

Table 3. Summary of the ways primary data was incorporated in HIA (collected specifically for the HIA)

Ways of Incorporating Primary Data	Topic Area	Example HIAs
Methods of Data Collection		
Focus Groups	Job loss	<i>California Paid Sick Days</i> <i>Massachusetts Paid Sick Days</i>
	Public housing	<i>Rental Assistance Demonstration Project</i>
	Redevelopment	<i>Trinity Plaza Housing Redevelopment</i>
	School discipline	<i>School Discipline Policies</i>
	Alcohol abuse and drinking	<i>Alcohol Outlet Density in Mendocino County</i>
Informal personal communications	Concerns about mining	<i>Coal and clean Energy Options in Kentucky</i>
Key Informant Interviews	Public housing rules	<i>HOPE VI to HOPE SF Housing</i>
	Administrative problems with school discipline	<i>School Discipline Policies</i>
Surveys (conducted for the project)	Issues with energy use, billing, and advanced metering	<i>Advanced Metering Infrastructure – Chicago</i>
	Effects of redevelopment	<i>HOPE VI to HOPE SF Housing</i>
	Community survey, including mental health questions	<i>Concord Naval Weapons Station Reuse Project</i>
	Safety, crime, trust in neighbours	<i>Oasis on Ballou</i>
	Perception of community, race relations, mental health	<i>Arrest Records in Employment Decisions</i>
	Issues relating to exclusionary discipline	<i>School Discipline Policies</i>
	Paid sick days	<i>Paid Sick Days</i>
Methods of Data Analysis		
Economic Analysis	Impact of minimum hourly wage	<i>San Francisco Living Wage Ordinance</i>
	Health and human services costs of additional gamblers	<i>Sugarhouse Casino</i>

Table 3. Summary of the ways primary data was incorporated in HIA (cont'd)

Ways of Incorporating Primary Data	Topic Area	Example HIAs
Isolation Index	Combined data for: psychological distress, suicide, mental health treatment, etc.	<i>Humboldt County General Plan</i>
Specific Tools		
San Francisco Indicator Project (formerly: Health Development Measurement Tool)	Social cohesion	<i>Sycamore Light Rail Station</i> <i>Humboldt County General Plan</i>
Spearman Rank Correlation Coefficients	Relationship between mental health and other factors	<i>New Britain-Hartford Busway Project Rapid</i>

Secondary Data Sources

Secondary data refers to data that has been collected and published previously for another project or purpose and is available to others for secondary analysis.¹⁷⁷ HIA researchers do not collect this data themselves and may have to request permission to use it from the data owner.¹⁷⁸ Like primary data, secondary data may also be qualitative or quantitative, although data is most often quantitative regarding health information. Secondary data provides a practical solution for practitioners who face time and resource constraints and are unable to collect primary data. For many sources, there is overlap between categories, regarding whether a data source is “vital statistics/surveillance” data or “hospital” data. Categorizations reflect the information reported in HIAs. Secondary data sources and their measures of mental health or mental health problems are summarized in **Table 4**, which includes examples of HIAs that are cited in the text. **Appendix A** includes a version of this table that is organized by mental health indicators.

Methods of Data Collection

Surveys

Behavioral Risk Factor Surveillance System (BRFSS)

The Behavioral Risk Factor Surveillance System (BRFSS) is a telephone survey conducted in the United States by the **Center for Disease Control and Prevention**. It covers all 50 states, with core questions on health topics (e.g., car safety, obesity). Data is compiled at the state and county level.

One measure included in the BRFSS is **poor mental health days**, which measures the “number of days in the previous 30 days when a person indicates their activities are limited due to mental health difficulties.”¹⁷⁹ This was one of the most widely used mental health indicators in HIAs. Some HIAs that used this included the *Portland City*

Council's Rental Housing Inspections Program for Multnomah County HIA,¹⁸⁰ *State Route 520 Bridge HIA* in Washington, D.C.,¹⁸¹ *Arrest Record in Employment Decisions HIA*¹⁸² in Chicago to determine city-level data, and the *Capital Area Regional Planning Commission Future Urban Development Area HIA*.¹⁸³

Other examples that used the BRFSS include the *Ice Age Trail Expansion Marquette County, Wisconsin HIA*¹⁸⁴ that measured rates of **substance abuse** and **stress-related illness**. The *Portland City Council's Rental Housing Inspections Program HIA*¹⁸⁵ used the BRFSS to detract **blood pressure** rates for Multnomah County, which they mentioned could be indicative of stress. The *Alcohol Outlet Density – Marathon County, Wisconsin*¹⁸⁶ measured the frequency of **adult binge drinking**. The *Pierce County in South Hill Redevelopment HIA*¹⁸⁷ reported data for the **percent of adults feeling sad, blue, or depressed**, while the *Oasis on Ballou HIA*¹⁸⁸ looked at mental health data specifically for the city of Boston. The *Southeast Kansas Casino HIA*¹⁸⁹ used the BRFSS to determine the **percentage adults who have gambled, for whom it has led to financial problems** to determine potential mental health impacts from opening a new casino.

Boston Neighborhood Survey

The Boston Neighborhood Survey was conducted in 2008, and used by the *Oasis on Ballou HIA*¹⁹⁰ team to create their Neighborhood Development Health Impact Assessment Resident survey.

California Health Interview Survey (CHIS)

The California Health Interview Survey is a biennial, statewide survey of Californians conducted by the **University of California**, Los Angeles. A number of HIAs used this to measure various mental health outcomes, including: **number of days unable to work due to mental health, sad or hopeless feelings among teens, psychological distress among teens** by the *San Diego Bus Rapid Transit Station HIA*,¹⁹¹ **sense of wellbeing** by the *Oasis on Ballou HIA*,¹⁹² and (implied) **social capital** for the *Androscoggin Greenway Plan*.¹⁹³

California School Climate Survey (CSCS)

The California School Climate Survey is an elective, web-based survey offered to staff working in grades 5 to 12 in schools that participate in the California Healthy Kids Survey. It includes questions on **staff-to-student support**, student **academic performance**, school discipline enforcement, and **student alcohol and drug use**. It was used in the *School Discipline Policies HIA*.¹⁹⁴

California Healthy Kids Survey (CHKS)

The California Health Kids Survey was designed and administrated by **WestEd** in the 2005/6 and 2007/8 school years. The survey was administered for kids in odd-

numbered grade years (5, 7, 9, 11) that were considered to be transitional years for youth. Interview questions include questions regarding students' **anxiety, sadness, or depression** that affected their normal activities. It was used in the *School Discipline Policies HIA*.¹⁹⁵

California Work and Health Survey (CWHS)

The California Work and Health Survey was a longitudinal survey of California adults conducted in 2000 by the **San Francisco Department of Public Health**. Questions asked included whether respondents **had one job, worked for someone else, or were paid for sick days**. This data source was used by the *California Paid Sick Days HIA*¹⁹⁶ to gain an understanding of the occupational stress that Californians faced in their jobs.

Connecticut Energy Efficiency Fund Survey

The Connecticut Energy Efficiency Fund administered this survey to Connecticut households 2011. Data from this survey was used in the *HIA of Utility Rulemaking on Connecticut's Public Benefit Fund*¹⁹⁷ to gain an understanding of **social isolation** amongst its customers.

Domestic Workers United Survey

Domestic Workers United administered the Domestic Workers United Survey between 2003 and 2004 in New York. It was used in *the California Domestic Worker Equality, Fairness, and Dignity Act HIA*¹⁹⁸ for its measures of occupational stress. This HIA reported the **percent of workers reporting stress at work, those required to perform multiple jobs, those working outside of their job description, or working for someone outside of their employer**.

EnCana Survey of Subcontractors

In the HIA for *Battlement Mesa, Garfield County Colorado*,¹⁹⁹ practitioners used data from a survey of subcontractors conducted by EnCana to gain an understanding of **methamphetamine and alcohol use** by their employees. They were able to identify that 66.3% of subcontractors were concerned about methamphetamine use among their employees, and 68.9% concerned about their heavy drinking.²⁰⁰

Los Angeles County Health Survey

The Los Angeles County Health Survey is a population-based telephone survey, administered to adults living throughout the Los Angeles County by the **Health Assessment Unit** of the **County of Los Angeles Public Health Department**. It asks questions regarding access to health care, health status and behaviours, and health utilization. It was used by the *Farmer's Field Rapid HIA*²⁰¹ to report **depression rates** for the project area.²⁰²

Minneapolis Park Foundation Survey

The **Minneapolis Park Foundation** administered a survey to Minneapolis residents that asked about their **perspectives on the park system**, as well as their support for different services. This survey was used as a data source in the *City of Minneapolis Above the Falls Master Plan HIA*,²⁰³ to show that residents felt parks play an important positive role in the emotional and psychological health of city residents.

National Health and Nutrition Examination Survey (NHANES)

The National Health and Nutrition Examination Survey (NHANES) is a program of studies designed to assess the health and nutritional status of adults and children in the United States. The Centers for Disease Control and Prevention administers it annually. The survey is unique in that it combines interviews and physical examinations. While not included in HIAs examined for this report, it does contain some data sources relevant to mental health and its social determinants. For the years 1999-2004, the NHANES asked parents of 8 to 19 year olds about the presence of **attention deficit hyperactivity disorders, conduct disorders, and elimination disorders**. It also asked children 8 to 19 years of age about anxiety, depression, **eating disorders, panic disorder**, and adults about **generalized anxiety and panic disorder**.²⁰⁴ The survey has continued to include a question about **depression** in adults since 1999 to the present (2014) cycle.²⁰⁵ Regarding the **social determinants of mental health**, the survey includes measures of early childhood, physical activity, occupation, social support, food security, health insurance, housing characteristics, income, and others.

National Health Interview Survey (NHIS)

The National Health Interview Survey (NHIS) has monitored the health of the nation since 1957. NHIS data on a broad range of health topics are collected through personal household interviews. For over 50 years, the **U.S. Census Bureau** has been the data collection agent for the National Health Interview Survey. Survey results have been instrumental in providing data to track health status, health care access, and progress toward achieving national health objectives. While not used to measure mental health outcomes, the NHIS was used in the *National Paid Sick Days HIA*.²⁰⁶ The survey does include some questions on mental health conditions, for example: (1) what conditions provide you with difficulties?, which lists **depression/anxiety/emotional problems** as an option; (2) how long have you had **depression, anxiety, or an emotional problem**?; (3) information on health behaviours (e.g., **alcohol consumption**); (4) information on **health services utilization** (e.g., “have you spoken to a health care provider about your mental health?” with the option to select psychiatrist, psychologist, clinical social worker, or psychiatric nurse).²⁰⁷

On-Board Transit Rider Survey

This survey is periodically conducted by the **Alameda Contra Costa Transit District** to gather information about the demographic and travel characteristics of its riders. In the *San Francisco Bay Area Regional Transportation Plan HIA*,²⁰⁸ this data source was used to derive how many riders reported **experiencing stress or anxiety** from their trip.

Pagedale Household Survey

The Pagedale Household Survey was used in the *Page Avenue Revitalization HIA*²⁰⁹ to measure sense of **social cohesion, social participation, community engagement**, and **political engagement**. **Beyond Housing** and **Washington University** administered this household survey in St. Louis in 2009. Questions asked about personal safety, neighbourhood security, and community trust, among others. Interviews were conducted with 155 heads of households.

Spokane Regional Health District Survey

The Spokane Regional Health District Survey was a series of 3 surveys that were administered in 2012. Surveys were distributed to residents, businesses, and regional university students. Findings from this survey were used in the *Division Street Gateway HIA*²¹⁰ to **report on mental health in the last 30 days**, and also the amount of **days that were good** and **how much stress affects respondents** on a daily basis.

Survey of Health of All the Populations and Environment (SHAPE)²¹¹

SHAPE is an ongoing surveillance and assessment project conducted by the **Hennepin County Human Services** and **Public Health Department**. It reports on the health of children and adults. SHAPE data was used by the *City of Minneapolis Above the Falls Master Plan HIA*²¹² to compare different areas in the county's rates of **psychological distress in the past 30 days**.

Wisconsin Family Health Survey

This is a random-sample survey conducted annually by the **Wisconsin Department of Health Services**, administered to one adult per household about their health status. It was used in the *Capital Area Regional Planning Commission (CRPC) Future Urban Development Area (FUDA) HIA*²¹³ to determine **baseline health status**.

Wisconsin's Transitional Jobs Program Participant Survey

This survey was conducted by the *Wisconsin's Transitional Jobs Program*²¹⁴ to survey individuals who had been involved in the Transitional Jobs Program. While the survey did not directly ask about participants' mental health, it did include a measure of **self-efficacy**. At least 46% of participants reported increases in feeling more hopeful for

the future, more in control of their lives, more calm and peaceful, less depressed or anxious, with increased confidence in applying for jobs.

Youth Risk Behavior Survey (YRBS)

The **Centers for Disease Control and Prevention** conducts the Youth Risk Behavior Survey (YRBS) every 2 years to a sample of children in 9th through 12th grades. Indicators used from this data source in the *North Carolina Senate Bill 731 HIA*²¹⁵ included **feelings of sadness or hopelessness, suicide attempts, poor mental health by bullying, domestic abuse or sexual assault, not attending school because of feeling unsafe, and forced to have sexual intercourse**. Data was taken for results specific to North Carolina in 2011.²¹⁶ The *Alcohol Outlet Density – Marathon County, Wisconsin HIA*²¹⁷ used the YRBS to measure baseline of **alcohol use among high school students**. In the *Rochester Waterfront Revitalization Plan HIA*,²¹⁸ practitioners used this survey to report on **suicide in youth** and **mental health problems** in Monroe County.

Literature Review

This was the main source used by HIAs to discuss or include mental health in scoping, assessment or reporting, as well as justify predictions made. Findings from the literature, including links to the sources used are summarized earlier in this report, in the section entitled “What Do HIAs Say About Mental Health?”

Examples of Data Sources

Census

While not specifically a source of public health data, census information may be used to provide some indication of mental health. Census data was used in the *Alcohol Outlet Density – Marathon County, Wisconsin HIA*²¹⁹ to derive **per capita consumption of alcohol** for the state and also in the US.²²⁰

Centers for Disease Control and Prevention (CDC)

In the *Oregon Farm to School HIA*,²²¹ practitioners used data they had obtained from the **Centers for Disease Control and Prevention**, to report state-level **suicide rates**.²²² For the *Treatment Alternative to Prison HIA*,²²³ practitioners used the **SMART: Behavioral Risk Factor Surveillance System**, which is maintained by the CDC, to report on **selected substances in the past month among persons 12 years of age and older, current depression among adults, burden of mental health, and illegal drug use**. They reported these at both the city and state level.

Community Health or Vital Statistics Reports

Reports produced by state, county, or local public health agencies, educational institutions, or by communities were used by many HIAs to report measures of mental health or mental health problems. Usually, these reports contain summaries of available

public health data for a given year in a specific region. Sometimes, communities produced reports on the growing health or social needs in the area, which were used by practitioners to help determine health concerns in the scoping portion of an HIA.

One example of how a community-produced report was used, is by the *Haywood County BC Comprehensive Bike Plan HIA*,²²⁴ where practitioners used the **Haywood County Health Priorities Report for 2009-2012** to justify **mental health as an issue of concern** to the community. In the *Pittsburg Railroad Avenue Transit-Oriented Development HIA*,²²⁵ practitioners used the **Community Health Indicators for Contra Costa County from Contra Costa Health Services** to report on baseline measures, which included some for mental health (e.g., **psychological distress in past year, taken prescription medicine for emotional/mental health issue for at least 2 weeks, binge drinking, illicit drug use, and substance abuse**). Baseline data was also reported for **illegal drug use, binge drinking, and binge drinking in adolescents** for the *Point Thomson Oil and Gas Leasing EIS HIA*²²⁶ from **The Regional Health Profile of the Arctic Slope** produced by the **Alaska Native Epidemiology Center**.

Community or county-produced data can also be used to provide measures of mental health for assessment. For example, in the *Red Dog Mine Extension HIA*²²⁷ in Alaska, practitioners reported **suicide mortality rates** that were derived from **Alaska Department of Commerce, Community, and Economic Development Community Profiles**. The *Rochester Waterfront Revitalization Plan HIA*²²⁸ also used the **Monroe County Adolescent Health Report Card** to show baseline mental health in their county.²²⁹ The report card uses area-specific measures from the Youth Risk Behavior Survey and Statewide Planning and Research Cooperative System (SPARCS) and includes **emergency department visits and hospitalizations** related to mental health, **suicide rate, feeling sad or hopeless, considering suicide, alcohol and drug use, self-injury, disordered eating, and youth admitted to substance abuse treatment programs**.²³⁰

Likewise, in the *Planning for Parks, Green Space, and Trails in Greenville's West Side HIA*,²³¹ baseline data was collected from the **Community Health Needs Assessment** in Greenville County for 2008 and 2012. Data of interest included those who **did not feel depressed or who felt depressed for 1 day, 2 to 7 days, or a week or more**. This information was used to help predict that the creation of parks, trails, and green space could decrease depression due to positive mental health benefits based on findings from their literature review.

National and state reports were used in the *Alcohol Outlet Density – Marathon County, Wisconsin HIA*²³² report on **underage drinking** informed many of the claims made about youth drinking.²³³ Other reports they looked at were the **National Survey on Drug Use and Health Report** (e.g., includes information on **mental illness and substance use, treatment/counseling, major depressive episode, suicide, and serious psychological distress for adults and youth**),²³⁴ **Drunken Driving** report from the **Wisconsin Department of Transportation** (e.g., **includes alcohol-related crashes,**

convictions for drunken driving, adults admitting drunken driving),²³⁵ and the **Underage Drinking in Wisconsin Report** from the **Pacific Institute for Research and Evaluation** (e.g., includes **costs associated with underage drinking, problems associated with underage drinking** such as **fetal alcohol syndrome, psychoses, high-risk sex, traffic crashes, and alcohol consumption**).²³⁶ Another example of a national data report that was used was the **Behind Bars II: Substance abuse in America's Prison Population**²³⁷ produced by the **National Center on Addiction and Substance Abuse at Columbia University (CASA Columbia)**. This report was used in the *Treatment Alternatives to Prison HIA*²³⁸ to report on baseline **substance abuse** and **diagnosis of mental illness** in America's prison population.

For the *Tempe Modern Streetcar HIA*,²³⁹ practitioners looked at mental health cases from hospitalizations obtained by the **Maricopa County Public Health**, which they then discussed with relevance to potential determinants. Some of the data they used were **suicides, self-induced deaths, and alcohol-induced deaths** in Tempe, Arizona. While it is not made explicit which data sources they used for which indicators, they derived their findings from **Vital Statistics** and a report on characteristics of emergency room visits and discharges from the **Arizona Department of Health Services**.

County Health Rankings

The **University of Wisconsin Population Health Institute** compiles County Health Rankings for nearly all counties across the U.S. from national and state-level data sources (e.g., BRFSS). These are then ranked, to show where counties rank in relation to one another, and how health is improving within and between counties.

One measure of interest to mental health that is contained in County Health Rankings is the measure for **poor mental health days**. This was used by a number of HIAs, including the *Columbia Transit System Expansion HIA*,²⁴⁰ the *I-710 Expansion HIA*²⁴¹ in Los Angeles, and the *Daniel Morgan Avenue Road Diet HIA*.²⁴² **Social support** was another measure of interest, which was used in the *Ice Age Trail Expansion HIA*²⁴³ for Marquette County, Wisconsin. Finally, the *Hood River Farmland Rezone HIA*²⁴⁴ reported **youth suicide attempts** from the county health rankings in their HIA.

Hospital Data

Many HIAs used hospital data they obtained from public health agencies. **Hospital data** refers specifically to the administrative, clinical, and demographic data collected upon a patient's admission to or discharge from a hospital. Regarding mental health, information of interest may include **admissions to psychiatric institutions**, or admission to hospitals where the **main diagnosis was psychiatric illness**. Most often, public health departments maintain hospitalization data. There is therefore significant overlap between "vital statistics and surveillance" data and "hospital" data. Some examples of how this data was used in HIAs are discussed below.

In the *Rochester Waterfront Revitalization Plan HIA*,²⁴⁵ mental health data was derived from the **New York State Department of Health**. These included **drug-related hospitalizations, suicide** and **mortality rates**. The HIA then compared these rates for Monroe County with those for New York State. Hospital data was also obtained for the *Aerotropolis Atlanta HIA*²⁴⁶ from the **Georgia Department of Community Health, Division of Public Health**. This HIA looked at data for **hospital discharges, deaths, and emergency room visits**. Outcomes of interest for this HIA included **mental and behavioral disorders due to psychoactive substances, emergency department visits related to mental health**, and **all other mental and behavioural disorders** (e.g., Alzheimer's).

In **Los Angeles**, the *I-710 Expansion HIA*²⁴⁷ used hospitalization records for **psychiatric admissions**, which they identified using ICD-9 codes. Similarly, the *Red Dog Mine Extension HIA*²⁴⁸ collected information for hospitalizations from **alcohol-related incidents** from the **Center for Disease Control and Prevention**. In the *North Carolina Senate Bill 731 HIA*²⁴⁹ practitioners used **hospitalizations in state psychiatric hospitals**, as well as those **hospitalized in Alcohol and Drug Treatment Centers**, which they retrieved from the **North Carolina State Center for Health Statistics**.²⁵⁰ As a final example, the *East Bay Greenway HIA*²⁵¹ used data from the **Alameda County Public Health Department's Community Assessment, Planning, Education and Evaluation Unit** to report **depression-related hospitalizations** at baseline.

Public Health Departments or Authorities – Vital Statistics and Surveillance

Many HIAs used data they had obtained from local, county, or state public health departments. Data sources varied, from statistics compiled from survey data (see above), vital statistics information, or surveillance data. One example is the vital statistics data obtained from the **California State Department of Health**, which were used in the *Farmer's Field Rapid HIA*²⁵² to report **causes of death**, including **suicide and mental health** for those with zip codes in the Los Angeles area. The *Alcohol Outlet Density – Marathon County, Wisconsin HIA*²⁵³ also used death data, by obtaining **death certificate** records from the county public health department to determine **number of alcohol-related deaths**.²⁵⁴ **Rates of death from self-injury** (e.g., poisoning, self-harming, suicidal behaviour) were used in the *Bernalillo County Pedestrian and Bicyclist Safety Action Plan HIA*,²⁵⁵ with data obtained from the **New Mexico Department of Public Health**. **Suicide rates** were also derived from **Online Analytical Statistical Information System (OASIS)**, a surveillance database maintained by the **Georgia Department of Public Health** for the **City of Decatur**. Suicide is a measure of mental health because it may be indicative of a severe mental health problem, such as depression, schizophrenia, or substance abuse.

The **Oregon Health Authority's (OHA) State Epidemiological Outcomes Workgroup, Addictions and Mental Health Division** provided the *Hood River Farmland*

*Rezone HIA*²⁵⁶ with data reporting the **percent of eighth and eleventh graders who had a depressive episode in the past year**. This included **major depressive disorder** and **depressive disorder**.²⁵⁷ The OHA also provided the *Portland City Council's Rental Housing Inspections Program HIA*²⁵⁸ with epidemiologic data from regarding baseline conditions related to mental health. These included **alcohol use, drug use, mental health**, and **gambling**. In another state, the **Michigan Department of Community Health** provided practitioners of the *Pay Equity HIA*²⁵⁹ ("Health Impact Assessment of Gender Pay Inequity") with data for risk factors and health indicators related to mental health, such as **substance abuse**.

In the *Arrest Record in Employment Decision HIA*,²⁶⁰ the **Illinois Department of Public Health** provided data on cases treated in outpatient settings—mental health clinics, hospitals, and outpatient medical clinics. Hospitalizations of interest included those for **Major Depressive Disorder, Dysthymic Disorder, Bipolar Disorder**, and **Substance Related Disorders**.

The **Los Angeles County Department of Public Health** provided **suicide rates** for the Harbor Health District's the *California Cap and Trade Rulemaking HIA*.²⁶¹ This data source was also used in the *Long Beach Downtown Plan HIA*²⁶² to report on those who were **feeling mentally or physically unhealthy, rates of depression**, or if they **considered their neighbourhood to be safe from crime**.²⁶³ In the *State Education Integration Task Force Recommendations Rapid HIA*,²⁶⁴ practitioners included information on mental health status for students of color from the **Minnesota Department of Health**. This included the **number of students who felt nervous, worried, or upset most or all of the time**.²⁶⁵ Data held by **Fulton County Health and Wellness** in the **Online Analytical Statistical Information System Database** was used in the *Atlanta Beltline HIA*²⁶⁶ to report death rates from suicides. As a final example, while not a public health organization, the **National Institute of Mental Health** may also be used to provide information and statistics on mental health and mental health problems in the US.

Other Sources

Aside from the health specific sources that were used to determine mental health data, other sources were also used to gain an understanding of a population's mental health status.

For example, in the *Southeast Kansas Casino HIA*,²⁶⁷ practitioners reported the **number of motor vehicle accidents due to alcohol** in Ford County before and after the opening of a casino, which they obtained from the **Kansas Department of Transportation**. Practitioners also reported and compared the rates of alcohol-related motor vehicle accidents before and after the opening of the Boot Hill Casino in 2009, to show that alcohol-related accidents had increased following its opening. This helped in formulating and substantiating predictions regarding the mental health impacts of opening a new casino. Using vital statistics data from the **Kansas Department of Health**

and Environment, they also found that **suicides** increased after the casino opened. *The Alcohol Outlet Density – Marathon County, Wisconsin HIA*²⁶⁸ also used data from the **Wisconsin Department of Transportation** to report on the number of alcohol-related deaths from motor vehicle crashes. Motor vehicle accidents may be indicative of underlying substance-abuse problems in a population.

In the *California Cap and Trade Rulemaking HIA*,²⁶⁹ practitioners used data from the **Bureau of Labor Statistics** to report the state **employment rate of individuals 16 and over**, which they discussed as a social determinant of mental health. Data from the **Bureau of Justice** was obtained by practitioners for the *Treatment Alternatives to Prison HIA*²⁷⁰ to report **drug use and dependence**. In the *Oasis on Ballou HIA*,²⁷¹ practitioners obtained data from the **Boston Police Department** to compare how actual offenses reported or known by police compared to perceptions of crime in the area.

Table 4. Summary of examples of data sources used to incorporate mental health in HIA
(secondary analysis by HIA)

Data Source	Measures of Mental Health or Mental Health Problems	Example HIAs
Census		
U.S. Census Bureau	Per capita consumption of alcohol	<i>Alcohol Outlet Density – Marathon County, Wisconsin</i>
Databases (explicitly identified)		
OASIS: Online Analytical Statistical Information System (Georgia Dept. Public Health)	Suicide rate	<i>Atlanta Beltline</i>
SMART: Behavioral Risk Factor Surveillance Systems	-Burden of mental health -Depression -Illegal drug use	<i>-Oregon Farm to School -Treatment Alternative to Prison</i>
Health Reports (compiled from various data sources)		
Alaska Department of Commerce, Community, and Economic Development Community Profiles	Suicide mortality rate	<i>Red Dog Mine Extension</i>
Behind Bars II: Substance abuse in America's Prison Population	-Alcohol or drug use disorder -Co-occurring disorders -Diagnosis of mental illness -Substance use disorder	<i>Treatment Alternatives to Prison</i>
Community Health Indicators for Contra Costa County	-Binge drinking -Illicit drug use -Psychological distress in past year -Substance abuse -Taken prescription medicine for emotional/mental health issue	<i>Pittsburg Railroad Avenue Transit-Oriented Development</i>
Community Health Needs Assessment for Greenville County	Feelings of depression	<i>Planning for Parks, Green Space, and Trails in Greenville's West Side</i>
Drunken Driving Report	-Adults admitting drunken driving -Alcohol-related crashes -Convictions for drunken driving	<i>Alcohol Outlet Density – Marathon County, Wisconsin</i>
Haywood County Health Priorities Report for 2009-2010	-Qualitative perceptions of problems -Substance abuse -Suicide death rate	<i>Haywood county BC Comprehensive Bike Plan</i>
Monroe County Adolescent Health Report Card	-Admissions to substance abuse treatment programs -Alcohol and drug use -Considering suicide -Disordered eating -Emergency department visits or hospitalizations (mental health related) -Feeling sad or hopeless -Self injury -Suicide rate	<i>Rochester Waterfront Revitalization Plan</i>

Table 4 cont'd. Summary of data sources used in to incorporate mental health in HIA

Data Source	Measures of Mental Health or Mental Health Problems	Example HIAs
Monroe County Adult/Older Adult Report Card	<ul style="list-style-type: none"> -Accomplishments related to emotional problems -Alcohol/Drugs related deaths -Feeling calm or peaceful -Feeling downhearted or depressed -Self-Inflicted Injuries (hospitalization) -Self-report frequent mental distress -Suicide mortality rate -Work related to emotional problems 	N/A
Regional Health Profile of the Arctic Slope	<ul style="list-style-type: none"> -Binge drinking (adults and adolescents) -Illegal drug use 	<i>Point Thomson Oil and Gas Leasing EIS</i>
Underage Drinking in Wisconsin Report	<ul style="list-style-type: none"> -Alcohol consumption -Associated harms (e.g., youth injury, youth alcohol treatment, fetal alcohol syndrome, poisonings and psychoses, youth property crime, high-risk sex, youth traffic crashes) -Costs associated with underage drinking 	<i>Alcohol Outlet Density – Marathon County, Wisconsin</i>
Surveys		
Behavioral Risk Factor Surveillance System (BRFSS)	Poor mental health days	<ul style="list-style-type: none"> -Portland City Council's Rental Housing Inspections Program for Multnomah County -State Route 520 Bridge -Arrest Record in Employment Decisions -Capital Area Regional Planning Commission Future Urban Development Area (Chicago)
	<ul style="list-style-type: none"> -Stress-related illness -Substance abuse 	<i>Ice Age Trail Expansion in Marquette County, Wisconsin</i>
	Blood pressure (stress)	<i>Portland City Council's Rental Housing Inspections Program for Multnomah County</i>
	Adult binge drinking	<i>Alcohol Outlet Density – Marathon County, Wisconsin</i>
	Feeling sad, blue, or depressed (adults)	<ul style="list-style-type: none"> -Pierce County in South Hill Redevelopment -Oasis on Ballou (Boston data only)
	Problem gambling	<i>Southeast Kansas Casino</i>
Boston Neighborhood Survey		<i>Oasis on Ballou HIA</i>
California Health Interview Survey (CHIS)	<ul style="list-style-type: none"> -Number of days unable to work due to mental health -Psychological distress (teens) -Sad or hopeless feelings (teens) 	<i>San Diego Bus Rapid Transit Station</i>
	Sense of wellbeing	<i>Oasis on Ballou</i>
	Social Capital	<i>Androscoggin Greenway Plan</i>
California School Climate Survey (CSCS)	<ul style="list-style-type: none"> -Academic performance Staff-to-student support -Student alcohol and drug use 	<i>School Discipline Policies</i>

Table 4 cont'd. Summary of data sources used in to incorporate mental health in HIA

Data Source	Measures of Mental Health or Mental Health Problems	Example HIAs
California Healthy Kids Survey (CHKS)	-Anxiety -Depression -Sadness	<i>School Discipline Policies</i>
California Work and Health Survey (CWHHS)	Occupational stress	<i>California Paid Sick Days</i>
Connecticut Energy Efficiency Fund Survey	Social isolation	<i>Utility Rulemaking on Connecticut's Public Benefit Fund</i>
Domestic Workers United Survey	Occupational stress	<i>California Domestic Worker Equality, Fairness, and Dignity Act</i>
EnCana Survey of Subcontractors	-Alcohol use -Methamphetamine use	<i>Battlement Mesa, Garfield County Colorado</i>
Los Angeles County Health Survey	Depression rate	<i>Farmer's Field Rapid HIA</i>
Minneapolis Park Foundation Survey	Perspectives on parks and support for different services	<i>City of Minneapolis Above the Falls Master Plan</i>
National Health and Nutrition Examination Survey (NHANES)	-Attention deficit hyperactivity disorders (children) -Conduct disorders (children) -Eating disorders (adults) -Elimination disorders (children) -Generalized anxiety (adults) -Panic disorders (adults)	N/A
National Health Interview Survey (NHIS)	-Alcohol consumption -Depression, anxiety, or emotional problems -Mental health services utilization	<i>N/A (used in National Paid Sick Days for other information)</i>
National Survey on Drug Use and Health Report	-Any mental illness -Co-occurring disorders/substance use -Level of mental illness -Major depressive episode -Mental health treatment (type, location, source for payment, perceived need) -Serious mental illness -Serious psychological distress -Substance dependence or use -Suicide (thoughts, behavior, treatment) -Youth mental health (hospitalization, major depressive episode)	<i>Alcohol Outlet Density – Marathon County, Wisconsin</i>

Table 4 cont'd. Summary of data sources used in to incorporate mental health in HIA

Data Source	Measures of Mental Health or Mental Health Problems	Example HIAs
On-Board Transit Rider Survey (Alameda Contra Costa Transit)	Stress or anxiety from trip	<i>San Francisco Bay Area Regional Transit Plan</i>
Pagedale Household Survey	-Community engagement -Political engagement -Social cohesion -Social participation	<i>Page Avenue Revitalization</i>
Spokane Regional Health District Survey	-Daily stress -Good mental health days -Mental health in past 30 days	<i>Division Street Gateway</i>
Survey of Health of All the Populations and Environment (SHAPE)	Psychological distress in past 30 days	<i>City of Minneapolis Above the Falls Master Plan</i>
Wisconsin Family Health Survey	-Demographics -Health insurance coverage -Poverty	<i>Capital Area Regional Planning Commission (CRPC) Future Urban Development Area (FUDA)</i>
Wisconsin's Transitional Jobs Program Participant Survey	Self-efficacy (e.g., control, hope for future, depressed or anxious, calm or peaceful)	<i>Wisconsin's Transitional Jobs Program</i>
Youth Risk Behavior Survey (YRBS)	-Alcohol use -Domestic abuse or sexual assault -Feeling unsafe at school -Feelings of sadness or hopelessness -Poor mental health by bullying -Suicide attempts	- <i>Rochester Waterfront Revitalization Plan</i> - <i>Alcohol Outlet Density – Marathon County, Wisconsin</i> - <i>North Carolina Senate Bill 731</i>
County Health Rankings		
County Health Rankings and Roadmaps	-Alcohol use -Drug use -Poor mental health days -Social support -Youth suicide attempts	- <i>Columbia Transit System Expansion</i> - <i>I-710 Expansion</i> - <i>Daniel Morgan Avenue Road Diet</i> - <i>Ice Age Trail Expansion</i> - <i>Hood River Farmland Rezone</i>
Hospitalization Data (may overlap with vital statistics/surveillance data)		
Alameda County Public Health Department's Community Assessment, Planning, Education and Evaluation Unit	Depression-related hospitalizations	<i>East Bay Greenway</i>
Center for Disease Control and Prevention	Alcohol-related incidents	<i>Red Dog Mine Extension</i>
Georgia Department of Community Health, Division of Public Health	-Behavioral disorders -Deaths -Emergency Room visits related to mental health -Hospital discharges -Mental health and behavioral disorders due to psychoactive substances	<i>Aerotropolis Atlanta</i>
Department of Public Health, Los Angeles	Psychiatric admissions (ICD-9 codes)	<i>I-710 Expansion</i>

Table 4 cont'd. Summary of data sources used in to incorporate mental health in HIA

Data Source	Measures of Mental Health or Mental Health Problems	Example HIAs
New York Department of Health	-Drug-related hospitalizations -Mortality rate -Suicide	<i>Rochester Waterfront Revitalization Plan</i>
North Carolina State Center for Health Statistics	-Hospitalizations for alcohol and drug treatment centers -Hospitalizations for state psychiatric hospitals	<i>North Carolina Senate Bill 731</i>
Vital Statistics / Surveillance Data (may overlap with hospitalization data)		
California State Department of Health	-Causes of death -Mental health -Suicide	<i>Farmer's Field Rapid HIA</i>
Georgia Department of Public Health	Suicide rates	
Illinois Department of Public Health	-Bipolar disorder -Dysthymic disorder -Major Depressive disorder -Substance-related disorders	<i>Arrest Record in Employment Decision</i>
Department of Public Health, Los Angeles	-Depression rate -Feeling mentally or physically unhealthy -Perception of neighborhood crime -Suicide rates	- <i>California Cap and Trade Rulemaking</i> - <i>Long Beach Downtown Plan HIA</i>
Marathon County Health Department	Alcohol-related deaths	<i>Alcohol Outlet Density – Marathon County, Wisconsin</i>
Maricopa County Public Health and Arizona Department of Health Services	-Alcohol-induced death -Emergency Room visits -Self-induced deaths -Suicides	<i>Tempe Modern Street Car</i>
Michigan Department of Community Health	Substance abuse	<i>Pay Equity</i>
Minnesota Department of Health	Number of students feeling nervous, worried, or upset	<i>State Education Integration Task Force Recommendations Rapid HIA</i>
New Mexico Department of Public Health	Death from self-injury	<i>Bernalillo County Pedestrian and Bicyclist Safety Action Plan</i>
Oregon Health Authority (OHA) State Epidemiological Outcomes Workgroup, Addictions and Mental Health Division	-Alcohol use -Depressive disorder -Drug use -Gambling -Major depressive disorder -Percent eighth and eleventh graders with depressive episode	- <i>Hood River Farmland Rezone</i> - <i>Portland City Council's Rental Housing Inspections Program</i>

What are Some Examples of HIAs That Incorporate Mental Health?

This section provides two examples of HIAs that incorporated mental health throughout the HIA process and includes a description of how mental health was measured, what outcomes were looked at, and what recommendations were made to specifically address potential mental health impacts.

HOPE VI to HOPE SF: Public Housing Redevelopment HIA

Background

The University of California Berkeley Health Impact Group and Human Impact Partners conducted the *HOPE VI to HOPE SF: Public Housing Redevelopment HIA*²⁷² in 2009. The HIA looked retrospectively at the efforts made by the US Department of Housing and Urban Development in their 1999 initiative, Housing Opportunities for People Everywhere (HOPE VI), so that lessons learned could inform the HOPE San Francisco (HOPE SF) redevelopment which was underway for five public housing sites.

HOPE VI applied federal funds to reconstruct housing projects, create a new practice of housing management, and provide vouchers to subsidize residents who had been displaced and needed to find alternative accommodations. Additionally, twenty percent of program funds (\$300 million) were set aside for community building initiatives. The HOPE VI program aimed to decentralize poverty by creating new mixed income and mix-use communities.

How Was Mental Health Included?

Mental health is implicitly included throughout this HIA, namely through the attention paid to social cohesion by practitioners. Social cohesion was **identified in the scoping** as a health issue of interest, through interviews and discussions with community partners.

In the **pathway diagram** for housing and health, this HIA shows many different ways through which mental health outcomes (e.g., depression, stress) can be influenced by social, macro-environmental, or micro-environmental factors within a neighbourhood or housing project. This was helpful in illustrating how micro-level housing factors (e.g., presence of a common space) may help lead to determining factors (e.g., social interaction) that influence mental health (e.g., depression).

Mental health was mainly addressed in a separate chapter on social cohesion; however, mental health outcomes were **included wherever there was a relevant association**. For example, in the chapter on housing, practitioners used mental health-related information (collected for the purpose of measuring social cohesion) to introduce readers to the stresses that new management and rule structures within the housing redevelopment was causing.

How Was Mental Health Measured?

The main source of information practitioners used to discuss potential mental health impacts was collected through open-ended and structured survey responses with residents living in two of the redeveloped housing projects. In particular, this survey provided insight to social cohesion, with the following questions:

- What do you like the most about your community?
- What would you change about your community?
- If you were here before the redevelopment, what do you think has changed the most because of it?

In addition, more specific questions related to social cohesion were asked as well, such as:

- After redevelopment I know more of my neighbours than before (disagree, agree, neutral)
- How often do you run into your neighbours (always, sometimes, rarely)?
- Likelihood of stopping to talk with neighbours outside complex (always, sometimes, rarely)

Practitioners used survey responses to quantify the extent to which social cohesion existed before and after redevelopment, and also used qualitative data to show how residents felt and perceived the situation. Potential impacts to mental health were included through practitioners' conceptual model of direct and indirect health consequences or benefits from different levels of community participation (e.g., stress, depression from non-participation),²⁷³ literature review (e.g., distress and depressive symptoms from relocating neighbourhoods),²⁷⁴ and secondary data analysis (e.g., higher levels of depressed feelings in a Boston public housing project, compared to those living elsewhere).²⁷⁵

What Recommendations Were Made for Mental Health?

A number of recommendations were included in this HIA for ways to mitigate potential impacts to mental health, particularly through increasing or maintaining social cohesion. While these recommendations are specific to the *HOPE VI to HOPE SF HIA*²⁷⁶ site, five examples are provided here to show how practitioners were able to make complex concepts and impacts into tangible recommendations.

1. To address **high levels of stress** that existed in HOPE VI (and were worse for lower income residents) due to housing and maintenance concerns, practitioners recommended **outreach to local clinics to promote better use of available services**.²⁷⁷ Other recommendations for reducing stress this point included having the **explicit participation of residents and stakeholders as part of the redevelopment planning process**,²⁷⁸ and allowing public participation from public housing as well as residents from other neighbourhoods in this process.

2. To specifically address the stress and anxiety caused by **fears of breaking new management rules** (and subsequent eviction), practitioners recommended that **housing management find a way to enforce rules while being open to resolving disputes and clarifying matters before eviction.**²⁷⁹
3. To address **stress, anxiety, and changes in mood** among residents who had to move or relocate, practitioners recommended **talking circles or mental health resources for residents to discuss experiences and seek appropriate care.**²⁸⁰
This way, better and more comprehensive support could be provided to families as they undergo stress.
4. To improve upon social cohesion by **increasing social inclusion and social interaction**, practitioners recommended **increased funding and use of existing resource centers, resident access and management of community spaces, communication with management, interaction with different cultures and ethnicities**, among others. For each recommendation, specific examples tailored to the community (often suggested by its members) were included.
5. Participation in the Tenant's Association and Residential Council were seen as important factors to improving social cohesion within and outside of units. Recommendations to **increase participation** in the Tenant's Association included the **training of residents interested in being involved, involving residents in new rule review, considering some form of resident management, and reaching out to residents when entrepreneurial opportunities became available.** Again, specific examples were included for each.

Why Is This a Good Example?

The *HOPE VI to HOPE SF HIA*²⁸¹ is an excellent example of how mental health impacts and determinants can be included in a general HIA. Mental health was **included throughout the HIA**, from scoping to assessment to recommendations. Practitioners selected social cohesion as a health concern (and determinant of mental health), which enabled them to **devote the same attention to mental health as physical health** concerns. The entire chapter on this determinant allowed for in-depth and comprehensive consideration of potential issues that may arise. Most importantly, practitioners **worked with the community throughout** their HIA. This helped to identify social cohesion as a concern in the first place, but also helped to develop tangible recommendations uniquely tailored to the community. Finally, practitioners **collected their own data where other sources were not available.** For this HIA, the use of a semi-structured survey allowed practitioners to gain both quantitative and qualitative data regarding social cohesion and participation, which greatly enriched the findings, claims, and recommendations that were made.

Transitional Jobs Program HIA

Background

The University of Wisconsin's Population Health Institute conducted the *Transitional Jobs Program HIA*²⁸² in 2013 to assess how government-sponsored employment programs have impacted the health of their participants, in response to the statewide expansion of the Transitional Jobs Demonstration Program in Wisconsin. This HIA was conducted to inform the decision of whether or not to fund a new Wisconsin Transitional Jobs program for Milwaukee County and to evaluate the potential health impacts that may occur.

How Was Mental Health Included?

Mental health was **included in the scoping** portion of the HIA, as members of advocacy organizations, community organizations, and executive agencies identified it as a long-term outcome. Practitioners included a simple, easy to understand **logic model**, which illustrated how improved mental health could be a potential long-term outcome for improved income, social cohesion, state or local fiscal effects, or private sector effects. Practitioners selected health factors based on the quality of evidence between employment and a particular health outcome. As employment is closely tied to mental health in populations, practitioners selected **mental health related indicators** such as self-efficacy, social capital, family cohesion, and alcohol use, among others indicators for more physical health outcomes.

Practitioners included mental health in the **assessment** portion of their HIA by first providing an overview of the associations between employment and mental health (generally), and employment and substance abuse, as indicated in the literature.²⁸³ They then show how each indicator can be influenced by employment, and then how the indicator can impact a health outcome. This straightforward process was easy to understand, and clearly showed how mental health and child mental health were likely to increase if the Transitional Jobs program expanded or maintained its current level.

In addition to using the literature review to show relationships between mental health indicators and employment or health outcomes, this HIA also used data from a **survey** they had administered (in partnership with the Wisconsin Department of Children and Families) to participants of the Transitional Jobs Demonstration Program. Survey questions related to mental health included, among others:

- Since I started the TJ Program I feel... [Check boxes for a lot more, a little more, the same, a little less, a lot less]:
 - Hopeful for the future...
 - Depressed or anxious...
 - In control of my life...
 - Calm and peaceful...

- Which of the following support services did you receive from the TJ program? [Among other options, included:]
 - Personal counseling
 - Drug/alcohol counseling
- Since I started the TJ Program... [Check boxes for a lot more, a little more, the same, a little less, a lot less, or does not apply]:
 - I have trouble falling or staying asleep...
 - I drink alcohol (beer, wine, hard liquor)...

Survey responses—which spoke to employment, demographics, and self-reported personal health—provided insight into the associations identified between employment, mental health indicators, and mental health outcomes identified in the literature. Practitioners collected this information because no previous data was available. This allowed them to gain a rich understanding of their participants beyond the demographic factors collected by the program.

What Recommendations Were Made for Mental Health?

Practitioners included three upstream recommendations that broadly addressed all of their health indicators of interest. They also included implementation ideas for legislators, implementing agencies, and contractors. Only those specific to mental health will be reviewed here.

1. To maximize the **positive mental health effects** provided from the Transitional Jobs program, practitioners recommended that **opportunities be extended to the largest potential pool of eligible applicants**. Specific suggestions for impacting a larger number of people included: increasing the threshold household income required to **provide families a greater safety net**, **eliminate the requirement that participants be ineligible for employment insurance**, and **provide incentives to employers** who hire large groups of workers.²⁸⁴
2. To **create lasting employment outcomes** for participants after subsidized employment ends. Specific implementation ideas practitioners included were: providing **incentives for placements lasting beyond the subsidy period**, **requiring training in skills for which there is a growing demand** in the program area, or **leveraging participants' work experience** into credentials, certificates, or references.
3. To **assure priority to program applicants with children**, without making parenthood an eligibility requirement of the program. Justification for this recommendation was that the benefits accrued by program participants transfers to their children and families. Practitioners suggested that the program **revisit its eligibility criteria**, which at the time stated that participants over the

age of 25 had to be parents. This likely prevented fuller participation in the program from participants who were not parents.

Why Is This a Good Example?

The *Transitional Jobs Program HIA*²⁸⁵ is a thoughtful and relevant example of how certain indicators may potentially impact mental health. This HIA concerned employment, thus practitioners were able to draw on the vast amount of literature published on employment and health; specifically, the effect of employment on mental health and its determining factors. This HIA **included mental health consistently** throughout their report. This allowed readers to see the process at play behind the HIA (i.e., how did they select indicators, how did they derive health effects). This HIA also included **recommendations that were suggested to fit the context** of the program and its participants, which were greatly informed by their findings for mental health. Practitioners also **involved community members** (program participants) throughout their HIA, and included their survey responses in relation to each health indicator of interest.

A supplemental strength of this HIA was its use of straightforward, **easy to understand figures and tables**. These illustrations helped to show how health is influenced by multiple factors, which was especially useful in considering how mental health would be impacted. Finally, this HIA included a strong evaluation component. Practitioners **ranked the strength of each data source used**, and reported on the association between employment and a health indicator or outcome. This was valuable in showing readers how a literature review can be used as a strong source of evidence to include mental health, where other forms of data may not be available. Importantly, they also included measures by which the success of the program could be monitored.

How Can We Improve the Inclusion of Mental Health in HIA?

Many steps have been taken to improve the inclusion of mental health in HIA; however, barriers still remain. The recommendations from this report are meant to guide practitioners who aim to include mental health in their HIAs in the immediate future. These recommendations are straightforward suggestions to increase the potential for monitoring and evaluation, improve the evidence of claims made, and encourage inclusion of mental health in HIA.

Recommendations

Recommendation 1: Draw on community engagement to guide the inclusion of mental health in HIA.

Many HIAs reported their identification of mental health through community engagement interviews or workshops conducted during the scoping portion. Community members are able to provide a local perspective on the social and cultural conditions that shape the health and mental health of their neighbourhoods. This may

include the identification of specific problems (e.g., substance abuse, problem gambling) that are not reported in the literature or other data sources that are used to gather information on baseline health conditions. Engaging with community members also provides the opportunity to ask questions practitioners may have specific to mental health. For example, in speaking with a local health worker, practitioners may gain insight to new data sources (e.g., local hospitalization records, community reports, etc.) that may assist in assessing mental health. Community members were also shown to be invaluable in developing recommendations to mitigate potential impacts on mental health. The involvement of community members in HIA may also help to mitigate stresses associated with the project, policy, or program. Focus groups, meetings, or interviews may provide stakeholders with the opportunity to express their concerns, and have them heard by practitioners. The *Wind Energy HIA*²⁸⁶ in Oregon, for example, provides a discussion of the role community engagement and participation can play to mitigate community conflict.

Recommendation 2: Consider mental health when conducting the scoping of any HIA.

Mental health is one component of health and wellbeing. Therefore, to gain a comprehensive understanding of health in a population, practitioners should at least *consider* the role that mental health might play. This may manifest differently for different HIAs; mental health may be identified as a factor that influences health outcomes, or as a specific outcome itself. Even outcomes may differ widely, from complex concepts, such as social cohesion, to more concrete and measurable outcomes, such as depression. Additionally, as a decision making tool that encourages the monitoring and evaluation of project indicators following completion, HIA provides the opportunity to contribute to the evidence base regarding potential mental health impacts from specific projects, policies, or programs.

All HIAs are limited to some extent by time, resources, or other factors. As such, it may not be feasible for HIAs to focus on mental health as a discrete health outcome. However, there may be ways to include mental health implicitly throughout the HIA. For example, HIA practitioners may consider including some discussion of how health outcomes may be influenced by mental health. The Mental Health Working Group is developing a tool to assist practitioners in including mental health in their pathways, as they begin their HIA. This tool will illustrate how mental health is influenced by many of the same social determinants that affect physical health. It may provide some guidance for how mental health can be included in a complex pathway diagram.

Recommendation 3: Maintain consistency throughout the HIA where mental health is identified as a health outcome of interest.

Where mental health is identified as an outcome of interest (usually in scoping) to an HIA, often it does not reappear in relation to assessment, recommendations, reporting, or monitoring and evaluation. If mental health is identified as an outcome or indicator of interest, it should be addressed in every stage of the HIA. If for some reason

the HIA team and stakeholders have had to deprioritize mental health in their HIA, reasoning for this should be transparently explained in the HIA report. HIAs are conducted with the intention of improving population health; therefore, where potential harms to mental health are identified in an HIA, it should also include recommendations to mitigate said harms. In some cases, it may actually be harmful for the mental health of populations to identify baseline problems or potential impacts of a project, without suggesting recommendations or mitigation strategies. Communities may be subject to stress or feelings of hopelessness where problems are simply identified and not addressed.

Recommendation 4: Consider how mental health may impact groups differently when including mental health in an HIA.

Inequities in mental health may or may not be represented in data sources available to practitioners. It is therefore important for practitioners to consider how mental health might be impacted differently for different groups, for the HIA may be the only forum in a decision making process where these concerns are voiced.

Recommendation 5: Draw on multiple data sources to assess mental health, and use those most appropriate to the health outcomes of interest.

Mental health is complex and can manifest in many different ways. Practitioners should take care to ensure that they are assessing mental health in a way that speaks relevance to the health outcomes of interest. For example, it may not prove useful to report national rates of depression and anxiety when the county is worried about increased alcohol use. Better sources of data may come from unconventional places, such as the number of motor vehicle crashes due to alcohol-related incidents, as was used in the *SugarHouse Casino HIA*.²⁸⁷ Practitioners might consider drawing on the connections they have with those working in other sectors, when brainstorming where to find data that may measure mental health. The resources listed in this report are intended to provide practitioners with a starting point of potential data sources.

Primary data may be a feasible option for some HIAs. If mental health is not captured by any existing data sources, practitioners might consider collecting their own data to infer mental health conditions in the population of interest. Data collection may occur in different ways. For example, this might include administering a survey to community members with questions that speak directly or indirectly to mental health outcomes of interest. Alternatively, practitioners may wish to gather qualitative information from community members. This may include asking a specific question or prompt to key informants about their perceptions of mental health in the community, which can later be integrated into the HIA assessment.

Regardless of what data source is used, it is important that practitioners cite what information or indicators came from what data sources. While this seems intuitive, many HIAs did not make note of the data sources they analyzed or included in their literature review, which questions credibility of claims made regarding mental health.

More robust research practices will improve the field in a number of ways. First, consistent referencing will help other practitioners to draw from completed HIAs that included mental health in their own efforts to include mental health. Second, referencing data sources will enhance the quality of HIA, by substantiating the claim to decision makers, community members, and other practitioners that recommendations are evidence based. Finally, referencing of indicators will facilitate monitoring and evaluation of health outcomes. This is especially important as the field of HIA matures, so that concrete recommendations about mental health (i.e., what is working, what can be improved) can be made.

Recommendation 6: Consider the impact of mental health on physical health and the impact of physical health on mental health.

It is well understood that health and mental health are inextricably connected. Therefore, it is important that practitioners reflect this understanding in their HIAs to the greatest extent possible. This will allow for a more complete understanding of health in communities, within the context of the holistic definition of health that HIA adopts.

Summary

As the field of HIA grows, it is important that it maintains pace with population health concerns and priorities. Mental health is one area where HIA practitioners have indicated that the field falls short. Recent work done by the members of the Mental Health Working Group of SOPHIA has provided an excellent starting point to advance the inclusion of mental health in HIA and has served as the inspiration for this report. There are many different ways of including mental health in HIA, which have been provided as examples in this report. This includes different data sources, mental health outcomes of interest, and the degree to which mental health is consistently included in HIA.

This report is intended to serve as a starting point for practitioners seeking or developing resources of how to include mental health in their HIA. Therefore, the recommendations provided are derived from observations that the author identified as particularly challenging in her review of HIAs for their inclusion of mental health. While straightforward, these are meant to encourage better inclusion of mental health in HIA, more consistency within HIAs, and more explicit discussion of the data used. These, among other factors will facilitate future monitoring and evaluation regarding mental health in HIA so others may conclude what is working, what is not, and what can be improved.

Appendix A

Table of mental health indicators and data sources used in HIAs reviewed.

Mental Health Indicator	Data Source(s)	Example HIAs
Academic performance staff-to-student support	<ul style="list-style-type: none"> California School Climate Survey (CSCS) 	<i>School Discipline Policies</i>
Accomplishments related to emotional problems	<ul style="list-style-type: none"> Monroe County Adolescent Health Report Card 	N/A
Admissions to substance abuse treatment programs	Monroe County Adolescent Health Report Card	<i>Rochester Waterfront Revitalization Plan</i>
Adult binge drinking	<ul style="list-style-type: none"> Behavioral Risk Factor Surveillance System (BRFSS) 	<i>Alcohol Outlet Density – Marathon County, Wisconsin</i>
Adults admitting drunken driving	<ul style="list-style-type: none"> Drunken Driving Report 	<i>Alcohol Outlet Density – Marathon County, Wisconsin</i>
Alcohol consumption	<ul style="list-style-type: none"> Underage Drinking in Wisconsin Report 	<i>Alcohol Outlet Density – Marathon County, Wisconsin</i>
Alcohol or drug abuse	<ul style="list-style-type: none"> Behind Bars II: Substance abuse in America's Prison Population Community Health Indicators for Contra Costa County Haywood County Health Priorities Report for 2009-2010 Monroe County Adolescent Health Report Card Behavioral Risk Factor Surveillance System (BRFSS) Michigan Department of Community Health 	<ul style="list-style-type: none"> -Treatment Alternatives to Prison -Pittsburg Railroad Avenue Transit-Oriented Development -Haywood county BC Comprehensive Bike Plan -Rochester Waterfront Revitalization Plan -Ice Age Trail Expansion in Marquette County, Wisconsin -Pay Equity
Alcohol use	<ul style="list-style-type: none"> EnCana Survey of Subcontractors National Health Interview Survey (NHIS) Youth Risk Behavior Survey (YRBS) County Health Rankings and Roadmaps Oregon Health Authority (OHA) State Epidemiological Outcomes Workgroup, Addictions and Mental Health Division 	<ul style="list-style-type: none"> -Battlement Mesa, Garfield County Colorado -Rochester Waterfront Revitalization Plan -Alcohol Outlet Density – Marathon County, Wisconsin -North Carolina Senate Bill 731 -Columbia Transit System Expansion -I-710 Expansion -Daniel Morgan Avenue Road Diet -Ice Age Trail Expansion -Hood River Farmland Rezone -Portland City Council's Rental Housing Inspections Program
Alcohol-induced deaths	<ul style="list-style-type: none"> Maricopa County Public Health and Arizona Department of Health Services 	<i>Tempe Modern Street Card</i>
Alcohol-related crashes	<ul style="list-style-type: none"> Drunken Driving Report 	<i>Alcohol Outlet Density – Marathon County, Wisconsin</i>
Alcohol-related incidents	<ul style="list-style-type: none"> Center for Disease Control and Prevention 	<i>Red Dog Mine Extension</i>
Alcohol/Drug related deaths	<ul style="list-style-type: none"> Monroe County Adolescent Health Report Card Marathon County Health Department 	<i>Alcohol Outlet Density – Marathon County, Wisconsin</i>

Table of mental health indicators and data sources used in HIAs reviewed (cont'd)

Mental Health Indicator	Data Source(s)	Example HIAs
Anxiety	<ul style="list-style-type: none"> California Healthy Kids Survey (CHKS) National Health and Nutrition Examination Survey (NHANES) 	<i>School Discipline Policies</i>
Any mental illness	<ul style="list-style-type: none"> National Survey on Drug Use and Health Report 	<i>Alcohol Outlet Density – Marathon County, Wisconsin</i>
Associated harms (e.g., youth injury, youth alcohol treatment, fetal alcohol syndrome, poisonings and psychoses, youth property crime, high-risk sex, youth traffic crashes)	<ul style="list-style-type: none"> Underage Drinking in Wisconsin Report 	<i>-Alcohol Outlet Density – Marathon County, Wisconsin</i>
Attention deficit hyperactivity disorders (children)	<ul style="list-style-type: none"> National Health and Nutrition Examination Survey (NHANES) 	N/A
Behavioral disorders	<ul style="list-style-type: none"> Georgia Department of Community Health, Division of Public Health 	<i>Aerotropolis Atlanta</i>
Binge drinking	<ul style="list-style-type: none"> Community Health Indicators for Contra Costa County Regional Health Profile of the Arctic Slope 	<i>-Pittsburg Railroad Avenue Transit-Oriented Development</i> <i>-Point Thomson Oil and Gas Leasing EIS</i>
Bipolar disorder	<ul style="list-style-type: none"> Illinois Department of Public Health 	<i>Arrest Record in Employment Decision</i>
Blood pressure (stress)	<ul style="list-style-type: none"> Behavioral Risk Factor Surveillance System (BRFSS) 	<i>Portland City Council's Rental Housing Inspections Program for Multnomah County</i>
Burden of mental health	<ul style="list-style-type: none"> SMART: Behavioral Risk Factor Surveillance Systems 	<i>-Oregon Farm to School</i> <i>-Treatment Alternative to Prison</i>
Causes of death	<ul style="list-style-type: none"> California State Department of Health 	<i>Farmer's Field Rapid HIA</i>
Co-occurring disorders	<ul style="list-style-type: none"> Behind Bars II: Substance abuse in America's Prison Population National Survey on Drug Use and Health Report 	<i>-Treatment Alternatives to Prison</i> <i>-Alcohol Outlet Density – Marathon County, Wisconsin</i>
Community engagement	<ul style="list-style-type: none"> Pagedale Household Survey 	<i>Page Avenue Revitalization</i>
Conduct disorders (children)	<ul style="list-style-type: none"> National Health and Nutrition Examination Survey (NHANES) 	N/A
Considering suicide	Monroe County Adolescent Health Report Card	<i>Rochester Waterfront Revitalization Plan</i>
Convictions for drunken driving	<ul style="list-style-type: none"> Drunken Driving Report 	<i>Alcohol Outlet Density – Marathon County, Wisconsin</i>
Costs associated with underage drinking	<ul style="list-style-type: none"> Underage Drinking in Wisconsin Report 	<i>Alcohol Outlet Density – Marathon County, Wisconsin</i>
Daily stress	<ul style="list-style-type: none"> Spokane Regional Health District Survey 	<i>Division Street Gateway</i>
Death from self-injury	<ul style="list-style-type: none"> New Mexico Department of Public Health 	<i>Bernalillo County Pedestrian and Bicyclist Safety Action Plan</i>
Deaths	<ul style="list-style-type: none"> Georgia Department of Community Health, Division of Public Health 	<i>Aerotropolis Atlanta</i>

Table of mental health indicators and data sources used in HIAs reviewed (cont'd)

Mental Health Indicator	Data Source(s)	Example HIAs
Demographics	<ul style="list-style-type: none"> Wisconsin Family Health Survey 	<i>Capital Area Regional Planning Commission (CRPC) Future Urban Development Area (FUDA)</i>
Depression	<ul style="list-style-type: none"> SMART: Behavioral Risk Factor Surveillance Systems Community Health Needs Assessment for Greenville County California Healthy Kids Survey (CHKS) Los Angeles County Health Survey National Health Interview Survey (NHIS) Department of Public Health, Los Angeles 	<ul style="list-style-type: none"> <i>-Oregon Farm to School</i> <i>-Treatment Alternative to Prison</i> <i>-Planning for Parks, Green Space, and Trails in Greenville's West Side</i> <i>-School Discipline Policies</i> <i>-Farmer's Field Rapid HIA</i> <i>-California Cap and Trade Rulemaking</i> <i>-Long Beach Downtown Plan HIA</i>
Depression-related hospitalizations	<ul style="list-style-type: none"> Alameda County Public Health Department's Community Assessment, Planning, Education and Evaluation Unit 	<i>East Bay Greenway</i>
Diagnosis of mental illness	<ul style="list-style-type: none"> Behind Bars II: Substance abuse in America's Prison Population 	<i>Treatment Alternatives to Prison</i>
Disordered eating	Monroe County Adolescent Health Report Card	<i>Rochester Waterfront Revitalization Plan</i>
Domestic abuse or sexual assault	<ul style="list-style-type: none"> Youth Risk Behavior Survey (YRBS) 	<ul style="list-style-type: none"> <i>-Rochester Waterfront Revitalization Plan</i> <i>-Alcohol Outlet Density – Marathon County, Wisconsin</i> <i>-North Carolina Senate Bill 731</i>
Drug-related hospitalizations	<ul style="list-style-type: none"> New York Department of Health 	<i>Rochester Waterfront Revitalization Plan</i>
Dysthymic disorder	<ul style="list-style-type: none"> Illinois Department of Public Health 	<i>Arrest Record in Employment Decision</i>
Eating disorders (adults)	<ul style="list-style-type: none"> National Health and Nutrition Examination Survey (NHANES) 	N/A
Elimination disorders (children)	<ul style="list-style-type: none"> National Health and Nutrition Examination Survey (NHANES) 	N/A
Emergency department visits or hospitalizations (mental health related)	<ul style="list-style-type: none"> Monroe County Adolescent Health Report Card Georgia Department of Community Health, Division of Public Health Maricopa County Public Health and Arizona Department of Health Services 	<ul style="list-style-type: none"> <i>-Rochester Waterfront Revitalization Plan</i> <i>-Aerotropolis Atlanta</i> <i>-Tempe Modern Street Car</i>
Feeling calm or peaceful	<ul style="list-style-type: none"> Monroe County Adolescent Health Report Card 	N/A
Feeling downhearted or depressed	<ul style="list-style-type: none"> Monroe County Adolescent Health Report Card 	N/A
Feeling mentally or physically unhealthy	<ul style="list-style-type: none"> Department of Public Health, Los Angeles 	<ul style="list-style-type: none"> <i>-California Cap and Trade Rulemaking</i> <i>-Long Beach Downtown Plan HIA</i>

Table of mental health indicators and data sources used in HIAs reviewed (cont'd)

Mental Health Indicator	Data Source(s)	Example HIAs
Feeling sad or hopeless	<ul style="list-style-type: none"> Monroe County Adolescent Health Report Card California Health Interview Survey (CHIS) 	<ul style="list-style-type: none"> <i>-Rochester Waterfront Revitalization Plan</i> <i>-San Diego Bus Rapid Transit Station</i>
Feeling sad, blue, or depressed (adults)	<ul style="list-style-type: none"> Behavioral Risk Factor Surveillance System (BRFSS) California Health Interview Survey (CHIS) 	<ul style="list-style-type: none"> <i>-Pierce County in South Hill Redevelopment</i> <i>-Oasis on Ballou (Boston data only)</i> <i>-San Diego Bus Rapid Transit Station</i>
Feeling unsafe at school	<ul style="list-style-type: none"> Youth Risk Behavior Survey (YRBS) 	<ul style="list-style-type: none"> <i>-Rochester Waterfront Revitalization Plan</i> <i>-Alcohol Outlet Density – Marathon County, Wisconsin</i> <i>-North Carolina Senate Bill 731</i>
Feelings of sadness or hopelessness	<ul style="list-style-type: none"> Youth Risk Behavior Survey (YRBS) 	<ul style="list-style-type: none"> <i>-Rochester Waterfront Revitalization Plan</i> <i>-Alcohol Outlet Density – Marathon County, Wisconsin</i> <i>-North Carolina Senate Bill 731</i>
Gambling	<ul style="list-style-type: none"> Oregon Health Authority (OHA) State Epidemiological Outcomes Workgroup, Addictions and Mental Health Division 	<ul style="list-style-type: none"> <i>-Hood River Farmland Rezone</i> <i>-Portland City Council's Rental Housing Inspections Program</i>
Good mental health days	<ul style="list-style-type: none"> Spokane Regional Health District Survey 	<i>Division Street Gateway</i>
Health insurance coverage	<ul style="list-style-type: none"> Wisconsin Family Health Survey 	<i>Capital Area Regional Planning Commission (CRPC) Future Urban Development Area (FUDA)</i>
Hospital discharges	<ul style="list-style-type: none"> Georgia Department of Community Health, Division of Public Health 	<i>Aerotropolis Atlanta</i>
Hospitalizations for alcohol and drug treatment centers	<ul style="list-style-type: none"> North Carolina State Center for Health Statistics 	<i>North Carolina Senate Bill 731</i>
Hospitalizations for state psychiatric hospitals	<ul style="list-style-type: none"> North Carolina State Center for Health Statistics 	<i>North Carolina Senate Bill 731</i>
Illegal drug use	<ul style="list-style-type: none"> SMART: Behavioral Risk Factor Surveillance Systems Behind Bars II: Substance abuse in America's Prison Population Community Health Indicators for Contra Costa County Regional Health Profile of the Arctic Slope County Health Rankings and Roadmaps Oregon Health Authority (OHA) State Epidemiological Outcomes Workgroup, Addictions and Mental Health Division 	<ul style="list-style-type: none"> <i>-Oregon Farm to School</i> <i>-Treatment Alternative to Prison</i> <i>-Pittsburg Railroad Avenue Transit-Oriented Development</i> <i>-Point Thomson Oil and Gas Leasing EIS</i> <i>-Columbia Transit System Expansion</i> <i>-I-710 Expansion</i> <i>-Daniel Morgan Avenue Road Diet</i> <i>-Ice Age Trail Expansion</i> <i>-Hood River Farmland Rezone</i> <i>-Portland City Council's Rental Housing Inspections Program</i>

Table of mental health indicators and data sources used in HIAs reviewed (cont'd)

Mental Health Indicator	Data Source(s)	Example HIAs
Level of mental illness	<ul style="list-style-type: none"> National Survey on Drug Use and Health Report 	<i>Alcohol Outlet Density – Marathon County, Wisconsin</i>
Major depressive disorder	<ul style="list-style-type: none"> Illinois Department of Public Health Oregon Health Authority (OHA) State Epidemiological Outcomes Workgroup, Addictions and Mental Health Division 	<ul style="list-style-type: none"> <i>-Arrest Record in Employment Decision</i> <i>-Hood River Farmland Rezone</i> <i>-Portland City Council's Rental Housing Inspections Program</i>
Major depressive episode	<ul style="list-style-type: none"> National Survey on Drug Use and Health Report 	<i>Alcohol Outlet Density – Marathon County, Wisconsin</i>
Mental health	<ul style="list-style-type: none"> California State Department of Health 	<i>Farmer's Field Rapid HIA</i>
Mental health and behavioral disorders due to psychoactive substances	<ul style="list-style-type: none"> Georgia Department of Community Health, Division of Public Health 	<i>Aerotropolis Atlanta</i>
Mental health in past 30 days	<ul style="list-style-type: none"> Spokane Regional Health District Survey 	<i>Division Street Gateway</i>
Mental health services utilization	<ul style="list-style-type: none"> National Health Interview Survey (NHIS) 	<i>N/A</i>
Mental health treatment (type, location, source for payment, perceived need)	<ul style="list-style-type: none"> National Survey on Drug Use and Health Report 	<i>Alcohol Outlet Density – Marathon County, Wisconsin</i>
Methamphetamine use	<ul style="list-style-type: none"> EnCana Survey of Subcontractors 	<i>Battlement Mesa, Garfield County Colorado</i>
Mortality rate	<ul style="list-style-type: none"> New York Department of Health 	<i>Rochester Waterfront Revitalization Plan</i>
Number of days unable to work due to mental health	<ul style="list-style-type: none"> California Health Interview Survey (CHIS) 	<i>San Diego Bus Rapid Transit Station</i>
Number of students feeling nervous, worried, or upset	<ul style="list-style-type: none"> Minnesota Department of Health 	<i>State Education Integration Task Force Recommendations Rapid HIA</i>
Occupational Stress	<ul style="list-style-type: none"> California Work and Health Survey (CWHHS) Domestic Workers United Survey 	<ul style="list-style-type: none"> <i>California Paid Sick Days</i> <i>California Domestic Worker Equality, Fairness, and Dignity Act</i>
Panic disorders (adults)	<ul style="list-style-type: none"> National Health and Nutrition Examination Survey (NHANES) 	<i>N/A</i>
Per capita consumption of alcohol	U.S. Census Bureau	<i>Alcohol Outlet Density – Marathon County, Wisconsin</i>
Perception of neighborhood crime	<ul style="list-style-type: none"> Department of Public Health, Los Angeles 	<ul style="list-style-type: none"> <i>-California Cap and Trade Rulemaking</i> <i>-Long Beach Downtown Plan HIA</i>
Perspectives on parks and support for different services	<ul style="list-style-type: none"> Minneapolis Park Foundation Survey 	<i>City of Minneapolis Above the Falls Master Plan</i>
Political engagement	<ul style="list-style-type: none"> Pagedale Household Survey 	<i>Page Avenue Revitalization</i>
Poor mental health by bullying	<ul style="list-style-type: none"> Youth Risk Behavior Survey (YRBS) 	<ul style="list-style-type: none"> <i>-Rochester Waterfront Revitalization Plan</i> <i>-Alcohol Outlet Density – Marathon County, Wisconsin</i> <i>-North Carolina Senate Bill 731</i>

Table of mental health indicators and data sources used in HIAs reviewed (cont'd)

Mental Health Indicator	Data Source(s)	Example HIAs
Poor mental health days	<ul style="list-style-type: none"> Behavioral Risk Factor Surveillance System (BRFSS) County Health Rankings and Roadmaps 	<ul style="list-style-type: none"> -Portland City Council's Rental Housing Inspections Program for Multnomah County -State Route 520 Bridge -Arrest Record in Employment Decisions -Capital Area Regional Planning Commission Future Urban Development Area (Chicago) -Columbia Transit System Expansion -I-710 Expansion -Daniel Morgan Avenue Road Diet -Ice Age Trail Expansion -Hood River Farmland Rezone
Poverty	<ul style="list-style-type: none"> Wisconsin Family Health Survey 	Capital Area Regional Planning Commission (CRPC) Future Urban Development Area (FUDA)
Problem gambling	<ul style="list-style-type: none"> Behavioral Risk Factor Surveillance System (BRFSS) 	Southeast Kansas Casino
Psychiatric admissions (ICD-9 codes)	<ul style="list-style-type: none"> Department of Public Health, Los Angeles 	I-710 Expansion
Psychological distress in past 30 days	<ul style="list-style-type: none"> Survey of Health of All the Populations and Environment (SHAPE) 	City of Minneapolis Above the Falls Master Plan
Psychological distress in past year	<ul style="list-style-type: none"> Community Health Indicators for Contra Costa County California Health Interview Survey (CHIS) 	<ul style="list-style-type: none"> -Pittsburg Railroad Avenue Transit-Oriented Development -San Diego Bus Rapid Transit Station
Qualitative perceptions of problems	<ul style="list-style-type: none"> Haywood County Health Priorities Report for 2009-2010 	Haywood county BC Comprehensive Bike Plan
Sadness	<ul style="list-style-type: none"> California Healthy Kids Survey (CHKS) 	School Discipline Policies
Self injury	Monroe County Adolescent Health Report Card	Rochester Waterfront Revitalization Plan
Self-efficacy (e.g., control, hope for future, depressed or anxious, calm or peaceful)	<ul style="list-style-type: none"> Wisconsin's Transitional Jobs Program Participant Survey 	Wisconsin's Transitional Jobs Program
Self-induced deaths	<ul style="list-style-type: none"> Maricopa County Public Health and Arizona Department of Health Services 	Tempe Modern Street Car
Self-inflicted injuries (hospitalization)	<ul style="list-style-type: none"> Monroe County Adolescent Health Report Card 	N/A
Self-report frequent mental distress	<ul style="list-style-type: none"> Monroe County Adolescent Health Report Card 	N/A
Sense of wellbeing	<ul style="list-style-type: none"> California Health Interview Survey (CHIS) 	Oasis on Ballou
Serious mental illness	<ul style="list-style-type: none"> National Survey on Drug Use and Health Report 	Alcohol Outlet Density – Marathon County, Wisconsin
Serious psychological distress	<ul style="list-style-type: none"> National Survey on Drug Use and Health Report 	Alcohol Outlet Density – Marathon County, Wisconsin

Table of mental health indicators and data sources used in HIAs reviewed (cont'd)

Mental Health Indicator	Data Source(s)	Example HIAs
Social capital	<ul style="list-style-type: none"> California Health Interview Survey (CHIS) 	<i>Androscoggin Greenway Plan</i>
Social cohesion	<ul style="list-style-type: none"> Pagedale Household Survey 	<i>Page Avenue Revitalization</i>
Social isolation	<ul style="list-style-type: none"> Connecticut Energy Efficiency Fund Survey 	<i>California Paid Sick Days</i>
Social participation	<ul style="list-style-type: none"> Pagedale Household Survey 	<i>Page Avenue Revitalization</i>
Social support	<ul style="list-style-type: none"> County Health Rankings and Roadmaps 	<i>-Columbia Transit System Expansion</i> <i>-I-710 Expansion</i> <i>-Daniel Morgan Avenue Road Diet</i> <i>-Ice Age Trail Expansion</i> <i>-Hood River Farmland Rezone</i>
Stress or anxiety from transit trip	<ul style="list-style-type: none"> On-Board Transit Rider Survey (Alameda Contra Costa Transit) 	<i>San Francisco Bay Area Regional Transit Plan</i>
Stress-related illness	<ul style="list-style-type: none"> Behavioral Risk Factor Surveillance System (BRFSS) 	<i>Ice Age Trail Expansion in Marquette County, Wisconsin</i>
Student alcohol and drug use	<ul style="list-style-type: none"> California School Climate Survey (CSCS) 	<i>School Discipline Policies</i>
Substance use disorder	<ul style="list-style-type: none"> Behind Bars II: Substance abuse in America's Prison Population National Survey on Drug Use and Health Report 	<i>-Treatment Alternatives to Prison</i> <i>-Alcohol Outlet Density – Marathon County, Wisconsin</i>
Substance-related disorders	<ul style="list-style-type: none"> Illinois Department of Public Health 	<i>Arrest Record in Employment Decision</i>
Suicide (thoughts, behavior, treatment)	<ul style="list-style-type: none"> National Survey on Drug Use and Health Report 	<i>Alcohol Outlet Density – Marathon County, Wisconsin</i>
Suicide attempts	<ul style="list-style-type: none"> Youth Risk Behavior Survey (YRBS) 	<i>-Rochester Waterfront Revitalization Plan</i> <i>-Alcohol Outlet Density – Marathon County, Wisconsin</i> <i>-North Carolina Senate Bill 731</i>
Suicide rate	<ul style="list-style-type: none"> OASIS: Online Analytical Statistical Information System (Georgia Dept. Public Health) Alaska Department of Commerce, Community, and Economic Development Community Profiles Haywood County Health Priorities Report for 2009-2010 Monroe County Adolescent Health Report Card New York Department of Health California State Department of Health Georgia Department of Public Health Department of Public Health, Los Angeles Maricopa County Public Health and Arizona Department of Health Services 	<i>-Atlanta Beltline</i> <i>-Red Dog Mine Extension</i> <i>-Haywood county BC Comprehensive Bike Plan</i> <i>-Rochester Waterfront Revitalization Plan</i> <i>-Farmer's Field Rapid HIA</i> <i>-California Cap and Trade Rulemaking</i> <i>-Long Beach Downtown Plan HIA</i> <i>-Tempe Modern Street Car</i>

Table of mental health indicators and data sources used in HIAs reviewed (cont'd)

Mental Health Indicator	Data Source(s)	Example HIAs
Taken prescription medicine for emotional/mental health issue	<ul style="list-style-type: none"> Community Health Indicators for Contra Costa County 	<i>Pittsburg Railroad Avenue Transit-Oriented Development</i>
Work related to emotional problems	<ul style="list-style-type: none"> Monroe County Adolescent Health Report Card 	N/A
Youth mental health (hospitalization, major depressive episode)	<ul style="list-style-type: none"> National Survey on Drug Use and Health Report 	<i>Alcohol Outlet Density – Marathon County, Wisconsin</i>
Youth suicide attempts	<ul style="list-style-type: none"> County Health Rankings and Roadmaps 	<i>-Columbia Transit System Expansion</i> <i>-I-710 Expansion</i> <i>-Daniel Morgan Avenue Road Diet</i> <i>-Ice Age Trail Expansion</i> <i>-Hood River Farmland Rezone</i>

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