
Vulnerable Children: an Early Development Instrument (EDI) Outcome

Indicator Description

- The Early Development Instrument (EDI) is designed to measure how well children meet developmentally appropriate expectations in senior kindergarten children in the following five domains: physical health and well-being, social competence, emotional maturity, language and cognitive development, and communication skills and general knowledge.
- “Vulnerable” describes the children who score low (below the 10th percentile cut-off of the Ontario baseline population) in any of the five domains. Higher vulnerability indicates that a greater percentage of children are struggling. See analysis checklist for detailed information on the Ontario baseline population.
- Vulnerability by domain: the percentage of kindergarten children who are considered vulnerable in a specific domain at school entry, as measured by the Early Development Instrument (EDI).
- Overall vulnerability: The percentage of senior kindergarten children who are considered vulnerable in at least one the five development domains at school entry, as measured by the Early Development Instrument (EDI).

Note: The Ontario baseline was the first provincial EDI collection in Ontario from 2004-2006.

Specific Indicators and Method of Calculation

Vulnerability in Physical Health and Well-being Domain

$$\frac{\text{Total number of senior kindergarten children scoring below the 10}^{\text{th}} \text{ percentile cut-off physical health and well-being domain}}{\text{Total number of senior kindergarten children with valid EDI scores for that domain}} \times 100\%$$

Vulnerability in Social Competence Domain

$$\frac{\text{Total number of senior kindergarten children scoring below the 10th percentile cut-off in social competence domain}}{\text{Total number of senior kindergarten children with valid EDI scores for that domain}} \times 100\%$$

Vulnerability in Emotional Maturity Domain

$$\frac{\text{Total number of senior kindergarten children scoring below the 10th percentile cut-off in emotional maturity domain}}{\text{Total number of senior kindergarten children with valid EDI scores for that domain}} \times 100\%$$

Vulnerability in Language and Cognitive Development Domain

$$\frac{\text{Total number of senior kindergarten children scoring below the 10th percentile cut-off in language and cognitive development domain}}{\text{Total number of senior kindergarten children with valid EDI scores for that domain}} \times 100\%$$

Vulnerability in Communication Skills and General Knowledge Domain

$$\frac{\text{Total number of senior kindergarten children scoring below the 10th percentile cut-off in communication skills and general knowledge domain}}{\text{Total number of senior kindergarten children with EDI scores for that domain}} \times 100\%$$

Overall vulnerability: Percentage of children vulnerable on at least ONE EDI domain

$$\frac{\text{Total number of senior kindergarten children scoring below the 10th percentile cut-off one or more domains of the EDI}}{\text{Total number of senior kindergarten children with valid EDI scores}} \times 100\%$$

Note: In Ontario, the 2004-2006 Ontario baseline data are used to calculate the percentile threshold.

Basic Categories

- Age groups: senior kindergarten
- Gender: male, female
- Geographic areas: Ontario, public health unit/region*, school board, municipality, and neighborhood

Notes:

- EDI data sets are provided by the Ministry of Education to organizations that are funded to plan for young children and their families, including school boards, municipalities, and agencies that have ministry-funded Data Analysis Coordinator (DAC) positions.
- EDI collection, analysis, and reporting is supported by a network of approximately 50 Data Analysis Coordinators (DACs). DACs are community-based research analysts responsible for data gathering, analysis, and reporting to support research, evaluation, and planning efforts in Ontario's early years sector. DACs have historically been linked to ministry-funded child and family programs.
- Agencies with DACs receive EDI data sets for the municipalities that are included in each agency's service area.
- Municipal boundaries for the EDI data sets are the 47 Consolidated Municipal Service Managers and District Social Services Administration Boards, which are similar to census divisions. For more information about the municipal boundaries used to develop the EDI data sets: <http://www.edu.gov.on.ca/childcare/websiteServiceManagers.pdf>.
- *: The Ministry of Education works with the Offord Centre to produce data sets for publicly-funded school boards as well as municipalities. There is no provincial consistency in the availability of the EDI data by public health unit/region.

Data Sources

Numerator and Denominator: Early Development Instrument (EDI)

Data custodian: Ministry of Education

Data processed by: Ministry of Education and the Offord Centre for Child Studies (OCCS)

Implemented by: Ministry of Education, the Offord Centre for Child Studies, and publicly-funded school boards

Local contact: Offord Centre for Child Studies

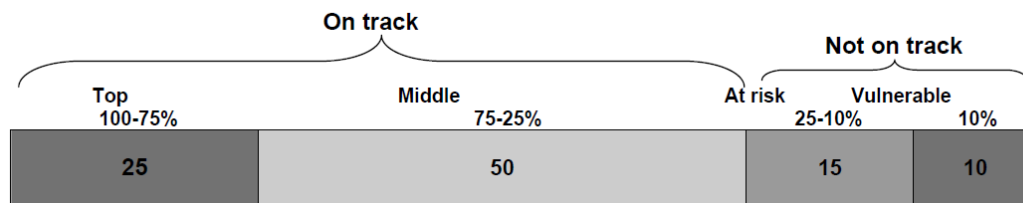
Suggested citation (see [Data Citation Notes](#)): Early Development Instrument, [cycle, year], Ontario Ministry of Education, Extracted: [date]

Notes:

- Drs. Magdalena Janus and Dan Offord from the Offord Centre for Child Studies (OCCS), McMaster University developed the EDI. The OCCS owns the copyright for the EDI. In collaboration with the Ministry of Education, OCCS facilitates data collection with school boards, manages training and implementation, cleans and scores the data, and produces reports at the provincial, municipal, school board and school levels. Historically, senior kindergarten teachers were able to complete the EDI on paper or electronically. Since 2012, EDI has become entirely electronic.
- In October 2013, funding, policy and operational responsibilities for the EDI were transferred from the Ministry of Children and Youth Services to the Early Years Division of the Ministry of Education. Beginning in the 2014-15 school year, school boards became responsible for the administration and collection of the EDI data. A province-wide EDI data collection (Cycle 4) occurred between January and April 2015.

Analysis Check List

- The EDI is a questionnaire that measures children's ability to meet age appropriate developmental expectations at school entry. It consists of 104 core questions that are organized into domains and subdomains. It is filled out by senior kindergarten teachers.
- Questions left blank or with "I don't know" answer are treated as missing data in the EDI questionnaire
- Questionnaires valid for analyses (i.e. with valid EDI scores) includes those for children in a senior kindergarten class for more than one month, with no missing data on special needs questions, and no missing data in more than one domain (a domain is considered missing if more than approximately 30% of questions are left blank or have "I don't know" responses). A binary variable based on the validity of the questionnaires is created in the EDI dataset (1=Yes, 0=No) so that DAC can easily select only valid questionnaires for their analysis.
- EDI results for individuals should be aggregated and be applied to logically-defined groups, for example, groups based on geographical boundaries such as a city or census tract or on administrative boundaries such as a school board catchment area or school network, and populous enough to make analysis feasible. Data on subgroups of 10 or fewer children should not be reported. Data on groups of between 11 and 30 should be interpreted with caution.
- In Ontario, the 2004-2006 Ontario EDI data (cycle I, also refer to Ontario Baseline) is used to calculate the percentile cut-offs. The 2004-2006 domain specific mean scores are arranged in numeric order from lowest to highest. The tenth score represents the 10th percentile cut-point. Children below the 10th percentile cut-off of a specific domain are considered as vulnerable for that domain.
- The vulnerability rate is a relative measure. Depending on what sample is selected to calculate the thresholds, the rate changes. Therefore, the use of 2004-2006 Ontario Baseline EDI data to calculate cut-offs is recommended and especially important when comparing local data with provincial data, data over time, or with other geographic areas such as between health units.
- Historically, other than "vulnerable" threshold, some other thresholds are also used in the report including "on track-top", "on track- middle", and "not on track-at risk". Since 2015, changes were made and the OCCS are moving to reporting only on the following categories: Vulnerable (below 10th), At Risk (between 10th and 25th), and On track (above the 25th).



- **On track (Top):** The total group of children who score in the highest 25th percentile of the site's distribution.
 - **On track (Middle):** The total group of children who score between the 75th and 25th percentiles of the site's distribution.
 - **Not on track (At risk):** The total group of children who score between the lowest 10th and 25th percentiles of the site's distribution.
 - **Not on track (Vulnerable):** The total group of children who score below the lowest 10th percentile of the site's distribution.
- Data sets provided to school boards, municipalities, and DAC agencies include EDI data at the individual level with a unique ID number for each record. Municipal data sets include dissemination areas and school board data sets include postal codes. Personal information such as student name, date of birth, or home address is not included in the dataset (age is included).
- The dataset the DACs receive contain vulnerability scores based on the Ontario Baseline cut-offs population.
- Although the Canadian and Ontario thresholds for each cycle are not included in the dataset, EDI users may request them from the OCCS. Usually there is a time lag in receiving these measures.
- The two groups- children with, and children without special needs are usually analyzed separately. The OCCS typically separate their groups in their EDI publications while how they are analyzed is handled differently by different DACs.

Survey questions

The EDI questionnaire contains the following sections:

- Demographics Section: includes class assignment, sex, age, post code, language ect.
- Section A-Physical Health and Well-being
- Section B- Language and Cognitive Skills
- Section C-Social and Emotional development
- Section D-Special Concerns
- Section E-Additional Questions

It is important to note that the section title on the EDI questionnaire may not match the five main domains. The indicators of EDI mean scores are derived from the several sections of EDI. The table below presents EDI questions used for calculating the scores. Notes: information in this table may be subject to change.

Indicators	Sections	Number of Questions	Response categories	Score Range	Variables
Vulnerability in Physical Health and Well-being	Section A and C	13: QA2-13, QC58	Yes, No, Don't Know; Often or very true, Sometimes or somewhat true, Never or not true, Don't Know	0-10	olowph
Vulnerability in Social	Section C	26: QC1-25,	Often or very true,	0-10	olowsoc

Competence		QC27	Sometimes or somewhat true, Never or not true, Don't Know		
Vulnerability in Emotional Maturity	Section C	30:QC28-57	Often or very true, Sometimes or somewhat true, Never or not true, Don't Know	0-10	olowem
Vulnerability in Language and Cognitive Development	Section B	26:QB8-33	Yes, No, Don't Know;	0-10	olowlc
Vulnerability in Communication Skills and General Knowledge	Section B and C	8:QB1-7, QC26	Very good/good, Average, Poor/very poor, Don't Know; Often or very true, Sometimes or somewhat true, Never or not true, Don't Know	0-10	olowcg
Overall vulnerability					Olowtot

Indicator Comments

- The EDI data has been collected from each Ontario school board once every three years since 2004. Since the 2004-2006 school years, four provincial cycles of the EDI have been collected to date including 2004-2006, 2007-2009, 2010-2012, and 2015.
- The data collected from 2004 to 2012 is owned jointly by OCCS and MCYS. The data collected in 2015 is owned by the Ministry of Education and shared with OCCS for purposes outlined in a data sharing agreement.
- The EDI instrument is designed to be interpreted at the population level. It is not suitable for determining or supporting any diagnosis for an individual child.
- The group with lower vulnerability rates is doing comparatively better. For example, if a health unit has a lower proportion of children falling in the "vulnerable" range in comparison with the province for a specific domain, this means compared to province, children of this health have a lower percentage of vulnerable children .
- In addition to a specific domain, vulnerability can be examined across multiple domains. Specifically, for example, we can determine the proportion of children scoring in the "vulnerable" range on 2 or more, or 3 or more of the EDI domains. When looking at vulnerability across multiple domains, the more children who are vulnerable across more of the domains, the more concern is warranted.
- The association between vulnerability and other societal indicators can be examined ecologically. This means linking the mean scores with other indicators at group level, rather individual level. These societal indicators could include education level, income school enrollment, academic testing of children in later grades, availability of libraries, local programs and services for children, parks, and playgrounds ect. There is evidence to suggest that school readiness, as measured by the EDI, is associated with societal factors such as socioeconomics, demographics and family dynamics (Janus & Duku, 2007).
- EDI results may also be linked to other indicators such as the Education Quality and Accountability Office (EQAO) assessment results at individual level. It was found that students with high EDI scores in kindergarten are much more likely to achieve the provincial standard on the Grade 3 EQAO assessment than those in the vulnerable or at-risk groups. (Calman & Crawford, 2013).

Ontario Public Health Standards (OPHS)

The Ontario Public Health Standards (OPHS) establish requirements for the fundamental public health programs and services carried out by boards of health, which include assessment and surveillance, health promotion and policy development, disease and injury prevention, and health protection.

The OPHS consist of one Foundational Standard and 13 Program Standards that articulate broad societal goals that result from the activities undertaken by boards of health and many others, including community partners, non-governmental organizations, and governmental bodies. These results have been expressed in terms of two levels of outcomes: societal outcomes and board of health outcomes. Societal outcomes entail changes in health status, organizations, systems, norms, policies, environments, and practices and result from the work of many sectors of society, including boards of health, for the improvement of the overall health of the population. Board of health outcomes are the results of endeavours by boards of health and often focus on changes in awareness, knowledge, attitudes, skills, practices, environments, and policies. Boards of health are accountable for these outcomes. The standards also outline the requirements that boards of health must implement to achieve the stated results.

Outcomes Related to this Indicator

- Societal Outcome (Child health): An increased proportion of children have optimal oral health.
- Board of Health Outcome (Child health):
- The board of health is aware of and uses epidemiology to influence the development of healthy public policy and its programs and services for the promotion of healthy child development.
- Policy-makers have the information required to enable them to amend current policies or develop new policies that would have an impact on the promotion of healthy child development.

Assessment and/or Surveillance Requirements Related to this Indicator

- The board of health shall conduct epidemiological analysis of surveillance data, including monitoring of trends over time, emerging trends, and priority populations in accordance with the Population Health Assessment and Surveillance Protocol, 2008 (or as current), in the areas of Growth and development
- The board of health shall work with community partners, using a comprehensive health promotion approach, to influence the development and implementation of healthy policies and the creation or enhancement of supportive environments to address the areas of Growth and development
- The board of health shall collect or access the following types of population health data and information: Growth and development

<http://www.ontario.ca/publichealthstandards>

Corresponding Health Indicator(s) in Public Practice

Corresponding Health Indicator(s) from Statistics Canada and CIHI

None

Corresponding Indicator(s) from Other Sources

None

Definitions

- Physical Health and Well-being refers to the notion that children are healthy, independent, properly clothed and well rested. It is assessed by the following sub-domains: gross and fine motor skills,

physical readiness for school day and physical independence

- Social Competence refers to the notion that children play and get along with others, share and show self-confidence. It is assessed by the following sub-domains: overall social competence, responsibility and respect, approaches to learning and readiness to explore new things
- Emotional Maturity refers to the notion that children are able to concentrate on tasks, help others, show patience and are not habitually aggressive, hyperactive, inattentive, anxious, or fearful or. It is assessed by the following sub-domains: prosocial and helping behaviour, hyperactivity and inattention, anxious and fearful behaviour and aggressive behaviour
- Language and Cognitive Development refers to the notion that children are interested in reading and writing, can count and recognize numbers and shapes. It is assessed by the following sub-domains: basic literacy skills, interest literacy/numeracy and memory, advance literacy skills and basic numeracy skills
- Communication Skills and General Knowledge refers to the notion that children can and communicate their needs and ideas effectively to children and adults, and are interested in the surrounding word.

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Acknowledgements

Lead Author(s)	Fangli Xie, Epidemiologist, Durham Region Health Department
Contributing Author(s)	Suzanne Biro, Foundational Standards Specialist KFL&A Public Health Ken Clarke, Data Analysis Coordinator, Perth-Middlesex

	Ontario Early Years Centre Gloria Duke-Aluko, Data Analysis Coordinator, Durham Region Social Services Amy Romagnoli, Regional Municipality of Niagara
CIWG Reviewers	Name, organization
External Reviewers	Ashley Gaskin, EDI Project Coordinator, Offord Centre for Child Studies Danika Lyons, MSc, Data Analysis Coordinator, Ontario Early Years, Oxford Community Child Care Sara Annou, Health Analyst/Data Analysis Coordinator, Ontario Early Years, Office of the Medical Officer of Health, Region of Peel, Public Health Judi Winkup, Data Analysis Coordinator, Child Care Services, County of Wellington Judy Cerny, Senior Statistical and Research Analyst, Early Years Outcomes and Assessments Unit, Business Planning, Outcomes and Assessments Branch, Early Years Division, Ontario Ministry of Education

Changes made

Date	Type of Review- Formal Review or Ad Hoc?	Changes made by	Changes
November, 2015	Formal Review	EDI Task Group of the Child and Adolescent Health Indicators and Data Working Group	<ul style="list-style-type: none"> New indicator
March, 2016	Formal Review	External Reviewers	