Child and Youth Health Data Sources Project

Summary of process and findings

Technical Report
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List of Acronyms

ADS - Accident Data System
APHEO - Association of Public Health Epidemiologists in Ontario
APS - Aboriginal Peoples Survey
BMI - Body Mass Index
BORN - Better Outcomes Registry and Network
CADUMS - Canadian Alcohol and Drug Use Monitoring Survey
CAN PLAY - Canadian Physical Activity Levels Among Youth
CANSIM - Canadian Socio-Economic Information Management System
CATI - Computer-Assisted Telephone Interviewing
CAPI - Computer-Assisted Personal Interviewing
CCHS - Canadian Community Health Survey
CFLRI - Canadian Fitness and Lifestyle Research Institute
CHMS - Canadian Health Measures Survey
CIHI - Canadian Institute for Health Information
CINOT - Children in Need of Treatment
CTADS - Canadian Tobacco, Alcohol and Drugs Survey
CTUMS - Canadian Tobacco Use Monitoring Survey
CYHIR - Child and Youth Health Indicators Report
DAC - Data Analysis Coordinator
DAD - Discharge Abstract Database
DMFT - Decayed, Missing and Filled Teeth
EDI - Early Development Instrument
EDU - Ministry of Education
EOHU-YRBS - Eastern Ontario Health Unit-Youth Risk Behaviour Survey
EQAO - Education Quality Accountability Office
FNIGC - First Nations Information Governance Committee
GIS - Geographic Imaging System
GSS - General Social Survey
HBHC-ISCIS - Healthy Babies Healthy Children-Integrated Services for Children Information System
HBSC - Health Behaviour in School-aged Children
HCN - Health Card Number
HPPA - Health Protection and Promotion Act
HPV - Human Papillomavirus
HSO - Healthy Smiles Ontario
iPHIS - Integrated Public Health Information System
IRIS - Immunization Records Information System
ISPA - Immunization of School Pupils Act
IT - Information Technology
KPS - Kindergarten Parent Survey
LHIN - Local Health Integration Network
MCYS - Ministry of Children and Youth Services
MEC - Mobile Examination Centre
MOHLTC - Ministry of Health and Long-Term Care
MTO - Ministry of Transportation
NACRS - National Ambulatory Care Reporting System
OCCS - Offord Centre for Child Studies
OHISS - Oral Health Information Support System
ORG - Office of the Registrar General
OSDUHS - Ontario Student Drug Use and Health Survey
OW - Ontario Works
PAM - Physical Activity Monitor
PHAC - Public Health Agency of Canada
PHO - Public Health Ontario
PUMF - Public Use Microdata File
RDC - Research Data Centre
RDIS - Reportable Disease Information System
RHS - Regional Health Survey
SHAPES - School Health Action Planning and Evaluation System
STD - Sexually Transmitted Disease
SYC - Survey of Young Canadians
TIS - Tobacco Inspection System
YSS - Youth Smoking Survey

1. Introduction

Child and youth population health assessments are influenced by the quality and utility of the information sources. The ability to make sound assessments depends on the accuracy and representativeness of the data collected. Furthermore, the ability to conduct ongoing assessments is determined by attributes such as the continuity, timeliness and overall accessibility of the data. As stated in the report, *Measuring the health of infants, children and youth for public health in Ontario: indicators, gaps and recommendations for moving forward*, Ontario lacks a coordinated system for assessing child and youth health.[1] Such a system would be valuable for identifying priorities related to child and youth health, monitoring the effects of programs and policies, and measuring our progress towards achieving positive health outcomes. The value of a coordinated and province-wide assessment system is also highlighted in the provincial report, *Taking action to prevent chronic disease: recommendations for a healthier Ontario,* with focus on the need for data to inform program and policy planning, implementation and evaluation in order to reduce the burden of chronic diseases and related risk factors.[2] Despite the absence of an integrated system, Ontario has access to individual data sources that can provide information on younger populations within the province. These data sources, ranging from surveys to administrative data, can be used to gather information on the health status, behaviours, and risk factors related to children and youth.

1.1. Project Purpose and Objectives

The purpose of the Child and Youth Health Data Sources project is to create a useful inventory of existing data sources that measure child and youth health in Ontario. For this project, we define children as individuals aged 0 to 11 years, and youth as individuals aged 12 to 19 years, inclusive. The data sources are summarized in tables (Appendix A) and assessed for strengths and limitations across dimensions of data-source quality and utility, including coverage, sustainability and funding, and accessibility. This appraisal aligns with current discussions regarding the need for, and potential development of, an integrated population health assessment system for children and youth. The *Youth Population Health Assessment Visioning Report* recommended that a comprehensive scan of existing data sources and youth surveillance systems be undertaken to identify existing gaps and strengths.[3] Although this recommendation was created with the goal of advancing youth health, a parallel activity for children would be beneficial as well. Therefore, in addition to informing data users about child and youth health data sources that are available, information from this project can be used as a starting point for future discussions regarding the development of a combined child and youth population health assessment system.

This project has three objectives, the third of which is this current report:

1) To summarize and assess existing data sources in Ontario for child and youth health based on coverage, sustainability and funding, and accessibility.
2) To verify information in data source tables with experts.

3) To develop an accompanying summary report that documents the processes and findings of the project.

1.2. Context for Project Development

This project was derived from the Child and Youth Health Indicators Report (CYHIR) project, which resulted in the 2013 report, *Measuring the health of infants, children and youth for public health in Ontario: indicators, gaps, and recommendations for moving forward in Ontario*.[1] As a collaboration between Public Health Ontario (PHO) and other key public health and research partners, it aimed to identify gaps in the current range of infant, child, and youth health indicators and provide recommendations for advancing population health assessment of these age groups. The assessment and surveillance requirements of the *Ontario Public Health Standards* were used as the project's framework.[4] As part of the CYHIR project, a table of active and inactive data sources was created to determine the coverage of provincial child and health youth health indicators [5] in available data sources. Specifically, the table aimed to provide a summary of each included data source and identify links with provincial child and youth health indicators. The development of this table was based on earlier work documented in the Ontario Risk and Behaviour Surveillance System Project report.[6]

Recognizing that information from the CYHIR table would be a potentially valuable resource for public health practitioners, additional plans were made to complete and augment the existing work as part of a further project. Therefore, although we had separate goals and objectives, the current project builds on the existing CYHIR work by examining and assessing data sources in detail.

2. Methods

2.1. Development of Data Source Tables

Using information from the CYHIR project as a base, we formatted the data source tables to capture information on dimensions of data-source quality and utility (i.e., coverage, sustainability and funding, and accessibility). Coverage refers to the extent to which a data source is able to capture information related to child and youth health in Ontario. Sustainability and funding refers to parameters that indicate and influence the repetition of data collection over time. Accessibility refers to the ability for data users to obtain information that is useful and relevant for their purposes. Within each dimension (organized as table headings), we selected related assessment criteria (organized as table sub-headings) to guide our summaries and assessments. Table 1 provides the working definition for each criterion, which was selected through consultation of past internal work and deliberations on factors believed to influence data source quality and utility. We also conducted a review of the literature to assess the consistency of each selected criteria in relation to data source quality and utility.

Collectively, the dimensions and assessment criteria formed the summary and assessment framework for the project.

Table 1: Definitions of Table Sub-Headings (Criteria) Used in Assessing Data Sources

Table Heading (Dimension)	Table Sub-Heading (Assessment Criterion)	Definition
Overview	Purpose	The reason for which the data source was created
	Administrator	Organization(s) responsible for managing the data source
	Type of data source	Database or instrument that is used to collect and record data from the target population (e.g., survey, registry)
	Data collection method	The procedure used to administer the instrument for data collection and data-source population (e.g., computer-assisted telephone interviewing, self-administered questionnaire)
	Content	General categories of information collected
		Examples of topics that are relevant to child and youth health
		Any additional information related to the type of information collected in the data source
Coverage	Included populations	The target population included in data collection

Table Heading (Dimension)	Table Sub-Heading (Assessment Criterion)	Definition
	Excluded populations	The population excluded from data collection
	Sample size (national and provincial)	The size of the population being surveyed at the national and provincial levels. Where possible, the sample size for the most recent cycle and for the child/youth subset is reported*
	Response rate (national and provincial)	The proportion of contacted eligible people who participated in the survey †
	Type of parental consent	Method of obtaining permission from parents/guardians before collecting data from the sampling unit or on behalf of the sampling unit (proxy)
	Type of reporting	Method for providing responses (e.g., self-report, proxy-report, direct measurement)
Sustainability and Funding	Years conducted	When the data source was first implemented and/or the number of years it has been implemented (including the specific years)
	Frequency of data collection	How often information is collected and populated into the data source
	Funding	Organization(s) providing financial support for data source administration and, where possible, the duration of available funding
Accessibility	Data release and access	When data and/or information (e.g., summary reports, aggregate data or microdata) become available for use and/or analysis following the data-collection period
		General methods, if they are available , for obtaining data access for use and/or analysis
	Public health unit access	Whether or not public health units in general have access to data files for analysis and the mechanism through which this is made possible
	Examples of record linkages	Examples demonstrating the ability of a data source to be linked with other data source(s) through unique identifiers to create combined individual micro records
	Ability to purchase oversamples	The ability of an interested party (e.g., the province or a public health unit) to purchase increased samples for its jurisdiction on a cost-recovery basis

Notes:

* Certain data sources provide the number of individuals included in the sample drawn, while others provide the number of respondents

† Response-rate calculations may vary across data sources. These specific calculations are not captured.

An additional section entitled “APHEO Core Indicators Covered” was incorporated under each table to provide information on the Core Indicators, generated by the Association of Public Health Epidemiologists in Ontario (APHEO),[5] that are covered by each data source. This section was populated by cross-referencing information from the CYHIR project.

2.2. Inclusion and Exclusion Criteria

We devised a set of inclusion and exclusion criteria to identify the child and youth health data sources to be incorporated in the project. To be included, data sources must:

- include children and/or youth aged 0 to 19 years (for the purposes of this project, children are defined as individuals aged 0 to 11 years and youth are defined as individuals aged 12 to 19 years, inclusive)
- be administered in Ontario (even when provincial estimates are not available)
- address any of the following subjects, which were drawn largely from the *Ontario Public Health Standards*:[4] breastfeeding; nutrition, healthy weights, physical activity; growth and development; oral health; mental health; chronic disease and injury; immunization and infectious diseases; birth and mortality; smoking and drug use; sexual health; social well-being; positive parenting in relation to health outcomes; healthy family dynamics in relation to health outcomes; and/or healthy schools in relation to health outcomes

We excluded data sources that were:

- inactive or used as part of a one-time research study
- primarily created and used for screening purposes
- administered by an individual public health unit
- populated by other data sources

2.3. Summary and Assessment of Data Sources

We reviewed data sources according to the three dimensions of data-source quality and utility (i.e., coverage, sustainability and funding, accessibility) and assessed them on the basis of their strengths and limitations. The information used to populate the data source tables and guide the assessment was derived from informational interviews and correspondence with experts; publicly available documents such as user guides, published reports, questionnaires, and website content; as well as existing work from the CYHIR project. We reported information that was specific to Ontario, as well as children and youth when it was available, and reported general information when it was not. We did not use a formal ranking system or quantitative scoring method for our assessments. Rather, we examined each data source independently and identified key strengths and limitations that would impact its quality and utility.

2.4. Verification of Table Information

We contacted experts for each data source in order to enhance the accuracy and completeness of information in the tables. Experts were identified as experienced users of the data source, and/or individuals who are involved with its administration. These individuals were asked to verify and augment the information captured on a specific data source according to their expertise, after which the tables were revised based on their feedback. One data source (TIS) could not be verified at the end of this process, and was therefore excluded from the tables. Data source tables were populated and verified between October 2012 and October 2013.

3. Rationale for Assessment Criteria

The following sub-sections describe the importance of selected assessment criteria in relation to data source quality and utility, which was supported by a literature review (refer to Appendix C for the methodology). Overall, the results from the review confirmed the importance of each criterion, and furthermore demonstrated that the summary and assessment framework for our project shared commonalities with other existing frameworks for assessing data quality.[7-10] For example, Statistics Canada's 2002 Quality Assurance Framework outlines six dimensions of information quality to consider when determining the fitness of using information, four of which include relevance, accuracy, timeliness, and accessibility.[8]

Sample Size

Sample size, relative to the population of interest, assesses the coverage of a data source and should be reported as it is associated with the completeness of a data source. It also underlies the use and interpretation of many statistical procedures and analyses, and issues associated with sample size can impact the strength of results.[11-13]

Assuming a random sampling strategy, as sample size increases, the sampled variables are more normally distributed around the true population values of those variables. Increased sample size can often act as a buffer to the impact of sampling variability, which is reflected by increased precision.[14] Inversely, the level of precision required for reportable data also impacts the sample size; with higher levels of precision often requiring larger sample sizes. The sample size must also be appropriately adjusted according to the original population size, the estimated variance of the outcome in question, and the anticipated response rate.

Response Rate

Response rate can impact the external validity of data and can be calculated by dividing the number of usable responses returned by the total number of those selected and eligible within the sampling frame.[15] Response rate is particularly important when assessing the value of research findings because it impacts the precision of analyses and influences the representativeness of results.[14] An abundance of responses from some groups and non-responses from others can distort true values and generate statistical biases. These biases affect the validity of results, and limit the extent to which findings can be generalized.

High response rates have been linked to reduced probability of sampling errors, which have significant bearing on the quality of data provided.[16] It should be noted that response rates have been calculated in different ways across studies, with differences in the considerations made towards classifying cases in the numerator versus the denominator.[17]

Consent Type

Researchers are ethically required to seek consent when recruiting participants, particularly vulnerable populations such as children, for studies.[18] Often mentioned in descriptions of methodology or research ethics, consent type is recognized as a potential source of bias in the survey methodology. Intertwined with response rates, the type of consent used can produce sampling biases that may affect data utility.[18,19] This is particularly true for survey-generated data in child and youth health, where the individuals surveyed are younger than 18 years of age and require parental consent.

There are two main forms of consent:

1) *Passive parental consent* involves distributing a letter to the child's parent or guardian that explains the nature of the study, but does not request documented permission. Instead, it assumes consent has been granted unless documented otherwise by the parent or guardian.
2) *Active parental consent* involves distributing a letter to the parent or guardian that explains the nature of the study and requests a signed statement providing consent for the child to participate.[20,21]

While cultural shifts may currently favour the more conservative form of active consent, consent type is an ongoing discussion for the purposes of data collection. While this discussion often revolves around subject matter, particularly when involving minors and sensitive topics (e.g., tobacco, alcohol, drug use), from a data-quality perspective, the debate resides in whether certain consent types generate considerable bias and whether this bias affects data utility. Supporters of passive consent underline the need for high participation rates to avoid sampling bias. Using active consent has shown to reduce participation rates, which can bias the sample towards certain demographics or exclude groups of interest, and subsequently reduce sample representativeness.[22] The sampling bias influenced by active consent also has the potential to affect dependent variables in the survey.[21,22]

Reporting Method

The reporting method can provide insight into response biases which may affect the accuracy of the collected data. A reporting method can be subjective, objective, or both. Depending on the research purpose, the reporting method can vary and consequently affect data quality and utility. Subjective reporting includes self- or proxy-reporting, while objective reporting includes direct measurements. Although objective data are often preferred, many health-related data sources used for research are based on self-reports (e.g., health surveys).

Subjective Reporting Methods:

Self-reporting is often preferred for economic and logistical reasons [23] and can provide insight beyond direct measurement. However, self-reports risk various interpretations and are influenced by an individual's cultural and social environment, which has been shown to consistently affect data reliability.[24,25] Additionally, it can be affected by other forms of bias such as social approval or social desirability bias,[23,26] and can limit cross-regional comparisons of health data through differences in conceptualizing measures.[24] In some cases, appropriate adjustments can be made to reduce bias from self-reports.[27]

Proxy-reporting is an alternative to self-reporting in cases where the person of interest is unable to provide their own responses. In some cases though, proxy-reporting can be inconsistent and attenuate or exaggerate associations, therefore limiting the accuracy of numerical data in comparison to directly measured values. It may also under or over-estimate prevalence values; however, this may depend on the condition of interest.[28]

An example of proxy-reporting is obtaining information on children through parent-reports. The biases related to parent-reporting can be demonstrated when obtaining the heights and weights of children to assess Body Mass Index (BMI).[23,25] Parents often produce measurement biases when reporting their children's heights and weights; however, the direction of the bias varies across studies. For example, a study using data from the CHMS found that parents tend to underestimate their child's height and weight. These biases often results in BMI misclassifications and inaccurate BMI class prevalence calculations.[25]

Objective Reporting Method:

Direct measurement normally provides more accurate and better quality data [25] and can reduce reporting-associated biases and measurement errors by improving the accuracy and reliability of some measures. Although correction equations are available in some instances to address biases and errors associated with self- and proxy-reporting, the reductions in misclassification errors have been modest. Some studies question the feasibility of solely using direct measurement, especially within certain research contexts.[29,30] It is suggested that direct measurements be reported in tandem with self- or proxy-reports to provide a more comprehensive understanding of the research topic.[31] However, for economic and logistical reasons, this is not always possible.

Sustainability

With increased research and policy interest in chronic disease prevention, data source sustainability has become an important consideration for chronic disease surveillance frameworks worldwide.[32-34] The sustainability of a data source influences data quality and utility, and can be broken down into the following interrelated components; frequency, funding stability, and continuity:

Frequency refers to the regularity of collecting and reporting data. Although no standards exist for how often to collect data, it is an important consideration from a data utility perspective. Depending on the survey's indicators of interest and funding stability, the frequency of data collection can vary (e.g., periodically, yearly, every two years). Population-based surveys that are regularly repeated are more likely to be used for trend analysis.[34] The frequency of data collection also influences how current data are, which can affect policy or program-related actions.[35]

Funding stability allows a data source to be conducted, maintained, and potentially improved. Data sources with stable funding, such as government-funded surveillance systems, can promote continuous and frequent data collection. This enables timely administration of surveys, which in turn provides greater potential for both trend analyses and policy-relevant decision making.[11,32]

Continuity refers to whether or not a data source is ongoing. Continuity can impact the ability to analyze trends across time and is dependent on many factors, including funding stability. Regardless of the data source, if funding is stable, the data source is more likely to provide more regular output. Ongoing data collection has the potential to contribute to trend analyses, as well as inform policy development, planning, and evaluation.[11,33]

Access

Access is defined as the ease with which data can be obtained.[7,8] The following are often cited characteristics of data access that can influence a data source's degree of utility.

Data Release:

Data release is the time between when data are collected and when information is released, and influences the timeliness and relevancy of a data source. This is particularly important for health policies, and program evaluations and actions. Ideally, the time in between should be minimal in order to ensure the data are current and relevant.[7-10,32,36]

Facilitators and Barriers of Data Access:

Data accessibility refers to how easy it is for users to obtain or receive data of interest from a source. The ability to access a data source or the level of access available can be influenced by a combination of facilitators and barriers.[37] These can be grouped into policies, procedures and data-sharing methodology.

Policies (government and organization) can include information-sharing agreements/programs, access fees, principles and guidelines on database management, privacy concerns, as well as safety and security measures.[38-41] For example, for an annual subscription fee, the Statistics Canada's Data Liberation Initiative program improves members' access to data resources at Canadian post-secondary institutions. Agreements, guidelines and security measures on data access can influence what is available or restricted, and consequently affect the level of data utility. Currently, existing policies on data access lack consensus due to the heterogeneity of health research.

Procedures can encompass processes for publicizing what data are available to users, requesting data, authorizing access, and obtaining ethical approval.[42] Formalities and procedures may make it more difficult to access a database and in turn limit how much information is used.

Data-sharing methodology includes the form or medium through which data are made available. This can include the release of aggregated versus disaggregated/record-level research data, the availability of data file documentation, and whether or not data are provided in a standardized format.[7,8,42] The way in which data are shared can affect its utility. For example, standardized data may make it easier for users to transfer information.

Record Linkage:

Record linkage is the ability to link data sources through unique identifiers. It enables health researchers to enhance a dataset by obtaining more information from a complementary dataset (e.g., age, gender, socioeconomic status).[43-45] In turn, this can help them validate information in order to reduce reporting-related biases, assess the quality of data files generated, and monitor health program and system performance.[33,46,47]

Record linkage also allows topics that are outside of the intended scope of the data source to be explored.[47-49] This can help facilitate research on topics involving multiple sectors (e.g., obesity), and can enhance the ability to assess quality and equity within healthcare and population health research.[50,51]

Oversampling:

The ability to purchase oversamples from a survey allows researchers to increase sample sizes to adequate levels, especially when studying subpopulations (e.g., at the local level, ethnic minorities).[52-55] Oversampling small or sensitive groups provides necessary estimates of variability within small groups, which is important for data utility. However, oversampling may introduce bias unless appropriate complex sampling analyses are undertaken.[56,57] Generally, if appropriately analysed, oversampling can contribute to a greater understanding of health associations and can influence the development of specific and equitable health programs.[58]

4. Included Data Sources

We obtained an initial list of data sources from the CYHIR project as well as from other past internal work. Our initial list included 45 data sources and after applying the inclusion and exclusion criteria, 27 data sources were included in the project. Data sources that were considered, but that did not meet the inclusion criteria, are listed in Appendix D.

The following data sources were included in the project:

- Aboriginal Peoples Survey (APS)
- Accident Data System (ADS)
- Better Outcomes Registry and Network (BORN) Ontario Information System
- Canadian Alcohol and Drug Use Monitoring Survey (CADUMS)
- Canadian Community Health Survey (CCHS)
- Canadian Health Measures Survey (CHMS)
- Canadian Physical Activity Levels Among Youth Survey (CAN PLAY)
- Canadian Tobacco Use Monitoring Survey (CTUMS)
- Discharge Abstract Database (DAD)
- Early Development Instrument (EDI)
- Eastern Ontario Health Unit-Youth Risk Behaviour Survey (EOHU-YRBS)
- General Social Survey (GSS)
- Health Behaviour in School-aged Children (HBSC)
- Healthy Babies Healthy Children-Integrated Services for Children Information System (HBHC-ISCIS)
- Immunization Records Information System (IRIS)
- Integrated Public Health Information System (iPHIS)
- Kindergarten Parent Survey (KPS)
- National Ambulatory Care Reporting System (NACRS)
- Ontario Student Drug Use and Health Survey (OSDUHS)
- Oral Health Information Support System (OHISS)
- Physical Activity Monitor (PAM)
- Regional Health Survey (RHS)
- School Health Action Planning and Evaluation System (SHAPES)
- Survey of Young Canadians (SYC)
- Tobacco Inspection System (TIS)
- Vital Statistics (Live Births, Stillbirths, Mortality data)
- Youth Smoking Survey (YSS)

When applying the exclusion criteria, an exception was made for the Eastern Ontario Health Unit-Youth Risk Behaviour Survey (EOHU-YRBS). The Eastern Ontario Health Unit uses the YRBS to assess health-risk behaviours and practises of adolescents in its region. Although the EOHU-YRBS is administered by a single public health unit, this data source was considered promising as it explores a wide range of adolescent behaviours, and is further modelled on a national school-based survey in the United States with the same name.[59]

Additionally, both CADUMS and CTUMS were retained in the project despite being replaced in 2013 with a new Health Canada survey entitled the Canadian Tobacco, Alcohol and Drugs Survey (CTADS). CADUMS and CTUMS were Statistics Canada surveys that gathered information about the use of alcohol, drugs, and/or other substances.[60] Statistics Canada's Survey of Young Canadians was also retained in the project despite currently being inactive. These data sources were retained as the status change occurred midway through the project and the information was still considered to be useful for comparison purposes.

4. Discussion

4.1. Main Findings

The data sources in this project cover a range of topics including, for example, physical activity, injuries, immunizations, and alcohol and drug use. As demonstrated in the tables, each data source varies in terms of its strengths and limitations across the three dimensions of data-source quality and utility: coverage, sustainability and funding, and accessibility. With respect to coverage, most data sources target a specific age range within our working definition of children and youth (i.e., ages 0 to 11 and 12 to 19, respectively). However, none span the full child and youth age spectrum. Among surveys, the type of reporting varies. Proxy-reporting is generally used when collecting data from younger populations or when the individual is unable to respond for either physical or mental reasons. Furthermore, approximately half of the surveys can provide stable estimates for children and/or youth in Ontario, and this was classified as a strength given the provincial context of this project. However, stable estimates are provided for different age groups across data sources.

Under the sustainability dimension, we found that data sources are typically funded by provincial and/or federal governments, with the frequency of data collection varying between continuous to every five years. Additionally, most data sources can be used for trend analyses; however, some should be analyzed with caution due to changes in methodology across cycles.

The ability of data users to access data files depends on the data source. In some cases, potential users can make a formal request to the administrator which is typically on a cost-recovery basis. Some data sources can also be accessed through Statistics Canada's Research Data Centres (RDCs) program or as anonymized public use microdata files (PUMFs). In other cases, data files are not available for external users or they are available only to certain populations. Several data sources can be used for record linkage purposes, and others are exploring this possibility. For example, data from HBSC has been linked with GIS data to examine neighbourhood characteristics of schools within their sample. Additionally, more than half of the surveys included indicate the possibility of purchasing oversamples. Interested parties would have to inquire further with the data source administrator, along with complying with any data access procedures.

4.2. Summary and Next Steps

Data sources are an important resource for assessing the health and well-being of children and youth. However, it is important to consider the quality and utility of these data sources to ensure that the information generated is accurate and representative of the target population. This project aimed to generate an inventory of data sources that could provide information on the health of children and youth in Ontario. With this in mind, we used specific processes to achieve optimal results when generating this inventory. In particular, we reviewed the literature to support our selection of the project's assessment criteria. Findings from the literature review confirmed the importance of each criterion in relation to data-source quality and/or utility, and demonstrated shared commonalities with other frameworks developed for assessing data quality. Thus, we are confident that the criteria selected were appropriate and suitable to form the basis of our project framework.

The included data sources, ranging in types and topic areas, were assessed for strengths and limitations across the three dimensions of coverage, sustainability and funding, and accessibility. The captured information was further verified and augmented by key experts to enhance its accuracy and comprehensiveness. This was a particularly important step as it allowed us to access information that was not uniformly available publicly, and furthermore, it provided additional perspectives into the appraisal of each data source to enable a more inclusive and fair assessment.

While it is clear that gaps currently exist, our assessments indicate existing strengths among available data sources that can be built upon to help advance systematic child and youth health status monitoring. Furthermore, information from this project has diverse applications for the field. It can provide groundwork to foster discussions for planning and developing a child and youth health assessment system, help to generate health status reports, and provide information for those interested in using data from the respective sources. However, as information constantly evolves, it is important to continuously update the current inventory to ensure that the information on data sources remains relevant and useful. The project team and other partners will need to explore the future directions of this project and its overall sustainability. This project can be seen as a key first step towards developing a coordinated population health assessment system for children and youth in Ontario.

References

1. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Measuring the health of infants, children and youth for public health in Ontario: indicators, gaps, and recommendations for moving forward. Toronto, ON: Queen's Printer for Ontario; 2013. Available from: www.publichealthontario.ca/en/eRepository/Measuring_Health_Infants_Children_2013.pdf

2. Cancer Care Ontario; Ontario Agency for Health Protection and Promotion (Public Health Ontario). Taking action to prevent chronic disease: recommendations for a healthier Ontario. Toronto, ON: Queen's Printer for Ontario; 2012. Available from: http://www.publichealthontario.ca/en/eRepository/takingactionreport%20Mar%2015-12.pdf

3. Ontario Agency for Health Protection and Promotion (Public Health Ontario); Propel Centre for Population Health Impact. Youth population health assessment visioning: recommendations and next steps [Internet]. Toronto, ON: Queen's Printer for Ontario; 2013 [cited 2015 Apr 9]. Available from: http://www.publichealthontario.ca/en/eRepository/Youth_Population_Health_Assessment_Visioning_2013.pdf

4. Ontario. Ministry of Health and Long-Term Care. Ontario public health standards, 2008. Revised May 1, 2014 [Internet]. Toronto, ON: Queen's Printer for Ontario; 2014 [cited 2015 Apr 9]. Available from: http://www.health.gov.on.ca/en/pro/programs/publichealth/oph_standards/docs/ophs_2008.pdf

5. Association of Public Health Epidemiologists in Ontario. Core indicators for public health in Ontario [Internet]. Toronto, ON: APHEO; c2011 [cited 2013 Sept 1]. Available from: http://www.apheo.ca/index.php?pid=48

6. Ontario Risk and Behaviour Surveillance System Advisory Committee; Ontario Agency for Health Protection and Promotion (Public Health Ontario). Moving risk and behaviour surveillance forward in Ontario: a proposal and recommendations. Toronto, ON: Queen's Printer for Ontario; 2011. Available from: http://www.publichealthontario.ca/en/eRepository/Moving%20Risk%20and%20Behaviour%20Surveillance%20Forward%20in%20Ontario-%20ORBSS%20May%2030,2011.pdf

7. Canadian Institute for Health Information. CIHI data quality framework. Ottawa, ON: CIHI; 2009. Available from: http://www.cihi.ca/CIHI-ext-portal/pdf/internet/data_quality_framework_2009_en

8. Statistics Canada. Statistics Canada's quality assurance framework. Ottawa, ON: Minister of Industry; 2002. Available from: http://www.statcan.gc.ca/pub/12-586-x/12-586-x2002001-eng.pdf

9. Iron K, Manuel DG. Quality assessment of administrative data (QuAAD): an opportunity for enhancing Ontario's health data. ICES Investigative Report [Internet]. Toronto, ON: Institute for Clinical Evaluative

Sciences; 2007 [cited 2015 Apr 9]. Available from: http://www.ices.on.ca/~/media/Files/Atlases-Reports/2007/Quality-assessment-of-administrative-data/Full%20report.ashx

10. Public Health Agency of Canada. PHAC data quality framework. Ottawa, ON: Her Majesty the Queen in Right of Canada; n.d.

11. Pearce A, Jenkins R, Kirk C, Law C. An evaluation of UK secondary data sources for the study of childhood obesity, physical activity and diet. Child Care Health Dev. 2008;34(6):701-9.

12. Lumley T Diehr P, Emerson S, Chen L. The importance of the normality assumption in large public health data sets. Annu Rev Public Health. 2002;23:151-69.

13. Lwanga SK, Lemeshow S. Sample size determination in health studies: a practical manual. Geneva: World Health Organization; 1991. Available from: http://apps.who.int/iris/bitstream/10665/40062/1/9241544058_%28p1-p22%29.pdf?ua=1

14. Statistics Canada. Survey methods and practices. Ottawa, ON: Minister of Industry; 2010. Available from: http://www.statcan.gc.ca/pub/12-587-x/12-587-x2003001-eng.pdf

15. Fincham JE. Response rates and responsiveness for surveys, standards, and the Journal. Am J Pharm Educ. 2008;72(2):43. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2384218/pdf/ajpe43.pdf

16. Baruch Y, Holtom BC. Survey response rate levels and trends in organizational research. Human Relat. 2008;61(8):1139-60.

17. Galea S, Tracy M. Participation rates in epidemiologic studies. Ann Epidemiol. 2007;17(9):643-53.

18. Jelsma J, Burgess T, Henley L. Does the requirement of getting active consent from parents in school-based research result in a biased sample? An empirical study. J Empir Res Hum Res. 2012;7(5):56-62.

19. White VM, Hill DJ, Effendi Y. How does active parental consent influence the findings of drug-use surveys in schools? Eval Rev. 2004;28(3):246-60.

20. Stein BD, Jaycox LH, Langley A, Kataoka SH, Wilkins WS, Wong M. Active parental consent for a school-based community violence screening: comparing distribution methods. J Sch Health. 2007;77(3):116-20.

21. Pokorny SB, Jason LA, Schoeny ME, Townsend SM, Curie CJ. Do participation rates change when active consent procedures replace passive consent. Eval Rev. 2001;25(5):567-80.

22. Mellor JM, Rapoport RB, Maliniak D. The impact of child obesity on active parental consent in school-based survey research on healthy eating and physical activity. Eval Rev. 2008;32(3):298-312.

23. Himes JH. Challenges of accurately measuring and using BMI and other indicators of obesity in children. Pediatrics. 2009;124 Suppl 1:S3-22. Available from: http://pediatrics.aappublications.org/content/124/Supplement_1/S3.full.pdf+html

24. Ahn N. Assessing self-assessed health data [Internet]. Madrid: Fundación de Estudios de Economía Aplicada (FEDEA); 2003[cited 2015 Apr 10]. Available from: http://documentos.fedea.net/pubs/dt/2002/dt-2002-24.pdf

25. Shields M, Gorber SC, Janssen I, Tremblay MS. Obesity estimates for children based on parent-reported versus direct measures. Health Rep. 2011;22(3):47-58. Available from: http://www.statcan.gc.ca/pub/82-003-x/2011003/article/11534-eng.pdf

26. Miller TM, Abdel-Maksoud MF, Crane LA, Marcus AC, Byers TE. Effects of social approval bias on self-reported fruit and vegetable consumption: a randomized controlled trial. Nutr J. 2008;7:18. Available from: http://www.nutritionj.com/content/7/1/18

27. Ainsworth BE, Caspersen CJ, Matthews CE, Masse LC, Baranowski T, Zhu W. Recommendations to improve the accuracy of estimates of physical activity derived from self report. J Phys Act Health;2012;9 Suppl 1:S76-84. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3544158/pdf/nihms425294.pdf

28. Shields M. Proxy reporting of health information. Health Rep. 2004;15(3):21-33. Available from: http://www.statcan.gc.ca/pub/82-003-x/2003003/article/6847-eng.pdf

29. Van Cauwenberghe E, Gubbels J, De Bourdeaudhuij I, Cardon G. Feasibility and validity of accelerometer measurements to assess physical activity in toddlers. Int J Behav Nutr Phys Act. 2011;8:67. Available from: http://www.ijbnpa.org/content/8/1/67

30. Bexelius C, Sandin S, Lagerros YT, Litton J, Löf M. Estimation of physical activity levels using cell phone questionnaires: a comparison with accelerometry for evaluation of between-subject and within-subject variations. J Med Internet Res. 2011;13(3):e70. Available from: http://www.jmir.org/2011/3/e70/

31. Colley RC, Wong SL, Garriguet D, Janssen I, Gorber SC, Tremblay MS. Physical activity, sedentary behaviour and sleep in Canadian children: parent-report versus direct measures and relative associations with health risk. Health Rep. 2012;23(2):45-52. Available from: http://www.statcan.gc.ca/pub/82-003-x/2012002/article/11648-eng.pdf

32. Advisory Committee on Population Health and Health Security Surveillance Systems for Chronic Disease Risk Factors Task Group. Enhancing capacity for surveillance of chronic disease risk factors and determinants. Ottawa, ON: Her Majesty the Queen in Right of Canada, represented by the Minister of Health; 2005. Available from: http://publications.gc.ca/collections/collection_2009/aspc-phac/HP5-11-2005E.pdf

33. Department of Health, Public Health England Transition Team. Public health surveillance: towards a public health surveillance strategy for England [Internet]. London, UK: Crown copyright; 2012 [cited 2015 Apr 10]. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/213339/Towards-a-Public-Health-Surveillance-Strategy.pdf

34. Nsubuga P, White ME, Thacker SB, Anderson MA, Blount SB, Broome CV, et al. Public health surveillance: a tool for targeting and monitoring interventions. In: Jamison DT, Breman JG, Measham AR, Alleyne G, Claeson M, Evans DB, et al., editors. Disease control priorities in developing countries. 2nd ed. Washington, DC: Oxford University Press; 2006. p. 997.

35. Buehler JW; Centers for Disease Control and Prevention. CDC's vision for public health surveillance in the 21st century. MMWR Morb Mortal Wkly Rep. 2012;61 Suppl:S1-40. Available from: http://www.cdc.gov/mmwr/pdf/other/su6103.pdf

36. Office for National Statistics. Guidelines for measuring statistical output quality. Version 4.1 [Internet]. London, UK: Crown copyright; 2013 [cited 2015 Apr 10]. Available from: http://www.ons.gov.uk/ons/guide-method/method-quality/quality/guidelines-for-measuring-statistical-quality/guidelines-for-measuring-statistical-output-quality.pdf

37. Rani M, Buckley BS. Systematic archiving and access to health research data: rationale, current status and way forward. Bull World Health Organ. 2012;90(12):932-9. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3524959/pdf/BLT.12.105908.pdf

38. Cavoukian A, Alvarez RC. Embedding privacy into the design of EHRs to enable multiple funcitonalities: win/win [Internet]. Toronto, ON: Information and Privacy Commissioner of Ontario; 2012 [cited 2015 Apr 10]. Available from: https://www.ipc.on.ca/images/Resources/pbd-ehr-e_1.pdf

39. Sawatsky E. Information sharing agreements for disclosure of EHR data within Canada [Internet]. Toronto, ON: Information and Privacy Commissioner of Ontario; 2012 [cited 2015 Apr 10]. Available from: https://www.infoway-inforoute.ca/index.php/component/docman/doc_download/620-information-sharing-agreements-for-disclosure-of-ehr-data-within-canada.

40. Organisation for Economic Co-operation and Development. OECD principles and guidelines for access to research data from public funding [Internet]. Paris, FR: OECD; 2007 [cited 2015 Apr 10]. Available from: http://www.oecd.org/sti/sci-tech/38500813.pdf

41. Walport M, Brest P. Sharing research data to improve public health. Lancet. 2011;377(9765):537-9.

42. British Columbia Centre for Disease Control. About BCCDC: data access requests [Internet]. Vancouver, BC: BCCDC; c2013[cited 2013 Mar 15]. Available from: http://www.bccdc.ca/util/about/DataAccessRequests/default.htm?WBCMODE=presentationunpublished

43. Kinnear H, Rosato M, Mairs A, Hall C, O'Reilly D. The low uptake of breast screening in cities is a major public health issue and may be due to organisational factors: a census-based record linkage study. Breast. 2011;20(5):460-3.

44. Thompson SC, Woods JA, Katzenellenbogen JM. The quality of Indigenous identification in administrative health data in Australia: insights from studies using data linkage. BMC Med Inform Decis Mak. 2012;12:133. Available from: http://www.biomedcentral.com/1472-6947/12/133

45. Slack-Smith L. How population-level data linkage might impact on dental research. Community Dent Oral Epidemiol. 2012;40(Suppl 2):90-4.

46. Goldsbury DE, Smith DP, Armstrong BK, O'Connell DL. Using linked routinely collected health data to describe prostate cancer treatment in New South Wales, Australia: a validation study. BMC Health Serv Res. 2011;11:253. Available from: http://www.biomedcentral.com/1472-6963/11/253

47. Jutte DP, Roos LL, Brownell MD. Administrative record linkage as a tool for public health research. Annu Rev Public Health. 2011;32:91-108.

48. Rotermann M. Evaluation of the coverage of linked Canadian Community Health Survey and hospital inpatient records. Health Rep. 2009;20(1):45-51. Available from: http://www.statcan.gc.ca/pub/82-003-x/2009001/article/10773-eng.pdf

49. Holman CD, Bass JA, Rosman DL, Smith MB, Semmens JB, Glasson EJ, et al. A decade of data linkage in Western Australia: strategic design, applications and benefits of the WA data linkage system. Aust Health Rev. 2008;32(4):766-77.

50. Roos LL, Brownell M, Lix L, Roos NP, Walld R, MacWilliam, L. From health research to social research: privacy, methods, approaches. Soc Sci Med. 2008;66(1):117-29.

51. Hall SE, Holman CD, Finn J, Semmens JB. Improving the evidence base for promoting quality and equity of surgical care using population-based linkage of administrative health records. Int J Qual Health Care. 2005;17(5):415-20.

52. Blackburn C, Read J, Spencer N. Can we count them? Scoping data sources on disabled children and their households in the UK. Child Care Health Dev. 2007;33(3):291-5.

53. Alder SC. Monitoring the health of populations: statistical principles and methods for public health surveillance. Am J Epidemiol. 2005;161(2):205.

54. Kalton G. Methods for oversampling rare subpopulations in social surveys. Surv Methodol. 2009;35(2):125-41. Available from: http://www.statcan.gc.ca/pub/12-001-x/2009002/article/11036-eng.pdf

55. Cochran SD, Grella CE, Mays VM. Do substance use norms and perceived drug availability mediate sexual orientation differences in patterns of substance use? Results from the California Quality of Life Survey II. J Stud Alcohol Drugs. 2012;73(4):675-85. Available from: http://www.jsad.com/doi/10.15288/jsad.2012.73.675

56. Saylor J, Friedmann E, Lee HJ. Navigating complex sample analysis using national survey data. Nurs Res. 2012;61(3):231-7.

57. Reeder A, Jospon J. Gray A. Sun protection policies and practice in New Zealand primary schools. NZ Med J. 2012;125(1349):70-82.

58. Berg CJ, Kirch M, Hooper MW, McAlpine D, An LC, Boudreaux M, et al. Ethnic group differences in the relationship between depressive symptoms and smoking. Ethn Health. 2012;17(1-2):55-69.

59. Eastern Ontario Health Unit. Youth risk behaviour survey: an analysis of risk behaviours among youth in Eastern Ontario [Internet]. Cornwall, ON: EOHU; 2011 [cited 2015 Apr 10]. Available from: http://www.eohu.ca/_files/reports/YRBS_2011_cond_e.pdf

60. Statistics Canada. Canadian Tobacco, Alcohol and Drugs Survey (CTADS) [Internet]. Ottawa, ON: Statistics Canada; 2013[cited 2013 Mar 12]. Available from: http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=4440

Appendix A: Data Source Tables

Table A.1: Aboriginal Peoples Survey (APS)

	Overview	Coverage	Sustainability and Funding	Accessibility
	Purpose To provide information on the social and economic conditions of Aboriginal people in Canada–focusing on issues such as health, language, employment, income, schooling, housing, band mobility The focus of the 2012 survey was on education, employment and health **Administrator** Statistics Canada **Type of data source** Post-censal sample survey with cross-sectional design (2012 APS was selected from respondents to the National Household Survey as opposed to respondents to the long-form census) **Data collection method** Began using computer-assisted interviewing methods in 2012: 1) Computer-assisted telephone interviewing (CATI) 2) Computer-assisted personal interviewing (CAPI)	**Included populations** Population varies across survey cycles The 2012 APS target population was the Aboriginal identity population aged 6 and over living in Canada. This population consisted of individuals who self-reported as Aboriginal People (First Nations, Métis, Inuit) or who reported being Status Indians (Registered or Treaty Indian) or who reported being members of a First Nation or Indian Band **Excluded populations** Population varies across survey cycles In 2012, excluded were individuals living on a reserve in the ten provinces, individuals living in specific First Nations communities in territories and individuals living in collective dwellings **Sample size** National: 38,145 respondents in	**Years conducted** Survey conducted in 1991, 2001, 2006 and 2012 **Frequency of data collection** Every five years **Funding** Cycles consistently funded by government departments but with some variation for each one In 2012, funded by Aboriginal Affairs and Northern Development Canada, Health Canada, and Human Resources and Skills Development Canada	**Data release and access** Aggregate data and public use microdata files (PUMFs) available online through Statistics Canada Information that is not available in PUMFs can be obtained through custom-tabulation requests on a cost-recovery basis, or through access to master files through Research Data Centres or the Remote Access Program **Public health unit access** Information not available **Examples of record linkages** Information not available **Ability to purchase oversamples** Yes. Groups interested in purchasing oversamples may be accommodated

Table A.1: Aboriginal Peoples Survey (APS)

	Overview	Coverage	Sustainability and Funding	Accessibility
	Prior to 2012, used paper-and-pencil questionnaires **Content** 2012 APS was designed to be thematic, but based on content from previous cycles Examples of survey topics (based on 2012 survey): • Household information • Education • Labour/work/employment • Height and weight • General health • Chronic conditions • Injuries • Mental health • Distress • Smoking • Alcohol use • Drug use • Food security • Community support • Housing	2012 Ontario: 6,293 respondents in 2012 (2,547 respondents aged 6-19) **Response rate** National: 76% response rate in 2012 Ontario: 76% response rate in 2012 (80% response rate for individuals aged 6–19) **Type of parental consent** Active parental consent for individuals aged 17 and under **Type of reporting** Proxy-reported (parent) for individuals aged 6–14 Self-reported for individuals aged 15–17 (given parental/guardian consent)		
Strengths	Addresses information gaps on a priority population Developed in collaboration with national Aboriginal organizations and individuals	Able to provide stable provincial estimates for children and youth in Ontario	Past and continued data collection can provide information for trend analysis. However, should analyze with caution as coverage has varied from cycle to cycle and a major change in methodology occurred between 1991 and 2001 cycles, thus severely restricting data	Able to obtain oversamples

Table A.1: Aboriginal Peoples Survey (APS)

	Overview	Coverage	Sustainability and Funding	Accessibility
			comparability with 1991 data	
Limitations		Variations in included/excluded populations over cycles Use of strictly proxy-reporting for individuals aged 6–14	Data collection occurs every five years	
Verified as of: April 2013				
Data source expert(s): Karen Kelly-Scott, *Analyst*, Social and Aboriginal Statistics Division, Statistics Canada Éric Langlet, *Senior Methodologist*, Social Survey Methods, Statistics Canada				

APHEO Core Indicators Covered

- Aboriginal population
- Adolescent body mass index
- Heavy drinking episodes
- Population by age and sex
- Single-parent families
- Smoking status

Sources:

(1) Ontario Agency for Health Protection and Promotion (Public Health Ontario). Measuring the health of infants, children and youth for public health in Ontario: indicators, gaps, and recommendations for moving forward. Toronto, ON: Queen's Printer for Ontario; 2012 [cited 2012 Dec 15]. Available from: http://www.publichealthontario.ca/en/eRepository/Measuring_Health_Infants_Children_2013.pdf.

(2) Statistics Canada. Aboriginal Peoples Survey (APS) [Internet]. Ottawa, ON: Statistics Canada; 2012 [cited 2012 Oct 1]. Available from: http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=3250&lang=en&db=imdb&adm=8&dis=2.

Table A.2: Accident Data System (ADS)

	Overview	Coverage	Sustainability and Funding	Accessibility
	Purpose To collect information on all reportable motor vehicle collisions so that the data can be used to support policy and program analysis, road safety research and promotion, and marketing and performance measurement **Administrator** Ontario Ministry of Transportation (MTO) Road Safety Policy Office–Vehicles **Type of data source** Administrative database **Data collection method** Information obtained from motor vehicle accident reports completed by police officers or staff at a Collision Reporting Centre (i.e., primary data). Reports sent to administrator for coding into the ADS Secondary data received annually from multiple sources including the Ministry of Community Safety and Correctional Services–Office of the Chief Coroner, Ministry of the Attorney General, Ministry of Health and Long-Term Care (MOHLTC) and the Ontario	**Included populations** All individuals in the province involved in reportable motor vehicle collisions requiring police report **Excluded populations** Not applicable **Sample size** Not applicable **Response rate** Not applicable **Type of parental consent** Not applicable **Type of reporting** Not applicable	**Years conducted** Data collected in the ADS since its establishment in 1957. System was updated in 1988 **Frequency of data collection** Ongoing data collection **Funding provider** Provincial government	**Data release and access** Data are available within a year of the accident Aggregate data can be accessed via annual summary reports on the MTO website Raw data files may be accessed through submission of a request to the MTO under the *Freedom of Information Act* **Public health unit access** Access to data files may similarly be granted following submission of request to the MTO Public health unit requesting access may have to sign a legal agreement with Road Use Safety Division before access is granted **Examples of record linkages** The unique Driver Identification Number for each collision case can be linked with the MTO's drivers' database The ADS does not link with external databases **Ability to purchase oversamples** Not applicable

Table A.2: Accident Data System (ADS)

	Overview	Coverage	Sustainability and Funding	Accessibility
	Ministry of Education (EDU) **Content** Collision data provided geographically by place of occurrence, not by residence of driver or injured person Collision-related fatalities within 30 days of collision are collected and reviewed within 30 days of the collision with the Chief Coroner's Office, and updated in database Database does not contain personal identifying information. Three groupings of files collected and linked by a common Driver Identification Number: • Collision information (e.g., location, number of vehicles involved, road conditions) • Driver/vehicle information (e.g., driver's age and condition, vehicle type) • Persons involved if collision results in injury (e.g., age, sex, position in vehicle) Data from the Office of the Chief Coroner provide greater detail about the condition of drivers and pedestrians killed in motor vehicle collisions–whether the			

Table A.2: Accident Data System (ADS)

	Overview	Coverage	Sustainability and Funding	Accessibility
	individual was impaired by drugs, alcohol or some other condition (i.e., fatigue, medical/physical disability) Data from the Ministry of the Attorney General includes the number of motor-vehicle-related convictions and suspensions in Ontario Data from the MOHLTC includes the number of hospital admissions and days stayed for various motor vehicle collision injuries as well as hospital admissions and days stayed for selected surgical procedures related to motor-vehicle collision injuries Data from the EDU includes the number of pupils transported daily during the school year			
Strengths		Database captures all reportable motor vehicle collision data in Ontario	Stable government funding Past and continued data collection can provide information for trend analysis	Timely release of data for analysis
Limitations	The ADS does not contain information on the condition of passengers killed in motor vehicle crashes (e.g., person died as a result of medical condition)			
Verified as of: March 2013				

Table A.2: Accident Data System (ADS)

	Overview	Coverage	Sustainability and Funding	Accessibility
Data source expert(s): Road Safety Policy Office – Vehicles, Ministry of Transportation				

APHEO Core Indicators Covered

- Motor vehicle traffic collision injuries
- Population by age and sex

Sources:
(1) Ontario Agency for Health Protection and Promotion (Public Health Ontario). Measuring the health of infants, children and youth for public health in Ontario: indicators, gaps, and recommendations for moving forward. Toronto, ON: Queen's Printer for Ontario; 2012 [cited 2013 Dec 15]. Available from: http://www.publichealthontario.ca/en/eRepository/Measuring_Health_Infants_Children_2013.pdf.
(2) Ontario Population Health Index of Databases. Accident Database System (ADS) [Internet]. Ottawa, ON: Ontario Council of University Libraries and Population Health Improvement Research Network; c2015 [cited 2015 Apr 10]. Available from: http://ophid.scholarsportal.info/details/view.html?q=do&uri=/phirn/motcd_PHIRN_E.xml.
(3) Public Health Agency of Canada, Centre for Surveillance Coordination. Inventory of injury data sources and surveillance activities. Ottawa, ON: Her Majesty the Queen in Right of Canada; 2005 [cited 2012 Dec 1]. Available from: http://publications.gc.ca/collections/collection_2008/phac-aspc/H121-3-2005E.pdf.

Table A.3: Better Outcomes Registry and Network (BORN) Ontario Information System

	Overview	Coverage	Sustainability and Funding	Accessibility
	Purpose To collect information related to maternal and child health in order to facilitate and improve care for mothers and children; be an authoritative source of accurate, trusted and timely information; and mobilize information and expertise to optimize care for mothers and children **Administrator** BORN Ontario (under the auspices of The Children's Hospital of Eastern Ontario) **Type of data source** Registry **Data collection method** Data populated into information system through several mechanisms including manual data entry, automated extraction, and uploads from health record systems, where available Data collected from: • Prenatal screening laboratories • Hospital obstetrical units and Neonatal intensive care units • Midwifery practice groups • Specialized antenatal clinics	**Included populations** All hospital and home births, newborn and prenatal screening tests, and in vitro fertilization cycles in Ontario Currently undergoing pilot projects with other data sources to further integrate children into the information system. BORN plans to grow with the children in the system **Excluded populations** Not applicable **Sample size** Not applicable **Response rate** Not applicable **Type of parental consent** Not applicable **Type of reporting** Not applicable	**Years conducted** BORN Information System launched in 2012. Data collected since mid-1990s under different systems **Frequency of data collection** Near real-time and ongoing data collection– data collected per encounter between patient and health care services across the continuum of maternal, newborn and perinatal care Maternal encounters include: • Prenatal screening and follow-up • Antenatal care (antenatal general and antenatal specialty) • Labour • Birth mother • Postpartum mother Infant encounters include: • Birth child • Post-partum child • Newborn screening • Neonatal intensive care units/Special care nursery **Funding provider** Ministry of Health and Long-Term Care	**Data release and access** The database reporting system comprises three components: dashboards (for key performance indicators), standard reports (predefined reports for analysis of key information), and analytic reports (for creating customized queries for in-depth analysis) All groups providing data to the system have access to reporting modules where they can see their own population compared to other same level of care organizations, similar volume institutions and the province as a whole. Groups also have access to a large array of administrative reports that help them see their data quality and any related issues. Access to inputted data is available on a daily basis; however, there is a one day lag for data in clinical reports Aggregate and record-level data can be obtained through contact with the BORN Ontario Data Request/Research Coordinator or through submission of a data request form on a cost-recovery basis. For research purposes, BORN operates by fiscal year and only releases data after the year is closed and the data are validated. Currently, BORN data

Table A.3: Better Outcomes Registry and Network (BORN) Ontario Information System

	Overview	Coverage	Sustainability and Funding	Accessibility
	• Newborn screening laboratory • Prenatal screening and newborn screening follow-up clinics • Fertility clinics **Content** BORN Information System historically grew from five previously separate maternal and infant-related databases. The current integrated system provides a comprehensive dataset to help monitor, evaluate and plan maternal, child and youth health services across the provincial health-care system List and description of data elements captured in the BORN Information System can found be in the Data Dictionary on the BORN website			are available up until March 2012 (Fiscal year 2011) BORN differentiates between access for administrative and research purposes Provincial, LHIN regional, public health unit summary and special reports available on BORN website **Public health unit access** Public health unit access is currently being developed–will have access to standardized reports and a query/analytic function depending on their level of data privacy and security. Reports are currently in production **Examples of record linkages** Studies underway that examine the feasibility of linking BORN data to the Early Development Instrument and EQAO assessment scores **Ability to purchase oversamples** Not applicable
Strengths	Integration of five formerly separate databases allows for greater ease of access to information	BORN Information System captures 100% of all hospital births in the province as of 2010 and all midwifery home births as of 2012	Stable government funding	

Table A.3: Better Outcomes Registry and Network (BORN) Ontario Information System

	Overview	Coverage	Sustainability and Funding	Accessibility
Limitations			Currently, limited trend data available under new integrated system	
Verified as of: February 2013				
Data source expert(s): Daniel Bedard, *Research Coordinator*, BORN Ontario Anne Sprague, *Scientific Manager*, BORN Ontario				

APHEO Core Indicators Covered

- Age of parents at infant's birth
- Birth weights
- Breastfeeding initiation and duration (similar information)
- Congenital anomalies
- Congenital infections
- Crude birthrate
- Fertility rates
- Multiple birthrate
- Perinatal mortality and stillbirths
- Population by age and sex
- Pregnancy rate
- Preterm birthrate
- Smoking during pregnancy

Sources:

(1) BORN Ontario. About BORN [Internet]. Ottawa, ON: BORN Ontario; c2015 [cited 2015 Apr 10]. Available from: http://www.bornontario.ca/about-born.
(2) Born Ontario. Data collection [Internet]. Ottawa, ON: BORN Ontario; c2013 [cited 2013 Dec 1]. Available from: http://web.archive.org/web/20121231165043/http://bornontario.ca/data/data-collection
(3) BORN Ontario. Data requests [Internet]. Ottawa, ON: BORN Ontario; c2015 [cited 2015 Apr 10]. Available from: http://datadictionary.bornontario.ca/data-requests/
(4) BORN Ontario. Data dictionary [Internet]. Ottawa, ON: BORN Ontario; c2015 [cited 2015 Apr 10]. Available from: http://datadictionary.bornontario.ca/
(5) BORN Ontario. Reports [Internet]. Ottawa, ON: BORN Ontario; c2015 [cited 2015 Apr 10]. Available from: http://www.bornontario.ca/en/resources/reports/
(6) Ontario Agency for Health Protection and Promotion (Public Health Ontario). Measuring the health of infants, children and youth for public health in Ontario: indicators, gaps, and recommendations for moving forward. Toronto, ON: Queen's Printer for Ontario; 2012 [cited 2012 Dec 15]. Available from: http://www.publichealthontario.ca/en/eRepository/Measuring_Health_Infants_Children_2013.pdf.

Table A.4: Canadian Alcohol and Drug Use Monitoring Survey (CADUMS)

	Overview	Coverage	Sustainability and Funding	Accessibility
Note: Beginning in 2013, this survey was replaced with Health Canada's Canadian Tobacco Alcohol and Drugs Survey	**Purpose** To gather information about the use of alcohol, drugs and other substances among Canadians, and how they are directly and indirectly affected by these substances **Administrator** Health Canada **Type of data source** Sample survey with cross-sectional design **Data collection method** CATI **Content** Core content included: • General health and well-being • Smoking status • Alcohol use & harms • Pharmaceuticals use • Cannabis use & harms • Other illicit drug use & harms • Alcohol & cannabis use and driving • Pregnancy & substance use Other content addressing secondary objectives of survey included: • Perceived risk of substance use • Reasons for not using	**Included populations** Canadians aged 15 and older living in household with a telephone **Excluded populations** Residents of the Canadian territories, permanent residents of institutions, people living in households without a phone, and/or people with cellphones only **Sample size** National: 10,076 respondents in 2011; 391 of whom were aged 15–19. In 2010, an oversample of youth resulted in a sample of 2,452 youth aged 15–19 Ontario: 1,009 respondents in 2011; 43 of whom were aged 15–19. In 2010, an oversample of youth resulted in an Ontario sample of 260 youth aged 15–19 **Response rate** National: 45.5% in 2011; response rate for youth could not be determined Ontario: 51.1% in 2011; response rate for youth could not be determined	**Years conducted** 2008, 2009, 2010, 2011, 2012 **Frequency of data collection** Survey no longer active. Data were collected annually between 2008 and 2012 **Funding provider** Health Canada	**Data release and access** Summary reports containing results from the previous year were released in early summer each year. 2012 data to be released in summer 2013 Public use microdata file (PUMF) and supporting User Guide were released in the fall of the same year Aggregate data tables available online on Health Canada website. Reported ages are categorized into 15–24 and ≥25 age groups PUMFs are available and data license agreement can be obtained by emailing ORS_BRS@hc-sc.gc.ca PUMFs can also be obtained as part of Statistics Canada's Data Liberation Initiative at Canadian post-secondary institutions or through Statistics Canada's Research Data Centres **Public health unit access** General access procedures as described above for obtaining data sets **Examples of record linkages**

Table A.4: Canadian Alcohol and Drug Use Monitoring Survey (CADUMS)

	Overview	Coverage	Sustainability and Funding	Accessibility
		Type of parental consent Parental consent was not required or sought **Type of reporting** Self-reported		To protect the privacy of respondents, potentially identifiable information such as postal code is removed from the CADUMS PUMFs. PUMFs are not linked or linkable to other data sources **Ability to purchase oversamples** Yes. Provinces were able to purchase additional samples in 2012
Strengths			Five years of annual data collection can provide data for trend analysis	Able to obtain oversamples
Limitations		Collection of sensitive information using self-reporting may have resulted in biased/underreported data Provincial estimates specific to youth will be severely restricted and subject to suppression due to sample size Use of telephone households as method of selecting participants excludes those not residing in conventional households. As such, the true prevalence of drug users may not be fully captured		
Verified as of: February 2013				
Data source expert(s): Suzanna Keller, *Epidemiologist*, Enhanced Monitoring and Reporting Division, Office of Research and Surveillance, Controlled Substances and Tobacco Directorate, Healthy Environments and Consumer Safety Branch, Health Canada				

Table A.4: Canadian Alcohol and Drug Use Monitoring Survey (CADUMS)

	Overview	Coverage	Sustainability and Funding	Accessibility
Judy Snider, *Manager, Enhanced Monitoring and Reporting,* Office of Research and Surveillance, Controlled Substances and Tobacco Directorate, Healthy Environments and Consumer Safety Branch, Health Canada				

APHEO Core Indicators Covered

- Heavy drinking episodes
- Illicit drug use
- Population by age and sex

Sources:

(1) Health Canada. Canadian Alcohol and Drug Use Monitoring Survey 2011: microdata user guide [Internet]. Ottawa, ON: Her Majesty the Queen in Right of Canada; 2012 [cited 2012 Nov 1]. Available from: http://abacus.library.ubc.ca/jspui/bitstream/10573/42749/6/cadums-user-guide-2011-eng-nov-2012.pdf.
(2) Health Canada. Canadian Alcohol and Drug Use Monitoring Survey (CADUMS) [Internet]. Ottawa, ON: Her Majesty the Queen in Right of Canada; 2014 [cited 2015 Apr 10]. Available from: http://www.hc-sc.gc.ca/hc-ps/drugs-drogues/cadums-esccad-eng.php.
(3) Ontario Agency for Health Protection and Promotion (Public Health Ontario). Measuring the health of infants, children and youth for public health in Ontario: indicators, gaps, and recommendations for moving forward. Toronto, ON: Queen's Printer for Ontario; 2012 [cited 2012 Dec 15]. Available from: http://www.publichealthontario.ca/en/eRepository/Measuring_Health_Infants_Children_2013.pdf.
(4) Statistics Canada. Canadian Tobacco, Alcohol and Drugs Survey (CTADS) [Internet]. Ottawa, ON: Statistics Canada; 2013 [cited 2013 Feb 1]. Available from: http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=4440&lang=en&db=imdb&adm=8&dis=2.

Table A.5: Canadian Community Health Survey (CCHS)–Annual Component

	Overview	Coverage	Sustainability and Funding	Accessibility
Note: In addition to the annual component, Statistics Canada conducts focused surveys every three years to provide reliable estimates at the national and provincial levels. Pertaining to children and youth, themes have included mental health and well-being, and nutrition. The next focused survey cycle will be in 2015 and will focus on nutrition)	**Purpose** To collect information related to health status, health-care utilization and health determinants for the Canadian population at sub-provincial levels of geography **Administrator** Statistics Canada **Type of data source** Sample survey with cross-sectional design **Data collection method** Two computer-assisted interviewing methods used: 1) CATI 2) CAPI **Content** CCHS Annual component organized into three components: • Common content (collected from all respondents) • Optional content (unique to each region or province) • Rapid response content (for organizations interested in national estimates on a specific issue on a cost-recovery basis) Topics include:	**Included populations** Population aged 12 and over living in the ten provinces and three territories **Excluded populations** Persons living on Indian reserves or on Crown lands, residents of institutions, full-time members of the Canadian Forces and residents of certain remote regions are excluded from this survey **Sample size** National: 72,386 household respondents in 2011; 63,542 individual respondents in 2011 (7,127 individuals aged 12–19 in 2011) Ontario: 24,848 household respondents in 2011; 21,658 individual respondents in 2011 (2,499 individuals aged 12–19 in 2011) **Response rate** National: 79.5% household response rate in 2011; 87.8% person-level response rate in 2011; 69.8% combined household- and person-level response rate in 2011. (Among individuals selected aged 12–19,	**Years conducted** 2001, 2003, 2005, 2007, 2008, 2009, 2010, 2011, 2012 **Frequency of data collection** Annual. Prior to 2007, data collection was biennial **Funding provider** Funded by the Government of Canada	**Data release and access** As of 2008, data released annually. A file combining two years' sample is also released every two years Aggregate data available online on Statistics Canada's CANSIM database Public use microdata files (PUMFs) can be accessed at post-secondary educational institutions or via request to Statistics Canada Client Services. Information not included in PUMFs may be accessed through cost-recovery custom tabulation requests Share files available for provincial Ministries of Health and Health Canada Master files can be accessed through the Research Data Centre program or the Remote Access program **Public health unit access** Public health units receive record-level share files from the Ministry of Health and Long-Term Care

Table A.5: Canadian Community Health Survey (CCHS)–Annual Component

	Overview	Coverage	Sustainability and Funding	Accessibility
	• Chronic conditions • Education • General health • Health-care utilization • Illicit drug use • Injuries • Mental health • Nutrition • Oral health • Screening tests and physical check-ups • Smoking • Sexual behaviour • Social support • Physical activity • Vaccinations	82.7% responded in 2011) Ontario: 79.6% household response rate in 2011; 87.2% person-level response rate in 2011; 69.4% combined household- and person-level response rate. (Among individuals selected aged 12-19, 83.1% responded in 2011) **Type of parental consent** Active parental consent for interviewing individuals aged 12–15 **Type of reporting** Proxy-reported for cases where respondent is incapable of completing interview for physical or mental reasons		Public health units also receive record-level PUMFs from Statistics Canada **Examples of record linkages** CCHS data have been linked with a variety data sources by researchers and analysts across Canada (e.g., hospitalization, visits, cancer, death) **Ability to purchase oversamples** Yes. National and provincial organizations and health regions can purchase oversamples.
Strengths			Consistent government funding Annual data collection, past and continued data collection can provide information for trend analysis	Able to be linked with other data sources Results accessible at the health regional level Oversampling can be conducted for health regions
Limitations	Selection of custom topics for optional modules by jurisdictions does not allow for comparability of data across provinces or for production of national level estimates for those topics	The ability to generate stable estimates for youth depends on the prevalence of the indicator being examined. CCHS microdata files may be combined across years to generate stable		

Table A.5: Canadian Community Health Survey (CCHS)–Annual Component

	Overview	Coverage	Sustainability and Funding	Accessibility
		estimates Excludes children below the age of 12 years. Current discussions underway regarding its redesign to include younger age groups or to launch a stand-alone survey for children in Canada		
Verified as of: February 2013				
Data source expert(s): Sylvain Tremblay, *Unit Head, Health Statistics Division*, Statistics Canada				

APHEO Core Indicators Covered

- Aboriginal population
- Adolescent body mass index
- Age of sexual debut
- Breastfeeding initiation and duration
- Cellphone use while driving
- Condom use the last time among those at risk of STDs
- Drinking and driving prevalence
- Ethnic/cultural origin
- Fall-related emergency department visits (similar information)
- Frequency of condom use among those at risk for STDs
- Heavy drinking episodes
- Home language
- Illicit drug use
- Immigrant population
- Leisure-time physical activity
- Minors' access to tobacco
- Motor vehicle traffic collision injuries (similar information)
- Non-smoker second-hand smoke exposure
- Number of sexual partners
- Per cent who cannot speak English nor French
- Population by age and sex
- Screen time
- Seatbelt use
- Self-rated health
- Self-reported injury
- Smoke-free homes
- Smoking cessation
- Smoking during pregnancy
- Smoking status
- Suicidal thoughts and attempts
- Underage alcohol drinking
- Vegetable and fruit consumption
- Youth sexual activity

Sources:

(1) Ontario Agency for Health Protection and Promotion (Public Health Ontario). Measuring the health of infants, children and youth for public health in Ontario: indicators, gaps, and recommendations for moving forward. Toronto, ON: Queen's Printer for Ontario; 2012 [cited 2012 Dec 15]. Available from: http://www.publichealthontario.ca/en/eRepository/Measuring_Health_Infants_Children_2013.pdf.

(2) Statistics Canada. Canadian Community Health Survey (CCHS) annual component: user guide 2011 microdata files. Ottawa, ON: Statistics Canada; 2012.

Table A.6: Canadian Health Measures Survey (CHMS)

	Overview	Coverage	Sustainability and Funding	Accessibility
	Purpose To collect important health information through household interviews and direct physical measures at mobile examination centres (MECs) The resulting data are recognized as valid measures of concepts such as: physical activity, cardiovascular health, oral health, overweight and obesity, and markers of chronic disease **Administrator** Statistics Canada in partnership with Health Canada and the Public Health Agency of Canada **Type of data source** Sample survey with cross-sectional design **Data collection method** CAPI and direct physical measurements at MECs Accelerometers and indoor air samplers provided to respondents for 1 week monitoring following visit to MECs **Content** Respondents asked to complete	**Included populations** Individuals aged 3–79 living in ten provinces and three territories (Beginning in Cycle 2, the age lowered from age 6 to age 3) Sample populations need to be close to designated collection sites **Excluded populations** Individuals living on reserves and other Aboriginal settlements in the provinces, full-time members of the Canadian Forces, the institutionalized population, and residents of certain remote regions **Sample size** National: 3,275 individuals between 3–19 years responded in Cycle 2; 2,736 individuals between 3–19 years participated at the MECs Ontario: Information not available **Response rate** National: Overall combined response rates ranged from 55.9%–59.9% amongst individuals aged 3–19 years in	**Years conducted** Cycle 1 (2007–2009) Cycle 2 (2009–2011) Cycle 3 (2012–2013) **Frequency of data collection** Biennial **Funding provider** Primarily funded by Statistics Canada, with no additional costs to public health units Permanent funding secured	**Data release and access** Aggregate tables at the national level are available online on Statistics Canada website Master files accessible at Research Data Centres (RDCs) at Canadian universities following submission of proposal to Statistics Canada's RDC program Data from master file also accessible from Statistics Canada Client Services through specification for custom tabulations **Public health unit access** Access is available only through RDCs **Examples of record linkages** None to date **Ability to purchase oversamples** Requests from provinces or territories would be considered on a cost-recovery basis

Table A.6: Canadian Health Measures Survey (CHMS)

	Overview	Coverage	Sustainability and Funding	Accessibility
	a household interview and visit MECs for further data collection Slight variations in content per cycle Examples of themes from household questionnaire: • Alcohol • Anthropometry • Chronic conditions • Drug/medication use • Environmental exposure • Family medical history • General health • Infection markers • Nutrition • Oral health • Physical activity • Pregnancy/Birth • Sexual health • Sleep • Smoking • Socio-demographic characteristics • Sun exposure Examples of clinic measures and themes: • Anthropometry • Cardiovascular health and fitness • Hearing • Lung health	Cycle 2 Ontario: Information not available **Type of parental consent** Active parental consent for individuals less than 14 years of age **Type of reporting** Self-reported for respondents aged 12 and older Proxy-reported (parent) for children less than 12 years of age Proxy-reported (person-most-knowledgeable) also in cases where respondent 12 years or over is incapable of completing interview due to physical or mental limitations. In Cycle 1, 20% of interviews were proxy-reported; 97% of these were for children under 12 years Physical measurements for respondents that visit MECs		

Table A.6: Canadian Health Measures Survey (CHMS)

	Overview	Coverage	Sustainability and Funding	Accessibility
	• Musculoskeletal fitness • Oral health • Physical activity • Specimen collection (e.g., blood and urine) • Skin pigmentation			
Strengths		Use of clinical and direct measures Can provide information to augment and validate self-report measures	Stable funding provided by Statistics Canada Past and continued data collection can provide information for trend analysis	Potential to purchase oversamples
Limitations		Proxy-reporting for respondents less than 12 years of age Survey was not designed to provide provincial/territorial level estimates, it is nationally representative only. However, the sample size for Ontario may be sufficient to provide estimates when common content (data) is combined from cycles 1 and 2 of the survey. Researchers can submit projects to access this data at Statistics Canada's RDCs and can use the combined Cycle 1 and Cycle 2 weights and instruction document for combining the weights (*Instructions for Combining Cycle 1 and Cycle 2 CHMS Data* document available)	Expensive to administer survey	
Verified as of: February 2013				
Data source expert(s):				

Table A.6: Canadian Health Measures Survey (CHMS)

	Overview	Coverage	Sustainability and Funding	Accessibility
Brent Day, *Manager, CHMS Product Development*, Health Statistics Division, Statistics Canada				

APHEO Core Indicators Covered

Not available

Sources:

1) Statistics Canada. Canadian Health Measures Survey (CHMS) data user guide: cycle 2 [Internet]. Ottawa, ON: Statistics Canada; 2012 [cited 2015 Apr 16]. Available from: http://www23.statcan.gc.ca/imdb-bmdi/document/5071_D2_T1_V2-eng.htm

Table A.7: Canadian Physical Activity Levels Among Youth (CAN PLAY) Survey

	Overview	Coverage	Sustainability and Funding	Accessibility
	Purpose To collect comprehensive and accurate objective information on the fitness and physical activity patterns of young Canadians, using pedometry methods **Administrator** Canadian Fitness and Lifestyle Research Institute (CFLRI) **Type of data source** Sample survey with cross-sectional design **Data collection method** Initial telephone recruitment interview, short survey via CATI, followed by collection of pedometer data via daily logs **Content** Data collected on children's patterns and preferences for physical activity from parents during telephone recruitment interview Pedometer package sent to participants following verbal agreement. Children asked to wear pedometer for seven consecutive days and record daily log	**Included populations** Canadian youth aged 5–19 **Excluded populations** Households are not included if they do not have children in the appropriate age range **Sample size** National: Over 10,000 children and youth aged 5–19 years are recruited annually since 2005 Ontario: Slightly over 2,100 individuals aged 5-19 years were recruited in 2010/11 **Response rate** National: Information not available Ontario: 63% response rate in 2010/11 **Type of parental consent** Active parental consent **Type of reporting** Proxy-reported (parent) Direct measures	**Years conducted** 2005–2012 **Frequency of data collection** Annual **Funding provider** The Public Health Agency of Canada and the federal, provincial and territorial governments through the Interprovincial Sport and Recreation Council	**Data release and access** Data are not available for analysis outside of the CFLRI Summary results are available for national and regional estimates on an annual basis and for each province every two years. The data are available in the form of bulletins and data tables on the CFLRI website. Results are generally posted within 6 months from the conclusion of data collection **Public health unit access** Data are not available for analysis outside of the CFLRI **Examples of record linkages** None to date **Ability to purchase oversamples**. Yes. Survey partners can add sample either nationally or for a particular province or region

Table A.7: Canadian Physical Activity Levels Among Youth (CAN PLAY) Survey

	Overview	Coverage	Sustainability and Funding	Accessibility
Strengths		Able to provide stable provincial and territorial estimates for children and youth Direct measures of physical activity	Annual data collection Past and continued data collection can provide information for trend analysis	
Limitations	Pedometers cannot measure intensity of activity, distinguish between types of activity, or assess certain types of activity			Data files not available for external analysis
Verified as of: March 2013				
Data source expert(s): Christine Cameron, *Acting President*, Canadian Fitness and Lifestyle Research Institute				

APHEO Core Indicators Covered

Not available

Sources:

1) Canadian Fitness & Lifestyle Research Institute. Methodology, CAN PLAY study [Internet]. Ottawa, ON: CFLRI; 2011 [cited 2012 Dec 1]. Available from: http://www.cflri.ca/sites/default/files/node/995/files/CANPLAY%20Methodology%20EN.pdf

2) Craig CL, Tudor-Locke C, Cragg S, Cameron, C. Process and treatment of pedometer data collection for youth: the Canadian Physical Activity Levels among Youth study. Med Sci Sports Exerc. 2010;42(3):430-5.

Table A.8: Canadian Tobacco Use Monitoring Survey (CTUMS)

	Overview	Coverage	Sustainability and Funding	Accessibility
Note: Beginning in 2013, this survey was replaced with Health Canada's Canadian Tobacco Alcohol and Drug Survey	**Purpose** To provide data on tobacco use and related issues, and to track changes in smoking status and the amount smoked **Administrator** Health Canada **Type of data source** Sample survey with cross-sectional design **Data collection method** CATI **Content** Topics include, but not limited to: • Household smoking • Language and education • Smoking status and history • Smoking behaviour • Cigarette access • Smoking cessation • Smoking cessation methods • Smoking and pregnancy • Smoking in vehicles • Student income	**Included populations** All persons 15 years of age and over living in Canada **Excluded populations** Residents of Canadian territories and full-time residents of institutions. Also excluded individuals without telephone land lines (accounts for less than 14% of the target population) **Sample size** National: 53,293 households in 2011; 20,703 respondents in 2011 (5,368 respondents in 15–19 age group) Ontario: 4,718 households in 2011; 2,057 respondents in 2011 (544 in 15–19 age group) CTUMS oversampled 15–24 year olds **Response rate** National: 78.9% household response rate in 2011; 83.9% person response rate in 2011 (79.6% for 15–19 age group); 66.2% overall response rate in 2011 (household and person response rate combined) Ontario: 72.6% household	**Years conducted** 1999–2012 **Frequency of data collection** Survey no longer active. Data were collected annually (with two data collection periods each year: Cycle 1 between February to June and Cycle 2 between July and December) **Funding provider** Health Canada	**Data release and access** Since 2011, one annual file was released each year. Prior to that, two half-year files released each year (February–June, July–December) in addition to a yearly summary Aggregate data and publications available online on Health Canada website More detailed analysis provided by the Tobacco Informatics Monitoring System website Microdata files can be obtained through Statistics Canada's Data Liberation Initiative or through Statistics Canada's Research Data Centres **Public health unit access** General access procedures as described above for obtaining data sets **Examples of record linkages** None to date **Ability to purchase oversamples** Yes. Additional samples have been purchased in the past by research groups

Table A.8: Canadian Tobacco Use Monitoring Survey (CTUMS)

	Overview	Coverage	Sustainability and Funding	Accessibility
		response rate in 2011; 85.4% person response rate in 2011. (Specific response rate for youth could not be determined); 62.0% overall response rate in 2011 (household and person response rate combined) **Type of parental consent** Information not available **Type of reporting** Self-reported		Potential for oversampling by age
Strengths		Survey was able to provide stable provincial estimates for youth in Ontario aged 15–19	Past cycles of survey can provide data for trend analysis	Had timely release of information Able to obtain purchase oversamples
Limitations		Collection of sensitive information from self-reports may result in biased/underreported data		
Verified as of: February 2013				
Data source expert(s): Shawn O'Connor, *Senior Research Associate*, Ontario Tobacco Research Unit; *Senior Research Associate,* Dalla Lana School of Public Health				

APHEO Core Indicators Covered

- Aboriginal population
- Home language
- Illicit drug use
- Minors' access to tobacco (similar information)
- Non-smoker second-hand smoke exposure
- Population by age and sex
- Smoke-free homes
- Smoking cessation (similar information)
- Smoking during pregnancy
- Smoking status

Sources:

(1) Ontario Agency for Health Protection and Promotion (Public Health Ontario). Measuring the health of infants, children and youth for public health in Ontario: indicators, gaps, and recommendations for moving forward. Toronto, ON: Queen's Printer for Ontario; 2012 [cited 2012 Dec 15]. Available from: http://www.publichealthontario.ca/en/eRepository/Measuring_Health_Infants_Children_2013.pdf.

(2) Ontario Population Health Index of Databases. Canadian Tobacco Use Monitoring Survey, 1999-2010: cycle 1,2 & annual [Internet]. Ottawa, ON: Ontario Council of University Libraries and Population Health Improvement Research Network; c2015 [cited 2015 Apr 16]. Available from: http://ophid.scholarsportal.info/details/view.html?q=Health&field=TC&val=SE-facet%3a%22Canadian+Tobacco+Use+Monitoring+Survey+CTUMS%22&uri=/phirn/ctums_82M0020XCB_PHIRN_E_1999-2010.xml.

(3) Statistics Canada. Canadian Tobacco Use Monitoring Survey, annual: Microdata user guide. Ottawa, ON: Statistics Canada; 2011.

(4) Statistics Canada. Canadian Tobacco, Alcohol and Drugs Survey (CTADS) [Internet]. Ottawa, ON: Statistics Canada; 2013 [cited 2013 Feb 1]. Available from: http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=4440&lang=en&db=imdb&adm=8&dis=2.

Table A.9: Discharge Abstract Database (DAD)

	Overview	Coverage	Sustainability and Funding	Accessibility
	Purpose To provide administrative, clinical and demographic information for all separations from acute-care institutions Data extracted from DAD is used to populate other CIHI (Canadian Institute for Health Information) databases, including: The Hospital Mental Health Database, The National Trauma Registry, The Ontario Trauma Registry **Administrator** CIHI **Type of data source** Administrative database **Data collection method** In Ontario, all hospitals are mandated to submit discharge data to CIHI A medical records coder at participating hospitals completes an abstract after each patient is discharged, according to instructions outlined in the CIHI Abstracting Manual. Data are then sent directly to CIHI for validity checks/data cleaning. Data may be sent back to	**Included populations** In Ontario, patients who have been discharged from the following types of hospitals (and their associated units): • Acute care • Pediatric inpatient rehabilitation • Child and adolescent inpatient mental health • Chronic care (1996/1997 only) • Day procedures (1996/1997 to 2002/2003) • Adult inpatient rehabilitation (1996/1007 to 2002/2003) • Adult inpatient mental health beds (1996/1997 to 2005/2006) The former three areas are still collected in the DAD while the latter four areas are not Decreasing reported population due to development of separate systems for different care types **Excluded populations** Stillbirths and cadaveric donors in Ontario **Sample size** Not applicable **Response rate** Not applicable	**Years conducted** Developed and implemented since 1963 **Frequency of data collection** Hospitals submit data within a fiscal year (April 1–March 31) to CIHI on an ongoing basis **Funding provider** Funding for CIHI databases is shared between the federal government and provinces/territories	**Data release and access** The first year of data available is 1996/1997 Data files generally available within 95–120 days after end of reporting period Publicly available statistics can be accessed through data holding pages or Quick Stats of CIHI website Custom data can be obtained through submission of a data inquiry form to CIHI on a cost-recovery basis Qualifying graduate students can access data at no cost through Graduate Student Data Access Program Access to Ontario files requires signing a Data Access agreement with the Knowledge Management & Reporting Branch of MOHLTC **Public health unit access** Public health units can obtain access to the DAD data through IntelliHEALTH Ontario **Examples of record linkages**

Table A.9: Discharge Abstract Database (DAD)

	Overview	Coverage	Sustainability and Funding	Accessibility
	hospitals for corrections. The correction and editing steps are repeated until either abstract is successfully corrected or the database closes at the year-end deadline (July 31). Following this date, database is closed and edits can no longer be made A year-end file is then submitted to the Ministry of Health and Long-Term Care (MOHLTC) **Content** Database contains data on facility separations including discharges, deaths, sign-outs and transfers Database also collects: • Clinical data (diagnoses, interventions, physician) • Demographic data (sex, date of birth, postal code) • Administrative data (institution/hospital number, admission category, length of stay, disposition, inter-institutional transfers • Data used to evaluate patient length of stay and resource consumption • Additional data on mental health inpatients (excluding patients in adult in-patient	**Type of parental consent** Not applicable **Type of reporting** Not applicable		Data are linked to other health administrative data in the province through collection of postal codes (if used along with the Postal Code Conversion File from Statistics Canada) and encrypted health card numbers (HCNs). Encrypted HCNs can only be linked to other CIHI data sources using the same encryption algorithm **Ability to purchase oversamples** Not applicable

Table A.9: Discharge Abstract Database (DAD)

	Overview	Coverage	Sustainability and Funding	Accessibility
	beds as this information is captured in the CIHI's Ontario Mental Health Reporting System) The collection of specific data elements within the DAD may be mandatory or optional			
Strengths	System in place to enhance accuracy and completeness of abstract records	All publicly funded hospital admissions are captured	Stable government funding Ongoing and timely data collection	Able to link with other data sources
Limitations	Data provide only a crude measure of the prevalence of cause (For example, only captures hospital-related information, an individual may be hospitalized several times for the same event, individuals may be transferred between facilities for the same event) Data elements specifications (e.g., coding, mandatory or optional data collection) may change between fiscal years, thus affecting comparability	In rare occurrences, over-coverage of record data may occur if an institution creates multiple abstracts for the same discharge. However, it is possible to identify and remove duplicate records with a combination of unique identifiers		
Verified as of: February 2013				
Data source expert(s): Jeremy Herring, *Epidemiologist Lead*, Analytic Services, Knowledge Services, Public Health Ontario				

APHEO Core Indicators Covered

- Age of parents at infant's birth
- All-cause hospitalization
- All-cause mortality
- Birth weights

- Breastfeeding initiation and duration (similar information)
- Child and adolescent mortality
- Chronic disease hospitalization
- Congenital anomalies
- Congenital infections
- Crude birthrate
- Fertility rates
- Multiple birthrate
- Pelvic inflammatory disease morbidity
- Perinatal mortality and stillbirths
- Population by age and sex
- Pregnancy rate
- Preterm birthrate

Sources:
(1) Canadian Institute for Health Information. Data quality documentation for external users: Discharge Abstract Database, 2010–2011 [Internet]. Ottawa, ON: Her Majesty the Queen in Right of Canada; 2011 [cited 2012 Dec 1]. Available from: http://www.cihi.ca/CIHI-ext-portal/pdf/internet/DAD_EXECUTIVE_SUM_10_11_EN.
(2) Canadian Institute for Health Information. Discharge Abstract Database (DAD) metadata [Internet]. Ottawa, ON: CIHI; c1996-2014 [cited 2012 Dec 1]. Available from: http://www.cihi.ca/CIHI-ext-portal/internet/en/document/types+of+care/hospital+care/acute+care/dad_metadata.
(3) Ontario Agency for Health Protection and Promotion (Public Health Ontario). Measuring the health of infants, children and youth for public health in Ontario: indicators, gaps, and recommendations for moving forward. Toronto, ON: Queen's Printer for Ontario; 2012 [cited 2012 Dec 15]. Available from: http://www.publichealthontario.ca/en/eRepository/Measuring_Health_Infants_Children_2013.pdf.
(4) Ontario. Ministry of Health and Long-Term Care. Health analyst's toolkit. Ottawa, ON: Queen's Printer for Ontario; 2012. Available from: http://www.health.gov.on.ca/english/providers/pub/healthanalytics/health_toolkit/health_toolkit.pdf.

Table A.10: Early Development Instrument (EDI)

	Overview	Coverage	Sustainability and Funding	Accessibility
	Purpose To asses children's readiness to learn at school, which is a proxy for the developmental outcomes and milestones achieved during the first five years of life, and helps determine the supports needed from a community **Administrator** The Offord Centre for Child Studies (OCCS) **Type of data source** Population-level survey with cross-sectional design **Data collection method** Self-administered (kindergarten teacher) paper or online questionnaire for each child during the second half of the school year Data Analysis Coordinators (DACs) are funded to support the implementation of the EDI **Content** The tool measures development in five areas: • Physical health and well-being • Social knowledge and competencies • Emotional health and maturity	**Included populations** Children at the senior kindergarten level **Excluded populations** Children enrolled in private schools **Sample size** National: Not applicable Ontario: Completed for 129,201 children in Cycle 3 **Response rate** National: Not applicable Ontario: Response rate not generated. However, the Ontario Cycle II data set is representative of 87% of the province **Type of parental consent** Passive parental consent **Type of reporting** Proxy-reported (kindergarten teacher)	**Years conducted** EDI implementation in Ontario: Participation from five communities in Ontario (2000) Cycle I (2004–2006) Cycle II (2007–2009) Cycle III (2010–2012) **Frequency of data collection** In Ontario the EDI is implemented on a three-year cycle **Funding provider** Ministry of Children and Youth Services (MCYS) provides funding for DACs and to the Offord Centre for the implementation of the EDI across Ontario (began in Cycle 1) Funding support is being transitioned to the EDU	**Data release and access** The OCCS, working with regional DACs, processes EDI data and provides a provincial report as well as set of standard regional reports. However, communities can produce further customized reports Aggregate data at the regional and neighborhood level are available online The OCCS maintains a repository of EDI data from across Canada and internationally, and oversees all EDI use Prospective users must consult with OCCS and purchase/sign a licensing agreement There may be an opportunity for data access through the MCYS **Public health unit access** Public health units may be able to access aggregate levels of their local EDI data through consultation with OCCS or the local DAC **Examples of record linkages** Linkage with school achievement indicators such as EQAO scores,

Table A.10: Early Development Instrument (EDI)

	Overview	Coverage	Sustainability and Funding	Accessibility
	• Language and cognitive development • General knowledge and communication skills Two additional indicators collected relating to special skills and special problems			census data, the Kindergarten Parent Survey The OCCS is notified prior to any data linking activities and provided with a copy of the results **Ability to purchase oversamples** Yes. For example, oversampling can be conducted at the junior kindergarten level or for private schools upon agreement with school authorities
Strengths	Survey has undergone extensive pilot testing, including comparisons with direct assessments and with parent reports Survey has been adopted across Canada and internationally, allows for comparisons across jurisdiction	Able to provide stable provincial estimates for children and youth in Ontario	Stable government funding Past and continued data collection can provide information for trend analysis	Able to link with other data sources Able to conduct oversampling
Limitations		Strictly proxy-reported	Administered every three years	
Verified as of: February 2013				
Data source expert(s): Magdalena Janus, *Associate Professor,* Department of Psychiatry and Behavioural Neurosciences, Offord Centre for Child Studies, McMaster University Caroline Reid-Westoby, *Research Assistant,* Offord Centre for Child Studies, McMaster University				

APHEO Core Indicators Covered

Population by age and sex

Sources:

(1) Janus M, Brinkman S, Duku E, Hertzman C, Santos R, Sayers M, et al. The Early Development Instrument: a population-based measure for communities, a handbook on development, properties and use. Ottawa, ON: Offord Centre for Child Studies; 2007. Available from: http://www.offordcentre.com/readiness/pubs/2007_12_FINAL.EDI.HANDBOOK.pdf.

(2) Offord Centre for Child Studies. Early Development Instrument factsheet [Internet]. Ottawa, ON: Offord Centre for Child Studies; 2012 [cited 2013 Jan 1]. Available from: http://www.offordcentre.com/readiness/files/EDI_Factsheet_2012.pdf.

(3) Ontario Agency for Health Protection and Promotion (Public Health Ontario). Measuring the health of infants, children and youth for public health in Ontario: indicators, gaps, and recommendations for moving forward. Toronto, ON: Queen’s Printer for Ontario; 2012 [cited 2012 Dec 15]. Available from: http://www.publichealthontario.ca/en/eRepository/Measuring_Health_Infants_Children_2013.pdf.

Table A.11: Eastern Ontario Health Unit-Youth Risk Behaviour Survey (EOHU-YRBS)

	Overview	Coverage	Sustainability and Funding	Accessibility
	Purpose To provide an assessment of the health-risk behaviours and practices of adolescents in the Eastern Ontario Health Unit (EOHU) region **Administrator** EOHU **Type of data source** Sample survey with cross-sectional design **Data collection method** Survey administered in classroom setting by public health nurses and public health educators **Content** Survey is modeled after the Centers for Disease Control and Prevention YRBS Monitors six types of health-risk behaviours contributing to death and disability among youth and adults: • Injury prevention • Nutrition • Physical activity and body weight • Tobacco use • Alcohol	**Included populations** Youth in grades 7–12 under the EOHU jurisdiction (five Eastern Counties of Stormont, Dundas, Glengary, Prescott and Russell) **Excluded populations** Not applicable **Sample size** National: Not applicable Ontario: Not applicable 49 schools and 3509 students participated within the EOHU region in 2011 **Response rate** National: Not applicable Ontario: Not applicable 62% school-level response rate in 2011 (Student-level response rate not available) **Type of parental consent** Active parental consent (Passive parental consent prior to 2011) **Type of reporting** Self-reported	**Years conducted** 2000, 2003, 2008, 2011 **Frequency of data collection** Every three years approximately **Funding provider** EOHU	**Data release and access** Summary and full reports are available on the EOHU website. Reports generally available within a year following the conclusion of data collection Access to data would involve writing a formal request to EOHU **Public health unit access** Not applicable **Examples of record linkages** Cannot be linked with other data sources **Ability to purchase oversamples** Not applicable

Table A.11: Eastern Ontario Health Unit-Youth Risk Behaviour Survey (EOHU-YRBS)

	Overview	Coverage	Sustainability and Funding	Accessibility
	• Marijuana and other drug use • Sexual health Also includes questions on bullying, sad feelings and attempted suicide, and EOHU services Four versions of survey: • English long (with sexual health) • English short (excluding sexual health) • French long • French short			
Strengths	Comparability with the YRBS data from the United States	School-based, regionally representative survey	The survey will continue to be used as a monitoring tool for youth risk behaviours among youth in Eastern Ontario Health Unit region Past and continued data collection can provide information for trend analysis	
Limitations		Only conducted by one public health unit in Ontario Does not provide provincial data Survey samples only those enrolled in schools and excludes at-risk groups such as homeless/street youth and dropouts	Administered approximately every three years	
Verified as of: March 2013				
Data source expert(s):				

Table A.11: Eastern Ontario Health Unit-Youth Risk Behaviour Survey (EOHU-YRBS)

	Overview	Coverage	Sustainability and Funding	Accessibility
Hugues Sampasa, *Health Information Analyst*, Eastern Ontario Health Unit				

APHEO Core Indicators Covered

Not available

Sources:
(1) Eastern Ontario Health Unit. Youth Risk Behaviour Survey: an analysis of risk behaviours among youth in Eastern Ontario [Internet]. Cornwall, ON: EOHU; 2011 [cited 2013 Mar 12]. Available from: http://www.eohu.ca/_files/reports/YRBS_2011_cond_e.pdf.

Table A.12: General Social Survey (GSS)

	Overview	Coverage	Sustainability and Funding	Access
	Purpose The purpose of the GSS is to gather data on social trends in Canada to monitor changes in living conditions and well-being, and provide information on specific social policy issues of current or emerging interest **Administrator** Statistics Canada, Social and Aboriginal Statistics Division **Type of data source** Sample survey with cross-sectional design **Data collection method** CATI (CAPI used in some cases in remote regions) The GSS program will be offering an internet collection mode starting in 2013 and will be gradually transitioning each of the surveys in the program to include this additional mode of collection **Content** Each cycle of the GSS contains a core topic, focus or exploratory questions and a standard set of socio-demographic questions	**Included populations** Canadian population aged 15 and over (except cycles 16 and 21 on caregiving which only sampled individuals aged 45 and older) **Excluded populations** Full-time residents of institutions and residents of the Yukon, Northwest Territories, and Nunavut (Residents in territories given a supplementary survey) The 2009 and 2004 victimization cycles were conducted in Canada's territories **Sample size** National: 22,435 respondents aged 15 and over in 2011 (GSS on families); 1,065 respondents aged 15–19 Ontario: 6,158 respondents aged 15 and over in 2011 (GSS on families); 300 respondents aged 15–19 **Response rate** National: 65.8% in GSS Cycle 25; GSS does not generate response rates by age Ontario: GSS does not generate	**Years conducted** Established in 1985. Conducted every year except 1987 and 1997. 26 complete cycles of GSS to date (Cycle 26: Caregiving and Care receiving) Other cycles are in the development phase: Cycle 27 on Social Identity is currently in collection. Cycle 27 on Giving, Volunteering and Participating will be in collection in September 2013. Cycle 28 on Victimization will be pilot tested in July 2013 **Frequency of data collection** Annual. Core topics rotate on an approximate five year cycle **Funding provider** Funded by Government of Canada. Focus content for certain cycles have been sponsored by various organizations and government departments	**Data release and access** Public use microdata files available for all released cycles as part of Statistics Canada's Data Liberation Initiative Analytic files available at Research Data Centres Microdata License Agreement required before delivery of a file Custom tabulations may be obtained by contacting Statistics Canada **Public health unit access** General access procedures as described above for obtaining data sets **Examples of record linkages** None to date. However, the GSS might link to administrative data in future cycles **Ability to purchase oversamples** Yes. Needs must be defined and assessed well in advance of collection in order for an oversample to take place

Table A.12: General Social Survey (GSS)

	Overview	Coverage	Sustainability and Funding	Access
	More recent cycles have also included some qualitative questions which explore perception Topics alternate by cycle and include: • Health • Time Use • Victimization • Education, Work and Retirement • Family • Social Support and Aging • Access to and Use of Information Communication Technology • Social Engagement • Social Identity • Giving, Volunteering and Participating Standard socio-demographic questions include: • Demographic characteristics of respondent • Main activities • Education • Housing characteristics • Self-reported general health and mental health • Other characteristics The GSS program is looking at	response rates by province **Type of parental consent** Active parental consent **Type of reporting** Self-reported Some cycles permit proxy interviews in cases where selected respondent does not speak either of the official languages or where they are unable to take part because of health reasons. Cycles 21 and 26 allow for proxy interviews		

Table A.12: General Social Survey (GSS)

	Overview	Coverage	Sustainability and Funding	Access
	options to include additional content on a cost-recovery basis in the future			
Strengths	Survey allows for analysis on wide range of social issues in relation to health outcomes	Able to provide provincial estimates for respondents aged 15–19 years	Stable government funding Annual data collection, past and continued data collection can provide information for trend analysis	
Limitations				
Verified as of: July 2013				
Data source expert(s): Jodi-Anne Brzozowski, *Chief, General Social Survey program,* Statistics Canada				

APHEO Core Indicators Covered

- Aboriginal population
- Ethnic/cultural origin
- Immigrant population
- Population by age and sex
- Self-rated health

Sources:

(1) Statistics Canada. General Social Survey: an overview, 2009 [Internet]. Ottawa, ON: Minister of Industry; c2009 [cited 2013 May 1]. Available from: http://www.statcan.gc.ca/pub/89f0115x/89f0115x2009001-eng.pdf

(2) Ontario Population Health Index of Databases. General Social Survey, 2010 [Canada]: cycle 24, Time-stress and well-being–main & episode files [Internet]. Ottawa, ON: Ontario Council of University Libraries and Population Health Improvement Research Network; c2015 [cited 2015 Apr 16]. Available from: http://ophid.scholarsportal.info/details/view.html?q=ballet&field=KW&val=SE-facet%3a"General+Social+Survey"&uri=/phirn/DLI_gss_12M0024_PHIRN_E_2010_c-24.xml.

(3) Statistics Canada. General Social Survey: care giving and care receiving (GSS) [Internet]. Ottawa, ON: Statistics Canada; 2013 [cited 2013 May 1]. Available from: http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=4502&Item_Id=115121&lang=en.

(4) Statistics Canada, Social and Aboriginal Statistics Division. General Social Survey cycle 25: Family public use microdata file documentation and user's guide [Internet]. Ottawa, ON: Ministry of Industry; c2013 [cited 2013 May 1]. Available from: http://abacus.library.ubc.ca/bitstream/10573/42770/3/c25_userguide_eng.pdf.

Table A.13: Health Behaviour in School-aged Children (HBSC)

	Overview	Coverage	Sustainability and Funding	Accessibility
	Purpose To inform and influence health promotion and health education policy and programs at national and international levels To gain insight and increased understanding into the health, well-being, and health behaviours of young people and their social contexts **Administrator** The Social Program Evaluation Group at Queen's University in partnership with Public Health Agency of Canada (PHAC) In 2009, new partnership established with the Joint Consortium of School Health and Health Canada At the international level, where survey is conducted in 41 countries in North America and Europe, HBSC is overseen by The HBSC International Coordinating Centre and the Child and Adolescent Health Research Unit based at St. Andrews School of Medicine, St. Andrews, Scotland **Type of data source** Sample survey with cross-	**Included populations** Data collected from Canadian school-aged children aged 11–15 years (grades 6–10) from all provinces and territories **Excluded populations** Private and special schools including on-reserve schools not included 2009/10 cycle excluded students from Prince Edward Island and New Brunswick **Sample size** National: 26,078 students from 436 schools participated in 2009/10 Ontario: 3,692 students from 69 schools participated in 2009/10 **Response rate** National: 77% of selected students completed questionnaires in 2009/10 Ontario: Student response at the provincial level has yet to be reported **Type of parental consent** Use of active or passive parental consent varies by school board in	**Years conducted** In Canada, 6 cycles to date. Conducted from 1989/90 school year to most recent cycle in 2009/10 **Frequency of data collection** Every four years **Funding provider** Main funding provider is PHAC's Division of Childhood and Adolescence Strategic Policy and Research Section Additional CIHR funding has supported the development of in-depth descriptions of the neighbourhoods of participating Canadian schools through the Canada Census of Population (Statistics Canada, 2006) and commercially available databases	**Data release and access** Major report of findings produced following the completion of each survey in Canada Latest national report released publicly in February 2012 Aggregate data available online on PHAC's website National data sets housed with Social Program Evaluation Group at Queen's University. Required to submit a data request application to the HBSC research team. Data may also be accessed through Statistics Canada's Data Liberation Initiative Current discussions regarding the accessibility of data files for analysis at the provincial level International data access requires formal request to the HBSC Network Assembly **Public health unit access** General access procedures as described above for obtaining data sets **Examples of record linkages**

Table A.13: Health Behaviour in School-aged Children (HBSC)

	Overview	Coverage	Sustainability and Funding	Accessibility
	sectional design **Data collection method** Data collected through administration of survey in schools to students and school administrators Data collection conducted under standardized international protocol For the international data set, data for 11-, 13-, and 15-year-olds from Canada are submitted **Content** Each survey consists of a set of mandatory questions as well as optional modules/questions that each country can select and/or develop to cater to jurisdictional interests Core questions in each student survey include: • Health-related behaviours (e.g., tobacco use, alcohol consumption, exercise) • General health, physical ailments, medication use • Psycho-social adjustment including mental health, relationships	Ontario **Type of reporting** Self-reported		Ability to link data with GIS data in partnership with the Social Program Evaluation Group to examine neighbourhood characteristics of participating schools **Ability to purchase oversamples** Yes. Provinces may purchase oversamples
Strengths	Only national-level school-based	As of 2009, able to provide	Stable funding	Able to link with other data

Table A.13: Health Behaviour in School-aged Children (HBSC)

	Overview	Coverage	Sustainability and Funding	Accessibility
	health promotion database for this age range in Canada Survey results can be compared at the international level	provincial estimates. However, unable to make comparisons across provinces	Past and continued data collection can provide information for trend analysis	sources Able to purchase oversamples
Limitations		Survey samples only those enrolled in schools and excludes at-risk groups such as homeless/street youth and dropouts	Data collection occurs every four years	
Verified as of: February 2013				
Data source expert(s): John Freeman, *Professor,* Faculty of Education, Queen's University; *Director*, Social Program Evaluation Group, Queen's University Ian Janssen, *Professor*, School of Kinesiology and Health Studies, Queen's University				

APHEO Core Indicators Covered

- Adolescent body mass index
- Age of sexual debut
- Condom use the last time among those at risk of STDs (similar information)
- Drinking and driving prevalence (similar information)
- Ethnic/cultural origin
- Heavy drinking episodes
- Illicit drug use
- Immigrant population
- Injury-related hospitalization
- Leisure-time physical activity (similar information)
- Population by age and sex
- Screen time
- Self-rated health
- Smoking status
- Underage alcohol drinking
- Vegetable and fruit consumption (similar information)
- Youth sexual activity

Sources:

(1) Ontario Agency for Health Protection and Promotion (Public Health Ontario). Measuring the health of infants, children and youth for public health in Ontario: indicators, gaps, and recommendations for moving forward. Toronto, ON: Queen's Printer for Ontario; 2012 [cited 2012 Dec 15]. Available from: http://www.publichealthontario.ca/en/eRepository/Measuring_Health_Infants_Children_2013.pdf.

(2) Ontario Population Health Index of Databases. Health Behaviour in School-Aged Children, 1989-1990, 1993-1994, 1997-1998, 2001-2002, 2005-2006 [Canada]: a World Health Organization cross-national study [Internet]. Ottawa, ON: Ontario Council of University Libraries and Population Health Improvement Research Network; c2015 [cited 2015 Apr 16]. Available from: http://ophid.scholarsportal.info/details/view.html?q=Y&uri=/phirn/hbsc_PHIRN_E.xml.

(3) Public Health Agency of Canada. HBSC study overview [Internet]. Ottawa, ON: Her Majesty the Queen in Right of Canada; 2011 [cited 2012 Oct 1]. Available from: http://www.phac-aspc.gc.ca/hp-ps/dca-dea/prog-ini/school-scolaire/behaviour-comportements/study-etude-eng.php.

Table A.14: Healthy Babies Healthy Children-Integrated Services for Children Information System (HBHC-ISCIS)

	Overview	Coverage	Sustainability and Funding	Accessibility
	Purpose To enable public health units across Ontario to effectively administer the HBHC program. HBHC is a voluntary prevention and early intervention initiative to help families promote healthy child development and help their children achieve their full potential **Administrator** Ministry of Children and Youth Services (MCYS) **Type of data source** A multi-tier case management system used by all public health units across the province **Data collection method** Data manually entered into HBHC–ISCIS by public health units and reported quarterly to the MCYS Data are saved in a centralized database **Topics** The HBHC program evaluates a broad range of economic, psychosocial, behavioural, and lifestyle factors that affect families and that will influence	**Included populations** Births for which family consent to participate in the HBHC program. Follows children from their prenatal years to their transition to school **Excluded populations** Births for which family consent to participate was not obtained **Sample size** Not applicable **Response rate** Not applicable **Type of parental consent** Not applicable **Type of reporting** Not applicable	**Years conducted** Implemented since 1999 **Frequency of data collection** Ongoing data collection **Funding provider** MCYS	**Data release and access** Individuals/groups interested in obtaining HBHC–ISCIS data must contact the program area within MCYS Any service requests to create custom queries must be approved by the Information Technology Executive Committee of the MYCS **Public health unit access** Data from ISCIS system can be extracted by public health units using pre-defined or custom reports in the HBHC-ISCIS Reporting Sub-System Public health units have access to individual client information for those that they provide direct service for. Access to provincial summaries or other public health units' information not available unless data sharing agreements have been arranged **Examples of record linkages** None to date. However, there is some exploratory work in progress with BORN (Better Outcomes Registry and Network) **Ability to purchase oversamples**

Table A.14: Healthy Babies Healthy Children-Integrated Services for Children Information System (HBHC-ISCIS)

	Overview	Coverage	Sustainability and Funding	Accessibility
	the child's ability to develop to his or her full potential ISCIS records family circumstances, screening and assessment details, and data on any referrals or services provided by HBHC			Not applicable
Strengths	Full provincial coverage by public health unit for mandatory data elements		Stable government funding Past and continued data collection can provide information for trend analysis	
Limitations	Data collection and quality of data are the responsibility of public health units. Data collection methods and quality of data may vary across public health units Issues relating to data quality and completeness such as missing values for certain data elements	Does not include information for home births unless forwarded to the public health unit		Restricted access to other public health unit data may create limitations for comparisons and surveillance
Verified as of: April 2013				
Data source expert(s): Ingrid McKhool, *Senior Policy Analyst*, Child and Youth Development Branch, Strategic Policy and Planning Division, Ministry of Children and Youth Services Jason Price, *Senior Systems Programmer/Developer*, Children, Youth and Social Services I&IT Cluster, Ministry of Children and Youth Services				

APHEO Core Indicators Covered

- Age of parent at infant's birth
- Birth weights
- Breastfeeding initiation and duration
- Mother tongue

- Multiple birthrate
- Population by age and sex
- Preterm birthrate
- Single-parent families

Sources:

(1) Association of Public Health Epidemiologists in Ontario. Integrated Services for Children Information System (ISCIS) [Internet]. Toronto, ON; APHEO; c2013 [cited 2013 Jan 1]. Available from: http://www.apheo.ca/index.php?pid=197.

(2) Ontario Agency for Health Protection and Promotion (Public Health Ontario). Measuring the health of infants, children and youth for public health in Ontario: indicators, gaps, and recommendations for moving forward. Toronto, ON: Queen’s Printer for Ontario; 2012 [cited 2012 Dec 15]. Available from: http://www.publichealthontario.ca/en/eRepository/Measuring_Health_Infants_Children_2013.pdf.

(3) Ontario. Ministry of Health and Long-Term Care. Postpartum implementation guidelines for the Healthy Babies, Healthy Children program [Internet]. Toronto, ON: Queen’s Printer for Ontario; c2002 [cited 2013 Jan 1]. Available from: http://www.health.gov.on.ca/english/providers/pub/child/hbabies/postpartum.html.

Table A.15: Immunization Records Information System (IRIS)

	Overview	Coverage	Sustainability and Funding	Accessibility
	Purpose To assess and maintain records of the immunization status of school pupils (Under the *Immunization of School Pupils Act (ISPA)*, each board of health is required to enter this data into IRIS). IRIS is also used to identify students who have incomplete immunization records or who are overdue for immunizations, and can be used to generate vaccine coverage reports by birth cohort **Administrator** The Ministry of Health and Long-Term Care (MOHLTC) provides and implements IT support and vaccine coverage programming logic. Public health units are responsible for data entry, data management and all other routine operations **Type of data source** Decentralized system of 36 locally maintained IRIS databases **Data collection method** Parents report immunizations received by their children to their public health unit. This information is then entered into	**Included populations** All children attending licensed child care centres, as per the *Day Nurseries Act,* and all students attending elementary and secondary schools, as per the *ISPA.* **Excluded populations** Home-schooled students and students attending private schools may not be fully represented in IRIS **Sample size** Not applicable **Response rate** Not applicable **Type of parental consent** Not applicable **Type of reporting** Not applicable	**Years conducted** Conducted since 1992 Current activities underway to replace IRIS with Panorama. For several public health units, this will be in 2013 and for the public remaining health units, in 2014/15 **Frequency of data collection** Ongoing data collection. Data are entered retrospectively when a child enrolls in a licensed childcare centre, elementary school or high school. Health-unit-delivered immunizations (e.g. school-based clinics) are entered prospectively **Funding provider** Currently, funding is provided by MOHLTC. Funding for this system will be provided until its replacement by Panorama	**Data release and access** Public health units provide immunization coverage reports annually to PHO so that health-unit-specific data can be compiled for coverage reporting at the provincial level A summary of immunization coverage at the provincial level for 2011–12 can be found in PHO's Monthly Infectious Diseases Surveillance Report (www.oahpp.ca/resources/monthly-infectious-diseases-surveillance-report.html). Summary information not routinely included in each issue (most recently included in Volume 1, Issue 12) Access to public health unit IRIS data would need to be discussed with the respective medical officer of health **Public health unit access** Public health units are the data custodians for IRIS data **Examples of record linkages** HPV-specific IRIS data have been linked with administrative health data in a population-based, retrospective cohort study

Table A.15: Immunization Records Information System (IRIS)

	Overview	Coverage	Sustainability and Funding	Accessibility
	IRIS Public health units enter immunizations that public health unit staff administer into the system (e.g., at immunization clinics run by public health units and at school-based immunization clinics) Information can also be collected from physician records if parental consent is received Boards of education and private schools within the boundaries of each public health unit are asked to provide student enrollment data which are imported into IRIS and provide the denominator data **Content** Under the *ISPA,* immunization records are entered into IRIS. The focus of the *ISPA* is on the following vaccine antigens: measles, mumps, rubella, diphtheria, tetanus and polio. However, public health units use IRIS to record additional immunizations, especially those that are publicly-funded and those that are administered by public health unit staff			(Smith et al., 2011). This study examined the factors associated with the initiation and completion of the quadrivalent HPV series in a cohort of Grade 8 girls in Ontario **Ability to purchase oversamples** Not applicable

Table A.15: Immunization Records Information System (IRIS)

	Overview	Coverage	Sustainability and Funding	Accessibility
	Data on exemptions (medical, religious, conscientious) are collected in IRIS – with the focus being on the *ISPA* antigens There are no designated diseases under the *Day Nurseries Act*. Medical Officers of Health (MOH) at each public health unit determine what additional vaccinations are needed			
Strengths	IRIS is the sole source of routinely collected and regularly updated data on individual-level immunization uptake among school-aged children and adolescents in Ontario		Stable government funding Able to provide information for trend analysis	
Limitations	System currently runs on outdated operating system which can be challenging to use Limited data entry policies and guidelines available provincially	Does not capture information on pre-school-aged children who are at home or who attend unlicensed day cares. Homeschool students and private school students may not be consistently captured Limited information on young children under the age of two Because of a lack of unique identifier within IRIS, duplicate records may be present which can result in lower than		Due to the decentralized nature of IRIS, assessment of immunization coverage at a health region or provincial level can only be accomplished by collating aggregate data provided by individual public health units

Table A.15: Immunization Records Information System (IRIS)

	Overview	Coverage	Sustainability and Funding	Accessibility
		anticipated coverage estimates Due to the parameters of IRIS programming logic used to generate immunization coverage reports, IRIS may tend to over- or under-estimate immunization coverage for some vaccine antigens, depending on the age of the assessed birth cohort It is challenging that information is not available by grade because the eligibility criteria for school-based immunization programs are based on grade rather than age		
Verified as of: March 2013				
Data source expert(s): Jill Fediurek, *Manager, Immunization and Vaccine-Preventable Diseases*, Communicable Disease Prevention and Control (CDPC), Public Health Ontario (PHO) Sarah Wilson, *Medical Epidemiologist*, CDPC, PHO				

APHEO Core Indicators Covered

- Childhood vaccination coverage
- Population by age and sex

Sources:

(1) Association of Public Health Epidemiologists in Ontario. Immunization Records Information System (IRIS) [Internet]. Toronto, ON: APHEO; 2009 [cited 2012 Dec 1]. Available from: http://www.apheo.ca/index.php?pid=205.

(2) Ontario Agency for Health Protection and Promotion (Public Health Ontario). Monthly infectious diseases surveillance report: volume 1, issue 12 [Internet]. Toronto, ON: Queen’s Printer for Ontario; 2012 [cited 2012 Feb 1]. Available from: http://www.publichealthontario.ca/en/DataAndAnalytics/Documents/2012_November_PHO_Monthly_Report.pdf.

(3) Ontario Agency for Health Protection and Promotion (Public Health Ontario). Measuring the health of infants, children and youth for public health in Ontario: indicators, gaps, and recommendations for moving forward. Toronto, ON: Queen’s Printer for Ontario; 2012 [cited 2012 Dec 15]. Available from: http://www.publichealthontario.ca/en/eRepository/Measuring_Health_Infants_Children_2013.pdf.

(4) Ontario Population Health Index of Databases. Immunization Records Information System (IRIS) [Canada] [Internet]. Ottawa, ON: Ontario Council of University Libraries and Population Health Improvement Research Network; c2015 [cited 2012 Dec 1]. Available from: http://ophid.scholarsportal.info/details/view.html?q=act&uri=/phirn/iris_PHIRN_e.xml.
(5) Smith L, Brassard P, Kwong J, Deeks S, Ellis A, Lévesque L. Factors associated with initiation and completion of the quadrivalent human papillomavirus vaccine series in an Ontario cohort of grade 8 girls. BMC Public Health 2011;11:645. Available from: http://www.biomedcentral.com/1471-2458/11/645

Table A.16: Integrated Public Health Information System (iPHIS)

	Overview	Coverage	Sustainability and Funding	Accessibility
	Purpose In Ontario, infectious disease data are reported by public health units using the iPHIS, a web-based reporting system. The province has used this application since 2005 for reportable disease surveillance. Each of the 36 health units in Ontario uses iPHIS to report over 70 diseases in accordance with Ontario Regulation 569 and Ontario Regulation 559/91 pursuant to the *Health Protection and Promotion Act* (HPPA), R.S.O 1990 **Administrator** Within Ontario, iPHIS is managed by the Ministry of Health and Long-Term Care (MOHLTC), eHealth Ontario, and Public Health Ontario (PHO) **Type of data source** Provincially-managed surveillance system **Data collection method** In Ontario, public health units must enter cases and contacts of reportable diseases into iPHIS within one or five business days (depending on the disease) of receiving notification of the case	**Included populations** Clients confirmed with or suspected of having one or more reportable diseases in accordance with Ontario provincial case definitions in place at the time of their identification or contacts of those clients Individuals given rabies post-exposure prophylaxis **Excluded populations** Not applicable **Sample size** Not applicable **Response rate** Not applicable **Type of parental consent** Not applicable **Type of reporting** Not applicable	**Years conducted** Operating since it replaced Reportable Disease Information System (RDIS) in 2005. Also contains basic data from RDIS for reportable disease frequency reporting. RDIS was in place from the early 1990s to 2005 **Frequency of data collection** Ongoing data collection. Public health units must enter cases and contacts of reportable diseases into iPHIS within one or five business days (depending on the disease) of receiving notification of the case PHO can use Cognos 10 (the iPHIS reporting software) to extract data from iPHIS approximately one hour after data entry **Funding provider** MOHLTC provides funding for iPHIS Funding will continue until the MOHLTC replaces iPHIS with a new system	**Data release and access** PHO uses iPHIS data to create various surveillance summary reports found on PHO website (e.g., Monthly Infectious Diseases Surveillance Reports, Ontario Respiratory Virus Bulletin) To acquire datasets, requestors must complete a General Data Access Request Form and submit it to PHO (privacy@oahpp.ca) for review. After review, PHO may disclose data, and requestors may require a data sharing agreement Public health units also use the data to produce local reports **Public health unit access** Public health units can enter data and view information for cases and contacts from across Ontario, but using Cognos 10, they can only extract data on cases or contacts that reside within their boundaries Public health units extract their own data from iPHIS using Cognos 10, the business intelligence tool used for iPHIS reporting

Table A.16: Integrated Public Health Information System (iPHIS)

	Overview	Coverage	Sustainability and Funding	Accessibility
	The most common source of case identification is through laboratory notification of confirmed test results (e.g., serology, microbiology, cultures). However, under the *HPPA*, designated reportable diseases or suspected occurrences of these diseases must be reported to public health units by physicians, administrators of hospitals, schools and institutions Cases are classified in iPHIS according to MOHLTC's case definitions **Content** iPHIS includes five modules: Demographics, Sexually Transmitted Disease, Tuberculosis, Communicable Disease (only used for rabies post-exposure prophylaxis), and Outbreak Management For cases and contacts of reportable diseases, iPHIS provides: • Data collection • Case and contact management for reportable diseases • Client information and			**Examples of record linkages** Information not available **Ability to purchase oversamples** Not applicable

Table A.16: Integrated Public Health Information System (iPHIS)

	Overview	Coverage	Sustainability and Funding	Accessibility
	demographics • Reporting and analysis of information • Outbreak management			
Strengths	iPHIS contains standardized fields and is a centralized repository for public health units	A record of all reported reportable diseases within the province	Stable government funding Able to provide information for trend analysis	Web-enabled access for approved and validated users
Limitations	There may be inconsistencies with respect to data collection and level of detail in data entry across public health units Public health units are individual entities and may have different processes for reportable disease case and contact management. The majority of data elements are not system mandatory and data quality is difficult to determine Timeliness of entry may be a problem Data entry must be done manually and cannot be automated	Passive surveillance may result in underreporting of cases in iPHIS; the extent of under-reporting varies by disease iPHIS may contain duplicate records. This could be a result of the migration from the former decentralized RDIS databases or due to inconsistencies in data entry Public health units may not be able to collect information about clients with positive tests from other jurisdictions		

Verified as of: October 2013

Data source expert(s):
Tina Badiani, *Manager, Surveillance Services*, Communicable Disease Prevention and Control (CDPC), Public Health Ontario (PHO)
Cherie Bruce, *Team Lead, Surveillance Integration and Support,* CDPC, PHO
Ellen Chan, *Epidemiologist Lead, CDPC,* PHO
Andrew Lefebvre, *Senior Program Specialist,* CDPC, PHO
Michael Whelan, *Epidemiologist Lead*, CDPC, PHO

APHEO Core Indicators Covered

- Adverse events following immunization
- Congenital infections
- Infectious disease incidence
- Infectious disease mortality
- Population by age and sex

Sources:
1) Association of Public Health Epidemiologists in Ontario. Integrated Public Health Information System (iPHIS) [Internet]. Toronto, ON: APHEO; 2011 [cited 2013 Jan 1]. Available from: http://www.apheo.ca/index.php?pid=187.
2) Ontario Agency for Health Protection and Promotion (Public Health Ontario). Measuring the health of infants, children and youth for public health in Ontario: indicators, gaps, and recommendations for moving forward. Toronto, ON: Queen's Printer for Ontario; 2012 [cited 2012 Dec 15]. Available from: http://www.publichealthontario.ca/en/eRepository/Measuring_Health_Infants_Children_2013.pdf.
3) Ontario Population Health Index of Databases. Integrated Public Health Information System (iPHIS) [Internet]. Ottawa, ON: Ontario Council of University Libraries and Population Health Improvement Research Network; c2015 [cited 2013 Jan 1]. Available from: http://ophid.scholarsportal.info/details/view.html?q=enter&uri=/phirn/iphis_PHIRN_e.xml.

Table A.17: Kindergarten Parent Survey (KPS)

	Overview	Coverage	Sustainability and Funding	Accessibility
	Purpose To gather parental perspective and provide context for understanding the outcomes of the Early Development Instrument (EDI), a survey instrument completed by teachers that assesses children's readiness to learn **Administrator** The Offord Centre for Child Studies (OCCS) **Type of data source** Sample survey with cross-sectional design **Data collection method** Teachers distribute paper- and-pencil take-home surveys to children for parent/guardian completion. Completed survey is returned to the school or directly to the OCCS Survey is administered along with the EDI **Content** The core KPS consists of seven sections: • Child Health and Development • Child Care	**Included populations** Kindergarten-aged children in Ontario whose teachers completed the EDI **Excluded populations** Children enrolled in private schools **Sample size** National: Not applicable Ontario: 25,492 respondents in 2012 **Response rate** National: Not applicable Ontario: An average response rate of approximately 50% in 2012 (response rate varies by board/community and can range from 30%–80%) **Type of parental consent** Active parental consent **Type of reporting** Proxy-reported (parent)	**Years conducted** Developed in 2003. KPS has been completed concurrently with EDI collection in Ontario in 2010, 2011, and 2012 Current discussions as to whether or not the KPS will be continued **Frequency of data collection** Data collection frequency follows the EDI **Funding provider** In Ontario, the Ministry of Children and Youth Services (MCYS) provides funding to the OCCS and Data Analysis Coordinators (DACs) for some aspects of KPS implementation DACs are a program. Each DAC plays a specific role detailed by the agency/group that holds the funding from the MCYS	**Data release and access** The OCCS provides data to the MCYS and DACs Local DACs are responsible for responding to data requests **Public health unit access** Public health units may be able to access aggregate levels of their local KPS data through consultation with OCCS or the local DAC **Examples of record linkages** Surveys are linked to the EDI through student identification numbers, however, all reporting is completed at aggregate levels **Ability to purchase oversamples** Not applicable

Table A.17: Kindergarten Parent Survey (KPS)

	Overview	Coverage	Sustainability and Funding	Accessibility
	• Pre-kindergarten • Senior Kindergarten • Family • Neighbourhood • Background Information Participating communities additionally have the option to incorporate questions that are tailored to their community			
Strengths	Provides supplementary information for understanding child's readiness to learn (EDI) outside of the classroom setting			
Limitations	Take-home survey method may reduce response-rate levels	Some school boards include the KPS with data collection, while others do not. In 2010, 2011 and 2012, approximately 13, 17 and 27 regions implemented both the EDI and KPS, respectively KPS data are subject to response bias where children whose parents completed the KPS tend to have better EDI scores than children who parents did not complete Strictly proxy-reported		The survey is implemented by community or school board therefore, data must be re-aggregated to ensure there is appropriate coverage at the public health unit level. However, not every DAC has the capacity or resources to do so
Verified as of: February 2013				
Data source expert(s): Magdalena Janus, *Associate Professor,* Department of Psychiatry and Behavioural Neurosciences, Offord Centre for Child Studies, McMaster University Caroline Reid-Westoby, *Research Assistant,* Offord Centre for Child Studies, McMaster University				

APHEO Core Indicators Covered

Not available

Sources:

(1) Janus M, Brinkman S, Duku E, Hertzman C, Santos R, Sayers M, et al. The Early Development Instrument: a population-based measure for communities, a handbook on development, properties and use. Ottawa, ON: Offord Centre for Child Studies; 2007 [cited 2013 Jan 1]. Available from: http://www.offordcentre.com/readiness/pubs/2007_12_FINAL.EDI.HANDBOOK.pdf.

Table A.18: National Ambulatory Care Reporting System (NACRS)

	Overview	Coverage	Sustainability and Funding	Accessibility
	Purpose To capture information on client visits to facility- and community-based ambulatory care **Administrator** Canadian Institute for Health Information (CIHI) **Type of data source** Administrative database **Data collection method** Data are collected at the time of service in participating facilities Provinces determine which facilities will be included in NACRS. In Ontario, participating facilities submit their data directly to CIHI. Following validity checks and data cleaning, data may be sent back to facilities for corrections. The correction and editing steps are repeated until either abstract is successfully corrected or the database closes at the year-end deadline (July 31). Following this date, database is closed and edits can no longer be made Year-end data file subsequently sent to the Ministry of Health and Long-Term Care (MOHLTC)	**Included populations** Individuals who use ambulatory care services from participating facilities (emergency departments, day procedures, clinics) **Excluded populations** Not applicable **Sample size** Not applicable **Response rate** Not applicable **Type of parental consent** Not applicable **Type of reporting** Not applicable	**Years conducted** Developed and implemented since 1997 **Frequency of data collection** Participating hospitals submit data within a fiscal year (April 1–March 31) to CIHI on an ongoing basis **Funding provider** Funding for CIHI databases is shared between the federal government and provinces/territories	**Data release and access** The first year of data available is 2000/01 Custom data requests can be made by submitting CIHI Data Inquiry Form on a cost-recovery basis Data can also be accessed from CIHI at no cost as part of the Institute's Graduate Student Data Access Program Access to Ontario files requires signing a Data Access agreement with the Knowledge Management and Reporting Branch of MOHLTC **Public health unit access** Public health units can obtain access to data through IntelliHEALTH Ontario. IntelliHEALTH is updated quarterly with refreshed data **Examples of record linkages** Data are linked to other health administrative data in the province through collection of postal codes (if used along with the Postal Code Conversion File from Statistics Canada) and encrypted health card numbers

Table A.18: National Ambulatory Care Reporting System (NACRS)

	Overview	Coverage	Sustainability and Funding	Accessibility
	Content List of data elements in the NACRS is available from CIHI Data elements are grouped according to five categories: demographic, clinical, administrative, financial and service-specific, with information on discharges, deaths and transfer within a fiscal year In the past, NACRS used to capture day surgery procedures, diagnostic imaging visits and numerous clinic visits (e.g., renal dialysis, cardiac catheterization, oncology and mental health) In Ontario, facilities are mandated to submit abstracts for all emergency department, day surgery, renal dialysis, oncology and cardiac catheterization clinic visits One NACRS record per type of functional centre service			(HCNs). Encrypted HCNs can only be linked to other CIHI data sources using the same encryption algorithm **Ability to purchase oversamples** Not applicable
Strengths	System in place to enhance accuracy and completeness of abstract records	All publicly funded hospital admissions are captured	Stable government funding Past and continued data collection can provide information for trend analysis	Able to link with other data sources

Table A.18: National Ambulatory Care Reporting System (NACRS)

	Overview	Coverage	Sustainability and Funding	Accessibility
Limitations	Data provide only a crude measure of the prevalence of cause	Over-coverage of data may occur if duplicate records are created for an individual (e.g., copying an abstract for subsequent visits and failing to update information) or if visits to different service providers are recorded as separate records		
Verified as of: February 2013				
Data source expert(s): Jeremy Herring, *Epidemiologist Lead*, Analytic Services, Knowledge Services, Public Health Ontario				

APHEO Core Indicators Covered

- Fall-related emergency department visits
- Fall-related hospitalizations
- Injury-related emergency department visits
- Injury-related hospitalization
- Intentional self-harm-related hospitalization
- Neurotrauma-related hospitalization
- Pelvic inflammatory disease morbidity
- Population by age and sex
- Seatbelt use

Sources:

(1) Canadian Institute for Health Information. Data quality documentation for external users: National Ambulatory Care Reporting System, 2010–2011 [Internet]. Ottawa, ON: CIHI; 2011 [cited 2012 Dec 1]. Available from: http://www.cihi.ca/CIHI-ext-portal/pdf/internet/nacrs_exec_summ_2010_2011_EN.

(2) Canadian Institute for Health Information. National Ambulatory Care Reporting System (NACRS) [Internet]. Ottawa, ON: CIHI; c1996-2014 [cited 2012 Dec 1]. Available from: http://www.cihi.ca/cihi-ext-portal/internet/en/document/types+of+care/hospital+care/emergency+care/nacrs_metadata.

(3) Ontario Agency for Health Protection and Promotion (Public Health Ontario). Measuring the health of infants, children and youth for public health in Ontario: indicators, gaps, and recommendations for moving forward. Toronto, ON: Queen's Printer for Ontario; 2012 [cited 2012 Dec 15]. Available from: http://www.publichealthontario.ca/en/eRepository/Measuring_Health_Infants_Children_2013.pdf.

(4) Ontario. Ministry of Health and Long-Term Care. Health analyst's toolkit. Ottawa, ON: Queen's Printer for Ontario; 2012. Available from: http://www.health.gov.on.ca/english/providers/pub/healthanalytics/health_toolkit/health_toolkit.pdf.

Table A.19: Ontario Student Drug Use and Health Survey (OSDUHS)

	Overview	Coverage	Sustainability and Funding	Accessibility
	Purpose To support regional and provincial level planning in Ontario through the collection of information about health and risk behaviour, attitudes and beliefs of Ontario youth related primarily to alcohol, tobacco and other drug use, as well as indicators of mental and physical health **Administrator** Centre for Addiction and Mental Health (CAMH) **Type of data source** Sample survey with cross-sectional design **Data collection method** Self-administered paper-and-pencil questionnaire conducted in classroom setting **Content** Two versions of the questionnaire (Form A and Form B) with overlapping content. One version administered to one half of the class Topics in survey include: • Tobacco • Alcohol and other drug use	**Included populations** Students in grades 7–12 enrolled in the public and Catholic school systems from 1999 and forward. Previous to that, collected for grades 7, 9, and 11 **Excluded populations** Excludes individuals in private schools or homeschools; in institutions for correctional or health reasons; on Indian reserves and Canadian Forces bases; and in far northern regions of Ontario. Special education classes and English as a Second Language classes are excluded. Excluded groups represent a proportion of about 7% of Ontario students **Sample size** National: Not applicable Ontario: 9,288 respondents (after data-editing) in 2011 (representing 40 school boards, 181 schools, 581 classes) **Response rate** National: Not applicable Ontario: 62% response rate from students in participating classes in 2011	**Years conducted** Began in 1977, 18 cycles conducted since then. Latest cycle of data collection was in 2011 **Frequency of data collection** Biennial **Funding provider** Funded by CAMH (indirectly by Ministry of Health and Long-Term Care)	**Data release and access** Aggregate data are available in tabular form through CAMH's publications and reports The drug use report is released 6 months after the end of data collection. The mental health and well-being report is released 12 months after the end of data collection Data requests for the most current OSDUHS public use microdata file evaluated on a case-by-case basis **Public health unit access** Potential for public health unit access if sample size is sufficient. Purchase of oversampling of students in select number of public health unit regions is possible **Examples of record linkages** None to date. Current discussions of potential studies regarding linkage of survey data with Census data (using the school postal code) and school-level data (using the school identification number)

Table A.19: Ontario Student Drug Use and Health Survey (OSDUHS)

	Overview	Coverage	Sustainability and Funding	Accessibility
	and harmful consequences of use • Mental health indicators • Physical health indicators • Health-care utilization • Body image • Gambling and video- gaming behaviours and problems • Violence and bullying • Criminal behaviours • School connectedness • Family life	**Type of parental consent** Active parental consent **Type of reporting** Self-reported		**Ability to purchase oversamples** Yes. A limited number of public health units are able to purchase oversamples of students in their public health unit region
Strengths		Able to provide stable provincial estimates for youth	Stable government funding Long-running survey, past and continued data collection can provide information for trend analysis	Able to purchase oversamples
Limitations		Survey samples only those enrolled in schools and excludes at-risk groups such as homeless/street youth and dropouts Collection of sensitive information from self-reports may result in biased/under-reported data		Public health units can purchase oversamples but only a select number can purchase each cycle. Estimates not available at the public health unit level except through oversampling
Verified as of: February 2013				
Data source expert(s): Angela Boak, *Research Coordinator & Analyst*, Centre for Addiction and Mental Health				

APHEO Core Indicators Covered

- Adolescent body mass index
- Heavy drinking episodes

- Leisure-time physical activity
- Motor vehicle traffic collision injuries (similar information)
- Population by age and sex
- Screen time
- Smoking status
- Suicidal thoughts and attempts
- Underage alcohol drinking

Sources:
(1) Ontario Agency for Health Protection and Promotion (Public Health Ontario). Measuring the health of infants, children and youth for public health in Ontario: indicators, gaps, and recommendations for moving forward. Toronto, ON: Queen’s Printer for Ontario; 2012 [cited 2012 Dec 15]. Available from: http://www.publichealthontario.ca/en/eRepository/Measuring_Health_Infants_Children_2013.pdf.
(2) Paglia-Boak A, Adlaf EM, Mann RE. Drug use among Ontario students, 1977-2011: detailed OSDUHS findings. Toronto, ON: Centre for Addiction and Mental Health; 2011. Available from: http://www.camh.ca/en/research/news_and_publications/ontario-student-drug-use-and-health-survey/Documents/2011%20OSDUHS%20Docs/2011OSDUHS_Detailed_DrugUseReport_2.pdf.

Table A.20: Oral Health Information Support System (OHISS)

	Overview	Coverage	Sustainability and Funding	Accessibility
	Purpose To support the administration of all public health dental programs for children and youth that are mandated by the Ontario Public Health Standards **Administrator** Ministry of Health and Long-Term Care (MOHLTC) **Type of data source** Administrative database **Data collection method** Public health unit staff collect and upload information following program administration onto a central eHealth server **Content** System captures oral-health assessment, treatment, prevention and surveillance practices as specified in the *Ontario Public Health Standards,* Child Health program (e.g., administration of the Children In Need Of Treatment program (CINOT) and expansion program, publicly funded elementary school screening and OPHS-provided preventive services) OHISS is also used to keep track of the following public health	**Included populations** All children and youth aged 17 years and under who receive publicly funded screening/preventive dental services, who are part of the CINOT program/CINOT expansion program, HSO program, or OW program (where the health unit is the local administrator) **Excluded populations** Not applicable **Sample size** Not applicable **Response rate** Not applicable **Type of parental consent** Not applicable **Type of reporting** Not applicable	**Years conducted** OHISS has been operating since fall 2008 (Redeveloped from CINOT software) **Frequency of data collection** Ongoing, real-time data collection **Funding provider** MOHLTC	**Data release and access** Access to data for analysis is limited to public health units and MOHLTC OHISS data have been reported in Ontario's poverty reduction strategy annual reports. Health units also report data in community health status reports **Health unit access** Health units can obtain data for programs they administer by accessing the eHealth server Health units are provided with provincial roll up data **Examples of record linkages** Currently unable to link with other data sources **Ability to purchase oversamples** Not applicable

Table A.20: Oral Health Information Support System (OHISS)

	Overview	Coverage	Sustainability and Funding	Accessibility
	dental programs: • Healthy Smiles Ontario (HSO) • Ontario Works (OW) (where the public health unit is the local administrator) • Local program options (at the discretion of the public health unit) OHISS uses prompts for the completion of mandatory fields to standardize the type of information collected across public health units			
Strengths	OHISS provides oral health surveillance data and administrative support for public health dental programs	Able to generate provincial estimates of child and youth oral health	Collection of data in real-time	
Limitations	Data collection is the responsibility of individual public health units. Data collection methods and quality of data may vary across public health units	System does not capture children and youth who are ineligible for publicly funded dental programs		Data not available for analysis outside of public health units and MOHLTC due to *Personal Health Information Protection Act* restrictions
Verified as of: February 2013				
Data source expert(s): Expert not listed				

APHEO Core Indicators Covered

- Caries-free children
- Children with dental treatment needs
- Deft/DMFT index
- Fluorosis index
- Population by age and sex

Sources:

(1) Ontario Agency for Health Protection and Promotion (Public Health Ontario). Measuring the health of infants, children and youth for public health in Ontario: indicators, gaps, and recommendations for moving forward. Toronto, ON: Queen's Printer for Ontario; 2012 [cited 2012 Dec 15]. Available from: http://www.publichealthontario.ca/en/eRepository/Measuring_Health_Infants_Children_2013.pdf.

(2) Ontario. Ministry of Health Promotion, Standards, Programs & Community Development Branch. Child health program oral health guidance document. Toronto, ON: Queen's Printer for Ontario; 2010. Available from: http://www.mhp.gov.on.ca/en/healthy-communities/public-health/guidance-docs/ChildHealth-OralHealth.PDF.

Table A.21: Physical Activity Monitor (PAM)

	Overview	Coverage	Sustainability and Funding	Accessibility
	Purpose To track changes in physical activity patterns, factors influencing participation, and life circumstances in Canada Survey is part of the monitoring program which helps policy makers measure levels of physical activity in the population **Administrator** Canadian Fitness and Lifestyle Research Institute (CFLRI) **Type of data source** Sample survey with cross-sectional design **Data collection method** CATI Interviewing conducted by the Institute for Social Research at York University on behalf of CFLRI **Content** Physical activity assessment is based on an adapted version of the Minnesota Leisure-Time Physical Activity Questionnaire in most survey years. Other years include the International Physical	**Included populations** Survey generally samples individuals aged 18 years or older, though several waves have sampled individuals aged 15 years or older For certain waves, if sampled individual is also a parent of a child under 18 years of age who is living at home, information on the child will also be collected **Excluded populations** For the collection of data pertaining to children and youth, households are not included if they do not have children in the appropriate age range **Sample size** Varies depending on the population being surveyed National: Approximately 3,997 parents were selected for the 2010 PAM to provide information on their child aged 5–17 years Ontario: Approximately 984 parents were selected for the 2010 PAM to provide information on their child aged 5–17 years	**Years conducted** 1995, 1997–2011 The 2000, 2003, 2005, 2008, 2010 and 2011 PAM themes were specifically focused on children and youth **Frequency of data collection** Generally conducted every year for adults, and less frequently for parents of children **Funding provider** Public Health Agency of Canada, Sport Canada (part of the Federal Department of Canadian Heritage), and the provincial and territorial government departments responsible for physical activity, sport, and recreation through auspices of the Interprovincial Sport and Recreational Council	**Data release and access** Data are not available for analysis outside of the CFLRI Summary tables are available online on CFLRI website in the form of reports and bulletins. Results are generally posted within 6 months from the conclusion of data collection **Public health unit access** Data are not available for analysis outside of the CFLRI **Examples of record linkages** None to date **Ability to purchase oversamples** Yes. Survey partners can add sample either nationally or for a particular province or region

Table A.21: Physical Activity Monitor (PAM)

	Overview	Coverage	Sustainability and Funding	Accessibility
	Activity Questionnaire, short telephone version Each wave focuses on a different theme related to physical activity. Themed surveys typically follow a 5 year cycle of data collection Themes focused on children and youth include: • Preferences for types of activity • Extracurricular activities at school • Opportunities in the community • Family participation and support • Time spent in active and sedentary pursuits after school	**Response rate** Varies depending on the population being surveyed National: Could not be determined Ontario: Could not be determined **Type of parental consent** Verbal consent **Type of reporting** Proxy-reported (parent)		
Strengths			Annual data collection, although focus of survey and methodology may not be the same each year	
Limitations		The target age range in sample group varies across waves Use of strictly proxy-reporting when collecting information for youth		Data files not available for external analysis
Verified as of: March 2013				
Data source expert(s): Christine Cameron, *Acting President*, Canadian Fitness and Lifestyle Research Institute				

APHEO Core Indicators Covered

Not available

Sources:
(1) Canadian Fitness and Lifestyle Research Institute. CFLRI publications [Internet]. Ottawa, ON: CFLRI; c2013 [cited 2013 Jan]. Available from: http://www.cflri.ca/node/78.
(2) Canadian Fitness and Lifestyle Research Institute. Overview physical activity and sport monitoring program [Internet]. Ottawa, ON: CFLRI; c2013 [cited 2013 Jan 1]. Available from: http://www.cflri.ca/node/13.
(3) Craig CL, Cameron C, Russell SJ, Beaulieu A. Increasing physical activity: building a supportive recreation and sport system. Ottawa, ON: CFLRI; 2001. Available from: http://www.cflri.ca/media/node/422/files/2000pam.pdf.

Table A.22: Regional Health Survey (RHS)

	Overview	Coverage	Sustainability and Funding	Accessibility
	Purpose To collect and analyze the health and well-being of First Nations (created by First Nations, for First Nations) **Administrator** Overseen by the First Nations Information Governance Committee (FNIGC) The RHS National Team responsible for national coordination Independent RHS Regional Partners responsible for regional coordination. In Ontario, regional coordination conducted by Chiefs of Ontario **Type of data source** Sample survey with cross-sectional design (longitudinal framework used in initial phases) **Data collection method** CAPI Some paper surveys were completed and entered **Content** Pertaining to children and youth, the survey collects information	**Included populations** First Nations individuals in 250 First Nations communities in the 10 participating regions in Canada (including all provinces and territories) **Excluded populations** Populations in Nunavut excluded from Phase II study **Sample size** National: In Phase II, 216 communities; 5,877 child respondents (0–11 years); 4,837 youth respondents (12–17 years) Ontario: In Phase II, 24 communities; 770 child respondents (0–11 years); 600 youth respondents (12–17 years) **Response rate** National: In Phase II, 72.5%; response rate for children and youth could not be determined Ontario: In Phase II, 63.1%; response rate for children and youth could not be determined **Type of parental consent** Active parental consent for	**Years conducted** Pilot survey (1997) Phase I (2002/2003) Phase II (2008/2010) Phase III and IV anticipated to be implemented in 2013 and 2016, respectively **Frequency of data collection** Approximately every four years **Funding provider** Primary funding is from the First Nations Inuit Health Branch of Health Canada	**Data release and access** FNIGC and its regionally-affiliated organizations are mandated and authorized to produce national- and regional-level reports. Any documents beyond this are produced at the discretion of the FNIGC/regionally-affiliated organization. Reports generally released two years after data collection Each region is responsible for their own databases and reporting Phase I RHS results for Ontario available at the Chiefs of Ontario website. Phase II Ontario results yet to be released To obtain data, a contract is prepared, with pre-determined costs, and sent to the requesting entity. Fees may not be applied to First Nations organizations seeking data due to the First Nation principles of Ownership, Control, Access, and Possession Record-level data never shared and community-level data generally not shared outside of First Nations or with public health units

Table A.22: Regional Health Survey (RHS)

	Overview	Coverage	Sustainability and Funding	Accessibility
	on: • Health conditions and chronic diseases • Injuries • Health care utilization and preventive care • Dental care • Prenatal health • Personal wellness • Demographics • Education • Household Environment • Substance use and misuse • Exercise, nutrition and food security • Sexual health practices Survey additionally accommodates region-specific survey modules for certain regions	children aged 0–11 years **Type of reporting** Proxy-reported (primary guardian) for children aged 0–11 years Self-reported in all other cases, including youth aged 12–17 years		**Public health unit access** General access procedures as described above for obtaining data sets **Examples of record linkages** Information not available **Ability to purchase oversamples** Information not available
Strengths	Survey collects information on a priority population	Survey provides representation of First Nations individuals living on reserves		
Limitations		Use of strictly proxy reporting for children aged 0–11 years	Data are collected every four years	Release of provincial reports not as timely and not easily accessible Record-level data never shared and community-level data generally not shared outside of First Nations or with public health units
Verified as of: February 2013				
Data source expert(s):				

Table A.22: Regional Health Survey (RHS)

	Overview	**Coverage**	**Sustainability and Funding**	**Accessibility**
Alexander Yurkiewich, *Statistical Analyst*, Chiefs of Ontario				

APHEO Core Indicators Covered

Not available

Sources:
(1) Chiefs of Ontario. 2002/2003 Ontario First Nations Regional Health Survey: executive summary [Internet] Toronto, ON: COO; 2003 [cited 2013 Dec 1]. Available from: http://www.chiefs-of-ontario.org/sites/default/files/files/Regional%20Health%20Survey%202002-2003.pdf.
(2) First Nations Information Governance Centre. First Nations Regional Health Survey (RHS) phase 2 (2008/10): national report on the adult, youth and children living in First Nations communities. Ottawa, ON: FNIGC; 2012. Available from: http://www.fnigc.ca/sites/default/files/First_Nations_Regional_Health_Survey_2008-10_National_Report.pdf.
(3) First Nations Information Governance Centre. About RHS [Internet]. Ottawa, ON: FNIGC; c2013 [cited 2013 Dec. 1]. Available from: http://fnigc.ca/our-work/regional-health-survey/about-rhs.html.

Table A.23: School Health Action Planning and Evaluation System (SHAPES)

	Overview	Coverage	Sustainability and Funding	Accessibility
Note: SHAPES refers to the generic system used to gather evidence and provide feedback to guide planning and action at the school, regional, provincial and national levels (depending on the particular study). The system has been used in a variety of contexts This table refers primarily to the SHAPES-Ontario study, which applied the system)	**Purpose** To provide evidence for population–based intervention planning, evaluation and field research on youth at the local level and for aggregation at regional, provincial, national levels In Ontario, SHAPES was used in a project (SHAPES Ontario) to inform health promotion strategies by gathering baseline data on local youth smoking and physical activity **Administrator** The Propel Centre for Population Health Impact at the University of Waterloo **Type of data source** School data collection, feedback and planning tool **Data collection method** Individual, machine-readable questionnaires administered to students during class period Parallel school-level questions are answered by school staff **Content**	**Included populations** May include students and their schools, grades 5–12 2005/06 included representative samples of secondary school students in six public health unit jurisdictions: Hamilton, Thunder Bay, Ottawa, Simcoe-Muskoka, Middlesex-London, Kingston Since 2005/06, various Ontario public health units have collected data representing students in their public health unit jurisdictions **Excluded populations** Private school students and youth not in school **Sample size** National: Not applicable Ontario: Over 52,000 students between grades 9–12 participated in 2005/06 (76 secondary schools) **Response rate** National: Not applicable Ontario: 73.5% response rate in 2005/06	**Years conducted** In Ontario, SHAPES was implemented in 2005/06 **Frequency of data collection** One-time data collection across Ontario. Currently inactive in Ontario except through individual public health units (e.g., Oxford County, Northwestern) **Funding provider** Funding was project-specific and time-limited and is currently not funded in Ontario Survey was previously funded by the Canadian Institutes of Health Research and the Socio-behavioural Cancer Research Network	**Data release and access** Participating schools receive individualized report or profile of school- health status based on data collected from respondents Disaggregated data disseminated to each participating public health unit with all identifying information at the student and school levels removed Investigators willing to share school-identified data within clearly delineated circumstances **Public health unit access** Public health units able to access reports and data for schools within their districts **Examples of record linkages** Student-level data with school level data (e.g., program, policy, environment). Linkages also made between both the above and GIS data as well as Census information related to school postal code **Ability to purchase oversamples** Propel Centre partners with public health and education to gather evidence to inform local

Table A.23: School Health Action Planning and Evaluation System (SHAPES)

	Overview	Coverage	Sustainability and Funding	Accessibility
	SHAPES consists of four modules: • Tobacco Use • Physical Activity • Healthy Eating • Positive Mental Health Each module establishes behaviours and issues influencing topics of module (e.g., knowledge, social influences, education-related behaviours and attitudes) Additionally collects administrator-level information on related policies, programs and facilities	**Type of parental consent** Passive parental consent **Type of reporting** Self-reported		and provincial planning and action at a cost
Strengths				Ability to provide schools with information compared to other schools Feedback reports provided within 8 weeks of data collection Able to link with other data sources
		Not designed to produce provincial-level estimates. However, it may be representative of the population in the respective public health unit jurisdictions	No trend analysis available for Ontario	
Verified as of: October 2013				
Data source expert(s):				

Table A.23: School Health Action Planning and Evaluation System (SHAPES)

	Overview	Coverage	Sustainability and Funding	Accessibility
Steve Manske, *Senior Scientist*, Propel Centre for Population Health Impact, University of Waterloo				

APHEO Core Indicators Covered

Not available

Sources:
(1) Ontario Agency for Health Protection and Promotion (Public Health Ontario). Measuring the health of infants, children and youth for public health in Ontario: indicators, gaps, and recommendations for moving forward. Toronto, ON: Queen's Printer for Ontario; 2012 [cited 2012 Dec 15]. Available from: http://www.publichealthontario.ca/en/eRepository/Measuring_Health_Infants_Children_2013.pdf.
(2) Propel Centre for Population Health Impact. SHAPES – School Health Action Planning and Evaluation System [Internet]. Waterloo, ON: University of Waterloo; 2013 [cited 2013 Jan 1]. Available from: http://www.shapes.uwaterloo.ca/index.cfm?section=1001&page=1002.
(3) Propel Centre for Population Health Impact. School Health Action, Planning and Evaluation System. Waterloo, ON: University of Waterloo; 2013 [cited 2013 Jan 1]. Available from: http://www.shapes.uwaterloo.ca/_global/documents/SHAPES_2_page_Description_2009-10-30.pdf.

Table A.24: Survey of Young Canadians (SYC)

	Overview	Coverage	Sustainability and Funding	Accessibility
Note: Survey no longer active	**Purpose** To provide provincially and nationally representative information (for children aged 1–5, and aged 6–9, respectively) on child development including the prevalence of risk and protective factors, and cognitive, emotional and behavioural development **Administrator** Statistics Canada **Type of data source** Sample survey with cross-sectional design **Data collection method** Two computer-assisted interviewing methods: 1) CATI 2) CAPI (used to collect direct measures assessments) **Content** Based on the National Longitudinal Survey of Children and Youth Covered topics such as the child's physical and emotional development, health, behaviour, education and learning, activities, family, community and friends	**Included populations** Canadian children aged 1–9 years who live in private dwellings in the ten provinces of Canada The Canada Child Tax Benefit, an administrative database listing all applicants to the benefit, was used to build the survey-frame population **Excluded populations** Children living in the three territories and on Indian reserves **Sample size** National: 10,810 respondents in 2010/11 Ontario: 1,384 respondents in 2010/11 **Response rate** National: 64.9% response rate in 2010/11 Ontario: 60.9% response rate in 2010/11 **Type of parental consent** Active parental consent for direct measures assessment involving children **Type of reporting**	**Years conducted** 2010/11 **Frequency of data collection** Survey no longer active. 2010/11 was the only cycle conducted **Funding provider** Human Resources and Skills Development Canada	**Data release and access** Data released approximately one year after data collection period Master files accessible at Statistics Canada for internal use, in Statistics Canada's Research Data Centres or through custom tabulation requests on a cost-recovery basis **Public health unit access** General access procedures as described above for obtaining data sets **Examples of record linkages** Information not available **Ability to purchase oversamples** Yes. There was potential for oversampling

Table A.24: Survey of Young Canadians (SYC)

	Overview	Coverage	Sustainability and Funding	Accessibility
	Survey comprised four components: • Household (gathered basic household, tracing and demographic information for the child's household) • Person Most Knowledgeable (PMK) (gathered information about the PMK) • Spouse (gathered information about the spouse or partner of the PMK if applicable) • Child (gathered information regarding the selected child) Three direct assessments to be completed by a sub-sample of the 4–5 year olds as part of the child component: • Revised Peabody Picture Vocabulary Test • Number Knowledge • Who am I?	Proxy reported (for child component of survey) Direct assessments were completed by the child		
Strengths		Survey was able to provide stable provincial estimates for children in Ontario Use of direct measures to assess early childhood development		Had relatively timely release of data for analysis Had potential for oversamples to be purchased
Limitations			New survey, limited data for trend analysis No data collection planned in the near future	Summary results not available online
Verified as of: February 2013				

Table A.24: Survey of Young Canadians (SYC)

	Overview	Coverage	Sustainability and Funding	Accessibility
Data source expert(s): Manon Monette, *Acting Director,* Data Management Directorate, Employment and Social Development Canada				

APHEO Core Indicators Covered

- Aboriginal population
- Adolescent body mass index
- Age of parent at infant's birth (similar information)
- Birth weights
- Breastfeeding initiation and duration
- Ethnic/cultural origin
- Home language
- Multiple birthrate
- Per cent who cannot speak English nor French
- Preterm birthrate
- Screen time
- Self-rated health
- Population by age and sex

Sources:
(1) Statistics Canada. Survey of Young Canadians: Microdata user guide. Ottawa, ON: Statistics Canada; 2010.
(2) Ontario Agency for Health Protection and Promotion (Public Health Ontario). Measuring the health of infants, children and youth for public health in Ontario: indicators, gaps, and recommendations for moving forward. Toronto, ON: Queen's Printer for Ontario; 2012 [cited 2012 Dec 15]. Available from: http://www.publichealthontario.ca/en/eRepository/Measuring_Health_Infants_Children_2013.pdf.

Table A.25: Vital Statistics (Live Births, Stillbirths, Mortality data)

	Overview	Coverage	Sustainability and Funding	Accessibility
	Purpose To collect information of all births (including stillbirths) and deaths of individuals within Canada **Administrator** Statistics Canada **Type of data source** Registry **Data collection method** In Ontario, data are collected by Service Ontario–Office of the Registrar General (ORG) and provided to Statistics Canada for editing, approval and national reporting With approval from the ORG, Statistics Canada provides the Ministry of Health and Long-Term Care (MOHLTC) with an edited and standardized data set For live births, births must be registered with the ORG within 30 days of birth using the birth registration form completed by parents and the physician notice of birth form	**Included populations** Nationally, all births and deaths in Canada. In Ontario, live births in Ontario that are registered with the ORG, and Ontario residents who died within the province (also includes non-Ontario residents if births or deaths occurred in the province) **Excluded populations** In Ontario, births and deaths that occur out of the province are not included **Sample size** Not applicable **Response rate** Not applicable **Type of parental consent** Not applicable **Type of reporting** Not applicable	**Years conducted** Start year could not be determined Data are available at Statistics Canada at least from 1971 and collected earlier **Frequency of data collection** Annual **Funding provider** Federal and provincial governments	**Data release and access** With ORG approval, Statistics Canada provides the MOHLTC with an edited and standardized dataset, which is uploaded to IntelliHEALTH Data can be accessed through IntelliHEALTH Ontario portal. Access through IntelliHEALTH is for 1986 to the current year Aggregate data available on Statistics Canada CANSIM database Record-level data may be obtained following requests and agreements with made with the ORG **Public health unit access** Public health units can obtain access to data through IntelliHEALTH Ontario **Examples of record linkages** Information not available **Ability to purchase oversamples** Not applicable

Table A.25: Vital Statistics (Live Births, Stillbirths, Mortality data)

	Overview	Coverage	Sustainability and Funding	Accessibility
	For mortality data, the ORG receives a Medical Certificate of Death (completed by attending physician) and a Statement of Death (completed by the funeral director with assistance of a family member) For stillbirths, information is based on three forms: 1) Notice of Stillbirth completed by the birth attendant 2) Statement of Stillbirth completed by parents 3) More detailed Medical Certificate of Stillbirth completed by birth attendant **Content** Three files provided for each calendar year: 1) Live births in Ontario 2) Stillbirths in Ontario 3) Deaths in Ontario Birth data include information about the baby (sex, date of birth, birthplace, birth weight, gestational age) and parents (age, place of residence, birthplace). Cause of stillbirth is included as additional item for stillbirths.			

Table A.25: Vital Statistics (Live Births, Stillbirths, Mortality data)

	Overview	Coverage	Sustainability and Funding	Accessibility
	Mortality data include information about the death (place, cause, disposition of body) and the deceased (sex, age, place of residence, marital status)			
Strengths	System in place to enhance accuracy and completeness of abstract records	Reporting of mortality data is nearly complete due to legal requirements for registering deaths	Past and continued data collection can provide information for trend analysis	
Limitations		Issues with missing and inaccurate data for birth registrations in Ontario for certain years		Data are usually two or three years behind the current year
Verified as of: February 2013				
Data source expert(s): Carol Paul, *Senior Health Analyst*, Health Analytics Branch, Health System Information Management and Investment Division, Ministry of Health and Long-Term Care				

APHEO Core Indicators Covered

- Age of parent at infant's birth
- All-cause mortality
- Birth weights
- Cancer mortality
- Child and adolescent mortality
- Chronic disease mortality
- Congenital infections
- Crude birthrate
- Fall-related mortality
- Fertility rates
- Infectious disease mortality
- Injury-related mortality
- Multiple birthrate
- Neonatal and infant mortality rates
- Perinatal mortality and stillbirths
- Population by age and sex
- Pregnancy rate
- Preterm birthrate
- Single-parent families
- Suicide mortality

Sources:

(1) Association of Public Health Epidemiologists in Ontario. Vital Statistics live birth data [Internet]. Toronto, ON: APHEO; 2013 [cited 2013 Jan 1]. Available from: http://www.apheo.ca/index.php?pid=206.

(2) Association of Public Health Epidemiologists in Ontario. Vital Statistics stillbirth data [Internet]. Toronto, ON: APHEO; 2013 [cited 2013 Jan 1]. Available from: http://www.apheo.ca/index.php?pid=212.
(3) Association of Public Health Epidemiologists in Ontario. Vital Statistics mortality data [Internet]. Toronto, ON: APHEO; 2013 [cited 2013 Jan 1]. Available from: http://www.apheo.ca/index.php?pid=208.
(4) Ontario Agency for Health Protection and Promotion (Public Health Ontario). Measuring the health of infants, children and youth for public health in Ontario: indicators, gaps, and recommendations for moving forward. Toronto, ON: Queen's Printer for Ontario; 2012 [cited 2012 Dec 15]. Available from: http://www.publichealthontario.ca/en/eRepository/Measuring_Health_Infants_Children_2013.pdf.
5) Ontario. Ministry of Health and Long-Term Care. Health analyst's toolkit. Ottawa, ON: Queen's Printer for Ontario; 2012. Available from: http://www.health.gov.on.ca/english/providers/pub/healthanalytics/health_toolkit/health_toolkit.pdf.

Table A.26: Youth Smoking Survey (YSS)

	Overview	Coverage	Sustainability and Funding	Accessibility
Note: Beginning in 2014, this survey is referred to as the Canadian Student Tobacco, Alcohol and Drug Survey	**Purpose** To estimate prevalence of and study factors that increase and diminish the likelihood of tobacco, alcohol and drug use among youth **Administrator** Propel Centre for Population Health Impact at the University of Waterloo **Type of data source** Sample survey with cross-sectional design **Data collection method** Individual, machine-readable questionnaires administered to students during class period Parallel school-level questions are answered by school staff **Topics** Focus is on tobacco, alcohol and drug use Student level: • Tobacco use, drug & alcohol use prevalence • Issues influencing tobacco use	**Included populations** Since 2006, includes young Canadian residents who attend private, public and Catholic schools and are enrolled in grades 6–12 (also Grade 5 in 2006). 1994, 2002, 2004 waves included only grades 5–9 but surveyed a sub-sample of parents **Excluded populations** Excludes those residing in Nunavut, and the Yukon and Northwest territories; and those living in institutions and on First Nations reserves; and young persons who attend special schools or schools located on military bases 2010/11 cycle excluded those residing in New Brunswick **Sample size** National: 50,949 completed questionnaires in 2010/11 Ontario: 9,817 completed questionnaires in 2010/11 **Response rate**	**Years conducted** First survey conducted in 1994 Five biennial cycles to date: 2002, 2004/05, 2006/07, 2008/09, 2010/11 Currently conducting 2012/2013 **Frequency of data collection** Biennial since 2002 **Funding provider** Health Canada	**Data release and access** Summary tables of results for each cycle are available on Propel Centre's and Statistics Canada's website Aggregate data available online. More detailed analysis provided by Tobacco Informatics Monitoring System Public use microdata files available through Statistics Canada for 2002 cycle Data sets for remaining cycles housed in the Propel Centre's Population Health Data Repository. Access obtained by submitting a data request application (www.propel.uwaterloo.ca/index.cfm?section=28&page=432) Dataset can also be requested through Statistic Canada's Data Liberation Initiative **Public health unit access** General access procedures as described above for obtaining data sets, unless data are

Table A.26: Youth Smoking Survey (YSS)

	Overview	Coverage	Sustainability and Funding	Accessibility
	(e.g., knowledge, social influences, education-related behaviours and attitudes) Also collects other relevant information related to youth risk behaviours including physical activity, sedentary behaviours, obesity, healthy eating School Level: School administrators from each school are invited to complete modules from the Healthy School Planner (e.g., Tobacco Use Assessment). This assessment pertains to policies and programs in their school	National: 56% school recruitment rate in 2010/11; 73% student-level response rate in 2010/11 Ontario: 42% school recruitment rate in 2010/11; 56% student-level response rate in 2010/11 **Type of parental consent** Mixed (in 2010/11, there were 12,228 students in Canada participating on the basis of active parental consent and 38,721 students participating with passive consent. In Ontario, 4470 students had active parental consent and 5347 students had passive parental consent **Type of reporting** Self-reported		collected specifically on behalf of a public health unit Public health units seeking data from schools within their jurisdiction require permission from schools for information release. Once permission is obtained, the standard procedure for data requests is followed **Examples of record linkages** Student-level data with school level (e.g., program, policy, environment) Both of the above can be linked with GIS data and with Census information related to school postal code **Ability to purchase oversamples** Yes. Public health is encouraged to purchase additional samples to fill local needs
Strengths		Able to provide stable provincial estimates for youth	Stable government funding Past and continued data collection can provide information for trend analysis	Able to link with other data sources Feedback reports provided within 8–10 weeks of data collection Able to purchase oversamples
Limitations		Survey samples only those		

Table A.26: Youth Smoking Survey (YSS)

	Overview	Coverage	Sustainability and Funding	Accessibility
		enrolled in schools and excludes at-risk groups such as homeless/street youth and dropouts Collection of sensitive information from self-reports may result in biased/under-reported data		
Verified as of: October 2013				
Data source expert(s): Steve Manske, *Senior Scientist*, Propel Centre for Population Health Impact, University of Waterloo				

APHEO Core Indicators Covered

- Ethnic/cultural origin
- Minor's access to tobacco (similar information)
- Non-smoker second-hand smoke exposure
- Population by age and sex
- Smoke-free homes
- Smoking status
- Vegetable and fruit consumption (similar information)

Sources:

(1) Elton-Marshall T, Leatherdale ST, Manske SR, Wong K, Ahmed R, Burkhalter R. Research methods of the Youth Smoking Survey (YSS). Chronic Dis Inj Can. 2011;32(1):47-54.

(2) Ontario Agency for Health Protection and Promotion (Public Health Ontario). Measuring the health of infants, children and youth for public health in Ontario: indicators, gaps, and recommendations for moving forward. Toronto, ON: Queen's Printer for Ontario; 2012 [cited 2012 Dec 15]. Available from: http://www.publichealthontario.ca/en/eRepository/Measuring_Health_Infants_Children_2013.pdf.

(3) University of Waterloo. Youth Smoking Survey (YSS): 2010/2011 YSS microdata user guide [Internet]. Waterloo, ON: Propel Centre for Population Health Impact; 2011 [cited 2012 Nov 1]. Available from: https://uwaterloo.ca/canadian-student-tobacco-alcohol-drugs-survey/sites/ca.canadian-student-tobacco-alcohol-drugs-survey/files/uploads/files/yss10_user_guide.pdf

(4) Propel Centre for Population Health Impact [Internet]. About YSS. Waterloo, ON: Propel Centre for Population Health Impact [cited 2012 Nov 1]. Available from: http://www.yss.uwaterloo.ca/index.cfm?section=1001&page=248.

Appendix B: Methodology for Literature Review

A literature review was conducted to assess the consistency of our project's selected assessment criteria in relation to data source quality and utility, as well as to identify existing and similar work with respect to assessing data sources for population health.

Literature search

- We searched the following electronic databases, search engines, and grey literature sources in February 2013: PubMed, Ovid Medline, Google Scholar, Web of Science, National Collaborating Centre for Methods and Technology, and Public Health Ontario library resources (i.e., Ontario's public health units, Canada's provincial and federal health departments and agencies, Ontario Public Health Unit Reports: A Grey Literature Repository compiled by Ontario Public Health Libraries Association, Canadian government publications).
- Databases were searched for potentially relevant abstracts from 1990 to 2013, and further filtered using the inclusion-exclusion criteria listed below.
- A combination of the following keywords were used: data assessment, data quality, secondary data source(s), data evaluation, health survey(s), health data, health assessment, administrative data, data collection, evaluation framework, health impact assessment, population surveillance, population health, public health, public health surveillance, epidemiologic survey, data review, public health research, population health research, survey methodology. Identified data assessment criteria terms were also searched.

Inclusion and exclusion criteria

We examined the following documents:

- English-language studies that assessed a secondary and/or administrative database or data source (limited to 2008-2013).
- Literature that developed frameworks or criteria for data source assessment (limited to 2003-2013).
- Literature that assessed the impact of certain criteria listed in data-source assessment frameworks or studies (limited to 1990-2013). Amongst included literature, we focused on methodology, and the rationale for methodology and terminology.

We excluded articles that looked at non-population-based research studies.

Appendix C: Excluded Data Sources

Table C.1: Data Sources Excluded from Project

Data Source	Reason for Exclusion
Aboriginal Children's Survey	Inactive
Census of Canada and National Household Survey	Does not meet subject inclusion criteria
Communities Survey	Inactive
EQAO assessment scores	Does not meet subject inclusion criteria
Infant Feeding Survey	No standardized surveys–each public health unit conducts their own
Preschool Speech and Language–Integrated Services for Children Information System	Does not meet subject inclusion criteria
National Longitudinal Survey of Children and Youth	Inactive
National Population Health Survey	Inactive
NutriSTEP	Primarily used for screening purposes
Ontario Cancer Registry	Populated by other data sources
Ontario Child Health Study	Inactive
Population Estimates	Does not meet subject inclusion criteria
Population Projections	Does not meet subject inclusion criteria
Programme for International Student Assessment	Does not meet subject inclusion criteria
Rapid Risk Factor Surveillance System	Survey targets upper end of target age group (i.e., focus is on adults)
School Health Environment Survey	Inactive
Uniform Crime Reporting Survey	Populated by other data sources
Youth in Transition Survey	Does not meet subject inclusion criteria

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