

# The Mental Health of Children and Youth in Ontario

## A Baseline Scorecard

TECHNICAL APPENDIX

March 2015





## Publication Information

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The opinions, results and conclusions included in this report are those of the authors and are independent of the funding sources. No endorsement by the Institute for Clinical Evaluative Sciences or the Ontario Ministry of Health and Long-Term Care is intended or should be inferred.

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# Contents

<b>i</b>	List of Exhibits	
<b>v</b>	List of Abbreviations	
<b>1</b>	<b>APPENDIX A: INDICATORS EXCLUDED DUE TO DATA NON-AVAILABILITY</b>	
<b>3</b>	<b>APPENDIX B: SELECTED INDICATORS BY DIAGNOSTIC CATEGORY</b>	
<b>36</b>	<b>APPENDIX C: DETAILED INDICATOR DESCRIPTIONS</b>	
<b>61</b>	<b>APPENDIX D: INDICATOR STANDARDIZATION SUMMARY</b>	
<b>68</b>	<b>APPENDIX E: INDICATOR SELECTION PROCESS</b>	
<b>74</b>	<b>REFERENCES</b>	

## List of Exhibits

**EXHIBIT B.1.1** Rate of emergency department visits related to mental health and addictions per 1,000 population aged 0 to 24 years, by age group and type of disorder, in Ontario, three-year average for 2009/10 to 2011/12

**EXHIBIT B.1.2** Rate of emergency department visits related to mental health and addictions per 1,000 population aged 0 to 24 years, by sex and type of disorder, in Ontario, three-year average for 2009/10 to 2011/12

**EXHIBIT B.1.3** Rate of emergency department visits related to mental health and addictions per 1,000 population aged 0 to 24 years, by immigrant category and type of disorder, in Ontario, three-year average for 2009/10 to 2011/12

**EXHIBIT B.1.4** Rate of emergency department visits related to mental health and addictions per 1,000 population aged 0 to 24 years, by neighbourhood income quintile and type of disorder, in Ontario, three-year average for 2009/10 to 2011/12

**EXHIBIT B.1.5** Standardized rate of emergency department visits for substance-related disorders per 1,000 population aged 0 to 24 years, by Local Health Integration Network, in Ontario, three-year average for 2009/10 to 2011/12

**EXHIBIT B.1.6** Standardized rate of emergency department visits for schizophrenia and other psychotic disorders per 1,000 population aged 0 to 24 years, by Local Health Integration Network, in Ontario, three-year average for 2009/10 to 2011/12

**EXHIBIT B.1.7** Standardized rate of emergency department visits for mood and anxiety disorders per 1,000 population aged 0 to 24 years, by Local Health Integration Network, in Ontario, three-year average for 2009/10 to 2011/12

**EXHIBIT B.1.8** Standardized rate of emergency department visits for other selected childhood disorders per 1,000 population aged 0 to 24 years, by Local Health Integration Network, in Ontario, three-year average for 2009/10 to 2011/12

**EXHIBIT B.1.9** Standardized rate of emergency department visits for substance-related disorders per 1,000 population aged 0 to 24 years, by MCYS Child and Youth Mental Health Service Area, in Ontario, three-year average for 2009/10 to 2011/12

**EXHIBIT B.1.10** Standardized rate of emergency department visits for schizophrenia and other psychotic disorders per 1,000 population aged 0 to 24 years, by MCYS Child and Youth Mental Health Service Area, in Ontario, three-year average for 2009/10 to 2011/12

**EXHIBIT B.1.11** Standardized rate of emergency department visits for mood and anxiety disorders per 1,000 population aged 0 to 24 years, by MCYS Child and Youth Mental Health Service Area, in Ontario, three-year average for 2009/10 to 2011/12

**EXHIBIT B.1.12** Standardized rate of emergency department visits for other selected childhood disorders per 1,000 population aged 0 to 24 years, by MCYS Child and Youth Mental Health Service Area, in Ontario, three-year average for 2009/10 to 2011/12

**EXHIBIT B.2.1** Rate of hospital admissions related to mental health and addictions per 1,000 population aged 0 to 24 years, by age group and type of disorder, in Ontario, three-year average for 2009/10 to 2011/12

**EXHIBIT B.2.2** Rate of hospital admissions related to mental health and addictions per 1,000 population aged 0 to 24 years, by sex and type of disorder, in Ontario, three-year average for 2009/10 to 2011/12

**EXHIBIT B.2.3** Rate of hospital admissions related to mental health and addictions per 1,000 population aged 0 to 24 years, by immigrant category and type of disorder, in Ontario, three-year average for 2009/10 to 2011/12

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**EXHIBIT B.3.3** Rate of emergency department (ED) visit as first contact for mental health and addictions (MHA) per 1,000 population aged 0 to 24 years with an MHA-related ED visit, by immigrant category and type of disorder, in Ontario, three-year average for 2009/10 to 2011/12

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**EXHIBIT B.3.5** Standardized rate of emergency department (ED) visit as first contact for substance-related disorders per 1,000 population aged 0 to 24 years with an MHA-related ED visit, by Local Health Integration Network, in Ontario, three-year average for 2009/10 to 2011/12

**EXHIBIT B.3.6** Standardized rate of emergency department (ED) visit as first contact for schizophrenia and other psychotic disorders per 1,000 population aged 0 to 24 years with an ED visit related to mental health and addiction, by Local Health Integration Network, in Ontario, three-year average for 2009/10 to 2011/12

**EXHIBIT B.3.7** Standardized rate of emergency department (ED) visit as first contact for mood and anxiety disorders per 1,000 population aged 0 to 24 years with an ED visit related to mental health and addiction, by Local Health Integration Network, in Ontario, three-year average for 2009/10 to 2011/12

**EXHIBIT B.3.8** Standardized rate of emergency department (ED) visit as first contact for other selected childhood disorders per 1,000 population aged 0 to 24 years with an ED visit related to mental health and addictions, by Local Health Integration Network, in Ontario, three-year average for 2009/10 to 2011/12

**EXHIBIT B.4.1** Rate of hospital admission as first contact for mental health and addictions (MHA) per 1,000 population aged 0 to 24 years with an MHA-related hospitalization, by age group and type of disorder, in Ontario, three-year average for 2009/10 to 2011/12

**EXHIBIT B.4.2** Rate of hospital admission as first contact for mental health and addictions (MHA) per 1,000 population aged 0 to 24 years with an MHA-related hospitalization, by sex and type of disorder, in Ontario, three-year average for 2009/10 to 2011/12

**EXHIBIT B.4.3** Rate of hospital admission as first contact for mental health and addictions (MHA) per 1,000 population aged 0 to 24 years with an MHA-related hospitalization, by immigrant category and type of disorder, in Ontario, three-year average for 2009/10 to 2011/12

**EXHIBIT B.4.4** Rate of hospital admission as first contact for mental health and addictions (MHA) per 1,000 population aged 0 to 24 years with an MHA-related hospitalization, by neighbourhood income quintile and type of disorder, in Ontario, three-year average for 2009/10 to 2011/12

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**EXHIBIT B.4.8** Standardized rate of hospital admission as first contact for other selected childhood disorders per 1,000 population aged 0 to 24 years with a hospitalization related to mental health and addiction, by Local Health Integration Network, in Ontario, three-year average for 2009/10 to 2011/12

**EXHIBIT D.1** Variables used for calculating equity lens attributes for incidence indicators

**EXHIBIT D.2** Equity lens variables

**EXHIBIT D.3** Geographic variables

**EXHIBIT D.4** Standard mental health diagnostic codes

**EXHIBIT D. 5** Service and diagnostic codes for Ontario physician billing claims (revised Steeles' algorithm)

**EXHIBIT E.1** Child and Youth Linkable Data (ChYLD) repository concept diagram

**EXHIBIT E.2** Linkable data necessary for all domains



## List of Abbreviations

**BORN:** Better Outcomes Registry and Network

**CIMS:** Client Information Management System

**CCHS:** Canadian Community Health Survey

**Census:** Ontario Census Area Profiles, 2006

**CIC:** Citizenship and Immigration Canada

**CIDI:** Composite International Diagnostic Interview

**DAD:** Distract Abstract Database

**DATIS:** Drug and Alcohol Treatment Information System

**FIPPA:** Freedom of Information and Protection of Privacy Act

**FTE:** full-time equivalent

**ICES:** Institute for Clinical Evaluative Sciences

**IPDB:** ICES Physician Database

**K-12:** Kindergarten to grade 12

**Kinark:** Kinark Child and Family Services

**LHIN:** Local Health Integration Network

**MCYS:** Ministry of Children and Youth Services

**MHA:** mental health and addictions

**NACRS:** National Ambulatory Care Reporting System

**NAS:** neonatal abstinence syndrome

**NOS:** not otherwise specified

**OCANDS:** Ontario Child Abuse and Neglect Database System

**ONSIS:** Ontario School Information System

**OHIP:** Ontario Health Insurance Plan

**PHIPA:** Personal Health Information Protection Act

**RPDB:** Registered Persons Database

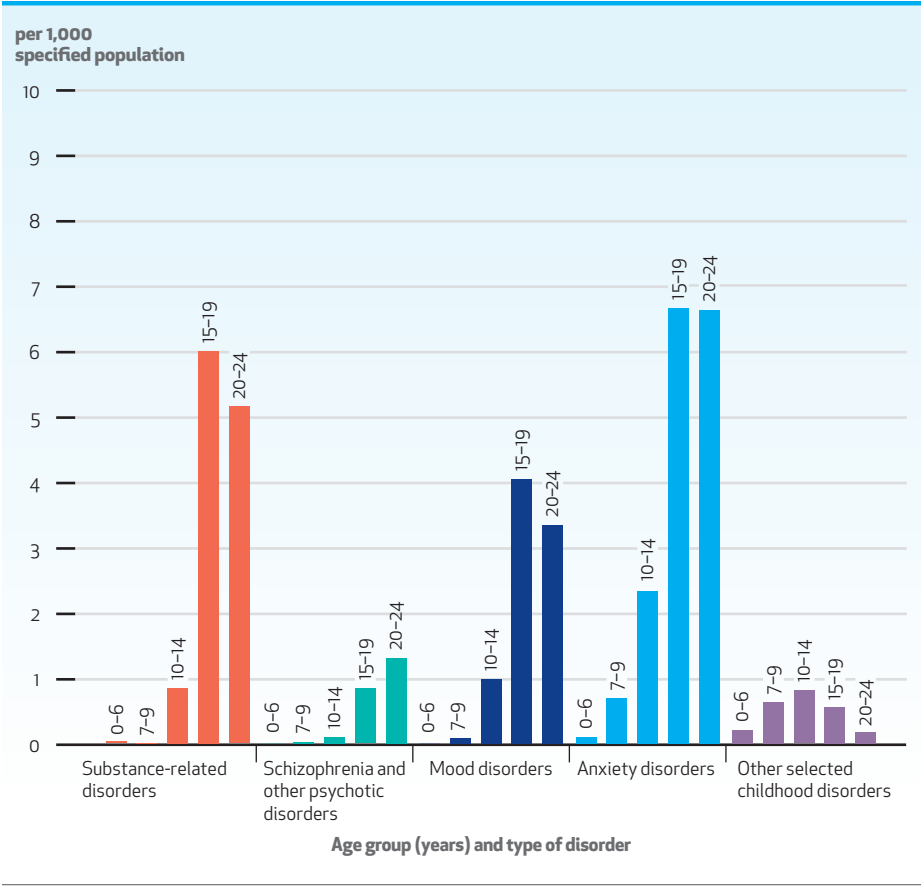
# Appendix A: Indicators Excluded Due to Data Non-Availability

Domain	Type of Indicator
Children and youth at risk	Children and youth in care
	High-risk immigrant children and youth
Known prevalence	Prescriptions for attention deficit hyperactivity disorder (ADHD) drugs for children and youth
Resources	Available resources for mental health and addictions in emergency departments (including resources within the hospital and follow-up services)
Outcomes	Admission rates to sentenced custody for youth identified with mental health or substance use issues
	Rates of recidivism into sentenced custody for youth with identified mental health and addictions issues
	Rates of chronic absenteeism in elementary school
	Rates of high school graduation
Access	Wait time for community-based services
	Rates at which children and youth have an individual education plan

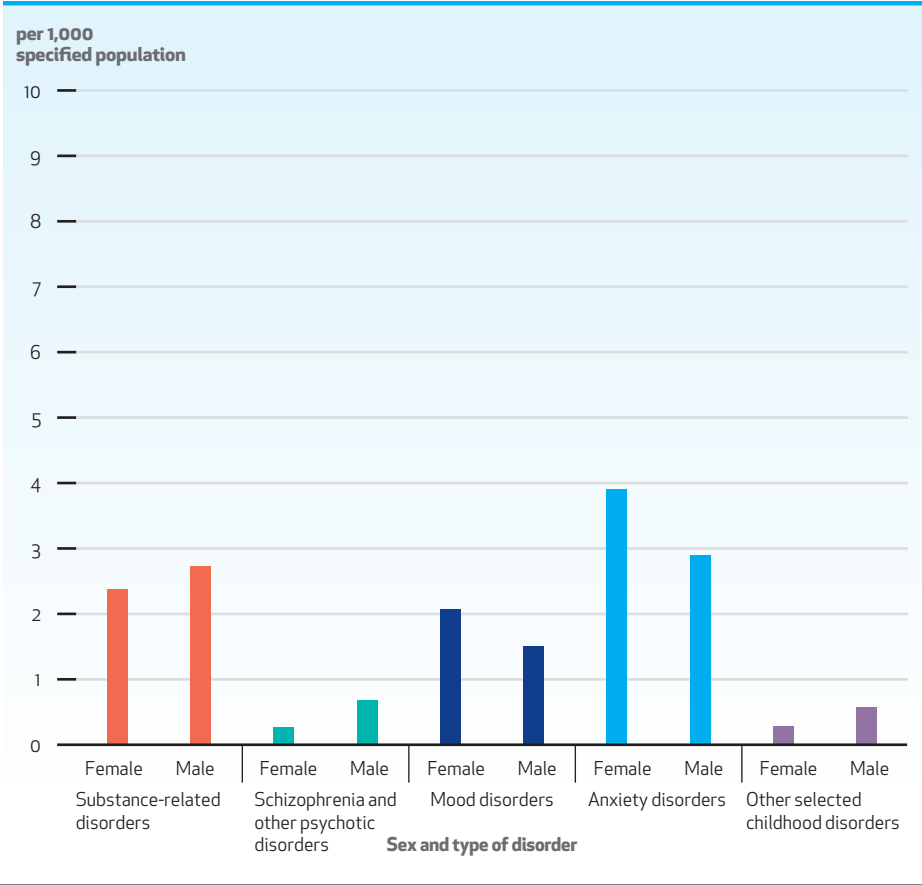
# Appendix B: Selected Indicators by Diagnostic Category

# Rate of emergency department visits related to mental health and addictions for children and youth

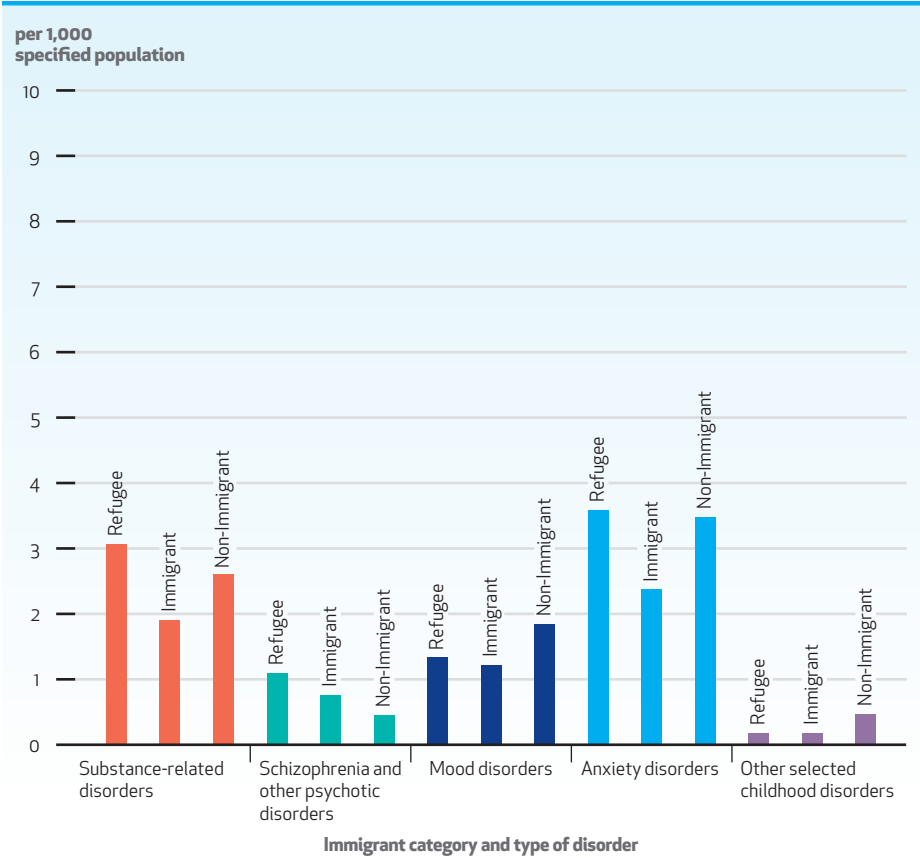
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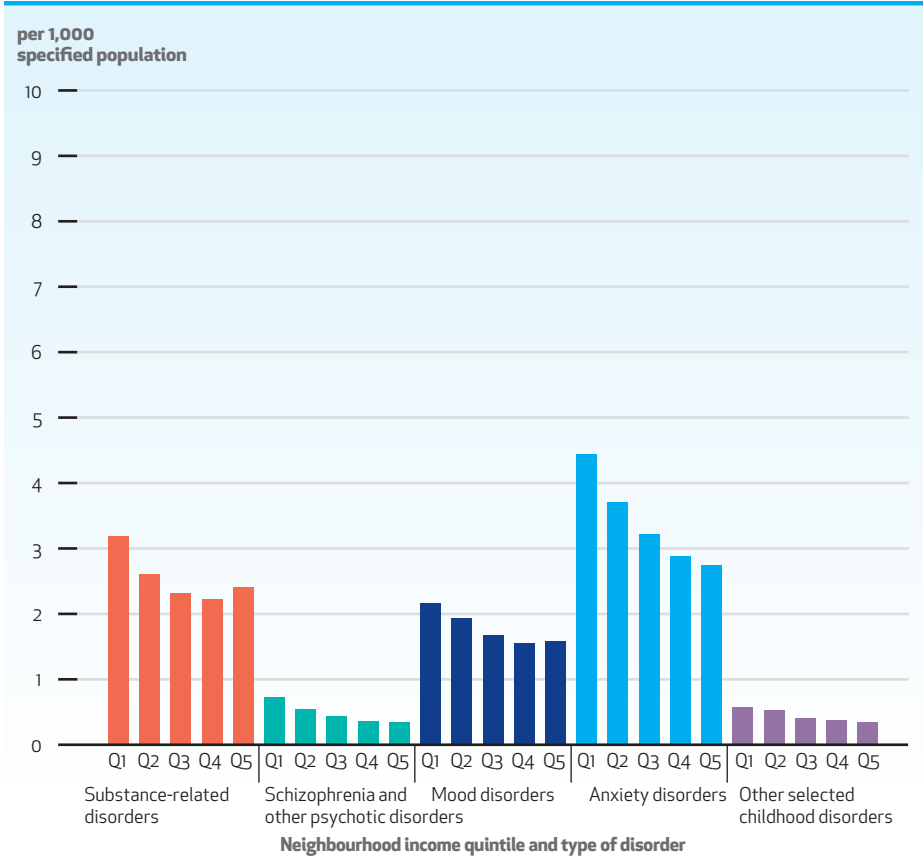
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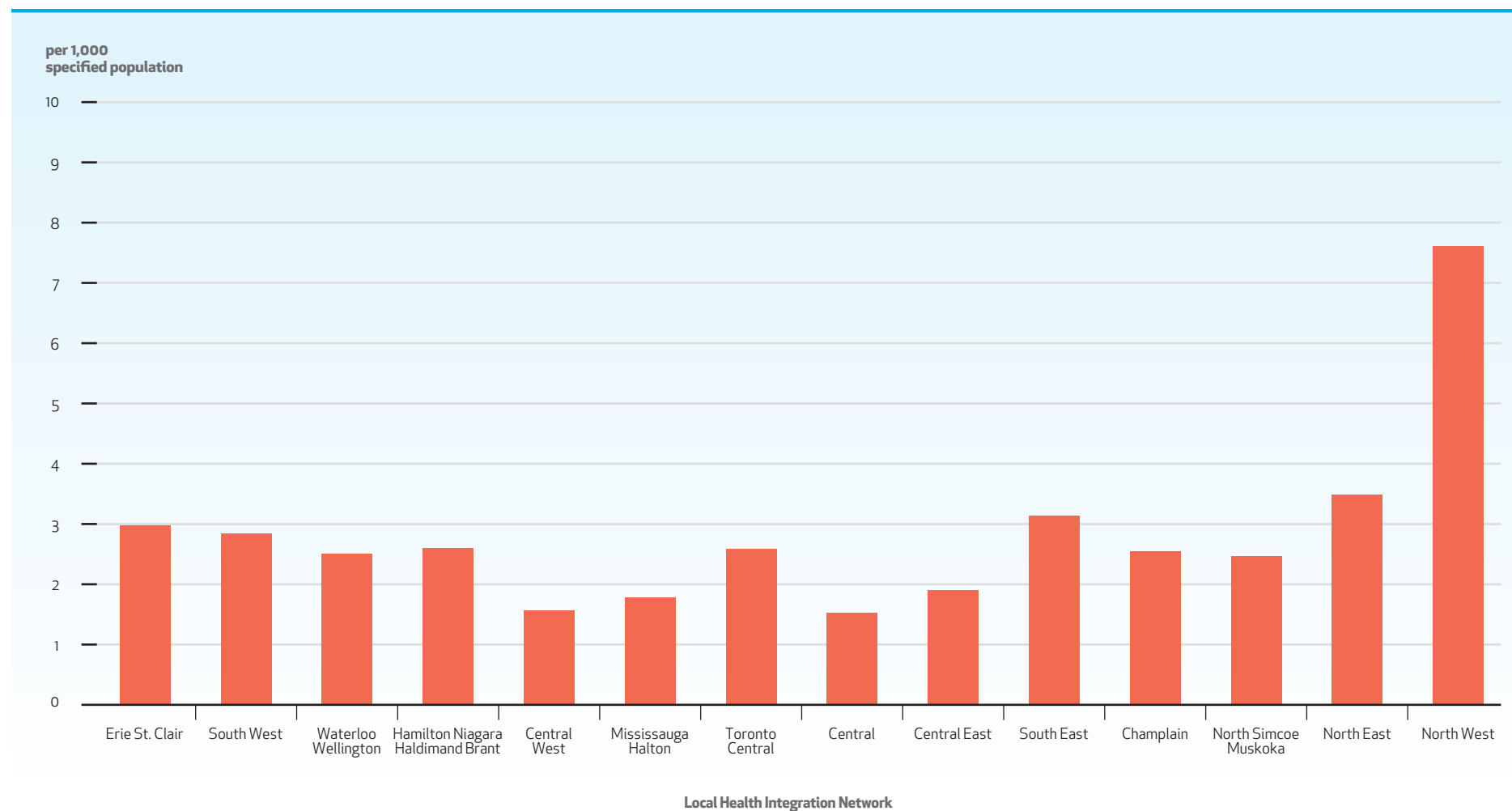


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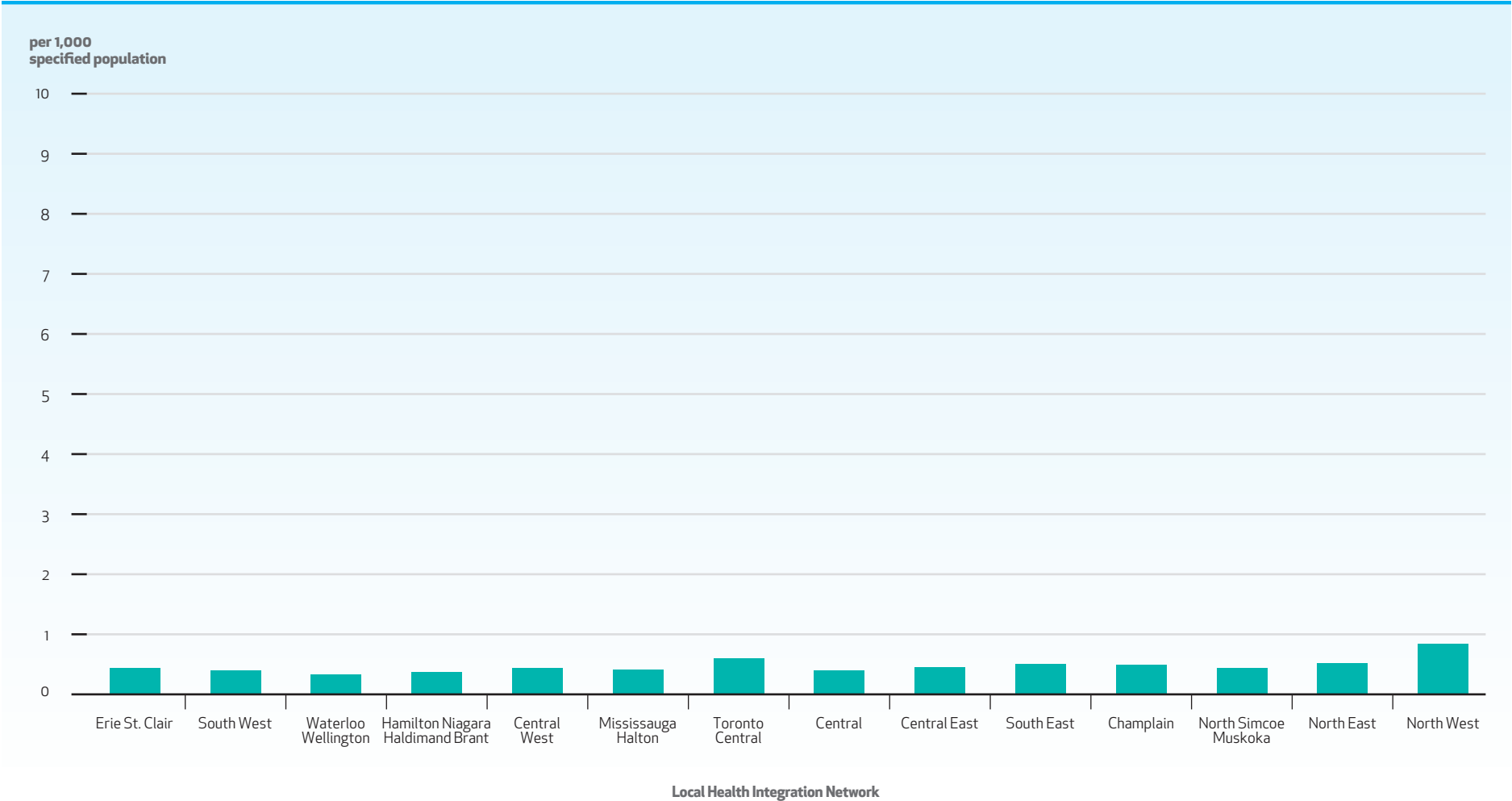
Q1 = lowest income quintile

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Note: Rates were standardized by age and sex to the 2002 Ontario population.

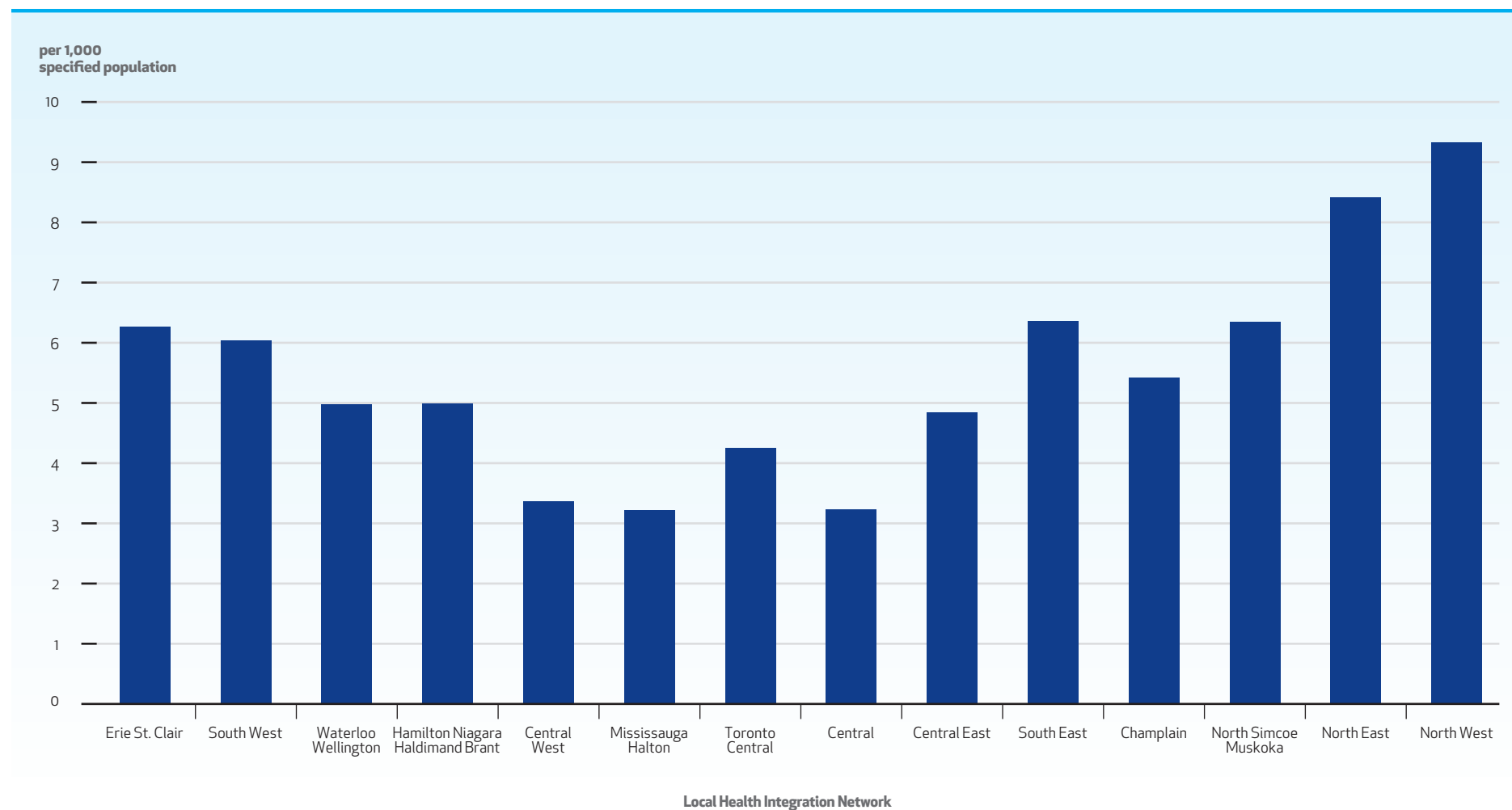
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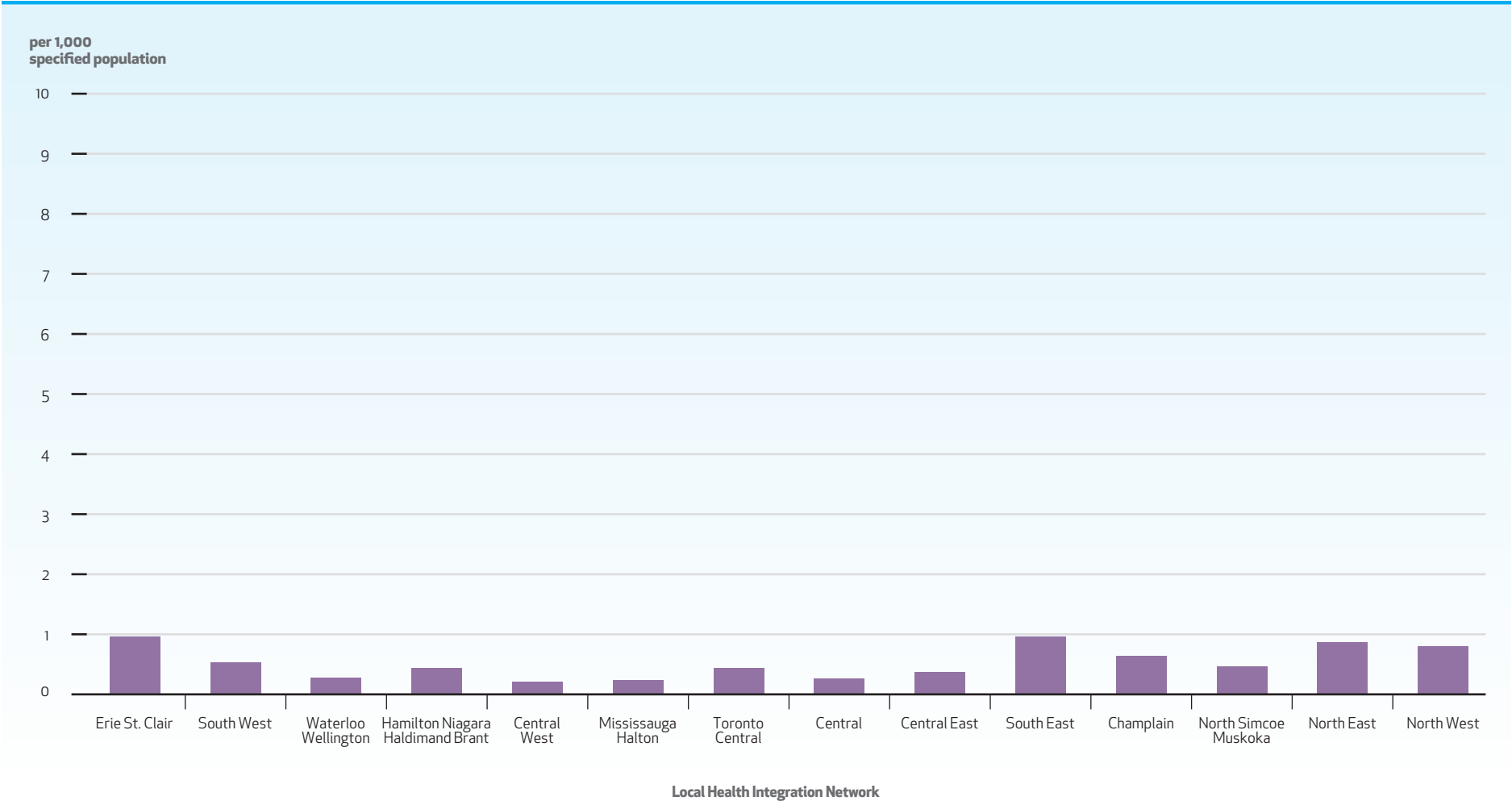


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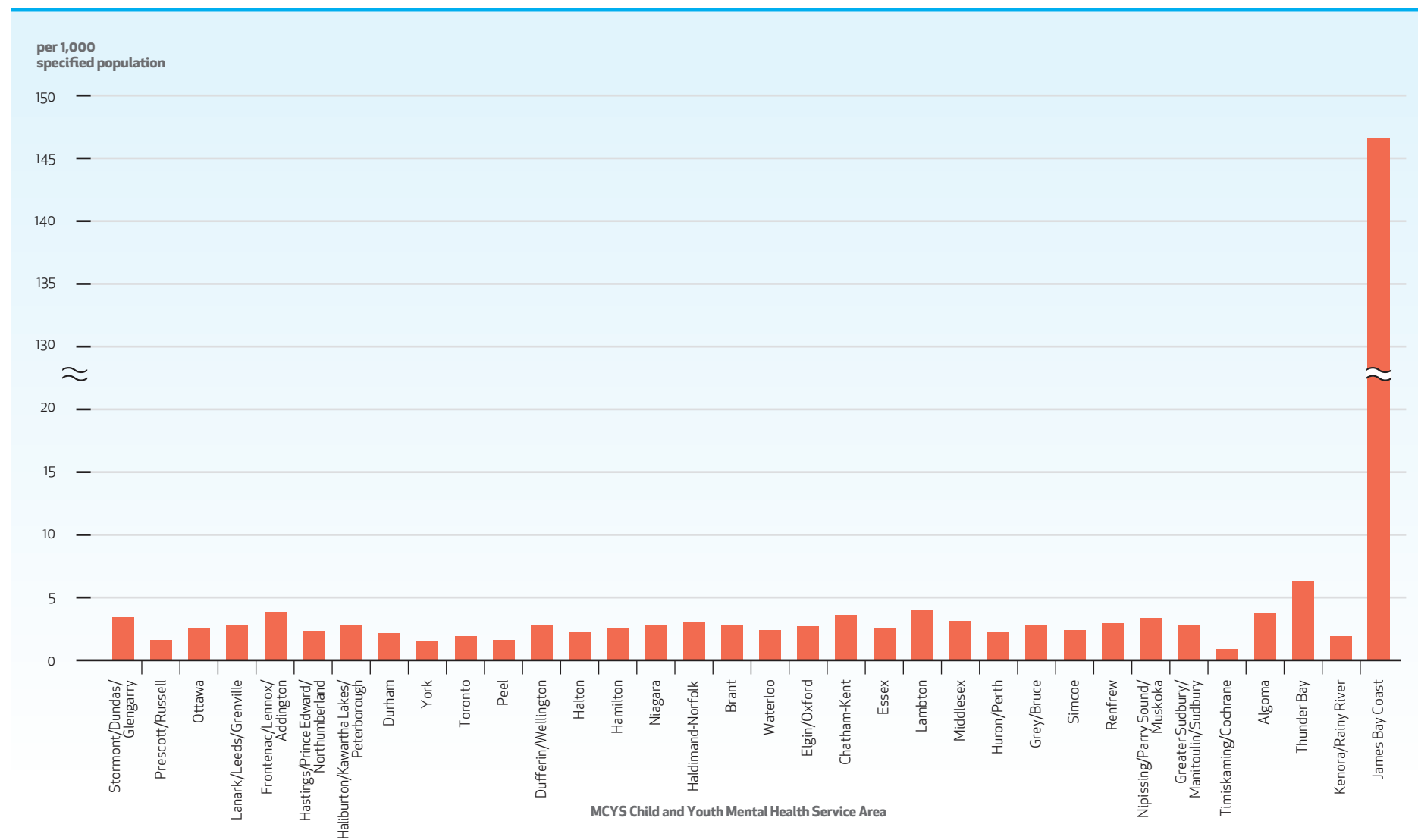
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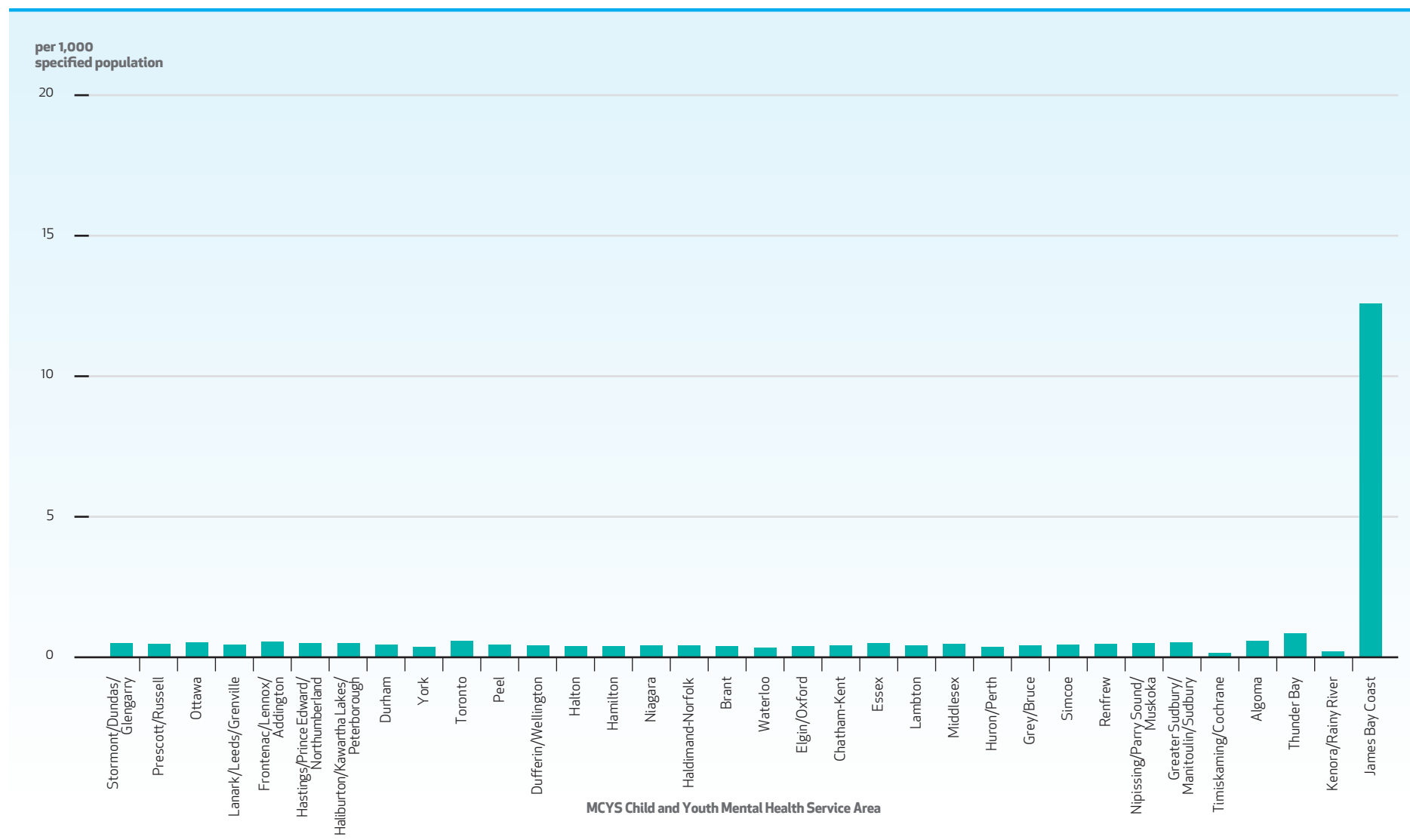
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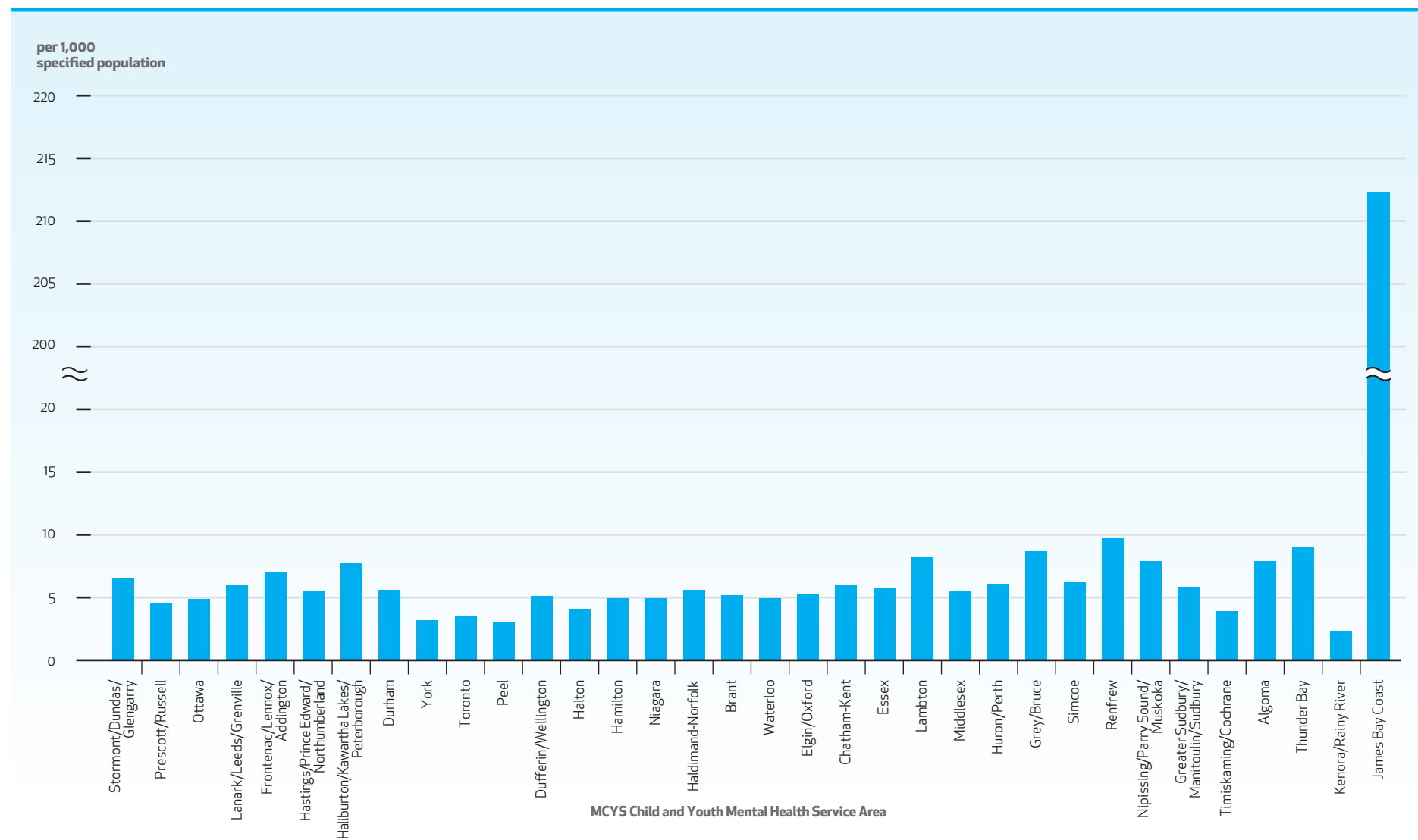
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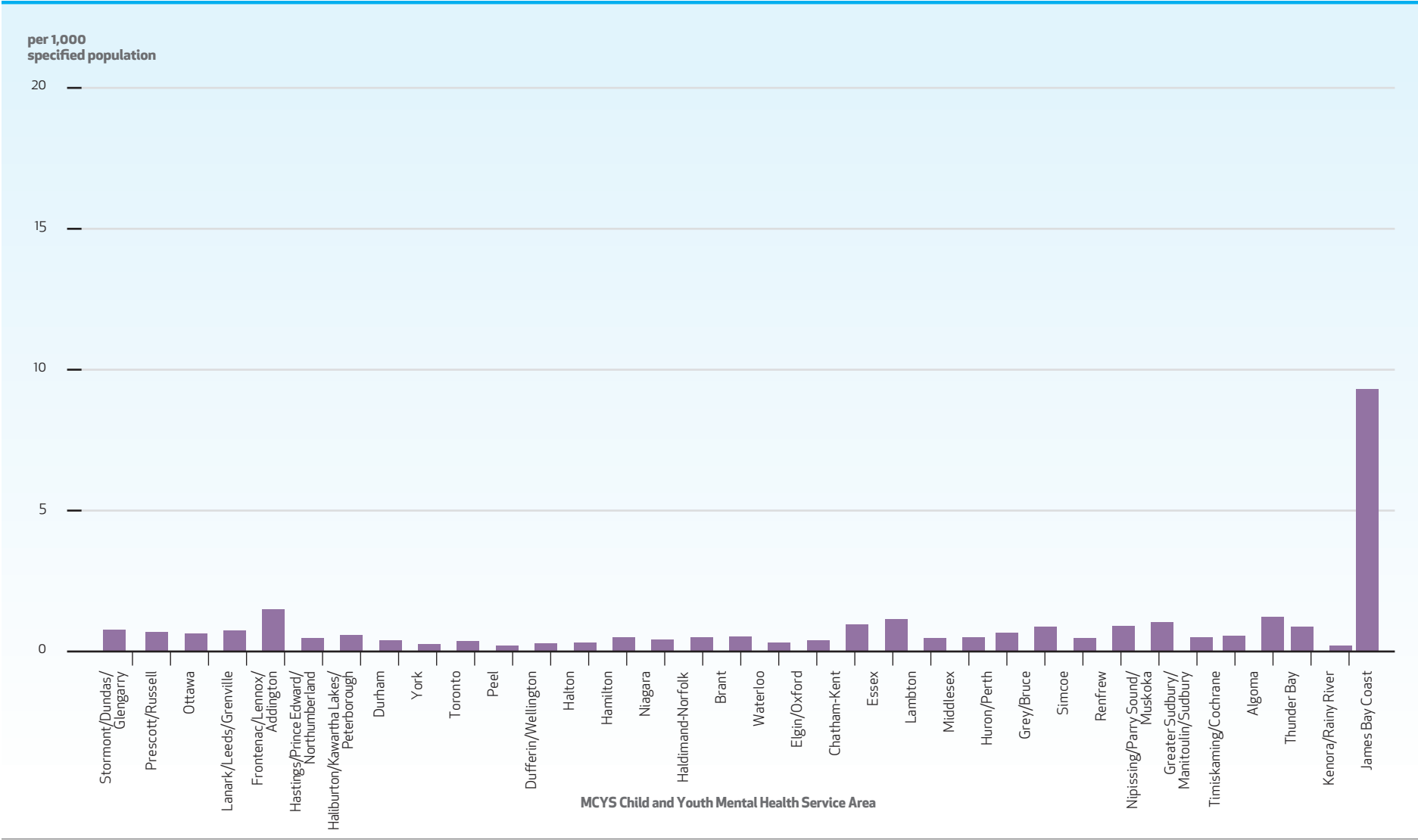
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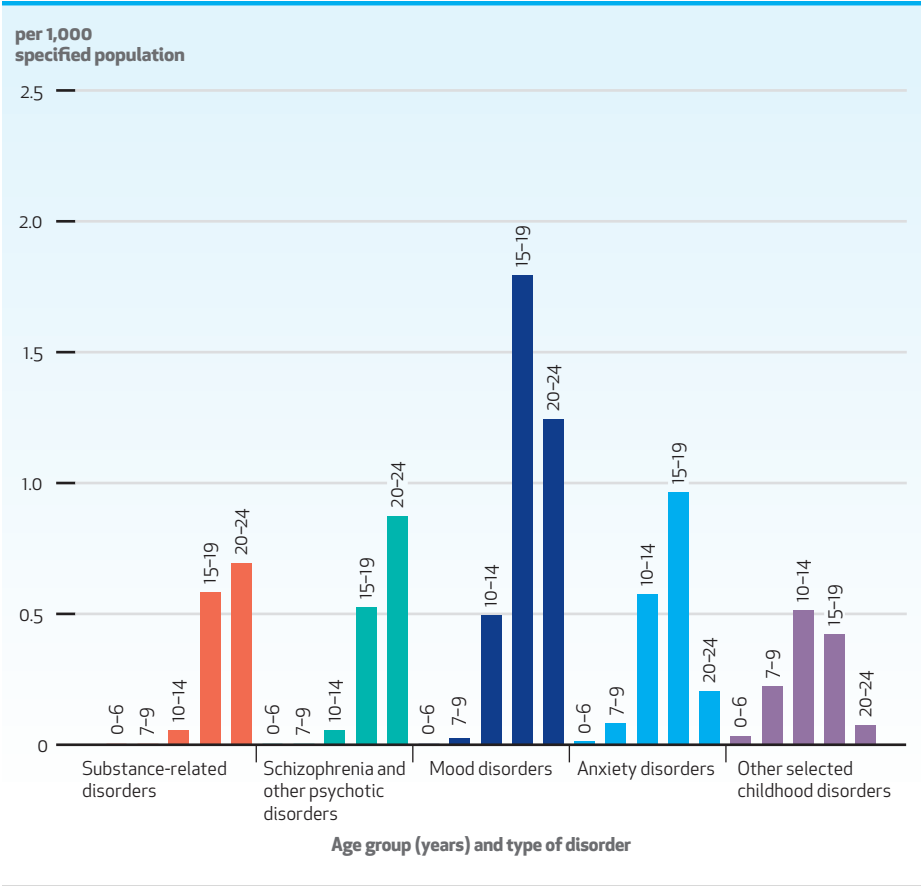
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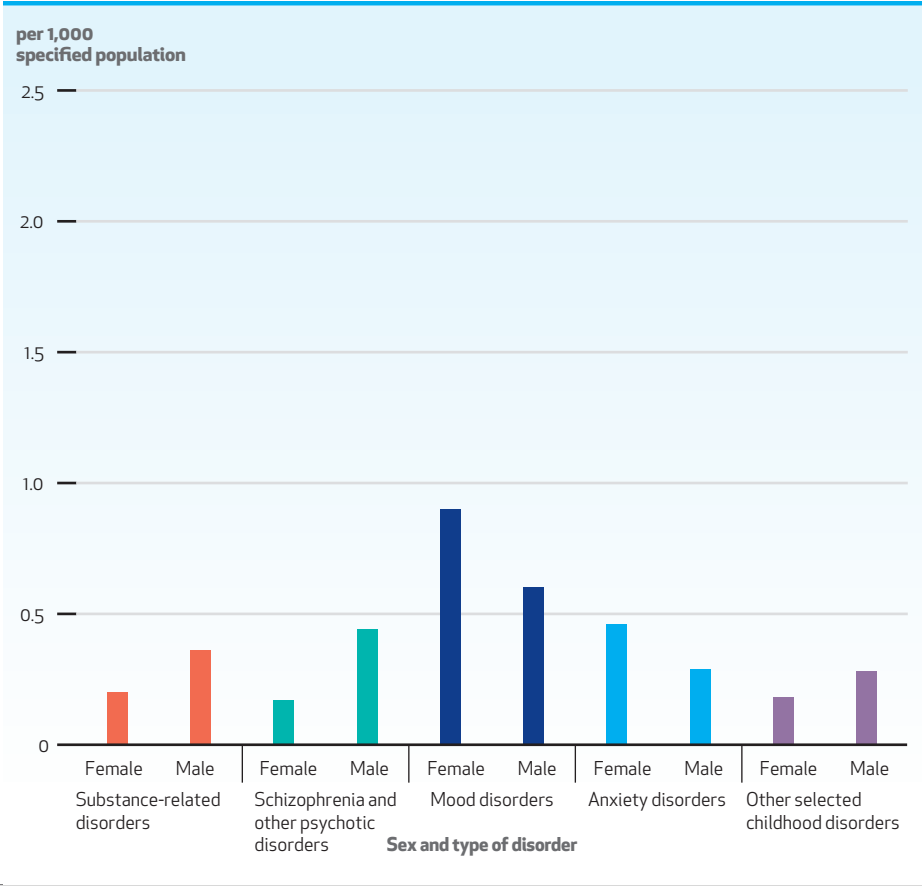
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# Rate of hospital admissions related to mental health and addictions for children and youth

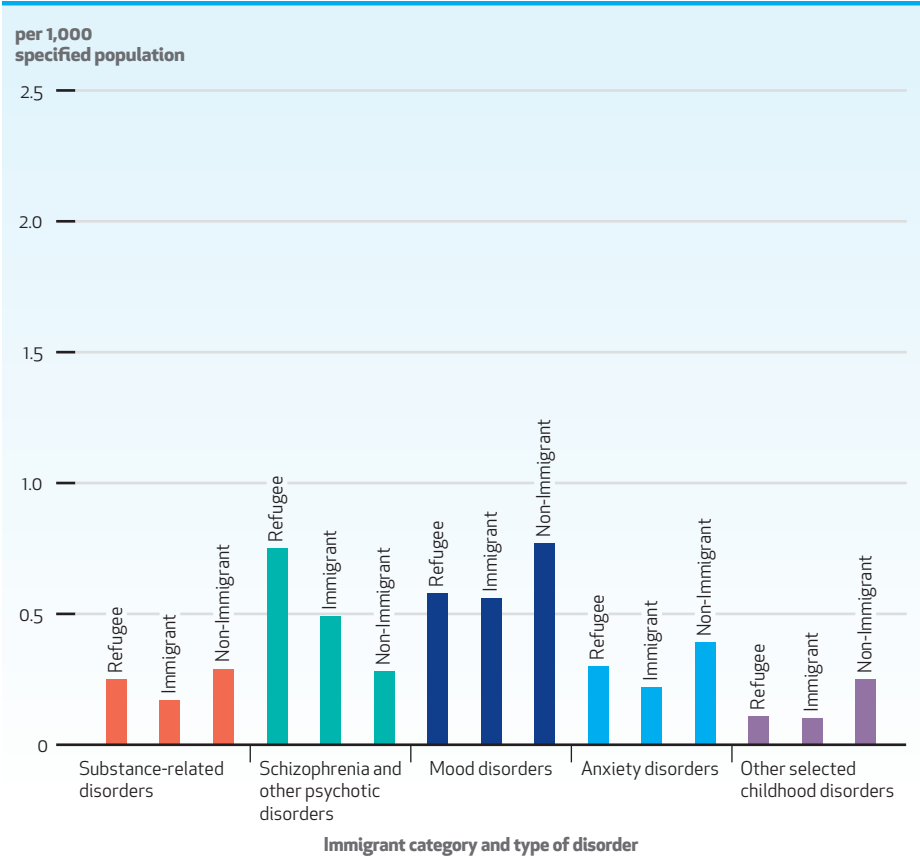
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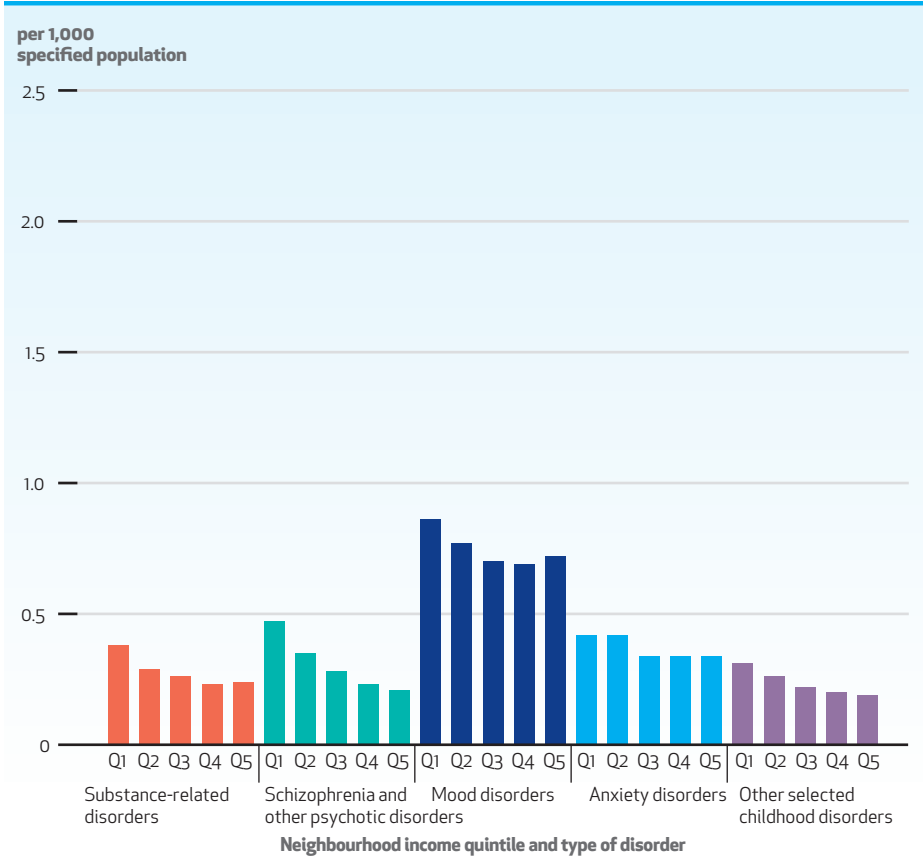


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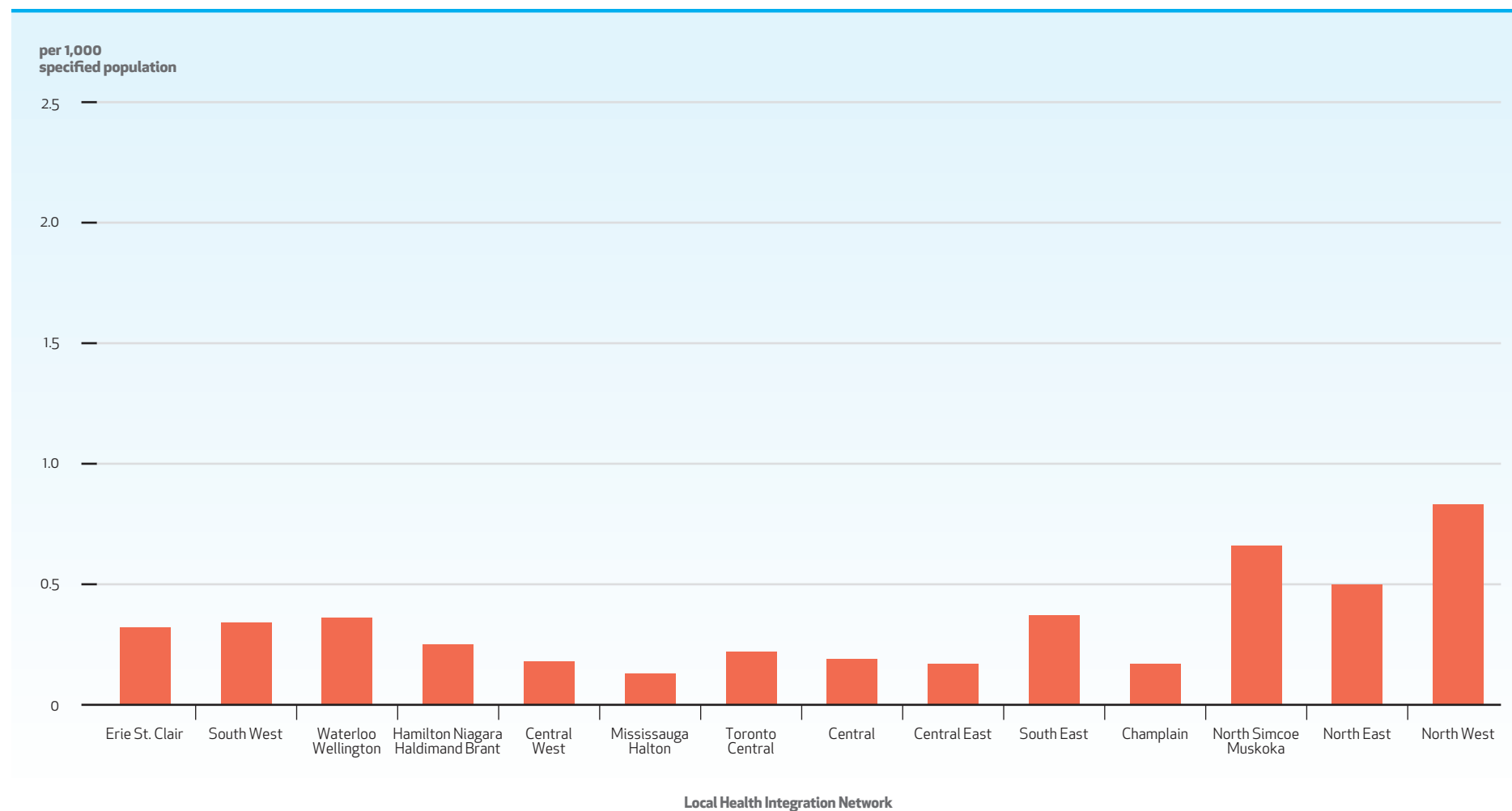
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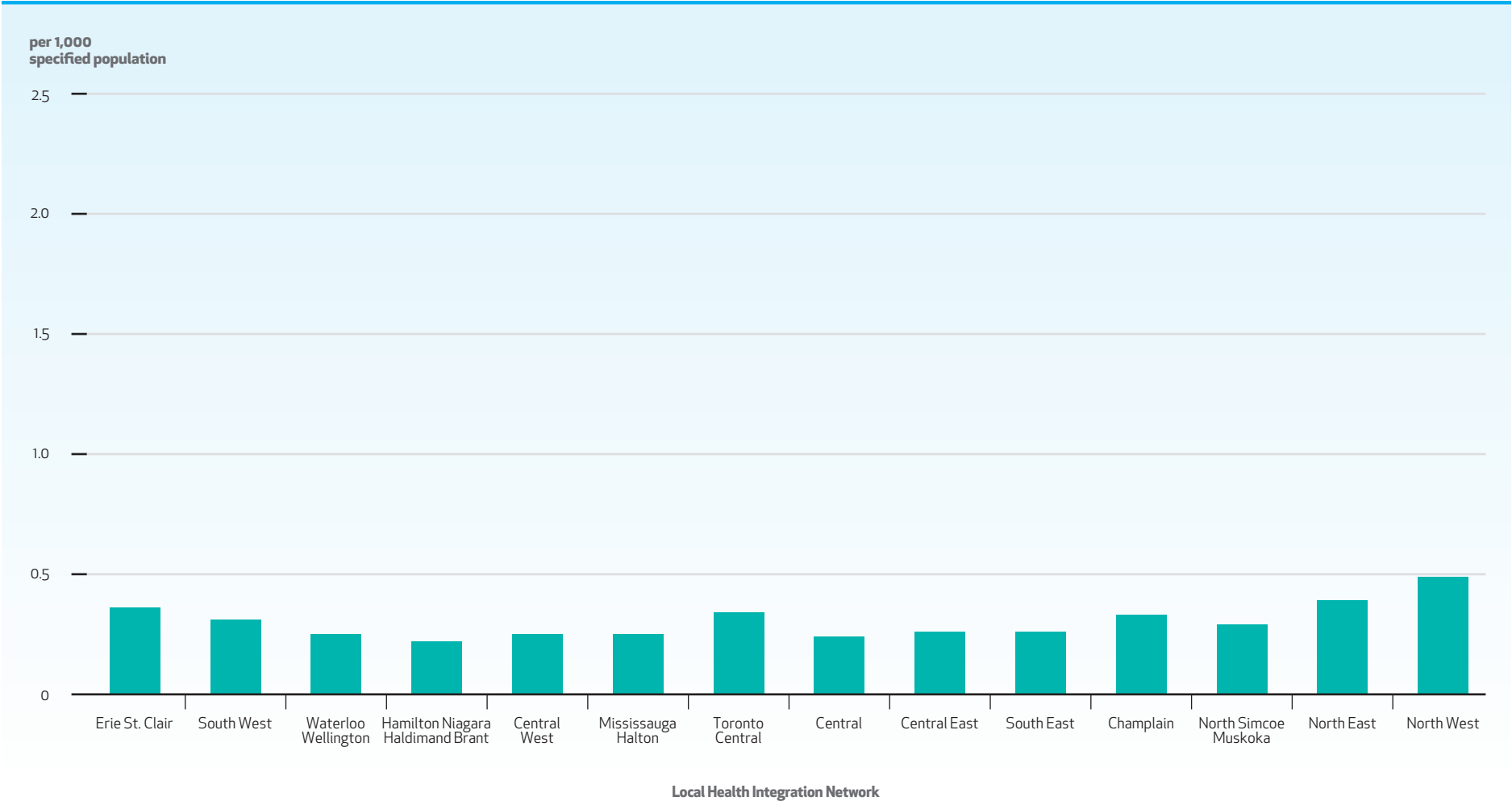


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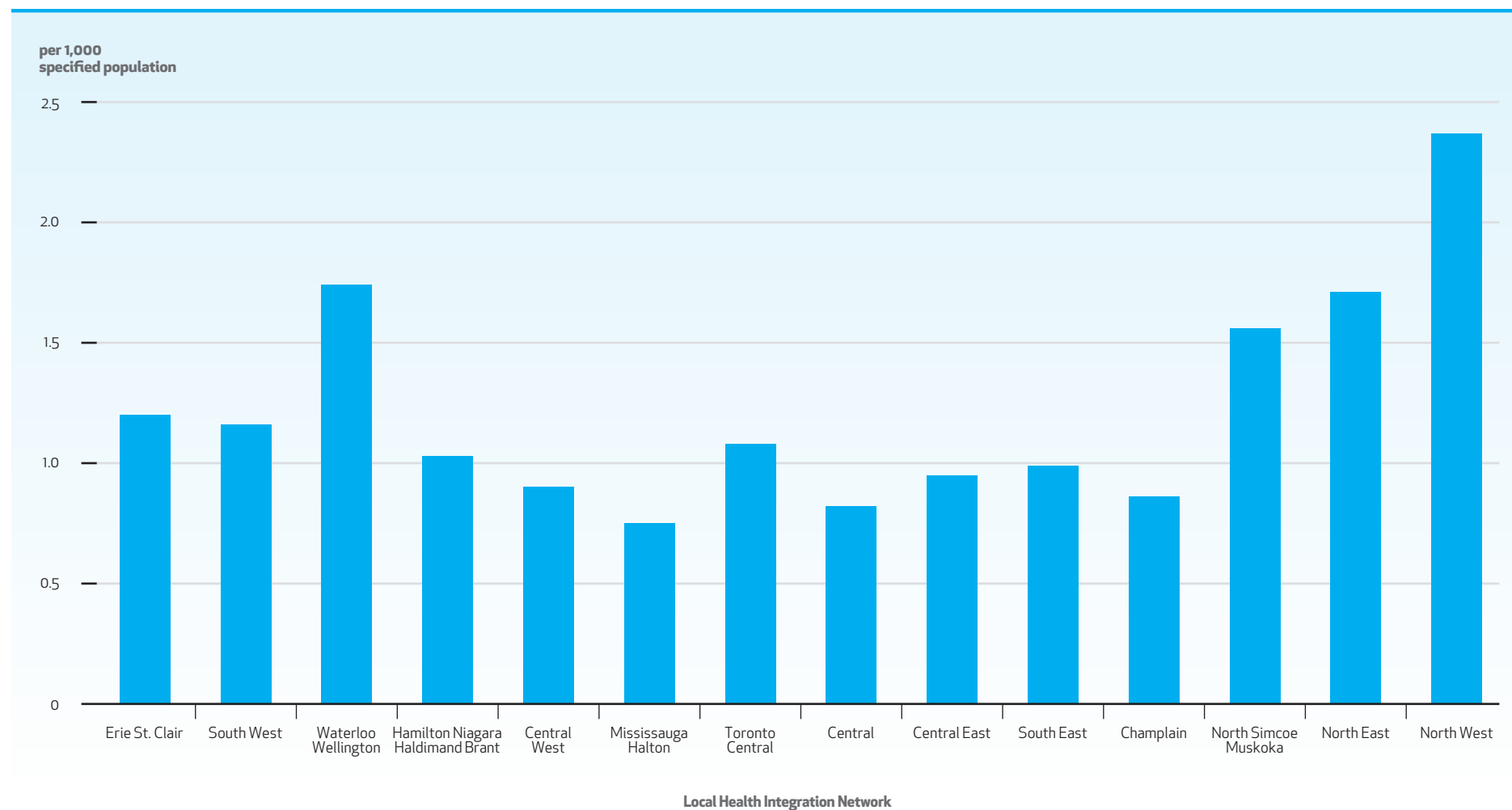
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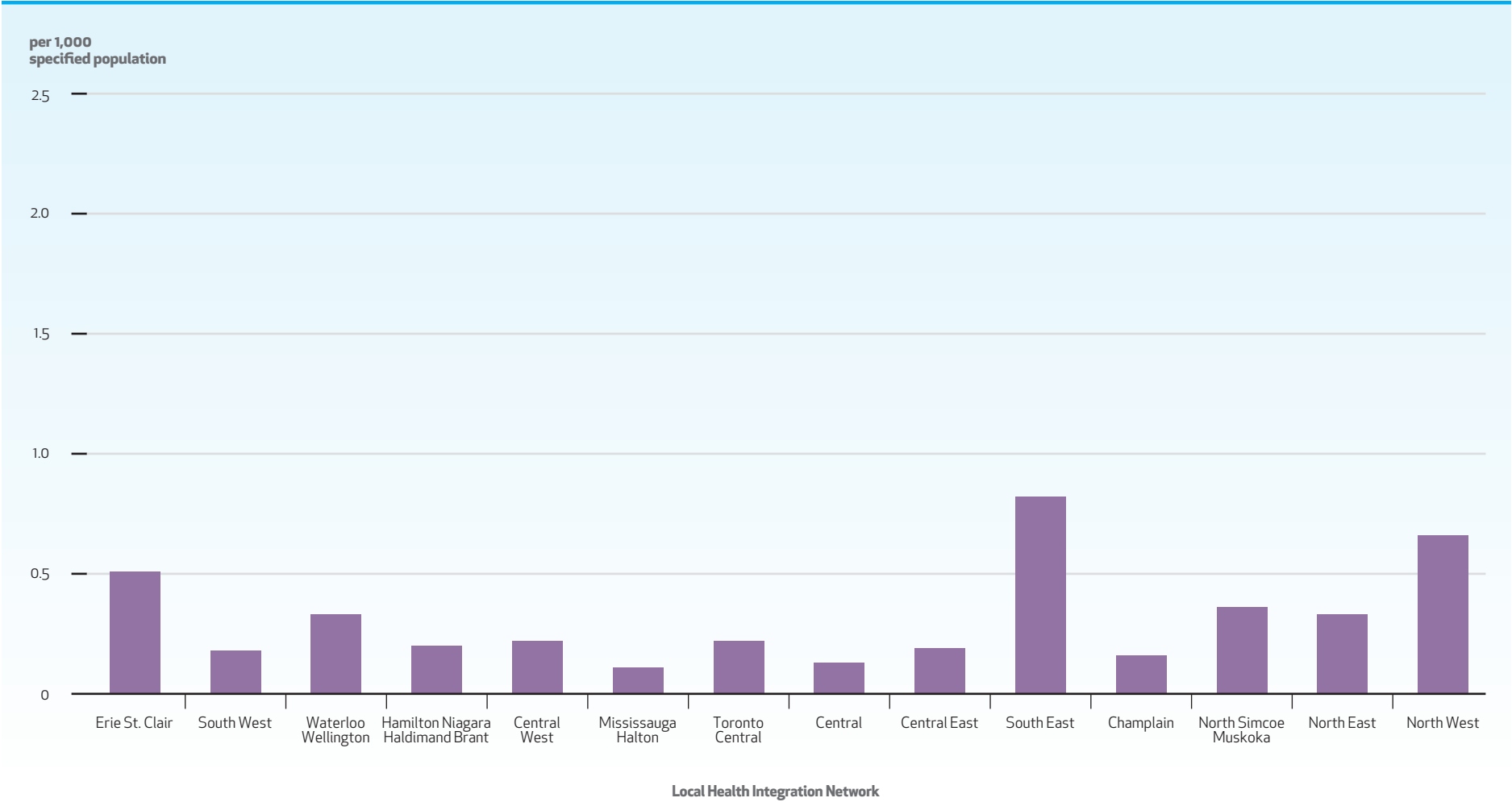
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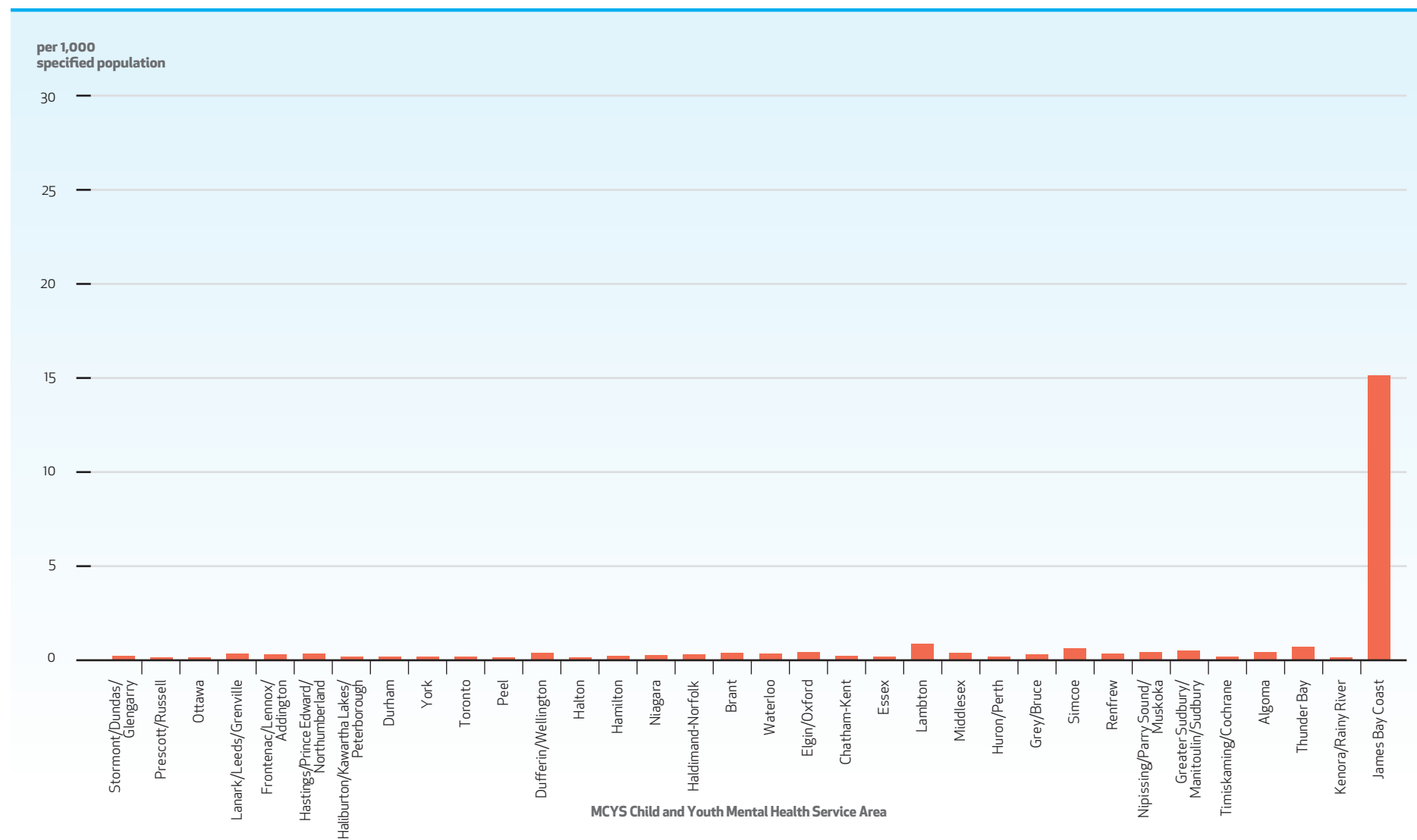
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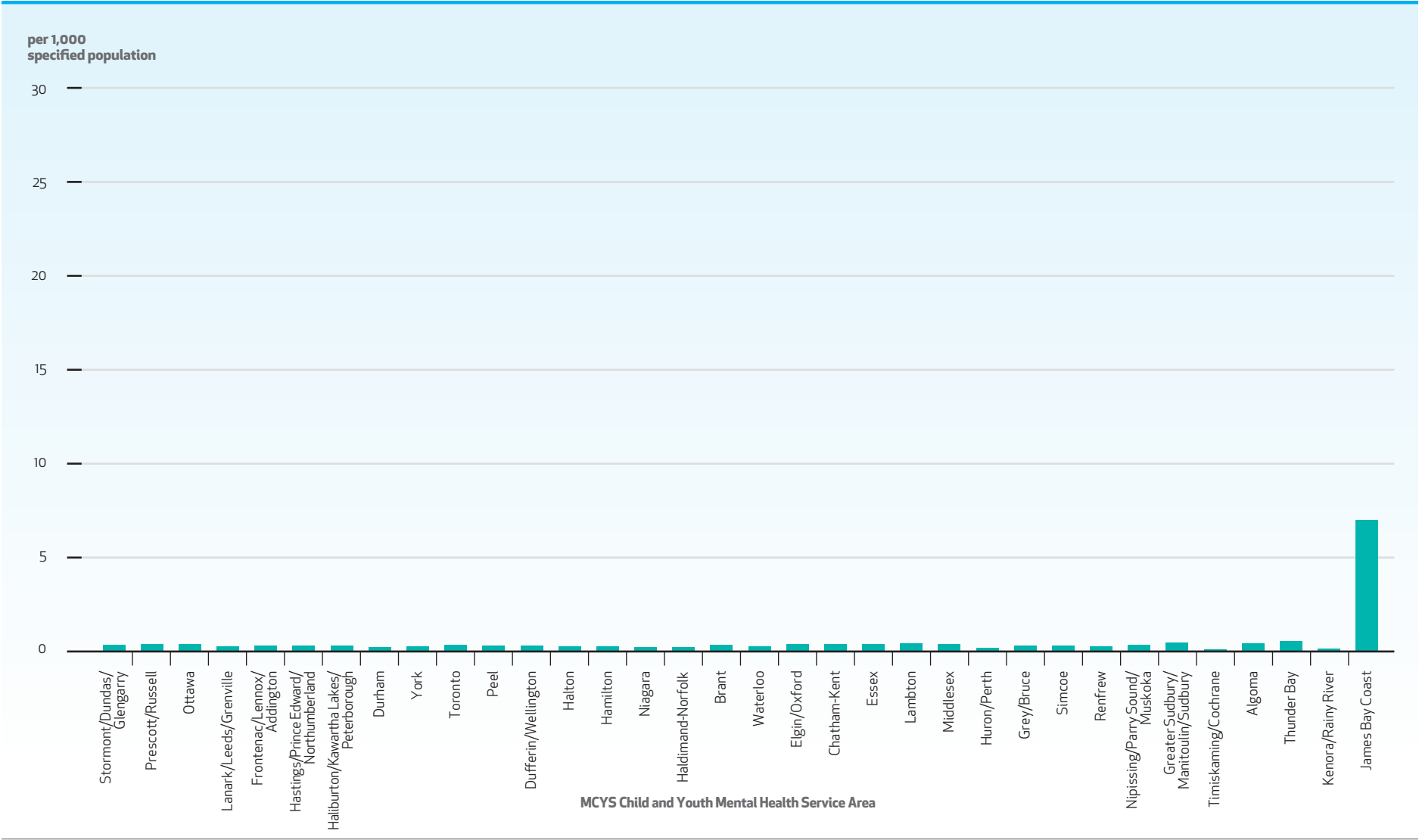
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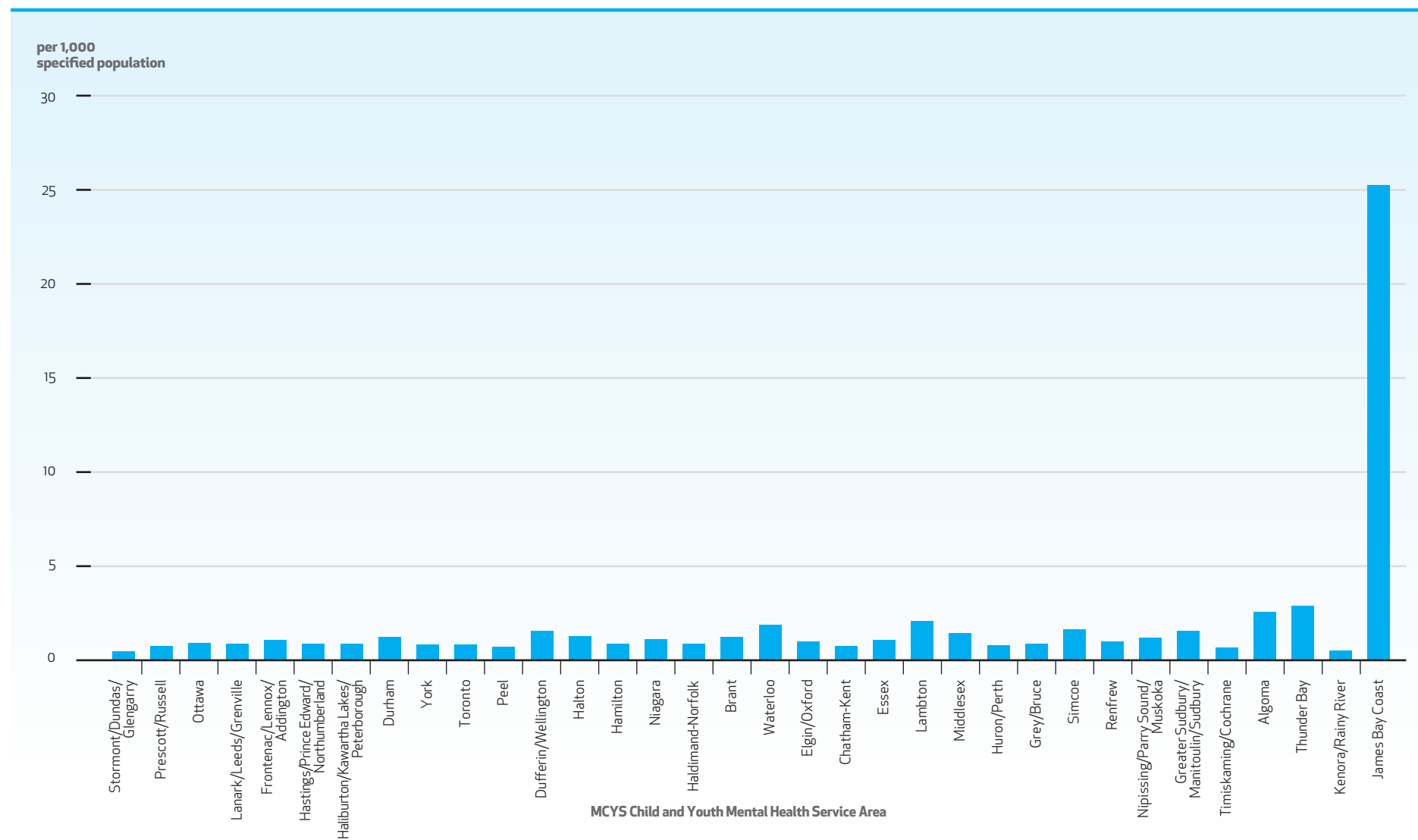
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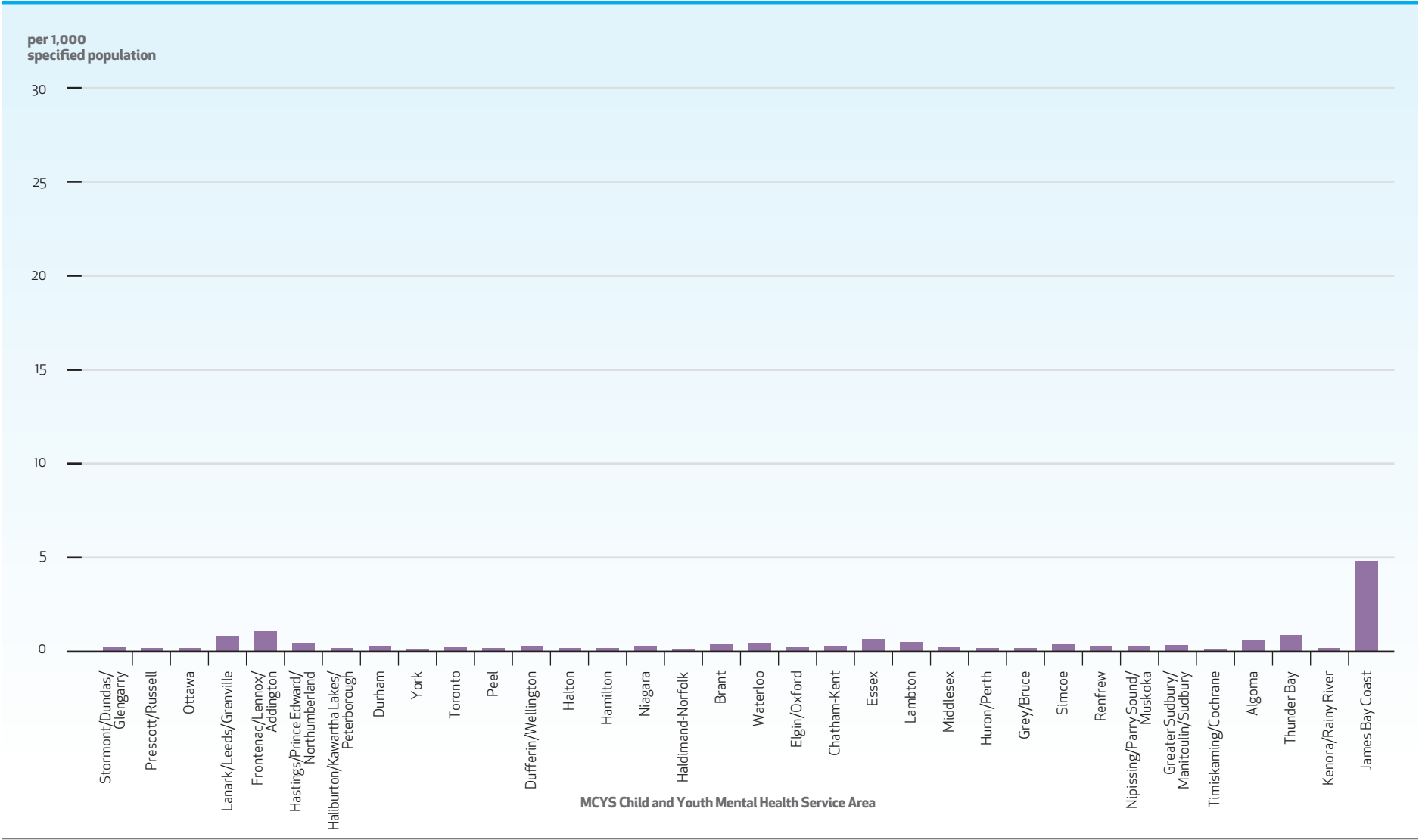
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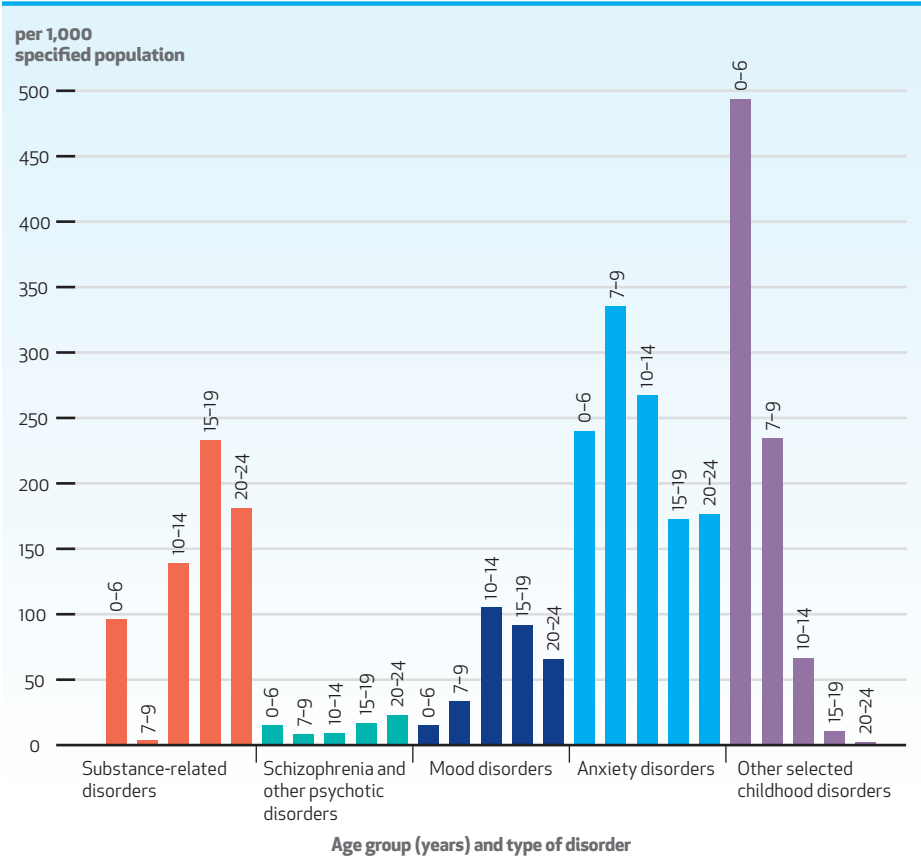


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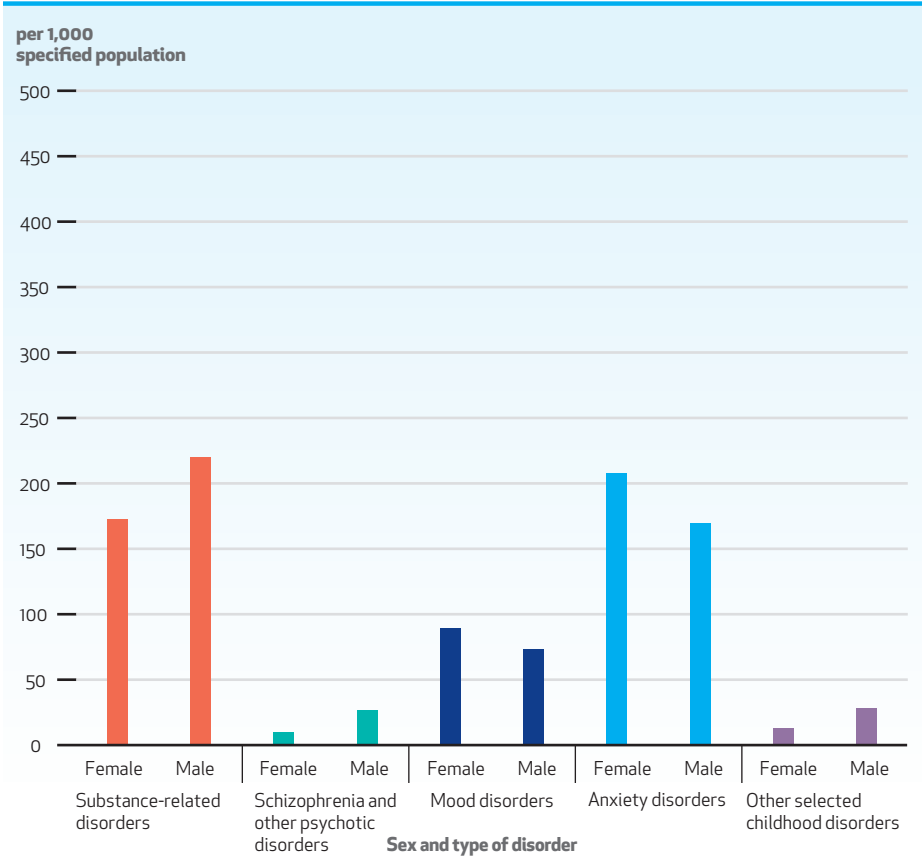


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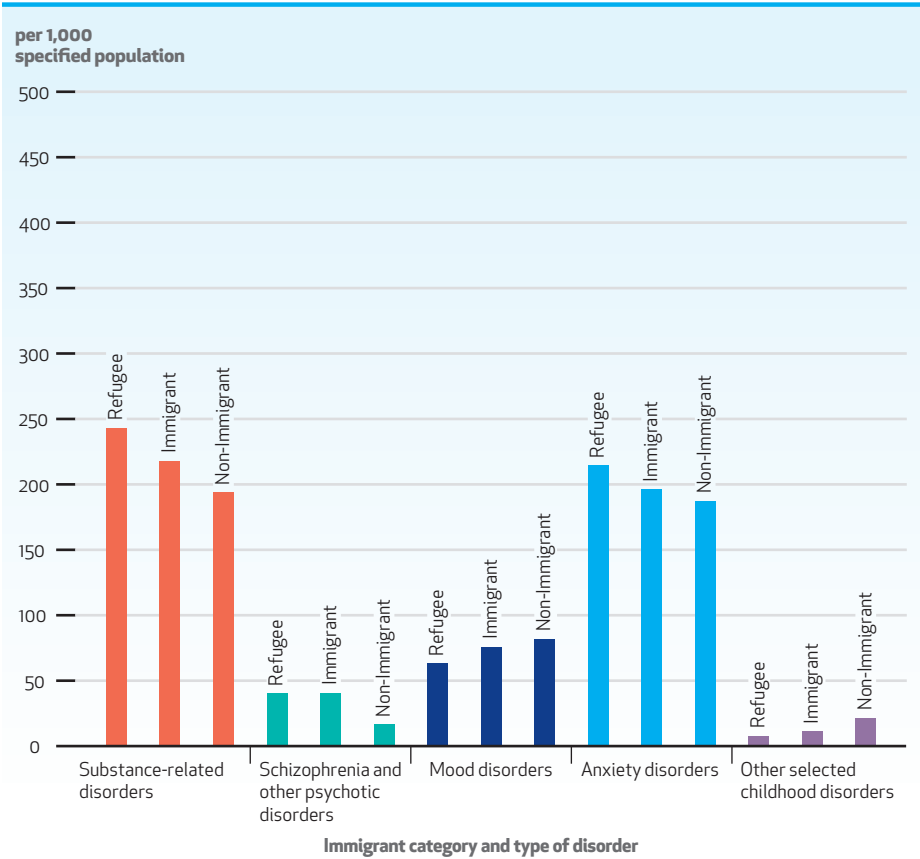
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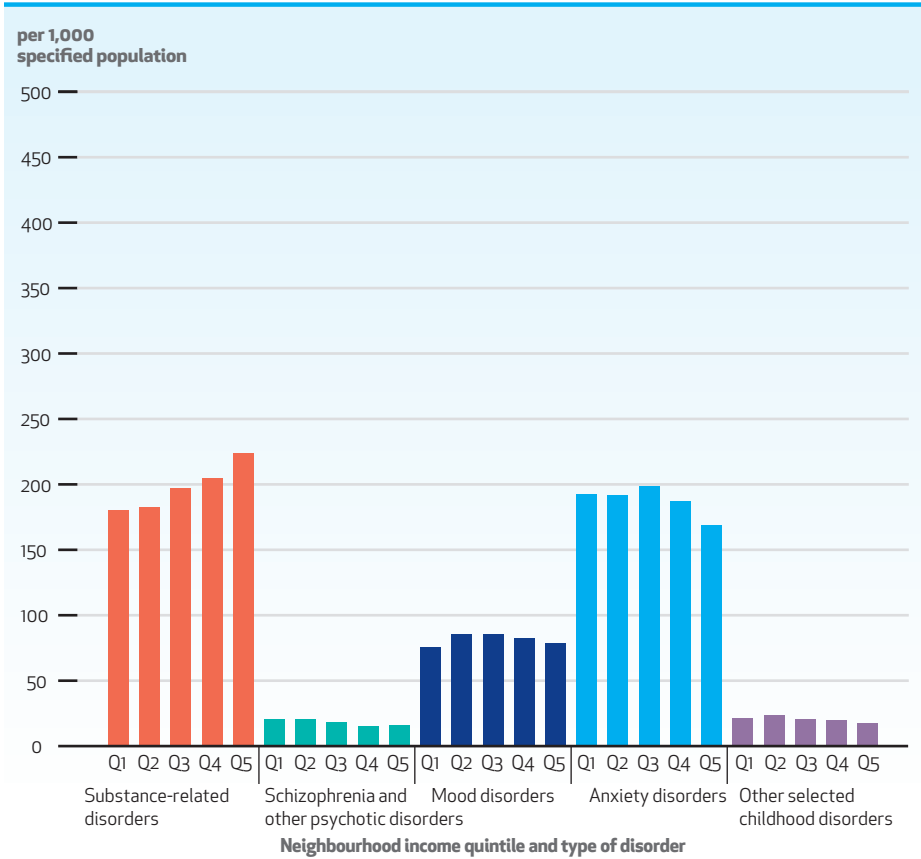
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**EXHIBIT B.3.3** Rate of emergency department (ED) as first contact for mental health and addictions (MHA) per 1,000 population aged 0 to 24 years with an MHA-related ED visit, by immigrant category and type of disorder, in Ontario, three-year average for 2009/10 to 2011/12

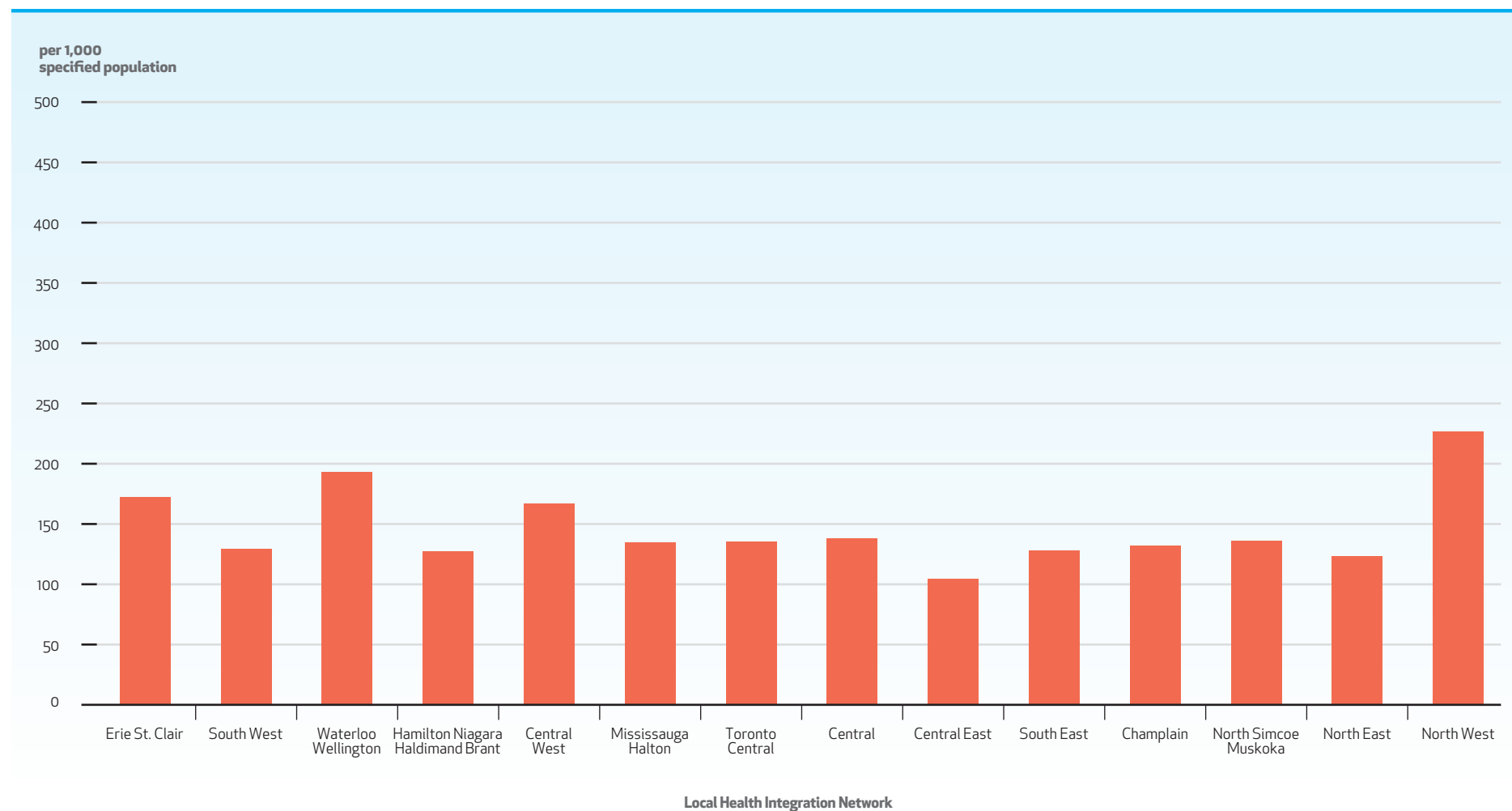


**EXHIBIT B.3.4** Rate of emergency department (ED) as first contact for mental health and addictions (MHA) per 1,000 population aged 0 to 24 years with an MHA-related ED visit, by neighbourhood income quintile and type of disorder, in Ontario, three-year average for 2009/10 to 2011/12



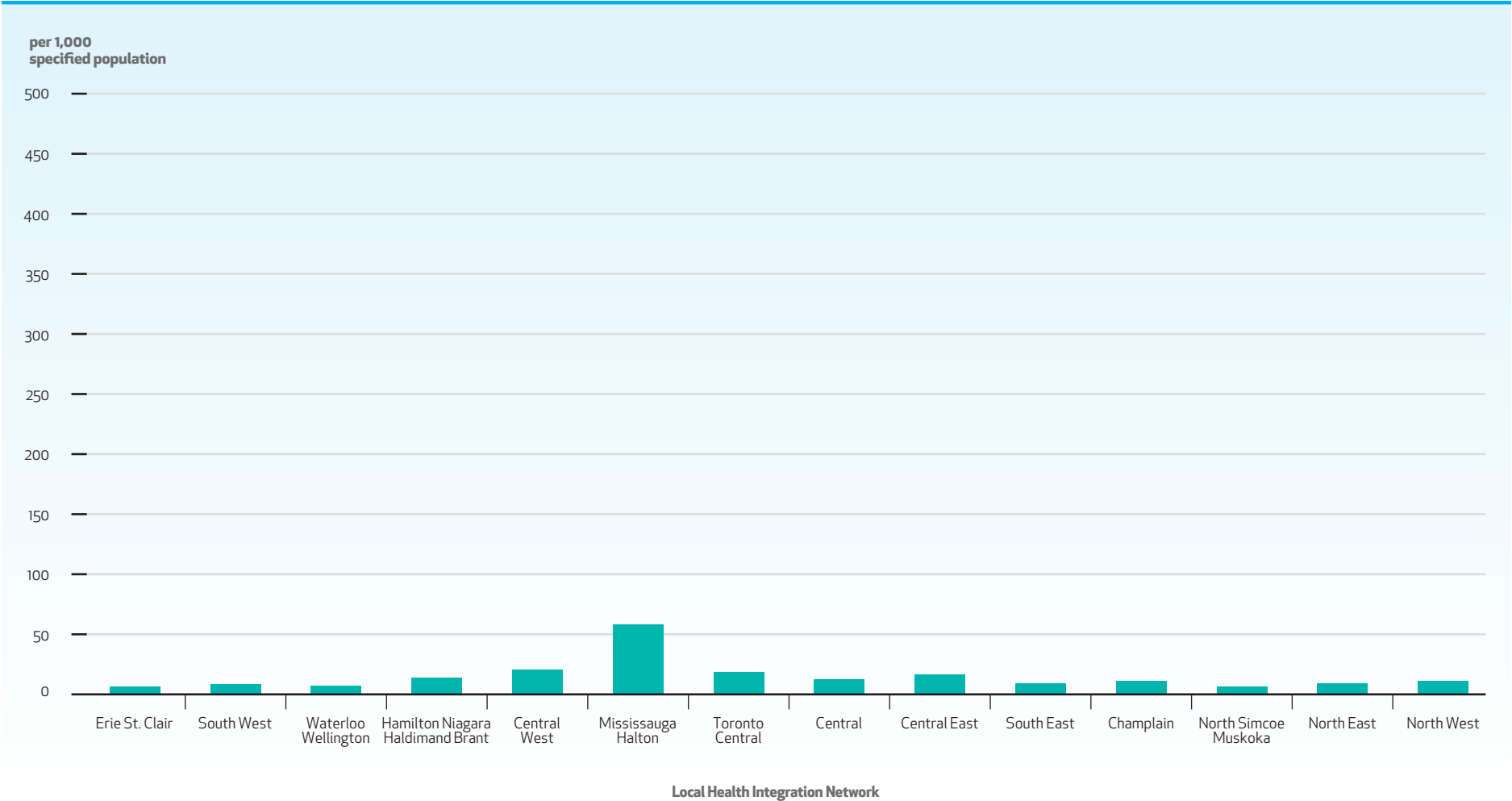
Q1 = lowest income quintile

**EXHIBIT B.3.5** Standardized rate of emergency department (ED) as first contact for substance-related disorders per 1,000 population aged 0 to 24 years with an MHA-related ED visit, by Local Health Integration Network, in Ontario, three-year average for 2009/10 to 2011/12



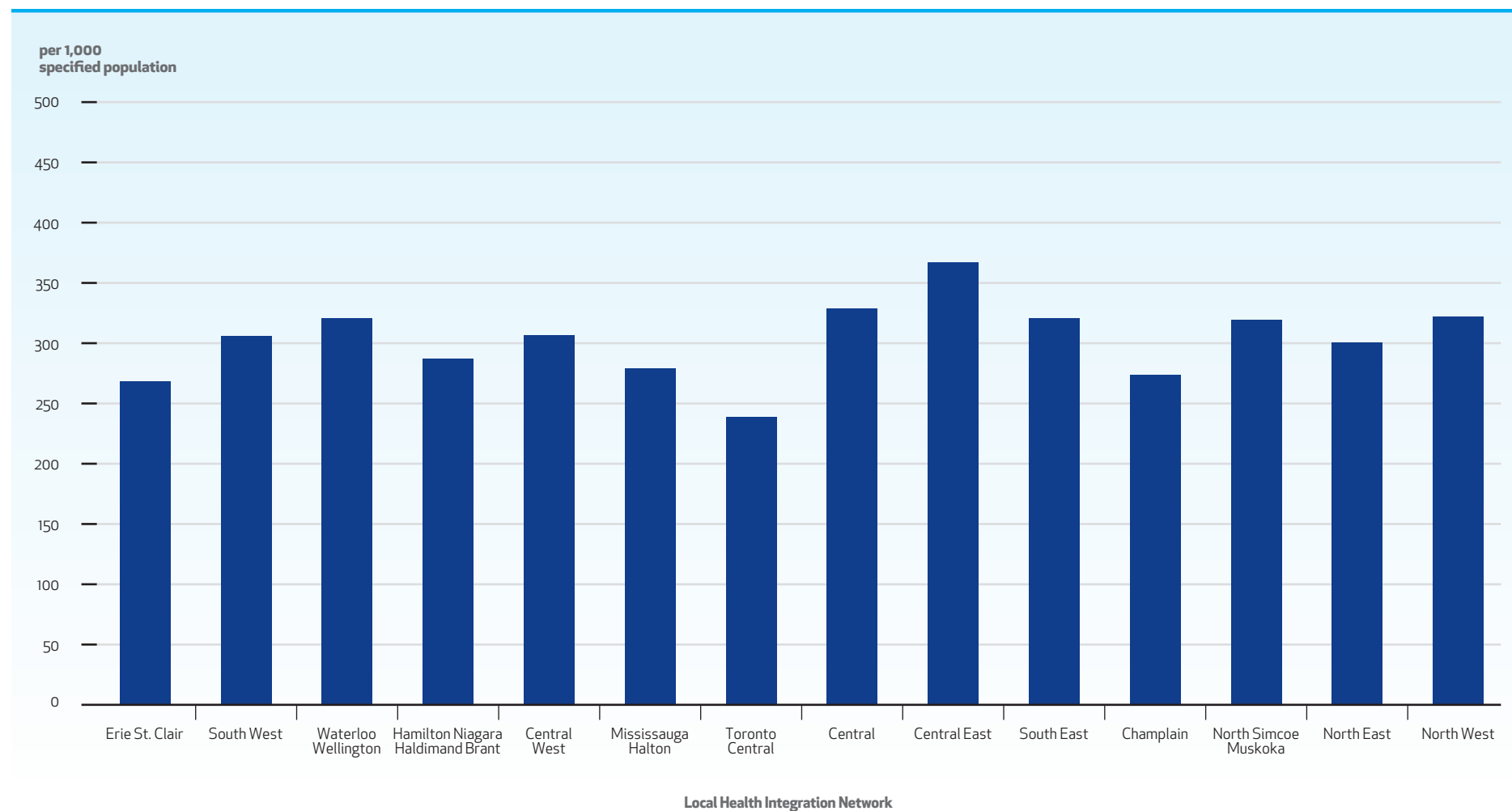
Note: Rates were standardized by age and sex to the 2002 Ontario population.

**EXHIBIT B.3.6** Standardized rate of emergency department (ED) as first contact for schizophrenia and other psychotic disorders per 1,000 population aged 0 to 24 years with an ED visit related to mental health and addiction, by Local Health Integration Network, in Ontario, three-year average for 2009/10 to 2011/12



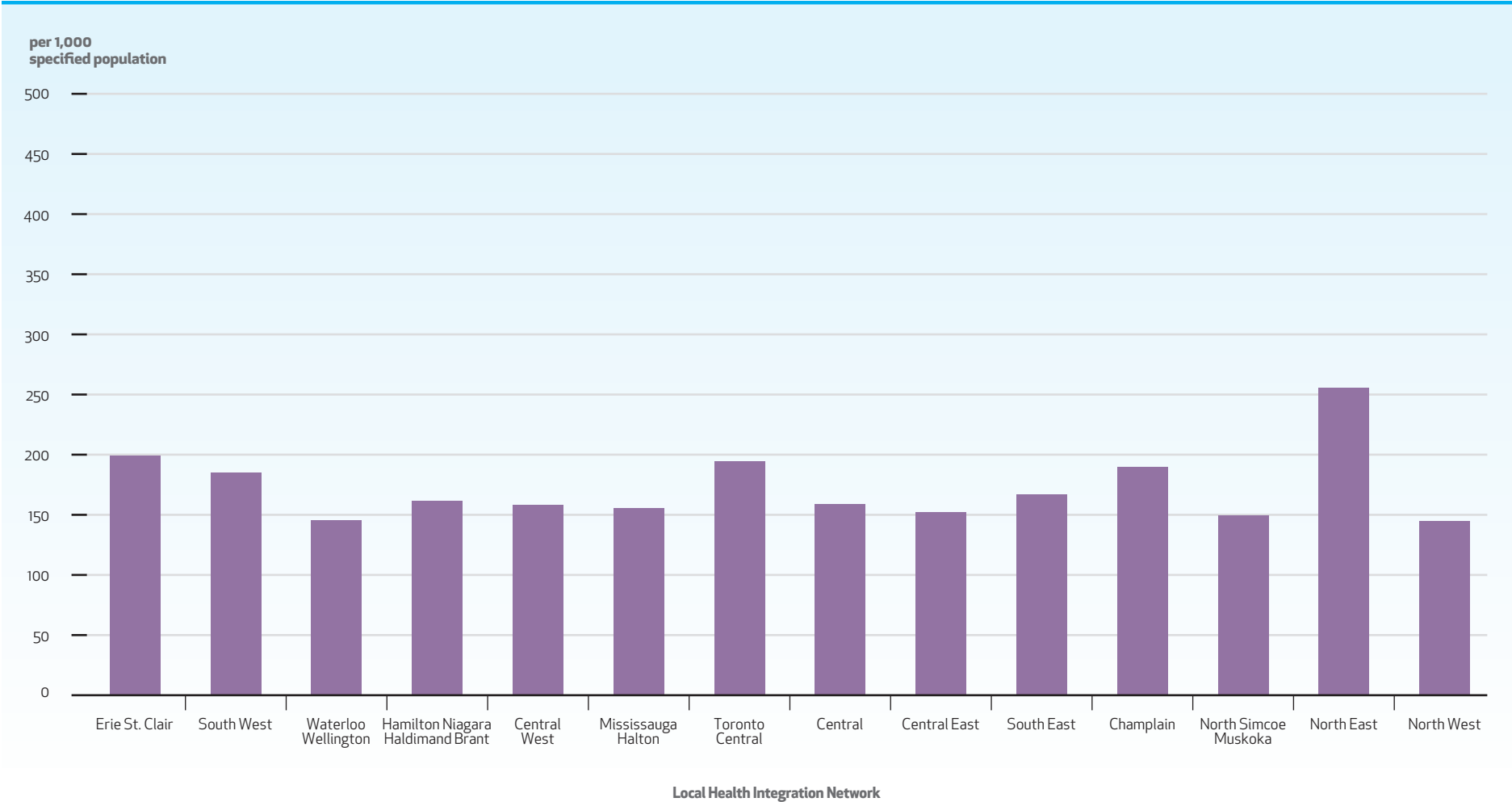
Note: Rates were standardized by age and sex to the 2002 Ontario population.

**EXHIBIT B.3.7** Standardized rate of emergency department (ED) as first contact for mood or anxiety disorders per 1,000 population aged 0 to 24 years with an ED visit related to mental health and addiction, by Local Health Integration Network, in Ontario, three-year average for 2009/10 to 2011/12



Note: Rates were standardized by age and sex to the 2002 Ontario population.

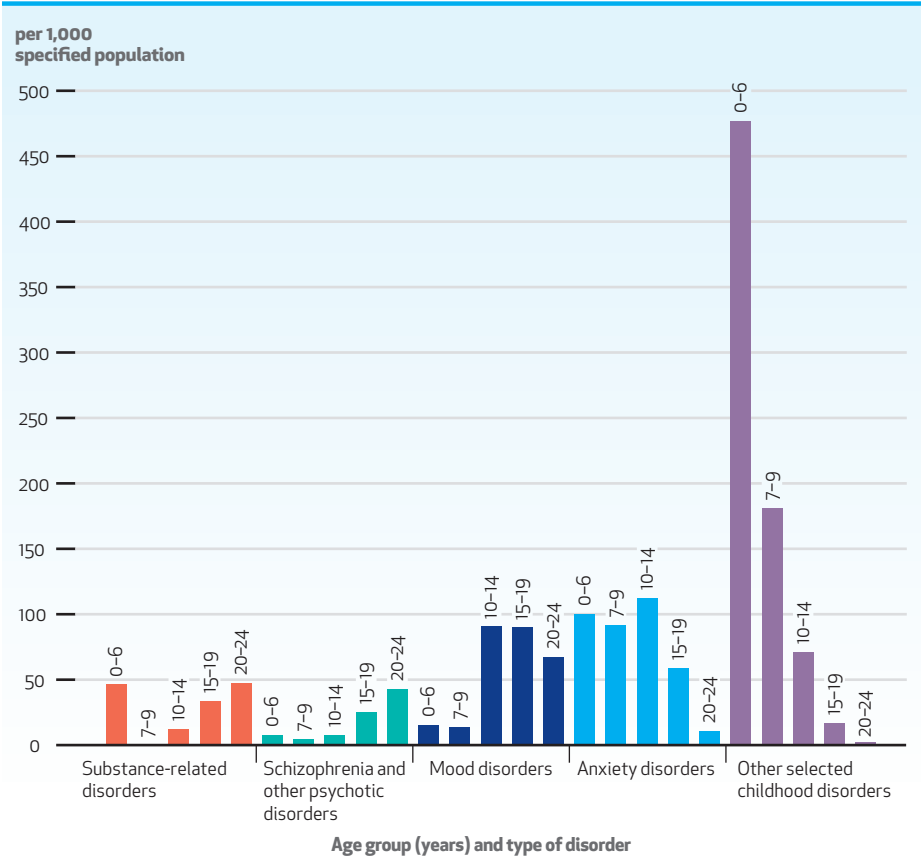
**EXHIBIT B.3.8** Standardized rate of emergency department (ED) as first contact for other selected childhood disorders per 1,000 population aged 0 to 24 years with an ED visit related to mental health and addictions, by Local Health Integration Network, in Ontario, three-year average for 2009/10 to 2011/12



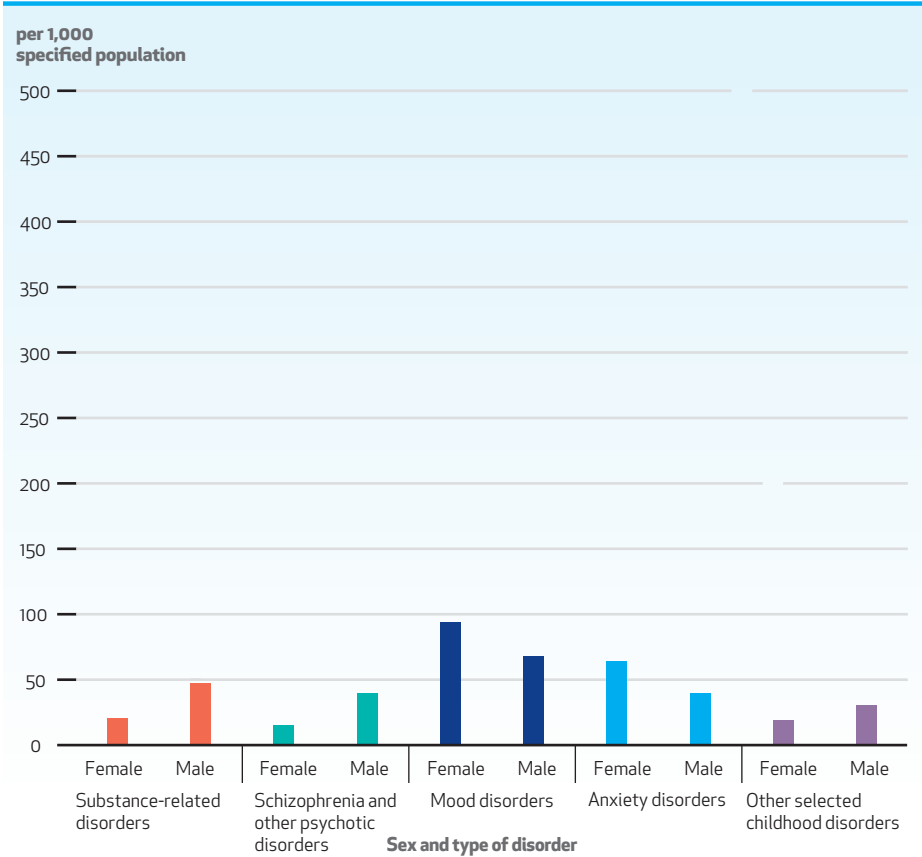
Note: Rates were standardized by age and sex to the 2002 Ontario population.

# Rate of hospital admission as first contact for mental health and addictions for children and youth

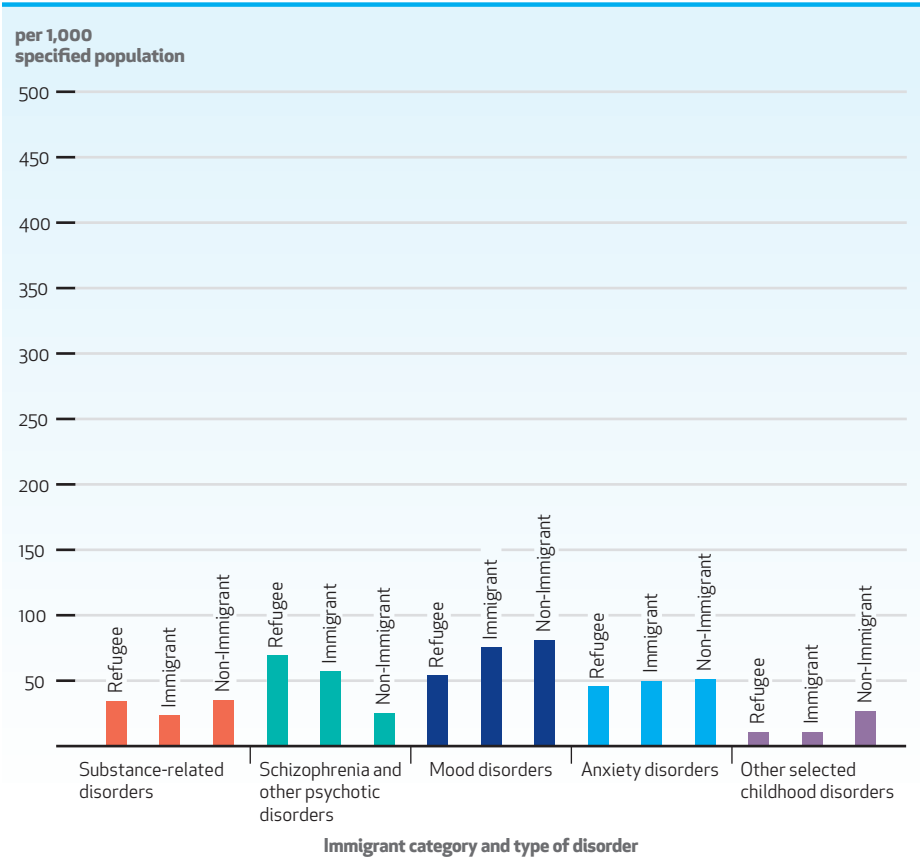
**EXHIBIT B.4.1** Rate of hospital admission as first contact for mental health and addictions (MHA) per 1,000 population aged 0 to 24 years with an MHA-related hospitalization, by age group and type of disorder, in Ontario, three-year average for 2009/10 to 2011/12



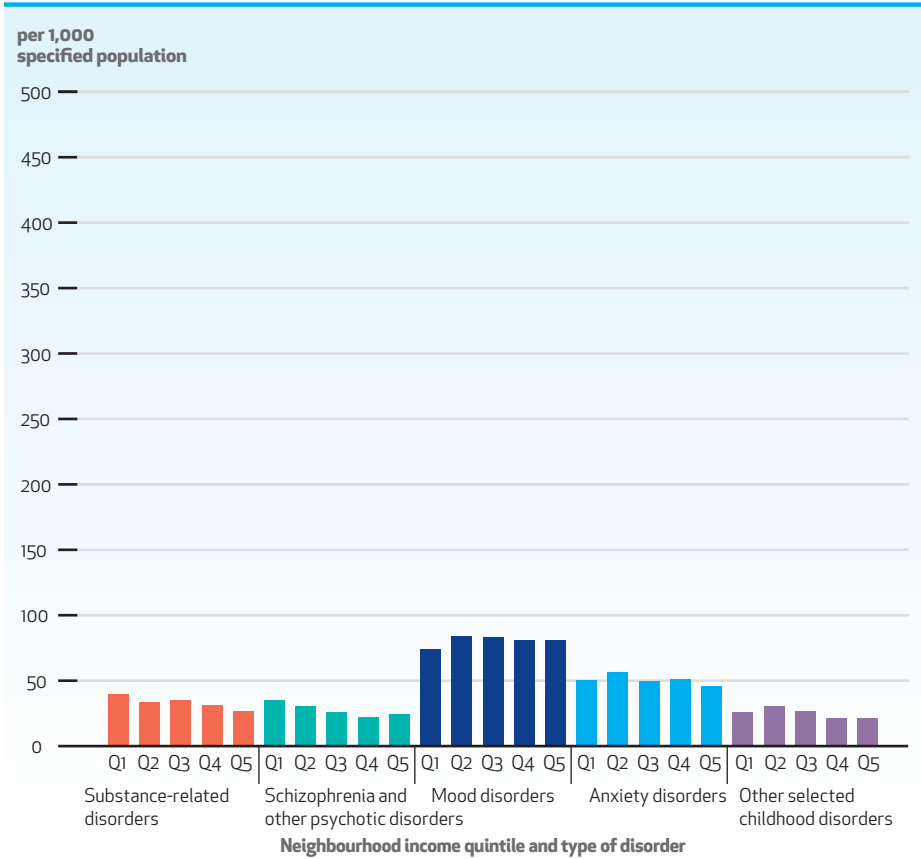
**EXHIBIT B.4.2** Rate of hospital admission as first contact for mental health and addictions (MHA) per 1,000 population aged 0 to 24 years with an MHA-related hospitalization, by sex and type of disorder, in Ontario, three-year average for 2009/10 to 2011/12



**EXHIBIT B.4.3** Rate of hospital admission as first contact for mental health and addictions (MHA) per 1,000 population aged 0 to 24 years with an MHA-related hospitalization, by immigrant category and type of disorder, in Ontario, three-year average for 2009/10 to 2011/12



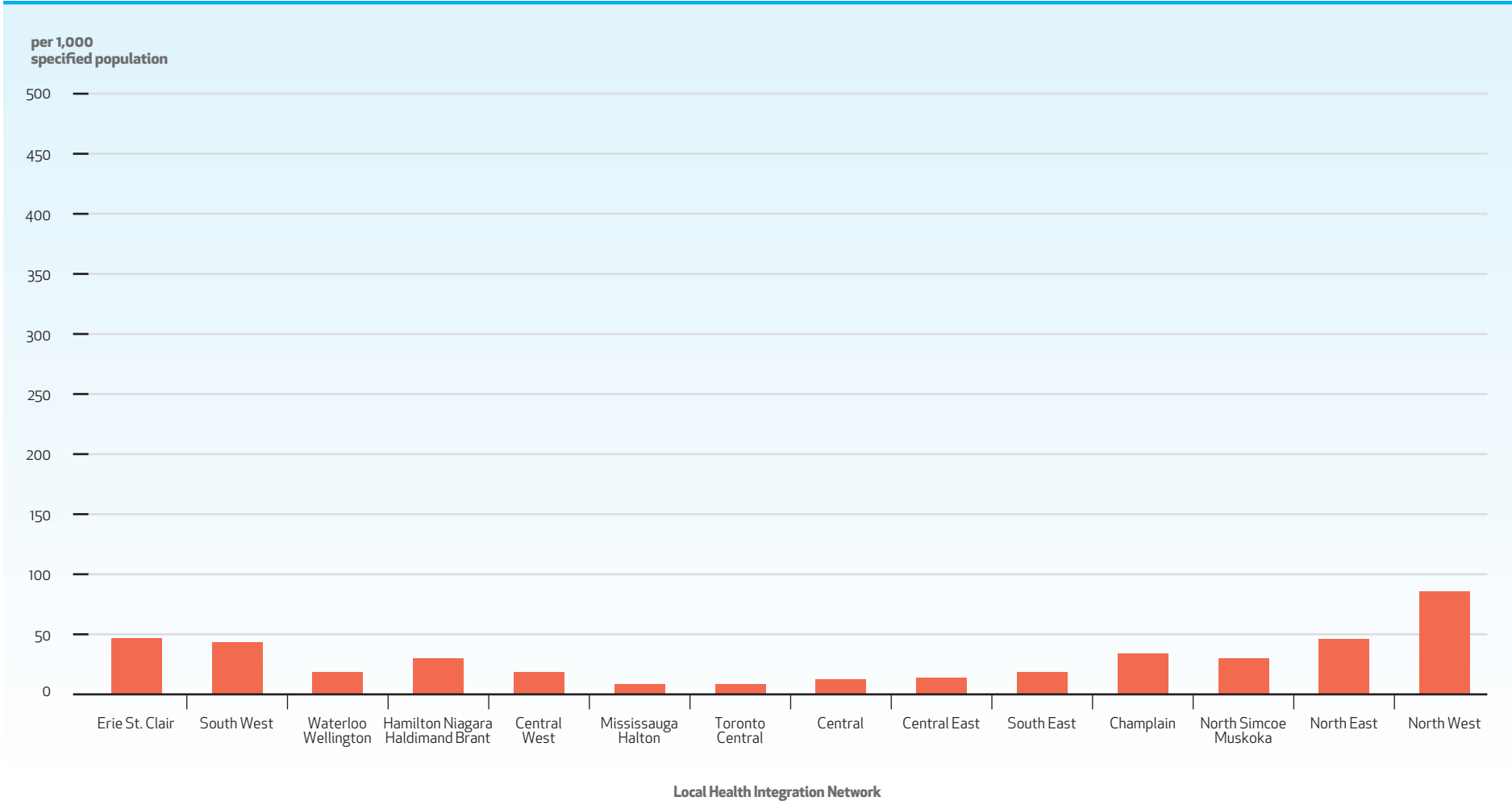
**EXHIBIT B.4.4** Rate of hospital admission as first contact for mental health and addictions (MHA) per 1,000 population aged 0 to 24 years with an MHA-related hospitalization, by neighbourhood income quintile and type of disorder, in Ontario, three-year average for 2009/10 to 2011/12



Q1 = lowest income quintile

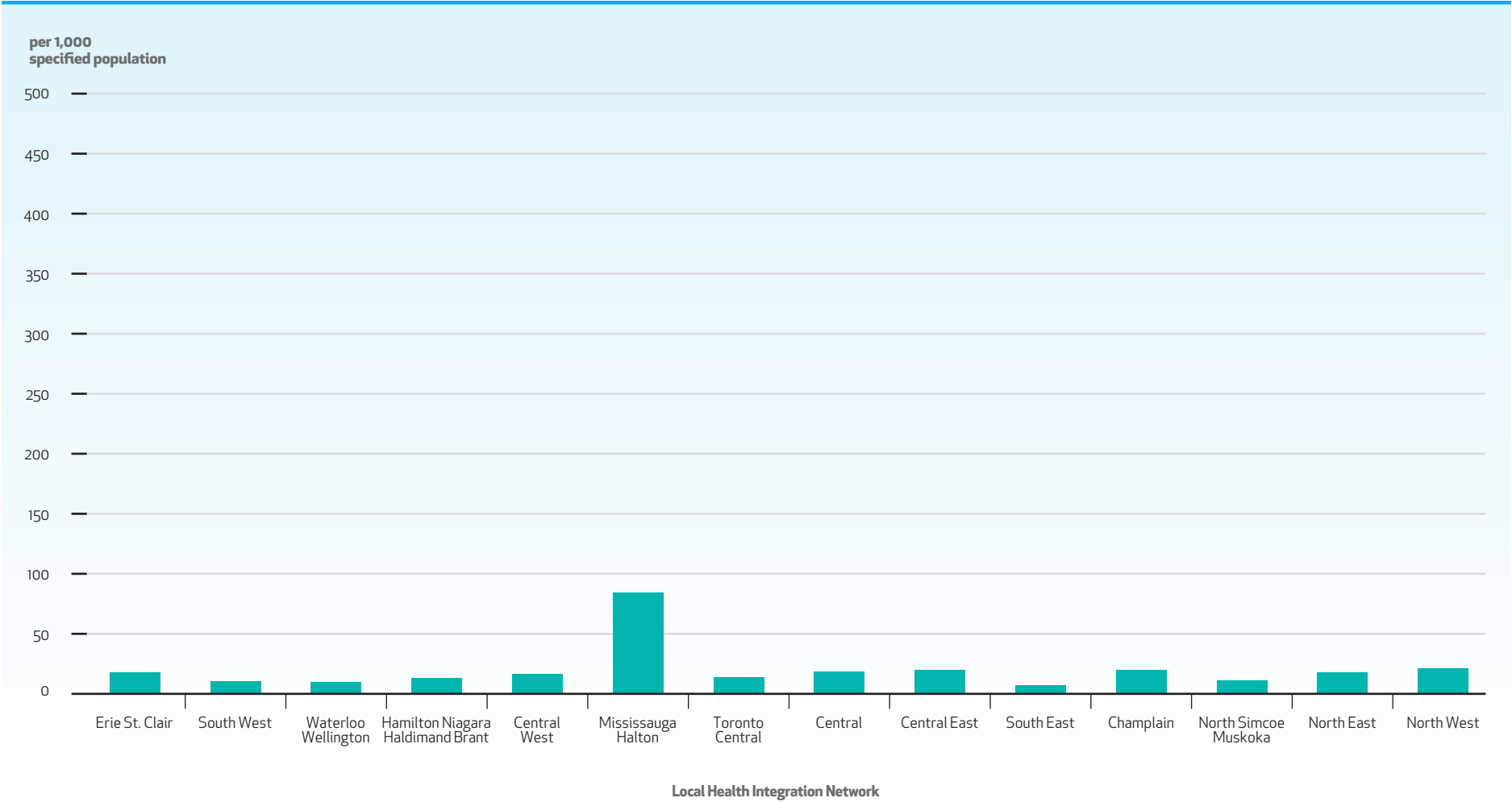


**EXHIBIT B.4.5** Standardized rate of hospital admission as first contact for substance-related disorders per 1,000 population aged 0 to 24 years with a hospitalization related to mental health and addiction, by Local Health Integration Network, in Ontario, three-year average for 2009/10 to 2011/12



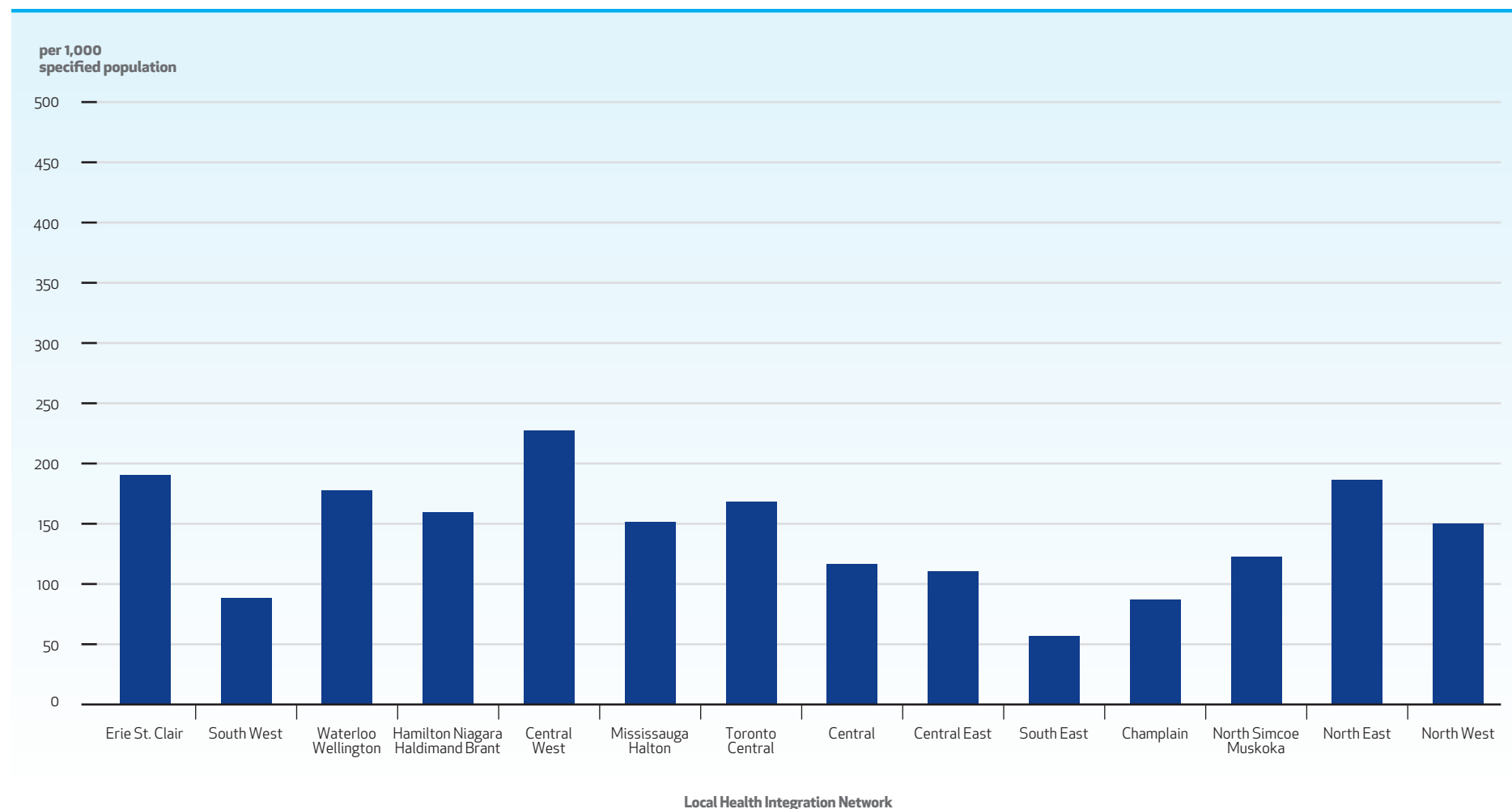
Note: Rates were standardized by age and sex to the 2002 Ontario population.

**EXHIBIT B.4.6** Standardized rate of hospital admission as first contact for schizophrenia and other psychotic disorders per 1,000 population aged 0 to 24 years with a hospitalization related to mental health and addiction, by Local Health Integration Network, in Ontario, three-year average for 2009/10 to 2011/12



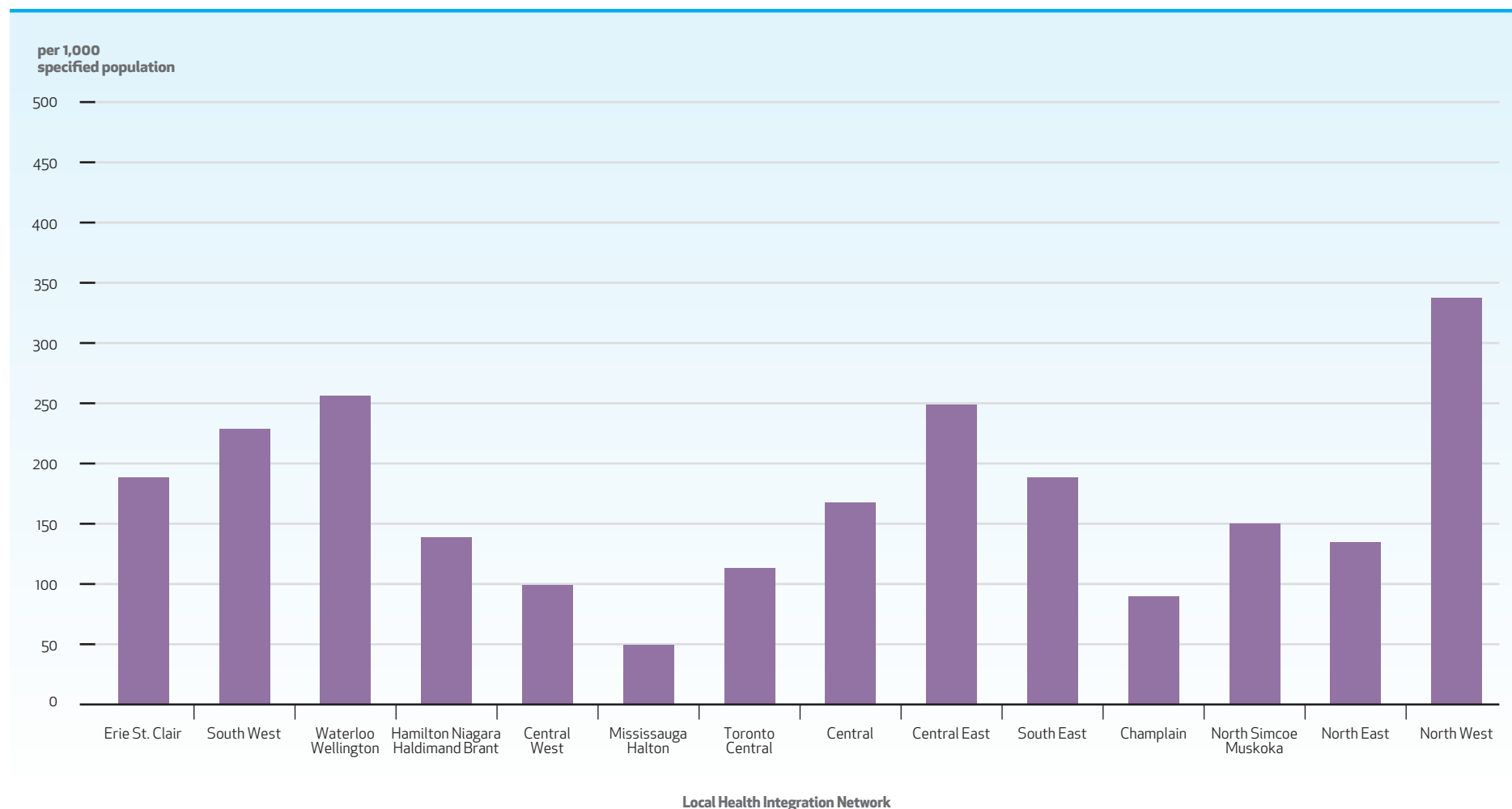
Note: Rates were standardized by age and sex to the 2002 Ontario population.

**EXHIBIT B.4.7** Standardized rate of hospital admission as first contact for mood or anxiety disorders per 1,000 population aged 0 to 24 years with a hospitalization related to mental health and addiction, by Local Health Integration Network, in Ontario, three-year average for 2009/10 to 2011/12



Note: Rates were standardized by age and sex to the 2002 Ontario population.

**EXHIBIT B.4.8** Standardized rate of hospital admission as first contact for other selected childhood disorders per 1,000 population aged 0 to 24 years with a hospitalization related to mental health and addiction, by Local Health Integration Network, in Ontario, three-year average for 2009/10 to 2011/12



Note: Rates were standardized by age and sex to the 2002 Ontario population.

# Appendix C:

## Detailed Indicator Descriptions

<b>Domain</b>	<b>Not applicable</b>
<b>Indicator Name</b>	Ontario Marginalization Index (ON-Marg)
<b>Rationale</b>	The ON-Marg was used to describe the relationship between area marginalization and mental health outcomes. It provided an equity lens to better inform service planning, needs assessments and resource allocation.
<b>Numerator</b>	From the ON-Marg: Material Deprivation Index, Residential Instability Index and Ethnic Concentration Index
<b>Denominator</b>	Not applicable
<b>Data Source</b>	
Database	2006 Census
Data collection sources	<ul style="list-style-type: none"> <li>Centre for Research on Inner City Health (CRICH), St. Michael's Hospital</li> <li>Collaboratory for Research on Urban Neighbourhoods, Community Health and Housing (CRUNCH), McMaster University</li> </ul>
<b>Years</b>	Not applicable
<b>Geographical Areas</b>	Local Health Integration Network, Ministry of Children and Youth Services (MCYS) Child and Youth Mental Health Service Area
<b>Age Groups</b>	Not applicable
<b>Equity Lens</b>	The ON-Marg captures multiple dimensions of social disadvantage.
<b>Relevance to Strategy/Policy</b>	The ON-Marg was used as an aggregate measure of social disadvantage to compare geographical areas. The ON-Marg could be correlated with health outcomes overall in Ontario.
<b>Supporting Evidence</b>	<ul style="list-style-type: none"> <li>Inequality and deprivation indices have been used for area contextual health analyses by various jurisdictions.<sup>1,2</sup></li> <li>The ON-Marg has been used to identify regional inequalities and variations in perceived health,<sup>3</sup> cardiovascular health,<sup>4</sup> depression,<sup>5</sup> alcohol consumption<sup>6</sup> and youth smoking behaviours.<sup>7</sup></li> </ul>
<b>Limitations</b>	<ul style="list-style-type: none"> <li>The ON-Marg applies to areas, not individual people. Scores for each dimension in the index were available for every census tract and dissemination area in Ontario, except where data were suppressed.</li> <li>Some populations, such as Aboriginal people living on reserves, may have been undercounted in the census.</li> </ul>

Domain	Known prevalence
Indicator Name	Prevalence of self-reported mental illness and substance use for youth
Rationale	Measuring population-based prevalence of mental illness and substance use in youth based on Canadian Community Health Survey (CCHS) data can provide contextual evidence on which to base mental health resource allocation and program planning.
Numerator	<ul style="list-style-type: none"> <li>Mood disorders: Number of youth surveyed with major depressive episode or bipolar disorder (manic episode) in the previous 12 months</li> <li>Anxiety disorders: Number of youth surveyed with panic disorder, social phobia or agoraphobia in the previous 12 months</li> <li>Alcohol dependence: Number of youth surveyed with alcohol dependence in the previous 12 months</li> <li>Drug use: Number of youth surveyed with any illicit drug use in the previous 12 months</li> </ul>
Denominator	Total number of youth surveyed by geographical area, by age group (see below)
Data Source	
Databases	CCHS 1.2 (mood disorders, anxiety disorders, alcohol dependence); CCHS 2.1 (drug use); Census, Citizenship and Immigration Canada (CIC); Registered Persons Database (RPDB)
Data collection source	Institute for Clinical Evaluative Sciences (ICES)
Years	2002 (mood disorders, anxiety disorders, alcohol dependence); 2003 (drug use)
Geographical Areas	Province, Local Health Integration Network
Age Groups	15–19 and 20–24 years
Equity Lens	Sex, neighbourhood income quintile, immigrant category
Relevance to Strategy/Policy	These indicators provided context for tailoring initiatives of the strategy toward a focus on specific disorders.
Supporting Evidence	<ul style="list-style-type: none"> <li>Several jurisdictions have used prevalence indicators for alcohol abuse/dependence,<sup>1,8–13</sup> including the European Community Health Indicators and Monitoring, which has reported use of cannabis, cocaine or crack, amphetamines and heroin;<sup>10</sup> and the London Health Observatory, which has used indicators of admissions for cannabis use, cocaine or crack use, hallucinogen use and gasoline/solvent use.<sup>11</sup> Several jurisdictions have included prevalence indicators for bipolar disorder,<sup>11,14,15</sup> major depressive disorder<sup>10–12,16</sup> and anxiety.<sup>8–13</sup></li> <li>Studies indicate that 55 % of Ontario students in grades 7–12 self-reported having used alcohol; 22 %, cannabis; and 14 %, opioid pain relievers (non-medical use).<sup>17</sup> Lifetime prevalence of self-reported depression for Canadian youth aged 15–18 years was found to be about 8% or higher in females than in males (11% vs. 4%).<sup>18</sup> Approximately 6% of children and youth were reported to have a serious anxiety disorder requiring treatment.<sup>19</sup> Research found that the lifetime prevalence of self-reported bipolar disorder among Canadians aged 15–24 years was 3%, and was highest among the 19- to 24-year-old subsample. Mental health services were reported to have been accessed in the previous year by only 56% of youth with bipolar disorder.<sup>20</sup></li> <li>The mental health component of the CCHS, largely based on the Composite International Diagnostic Interview (CIDI) tool, has been evaluated in the literature previously. Associations between self-rated mental health and mental disorders measured by CIDI in the CCHS were found to be strong and consistent.<sup>21</sup> The CIDI Module has performed well in previous inter-rater reliability studies (although it has not been validated in community settings).<sup>22</sup></li> </ul>
Limitations	<ul style="list-style-type: none"> <li>Because data were obtained through a general population survey, this indicator was not designed for analysis of rare characteristics or rare subpopulations.</li> <li>As all survey data were self-reported, responses may have been biased by factors such as the inclusion of questions deemed too sensitive to answer, poor memory, differences caused by translations of questionnaires and nonresponse errors.</li> <li>Individuals living in Indian reserve communities, institutions and remote regions of the country were excluded.</li> </ul>

Domain	Known Prevalence
Indicator Name	Treated prevalence of schizophrenia in children and youth
<b>Rationale</b>	Schizophrenia is a serious mental disorder with onset in late teens and young adulthood. Tracking treatment rates over time may provide insight into access to and utilization of services for severe mental illness in children and youth.
<b>Numerator</b>	Number of children and youth treated for schizophrenia at inpatient or outpatient settings. Schizophrenia was defined as at least one entry in the Distract Abstract Database (DAD) or one Ontario Mental Health Reporting System (OMHRS) admission for schizophrenia or two Ontario Hospital Insurance Plan (OHIP) claims for schizophrenia.
<b>Denominator</b>	Total number of children and youth by geographical area, by age group (see below)
<b>Data Source</b>	
Databases	DAD, OMHRS, Census, CIC, RPDB
Data collection source	ICES
<b>Years</b>	2006/07–2011/12 (April 1, 2006 to March 31, 2012)
<b>Geographical Areas</b>	Province, Local Health Integration Network
<b>Age Groups</b>	0–6, 7–9, 10–14, 15–19 and 20–24 years
<b>Equity Lens</b>	Sex, neighbourhood income quintile, immigrant category
<b>Relevance to Strategy/Policy</b>	Early identification and increased access to care is an important goal of Ontario's Comprehensive Mental Health and Addictions Strategy. Increases in outpatient service use among children and youth at younger ages (10–14, 15–19 years) could occur as a result from early identification as could increases in use of services (e.g., telepsychiatry) if access problems are addressed for this population.
<b>Supporting Evidence</b>	<ul style="list-style-type: none"> <li>Prevalence indicators for schizophrenia have been used by several jurisdictions.<sup>11,13,14,23</sup></li> <li>Schizophrenia is a serious mental disorder that generally onsets in young adulthood. Treated schizophrenia has been examined in youth using health administrative data previously.<sup>24</sup> An increase in incidence of schizophrenia was found in this population between 1989 and 1998. In 1998, incidence ranged from 0.9% among females to 1.2% among males.</li> <li>The ICES schizophrenia diagnostic algorithm has been used in previous literature.<sup>25,26</sup> It produces a prevalence of schizophrenia in Ontario similar to previous Canadian prevalence estimates (less than 1%).<sup>27</sup></li> </ul>
<b>Limitations</b>	<ul style="list-style-type: none"> <li>Sole reliance on administrative records for diagnoses will result in a loss of less severe, higher functioning children and youth with psychotic disorders, therefore underestimating true population prevalence.</li> <li>General limitations of health administrative data include potential coding errors and lack of clinical detail.</li> </ul>



Domain	Known prevalence
Indicator Name	Prevalence of neonatal abstinence syndrome
Rationale	Neonatal abstinence syndrome (NAS) is a withdrawal syndrome observed in babies whose mothers are either being treated for opioid dependence with methadone or are otherwise using opioids. Rates of NAS are a proxy for maternal substance use problems.
Numerator	Number of newborns diagnosed with NAS at birth or within one month of birth
Denominator	Total number of live births by geographical area <sup>28</sup>
Data Source	
Databases	DAD, MOMBABY (ICES-derived dataset linking the admission records of delivering mothers and their newborn), CIC, Census
Data collection source	ICES
Years	2002/03–2011/12 (April 1, 2002 to March 31, 2012)
Geographical Areas	Province, Local Health Integration Network
Age Groups	Younger than one month
Equity Lens	Sex, mother's age at first delivery, neighbourhood income quintile, mother's immigrant category
Relevance to Strategy/Policy	Although the first three years of the strategy do not address addictions problems of women in childbearing age per se, this may be a focus in subsequent years and so is important to track. Furthermore, it is possible that many mothers of infants with NAS are teenaged and younger, so the strategy could indirectly target this population.
Supporting Evidence	<ul style="list-style-type: none"> <li>A search of the grey literature did not reveal any other jurisdictions examining the prevalence rate of neonatal abstinence syndrome.</li> <li>Reported data show that NAS occurs in 55% to 94% of infants exposed to opioids in utero. The incidence of NAS in Ontario has increased from 1.3 cases per 1,000 births in 2004 to 4.3 cases per 1,000 births in 2010.<sup>28</sup> The Provincial Council for Maternal and Child Health identified NAS as a growing concern and organized a Neonatal Abstinence Syndrome Work Group to address the needs of this population.<sup>29</sup></li> </ul>
Limitations	<ul style="list-style-type: none"> <li>Diagnoses made after one month of age may not be captured.</li> <li>Among mothers treated with methadone, only those qualifying for the Ontario Drug Benefit will be identifiable.</li> <li>General limitations of health administrative data include potential coding errors and lack of clinical detail.</li> </ul>

Domain	Known prevalence
Indicator Name	Annualized prevalence of students identified with exceptionalities (autism spectrum disorder, behavioral issues, a learning disability)
Rationale	Early identification of exceptionalities (behavioural, communication, intellectual/cognitive, physical) in the school environment may help improve both school-based achievements and general mental health outcomes.
Numerator	<p>Annualized number of students identified as having any of the following exceptionalities<sup>30</sup>:</p> <ul style="list-style-type: none"> <li>Autism spectrum disorder, defined as a severe learning disorder that is characterized by <ul style="list-style-type: none"> <li>disturbances in: rate of educational development; ability to relate to the environment; motility; perception; speech and language</li> <li>lack of the representational-symbolic behaviour that precedes language.</li> </ul> </li> <li>Behaviour exceptionality, defined as a learning disorder characterized by specific behaviour problems over such a period of time, to such a marked degree and of such a nature as to adversely affect educational performance and could be accompanied by one or more of the following: <ul style="list-style-type: none"> <li>an inability to build or to maintain interpersonal relationships</li> <li>excessive fears or anxieties</li> <li>a tendency to compulsive reaction</li> <li>an inability to learn that cannot be traced to intellectual, sensory or other health factors, or any combination thereof.</li> </ul> </li> <li>Learning disability, defined as a learning disorder evident in both academic and social situations. The learning disorder involves one or more of the processes necessary for the proper use of spoken language or the symbols of communication and is characterized by a condition that <ul style="list-style-type: none"> <li>is not primarily the result of: impairment of vision or hearing; physical handicap; cultural difference; mental retardation; primary emotional disturbance</li> <li>results in a significant discrepancy between academic achievement and assessed intellectual ability, and could involve defects in one or more of the following: receptive language (listening, reading); language processing (thinking, conceptualizing, integrating); expressive language (talking, spelling, writing); mathematical computations</li> <li>may be associated with one or more of the conditions diagnosed as: a perceptual handicap; a brain injury; developmental aphasia; minimal brain dysfunction; dyslexia</li> </ul> </li> </ul> <p>*Only exceptionalities that have a clear relationship to mental health are included in this analysis.</p>
Denominator	Annualized English school board (public and Catholic) enrolment from junior kindergarten to grade 12 by geographical area
Data Source	
Database	Ontario School Information System
Data collection source	Ministry of Education
Years	Academic years 2009/10–2011/12 (September 1, 2009 to August 31, 2012)
Geographical Areas	Local Health Integration Network, MCYS Child and Youth Mental Health Service Area
Age Groups	Not applicable
Equity Lens	Not applicable
Relevance to Strategy/Policy	Although not directly related to the strategy initiatives, children with these exceptionalities are at greater risk for mental health problems and problems related to social adjustment. Early identification of mental health problems in children necessitates screening and monitoring in this population. A rise in prevalence of these exceptionalities could occur in relation to enhanced identification, teacher education and school supports as part of the strategy.
Supporting Evidence	<ul style="list-style-type: none"> <li>Similar indicators have been used as a measure of school readiness<sup>31</sup> and access to school-based mental health services.<sup>23</sup></li> <li>Reports estimate that 30% of children with developmental disabilities also suffer from co-occurring mental disorders (dual diagnosis).<sup>32</sup> A British study found that children and youth with developmental disabilities are six times more likely than their peers to have a diagnosable psychiatric disorder and are also significantly more likely to have multiple disorders.<sup>33</sup> In Canada, numerous studies have examined mental health services use in adults with developmental disabilities. These populations tend to have higher rates of hospitalizations and emergency department visits than the general adult population.<sup>34,35</sup></li> </ul>
Limitations	<ul style="list-style-type: none"> <li>There is no systematic screening for many of these problems.</li> <li>These rates may be an underestimate of true prevalence.</li> <li>Limitations of the Ontario School Information System include: <ul style="list-style-type: none"> <li>Data capture was not standardized across school boards.</li> <li>Diagnosis of exceptionalities varied across school boards.</li> <li>Data on children attending alternative schools (e.g., Montessori) may not be received by the system.</li> </ul> </li> </ul>

Domain	System use
<b>Indicator Name</b>	Physicians' full-time equivalent allocation to mental health care for children and youth
<b>Rationale</b>	This indicator helps improve understanding of the capacity of family physicians, paediatric physicians and psychiatrists who provide mental health services.
<b>Numerator</b>	<ul style="list-style-type: none"> <li>• Total full-time equivalents (FTEs) and total mental health FTEs allocated by paediatricians to children and youth aged 19 years or younger</li> <li>• Total FTEs and total mental health FTEs allocated by family physicians to children and youth aged 24 years or younger</li> <li>• Total FTEs and total mental health FTEs allocated by psychiatrists to children and youth aged 24 years or younger</li> </ul>
<b>Denominator</b>	Not applicable
<b>Data Source</b>	
Databases	OHIP claims, ICES Physician Database, RPDB
Data collection source	ICES
<b>Years</b>	2009/10–2011/12 (April 1, 2009 to March 31, 2012)
<b>Geographical Areas</b>	Province, Local Health Integration Network
<b>Age Groups</b>	Not applicable
<b>Equity Lens</b>	Province-wide three-year average (2009/10–2011/12)
<b>Relevance to Strategy/Policy</b>	Although the strategy does not directly address physician supply, this is an important context for identification and treatment of children and youth with mental health problems.
<b>Supporting Evidence</b>	Measures of physician supply have been used as an indicator of mental health system capacity, <sup>13,36,37</sup> as an indicator of efficiency <sup>38,39</sup> and to indicate the presence of specialist staff for children and youth. <sup>23</sup> Psychiatrists that primarily provide care to children and youth have been used as an indicator of health care resources <sup>9,10,23</sup> and as an indicator of efficiency. <sup>40</sup>
<b>Limitations</b>	The indicator may not capture other mental health services provided in primary care (e.g., mental health workers in Family Health Teams).

Domain	System use
<b>Indicator Name</b>	Rate at which children and youth were seen by a psychiatrist
<b>Rationale</b>	Many psychiatric disorders have an initial onset during adolescence, and are one of the main causes of youth hospitalizations with high readmission rates following discharge. There is little information on the number of children and youth who are seen by psychiatrists in Ontario.
<b>Numerator</b>	Number of unique children and youth seen by a psychiatrist
<b>Denominator</b>	Total number of children and youth by geographical area, by age group (see below)
<b>Data Source</b>	
Databases	OHIP claims, CIC, RPDB
Data collection source	ICES
<b>Years</b>	2002/03–2011/12 (April 1, 2002 to March 31, 2012)
<b>Geographical Areas</b>	Province, Local Health Integration Network
<b>Age Groups</b>	0–6, 7–9, 10–14, 15–19 and 20–24 years
<b>Equity Lens</b>	Sex, neighbourhood income quintile, immigrant category
<b>Relevance to Strategy/Policy</b>	This indicator provides context on the number of children and youth seeing psychiatrists. There is no direct relationship to initiatives from the Comprehensive Mental Health and Addictions Strategy.
<b>Supporting Evidence</b>	<ul style="list-style-type: none"> <li>Similar measures have been used to indicate accessibility<sup>41</sup> and mental health system capacity.<sup>36</sup></li> <li>Breton et al. used a similar indicator in a Quebec-based study to identify the availability of hospital resources allocated for child psychiatry that target children and youth aged 17 years and younger.<sup>42</sup> These include the number of services (e.g., outpatient clinics, beds), the number of child psychiatrists and the number of youth per child psychiatrist. Although the number of child psychiatry resources was higher in the central health regions, there was an overall shortage across the province and a large number of children and youth waiting for treatment.</li> </ul>
<b>Limitations</b>	Rates may be undercounted because some psychiatrists only shadow bill (submit claims for services provided to patients that are funded through sources other than fee for service).

Domain	System use
<b>Indicator Name</b>	Rate of telepsychiatry consultations for children and youth
<b>Rationale</b>	Telepsychiatry has become an integral part of mental health care service delivery for rural and remote populations.
<b>Numerator</b>	Number of unique individuals aged 24 years and under who receive telepsychiatry assessment
<b>Denominator</b>	Total number of children and youth by geographical area, by age group (see below)
<b>Data Source</b>	
Databases	OHIP claims, ICES Physician Database, Census, CIC, RPDB
Data collection source	ICES
<b>Years</b>	2008/09–2011/12 (April 1, 2008 to March 31, 2012)
<b>Geographical Areas</b>	Province, Local Health Integration Network, MCYS Child and Youth Mental Health Service Area
<b>Age Groups</b>	0–6, 7–9, 10–14, 15–19 and 20–24 years
<b>Equity Lens</b>	Sex, neighbourhood income quintile, immigrant category
<b>Relevance to Strategy/Policy</b>	Since unrestricted access to telepsychiatry consultations for rural and remote populations is an explicit initiative of the strategy, tracking its use will be important.
<b>Supporting Evidence</b>	Indicators of Telehealth assessment have been used as measures of accessibility and competence <sup>23</sup> and are seen as enablers for the mental health system. <sup>43</sup>
<b>Limitations</b>	<ul style="list-style-type: none"> <li>Effective January 1, 2008, OHIP started processing eligible telemedicine service billings via approved Ontario Telemedicine Network sites. Therefore, only trends from 2008 onward can be provided.</li> <li>General limitations of health administrative data include potential coding errors and lack of clinical detail.</li> </ul>

Domain	System use
<b>Indicator Name</b>	Rate of outpatient visits related to mental health and addictions for children and youth
<b>Rationale</b>	The use of physician services for mental health problems provides insight as to where children and youth access outpatient medical services.
<b>Numerator</b>	Number of office-based physician visits related to mental health and addictions, stratified by physician specialty (family physician, paediatrician or psychiatrist).
<b>Denominator</b>	Total number of children and youth by geographical areas, by age group (see below)
<b>Data Source</b>	
Databases	OHIP claims, ICES Physician Database, Census, CIC, RPDB
Data collection source	ICES
<b>Years</b>	2002/03–2011/12 (April 1, 2002 to March 31, 2012)
<b>Geographical Areas</b>	Province, Local Health Integration Network
<b>Age Groups</b>	0–6, 7–9, 10–14, 15–19 and 20–24 years
<b>Equity Lens</b>	Sex, neighbourhood income quintile, immigrant category
<b>Relevance to Strategy/Policy</b>	The strategy focuses on earlier identification of mental health and addiction problems in children and youth, which may increase the number of physician visits for these reasons. This is predominantly a health-system tracking indicator.
<b>Supporting Evidence</b>	Outpatient visits have been used as an indicator of health care use by several sources <sup>8-10,23,37</sup> and as a measure of the quality and appropriateness of care. <sup>44</sup>
<b>Limitations</b>	<ul style="list-style-type: none"> <li>• Data did not include individuals with mental health and addictions problems who did not visit a physician.</li> <li>• General limitations of health administrative data include potential coding errors.</li> </ul>

Domain	System use
<b>Indicator Name</b>	Rate at which children and youth were treated for alcohol and drug problems
<b>Rationale</b>	Drug and alcohol treatment rates can be tracked over time and may provide insight on access and utilization of such services. Data for this indicator should be interpreted with other data sources related to actual population-based prevalence of drug and alcohol problems in children and youth.
<b>Numerator</b>	Number of children and youth seeking treatment for the following problem substances: alcohol, cannabis, tobacco, stimulants (cocaine, amphetamines, crack, crystal methamphetamine), opioids (heroin, opium, prescription opioids, over-the-counter codeine preparations) and other substances (benzodiazepines, barbiturates, hallucinogens, glue and other inhalants, other psychoactive drugs, steroids, ecstasy).
<b>Denominator</b>	Total number of children and youth by geographical area, by age group (see below)
<b>Data Source</b>	
Databases	Drug and Alcohol Treatment Information System (DATIS), RPDB
Data collection sources	DATIS, ICES
<b>Years</b>	2003/04–2011/12 (April 1, 2003 to March 31, 2012)
<b>Geographical Areas</b>	Province, Local Health Integration Network
<b>Age Groups</b>	0–9, 10–14, 15–19 and 20–24 years
<b>Equity Lens</b>	Sex
<b>Relevance to Strategy/Policy</b>	These indicators are not specifically related to strategy initiatives but are related to the wider goals of early access and intervention.
<b>Supporting Evidence</b>	<ul style="list-style-type: none"> <li>Berkowitz et al.<sup>8</sup> used an indicator for alcohol treatment, and indicators for drug treatment have been used by several jurisdictions.<sup>1,8,12,13,45</sup></li> <li>A study profiling clients captured in DATIS found that the number of youth under 25 years of age (13,161 individuals) had increased and that they represented more than one-quarter of the total population in alcohol and drug treatment in Ontario.<sup>46</sup> A similar study found that almost 2,700 youth in DATIS under 25 years of age reported problematic use of prescription opioids, which was more than one-quarter of all clients being treated for this problem.<sup>47</sup></li> </ul>

Domain	System use
<b>Indicator Name</b>	Rate at which children and youth were admitted for treatment of eating disorders
<b>Rationale</b>	Eating disorder treatment rates can be tracked over time and may provide insight on access and use of such services. Data for this indicator should be interpreted with other sources of data for population-based prevalence of eating disorders in children and youth.
<b>Numerator</b>	Number of children and youth treated for eating disorders (anorexia and bulimia) in inpatient settings
<b>Denominator</b>	Total number of children and youth by geographical area, by age group (see below)
<b>Data Source</b>	
Databases	DAD, OMHRS, CIC, RPDB
Data collection source	ICES
<b>Years</b>	2002/03–2011/12 (April 1, 2002 to March 31, 2012)
<b>Geographical Areas</b>	Province, Local Health Integration Network
<b>Age Groups</b>	0–6, 7–9, 10–14, 15–19 and 20–24 years
<b>Equity Lens</b>	Sex, neighbourhood income quintile, immigrant category
<b>Relevance to Strategy/Policy</b>	<ul style="list-style-type: none"> <li>Eating disorders are a key focus of two initiatives in the Comprehensive Mental Health and Addictions Strategy: <ul style="list-style-type: none"> <li>Expand inpatient/outpatient services for child and youth eating disorders</li> <li>Hire nurse practitioners for eating disorders program</li> </ul> </li> <li>Implementation of the strategy is expected to result in an increase in the number of children and youth seeking treatment for eating disorders earlier. This indicator can be interpreted with data on specific strategy-related (or other) resources that are implemented for eating disorders.</li> </ul>
<b>Supporting Evidence</b>	<ul style="list-style-type: none"> <li>Prevalence of eating disorders has also been tracked by other sources,<sup>1</sup> and screening for eating disorders has been used as a measure of early detection.<sup>23</sup></li> <li>In the 2002 Canadian Community Health Survey, 1.5% of female Canadians aged 15–24 years reported having an eating disorder. Hospitalization rates for eating disorders are highest among females aged 15–19 years.<sup>48</sup> According to the 1998/99 National Population Health Survey, inpatient hospital separations for eating disorders per 100,000 females in Canada increased from 10.2 in 1994 to 10.7 in 1999.</li> <li>The prevalence of depression in girls and women hospitalized for anorexia or bulimia was more than two times that of the general female population.<sup>49</sup></li> </ul>
<b>Limitations</b>	Only children and youth receiving inpatient treatment are included. Since untreated youth will not be accounted for, the burden of the problem in the population will be underestimated.



Domain	System use
<b>Indicator Name</b>	Number of funded applications for out-of-country treatment of eating disorders for children and youth
<b>Rationale</b>	Historically, a small number of children and youth with eating disorders have received treatment in the United States each year. Implementation of the strategy has increased inpatient treatment capacity for eating disorders.
<b>Numerator</b>	Number of Ontario residents going out of country for eating disorder treatment
<b>Denominator</b>	Not applicable
<b>Data Source</b>	
Database	
Data collection sources	Ministry of Health and Long-Term Care
<b>Years</b>	2002–2011
<b>Geographical Area</b>	Province
<b>Age Group</b>	0–24 years
<b>Equity Lens</b>	Not applicable
<b>Relevance to Strategy/Policy</b>	The strategy has designated funding to improve access to inpatient eating disorder treatment.
<b>Supporting Evidence</b>	No studies were found that used an indicator to examine rates of Ontarians or Canadians seeking eating disorder treatment in the United States.
<b>Limitations</b>	Indicator limitations include a small sample size and limited data on the characteristics of treatment programs.

Domain	System use
<b>Indicator Name</b>	Median length of stay for psychiatric hospitalizations of children and youth
<b>Rationale</b>	Hospitalizations for mental health issues may indicate a lack of early identification of mental health needs or gaps in service provision at the primary care and community levels. Length of stay for hospitalizations is an indicator of acute care need that can be tracked over time.
<b>Numerator</b>	Median length of stay for hospital admissions related to any of the following in children and youth: substance-related disorders, schizophrenia and other psychotic disorders, mood disorders, anxiety disorders, and other selected childhood disorders.
<b>Denominator</b>	Not applicable
<b>Data Source</b>	
Databases	DAD, OMHRS, RPDB
Data collection source	ICES
<b>Years</b>	2006/07–2011/12 (April 1, 2006 to March 31, 2012)
<b>Geographical Areas</b>	Province, Local Health Integration Network
<b>Age Group</b>	0–24 years
<b>Equity Lens</b>	Sex, neighbourhood income quintile, immigrant category
<b>Relevance to Strategy/Policy</b>	A key goal of the strategy is to close critical gaps in mental health and addictions services for children and youth. Implementation of the strategy can be expected to reduce rates and length of stay for hospital admissions related to mental health and addictions problems.
<b>Supporting Evidence</b>	<ul style="list-style-type: none"> <li>• Inpatient length of stay has been used elsewhere<sup>50</sup> and as an indicator of utilization.<sup>36</sup></li> <li>• In 2009/10, patients with a mental health diagnosis represented 12% of people hospitalized in Canada and more than 25% of acute care hospital days. The percentage of hospital days attributed to a most responsible mental health diagnosis (i.e., a mental health diagnosis was the most significant condition causing a patient's hospitalization) was highest in youth aged 10–19 years (30%). Mental health diagnoses were associated with hospital stays more than 2.5 times longer than stays not involving mental health diagnoses. Patients aged 20–29 years with a most responsible mental health diagnosis stayed in hospital an average of 12 days, while patients in the same age group without a mental health diagnosis stayed only three days on average.<sup>51</sup></li> <li>• Two U.S. studies reported that use of inpatient services for mental health problems had risen among children and youth. In a study by the Health Care Cost Institute that examined expenditure and health care utilization by children covered under employer-sponsored private insurance, inpatient admissions for mental health and substance abuse rose 24% over the study period (2007–2010).<sup>52</sup> Inpatient admission costs also rose in this period. A study by Pfunter et al. reported that among children aged 1–17 years, mood disorders were the most frequent principal diagnosis for inpatient admissions in 2010, and the rate of hospitalization for mood disorders increased by 80%, from 10 to 17 stays per 10,000, between 1997 and 2010.<sup>53</sup></li> </ul>
<b>Limitations</b>	General limitations of health administrative data include potential coding errors and lack of clinical detail.

Domain	Outcomes
<b>Indicator Name</b>	Annualized prevalence of K-12 students suspended from school
<b>Rationale</b>	School suspensions can result from mental health problems and may be an early sign of the need for student support and services.
<b>Numerator</b>	Annualized number of students who had at least one suspension
<b>Denominator</b>	Annualized English school board (public and Catholic) enrolment from junior kindergarten to grade 12 by geographical area
<b>Data Source</b>	
Database	Ontario School Information System (ONSIS)
Data collection source	Ministry of Education
<b>Years</b>	Academic years 2009/10–2011/12 (September 1, 2009 to August 31, 2012)
<b>Geographical Areas</b>	Local Health Integration Network, MCYS Child and Youth Mental Health Service Area
<b>Age Groups</b>	Not applicable
<b>Equity Lens</b>	Not applicable
<b>Relevance to Strategy/Policy</b>	The strategy has committed capacity building resources to Ontario's education system. These resources are expected to better identify student mental health problems and help provide resources in an appropriate and timely manner. School suspensions are expected to decrease as the strategy progresses.
<b>Supporting Evidence</b>	<ul style="list-style-type: none"> <li>School exclusion has been used as a mental health outcome measure by various jurisdictions.<sup>1,23</sup></li> <li>Students suspended for disruptive behaviours at school are the children and youth at risk for social, emotional and mental health problems.<sup>54</sup> Being excluded from school, often unsupervised, can lead to other high risk behaviours.<sup>55</sup> School mental health resources that focus on early identification, assessment and identification of emotional and behavioral problems can be a significant factor in improving academic success.<sup>56-59</sup></li> </ul>
<b>Limitations</b>	<ul style="list-style-type: none"> <li>This indicator could potentially underestimate need because students with less severe problems or problems not associated with externalizing behaviours will not be captured in the data.</li> <li>Limitations of the ONSIS data are: <ul style="list-style-type: none"> <li>Students enrolled in private schools are not included.</li> <li>Reasons for suspension are not indicated.</li> </ul> </li> </ul>

Domain	Outcomes
<b>Indicator Name</b>	Rate of death by suicide for children and youth
<b>Rationale</b>	Suicide is a common cause of death during adolescence. Understanding variations and trends in suicide rates may assist in identifying high-risk groups and designing appropriate interventions to reduce suicidal behaviours.
<b>Numerator</b>	Number of deaths caused by suicide
<b>Denominator</b>	Total number of children and youth by geographical area, by age group (see below)
<b>Data Source</b>	
Databases	Ontario Registrar General – Death (Vital Statistics), RPDB, CIC, Census
Data collection source	ICES
<b>Years</b>	2003/04–2009/10 (April 1, 2003 to March 31, 2010)
<b>Geographical Areas</b>	Province, Local Health Integration Network, MCYS Child and Youth Mental Health Service Area
<b>Age Groups</b>	10–14, 15–19 and 20–24 years
<b>Equity Lens</b>	Sex, neighbourhood income quintile, immigrant category
<b>Relevance to Strategy/Policy</b>	Improved access to mental health services and early identification of mental health problems and suicide-related behaviours are strategy goals. Implementation of the strategy could result in decreased rates of suicide deaths among children and youth.
<b>Supporting Evidence</b>	Suicide rate is a widely used indicator. It has been used as an indicator of health status and mortality, <sup>1,8,9,12,13,15,16,45,50</sup> effectiveness, <sup>43</sup> inpatient services, <sup>60</sup> integrated health care, <sup>37</sup> patient quality <sup>40</sup> and safety. <sup>14</sup>
<b>Limitations</b>	Suicide rates may be underreported due to misclassification, especially among children younger than 10 years for whom suicide cannot be classified as a cause of death. The number of deaths among youth aged 10–14 years is low and may not reflect actual rates.

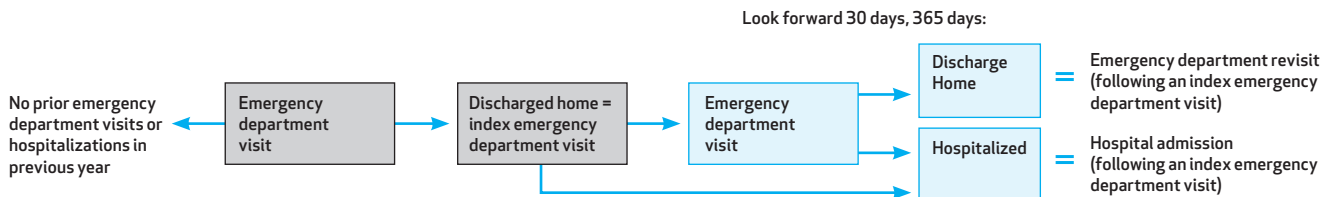
Domain	Outcomes
<b>Indicator Name</b>	Rate of emergency department visits for deliberate self-harm in children and youth
<b>Rationale</b>	Deliberate self-harm refers to non-fatal self-poisoning or self-injury. This term encompasses heterogeneous acts and behaviours, including attempted suicide (carried out with at least some intent to end one's own life) as well as non-suicidal acts. These are important markers of mental health.
<b>Numerator</b>	Total number of emergency department visits for deliberate self-harm
<b>Denominator</b>	Total number of children and youth by geographical area, by age group (see below)
<b>Data Source</b>	
Databases	National Ambulatory Care Reporting System (NACRS), Census, CIC, RPDB
Data collection source	ICES
<b>Years</b>	2006/07-2011/12 (April 1, 2006 to March 31, 2012)
<b>Geographical Areas</b>	Province, Local Health Integration Network, MCYS Child and Youth Mental Health Service Area
<b>Age Groups</b>	10-14, 15-19 and 20-24 years
<b>Equity Lens</b>	Sex, neighbourhood income quintile, immigrant category
<b>Relevance to Strategy/Policy</b>	Improved access to mental health services and early identification of mental health problems and suicide-related behaviours are strategy goals. Implementation of the strategy could result in decreased rates of emergency department visits for deliberate self-harm.
<b>Supporting Evidence</b>	<ul style="list-style-type: none"> <li>Self-harm has been used as an indicator of population health status<sup>1,8,12,13</sup> and as an indicator of safety.<sup>14</sup></li> <li>Deliberate self-harm is one of the strongest predictors of suicide.<sup>61</sup> The risk of suicide following deliberate self-harm behaviours remains high, even years after the first episode of deliberate self-harm. Youth that present to the emergency department with suicidal ideation, regardless of intent, are likely to repeat such behaviours as well as revisit the emergency department within a year. Increases in repetitive self-harm behaviours are associated with increased suicide risk.<sup>62,63</sup> According to findings by Newton and colleagues,<sup>63</sup> although suicide ideation may temporarily decrease following intervention, individuals are likely to repeat self-harm behaviours after 18-24 months.</li> </ul>
<b>Limitations</b>	<ul style="list-style-type: none"> <li>Individuals who self-harm but do not present to the emergency department are not included.</li> <li>General limitations of health administrative data include potential coding errors and lack of clinical detail.</li> </ul>

Domain	Outcomes
<b>Indicator Name</b>	Rate of emergency department visits related to mental health and addictions for children and youth
<b>Rationale</b>	Use of the emergency department for mental health care may indicate lack of early identification of mental health needs or gaps in service provision at the primary care and community levels. Emergency department visit rates can be tracked over time using health administrative data.
<b>Numerator</b>	Number of emergency department visits among children and youth related to mental health disorders, including substance-related disorders, schizophrenia and other psychotic disorders, mood disorders, anxiety disorders and other selected childhood disorders.
<b>Denominator</b>	Total number of children and youth by geographical area, by age group (see below)
<b>Data Source</b>	
Databases	NACRS, CIC, RPDB
Data collection source	ICES
<b>Years</b>	2006/07–2011/12 (April 1, 2006 to March 31, 2012)
<b>Geographical Areas</b>	Province, Local Health Integration Network, MCYS Child and Youth Mental Health Service Area
<b>Age Groups</b>	0–6, 7–9, 10–14, 15–19 and 20–24 years
<b>Equity Lens</b>	Sex, neighbourhood income quintile, immigrant category
<b>Relevance to Strategy/Policy</b>	A key goal of the strategy is to close critical mental health service gaps for children and youth. Strategy implementation may reduce rates of unnecessary emergency department visits for mental health and addictions problems.
<b>Supporting Evidence</b>	<ul style="list-style-type: none"> <li>Emergency department visits related to mental health and addictions disorders have been used as an indicator of continuity,<sup>14,64</sup> efficiency<sup>43</sup> and utilization of hospital services.<sup>36,65</sup></li> <li>Recent data from Alberta show that the emergency department is a common access point for children and youth with mental health issues; more than one-third of all presentations were repeat visits.<sup>63</sup></li> </ul>
<b>Limitations</b>	General limitations of health administrative data include potential coding errors and lack of clinical detail.

Domain	Outcomes
<b>Indicator Name</b>	Rate of hospital admissions related to mental health and addictions for children and youth
<b>Rationale</b>	Hospitalizations for mental health and addictions problems may indicate lack of early identification of needs or gaps in service provision at the primary care and community levels. Hospitalization rates can be tracked over time using health administrative data.
<b>Numerator</b>	Number of hospital admissions related to mental health and addictions for children and youth, including substance-related disorders, schizophrenia and other psychoses, mood disorders, anxiety disorders and other selected childhood disorders.
<b>Denominator</b>	Total number of children and youth by geographical area, by age group (see below)
<b>Data Source</b>	
Databases	DAD, OMHRS, CIC, RPDB
Data collection source	ICES
<b>Years</b>	2006/07–2011/12 (April 1, 2006 to March 31, 2012)
<b>Geographical Areas</b>	Province, Local Health Integration Network, MCYS Child and Youth Mental Health Service Area
<b>Age Groups</b>	0–6, 7–9, 10–14, 15–19 and 20–24 years
<b>Equity Lens</b>	Sex, neighbourhood income quintile, immigrant category
<b>Relevance to Strategy/Policy</b>	A key goal of the strategy is to close critical mental health service gaps for children and youth. Strategy implementation could reduce rates of hospital admissions for mental health and addictions problems.
<b>Supporting Evidence</b>	<ul style="list-style-type: none"> <li>Hospital admissions for mental health reasons has been used as a contextual indicator,<sup>11</sup> as an indicator of utilization,<sup>36,60,66,67</sup> outcome,<sup>13,68</sup> and performance.<sup>11</sup> Hospital admissions for age-specific populations has been used as an indicator of equality and inclusion.<sup>11</sup></li> <li>In 2009/10, patients with a mental health diagnosis represented 12% of people hospitalized in Canada and more than 25% of acute care hospital days. The percentage of hospital days attributable to a most responsible diagnosis of mental health was highest in youth aged 10–19 years (30%).<sup>51</sup></li> </ul>
<b>Limitations</b>	General limitations of health administrative data include potential coding errors and lack of clinical detail.

Domain	Access
<b>Indicator Name</b>	Wait time to first use of mental health specialist service from last referring physician visit for children and youth
<b>Rationale</b>	Improving access to mental health care is a key aspect of the strategy. Monitoring wait times is a key metric in measuring access to care.
<b>Numerator</b>	Median wait time in days as well as interquartile range from <ul style="list-style-type: none"> <li>the most recent primary care physician visit related to mental health and addictions to the first psychiatrist visit</li> <li>the most recent primary care physician visit related to mental health and addictions to the first paediatrician consultation for a mental health problem</li> </ul>
<b>Denominator</b>	Not applicable
<b>Data Source</b>	
Databases	OHIP claims, Census, CIC, RPDB
Data collection source	ICES
<b>Years</b>	2002/03–2011/12 (April 1, 2002 to March 31, 2012)
<b>Geographical Areas</b>	Province, Local Health Integration Network, MCYS Child and Youth Mental Health Service Area
<b>Age Groups</b>	0–6, 7–9, 10–14, 15–19 and 20–24 years
<b>Equity Lens</b>	Sex, neighbourhood income quintile, immigrant category
<b>Relevance to Strategy/Policy</b>	Although access to psychiatrists and paediatricians for mental health care is not part of the strategy, improving access to other mental health services is. It is possible that by improving access to other mental health services for children and youth, wait times for psychiatric and paediatric services may decrease.
<b>Supporting Evidence</b>	Wait times for specialist services have been used as an indicator of accessibility of mental health services. <sup>23,43,69</sup>
<b>Limitations</b>	<ul style="list-style-type: none"> <li>This measure only looks at access to specialized physician services and does not take access to specialized non-physician services (such as psychologists) into account. The calculation of the wait time assumes that the referral by the primary care physician was at the last primary care visit for a mental health problem but this may be inaccurate. Wait times will be underestimated when the referral was made earlier and the patient makes subsequent primary care visits while waiting to see a psychiatrist.</li> <li>General limitations of health administrative data include potential coding errors and lack of clinical detail.</li> </ul>



Domain	Quality
<b>Indicator Name</b>	Rate of acute care revisits following an incident emergency department visit related to mental health and addictions for children and youth
<b>Rationale</b>	Emergency department revisits or acute care admissions following an emergency department discharge may be suggestive of poor continuity of care, poor transition into the community and inadequate support from community resources.
<b>Numerator</b>	Number of mental health and addictions-related emergency department revisits or hospital admissions within 30 days and 365 days following an incident emergency department visit
<b>Denominator</b>	<p>Total number of incident emergency department visits with a disposition of discharge home for children and youth without a prior emergency department visit or hospitalization related to mental health and addictions in the previous year</p>  <pre> graph LR     A[No prior emergency department visits or hospitalizations in previous year] --&gt; B[Emergency department visit]     B --&gt; C[Discharged home = index emergency department visit]     C --&gt; D[Emergency department visit]     C --&gt; E[Look forward 30 days, 365 days:]     D --&gt; F[Discharge Home]     D --&gt; G[Hospitalized]     E --&gt; F     E --&gt; G     F --&gt; H[= Emergency department revisit (following an index emergency department visit)]     G --&gt; I[= Hospital admission (following an index emergency department visit)]   </pre>
<b>Data Source</b>	
Databases	DAD, OMHRS, NACRS, RPDB, CIC
Data collection source	ICES
<b>Years</b>	2006/07–2011/12 (April 1, 2006 to March 31, 2012)
<b>Geographical Areas</b>	Province, Local Health Integration Network
<b>Age Groups</b>	0–24 years
<b>Equity Lens</b>	Sex, neighbourhood income quintile, immigrant category
<b>Relevance to Strategy/Policy</b>	The strategy aims to improve the coordination of and access to mental health services, which should reduce rates of acute care visits following an incident emergency department visit.
<b>Supporting Evidence</b>	<ul style="list-style-type: none"> <li>Emergency department revisits within 30 days after a psychiatric discharge has been used as an indicator of early return to hospital,<sup>36,65</sup> clinical utilization<sup>36,70</sup> and as an outcome measure.<sup>71</sup> Most work has focused on emergency department recidivism only, not admission following an emergency department visit.</li> <li>Newton et al. studied socioeconomic status and health service use, including hospital- and community-based physician visits following an emergency department visit for a mental health crisis, among a paediatric cohort (younger than 18 years) in Alberta.<sup>72</sup> Overall, First Nations children and youth from families receiving welfare or other government subsidies were the most likely to return to the emergency department and the least likely to have follow-up physician visits after discharge. First Nations children and youth were also more likely to receive care from a general practitioner instead of a psychiatrist and to experience longer wait times for follow up with a psychiatrist.</li> </ul>
<b>Limitations</b>	<ul style="list-style-type: none"> <li>The data do not indicate whether mental health services were provided outside of the health sector in the period between emergency department discharge and acute care readmission.</li> <li>General limitations of health administrative data include potential coding errors and lack of clinical detail</li> </ul>

Domain	Quality
<b>Indicator Name</b>	Rate of acute care revisits following an incident hospitalization related to mental health and addictions for children and youth
<b>Rationale</b>	The need for acute care following a hospital admission may signal poor integration or continuity with community-based mental health services
<b>Numerator</b>	Number of emergency department visits or hospital readmissions related to mental health and addictions within 30 days and 365 days following an incident hospital admission
<b>Denominator</b>	<p>Total number of incident hospital admissions with a disposition of discharged home for children and youth without an emergency department visit or hospitalization related to mental health and addictions in the previous year</p> <pre> graph LR     A[No prior emergency department visits or hospitalizations in previous year] --&gt; B[Emergency department visit]     A --&gt; C[Hospitalized = index hospitalization]     B --&gt; C     C --&gt; D[Look forward 30 days, 365 days:]     D --&gt; E[Emergency department visit]     D --&gt; F[Hospitalized]     E --&gt; G[Discharge Home]     E --&gt; F     G --&gt; H[Emergency department revisit (following an index hospitalization)]     F --&gt; I[Hospital revisit (following an index hospitalization)]     H --&gt; A     I --&gt; A   </pre>
<b>Data Source</b>	
Databases	DAD, OMHRS, NACRS, RPDB, CIC
Data collection source	ICES
Years	2006/07–2011/12 (April 1, 2006 to March 31, 2012)
Geographical Areas	Province, Local Health Integration Network
Age Group	0–24 years
Equity Lens	Sex, neighbourhood income quintile, immigrant category
Relevance to Strategy/Policy	The strategy aims to improve the coordination of and access to mental health services which should reduce rates of these revisits.
Supporting Evidence	<ul style="list-style-type: none"> <li>Acute care readmission following a psychiatric admission has been used as an indicator under multiple domains: clinical utilization,<sup>36,70</sup> early return to hospital,<sup>65,73</sup> effectiveness,<sup>74,75</sup> health system performance,<sup>11,15</sup> integrated health care,<sup>37</sup> as a measure of outcome,<sup>71</sup> quality/appropriateness<sup>40,44</sup> and treatment.<sup>76,77</sup></li> <li>Carlisle et al. used a similar indicator in a study of youth 15–19 years of age who, after a first psychiatric admission, showed different outcomes related to the presence or absence of follow-up care after discharge.<sup>78</sup> These outcomes included visits to the emergency department or readmission, and visits to the emergency department and readmission. Lin et al. studied physician care, readmissions and emergency department visits following discharge for depression among adults.<sup>79</sup> They found that fewer than two-thirds of patients received physician follow-up care for depression, and 25% were either readmitted to hospital or revisited the emergency department within 30 days of discharge.</li> </ul>
Limitations	<ul style="list-style-type: none"> <li>The data does not indicate whether mental health services were provided outside of the health sector in the period between admission and acute care readmission.</li> <li>General limitations of health administrative data include potential coding errors and lack of clinical detail.</li> </ul>

Domain	Early identification
Indicator Name	Proportion of youth in provincial correctional centres using mental health and addictions services
Rationale	High rates of mental health services use by youth in custody may indicate missed opportunities for identification of mental health needs and diversion prior to entry into the youth justice system.
Numerator	Number of youth with an OHIP claim related to mental health and addictions in a provincial correctional centre
Denominator	Number of youth with any OHIP claim in a provincial correctional centre by geographical area, by age group (see below)
Data Source	
Databases	OHIP claims, RPDB, CIC
Data collection source	ICES
Years	2002/03–2011/12 (April 1, 2002 to March 31, 2012)
Geographical Areas	Province, Local Health Integration Network, MCYS Child and Youth Mental Health Service Area
Age Groups	12–14, 15–19 and 20–24 years
Equity Lens	Sex, neighbourhood income quintile, immigrant category
Relevance to Strategy/Policy	Increasing youth mental health court workers is a key focus of the strategy. Implementation of the strategy may increase early identification of mental health needs and result in a decrease of the proportion of youth with mental health problems in provincial correctional centres.
Supporting Evidence	<ul style="list-style-type: none"> <li>• Contact with the justice system has been used as an indicator by several sources.<sup>36,45</sup></li> <li>• Rates of mental disorders have been reported to be higher among youth within the justice system, compared to the general population.<sup>80</sup> In a study of incarcerated young offenders in British Columbia, almost all youth met the criteria for at least one mental disorder. Substance abuse and dependence disorders were highly prevalent (86% of males, 100% of females), as was conduct disorder.<sup>81</sup> For incarcerated youth with mental disorders who made contact with the mental health system prior to incarceration, the probability of being directed to the criminal justice system was only 5% after two hospitalizations and 1% after five hospitalizations. Conversely, ongoing contact with the justice system prior to mental health treatment was associated with a reduced chance of contact with the mental health system.<sup>82</sup></li> </ul>
Limitations	<ul style="list-style-type: none"> <li>• Identification of institutions in health administrative records is incomplete. Many OHIP claims do not identify the institution number or type, so these rates may be an underestimate.</li> <li>• Among youth in correctional facilities, only those who used physician-provided mental health and addictions services are captured, so the total number of youth in correctional facilities with mental health and addictions problems is likely to be underestimated.</li> <li>• Youth under community supervision or on probation are excluded.</li> <li>• General limitations of health administrative data include potential coding errors and lack of clinical detail.</li> </ul>

Domain	Early identification
Indicator Name	Rate of emergency department visit as first contact for mental health and addictions for children and youth
Rationale	This indicator measures how many children and youth are seen in the emergency department for acute mental health and addictions problems with no prior medical mental health care. First presentation to an emergency department for care may signal poor access to timely community-based mental health assessment and treatment.
Numerator	Number of children and youth with an unscheduled emergency department visit related to mental health and addictions and without prior outpatient visits, claims, emergency department visits, or hospital admissions related to mental health or addictions in the previous two years
Denominator	All children and youth with an emergency department visit related to mental health and addictions
Data Source	
Databases	NACRS, DAD, OHIP claims, OMHRS, CIC, RPDB
Data collection source	ICES
Years	2006/07–2011/12 (April 1, 2006 to March 31, 2012)
Geographical Areas	Province, Local Health Integration Network
Age Groups	0–6, 7–9, 10–14, 15–19 and 20–24 years
Equity Lens	Sex, neighbourhood income quintile, immigrant category
Relevance to Strategy/Policy	The strategy aims to improve timely access to mental health assessment and treatment. Rates at which the first contact with mental health and addictions care occurs in emergency departments should decrease with strategy implementation.
Supporting Evidence	<ul style="list-style-type: none"> <li>• No other study or jurisdiction has used a similar indicator.</li> <li>• Shortages in inpatient and outpatient mental health resources have resulted in the emergency department playing a key role as an access point for the management of children and youth with mental health concerns and emergencies, a proportion of which may not be urgent.<sup>83,84</sup> The percentage of emergency department visits related to mental health and addictions has increased (accounting for 2.9% of all emergency department visits in Ontario in 2000), especially in paediatric facilities.<sup>85,86</sup> Emergency department visits have been reported to most commonly be for suicide ideation, depression, suicide attempts, anxiety and self-harm.<sup>84</sup> Expectations from emergency department visits among parents and youth were primarily for guidance support (42% and 41%, respectively) and for diagnostic/evaluation purposes (29%).<sup>84</sup></li> </ul>
Limitations	<ul style="list-style-type: none"> <li>• There is a lack of data on mental health and addictions contact outside the health care system.</li> <li>• General limitations of health administrative data include potential coding errors and lack of clinical detail.</li> </ul>

Domain	Early identification
Indicator Name	Rate of hospital admission as first contact for mental health and addictions for children and youth
Rationale	Hospitals are an important point of access for youth in mental health crisis, particularly among those with limited access to community and primary care support and resources. High rates of hospitalization as first contact for mental health and addictions care may signal poor access to outpatient mental health assessment and treatment.
Numerator	Number of children and youth with a hospital admission related to mental health and addictions and without prior outpatient visits, claims, emergency department visits or hospital admissions related to mental health or addictions in the previous two years
Denominator	All children and youth with a hospital admission related to mental health and addictions
Data Source	
Databases	NACRS, DAD, OHIP claims, OMHRS, CIC, RPDB
Data collection source	ICES
Years	2006/07–2011/12 (April 1, 2006 to March 31, 2012)
Geographical Areas	Province, Local Health Integration Network
Age Groups	0–6, 7–9, 10–14, 15–19 and 20–24 years
Equity Lens	Sex, neighbourhood income quintile, immigrant category
Relevance to Strategy/Policy	The strategy aims to improve timely access to mental health assessment and treatment. Rates of hospital admission as first contact for mental health and addictions should decrease with strategy implementation.
Supporting Evidence	<ul style="list-style-type: none"> <li>No other study or jurisdiction has used a similar indicator.</li> <li>Shortages in inpatient and outpatient mental health resources have resulted in the emergency department playing a key role as an access point for the management of children and youth with mental health concerns and emergencies, a proportion of which may not be urgent.<sup>83,84</sup> The number of emergency department visits related to mental health and addictions has increased, (accounting for 2.9% of all hospital emergency department visits in Ontario in 2000), especially in paediatric facilities.<sup>85,86</sup> Emergency department visits have been reported most commonly for suicide ideation, depression, suicide attempts, anxiety, and self-harm.<sup>84</sup> Expectations from emergency department visits among parents and youth were primarily for guidance support (42% and 41%, respectively) and for diagnostic/evaluation purposes (29%).<sup>84</sup></li> </ul>
Limitations	<ul style="list-style-type: none"> <li>There is a lack of data on mental health and addictions contact outside the health care system.</li> <li>General limitations of health administrative data include potential coding errors and lack of clinical detail.</li> </ul>

# Appendix D:

## Indicator Standardization Summary

# Denominator

- Denominator weights are derived from the 2002 Registered Persons Database (RPDB).
  - Standardization of rates:
    - RPDB weights for 2002 are used as the standard population.
    - Direct standardization is used for the indicators.
- Standard exclusion criteria:
  - ICES Key Number invalid or cannot link to the RPDB
  - Not an Ontario resident
  - Missing age or sex
  - Age over 24 years
- When dealing with incidence indicators (e.g., telepsychiatry), the denominator needs to be adjusted for double-counting in the equity lens attributes (Exhibit D.1).

EXHIBIT D.1 Variables used for calculating equity lens attributes for incidence indicators

Date (year)	2009/10	2010/11	2011/12
Cumulative number of unique individuals	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>
Unadjusted denominator	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>

The final rate will be  $N3 \div [(D1 + D2 + D3) - (N1 + N2)]$  where  
N1 = number of unique individuals in 2009/10  
N2 = cumulative number of unique individuals from 2009/10 to 2010/11  
N3 = cumulative number of unique individuals from 2009/10 to 2011/12  
D1, D2, D3 = denominator count in each of 2009/10, 2010/11 and 2011/12

Rates Over Time

EXHIBIT D.2 Equity lens variables

- Overall rates are provided annually from 2002/03 to 2011/12 with standardization by age and sex.
- Any acute care indicator (e.g., emergency department visits, hospital admissions) should report numbers from 2006/07 onward.
- Crude rates by age group are provided annually.

Age group	Sex	Immigrant category	Neighbourhood income quintile
0–6, 7–9, 10–14, 15–19 and 20–24 years	Female, male	Citizenship and Immigration Canada (CIC) variables (CATEG): <ul style="list-style-type: none"><li>• Refugee (CATEG = 020–029, 031–034, 037, 047–049, 052–055, 080, 086–089, 094–095, 120–142, 153)</li><li>• Immigrant (CATEG = all other values)</li><li>• Non-immigrant</li></ul> <p>Note: Data for immigrant category are available until December 31, 2010. Any newcomers to Canada after this date may not be captured in the refugee or immigrant categories.</p>	Q1 (lowest) to Q5 (highest)

Equity Lens Attribute

- Indicators were analyzed by age group, sex, immigrant category and neighbourhood income quintile (Exhibit D.2).
- Three-year average rate = 
$$\frac{\text{number of incident cases}}{\text{total person-years of followup for 2009/10 to 2011/12}}$$



## Geographic Variables

- For stratification by Local Health Integration Network and MCYS Child and Youth Mental Health Service Area, standardize by age and sex (**Exhibit D.3**).

### EXHIBIT D.3 Geographic variables

Local Health Integration Networks	MCYS Child and Youth Mental Health Service Areas
1 Erie St. Clair	Stormont/Dundas/Glengarry
2 South West	Prescott/Russell
3 Waterloo Wellington	Ottawa
4 Hamilton Niagara Haldimand Brant	Lanark/Leeds/Grenville
5 Central West	Frontenac/Lennox/Addington
6 Mississauga Halton	Hastings/Prince Edward/Northumberland
7 Toronto Central	Haliburton/Kawartha Lakes/Peterborough
8 Central	Durham
9 Central East	York
10 South East	Toronto
11 Champlain	Peel
12 North Simcoe Muskoka	Dufferin/Wellington
13 North East	Halton
14 North West	Hamilton
	Niagara
	Haldimand-Norfolk
	Brant
	Waterloo
	Elgin/Oxford
	Chatham-Kent
	Essex
	Lambton
	Middlesex
	Huron/Perth
	Grey/Bruce
	Simcoe
	Renfrew
	Nipissing/Parry Sound/Muskoka
	Greater Sudbury/Manitoulin/Sudbury
	Timiskaming/Cochrane
	Algoma
	Thunder Bay
	Kenora/Rainy River
	James Bay Coast

## Diagnostic Categories

### EXHIBIT D.4 Standard mental health diagnostic codes

Diagnostic Category	International Statistical Classification of Diseases and Related Health Problems, 10th Revision, Canadian Enhancement codes (NACRS/DAD)	Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV) codes (OMHRS)
Substance-related disorders	<b>F10:</b> Mental and behavioural disorders due to use of alcohol <b>F11:</b> Mental and behavioural disorders due to use of opioids <b>F12:</b> Mental and behavioural disorders due to use of cannabinoids <b>F13:</b> Mental and behavioural disorders due to use of sedatives or hypnotics <b>F14:</b> Mental and behavioural disorders due to use of cocaine <b>F15:</b> Mental and behavioural disorders due to use of other stimulants, including caffeine <b>F16:</b> Mental and behavioural disorders due to use of hallucinogens <b>F17:</b> Mental and behavioural disorders due to use of tobacco <b>F18:</b> Mental and behavioural disorders due to use of volatile solvents <b>F19:</b> Mental and behavioural disorders due to multiple drug use and use of other psychoactive substances <b>F55:</b> Abuse of non-dependence-producing substances	<b>291.00:</b> Alcohol – Intoxication or withdrawal delirium <b>291.10:</b> Alcohol – Induced persisting amnesic disorder <b>292.20:</b> Alcohol – Induced persisting dementia <b>291.30:</b> Alcohol – Induced psychotic disorder, with hallucinations <b>291.50:</b> Alcohol – Induced psychotic disorder, with delusions <b>291.81:</b> Alcohol – Withdrawal <b>291.89:</b> Alcohol – Induced anxiety/mood disorder or sexual dysfunction <b>291.90:</b> Alcohol – Related disorder not otherwise specified (NOS) <b>292.00:</b> Substance – Withdrawal <b>292.11:</b> Substance – Induced psychotic disorder, with delusions <b>292.12:</b> Substance – Induced psychotic disorder, with hallucinations <b>292.81:</b> Substance – Intoxication or withdrawal delirium <b>292.82:</b> Substance – Induced persisting dementia <b>292.83:</b> Substance – Induced persisting amnesic disorder <b>292.84:</b> Substance – Induced mood disorder <b>292.89:</b> Substance – Intoxication or induced anxiety disorder/sexual dysfunction <b>292.90:</b> Substance – Related NOS <b>303.00:</b> Alcohol intoxication <b>303.90:</b> Alcohol dependence <b>304.00:</b> Opioid dependence <b>304.10:</b> Sedative, hypnotic or anxiolytic dependence <b>304.20:</b> Cocaine dependence <b>304.30:</b> Cannabis dependence <b>304.40:</b> Amphetamine dependence <b>304.50:</b> Hallucinogen dependence <b>304.60:</b> Inhalant or phencyclidine dependence <b>304.80:</b> Polysubstance dependence <b>304.90:</b> Other (or unknown) substance dependence <b>305.00:</b> Alcohol abuse <b>305.10:</b> Nicotine dependence <b>305.20:</b> Cannabis abuse <b>305.30:</b> Hallucinogen abuse <b>305.40:</b> Sedative, hypnotic or anxiolytic abuse <b>305.50:</b> Opioid abuse <b>305.60:</b> Cocaine abuse <b>305.70:</b> Amphetamine abuse <b>305.90:</b> Other (or unknown) substance abuse
Schizophrenia and other psychotic disorders	<b>F20:</b> Schizophrenia (excluding <b>F20.4:</b> Post-schizophrenic depression) <b>F22:</b> Persistent delusional disorders <b>F23:</b> Acute and transient psychotic disorders <b>F24:</b> Induced delusional disorder <b>F25:</b> Schizoaffective disorders <b>F28:</b> Other nonorganic psychotic disorders	<b>295.10:</b> Schizophrenia, disorganized type <b>295.20:</b> Schizophrenia, catatonic type <b>295.30:</b> Schizophrenia, paranoid type <b>295.40:</b> Schizophreniform disorder <b>295.60:</b> Schizophrenia, residual type <b>295.70:</b> Schizoaffective disorder

## EXHIBIT D.4 CONTINUED

Diagnostic Category	International Statistical Classification of Diseases and Related Health Problems, 10th Revision, Canadian Enhancement codes (NACRS/DAD)	Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV) codes (OMHRS)
<b>Schizophrenia and other psychotic disorders</b>	<b>F29:</b> Unspecified nonorganic psychosis	<b>295.90:</b> Schizophrenia, undifferentiated type <b>297.10:</b> Delusional disorder <b>297.30:</b> Shared psychotic disorder <b>298.80:</b> Brief psychotic disorder <b>298.90:</b> Psychotic disorder NOS
<b>Mood disorders</b>	<b>F30:</b> Manic episode <b>F31:</b> Bipolar affective disorder <b>F32:</b> Depressive episode <b>F33:</b> Recurrent depressive disorder <b>F34:</b> Persistent mood [affective] disorders <b>F39:</b> Unspecified mood [affective] disorder	<b>293.83:</b> Mood disorder due to general medical condition <b>296.0x:</b> Bipolar I disorder, single manic episode <b>296.2x:</b> Major depressive disorder, single episode <b>296.3x:</b> Major depressive disorder, recurrent <b>296.4x:</b> Bipolar I disorder, most recent episode manic <b>296.5x:</b> Bipolar I disorder, most recent episode depressed <b>296.6x:</b> Bipolar I disorder, most recent episode mixed <b>296.7:</b> Bipolar I disorder, most recent episode unspecified <b>296.80:</b> Bipolar disorder NOS <b>296.89:</b> Bipolar II disorder <b>296.90:</b> Mood disorder NOS <b>300.4:</b> Dysthymic disorder <b>301.13:</b> Cyclothymic disorder
<b>Anxiety disorders</b>	<b>F40:</b> Phobic anxiety disorders <b>F41:</b> Other anxiety disorders <b>F42:</b> Obsessive-compulsive disorder <b>F43:</b> Reaction to severe stress and adjustment disorders <b>F48.8:</b> Other specified neurotic disorders <b>F48.9:</b> Neurotic disorder, unspecified <b>F93.0:</b> Separation anxiety disorder of childhood	<b>300.xx:</b> Anxiety, dissociative and somatoform disorders <b>300.00:</b> Anxiety disorder NOS <b>300.01:</b> Panic disorder without agoraphobia <b>300.02:</b> Generalized anxiety disorder <b>300.21:</b> Panic disorder with agoraphobia <b>300.22:</b> Agoraphobia without history of panic disorder <b>300.23:</b> Social phobia <b>300.29:</b> Specific phobia <b>300.3:</b> Obsessive-compulsive disorder <b>308.3:</b> Acute stress disorder <b>309.21:</b> Separation anxiety disorder <b>309.81:</b> Posttraumatic stress disorder

**EXHIBIT D.5** Service and diagnostic codes for Ontario physician billing claims (revised Steeles' algorithm)<sup>87</sup>

<b>Mental health service fee codes</b>	K005	Primary mental health care
	K007	Psychotherapy
	K623	Assessment for involuntary admission
<b>Paediatric-specific consultation fee codes</b>	A260	Paediatrics – 75-minute consultation
	A265	Consultation – paediatric
	A662	Paediatrics – 90-minute consultation
	K122	Paediatric psychotherapy individual, per unit
	K123	Paediatric psychotherapy family, per unit
<b>Mental health diagnostic codes</b>	291	Alcoholic psychosis, delirium tremens, Korsakov's psychosis
	292	Drug psychosis
	295	Schizophrenia
	296	Manic depressive psychosis, involuntal melancholia
	297	Paranoid states
	298	Other psychoses
	299	Childhood psychoses (e.g., autism)
	300	Anxiety neurosis, hysteria, neurasthenia, obsessive compulsive neurosis, reactive depression
	301	Personality disorders (e.g., paranoid personality, schizoid personality, obsessive compulsive personality)
	302	Sexual deviations
	303	Alcoholism
	304	Drug dependence, drug addiction
	305	Tobacco abuse
	306	Psychosomatic disturbances
	307	Habit spasms, tics, stuttering, tension headaches, anorexia nervosa, sleep disorders, enuresis
	309	Adjustment reaction
	311	Depressive or other non-psychotic disorders, not elsewhere classified
	313	Behaviour disorders of childhood and adolescence
	314	Hyperkinetic syndrome of childhood
	315	Specified delays in development (e.g., dyslexia, dyslalia, motor retardation)
	319	Mental retardation
	897	Economic problems
	898	Marital difficulties
	899	Parent-child problems (e.g., child abuse, battered child, child neglect)
	900	Problems with aged parents or in-laws
	901	Family disruption, divorce
	902	Educational problems
	904	Social maladjustment
	905	Occupational problems, unemployment, difficulty at work
	906	Legal problems, litigation, imprisonment
	909	Other problems of social adjustment

# Appendix E:

## Indicator Selection Process

The study team adopted a five-pronged approach to guide indicator selection that consisted of:

1. a comprehensive jurisdictional environmental scan
2. analysis of the initiative-level logic models
3. consultation with a scientific advisory committee
4. a comprehensive review of relevant and available data
5. an assessment of privacy legislation and data linkage requirements

### Jurisdictional Review

An environmental scan (national and international in scope) of mental health and addictions constructs, scorecards and indicators, with a special focus on children and youth, provided the foundation and starting point. The ICES team created an extensive inventory of more than 1,500 mental health and addictions indicators gathered from 47 sources. The inventory was organized to identify the technical specifications of each indicator, including indicator type (e.g., process or outcome) and indicator utility/scope (e.g., whether it was policy, program or

clinically oriented). Where possible, indicators were aligned to the key goals of the first three years of the strategy. This jurisdictional review was used to provide supporting evidence for the indicators included in this baseline scorecard; for some indicators, benchmarking against other jurisdictions may be useful.

A smaller subset of the indicators was chosen based on indicator alignment with specific outcomes of initiatives from the strategy, gleaned from the logic model work (outlined below) and in consultation with the scientific advisory committee.

## Logic Models

The development of logic models for each strategy initiative served two primary purposes in the indicator selection process:

- program discovery
- provision of a visual mechanism to link mental health and addictions constructs to performance indicators

The logic models provided information that enabled sifting through the indicator inventory with a lens focused on relevance and feasibility.

An extensive process of program discovery for the strategy's 22 initiatives was undertaken. Logic models were used to transform the information gathered into a diagram that visually demonstrated the sequence of activities and expected outcomes. In total, 19 initiative-level logic models were created; in some cases, one or more initiatives were combined into a single logic model when it was demonstrated that they were intrinsically linked. In addition to providing an understanding of each initiative's activities, the logic models also showed that many initiatives shared the same short- and long-term outcomes or contributed to outcomes (e.g., service transitions, wait-times) that would have to be measured by other ministries.

The logic models were reviewed for their content (correctness), comprehensiveness, presentation and logic by ministry staff. This allowed all parties to identify the activities, objectives and contextual factors that influenced the development and implementation of the initiative. This process provided insight on how indicators were aligned to the strategy's themes and informed decisions around which indicators could measure system performance, accountability and improvement. Objective indicators of how the system worked at baseline will help show future improvement and accountability with ongoing monitoring of the system.

## Scientific Advisory Committee

ICES convened a scientific advisory committee of experts in the field of child and youth mental health. The function of the committee during the indicator selection process was to:

- identify key domains pertinent to the field of child and youth mental health and addictions
- select the most scientifically sound indicators relevant to each domain
- refine indicators so that they were relevant to the Ontario context but also feasible in light of data availability

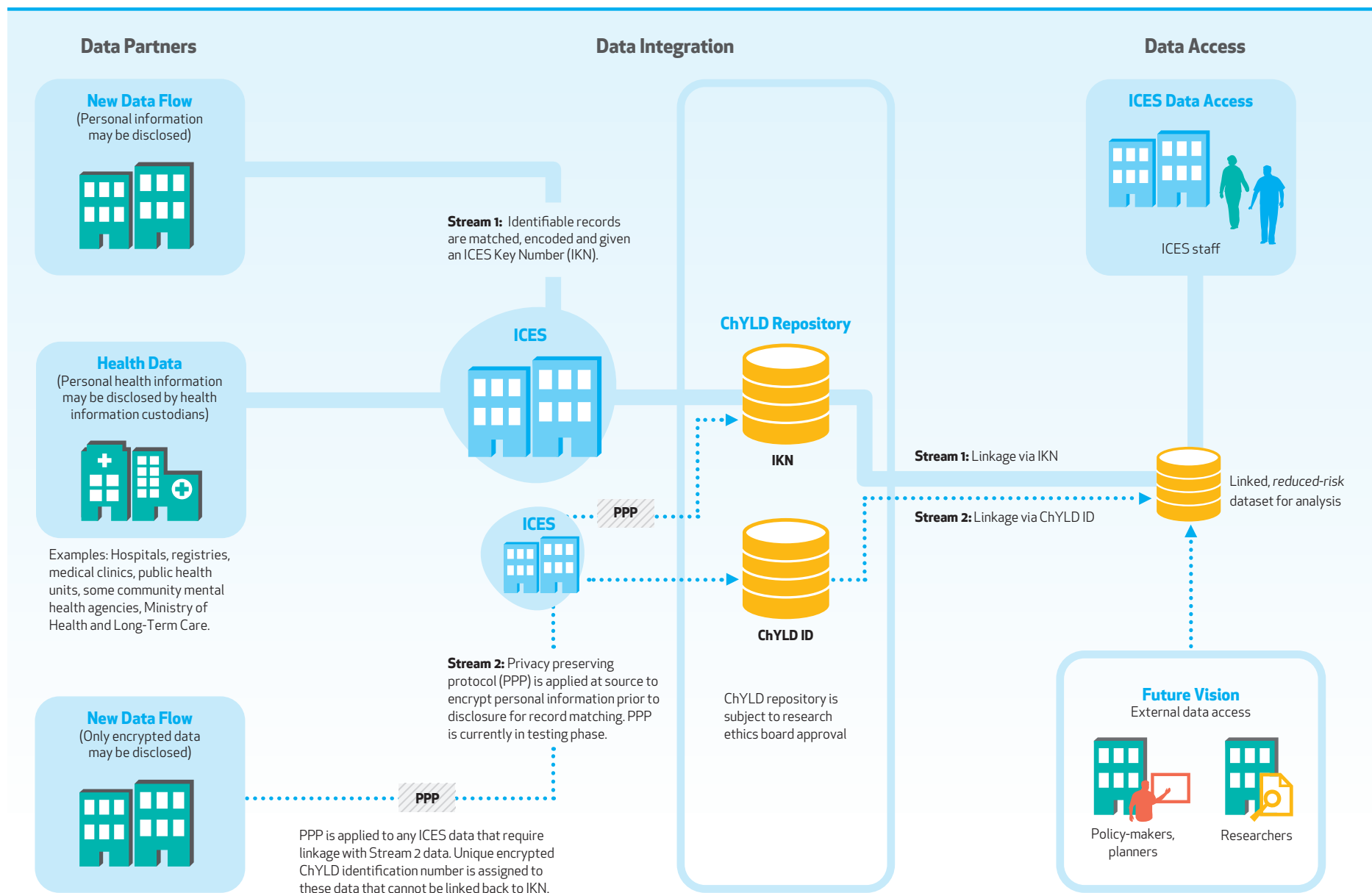
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## Review of Relevant and Available Data

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As part of the data discovery strategy for this evaluation, an environmental scan was conducted of potential data sources in Ontario that focused on child and youth mental health. Although currently available health data at ICES are adequate for some meaningful scorecard measures, especially for acute mental health events, there is a need to be able to examine and link a broad spectrum of data across multiple sectors, so as to fully understand the burden of child and youth mental health and addictions, integration of prevention, early intervention and care, and outcomes of care. Data sources that were individual-level, population-based, linkable and most relevant to the strategy, and both health- and non-health-related were identified in an environmental scan. The data team conducted numerous interviews with data subject matter experts, the scientific advisory committee and interministerial partners to help prioritize the identified data sources. As part of the data discovery process, data gaps were also identified for possible future collection.

As a result of this process, it was evident that a unique concept for integration of data on child and youth mental health and addictions was needed to inform the strategy baseline scorecard and for ongoing surveillance and monitoring. The concept envisioned is a Child and Youth Linkable Data (ChYLD) repository. The ChYLD repository would include extracts of data collected by ministries and partner organizations for administrative or other purposes. Data in the ChYLD repository would be stored in a coded format and linked at an individual level using a unique, encrypted identifier relating to each child in Ontario ([Exhibit E.1](#)).

**EXHIBIT E.1** Child and Youth Linkable Data (ChYLD) repository concept diagram



Once potential data partners and sources were identified for this project, integration and linkage of the data were categorized into phases according to:

- necessity of the data to populate the baseline scorecard and indicators (**Exhibit E.2**)
- legislative and technical ease of data integration

### EXHIBIT E.2 Linkable data necessary for all domains

Domain	Data at ICES	Data not yet at ICES, Phase 1	Data not yet at ICES, Phase 2	Data not available
<b>All children and youth (age, sex, residence, cultural identity, socioeconomic status)</b>	<ul style="list-style-type: none"> <li>- Registered Persons Database</li> <li>- Citizenship and Immigration Canada</li> <li>- Census</li> <li>- Canadian Community Health Survey</li> </ul>	<ul style="list-style-type: none"> <li>- Ministry of Community and Social Services (MCSS)</li> </ul>		<ul style="list-style-type: none"> <li>- Housing type</li> <li>- Linking children and youth to parents</li> <li>- Linking parents to socioeconomic status</li> <li>- Other external environment data</li> </ul>
<b>Children and youth at risk</b>	<ul style="list-style-type: none"> <li>- OHIP claims</li> <li>- Hospital inpatient care</li> <li>- Emergency department visits</li> <li>- Community health centre visits</li> </ul>	<ul style="list-style-type: none"> <li>- Better Outcomes Registry and Network (BORN)</li> <li>- Language, Speech and Hearing</li> <li>- Healthy Babies, Healthy Children (HBHC)</li> <li>- MCSS</li> </ul>	<ul style="list-style-type: none"> <li>- Education exceptionalities</li> <li>- First Nations</li> <li>- Métis</li> </ul>	Data are difficult to capture; measuring full coverage of potential need is challenging
<b>Known prevalence</b>	<ul style="list-style-type: none"> <li>- Eating disorders</li> <li>- HIV infection</li> <li>- ICES data</li> </ul>	<ul style="list-style-type: none"> <li>- BORN</li> <li>- Children's Aid Society</li> <li>- Ontario Child Abuse and Neglect Database System (OCANDS)</li> <li>- Kinark Child and Family Services (Kinark)</li> <li>- Client Information Management System (CIMS)</li> <li>- Drug and Alcohol Treatment Information System (DATIS)</li> </ul>	<ul style="list-style-type: none"> <li>- Education</li> <li>- Youth justice</li> </ul>	Data for many disorders and conditions are not captured
<b>Systems use</b>	<ul style="list-style-type: none"> <li>- OHIP claims</li> <li>- Hospital inpatient care</li> <li>- Emergency department visits</li> <li>- Community health centre visits</li> </ul>	<ul style="list-style-type: none"> <li>- BORN</li> <li>- OCANDS</li> <li>- Kinark</li> <li>- CIMS</li> <li>- DATIS</li> </ul>	<ul style="list-style-type: none"> <li>- Youth Offender Tracking Information System</li> <li>- School-level programs and use</li> </ul>	<ul style="list-style-type: none"> <li>- School guidance counselors</li> <li>- Psychologists</li> <li>- Social workers</li> </ul>
<b>Resources</b>	<ul style="list-style-type: none"> <li>- Acute care beds</li> <li>- Visits with family physicians and specialists</li> <li>- Ontario Association of Community Care Access Centres nurse visits</li> </ul>	<ul style="list-style-type: none"> <li>- Ministry of Children and Youth Services (MCYS) resourcing/staff information</li> </ul>		<ul style="list-style-type: none"> <li>- Human resource data lacking in all sectors</li> <li>- MCYS data sharing agreement pending</li> </ul>
<b>Outcomes</b>	<ul style="list-style-type: none"> <li>- Health data</li> <li>- Kinark data at ICES, Fall 2013</li> </ul>	<ul style="list-style-type: none"> <li>- Linked data</li> <li>- CIMS</li> </ul>		<ul style="list-style-type: none"> <li>- Continuity of care</li> <li>- Appropriateness (need relative to type of care)</li> </ul>
<b>Performance</b>	<ul style="list-style-type: none"> <li>- ICES health data</li> <li>- Kinark</li> </ul>	<ul style="list-style-type: none"> <li>- CIMS</li> </ul>		<ul style="list-style-type: none"> <li>- Quality of care</li> <li>- System Integration</li> <li>- Wait times</li> </ul>

## Privacy, coding and linkage

A privacy impact assessment was conducted for integration of identified data. The following summarizes its recommendations and provides some important notes regarding data integration.

The **Personal Health Information Protection Act** (PHIPA) facilitates the flow of personal health information to ICES due to its prescribed entity status, including data with health card numbers as identifiers; these data will be integrated in phase 1 for this evaluation.

**Recommendation:** Use phase 1 data (health data) whenever possible.

**Note:** Some health data are difficult to access, even through PHIPA.

The **Freedom of Information and Protection of Privacy Act** (FIPPA) facilitates the flow of personal information for research only, so no health card numbers can be disclosed (if collected). This places limits on data access and data use.

### Recommendations:

- Define data disclosure for purposes specific to this project.
- Seek approval from research ethics board for scorecard and creation of the Child and Youth Linkable Data (ChYLD) repository, defining the program of research.

**Note:** The research ethics board at Sunnybrook Health Sciences Centre approved the repository in August 2013.

The **Youth Criminal Justice Act** requires that personal information may be accessed only with a court order, which limits data access as well as data use.

### Recommendations:

- Place limits on data use, based on defined purpose and research ethics board approval.
- In accordance with the *Youth Criminal Justice Act*, make a submission to a youth court judge to access the data.

**Note:** ICES provided a submission to a youth court judge on January 30, 2014.

The **Education Act** states that no identifiers may be disclosed. This limits how data are disclosed and used, which will affect data quality and produce bias.

### Recommendations:

- Use a privacy-preserving protocol in creating a ChYLD identification number so that no identifying information is disclosed.
- Create and use risk-reduced, encoded, linkable data whenever possible (data rolled up).
- Utilize aggregate data where possible.

### Notes:

- A privacy preserving protocol methodology has been tested by ICES. Further testing of this method and others will continue over the course of 2015.
- Aggregate non-health data (school-level) have been integrated at ICES through a data-sharing agreement with the Ministry of Education.

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