

Initial Report on Public Health

August 2009

Public Health Division
Ministry of Health and Long-Term Care

Initial Report on Public Health Contacts

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Foreword

We are very pleased to provide you with the Ministry of Health and Long-Term Care's (MOHLTC) Initial Report on Public Health in Ontario.

The Public Health Division, in partnership with the Ministry of Health Promotion (MHP) and the Ministry of Children and Youth Services (MCYS), has made significant strides to renew public health in Ontario and build a public health sector with a greater focus on performance, accountability and sustainability. Some of our recent achievements towards this goal include delivering the new Ontario Public Health Standards, producing the Ontario Health Plan for an Influenza Pandemic, and now, releasing a public report that reflects the state of public health in Ontario. This report demonstrates our commitment to a public health sector that is accountable to the people of Ontario.

The indicators provided in this report are intended to contribute to our understanding of public health in Ontario as a system, at both the provincial and local levels. As we move towards implementing a performance management system in public health, we have an increased need for information that can be used to ensure the public's health is protected, to inform decisions on where improvements are required, to ensure that appropriate governance is in place and to help promote organizational excellence.

This initial report is intended to provide a snapshot of the current state of public health in Ontario. Over time, with the continued involvement of public health professionals in the sector, different indicators will need to be identified and developed. There is significant expertise related to performance management already available within our sector, and within the health care sector, and we will be relying on these resources to assist in developing the tools and processes required to operate a useful, efficient and effective performance management system at the provincial level.

The work of the Capacity Review Committee (2006) gave us an important conceptual framework for performance management. The work to implement this vision is now well underway, and this report is the first tangible product that begins to articulate that vision.

We hope you find the report informative and, most importantly, useful. We would like to take this opportunity to thank the members of the Performance Management Working Group who provided advice that shaped the development of this report. Their knowledge and wisdom have contributed substantially to the quality of this product.

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Acknowledgements

Producing this report involved the commitment of a diverse group of individuals, each of whom contributed their time and advice to ensure that the final product was representative of public health in Ontario at both the local and provincial levels. The ministry acknowledges and thanks the many individuals who contributed to this report including:

- The members of the Performance Management Working Group (PMWG) in 2007-2008ⁱ who advised on the development of this report:
 - Dr. Kathleen Dooling, Community Medicine Resident, University of Toronto
 - Dr. Vera Etches, Medical Officer of Health (A), Sudbury & District Health Unit
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 - Dr. Jeff Kwong, Scientist, Institute for Clinical Evaluative Sciences
 - Dr. Robert Kyle, Commissioner & Medical Officer of Health, Durham Region Health Department
 - Dr. Jack Lee, Senior Strategic Advisor, Ministry of Health Promotion
 - Dr. Doug Manuel, Senior Scientist, Institute for Clinical Evaluative Sciences (co-chair December, 2007 – May, 2008)
 - Dr. Rosana Pellizzari, Associate Medical Officer of Health, Toronto Public Health (co-chair from May, 2008)
 - Ms. Katharine Robertson-Palmer, Coordinator, Education and Research, Ottawa Public Health
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 - Ms. Monika Turner, Director, Public Health Standards Branch, Ministry of Health and Long-Term Care (co-chair)
 - Dr. Erica Weir, Associate Medical Officer of Health, York Regional Health Unit
 - Ms. Jackie Wood, Manager, Corporate Services, Ministry of Health Promotion
- Staff in public health units across the province, who contributed by completing the survey of boards of health on governance and management issues, providing case studies, and verifying the indicator methodology and data that appear in the report.
- Members of the Association of Public Health Business Administrators who assisted in developing the survey tool that was used to gather governance, organizational practices and financial data.

ⁱ It should be noted that some members changed positions during the course of the production of the report. However this list accurately reflects the PMWG membership and roles during the period of the report's development.

Acknowledgements

- The Institute for Clinical Evaluative Sciences (ICES) and Peel Public Health, which provided data analysis and advice.
- Members of the Association of Public Health Epidemiologists in Ontario (APHEO) who provided technical advice on indicator methodology and development:
 - Ms. Deborah Carr
 - Ms. Sherri Deamond
 - Mr. Foyez Haque
 - Ms. Joanna Oliver
 - Ms. Suzanne Sinclair
- Staff within the Ministry of Health Promotion and the Ministry of Children and Youth Services, who contributed to the indicator narratives and conducted data analysis.
- Staff within the Ministry of Health and Long-Term Care, who advised on the development of this report throughout 2008-09 within the following branches:ⁱⁱ
 - Communications and Information Branch
 - Controllership and Resources Management Branch
 - Emergency Management Branch
 - Environmental Health Branch
 - Health Analytics Branch
 - Infectious Diseases Branch
 - Legal Services Branch
 - Strategic Alignment Branch
- Staff of the Strategic Policy and Implementation Branch,ⁱⁱ who provided research and editorial support in the development of this report:
 - Ms. Allison McArthur
 - Ms. Beata Pach
- Staff of the Public Health Standards Branch,ⁱⁱ who acted as secretariat to the PMWG and guided this document through the development process, including:
 - Mr. David Moore
 - Mr. Hassan Parvin
 - Ms. Paulina Salamo
 - Ms. Sylvia Shedden
 - Ms. Joanne Thanos
 - Ms. Lisa Vankay
 - Ms. Tricia Willis

ⁱⁱ Note that the Public Health Division underwent a restructuring that coincided with the publication of this report. The branch names shown here reflect the branches as they were known during the period of the report's development.



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Section I:

Introduction

In *A Dictionary of Public Health*, John Last¹ defines public health as:

“an organized activity of society to promote, protect, improve, and when necessary, restore the health of individuals, specified groups, or the entire population...The term “public health” can describe a concept, a social institution, a set of scientific and professional disciplines and technologies, and a form of practice...It is a way of thinking, a set of disciplines, an institution of society, and a manner of practice”.

On a daily basis, Ontario’s public health sector contributes to keeping Ontarians healthy and safe through health protection, disease prevention and management, and health promotion activities. The essential day-to-day work of the public health sector often goes unnoticed as many potential health threats or conditions are contained or averted by routine prevention, health protection, health promotion, as well as surveillance and management activities carried out by public health organizations across Ontario.

Some of the great accomplishments of public health in the twentieth century include the virtual elimination of polio in Canada, the pasteurization of milk, the disinfection and fluoridation of drinking water, and the identification and prevention of tobacco-related illness. These examples demonstrate the contribution that public health has made to protect the health of the population.

A strong public health sector is vital to a healthy and safe Ontario population and yet we tend not to think about it except in times of crisis. The anonymity of the public health sector disappeared quickly with the gastroenteritis outbreaks in Walkerton in 2000 and the Severe Acute Respiratory Syndrome (SARS) crisis in 2003. These two events revealed serious weaknesses in the province’s public health sector at the time.

Key reports that resulted from the Walkerton incident (the O’Connor Reports^{2,3}) and SARS (the Walker,^{4,5} Naylor,⁶ and Campbell^{7,8,9} reports) provided a range of recommendations for renewal of public health in Canada and specifically in Ontario. In response, the government of Ontario announced Operation Health Protection¹⁰ in 2004. The Operation Health Protection (OHP) action plan focused on revitalizing the public health sector, preventing future health threats, and promoting a healthy Ontario. The plan also included a commitment to produce an annual Ontario public health performance report.

Ontario has made significant progress delivering on the commitments made in the OHP. Ontario’s continued commitment to build a strong, flexible, and responsive public health sector has been demonstrated through initiatives such as:

- amending the *Health Protection and Promotion Act* (HPPA)¹¹ to modernize the legislation
- creating the Ontario Agency for Health Protection and Promotion
- increasing provincial funding to public health units
- developing new standards for public health, which strengthen public health sector accountability

Another outcome of OHP was the establishment of the Capacity Review Committee (CRC). The committee was tasked with making recommendations to government on long-term strategies to revitalize public health in Ontario. The committee delivered its final report in 2006, which included a recommendation to adopt a comprehensive public health performance management system.¹² Public reporting was seen as an important tool within this system to demonstrate accountability and measure performance.

Ontario has responded to the need to improve performance management in public health by initiating work on the development of a public health performance management system. This system is intended to enable the public health sector to demonstrate its achievements in terms of improvements in both outcomes and services over time.

The introduction of the new performance management system is intended to move Ontario away from focusing primarily on compliance with processes, towards an emphasis on tracking outcomes. As the performance management system continues to be developed, improved measures of outcomes will follow.

This initial report provides a snapshot of Ontario's public health sector. It provides an overview of the scope of public health and profiles the local operational context of public health program and service delivery. It is a first step in understanding the current work of public health and will inform the discussion as Ontario moves towards a performance management system for public health.

This report also serves an important purpose in raising awareness of the vital role public health plays in protecting the health of Ontarians and in contributing to the provincial health system as a whole.

Towards Performance Management

Ontario's efforts to introduce a performance management framework for public health are being informed by the Performance Management Working Group (PMWG).

Formed in 2007, PMWG members come from diverse backgrounds and include members of the Council of Ontario Medical Officers of Health (COMOH), the Association of Public Health Epidemiologists in Ontario (APHEO), Public Health Research, Education and Development (PHRED) Program, the Association of Local Public Health Agencies (ALPHA), and local public health units.

The group also includes representatives from the Ministry of Health and Long-Term Care, the Ministry of Health Promotion and the Ministry of Children and Youth Services – the three ministries that share responsibility for providing funding and policy direction to public health units. The group's advice has informed the development of this report as well as continuing to address the larger performance management framework for public health.

Section II:

Overview of the Public Health Sector

Scope of Public Health

The World Health Organization (WHO) defines public health as “a social and political concept aimed at improving health, prolonging life and improving the quality of life among whole populations through health promotion, disease prevention and other forms of health intervention.”¹³ The WHO notes a distinction between the traditional model of public health and an emerging concept of public health, which emphasizes:

- a significantly different understanding of how lifestyles and living conditions (social, economic and physical environments) determine health status
- the need to mobilize resources and make sound investments in policies, programs and services which create, maintain and protect health

The public health sector has contributed to improving the health of Ontarians through initiatives such as childhood immunizations, the control of infectious diseases, supporting parenting/early childhood development, addressing oral health, ensuring safe water, education and inspections related to safe food handling, the promotion of healthy sexuality, reproductive and child health, the prevention of injury, and the prevention of chronic diseases through initiatives such as tobacco control and promotion of healthy eating.

Public health also contributes to the health of Ontarians by complementing the work of other parts of the health care system. Through its work in addressing the determinants of health and reducing health risks to the population, public health contributes to reducing the need for other health care services and limiting the consequences of poor health including:

- the need for acute medical care
- long-term consequences of illness and injury, including the severity and incidence of diseases and disability
- reduced income or loss of employment
- premature mortality

The *public health system* consists of governmental, non-governmental, and community organizations operating at the local, provincial, and federal levels. However, the prime responsibility for program delivery in Ontario lies with local boards of health, which comprise the *public health sector*. Provincial and federal level organizations play an important role in setting policy, providing funding, issuing directives about specific programs, services and situations, as well as coordination across jurisdictions.

There are exceptions to this indirect support of the provincial and federal governments, such as the work of the Canadian Food Inspection Agency, which has the authority to take direct action at the community level when necessary to protect the food supply. In addition, First Nations Band Councils and the federal government have the responsibility for much of the delivery of public health programs on reserves.

In Ontario, the role of the provincial government is to:

- establish overall strategic direction and provincial priorities for public health
- develop legislation, regulations, standards, policies, and directives to support those strategic directions
- monitor and report on the performance of the public health sector and the health of Ontarians with regard to public health issues
- establish funding models and levels of funding for public health service delivery
- ensure that ministry, public health sector and health care system strategic directions and expectations are met

Ontarians are served by 36 local boards of health that collectively cover the entire province and are individually responsible for serving the population within their geographic borders. Approximately two-thirds of Ontario's boards of health are autonomous bodies created to provide public health services in their jurisdictions. For the remainder, municipal or regional councils act as the board of health.

All boards of health in Ontario and their staff:

- have the same statutory responsibilities under the HPPA for delivering public health programs and services within their communities
- must comply with over fifty acts and regulations
- must deliver the same core set of services according to the Ontario Public Health Standards¹⁴ (OPHS); local service delivery models vary based on community need, geography and other local factors
- deliver other optional programming, with funding from a variety of sources, to address local community needs and priorities

Within this document, the term “board of health” has the meaning assigned to it in Section 1 of the HPPA, and refers to either the legal entities that provide public health programs and services within a specific geographic region or to the governing body of the organization, depending on the context. The term “public health unit” is used to refer to the staff complement of the organization who deliver the programs and services, which is usually headed by a medical officer of health or by a shared leadership model of a medical officer of health and a chief executive officer.

Legislative Framework for Public Health

Ontario's HPPA provides the legislative mandate for boards of health. The guiding purpose of the HPPA is to “provide for the organization and delivery of public health programs and services, the prevention of the spread of disease and the promotion and protection of the health of the people of Ontario.”¹¹

Part II, Section 5 of the HPPA specifies that boards of health must provide or ensure the provision of specific public health programs and services. The OPHS are published by the Minister of Health and Long-Term Care under his/her authority in Section 7 of the HPPA and specify the minimum mandatory programs and services with which all boards of health must comply.

Determinants of Health

The health of individuals and communities is significantly influenced by complex interactions between social and economic factors, the physical environment, and individual behaviours and living conditions. These factors are referred to as the determinants of health, and together they play a key role in determining the health status of the population as a whole. Determinants of health include the following:

- income and social status
- social support networks
- education and literacy
- employment/working conditions
- social and physical environments
- personal health practices and coping skills
- healthy child development
- biology and genetic endowment
- health services
- gender
- culture
- language

Public health works to address the determinants of health as the underlying causes of health inequities. This approach is reinforced in the OPHS, which require the following types of activities by public health units:

- identification of priority populations
- adapting programs and service delivery to meet locally identified priority needs
- assessment and sharing information of health inequities
- raising awareness with community decision makers and partners

These actions will foster more comprehensive solutions that will help improve the immediate and long-term health of Ontarians. The OPHS incorporate and address the determinants of health, and identify a broad range of population-based activities designed to promote health and reduce health inequities by working with community partners.

Public Health Programs and Services in Ontario

In addition to delivering programs and services to meet local contexts and situations, the scope of public health programs and services, as articulated in the OPHS, encompasses:

Chronic Diseases and Injuries:	Chronic Disease Prevention Prevention of Injury and Substance Misuse
Family Health:	Reproductive Health Child Health
Infectious Diseases:	Infectious Diseases Prevention and Control Rabies Prevention and Control Tuberculosis Prevention and Control Sexual Health, Sexually Transmitted Infections, and Blood-borne infections (including HIV) Vaccine Preventable Diseases
Environmental Health:	Food Safety Safe Water Health Hazard Prevention and Management
Emergency Preparedness:	Public Health Emergency Preparedness

Health Unit Profiles

Each of Ontario's 36 public health units must respond to unique demographics, social conditions and health needs within their community. The health unit profile information shown in Table 1: Health Unit Profiles describes the local service delivery environment for each public health unit in Ontario. The table provides context for the indicator data included in Section IV of the report. Each of the variables in the table underscores the fact that the delivery of public health programs and services in Ontario occurs in significantly different, multi-faceted and complex physical, cultural, social and economic environments.

For each variable, the provincial totals or averages, the minimum value, and the maximum value are shown. The Table is organized to show the public health units according to their peer groups. A peer group is a cluster of public health units, identified by Statistics Canada¹⁵ as having similar social, demographic and economic characteristics. Appendix 1 provides additional information on the definitions of peer groups. Appendix 2 provides information on the variable definitions and data sources.



Table 1: Health Unit Profiles

Peer Group	Variable		Size of Region (km ²)	Population (2007)	Population Growth Rate (2002-2007)	Population Density (km ²) (2007)	% Immigrants	# First Nations	Employment Rate	Housing Affordability	% Persons under 18 years of age in Low Income Households (after tax)	% with Post-Secondary Education	Size of Birth Cohort (2007)	% Francophone Population
	Public Health Unit													
Rural Northern Regions	1	Northwestern Health Unit	171,288	80,042	-3.2%	0.5	5.5%	39	60%	16.9%	6.5%	49.2%	973	2.3%
	2	Porcupine Health Unit	266,291	87,305	-4.5%	0.3	3.2%	10	57%	19.7%	10.8%	51.8%	1,063	48.2%
Mainly Rural	3	The Eastern Ontario Health Unit	5,308	199,227	1.5%	37.5	6.0%	1	61%	23.7%	9.1%	51.1%	2,015	42.0%
	4	Elgin-St. Thomas Health Unit	1,881	90,758	6.2%	48.3	13.2%	0	64%	22.2%	7.4%	50.0%	1,091	1.1%
	5	Grey Bruce Health Unit	8,586	161,896	1.2%	18.9	8.4%	2	61%	22.8%	7.0%	53.4%	1,356	1.0%
	6	Haldimand-Norfolk Health Unit	2,858	111,684	2.2%	39.1	11.1%	0	62%	21.9%	7.4%	52.2%	1,008	1.2%
	7	Haliburton, Kawartha, Pine Ridge District Health Unit	8,988	175,187	3.4%	19.5	9.6%	1	57%	22.9%	8.8%	53.1%	1,369	1.3%
	8	Huron County Health Unit	3,397	61,373	-1.0%	18.1	8.0%	0	65%	19.4%	5.8%	48.7%	569	0.8%
	9	Leeds, Grenville and Lanark District Health Unit	6,329	170,205	2.1%	26.9	7.6%	0	60%	22.5%	6.8%	57.5%	1,434	3.7%
	10	Oxford County Health Unit	2,039	106,574	2.9%	52.3	10.9%	0	66%	20.4%	5.8%	49.5%	1,214	1.2%
	11	Perth District Health Unit	2,218	77,156	0.3%	34.8	9.4%	0	70%	20.2%	5.7%	49.4%	862	0.6%
	12	Renfrew County and District Health Unit	14,980	100,468	0.2%	6.7	6.2%	1	58%	19.4%	7.6%	51.7%	1,020	5.6%
	13	Simcoe Muskoka District Health Unit	8,731	494,081	8.0%	56.6	11.8%	4	64%	26.1%	7.4%	55.9%	4,910	2.7%
Sparsely Populated Urban-Rural Mix	14	The District of Algoma Health Unit	44,308	119,121	-1.8%	2.7	9.7%	8	52%	19.7%	13.1%	56.1%	1,028	7.4%
	15	North Bay Parry Sound District Health Unit	16,802	125,383	0.1%	7.5	5.8%	6	55%	25.3%	11.6%	56.3%	1,058	18.4%
	16	Sudbury and District Health Unit	46,475	198,265	0.4%	4.3	6.2%	13	57%	20.9%	11.0%	58.1%	1,849	26.8%
	17	Thunder Bay District Health Unit	235,531	155,079	-3.5%	0.7	9.3%	25	58%	19.9%	11.3%	57.2%	1,530	4.2%
	18	Timiskaming Health Unit	14,125	34,564	-4.4%	2.4	4.1%	2	54%	19.6%	8.6%	52.5%	297	25.2%
	Ontario				5.8%	14.1	28.3%		63%	27.7%	13.7%	61.4%		4.4%
	Ontario Total		907,574	12,803,861				127					151,304	
	Ontario Minimum		630	34,564	-4.5%	0.3	3.2%	0	52%	16.9%	5.7%	48.7%	297	0.6%
	Ontario Maximum		266,291	2,651,717	20.8%	4,207.9	50.0%	39	70%	36.5%	25.4%	71.6%	31,581	48.2%

Table 1: Health Unit Profiles (cont'd)

Peer Group	Variable		Public Health Unit	% Speaking neither English nor French	Cost of Nutritious Food Basket for a Family of Four (2008)	# Food Premises (2006)	# Long-term Care Homes	# Hospital Sites	# Licenced Day Nurseries	# Personal Service Settings (estimated)	# Schools	# School Boards	# Small Drinking Water Systems (2008)	# Municipalities	Board of Health Governance Model
Rural Northern Regions	1	Northwestern Health Unit	0.7%	\$176	512	12	8	53	95	48	4	1,196	19	Autonomous	
	2	Porcupine Health Unit	0.3%	\$157	641	13	11	28	186	75	9	369	13	Autonomous	
Mainly Rural	3	The Eastern Ontario Health Unit	0.2%	\$144	973	18	4	61	343	136	4	660	15	Autonomous	
	4	Elgin-St. Thomas Health Unit	0.9%	\$140	552	8	1	12	82	36	2	110	8	Autonomous	
	5	Grey Bruce Health Unit	0.3%	\$145	1,567	30	11	71	281	69	3	1,304	17	Autonomous	
	6	Haldimand-Norfolk Health Unit	0.5%	\$134	954	10	3	24	148	55	2	344	2	Single-Tier	
	7	Haliburton, Kawartha, Pine Ridge District Health Unit	0.1%	\$141	1,636	20	5	71	256	77	4	924	12	Autonomous	
	8	Huron County Health Unit	0.7%	\$139	443	9	5	12	103	34	2	256	9	Autonomous/ Integrated	
	9	Leeds, Grenville and Lanark District Health Unit	0.1%	\$138	1,253	14	9	69	227	84	3	825	22	Autonomous	
	10	Oxford County Health Unit	0.4%	\$136	603	19	3	33	121	53	3	216	8	Regional	
	11	Perth District Health Unit	0.7%	\$137	450	10	3	25	104	37	2	398	6	Autonomous	
	12	Renfrew County and District Health Unit	0.1%	\$141	798	14	5	25	137	61	7	719	18	Autonomous	
	13	Simcoe Muskoka District Health Unit	0.3%	\$134	3,782	29	7	142	610	209	6	1,483	24	Autonomous	
Sparsely Populated Urban-Rural Mix	14	The District of Algoma Health Unit	0.4%	\$144	880	12	6	53	374	86	4	649	22	Autonomous	
	15	North Bay Parry Sound District Health Unit	0.1%	*	968	11	5	57	178	79	5	999	31	Autonomous	
	16	Sudbury and District Health Unit	0.2%	\$141	1,286	11	8	98	350	129	10	790	19	Autonomous	
	17	Thunder Bay District Health Unit	0.6%	\$157	1,737	15	6	45	223	86	6	791	15	Autonomous	
	18	Timiskaming Health Unit	0.0%	\$143	404	8	3	21	54	29	4	225	24	Autonomous	
	Ontario		2.2%	\$141											
	Ontario Total				76,163	777	209	4,620	18,560	4,927	154	17,879	413		
	Ontario Minimum		0.0%	\$130	404	7	1	12	54	29	2	0	1		
	Ontario Maximum		5.3%	\$176	13,367	86	21	924	3,469	808	10	1,483	31		

* Health Unit did not have a Registered Dietitian in 2008 and therefore data is unavailable. The 2007 amount was \$130.65.

Table 1: Health Unit Profiles (cont'd)

Peer Group	Variable		Size of Region (km ²)	Population (2007)	Population Growth Rate (2002-2007)	Population Density (km ²) (2007)	% Immigrants	# First Nations	Employment Rate	Housing Affordability	% Persons under 18 years of age in Low Income Households (after tax)	% with Post Secondary Education	Size of Birth Cohort (2007)	% Francophone Population
		Public Health Unit												
Urban/Rural Mix	19	Brant County Health Unit	1,129	136,865	4.6%	121.3	12.9%	2	64%	23.4%	12.1%	52.1%	1,444	1.2%
	20	Chatham-Kent Health Unit	2,471	109,612	-1.3%	44.4	10.1%	2	61%	22.3%	10.1%	49.0%	1,165	3.0%
	21	City of Hamilton Health Unit	1,117	519,741	1.0%	465.2	25.4%	0	60%	27.4%	18.6%	58.1%	5,416	1.5%
	22	Hastings and Prince Edward Counties Health Unit	7,028	163,120	2.2%	23.2	8.2%	1	58%	24.2%	10.2%	52.5%	1,582	2.4%
	23	Kingston, Frontenac and Lennox and Addington Health Unit	6,449	187,843	0.4%	29.1	11.4%	0	60%	26.3%	9.5%	61.8%	1,763	2.9%
	24	Lambton Health Unit	3,002	132,228	0.0%	44.1	11.6%	3	60%	19.1%	7.8%	58.1%	1,191	2.5%
	25	Middlesex-London Health Unit	3,317	438,438	2.9%	132.2	20.0%	3	63%	25.8%	12.5%	61.5%	4,858	1.6%
	26	Niagara Regional Area Health Unit	1,854	433,946	1.2%	234.0	18.0%	0	61%	25.4%	10.5%	56.1%	3,906	3.6%
	27	Peterborough County-City Health Unit	3,806	133,583	1.4%	35.1	9.5%	2	58%	26.8%	9.7%	58.3%	1,188	1.3%
Urban Centres	28	Durham Regional Health Unit	2,523	595,354	10.7%	236.0	20.3%	1	67%	25.9%	8.9%	60.1%	6,352	2.0%
	29	Halton Regional Health Unit	967	468,980	16.5%	484.9	24.8%	0	69%	23.3%	7.8%	69.3%	5,645	2.1%
	30	City of Ottawa Health Unit	2,778	846,169	3.5%	304.6	22.3%	0	65%	24.4%	15.2%	71.6%	9,245	18.6%
	31	Peel Regional Health Unit	1,242	1,296,505	19.7%	1,043.9	48.6%	0	67%	32.0%	14.5%	62.9%	16,345	1.3%
	32	Waterloo Health Unit	1,369	496,370	7.0%	362.7	22.3%	0	68%	23.1%	9.1%	58.1%	6,077	1.5%
	33	Wellington-Dufferin-Guelph Health Unit	4,142	265,319	5.6%	64.1	16.1%	0	69%	24.1%	6.7%	57.4%	2,891	1.3%
	34	Windsor-Essex County Health Unit	1,851	403,797	1.8%	218.1	22.4%	0	60%	23.7%	12.2%	55.4%	4,370	3.6%
	35	York Regional Health Unit	1,762	975,906	20.8%	553.9	42.9%	1	67%	29.7%	11.5%	67.1%	10,837	1.1%
Metro Centre	36	City of Toronto Health Unit	630	2,651,717	1.3%	4,207.9	50.0%	0	60%	36.5%	25.4%	66.4%	31,581	1.5%
	Ontario				5.8%	14.1	28.3%		63%	27.7%	13.7%	61.4%		4.4%
	Ontario Total		907,574	12,803,861				127					151,304	
	Ontario Minimum		630	34,564	-4.5%	0.3	3.2%	0	52%	16.9%	5.7%	48.7%	297	0.6%
	Ontario Maximum		266,291	2,651,717	20.8%	4,207.9	50.0%	39	70%	36.5%	25.4%	71.6%	31,581	48.2%

Table 1: Health Unit Profiles (cont'd)

Peer Group	Variable		% Speaking neither English nor French	Cost of Nutritious Food Basket for a Family of Four (2008)	# Food Premises (2006)	# Long-term Care Homes	# Hospital Sites	# Licenced Day Nurseries	# Personal Service Settings (estimated)	# Schools	# School Boards	# Small Drinking Water Systems (2008)	# Municipalities	Board of Health Governance Model
	Public Health Unit													
Urban/Rural Mix	19	Brant County Health Unit	0.4%	\$149	786	7	2	30	200	64	3	114	2	Autonomous
	20	Chatham-Kent Health Unit	0.5%	\$138	808	8	3	48	189	50	3	94	1	Autonomous/ Integrated
	21	City of Hamilton Health Unit	1.7%	\$136	2,988	29	8	204	717	184	4	246	1	Single-Tier
	22	Hastings and Prince Edward Counties Health Unit	0.2%	\$137	1,265	26	5	65	204	78	5	580	17	Autonomous
	23	Kingston, Frontenac and Lennox and Addington Health Unit	0.3%	\$142	1,100	11	4	95	286	92	4	805	9	Autonomous
	24	Lambton Health Unit	0.2%	\$135	640	10	3	51	140	60	4	64	11	Autonomous/ Integrated
	25	Middlesex-London Health Unit	1.1%	\$139	2,714	18	8	133	550	164	4	507	9	Autonomous
	26	Niagara Regional Area Health Unit	0.6%	\$135	2,655	46	10	154	700	196	4	294	12	Regional
	27	Peterborough County-City Health Unit	0.1%	\$145	704	17	1	50	287	55	4	494	9	Autonomous
Urban Centres	28	Durham Regional Health Unit	0.5%	\$141	3,349	26	6	169	646	214	6	395	8	Regional
	29	Halton Regional Health Unit	0.8%	\$133	2,655	18	4	250	516	147	4	261	4	Regional
	30	City of Ottawa Health Unit	1.3%	\$140	5,723	40	10	326	1,100	306	4	476	1	Single-Tier
	31	Peel Regional Health Unit	3.7%	\$130	5,013	36	3	433	1,200	386	4	130	3	Regional
	32	Waterloo Health Unit	1.5%	\$141	2,175	33	3	123	707	173	4	148	7	Regional
	33	Wellington-Dufferin-Guelph Health Unit	0.8%	\$149	1,460	30	8	77	327	97	5	393	16	Autonomous
	34	Windsor-Essex County Health Unit	1.7%	\$135	2,455	24	3	163	500	171	4	61	9	Autonomous
	35	York Regional Health Unit	4.0%	\$143	6,867	49	4	425	2,950	299	4	559	9	Regional
Metro Centre	36	City of Toronto Health Unit	5.3%	\$136	13,367	86	21	924	3,469	808	4	0	1	Semi-Autonomous
		Ontario	2.2%	\$141										
		Ontario Total			76,163	777	209	4,620	18,560	4,927	154	17,879	413	
		Ontario Minimum	0.0%	\$130	404	7	1	12	54	29	2	0	1	
		Ontario Maximum	5.3%	\$176	13,367	86	21	924	3,469	808	10	1,483	31	



Section III:

Performance of the Public Health Sector

Report Development

The process of developing this report began with careful consideration of how public reporting contributes to performance management. Meeting the longer term objective of publishing provincial performance reports reflective of the public health mandate will require time and resources to develop new measures of program outcomes and to address data collection issues.

While this report is not intended as a performance report, it does provide a status update on a range of indicators related to public health practice. Over time, as new data sources and indicators are developed, these basic indicators may be replaced by more appropriate measures. The development of this report was informed by the decision to avoid trying to directly link the indicators to the standards in the OPHS, which were released during the report's development. This decision was made because it was seen as inappropriate to begin to publicly report on local public health performance until public health units have had time to adapt to the new standards and begin measuring their impact at the outcome level. These outcome level measures will need to be identified and developed as this public health performance management work continues.

In presenting the scope of public health in Ontario at both the provincial and local levels, an important consideration was to use reliable data that could be presented at the health unit level. The selection of indicators, therefore, was contingent upon the availability of reliable and comprehensive data. During the indicator selection process a wide range of indicators, other than those presented, were considered for inclusion but were not selected for a variety of reasons, including unavailability of consistent and reliable data.

To guide the selection of indicators for the report, several different frameworks, or approaches to performance management indicator reporting were evaluated by the PMWG, including:

- balanced scorecard approach
- strategy mapping approach
- attributes of a high performing system

Through discussion and research on the use of these frameworks in other sectors and other jurisdictions, it was determined that each of these approaches has merits and limitations when applied to the public health sector in Ontario.

Balanced Scorecard Approach

The Balanced Scorecard, as developed by ICES for public health, identifies four quadrants:

- 1) Health Determinants and Status, 2) Community Engagement, 3) Resources and Services, 4) Integration and Responsiveness for the reporting of information on a system or organization.¹⁶

Several public health units have used the Balanced Scorecard approach for local public reporting in the recent past. However, the lack of consistent and available data for all health units for two of the four quadrants (Community Engagement, and Integration and Responsiveness) would compromise the usefulness of this tool for provincial reporting at this time.

Strategy Mapping Approach

A strategy mapping approach was explored as a framework to guide measurement of performance in public health. This approach was helpful in understanding the strategic components of public health, but was found to be too high level for use as a framework for this report.

Attributes of a High Performing System

Determining the “attributes of a high performing system” that could be used in relation to the public health sector was approached by first researching the performance dimensions used in other jurisdictions and in other health care sector reports. Through discussion with the PMWG, the following five key dimensions were identified as appropriate for capturing the key aspects of Ontario’s public health sector.

- 1) Effectiveness
- 2) Capacity
- 3) Equitable
- 4) Community Partnership
- 5) Effectively Governed and Managed

Each of these approaches provides an organized way of presenting performance information. The PMWG determined that any one of these performance reporting approaches could be used as part of the process for selecting potential indicators. In fact, an exercise was completed which showed that the indicators that were available for use at this time could be mapped into all of the above frameworks. This shows that the different frameworks have significant conceptual overlap, and any one of them could be used to assess public health performance.

As the report development process continued, it was determined that focussing on performance reporting at this time was inappropriate, due mainly to the lack of performance related indicators and consistent data to support them, and because of the early stage of development of the new approach to performance management within the public health sector.

While the work of developing the report and the selection of indicators was informed by the earlier work on performance reporting frameworks, a decision was made to not use any specific reporting framework for this report.

Development of Indicators

Indicators used in existing reports on public health and population health were considered as part of the context for informing Ontario's public health reporting. These existing reports included:

- *Q Monitor: 2008 Report on Ontario's Health System* (Ontario Health Quality Council)¹⁷
- *Ontario Health System Scorecard 2007/08* (Ministry of Health and Long-Term Care)¹⁸
- *Healthy Canadians: A Federal Report on Comparable Health Indicators 2006* (Health Canada)¹⁹
- *Report on the State of Public Health in Canada 2008* (Public Health Agency of Canada)²⁰
- *Developing a Balanced Scorecard for Public Health* (Institute for Clinical Evaluative Sciences)¹⁶
- *Towards Outcome Measurement* (Public Health Research Education and Development Program)²¹

Many public health units have also produced and will continue to produce, local health status reports or performance reports, which may contain similar or related indicators with more analysis and interpretation on the impact of these measures within their communities.

The indicators presented in this report are intended to complement and enhance our understanding of the scope and impact of public health across Ontario, whereas many other health reports focus on information about the impact of the health care system or the health of the general population.

A modified Delphi process was employed to select indicators for this report, using a number of rationales, including:

- strategic priority for public health
- provides sector-level information
- provides local-level information
- the ability of public health to influence outcomes in this area
- whether the indicator relates to multiple program areas

Selection criteria that were used to determine the final set of indicators required that each indicator be:

- relevant, feasible, and scientifically sound
- supported by currently available data that could be reported at the health unit level
- part of a set which reflects the scope of public health practice
- meaningful in describing the scope of public health at both the provincial and local levels

This report will allow local public health officials and other stakeholders to consider how a board of health is currently providing programs and services alongside of its peers. But this is only a starting point which also requires an understanding of local context and conditions, which must be taken into account. It is expected that public reporting will evolve as performance management in public health develops, consistent with the OPHS and Protocols, and that this will drive the development of better indicators and new data sources.

Case Studies

Throughout the report, examples of public health initiatives that are currently in place at the local level have been included as case studies. The case studies provide additional context to the work of the public health sector in Ontario.

Case study submissions were requested from public health units to showcase innovative or exciting local practices. The case studies included in the report are drawn from among the large number of submissions received from public health units. A full list of submissions can be found in the report's webpage, at www.health.gov.on.ca/english/public/pub/pubhealth/init_report/index.html.

While examples of local practice are attributed to specific public health units, please note that this does not necessarily represent exclusive practice as other public health units may also deliver similar programs.

The case studies were selected to reflect a range of program areas, populations served, levels of interaction and types of local practice. While the case studies are intended to complement the information in the report, they do not relate directly to any specific indicators, particularly because they were selected as examples of the work of public health that is not currently well represented in the available data. There is no association between the indicators and the placement of the case studies.¹

¹ The names of the public health units used in this section reflect locally used health unit names, and may differ from the legal names used by the ministry, as shown in the data tables.

Section IV: Indicators

This section contains narratives for each of the 34 selected indicators. The narratives provide background and contextual information on the importance of the indicator in public health practice and give specific examples of the role of public health in relation to that indicator. There is some duplication of text for those indicators which are closely related, particularly in terms of describing public health interventions. This structure was chosen so that each indicator narrative would provide the same level of information when read independently.

The corresponding data for each indicator can be found in Table 2: Indicators by Public Health Unit and information on indicator definitions, including sources and data limitations, can be found in Appendix 3. The data were compiled from existing data sources, such as Statistics Canada or the ministry's Integrated Public Health Information System (iPHIS) system, with the exception of the governance and accountability data, which were collected directly from public health units via a survey.

For each indicator, the provincial totals or averages, the minimum value, and the maximum value are shown. The table is organized to show the public health units according to their peer groups, as described earlier in the health unit profile section.

Group A – Population Health Indicators

1. Teen Pregnancy
2. Low Birth Weight
3. Breastfeeding Duration
4. Postpartum Contact
5. Smoking Prevalence
6. Youth Lifetime Smoking Abstinence
7. Adult Heavy Drinking
8. Youth Heavy Drinking
9. Physical Activity Index
10. Healthy Body Mass Index
11. Fruit and Vegetable Consumption
12. Fall-Related Hospitalizations among Seniors
13. Enteric Illnesses Incidence
14. Respiratory Infection Outbreaks in Long-Term Care Homes
15. Chlamydia Incidence
16. Immunization Coverage for Hepatitis B
17. Immunization Coverage for Measles, Mumps and Rubella
18. Adverse Water Quality Incidents

Group B – Governance and Accountability Indicators

19. Total Board of Health Expenditures
20. Board of Health Expenditure Variance
21. Expenditures on Training and Professional Development
22. Number of FTEs by Job Category
23. Number of Vacant Positions by Job Category
24. Employment Status of Medical Officers of Health
25. Staff Length of Service
26. Familiarity with Public Health Unit Programs and Services
27. Issuance of a Health Status Report
28. Strategic Plan
29. Emergency Response Plan Tested
30. Accreditation Status
31. Medical Officer of Health Performance Evaluation
32. Medical Officer of Health Reporting Relationships
33. Board Member Orientation
34. Board Self-Evaluation



Table 2: Indicators by Public Health Unit

Peer Group	Indicator Public Health Unit		Population Health Indicators								
			Teen pregnancy (rate)	Low birth weight (rate)	Breastfeeding duration (percent)	Postpartum contact (percent)	Smoking prevalence (percent)	Youth lifetime smoking abstinence (percent)	Adult heavy drinking (percent)	Youth heavy drinking (percent)	Physical activity index (percent)
Rural Northern Regions	1	Northwestern Health Unit	60.8	20.9	48% ^E	94.2%	25% ^E	69%	48%	34% ^E	56%
	2	Porcupine Health Unit	53.1	33.9	33% ^E	86.8%	28%	48% ^E	49%	51%	51%
Mainly Rural	3	The Eastern Ontario Health Unit	32.5	36.7	35%	88.4%	24%	75%	45%	34% ^E	57%
	4	Elgin-St. Thomas Health Unit	28.2	49.0	44% ^F	89.4%	29%	67% ^F	36%	45%	53%
	5	Grey Bruce Health Unit	26.4	39.2	53%	83.6%	26%	77%	54%	27% ^E	52%
	6	Haldimand-Norfolk Health Unit	22.8	40.7	49% ^E	73.8%	28%	74%	48%	46% ^E	49%
	7	Haliburton, Kawartha, Pine Ridge District Health Unit	30.6	36.3	43%	83.4%	27%	56% ^E	46%	33% ^E	55%
	8	Huron County Health Unit	22.1	46.6	45% ^E	77.2%	23%	81%	43%	F	52%
	9	Leeds, Grenville and Lanark District Health Unit	25.3	36.2	54%	92.0%	29%	70%	50%	35% ^E	58%
	10	Oxford County Health Unit	33.5	42.2	53%	93.7%	34%	70%	42%	45% ^E	44%
	11	Perth District Health Unit	23.8	35.8	39% ^F	80.2%	18%	91%	41%	F	48%
	12	Renfrew County and District Health Unit	29.0	41.2	31% ^F	85.3%	30%	80%	43%	25% ^F	51%
	13	Simcoe Muskoka District Health Unit	26.8	41.0	50% [†]	92.7%	24%	80%	49%	34% ^E	57%
Sparsely Populated Urban-Rural Mix	14	The District of Algoma Health Unit	42.5	51.8	46% ^E	89.3%	29%	79%	48%	34%	52%
	15	North Bay Parry Sound District Health Unit	31.4	30.9	45% ^{†E}	90.3%	30%	62% ^E	43%	65%	54%
	16	Sudbury and District Health Unit	32.6	41.1	38%	95.0%	29%	62%	47%	44%	55%
	17	Thunder Bay District Health Unit	44.6	41.5	44%	87.5%	29%	85%	51%	18% ^F	52%
	18	Timiskaming Health Unit	42.6	41.8	F	75.4%	25%	81% ^E	50%	F	49%
	Ontario	25.7	47.9	50% ^E	80.8%	*	81%	37%	25%	50%	
	Ontario Total										
	Ontario Minimum	9.5	20.9	31% ^F	58.2%	16%	48% ^E	24%	12% ^F	43%	
	Ontario Maximum	60.8	67.5	65%	95.8%	34%	92%	54%	65%	64%	

Notes:

* Ontario value is not provided

† Note that an amalgamation occurred in these health units during the period for which data is shown

^E Warning of high variability associated with estimates^F Estimates of unreliable quality and could not be reported

Table 2: Indicators by Public Health Unit (cont'd)

Peer Group	Indicator Public Health Unit		Population Health Indicators								
			Healthy body mass index (percent)	Fruit and vegetable consumption (percent)	Fall-related hospitalizations among seniors (rate)	Enteric illnesses incidence (rate)	Respiratory infection outbreaks in LTC homes (number)	Chlamydia incidence (rate)	Immunization coverage for Hepatitis B (percent)	Immunization coverage for Measles, Mumps and Rubella (percent)	Adverse water quality incidents (number)
Rural Northern Regions	1	Northwestern Health Unit	33% ^E	36%	2,053.8	47.3	0	678.9	88.3%	95.7%	207
	2	Porcupine Health Unit	39%	41%	1,619.6	41.3	3	303.2	86.8%	97.8%	86
Mainly Rural	3	The Eastern Ontario Health Unit	38%	44%	1,596.1	78.3	23	99.7	78.6%	82.4%	172
	4	Elgin-St. Thomas Health Unit	51%	42%	1,335.7	51.9	8	101.6	67.9%	97.2%	35
	5	Grey Bruce Health Unit	39%	47%	1,792.5	119.7	14	159.1	90.7%	95.6%	234
	6	Haldimand-Norfolk Health Unit	42%	41%	1,641.2	89.7	1	102.3	78.3%	20.7%	101
	7	Haliburton, Kawartha, Pine Ridge District Health Unit	38%	38%	1,445.7	84.5	10	159.6	75.1%	95.6%	202
	8	Huron County Health Unit	38%	48%	2,030.7	164.1	8	78.9	87.1%	95.4%	165
	9	Leeds, Grenville and Lanark District Health Unit	48%	40%	1,618.9	56.2	8	122.8	74.0%	52.2%	153
	10	Oxford County Health Unit	42%	39%	1,850.3	72.6	9	126.4	81.2%	89.3%	81
	11	Perth District Health Unit	38%	46%	1,493.1	150.5	13	138.9	85.3%	96.0%	30
	12	Renfrew County and District Health Unit	35%	36%	2,371.5	75.8	4	149.0	76.9%	86.4%	179
	13	Simcoe Muskoka District Health Unit	42%	41%	1,581.6	64.4	17	169.9	70.9%	44.2%	446
Sparsely Populated Urban-Rural Mix	14	The District of Algoma Health Unit	38%	34%	1,576.8	46.1	0	276.9	89.0%	94.6%	138
	15	North Bay Parry Sound District Health Unit	44%	45%	1,741.6	48.4	16	238.3	79.6%	67.8%	210
	16	Sudbury and District Health Unit	43%	45%	1,571.9	40.0	9	292.6	77.7%	93.8%	217
	17	Thunder Bay District Health Unit	45%	38%	1,663.4	44.1	0	388.3	88.4%	97.4%	157
	18	Timiskaming Health Unit	36%	45%	2,022.3	64.1	8	203.5	73.6%	96.8%	43
	Ontario		47%	42%	1,309.5	88.7		219.8	79.8%	84.9%	
	Ontario Total						602			4,458	
	Ontario Minimum		33% ^E	29%	942.6	40.0	0	78.9	65.2%	20.7%	13
	Ontario Maximum		55%	50%	2,371.5	164.1	113	678.9	95.2%	97.8%	446

Notes:

* Ontario value is not provided

† Note that an amalgamation occurred in these health units during the period for which data is shown

^E Warning of high variability associated with estimates^F Estimates of unreliable quality and could not be reported

Table 2: Indicators by Public Health Unit (cont'd)

Peer Group	Indicator Public Health Unit		Governance and Accountability Indicators															
			Total BoH expenditures (\$M)	BoH expenditure variance (percent)	Expenditures on training and professional development (percent)	Number of FTEs by job category												
						Public Health Nurse	Registered Nurse	Registered Practical Nurse	Nurse Practitioner	Public Health Inspector	Dentist	Dental Hygienist/ Dental Assistant	Health Promoter	Dietitian/Nutritionist	Speech – Language Pathologist	Epidemiologist	Heart Health Coordinator	Librarian
Rural Northern Regions	1	Northwestern Health Unit	13.0	4.0%	0.7%	33.3	0.0	1.0	0.0	5.0	0.3	6.0	5.0	2.0	4.0	2.0	1.0	1.0
	2	Porcupine Health Unit	10.7	-6.2%	0.8%	38.0	9.0	0.0	2.0	12.0	0.0	4.0	2.0	4.0	6.0	1.0	1.0	0.0
Mainly Rural	3	The Eastern Ontario Health Unit	14.1	-1.7%	0.6%	47.7	0.0	1.4	0.0	7.0	0.1	0.9	21.7	7.0	9.6	1.5	1.0	1.0
	4	Elgin-St. Thomas Health Unit	6.4	-6.4%	0.6%	25.0	0.5	0.0	0.0	8.0	0.2	1.4	3.0	2.0	0.0	1.0	0.0	0.0
	5	Grey Bruce Health Unit	10.8	-1.2%	0.3%	39.3	2.0	2.0	0.0	16.0	0.0	3.0	1.3	1.0	0.0	1.5	0.0	0.0
	6	Haldimand-Norfolk Health Unit	7.0	-7.5%	0.9%	18.8	1.9	0.0	2.0	10.5	0.3	1.3	6.5	2.5	3.7	1.0	1.0	0.0
	7	Haliburton, Kawartha, Pine Ridge District Health Unit	15.1	-1.6%	0.5%	25.0	5.0	1.0	0.0	23.0	0.0	5.0	14.0	5.0	0.0	1.0	1.0	0.0
	8	Huron County Health Unit	6.2	-2.8%	0.9%	14.0	2.8	0.0	1.0	7.0	0.0	0.7	3.0	0.5	0.0	1.0	1.0	0.0
	9	Leeds, Grenville and Lanark District Health Unit	10.5	-2.0%	0.3%	43.4	1.0	1.0	0.0	18.1	0.1	3.7	0.0	3.0	5.0	1.0	1.0	0.0
	10	Oxford County Health Unit	6.8	-10.9%	0.5%	37.2	1.0	0.0	1.0	10.5	0.3	2.7	1.0	1.4	0.0	1.0	1.0	0.0
	11	Perth District Health Unit	6.6	-2.3%	0.7%	31.3	0.8	0.0	0.0	7.2	0.0	2.0	6.2	2.6	0.0	1.0	1.0	0.0
	12	Renfrew County and District Health Unit	6.2	-20.8%	0.7%	23.1	1.0	2.0	0.0	8.2	0.3	1.3	3.0	1.0	0.0	0.8	0.0	0.0
	13	Simcoe Muskoka District Health Unit	28.8	-1.2%	0.4%	82.9	4.5	8.9	2.0	33.5	0.4	13.9	7.0	6.0	0.0	2.0	2.0	0.6
Sparsely Populated Urban-Rural Mix	14	The District of Algoma Health Unit	16.6	0.0%	0.8%	48.0	2.5	2.6	2.2	10.6	0.3	6.7	1.0	2.0	2.8	0.3	1.0	0.0
	15	North Bay Parry Sound District Health Unit	14.3	-4.5%	0.3%	41.8	3.8	0.0	0.0	15.0	0.0	5.4	6.0	2.8	0.0	1.0	1.0	0.0
	16	Sudbury and District Health Unit	15.8	-1.9%	1.6%	86.4	1.1	0.0	2.5	25.0	0.0	6.0	8.0	7.9	0.0	2.0	1.0	1.0
	17	Thunder Bay District Health Unit	15.7	-2.5%	0.9%	47.5	6.9	2.0	1.0	13.0	0.0	2.4	3.0	2.5	6.2	1.0	1.0	1.0
	18	Timiskaming Health Unit	5.7	-1.8%	1.3%	16.4	2.0	0.0	1.0	4.2	0.1	1.5	6.4	1.0	2.0	1.0	1.0	0.0
	Ontario			-3.3%	0.7%													
	Ontario Total		837.7			2,717.2	180.1	100.3	28.5	900.5	54.9	286.4	416.7	203.1	64.3	72.6	29.0	20.1
	Ontario Minimum		5.7	-20.8%	0.1%	14.0	0.0	0.0	0.0	4.2	0.0	0.7	0.0	0.5	0.0	0.0	0.0	0.0
	Ontario Maximum		193.6	6.3%	1.7%	536.9	36.0	41.4	4.0	202.8	32.0	86.7	123.4	64.5	15.2	11.0	2.0	4.0

Table 2: Indicators by Public Health Unit (cont'd)

Peer Group	Indicator Public Health Unit		Governance and Accountability Indicators																
			Total number of vacant positions	Employment status of MOH (FTE)	Proportion of staff by length of service					Familiarity with public health unit programs and services (year)	Issuance of a health status report (year)	Strategic plan (2008)	Emergency response plan tested	Accreditation status	MOH performance evaluation	MOH reporting relationships		Board member orientation	Board self-evaluation (year)
					Up to 1 year	>1 year <5 years	>5 years <10 years	>10 years <20 years	>20 years							MOH reporting to the BoH (proportion)	MOH reporting to standing committee (proportion)		
Rural Northern Regions	1	Northwestern Health Unit	2.0	1.0	9%	41%	21%	18%	10%	1998	2007	Yes	Yes	Yes	Yes	13/14	5/8	Yes	2003
	2	Porcupine Health Unit	5.0	1.0	4%	43%	27%	10%	16%	2005	2006	No	Yes	No	Yes	7/9	6/8	Yes	n/a
Mainly Rural	3	The Eastern Ontario Health Unit	3.2	1.0	8%	39%	25%	16%	12%	2007	2007	Yes	Yes	Yes	Yes	13/13	-	Yes	2008
	4	Elgin-St. Thomas Health Unit	0.0	1.0	12%	35%	20%	24%	9%	2003	2006	No	No	No	Yes	9/9	-	Yes	n/a
	5	Grey Bruce Health Unit	2.0	1.0	10%	43%	22%	14%	11%	2005	2008	Yes	Yes	No	Yes	13/13	-	Yes	2006
	6	Haldimand-Norfolk Health Unit	3.0	1.0 ³	10%	37%	23%	11%	19%	No	2008	Yes	Yes	Yes	-	4/11	4/8	Yes	n/a
	7	Haliburton, Kawartha, Pine Ridge District Health Unit	3.0	1.0	11%	26%	22%	28%	12%	2007	2006	No	Yes	No	No	10/10	-	Yes	n/a
	8	Huron County Health Unit	3.0	1.0	21%	43%	25%	7%	5%	2008	2007	Yes	Yes	Yes	Yes	12/12	-	Yes	n/a
	9	Leeds, Grenville and Lanark District Health Unit	1.0	1.0	13%	28%	24%	22%	13%	2006	2008	Yes	Yes	Yes	Yes	9/10	-	Yes	n/a
	10	Oxford County Health Unit	1.5	0.5	17%	19%	36%	9%	19%	2008	2008	No	No	No	No	16/16	-	Yes	n/a
	11	Perth District Health Unit	0.0	0.3	12%	30%	28%	16%	14%	2007	2007	Yes	Yes	No	Yes	10/12	2/2	Yes	n/a
	12	Renfrew County and District Health Unit	4.0	1.0	15%	19%	16%	31%	18%	No	2007	No	Yes	No	Yes	7/7	-	Yes	n/a
	13	Simcoe Muskoka District Health Unit	0.0	1.0	6%	29%	31%	18%	16%	2007	2008	Yes	Yes	Yes	Yes	10/10	3/3	Yes	n/a
Sparsely Populated Urban-Rural Mix	14	The District of Algoma Health Unit	1.0	1.0	5%	29%	28%	22%	16%	2008	2006	Yes	Yes	Yes	Yes	10/10	-	Yes	n/a
	15	North Bay Parry Sound District Health Unit	3.0	1.0	6%	40%	29%	15%	10%	No	2008	No	Yes	No	Yes	8/8	16/16	Yes	n/a
	16	Sudbury and District Health Unit	3.4	1.0	13%	34%	28%	15%	11%	2006	2008	Yes	Yes	Yes	Yes	9/9	-	Yes	2005
	17	Thunder Bay District Health Unit	0.0	1.0	14%	20%	35%	16%	15%	2003	2007	Yes	Yes	No	Yes	10/10	-	Yes	2008
	18	Timiskaming Health Unit	2.5	1.0	2%	34%	29%	18%	17%	No	2008	No	Yes	Yes	Yes	9/9	-	Yes	n/a
	Ontario	103.4	34.2	9%	31%	28%	18%	14%				24/36 =Yes	29/36 =Yes	21/36 =Yes	32/36 =Yes			35/36 =Yes	12/36 =Yes
	Ontario Total																		
	Ontario Minimum	0.0	0.3	0%	19%	16%	7%	5%	1998	2000									2003
	Ontario Maximum	27.0	1.0	21%	43%	38%	31%	21%	2008	2008									2008

Table 2: Indicators by Public Health Unit (cont'd)

Peer Group	Indicator Public Health Unit		Population Health Indicators								
			Teen pregnancy (rate)	Low birth weight (rate)	Breastfeeding duration (percent)	Postpartum contact (percent)	Smoking prevalence (percent)	Youth lifetime smoking abstinence (percent)	Adult heavy drinking (percent)	Youth heavy drinking (percent)	Physical activity index (percent)
Urban/Rural Mix	19	Brant County Health Unit	41.5	53.7	35% ^E	65.9%	26%	69%	37%	35%	50%
	20	Chatham-Kent Health Unit	34.1	44.5	40% ^E	87.5%	30%	83%	24%	36% ^E	47%
	21	City of Hamilton Health Unit	34.4	52.8	43%	60.2%	27%	77%	43%	30% ^F	52%
	22	Hastings and Prince Edward Counties Health Unit	35.0	49.4	38% ^E	84.1%	26%	91%	39%	^F	58%
	23	Kingston, Frontenac and Lennox and Addington Health Unit	33.0	59.4	56%	88.5%	26%	87%	42%	34% ^F	55%
	24	Lambton Health Unit	32.9	44.3	53%	90.1%	31%	68%	47%	38% ^E	51%
	25	Middlesex-London Health Unit	34.5	48.8	55%	87.6%	20%	89%	40%	12%	52%
	26	Niagara Regional Area Health Unit	32.4	50.0	42%	95.4%	31%	79%	44%	33% ^F	58%
	27	Peterborough County-City Health Unit	41.8	67.5	65%	82.2%	23%	62% ^E	48%	39% ^E	64%
Urban Centres	28	Durham Regional Health Unit	24.9	44.0	52%	89.1%	23%	84%	41%	22%	52%
	29	Halton Regional Health Unit	9.5	32.6	50%	86.4%	19%	80%	45%	45%	56%
	30	City of Ottawa Health Unit	22.2	44.8	63%	94.9%	17%	80%	42%	31%	59%
	31	Peel Regional Health Unit	12.8	58.3	49%	58.2%	17%	92%	27%	13% ^F	47%
	32	Waterloo Health Unit	30.8	42.3	51%	95.8%	22%	79%	40%	21% ^E	48%
	33	Wellington-Dufferin-Guelph Health Unit	18.8	39.5	58%	83.9%	22%	82%	42%	19% ^E	62%
	34	Windsor-Essex County Health Unit	26.4	48.8	34%	90.0%	20%	82%	40%	35% ^F	50%
	35	York Regional Health Unit	12.1	42.2	54%	82.4%	16%	79%	26%	19% ^F	46%
Metro Centre	36	City of Toronto Health Unit	27.4	54.0	53%	72.8%	18%	82%	28%	17% ^F	43%
		Ontario	25.7	47.9	50%	80.8%	*	81%	37%	25%	50%
		Ontario Total									
		Ontario Minimum	9.5	20.9	31% ^F	58.2%	16%	48% ^E	24%	12% ^E	43%
		Ontario Maximum	60.8	67.5	65%	95.8%	34%	92%	54%	65%	64%

Notes:

* Ontario value is not provided

† Note that an amalgamation occurred in these health units during the period for which data is shown

^E Warning of high variability associated with estimates^F Estimates of unreliable quality and could not be reported

Table 2: Indicators by Public Health Unit (cont'd)

Peer Group	Indicator Public Health Unit		Population Health Indicators								
			Healthy body mass index (percent)	Fruit and vegetable consumption (percent)	Fall-related hospitalizations among seniors (rate)	Enteric illnesses incidence (rate)	Respiratory infection outbreaks in LTC homes (number)	Chlamydia incidence (rate)	Immunization coverage for Hepatitis B (percent)	Immunization coverage for Measles, Mumps and Rubella (percent)	Adverse water quality incidents (number)
Urban/Rural Mix	19	Brant County Health Unit	50%	43%	1,571.2	60.4	19	184.6	74.8%	70.5%	67
	20	Chatham-Kent Health Unit	49%	29%	1,669.4	44.8	22	149.6	79.6%	95.9%	35
	21	City of Hamilton Health Unit	41%	45%	1,287.7	63.2	14	236.1	75.9%	94.2%	88
	22	Hastings and Prince Edward Counties Health Unit	40%	46%	1,422.8	53.2	18	179.1	82.9%	92.2%	164
	23	Kingston, Frontenac and Lennox and Addington Health Unit	45%	43%	1,034.6	54.0	10	276.5	67.1%	83.3%	107
	24	Lambton Health Unit	45%	37%	1,372.4	47.5	0	163.0	67.5%	85.6%	13
	25	Middlesex-London Health Unit	48%	38%	1,230.7	84.9	36	249.9	–	97.1%	64
	26	Niagara Regional Area Health Unit	47%	44%	1,210.1	87.2	33	186.1	88.3%	95.5%	86
	27	Peterborough County-City Health Unit	49%	45%	1,444.3	83.3	10	233.0	81.6%	92.3%	99
Urban Centres	28	Durham Regional Health Unit	39%	42%	1,291.8	70.7	7	199.4	86.2%	88.2%	133
	29	Halton Regional Health Unit	52%	48%	1,425.3	86.8	25	106.3	95.2%	89.0%	82
	30	City of Ottawa Health Unit	48%	50%	1,196.7	91.5	52	208.4	65.2%	96.3%	121
	31	Peel Regional Health Unit	46%	42%	950.9	93.2	8	181.6	89.8%	45.5%	36
	32	Waterloo Health Unit	43%	41%	1,165.5	99.3	26	192.8	84.6%	92.1%	154
	33	Wellington-Dufferin-Guelph Health Unit	48%	50%	1,682.3	98.2	13	160.4	83.2%	85.9%	82
	34	Windsor-Essex County Health Unit	41%	34%	1,431.5	69.1	8	148.7	69.5%	87.0%	69
	35	York Regional Health Unit	52%	37%	942.6	94.4	37	134.9	79.1%	77.0%	121
Metro Centre	36	City of Toronto Health Unit	55%	40%	1,087.5	119.9	113	280.2	79.0%	89.9%	81
		Ontario	47%	42%	1,309.5	88.7		219.8	79.8%	84.9%	
		Ontario Total					602				4,458
		Ontario Minimum	33% ^E	29%	942.6	40.0	0	78.9	65.2%	20.7%	13
		Ontario Maximum	55%	50%	2,371.5	164.1	113	678.9	95.2%	97.8%	446

Notes:

* Ontario value is not provided

† Note that an amalgamation occurred in these health units during the period for which data is shown

^E Warning of high variability associated with estimates^F Estimates of unreliable quality and could not be reported

Table 2: Indicators by Public Health Unit (cont'd)

Peer Group	Indicator Public Health Unit		Governance and Accountability Indicators															
			Total BoH expenditures (\$M)	BoH expenditure variance (percent)	Expenditures on training and professional development (percent)	Number of FTEs by job category												
						Public Health Nurse	Registered Nurse	Registered Practical Nurse	Nurse Practitioner	Public Health Inspector	Dentist	Dental Hygienist/ Dental Assistant	Health Promoter	Dietitian/Nutritionist	Speech – Language Pathologist	Epidemiologist	Heart Health Coordinator	Librarian
Urban/Rural Mix	19	Brant County Health Unit	10.0	-0.2%	1.7%	37.2	0.0	0.0	1.5	8.0	1.0	7.2	6.0	3.0	0.0	1.0	1.0	0.0
	20	Chatham-Kent Health Unit	8.9	1.6%	0.4%	33.1	3.7	0.0	1.0	9.0	0.0	1.0	3.0	3.0	0.0	1.0	1.0	0.0
	21	City of Hamilton Health Unit	35.7	1.0%	1.1%	128.0	9.0	2.0	0.4	41.1	1.6	3.8	13.0	4.5	0.0	2.5	1.0	2.0
	22	Hastings and Prince Edward Counties Health Unit	11.3	-0.8%	0.7%	35.0	1.8	3.0	0.0	13.0	0.5	4.8	6.0	4.8	0.0	0.0	1.0	0.5
	23	Kingston, Frontenac and Lennox and Addington Health Unit	15.6	-10.2%	0.5%	49.6	1.6	4.8	0.0	11.0	0.2	4.0	6.0	6.0	4.8	1.5	1.0	1.0
	24	Lambton Health Unit	8.6	6.3%	0.7%	26.0	0.0	2.2	0.0	9.7	0.2	1.7	8.3	2.0	0.0	1.0	1.0	1.0
	25	Middlesex-London Health Unit	28.2	-7.0%	0.8%	99.8	2.0	0.0	1.1	26.5	1.0	8.6	3.0	4.0	15.2	2.0	0.0	1.0
	26	Niagara Regional Area Health Unit	28.9	-0.2%	0.7%	99.7	0.0	1.0	1.6	33.0	0.0	12.0	17.1	4.9	0.0	3.0	1.0	0.0
	27	Peterborough County-City Health Unit	10.3	0.4%	0.4%	15.9	4.3	1.0	0.0	10.1	0.1	1.7	11.3	2.9	0.0	1.0	0.0	0.0
Urban Centres	28	Durham Regional Health Unit	33.8	-3.4%	0.6%	118.0	36.0	0.0	1.0	45.0	1.0	13.0	0.0	4.8	0.0	4.6	0.0	1.0
	29	Halton Regional Health Unit	24.1	-3.0%	0.6%	73.5	13.5	5.0	1.7	29.1	1.0	6.8	7.3	3.8	0.0	2.0	1.0	0.0
	30	City of Ottawa Health Unit	46.0	-4.9%	0.3%	190.0	1.0	7.0	4.0	39.0	11.0	14.0	0.0	3.0	0.0	4.0	1.0	1.0
	31	Peel Regional Health Unit	61.7	-6.6%	0.6%	229.8	*	0.0	0.0	60.0	1.0	14.8	65.0	12.0	0.0	4.9	1.0	1.0
	32	Waterloo Health Unit	28.8	-2.5%	0.5%	80.0	11.2	0.0	0.5	26.0	0.5	7.5	26.5	4.7	0.0	3.0	1.0	1.0
	33	Wellington-Dufferin-Guelph Health Unit	17.0	0.0%	0.8%	59.8	7.5	0.0	1.0	18.5	0.4	3.9	2.8	4.0	3.0	2.0	1.0	1.0
	34	Windsor-Essex County Health Unit	17.0	-8.2%	0.1%	67.0	0.0	0.0	0.0	20.0	0.0	5.0	8.0	4.0	0.0	1.0	1.0	0.0
	35	York Regional Health Unit	47.7	-4.7%	0.4%	139.0	7.0	11.0	0.0	65.0	1.0	22.0	12.0	13.0	0.0	6.0	0.0	1.0
Metro Centre	36	City of Toronto Health Unit	193.6	-4.9%	0.2%	536.9	35.8	41.4	0.0	202.8	32.0	86.7	123.4	64.5	2.0	11.0	0.0	4.0
		Ontario		-3.3%	0.7%													
		Ontario Total	837.7			2,717.2	180.1	100.3	28.5	900.5	54.9	286.4	416.7	203.1	64.3	72.6	29.0	20.1
		Ontario Minimum	5.7	-20.8%	0.1%	14.0	0.0	0.0	0.0	4.2	0.0	0.7	0.0	0.5	0.0	0.0	0.0	0.0
		Ontario Maximum	193.6	6.3%	1.7%	536.9	36.0	41.4	4.0	202.8	32.0	86.7	123.4	64.5	15.2	11.0	2.0	4.0

* Ontario value is not provided

Table 2: Indicators by Public Health Unit (cont'd)

Peer Group	Indicator Public Health Unit		Governance and Accountability Indicators																
			Total number of vacant positions	Employment status of MOH (FTE)	Proportion of staff by length of service					Familiarity with public health unit programs and services (year)	Issuance of a health status report (year)	Strategic plan (2008)	Emergency response plan tested	Accreditation status	MOH performance evaluation	MOH reporting relationships		Board member orientation	Board self-evaluation (year)
					Up to 1 year	>1 year <5 years	>5 years <10 years	>10 years <20 years	>20 years							MOH reporting to the BoH (proportion)	MOH reporting to standing committee (proportion)		
Urban/Rural Mix	19	Brant County Health Unit	0.0	1.0*	5%	38%	31%	16%	10%	2007	2008	Yes	Yes	Yes	Yes	10/11	-	Yes	n/a
	20	Chatham-Kent Health Unit	1.0	1.0	6%	40%	27%	19%	9%	2008	2007	No	Yes	Yes	Yes	9/10	-	Yes	2007
	21	City of Hamilton Health Unit	9.7	1.0	10%	21%	31%	20%	18%	2008	2007	Yes	Yes	Yes	Yes	11/12	-	Yes	n/a
	22	Hastings and Prince Edward Counties Health Unit	1.4	1.0	10%	27%	28%	15%	19%	2008	2006	Yes	No	Yes	Yes	9/10	-	Yes	n/a
	23	Kingston, Frontenac and Lennox and Addington Health Unit	1.0	1.0	11%	27%	28%	20%	14%	2005	2008	Yes	Yes	Yes	Yes	9/9	-	Yes	2007
	24	Lambton Health Unit	0.0	0.4	0%	36%	27%	21%	17%	2008	2008	No	Yes	No	No	0/11	-	Yes	2008
	25	Middlesex-London Health Unit	0.0	1.0	14%	36%	22%	13%	16%	2002	2008	Yes	Yes	Yes	Yes	10/10	-	Yes	n/a
	26	Niagara Regional Area Health Unit	3.0	1.0	5%	21%	34%	20%	21%	2008	2008	Yes	Yes	Yes	Yes	16/16	16/16	Yes	2007
	27	Peterborough County-City Health Unit	0.4	1.0	12%	25%	22%	27%	14%	2005	2008	Yes	No	No	Yes	10/10	-	Yes	n/a
Urban Centres	28	Durham Regional Health Unit	2.8	1.0	6%	30%	37%	17%	10%	2008	2008	No	Yes	Yes	Yes	13/13	14/14	Yes	n/a
	29	Halton Regional Health Unit	0.0	1.0	14%	26%	30%	18%	11%	2004	2008	Yes	Yes	No	Yes	12/13	12/13	Yes	n/a
	30	City of Ottawa Health Unit	11.0	1.0	4%	20%	33%	25%	17%	2007	2006	No	Yes	Yes	Yes	-	10/18	No	n/a
	31	Peel Regional Health Unit	1.0	1.0	9%	36%	27%	19%	8%	2007	2007	Yes	No	Yes	Yes	12/13	-	Yes	n/a
	32	Waterloo Health Unit	0.0	1.0	6%	41%	26%	19%	9%	2008	2008	Yes	No	Yes	Yes	-	14/14	Yes	n/a
	33	Wellington-Dufferin-Guelph Health Unit	2.0	1.0	16%	28%	31%	16%	10%	2008	2006	Yes	Yes	Yes	Yes	9/10	9/11	Yes	2008
	34	Windsor-Essex County Health Unit	0.5	1.0	6%	31%	29%	16%	18%	2002	2000	No	No	No	Yes	10/10	5/5	Yes	2007
	35	York Regional Health Unit	27.0	1.0	10%	30%	38%	13%	9%	2008	2007	Yes	Yes	No	Yes	9/10	7/7	Yes	2008
Metro Centre	36	City of Toronto Health Unit	5.0	1.0	6%	23%	31%	23%	17%	2008	2008	Yes	Yes	No	Yes	10/10	-	Yes	n/a
		Ontario	103.4	34.2	9%	31%	28%	18%	14%			24/36 =Yes	29/36 =Yes	21/36 =Yes	32/36 =Yes			35/36 =Yes	12/36 =Yes
		Ontario Total																	
		Ontario Minimum	0.0	0.3	0%	19%	16%	7%	5%	1998	2000								2003
		Ontario Maximum	27.0	1.0	21%	43%	38%	31%	21%	2008	2008								2008

* Shared MOH 1 FTE between two health units



Group A

Population Health Indicators

1. Teen Pregnancy

The teen pregnancy rate indicator estimates *the number of pregnancies (resulting in live births, stillbirths, and therapeutic abortions) per 1,000 females age 15-19 years.*

Teen pregnancy poses increased health risks to both the mother and the child, including the following:

- pregnant teens have a greater risk of developing health problems such as anaemia, hypertension, eclampsia and depressive disorders^{22,23}
- children of teen mothers are more likely to have low birth weights, preterm births and, as a result, are more likely to experience increased mortality and childhood morbidities including developmental problems, learning difficulties, hearing and visual impairments, and chronic respiratory problems^{24,25}

The rate of teen pregnancy is significant from a public health and determinants of health perspective because:

- teen pregnancy is more common among disadvantaged teens^{26,27}
- pregnancy in the teen years can be a significant predictor of other social, educational and employment barriers in later life^{26,27}
- children of teen mothers have higher rates of becoming teen parents themselves, thus perpetuating the cycle of teen pregnancy^{28,29}

Ontario's public health units play a role in reducing the rate of teen pregnancy and promoting healthy pregnancies for those teens who do become pregnant. Public health units provide a comprehensive range of sexual health education and counselling services that aim to support young mothers to have positive health outcomes for themselves and their babies.

Specific public health initiatives include:

- healthy sexuality education and counselling
- the provision of low cost birth control supplies
- confidential and free sexual health clinic services
- building community partnerships with schools, hospitals, and community-based organizations to deliver healthy sexuality and reproductive health programs and services

Public health units may face specific challenges with community receptivity to sexual health education and clinic services – it is important to acknowledge that the acceptance of these services may vary across Ontario.

In 2007, the pregnancy rate in Ontario for women aged 15-19 was 25.7 per 1,000. Based on 36 public health units in Ontario, the highest rate was 60.8, and the lowest rate was 9.5 per 1,000 women aged 15-19.

Teen pregnancy rates have been on the decline in Canada in the last 25 years, with significant variation across provinces and territories. However, teen pregnancy has continued to be of significant concern in specific populations including socio-economically disadvantaged teens.

Food Security Case Studies

Having access to affordable healthy foods is an issue of public health concern, and **Peterborough County-City Health Unit** has been working to address this issue with its Food Security Community Partnership Project.

For more than a decade, the annual Nutritious Food Basket survey has identified that low-income residents in Peterborough City and County cannot afford an adequate diet once they have paid for housing and other basic needs. In response, the Peterborough County-City Health Unit rallied community partners to provide the Food Security Community Partnership Project (FSCPP), with a focus on community-based food programs and food skill development.

The FSCPP involves 5,000 adults and children living on low incomes in Peterborough City and County. The program targets priority populations, including those from: rural and First Nation communities, youth living independently, parents of young children, homeless and under-housed community members, and seniors living in isolated situations. The new partnerships allowed the program to expand its reach within these priority populations.

The project components include:

- **Advocacy** for improved incomes for people receiving social assistance and low wages.
- **Come Cook with Us** – Cooking sessions in which participants cook, enjoy a meal together, share healthy eating and food safety tips, and take home meals and a food voucher. Graduates are invited to join a monthly collective kitchen.
- **Food Box Programs** – Monthly boxes of staples and/or produce with a subsidy for low income clients.
- **Cooking up Employment** – Two community members work with the “Open Table Chef” to provide a free, nourishing meal to community members five days a week.
- **Frozen Meal Program** – The provision of nutritious meals, delivered to isolated rural community members in Peterborough County.

Evaluations of this initiative indicate that participants are making healthier food choices. Community response to the program has been remarkable, in both the numbers reached and in the stories from individuals whose lives have been impacted.

Another local example of work on food security is occurring in the **Huron County Health Unit**, with their Farm to Table Project. This network of community organizations, concerned about access to local, healthy food and the overall decline in agriculture in Huron and Perth Counties, aims to educate consumers about food, nutrition, and agricultural issues, and create new markets for local farmers.

Farm to Table’s central initiative is the monthly Huron Good Food Box program, which provides Huron County residents with a regular, affordable supply of local fresh fruits and vegetables. The program relies on volunteers, and annual sales volumes have grown since its inception in 2001, to more than 2,500 Good Food Boxes in 2007, to a customer base that included 25% of buyers with annual household incomes of less than \$20,000. More than 60% of users of the Huron Good Food Box program report they have increased their consumption of fruits and vegetables.

Case Study 1

2. Low Birth Weight

The low birth weight rate indicator estimates *the rate of singleton live births weighing 500-2499 grams immediately upon birth, based on the mother's usual place of residence per the total for singleton live births weighing at least 500 grams per 1,000 births.*

Low birth weight is considered one of the most important indicators of a newborn's chances of survival, with low birth weight being a major risk factor for perinatal and infant mortality.³⁰ Low birth weight babies are more likely to have health and developmental problems including learning difficulties, hearing and visual impairments, chronic respiratory problems such as asthma and chronic diseases later in life.^{31,32}

Low birth weight is also an important population health indicator as it occurs with greater prevalence in disadvantaged populations. Risk factors associated with low birth weight include:

- socio-economic disadvantage
- poor health and nutrition of women during pregnancy
- smoking while pregnant
- consumption of drugs and alcohol while pregnant
- experiencing abuse while pregnant^{33,34}

It has been demonstrated that maternal smoking is one of the most modifiable risk factors to prevent low birth weight babies in developed countries.^{35,36} This underscores the importance of programs and policies to prevent women from becoming smokers and encouraging those who do smoke to quit.

Public health programs and services provide education and resources to women of child bearing age to promote healthy nutrition prior to conception and during pregnancy, provide prenatal education, encourage pregnant women to access prenatal support services, and provide assessments to at-risk pregnant women to help ensure that they receive appropriate medical attention.

Public health interventions also address factors that influence health outcomes such as access to nutritious foods, smoking, substance misuse, and alcohol consumption during pregnancy.

In 2007, the rate of singleton live births in Ontario with a birth weight of less than 2500 grams was 47.9 per 1,000 births. Based on 36 public health units in Ontario, the highest rate of live births weighing under 2500 grams was 67.5 and the lowest rate was 20.9 per 1,000 births.

3. Breastfeeding Duration

The breastfeeding duration rate indicator estimates *the proportion of mothers age 15-55 years who breastfed (not exclusively) their last baby (born within the past five years) for a duration of six months or more.*

According to the WHO, “breastfeeding is the ideal way of providing young infants with the nutrients they need for healthy growth and development.”³⁷ Breast milk contains the ideal nutritional elements for proper digestion, brain development, and growth. Breast milk transmits a mother’s antibodies to her baby, helping to protect the baby against infections and illnesses. Studies also suggest that breastfeeding may protect infants against allergies and respiratory infections,³⁸ and may lower rates of type 2 diabetes later in the child’s life.³⁹ Additionally, breastfeeding forms a bond between a mother and her child that is thought to contribute to the healthy psychological development of the child.⁴⁰

Breastfeeding is not only beneficial for infants. Research suggests that breastfeeding may lower rates of certain types of ovarian and breast cancer and reduce the risk of osteoporosis in women who have breastfed.⁴¹

Most new mothers have the potential to breastfeed, giving their newborns breast milk which contains everything they need for a healthy start in life. The public health sector in Ontario helps to promote breastfeeding through:

- providing prenatal and parenting programs, services and supports
- distributing information regarding the benefits of breastfeeding through mass media
- offering breastfeeding support and counselling through phone lines, home visits, groups, and clinics
- providing referrals to professionals and community programming and services for breastfeeding support and information
- advocating and assisting in the development of policies to support breastfeeding in the workplace, restaurants, shopping malls and other public places

The data presented in Table 2: Indicators by Public Health Unit for the proportion of mothers in Ontario who breastfed their last baby for a duration of six months or more uses a combination of three sets of Canadian Community Health Survey data, collected over a span of 5 years. Because sample sizes of breastfeeding rates at the public health unit level can be quite small, it was necessary to combine these three sets of data in order to arrive at a stable figure for each public health unit.

Approximately 50% of mothers in Ontario breastfed their last baby for a duration of six months or more (over 3 cycles of the survey). Based on 36 public health units in Ontario, the highest estimated proportion of breastfeeding for six months or more was 65% and the lowest estimate was 31% for mothers who had given birth in the last five years at the time of the surveys.

In Ontario, the proportion of mothers breastfeeding for six months or more for each of the survey periods was as follows:

Canadian Community Health Survey Cycle 2.1 (2003) – 46.7%⁴²

Canadian Community Health Survey Cycle 3.1 (2005) – 50.8%⁴³

Canadian Community Health Survey 2007 – 53.1%⁴⁴

The indicator results demonstrate that improvements are being made in breastfeeding uptake and that there is more opportunity to encourage and support breastfeeding initiation and duration in Ontario, particularly at a time when hospital based supports for breastfeeding are limited.

Addressing Poverty Case Study

Grey Bruce Health Unit's Moving Forward program focuses on breaking the cycle of poverty by addressing systemic barriers that prevent marginalized individuals from obtaining adequate education and employment. Targeting high-risk young families, the program uses motivational interviewing to help clients recognize their readiness to change and to develop an action plan to achieve specific goals. Set-backs and relapses are common throughout the change process. Public health professionals support clients to evaluate their goals and reaffirm their action plans.

Grey Bruce Health Unit also provides tangible support through the provision of transportation, access to adequate childcare and by helping clients purchase affordable, appropriate interview clothing. All these elements increase the client's opportunities for employment and education.

Moving Forward works on many levels to address and improve determinants of health associated with poverty and access to education and employment opportunities.

Case Study 2

4. Postpartum Contact

The postpartum contact indicator is defined as *the percentage of families who consented to a post-partum phone call under the Healthy Babies Healthy Children (HBHC) program and who received a post-partum phone call or contact from the health unit within 48 hours of release from hospital after giving birth.*

The postpartum contact by a public health nurse is a universal component of the HBHC program where new mothers who consent are contacted within 48 hours of discharge from hospital or after a home birth, and offered a home visit, counselling, support and information about community services on parenting and healthy child development.

The data in Table 2: Indicators by Public Health Unit show the percentage of mothers contacted within 48 hours of hospital discharge. This definition is consistent with the target used by the HBHC program, and the HBHC Protocol⁴⁵ under the Child Health standard of the OPHS. It is important to note, however, that the method of contact under this definition includes all types of contact including person to person contact, phone messages, and letters; there is no way of ensuring that a message or letter was received by the new mother. This indicator therefore does not measure the effectiveness or success of the HBHC program. Rather, it gives an indication of the extent of work and resources expended by public health units attempting to make contact with every new mother in their community.

5. Smoking Prevalence

The smoking prevalence indicator estimates the *age-standardized proportion of people age 12 years and older who are current smokers (daily or occasional cigarette smokers)*.

Tobacco use is the number one preventable cause of premature death and illness in Ontario. Smoking accounts for approximately 13,000 deaths annually and results in a substantial burden on the health care system.⁴⁶

Public health units are key partners in the implementation of the Smoke-Free Ontario Strategy (SFOS).

The SFOS is focused on:

1. Prevention – preventing children and youth from starting to use tobacco products
2. Protection – eliminating involuntary exposure to second-hand smoke
3. Cessation – motivating and supporting people to quit tobacco use

Locally, public health units lead the delivery of several programs involving youth engagement, local tobacco control coordination and enforcement of the *Smoke-Free Ontario Act (SFOA)*.⁴⁷

The goal of these public health programs and services is to reduce the burden of preventable chronic diseases of public health importance. Public health units are responsible for:

- increasing public awareness of the importance of comprehensive tobacco control
- working with priority populations to adopt tobacco-free living
- ensuring tobacco vendors are in compliance with the SFOA
- reducing youth access to tobacco products

Based on 36 public health units in Ontario, in 2007 the highest proportion of current smokers among people age 12 years and older was 34% and the lowest was 16%.

6. Youth Lifetime Smoking Abstinence

The youth lifetime smoking abstinence indicator estimates *the proportion of young people age 12-19 years who have never smoked a whole cigarette*.

Tobacco use is the number one preventable cause of premature death and illness in Ontario. Smoking accounts for approximately 13,000 deaths annually and results in a substantial burden on the health care system.⁴⁶

Preventing children and youth from starting to use tobacco products is a key pillar of the Smoke-Free Ontario Strategy (SFOS). Research has shown that more than 80% of current and former smokers in Canada started smoking before the age of 20.⁴⁸ Thus, preventing adolescents from experimenting with tobacco products during adolescence is a key intervention to prevent them from smoking as adults – and to prevent morbidity and mortality from chronic disease.

Youth tobacco use is associated with a variety of personal, behavioural, environmental, and socio-demographic factors, including:

- lower self esteem⁴⁹
- lower academic achievement⁵⁰
- lower socio-economic status⁵¹

- peer and parental smoking⁴⁸
- use of alcohol, and marijuana⁵⁰

The goal of public health policies, programs and services is to reduce the burden of preventable chronic diseases of public health importance. Public health units are responsible for:

- increasing public awareness of the importance of comprehensive tobacco control
- working with youth to adopt tobacco-free living
- working with schools to educate students about the dangers of smoking
- ensuring tobacco vendors are in compliance with the SFOA
- reducing youth access to tobacco products

In 2007, 81% of youth age 12-19 years in Ontario had never smoked a whole cigarette. Based on 36 public health units in Ontario, the highest proportion was 92% and the lowest was 48% of youth age 12-19 years who have never smoked a whole cigarette.

The Low-Wage Worker Project Case Study

Public health programming that directly addresses the underlying social factors associated with poor health outcomes is an important practice area for public health units. As an example, in 2003, the **Sudbury & District Health Unit** (SDHU) staff and its university partners launched a major project to understand the health and wellness issues facing low-wage worker populations in the City of Greater Sudbury and to identify interventions that could be taken to improve their health, safety, and well-being.

A literature review revealed that research on public health interventions to improve the lives and working conditions of working poor people is limited. This made a series of needs assessment interviews fundamental to understanding the challenges faced by low-income workers and the possible interventions to address those challenges. As a result, nine focus groups were conducted with 23 key informants and 65 low-wage workers. Recommendations from the interviews included calls for:

- enhancement of existing health promotion, protection, and safety programs focused on the low-wage worker population
- development of community partnerships to advocate for and implement policy changes
- conducting more research on the needs of low-wage workers and the identification of interventions at the individual, workplace, community, and social policy levels.

These recommendations have implications for public health planners across Ontario. Full reports are available on the Sudbury & District Health Unit's website at <http://www.sdhu.com>.

Case Study 3

Crystal Meth Task Force Case Study

As new health concerns emerge in a community, public health units use their knowledge and skills to respond with creative community engagement strategies. For example, in 2005, The Toronto Star labelled Perth County the “Crystal Meth Capital” of Ontario. A series of methamphetamine lab discoveries and rising substance misuse rates had leaders scrambling to deal with this problem.

In response, the **Perth District Health Unit** became involved with the formation of the Perth County Task Force on Crystal Meth, which formed in 2005. By 2008, it had grown to a 40-member committee, including public health, police, politicians, fire, EMS, health-care providers, addiction counsellors, social services, pharmacies, and agriculture associations. The Director of Health Protection from the Perth District Health Unit and the Mayor of Stratford co-chair the committee.

The Task Force is tackling the crystal meth problem on four fronts:

- enforcement
- health protection
- prevention and education
- treatment

Through its leadership on the Task Force, the Perth District Health Unit is able to ensure that crystal meth use is addressed using a comprehensive, best-practices approach. In 2008, the Task Force implemented nine programs across the four areas of focus. Public health unit programs have focused on youth development and engagement to prevent substance misuse, and health protection measures related to drug labs.

To date, the program has experienced successes resulting in:

- a decrease in meth lab discoveries
- major enforcement successes
- improved addiction treatment services
- better informed youth through the impact of widespread, multifaceted education measures

Case Study 4

7. Adult Heavy Drinking

The adult heavy drinking episode indicator estimates *the age-standardized proportion of people age 20 years and older who reported consuming five or more drinks on at least one occasion during the previous 12 months.*

Alcohol use is a significant risk factor for both injury and chronic disease. Heavy drinking puts a person at much higher risk of death or injuries from motor vehicle collisions; alcohol associated illness, falls, drowning and other hazards of poor judgement and reduced coordination.^{52,53} Longer term, heavy drinking can result in high blood pressure, stroke, liver disease, and neurological damage.⁵⁴

It is estimated that 10% of all deaths in Ontario directly or indirectly result from alcohol misuse.⁵⁵ Alcohol misuse is involved in about 40% of all traffic collisions,⁵⁶ which result in a large number of potential years of life lost because of the relatively young age of those killed in traffic collisions.⁵⁷

Alcohol misuse is associated with significant economic impacts including:

- lost productivity due to morbidity
- premature mortality
- social services costs
- law enforcement costs
- direct health care costs⁵⁸

Heavy drinking also increases the risk of violence,⁵⁹ vandalism,⁶⁰ sexual assault, and unprotected sexual encounters with the potential for unplanned pregnancy or infection from sexually transmitted diseases.⁶¹

Public health programs and services aim to increase public awareness of the dangers of substance misuse and promote healthy public policy to reduce the risks. Programs and services include:

- promoting the Low-Risk Drinking Guidelines designed to minimize the health risks of alcohol use
- promoting responsible driving including not driving under the influence of alcohol
- advising women who know they are pregnant or are planning on becoming pregnant of the harmful effects of alcohol on their unborn child
- promoting adoption of municipal alcohol policies
- providing Server Intervention Training and Safe Bar Policy
- promoting responsible hosting

In addition, there are provincially funded initiatives such as the FOCUS Community Project which operates in 21 communities with the aim of reducing the abuse of alcohol and other drugs and preventing their associated problems, injuries, and chronic diseases.

In 2007, 37% of people in Ontario age 20 years and older reported consuming at least five or more drinks on at least one occasion in the last 12 months. Based on 36 public health units in Ontario, the highest proportion of heavy drinkers, that is those who reported consuming five or more drinks on at least one occasion in the last 12 months, was 54% and the lowest was 24% of adults age 20 years and older.

Teen Sexual Health Case Studies

Many health units are addressing teens' sexual health needs by providing services in ways that are relevant to this client group.

For example, **Kingston, Frontenac and Lennox & Addington Public Health** offers its comprehensive school-based teen sexual health clinic program in partnership with the Limestone District School Board. A public health nurse visits various local high schools to increase the access local teens have to free, confidential sexual health services. Public health nurses work closely with the adolescent care worker at each school and facilitate physician referrals as required.

The teen sexual health clinic program is designed to decrease the rate of teen pregnancy and prevent the spread of sexually transmitted infections. The program is currently available at five secondary schools within the public health unit's catchment area. One Teen Clinic occurs at an alternate education centre where many of the students are homeless or involved in prostitution. A Teen Clinic database is currently being developed to capture all relevant demographic information and sexual health services provided in order to evaluate the program's success.

Another approach is being used by the **Middlesex-London Health Unit**, which runs a one-day, interactive high school outreach program designed to enhance knowledge and engage youth. The Having a Baby Day program operates in conjunction with St. Joseph's Health Care, London, the Regional Sexual Assault and Domestic Violence Treatment Centre (RSADVTC), and the Thames Valley and London District Catholic school boards.

The program is offered quarterly and brings high school students and their teachers into St. Joseph's Health Care to learn about preparing for parenthood, achieving optimal pre-conception health, experiencing a healthy pregnancy, and having the healthiest newborn possible.

Students rotate through small-group discussion sessions on and site visits to:

- the Family Birthing Centre (FBC)
- the Neonatal Intensive Care Unit
- Healthy Relationships
- the Regional Sexual Assault and Domestic Violence Treatment Centre
- Post-Partum Issues

The sessions include discussions by health care staff on topics such as antenatal, intra-partum, and post-partum care, implications of having a pre-term or ill infant, decisions about safer sex, resources on preventing abuse, and changes facing families with newborns.

Case Study 5

8. Youth Heavy Drinking

The youth heavy drinking episode indicator identifies *the proportion of people age 12-19 years who reported consuming five or more drinks on at least one occasion during the previous 12 months*.

Research shows that young people, whose brains are still developing, may be at greater risk than mature adults of lasting brain damage from heavy alcohol consumption.⁶² Alcohol is the most commonly used drug among Canada's youth.⁶³ Alcohol-related trauma is a significant and preventable cause of death among young Canadians.^{64,65,66}

Research indicates that youth view heavy drinking as a social norm and that the consequences of excessive alcohol consumption are a 'rite of passage'. This view is highlighted by the fact that while illicit drug use has generally been declining, the prevalence of heavy drinking has been holding steady and even increasing, particularly among youth aged 15 to 25.^{67,68} Moreover, new studies show that some youth start drinking at age 13 or younger.⁶⁹

Heavy drinking is associated with risk taking behaviour. Risks and consequences associated with heavy drinking include death, injury, violence, alcohol poisoning, unplanned and unwanted sexual experiences including sexual assault and sexually transmitted infections.⁷⁰ Prolonged heavy drinking may result in brain damage, liver disease, cancer or heart disease.⁷¹

Although most health consequences of alcohol and drug use typically appear later in life, early initiation of heavy drinking can lead to earlier problems and the development of life-long habits.

Public health programs and services aim to increase public awareness of the dangers of substance misuse and promote healthy public policy to reduce these risks. Programs and services include:

- promoting the Low-Risk Drinking Guidelines designed to minimize the health risks of alcohol use
- promoting responsible driving including not driving under the influence of alcohol
- advising women who know they are pregnant or are planning on becoming pregnant of the harmful effects of alcohol on their unborn child
- promoting adoption of municipal alcohol policies
- providing Server Intervention Training and promoting Safe Bar Policy
- promoting responsible hosting

Interventions to address youth heavy drinking are given additional prominence before and during events such as high school proms where a single episode of binge drinking can have severe health effects. More broadly though, interventions with youth promote adoption of behaviours to minimize health risks and reduce under-age drinking.

In 2007, 25% of people in Ontario age 12-19 years reported consuming at least five or more drinks on at least one occasion in the previous 12 months. Based on 36 public health units in Ontario, the highest proportion of heavy drinkers was 65% and the lowest was 12% for people age 12-19 years who reported consuming five or more drinks on at least one occasion.

9. Physical Activity Index

The physical activity index indicator estimates *the age-standardized proportion of the population age 12 years and older by level of energy expenditure in the categories active and moderately active in their leisure time physical activity.*

Physical activity directly benefits a person's physical and mental health. People who exercise regularly are less susceptible to a number of chronic health conditions. Evidence also suggests that regular physical activity can contribute to improved mental health.⁷²

Physical inactivity is among the leading contributors to a wide range of illnesses and conditions including:

- coronary heart disease and stroke
- type 2 diabetes
- certain types of cancer
- osteoporosis⁷³

A physically active lifestyle among the population will substantially reduce the burden of disease, death, and disability in Ontario.^{74,75}

Childhood obesity is a serious concern in Canada and internationally. Over the past 25 years, obesity rates among children and youth have nearly tripled. Not only are children eating too much high-energy, high-fat food, but they also are more sedentary. Childhood obesity can result in serious medical problems, including type 2 diabetes, high blood pressure, and liver disease as well psychological difficulties. Most children do not outgrow their weight problem and many continue to gain weight as they age.⁷⁶

The increased prevalence of overweight/obese young people and adults, combined with only moderate levels of physical activity, is a public health issue. To address these issues, the Ministry of Health Promotion launched ACTIVE2010 Ontario's Sport and Physical Activity Strategy in October 2004.⁷⁷

Public health programs and services use a population health approach to promote healthy behaviours that improve the quality of life and help reduce the number of Ontarians seeking diagnostic services and medical care. Public health initiatives promote a healthier Ontario by:

- Promoting health at each age and stage of life, focusing first on children and youth
- Influencing the social determinants of health – the social and economic factors that shape our health
- Engaging partners to share the responsibility for a healthier Ontario
- Improving the health of those most at risk
- Removing barriers to healthy, active living so Ontarians have more opportunities to enjoy good health (i.e., bicycle/walking trails)

In 2007, 50% of people in Ontario age 12 years and older reported participating in physical activities in which they were active or moderately active. Based on 36 public health units in Ontario, the highest proportion was 64% and the lowest was 43% of people age 12 years and older who reported participating in physical activities in which they were active or moderately active.

Best Start's Primary Care Strategy Case Study

Healthy development during a child's first years significantly impacts the health and well being of that individual later in life. The Best Start initiative, funded through the Ministry of Children and Youth Services, is designed to improve early identification and resource networking at the community level throughout Ontario, and public health units have been active participants in these projects.

As an example, **City of Hamilton Public Health Services** worked with primary care, public health and Ontario Early Years Centre (OEYC) representatives to form a sub-committee under Hamilton's Best Start Network. A team that included a physician opinion leader, public health nurse and OEYC facilitator delivered presentations on early identification and the availability of community resources to primary care practitioners. Where possible, practitioners were invited to the neighbourhood OEYC, which reinforced the availability of local Early Years services. Other presentations were held in group practices, and physician rounds.

Attendees received an information package that included multiple copies of the Nipissing District Developmental Screen™ (NDDS), Rourke Well Baby Record, an article on the 18-month visit, and a flowchart of local early years services with contact information. In addition, a continuing medical education accreditation event provided more in-depth understanding of child development. Project evaluation demonstrated an increase in referrals to community services.

Case Study 6

10. Healthy Body Mass Index

The healthy body mass index indicator estimates *the age-standardized proportion of people age 18 years and older whose self reported height and weight denote a healthy body mass index (BMI)*. BMI is calculated using the person's weight in kilograms divided by their height in squared metres. The World Health Organization considers a BMI in the range of 18.5-24.9 to be healthy for most adults.⁷⁸

A healthy body weight is associated with good health. Excess weight can lead to:

- coronary artery disease
- stroke
- hypertension
- colon cancer
- post menopausal breast cancer
- type 2 diabetes
- gall bladder disease
- osteoarthritis⁷⁹

Chronic diseases such as the above are the leading causes of death in Ontario.⁸⁰

Obesity is strongly linked with type 2 diabetes, which itself is associated with other health problems such as heart disease, stroke, blindness and kidney failure. Type 2 diabetes is a major cost driver of Ontario's health care system.⁸¹ Diabetes is the single most significant contributor to renal disease and vision loss and a leading cause of heart disease, stroke, and non-traumatic limb amputations.⁸²

There are many contributing factors to obesity, including:

- over eating
- low activity levels
- genetics
- body metabolism
- socio-economic status
- psychological/emotional factors

Unhealthy weights – both overweight and obesity – are a global public health priority. Overweight and obesity now are such a serious public health concern that they are known as 'the new tobacco'.^{83,84,85}

The increased prevalence of overweight and obese young people is of concern because overweight and obesity may persist into adulthood.^{86,87,88,89} To address these issues, and in response to the Chief Medical Officer of Health's report, *Healthy Weights, Healthy Lives*,⁹⁰ the Ministry of Health Promotion launched the Healthy Eating Active Living (HEAL) Action Plan in 2006.⁹¹

Public health units play a significant role in chronic disease prevention and health promotion related to healthy weights, proper nutrition and physical activity.

Public health works with individuals to build food skills and promote healthy behaviours, and with communities to promote food security and awareness of healthy eating. Efforts also are made to influence policy makers and community partners to address issues related to the existing community infrastructure, environment, and community spaces so that people have options that support them to be active and to access healthy foods.

In 2007, 47% of individuals age 18 years and older had a healthy BMI. Based on 36 public health units in Ontario, the highest proportion of individuals age 18 years and older with a healthy BMI was 55% and the lowest was 33%.

11. Fruit and Vegetable Consumption

The fruit and vegetable consumption indicator estimates *the age-standardized proportion of the population age 12 years and older that reported consuming fruits and vegetables five or more times per day.*

Research has shown that diets containing substantial and varied amounts of vegetables and fruit:

- may prevent certain types of cancer⁹²
- are associated with reduced risk of cardiovascular disease⁹³
- are associated with healthy weights and decreased risk of obesity⁹⁴

Lack of adequate fruit and vegetable consumption has become an important public health issue. According to the Canadian Community Health Survey (2.2) 59% of Canadian children 2-17 years of age consume fruit and vegetables less than five times a day.⁹⁵ These children are significantly more likely to be overweight or obese compared to those who consume fruit and vegetables more frequently.

Fruit and vegetable consumption is influenced by many factors, including:

- physical access within a community
- food affordability
- knowledge of healthy food choices
- food skills such as shopping, budgeting, preparation, and storage

Public health programs and services related to healthy eating and food security issues target both individuals, to build food skills and promote healthy behaviours, and communities to promote food security and awareness of healthy eating. Programs and services that support healthy eating and food security include:

- community gardens
- school nutrition programs
- awareness campaigns including comparisons of the cost of a nutritious food basket to the cost of living

The annual tracking of a cost of the Nutritious Food Basket for an Ontario family is used to monitor food affordability across Ontario and to advocate for food access and security for specific populations. Data for the 2008 cost of the Nutritious Food Basket across Ontario are shown within the Health Unit Profile table.

The Northern Fruit and Vegetable Program is a provincial initiative that aims to increase fruit and vegetable consumption and increase awareness of the importance of fruits and vegetables among elementary school children in select communities in Northern Ontario, and to educate elementary school-aged children and their families about the importance of eating fruit and vegetables, and the associated benefits of healthy eating and physical activity to overall health. The project provides fresh Ontario produce twice a week in conjunction with a curriculum-based resource that outlines the benefits of eating fruits and vegetables. Northern Ontario was selected for the project because of the higher proportion of overweight children, the higher cost of the Nutritious Food Basket in Northern Ontario, and because 62% of children in the region aged 12-19 do not eat five or more servings of fruits and vegetables daily.

In 2007, 42% of individuals age 12 years and older reported consuming fruits and vegetables five or more times per day. Based on 36 public health units in Ontario, the highest proportion of people age 12 years and older that consumed fruits and vegetables five or more times per day was 50% and the lowest was 29%.

12. Fall-Related Hospitalizations among Seniors

The fall-related hospitalization rate indicator estimates *the age-standardized number of injury-related hospital separations that are due to falls in seniors age 65 years and older per 100,000 population.*

Persons over age 65 have the highest mortality rate from injuries. In the elderly, injuries from falls cause about one-half of deaths due to injury – more than either pneumonia or diabetes.^{96,97}

Injury prevention is a cost-effective strategy for reducing the indirect and direct health care costs associated with falls.^{98,99} Effective injury prevention interventions can reduce injury-associated demand for care, including reducing hospitalizations, the demand for rehabilitation and assistive devices, as well as for residential care and home care.^{100,101} Injury prevention can also help seniors preserve their independence and quality of life – avoiding clinical complications and increased dependency on support services.^{102,103}

Most falls are predictable and therefore, preventable. Public health injury prevention interventions focus on eliminating or reducing known risk factors associated with falling.

Public health programs and services focus on reducing the frequency, severity, and impact of preventable injury. Public health units and their community partners promote:

- the safe use of prescription and over-the-counter medication
- the importance of nutrition and calcium and Vitamin D rich foods combined with exercise to prevent falls and/or delay the onset of osteoporosis
- awareness of the built environment and the identification of hazards to reduce the risk of falling both in the home and in the community

The risk of being injured and the incidence of injury are not equal throughout Ontario; each age group is at risk for different types of injuries. Seniors are most at risk for serious injuries resulting from changes that occur during the aging process (e.g. decreased vision, diminished reflexes, reduced muscular strength and mass, and decreased bone density).

In 2007, the rate of injury-related hospital separations due to falls in seniors age 65 years and older was 1,309.5 per 100,000 seniors in Ontario. Based on 36 public health units in Ontario, the highest rate was 2,371.5 and the lowest rate was 942.6 injury-related hospital separations due to falls in seniors age 65 years and older, per 100,000 population.

Guelph Inclusiveness Alliance Case Study

The Guelph Inclusiveness Alliance (GIA) is a multicultural coalition of more than 30 service provider organizations and persons focusing on making Guelph a more welcoming place for immigrants in need of support. The **Wellington-Dufferin-Guelph Public Health** (WDGPH) provides GIA with epidemiological expertise and brings a determinants-of-health perspective to the coalition's work.

The 2006 Census found that immigrants represent 21% of Guelph's population. In 2009, the Guelph Inclusiveness Alliance will buy customized, demographic information from Statistics Canada to provide more detailed immigrant profiles as a basis for identifying inequities and improving accuracy.

WDGPH uses census and postal code information to examine the spatial and temporal distribution of immigrants, mortality rates, emergency room visits, and hospitalizations, across 12 Guelph neighbourhoods. This work supports a powerful Geographic Information System (GIS) that includes advanced statistical analysis tools to help interpret health patterns within Guelph.

Through the GIA, Wellington-Dufferin-Guelph Public Health is attempting to identify and reduce health inequities among Guelph's diverse populations, tailor its programs and services to better meet local needs, and share its knowledge and expertise with community partners.

Case Study 7

Knowledge Exchange Case Studies

Developing methods of promoting and supporting knowledge exchange is an important aspect of ensuring that new knowledge is translated into practice and that current thinking on best practices is continually updated.

Peel Public Health has embarked on a ten year strategic direction setting process to enhance evidence informed decision making throughout the health unit. This multi-faceted strategy currently includes a review of library services, staff skill development, particularly in critical appraisal of the literature, a department wide communication plan, a project by one of the Associate Medical Officers of Health who has a fellowship through the CHSRF Executive Training for Research Application (EXTRA) program, and a post doctoral study on the change management process by a researcher at McMaster University. Additional activities include piloting the use of a knowledge broker role, contracting academics for selected literature reviews, a 12 month pilot of RefWorks (an online research management tool that manages on line information and generates citations and bibliographies) and formation of a critical appraisal club where staff can develop new skills and learn from each other.

Region of Waterloo Public Health approached this task by organizing a Research Pathways to Healthy Public Policy forum as a way to advance population health assessment, research, and evaluation activities. The forum is part of a program through which the health unit developed specific goals and objectives to guide its work with key stakeholder groups, including community organizations, the community at large and in particular vulnerable populations, professional partners and colleagues, decision makers and members of academia.

The Research Pathways to Healthy Public Policy one day forum attracted more than 80 participants from local academic institutions and key community groups. The event focused on three themes:

- health and the built environment (community design)
- environmental conditions affecting health (drinking water, air quality)
- local healthy food system development

The day was organized into three sections:

1. a general overview of the public health context, which outlined the Region of Waterloo Public Health's mandate and what Research Pathways had to offer researchers
2. a large-group plenary section, which addressed expectations and concerns in partnering with Public Health and brainstormed how to overcome barriers to working together
3. small-group break-out sessions covering the three themes

Each small-group session identified key issues for both academia and public health by theme area, discussed ways to continue communications on the issues, and identified the key contact people for each theme area. Since the session, public health staff have followed up on at least 10 potential research ideas, proposals, or discussions for projects with the academic attendees.

Case Study 8

13. Enteric Illnesses Incidence

The enteric illnesses age-standardized incidence rate estimates *the total number of reported cases of selected enteric illnessesⁱⁱ per 100,000 population.*

Enteric illnesses are frequently characterized by diarrhea, nausea, vomiting, abdominal cramps, fever, and other symptoms. They can be transmitted via ingestion of contaminated food or water, exposure to infected vomit or feces, direct or indirect contact with infected persons or animals, or contaminated objects. Enteric illnesses are typically caused by pathogens such as *Campylobacter*, *Salmonella*, and *E. coli*. Young children, the elderly, and those with weakened immune systems, are at greater risk for complications from these pathogens, which can result in significant morbidity and mortality.

Enteric diseases are generally under-reported. Many individuals who acquire an enteric disease do not seek medical attention, or do not submit a laboratory specimen to confirm the existence of the disease. Studies estimate that for each reported case of enteric illness, there are at least several hundred undiagnosed or unreported cases in the community.¹⁰⁴

An important role of public health is to increase public awareness of the importance of hand hygiene, food safety and safe food handling practices, and the safe use of drinking and recreational water to reduce the spread of enteric diseases in the community. Public health programs and services aimed at reducing enteric illnesses include:

- inspecting regulated establishments, such as food premises and recreational waters, for compliance with the HPPA
- conducting local and provincial surveillance of enteric diseases
- investigating enteric illnesses and outbreaks
- educating the public regarding enteric disease prevention
- providing food-safety training programs for food-handlers
- educating drinking water system operators

In 2007, the reported incidence rate of cases of selected enteric illnesses in Ontario was 88.7 per 100,000 population. Based on 36 public health units in Ontario, the highest incidence rate was 164.1 and the lowest was 40.0 cases of selected enteric illnesses, per 100,000 population.

14. Respiratory Infection Outbreaks in Long-Term Care Homes

The respiratory infection outbreak indicator estimates *the number of confirmed respiratory infection outbreaks in long-term care homes between September 1, 2006 and August 31, 2007.*

Respiratory tract infections such as the common cold (*Rhinovirus*), adenovirus, and influenza, along with other respiratory pathogens, are spread through contact with an infected person via droplets from coughs, sneezes, and tissues or surfaces contaminated with the virus. Although symptoms vary depending on the

ⁱⁱSelected enteric illnesses reporting fields include: Amebiasis; Botulism; Campylobacter Enteritis; Cholera; Cryptosporidiosis; Cyclosporiasis; Food Poisoning, All Causes; Gastroenteritis, Institutional Outbreaks; Giardiasis; Hepatitis A; Listeriosis; Paratyphoid fever; Typhoid Fever; Salmonellosis; Shigellosis; Trichinosis; Verotoxin producing E.coli including Hemolytic Uremic syndrome (HUS); Yersiniosis

causative agent, they generally include nasal congestion, cough, running nose, sore throat, fever, sneezing, and fatigue.

A confirmed respiratory infection outbreak in a long-term care home is defined as:

- Two cases of acute respiratory tract illness, at least one of which must be laboratory confirmed; or
- Three cases of acute respiratory tract illness occurring within 48 hours in a geographic area (e.g. unit, floor); or
- More than two units having a case of acute respiratory tract illness within 48 hours.¹⁰⁵

Respiratory tract infections are one of the most commonly diagnosed infections of long-term care home residents. Long term care residents are predisposed to such infections in part because they may:

- be elderly
- have chronic illnesses which weaken their immune system
- have chronic lung or neurological disease which impairs their ability to clear secretions from their lungs and airways

Residents are also at risk because they are often already medically compromised and many viral and bacterial respiratory pathogens are easily transmitted in an institutional environment. Thus, respiratory infections can result in substantial morbidity and mortality in residents of long-term care homes.^{106,107}

Public health units provide support to long-term care homes to prevent and reduce the spread of infectious diseases. This includes:

- promoting influenza immunization to staff and residents
- providing education to staff on infectious disease prevention
- working in partnership with staff to:
 - develop infection prevention and control policies and procedures
 - develop an outbreak contingency plan surveillance system
 - assist in the prevention, investigation, confirmation and management of cases and outbreaks

The number of outbreaks provides an indication of the workload and resources required of public health units to carry out appropriate response and investigations, to prevent the further spread of illness, and to prevent death. A high number of outbreaks should not be considered a sign of poor performance by a health unit, but may indicate an effective surveillance strategy and strong working relationships between long term care homes and a local public health unit staff. The data presented reflect the number of outbreaks and not closures due to outbreaks.

Through long-term care home reporting of respiratory infection outbreaks to public health units, early detection and investigation of outbreaks and implementation of appropriate infection control measures can be put in place to limit further transmission, illness and death.

Between September 1, 2006 and August 31, 2007 there were a total of 602 respiratory infection outbreaks in Ontario long-term care homes. Based on 36 public health units, the highest number of respiratory infection outbreaks in long-term care homes was 113 and the lowest number was zero.

15. Chlamydia Incidence

The age-standardized chlamydia incidence rate indicator estimates *the total number of reported chlamydia cases per 100,000 population*.

Chlamydia is the most common bacterial sexually transmitted bacterial infection (STI) in Canada.¹⁰⁸ If left untreated in women, it can cause complications such as pelvic inflammatory disease which can lead to ectopic pregnancies, infertility, and septicaemia. In men, untreated infections can cause inflammation of the testicles and prostate which can also lead to infertility.¹⁰⁹

Public health units play a significant role in the prevention and management of STIs through the programs and services they provide. These programs and services include:

- promoting healthy sexuality
- providing sexual health clinical services
- providing testing and counselling for STIs
- providing case and contact management of STI cases
- providing treatment for Chlamydia at no cost to the client

Individuals infected with one STI are at a higher risk of contracting another STI, including HIV. By improving counselling, screening, diagnosis and treatment of chlamydia, public health units can help decrease new cases of other STIs.

The highest incidence rate of chlamydia infections is found in young adults aged 15-24.¹⁰⁸ In recent years, the number of reported cases has been increasing. While this reflects a real increase in infection rates, it is also believed to reflect an increase in partner notification, expanded screening efforts and improved diagnostic testing.

In 2007, the incidence rate of reported chlamydia cases in Ontario was 219.8 per 100,000 population. Based on 36 public health units in Ontario, the highest incidence rate of reported chlamydia cases was 678.9 and the lowest incidence rate of reported of chlamydia cases was 78.9, per 100,000 population.

16. Immunization Coverage for Hepatitis B

The immunization coverage for hepatitis B indicator estimates *the proportion of grade 7 students who have completed the immunization series against hepatitis B by the end of grade 7*.

Hepatitis B is caused by a virus that attacks, and can permanently damage, the liver. It is the leading cause of liver cancer worldwide.¹¹⁰ The highly contagious virus is spread through close contact with infected bodily fluids including blood. Unprotected sexual contact is the most common risk factor for hepatitis B infection in Ontario.¹¹¹ Sharing needles with an infected person is another risk factor for infection.¹¹²

In Ontario, publicly funded hepatitis B vaccines are provided for specific populations including those at higher risk due to lifestyle, or due to being a contact, being a carrier, or having been diagnosed with an acute liver

disease. In addition, a universal vaccination program is administered by public health units through a school-based program to students in grade 7. There is also a catch-up program for students in grade 8 who may have missed some or all of the vaccine series in grade 7.

Hepatitis B coverage among students is a unique indicator in that it speaks to the efficacy of a program over which public health units have direct control at the local level.

Public health units plan and deliver school-based hepatitis B immunization clinics. This indicator reflects the appropriate planning and delivery of school-based hepatitis B immunization clinics, public health unit efforts to educate parents and children and promote uptake of hepatitis B immunization, and public health unit data gathering with respect to hepatitis B immunization.

At the end of the 2007-2008 school year 79.8% of grade 7 students in Ontario completed the immunization series against hepatitis B. Based on 36 public health units in Ontario, the highest coverage was 95.2% and the lowest coverage was 65.2% of grade 7 students who completed the two-dose series against hepatitis B.

Toronto Cancer Prevention Coalition Case Study

The Toronto Cancer Prevention Coalition was created in 1998 by **Toronto Public Health** and community partners and is North America's largest municipal cancer prevention coalition. In November 2002, City Council endorsed the Coalition Action Plan as the cornerstone of cancer prevention in the City of Toronto.

The strength of the coalition lies in its dedicated membership. For the first time in history, governments, universities, unions, health and environmental agencies, school boards, grassroots groups, activists and survivors have brought their individual expertise to the coalition and its comprehensive agenda for cancer prevention. The coalition's work has accomplished or influenced prevention work being done throughout Canada today.

In 2007, the Toronto Board of Health endorsed a policy statement for shade for the City of Toronto which was forwarded to City Managers for implementation and has since been a catalyst for additional pilot projects, activities and advocacy work in effectively reducing overexposure to ultraviolet radiation within the city's facilities.

Case Study 9

17. Immunization Coverage for Measles, Mumps and Rubella

The immunization coverage for measles, mumps and rubella indicator estimates *the proportion of school children age 7 years who are known to be complete for age for vaccination against measles, mumps and rubella.*

Several vaccines are currently provided through the publicly funded immunization program to reduce the incidence of vaccine preventable diseases.¹¹³ Publicly funded vaccines are provided for routine immunization, the immunization of high-risk persons, and the control of disease outbreaks. The measles virus is highly contagious and can result in respiratory complications and death in extreme cases;¹¹⁴ mumps can cause sterility and subfertility in adult males;¹¹⁵ and the rubella virus is a respiratory disease that causes rash and fever. If contracted by a pregnant woman, the rubella virus can have devastating consequences on the developing fetus.¹¹⁶

The combined measles, mumps and rubella (MMR) vaccine became available in 1975. It is administered to Ontario children on or after their first birthday and again at age 18 months as part of the Publicly Funded Immunization Schedules. Under the *Immunization of School Pupils Act (ISPA)*, all school pupils must have documented receipt of two doses of measles and one dose each of mumps and rubella by 7 years of age for school attendance, unless a valid exemption is provided.¹¹⁷ Children receive this immunization primarily through primary care physicians or through public health unit clinics.

Public health units are required to assess the immunization status of all school pupils and attendees of licensed day nurseries on a yearly basis to determine their immunization status and in the case of school pupils, the medical officer of health may issue suspension orders to school principals, where required, to remove non-immunized children from school. The process also provides important information to public health units regarding vulnerable children and populations in order to target these groups for immunization and to plan for potential outbreaks of disease. Public health units also provide recommendations to parents to immunize infants and children whose immunization is not up to date to ensure that both day nursery attendees and school pupils are appropriately immunized.

Having up to date MMR immunization at age 7 contributes to the timely and effective detection and identification of children and priority populations facing barriers to immunization who may be susceptible to vaccine preventable diseases, and their associated risk factors, as well as to any emerging immunization trends. It relates to the public's awareness of the importance of immunization across the lifespan and the achievement of target coverage rates for provincially-funded immunizations.

At the end of the 2007-2008 school year 84.9% of school children in Ontario age 7 years were known to be complete for age for vaccination against measles, mumps and rubella. Based on 36 public health units in Ontario, the highest coverage was 97.8% and the lowest coverage was 20.7% of school children age 7 years known to be complete for age for vaccination against measles, mumps and rubella.

18. Adverse Water Quality Incidents

The adverse water quality incidents indicator identifies the number of adverse water quality incidents from drinking water systems subject to O.Reg 170/03/O.Reg 252/05 and unregistered drinking water systems. An adverse drinking water incident occurs when a water sample test result exceeds the Ontario Drinking Water Quality Standards¹¹⁸ or an operator observes that the system may not be providing safe water.

Contaminated drinking water can lead to serious health concerns. Most water-related health problems are caused by microbial or chemical contamination and can result in illnesses ranging from mild gastroenteritis, to disease outbreaks including *E. coli* infections, giardiasis and cryptosporidiosis.

Public health programs and services, together with programs through the Ministry of the Environment, aim to prevent or reduce the occurrence of water-borne illness:

- through timely and effective detection and identification of water contaminants and illnesses, their associated risk factors and emerging trends
- mitigating water-borne illness
- using evidence to influence the development of healthy public policy to reduce the burden of water-borne illnesses of public health importance
- ensuring public awareness of drinking water safety and the importance of source protection

Boards of health must ensure that the medical officer of health, or designate, is available 24 hours a day, 7 days a week to receive and respond to reports of adverse water quality incidents. Public health units are also involved in providing input into the development of legislation and regulations in order to ensure that the minimum standards for public water systems reflect evidence informed best practices.

The safety of drinking water is a major concern throughout Ontario, especially since the Walkerton contaminated drinking water incident in 2000.

There are about 2,855 drinking water systems in Ontario as of February 2008 governed under the *Safe Drinking Water Act*¹¹⁹ Regulation 170/03.¹²⁰ These include year-round residential systems as well as those that supply water to designated facilities such as schools, daycares and nursing homes. An additional 18,000 small drinking water systems fall under Ontario Regulation 318/08¹²¹ (Transitional- Small Drinking Water Systems) and Ontario Regulation 319/08,¹²² (Small Drinking Water Systems).

There are wide variations in the size and complexity of the drinking water systems that fall under the various regulations. These variations have a direct bearing on the water sampling and testing frequency and, ultimately, the number of adverse water quality incidents which may occur.

In 2007 there were a total of 4,458 adverse drinking water incidents in Ontario for all system types. Based on 36 public health units in Ontario the highest number of adverse drinking water incidents was 446 and the lowest number was 13 for the calendar year of 2007. The wide variation of reported adverse water quality incidents among public health units reflects the number of regulated drinking water systems within each health unit as well as the size of the population served by the systems. Systems serving larger populations have greater sampling frequency requirements.

SPARK Youth Website Case Study

Substance misuse prevention initiatives need to match both the community characteristics and the needs of the population being served. **Huron County Health Unit**, which is located in a rural region, has developed a web based intervention that is designed to reduce barriers that rural youth face in accessing health information such as distance, transportation, lack of anonymity, and a general lack of youth health and social services.

Since local rates of youth alcohol abuse are significantly higher than the provincial average, the website content focuses on alcohol and drug abuse, but also contains information on a variety of health topics, including healthy sexuality, relationships, and mental health. There is a strong evaluation component to this project to ensure this interactive, youth-led site is continually evolving to meet the needs of local youth.

By providing employment for 6 youth in the initial stages of the design and maintenance of the website itself and currently employing 1 SPARK youth ambassador, the SPARK youth website is designed to give at-risk youth in Huron County the opportunity to develop the skills to:

- design and maintain a health-promotion website and
- build the website into a reliable source of public health information for Huron County youth

The website, found at www.youthspark.ca includes personal stories, local information and announcements of events. It also has open forums for youth to find answers together, and to connect with health professionals who can answer questions anonymously.

Case Study 10

Group B

Governance and Accountability Indicators

Governing bodies are responsible for the general oversight and direction of an organization. Effective governance is required for efficient program management, fiscal accountability, and the achievement of organizational objectives. Good governance is achieved through the implementation of guidelines and mechanisms which ensure that appropriate actions are taken when needed, and that the public is protected.

Governance is a multi-faceted subject. A well governed organization will feature:

- an ability to focus on strategic matters
- a clear understanding of the purpose of the organization
- clear delineation between board and administrative roles, responsibilities, and accountabilities
- an ability for the board to manage itself effectively
- board time used to focus on the most important issues
- administrative staff have the freedom to operate within the confines of stated policies
- alignment of resources with goals of the organization¹⁰⁷

Being able to demonstrate effective governance is a key component of any performance management system. Strengthened and consistent governance is the foundation for all other reforms to revitalize public health in Ontario.

In this report, three key aspects of organizational effectiveness are presented. They are 1) board of health finances, 2) human resource issues and 3) board operations.

The data for this section of the report were collected via a survey of boards of health in November 2008. The survey tool is available on the report website at: www.health.gov.on.ca/english/public/pub/pubhealth/init_report/index.html. A summary of the survey data can be found in Table 2: Indicators by Public Health Unit.

This information builds on the previous work of the CRC, which also conducted a survey of boards of health in June 2005. To support the CRC, MOHLTC sent all health units in Ontario an extensive, online survey about issues such as governance, funding, accountability, human resources and their research and knowledge transfer capacity. Health units were asked to describe their management and reporting structures, as well as the strategies they use to recruit and support their boards, and to assess performance. These results were presented in the CRC Interim Report.¹²³

19. Total Board of Health Expenditures

The indicator for total board of health expenditures is defined as *the total board of health expenditures for “core and related public health programs and services”, from all sources, including all government funding, user fees, one time funding, fee for service contracts, and donations.*

Expenditure data are one of the most basic pieces of baseline information used to describe an organization. They provide context to other information that describes the size, scope, diversity and complexity of an organization's operations.

Boards of health were asked to report on revenues from all sources, and to categorize their funding by whether it was for a core public health program, a program related to public health, or for a program that is outside the traditional public health functions. Note that these categories do not align with those used by the ministry in its Program Based Grant funding package, where “related” programs has a specific meaning; further details are available within the data definition for this indicator.

This report marks the first time that this level of information has been presented on board of health budgets in a way that allows for comparisons across the province. It is important to note that because this was the first time that this information was collected, the completeness and consistency of reporting within the funding categories limits the validity of comparisons between boards using this data.

Because boards self defined which of their programs fit within each of the expenditure categories, there was some inconsistency in the reporting. Based on the information gathered from this first effort to collect board of health expenditure data, future iterations of this question will be able to support more consistent data collection and reporting. Despite this limitation, the reported expenditure data give an overall sense of the relative range and scope of program spending across Ontario.

The expenditure data also begin to provide a picture of the complexity of managing the delivery of public health in Ontario, as evidenced by the variation in the number of separate programs that boards of health are administering. While some boards of health focus primarily on delivering core public health programs, others are providing a large number of different programs, most with separate funding streams.

Expenditures for public health programs and services from all revenue sources for all boards of health were reported to be \$837.7M in 2007. Program funding is provided primarily by the three ministries with responsibility for public health: Ministry of Health and Long-Term Care, Ministry of Health Promotion and Ministry of Children and Youth Services. In addition, some boards of health receive funding from the federal government (e.g., for the Canada Prenatal Nutrition Program) and collect fee for service revenues related to septic inspections.

20. Board of Health Expenditure Variance

The indicator board of health expenditure variance is defined as *the percentage variance between a board of health’s projected annual budget for “core and related public health programs and services” and year-end actual expenditures with revenue from all sources.*

Expenditure variance measures the effectiveness of internal fiscal management. A small amount of variance is expected, unless there are unforeseen events that result in one time financial anomalies.

Of the 36 boards of health, a total of 30 reported overall underspending totaling \$34.6M in 2007, which represents approximately 4.0% of board of health budgets for core and related programs.

The most commonly cited reasons for underspending were staff vacancies due to difficulty in recruiting (cited by 21 boards of health), delays in recruiting due to delay in budget approvals (cited by 18 boards of health) and cost containment initiatives or planned gapping to actively manage expenditures.

The presence of surpluses is partly due to the timing of provincial government decisions on funding levels. While some municipalities will provide cash flow early in the calendar year in anticipation of government

announcements of funding increases, others wait until the approval letters are received before allowing boards of health to spend at the new level.

Because of the lack of alignment between the fiscal years used by boards of health (January to December) and the provincial government (April to March), provincial funding approvals are not provided until well into the operational year for public health programs and services. Some municipalities delay their approvals to avoid financial risks, but this leaves little time for public health units to adjust their spending or program service levels either up or down to accommodate the provincial funding adjustment.

Overspending totaled \$1.6M in 2007, which accounts for less than one percent of reported planned expenditures of \$870.7M. Out of the total of six boards of health that reported overspending, three accounted for 88% of the total.

The commonly cited reasons for overspending were unexpected demand for programs (cited by 5 boards of health), funding shortfalls (cited by 4 boards of health) and unanticipated in-year costs (e.g., training, one time purchases of office equipment).

First Nations Children's Oral Health Initiative Case Study

Many health units are working in innovative ways with First Nations communities to address local health needs and build collaborative partnerships that will support improved communication and planning.

For example, in September 2004 the **Northwestern Health Unit (NWHU)** partnered with Health Canada to enrol five new First Nations communities in the Children's Oral Health Initiative (COHI), pilot program, and to date 19 communities are involved. The initiative addresses the high rates of preventable dental disease in First Nations and Inuit communities in Canada.

Under the program the NWHU provides diversified oral health promotion activities, such as: education, oral health assessments, screenings, fluoride varnish, sealants, scaling, and oral hygiene instruction. Yearly baseline epidemiological data are collected and used to implement and evaluate the program and determine trends in oral disease.

This strategy has broken down the federal/provincial/First Nations jurisdictional barriers and ties in nicely with other tripartite initiatives across Canada, enabling health unit staff to provide desperately needed services to children under federal jurisdiction.

The ultimate goal is to empower communities to provide these services themselves.

Case Study 11

21. Expenditures on Training and Professional Development

The indicator for expenditures on training and professional development is defined as *the percentage of board of health total actual expenditures for “core and related public health programs and services” used to support staff training and professional development costs.*

Spending on training and professional development is a measure of a board of health’s investment to support staff in their ongoing skill enhancement and maintenance for effective public health practice. Given the emphasis on the need to use evidence informed approaches, it is essential that staff have opportunities to enhance their knowledge. Access to current information on new methods of practice contributes to improvements in the delivery of public health programs and services.

Boards of health report that their expenditures on training and development in 2007 ranged from 0.15% to 1.65% of their total budgets, with most under 1% (32 out of 36).

The CRC recognized that professional development is a key to increasing staff satisfaction, improving staff retention and improving the quality of public health service delivery. Their report comments that public health units need deliberate strategies to provide professional development to address both program and discipline needs, and that innovative strategies need to be considered, such as subsidized refresher courses, scholarship programs, training networks and activities related to developing core competencies. The CRC recommended that public health units support training and staff development with expenditures in the range of 1% - 2% of their overall budgets.¹²⁴

22. Numbers of FTEs by Job Category

The indicator number of FTEs by job category is defined as *the number of FTE positions in 2007 in each of the following professional job categories: public health nurse, registered nurse, registered practical nurse, nurse practitioner, public health inspector, dentist, dental hygienist/dental assistant, health promoter, dietitian/public health nutritionist, speech-language pathologist, epidemiologist, heart health coordinator and librarian.*

Information on the number of staff positions in specific job categories provides context for understanding current human resource capacities in terms of the range and size of staff complements of boards of health. Information was collected on the number of FTE positions in these selected job categories because of the persistent concerns within the sector regarding the potential for gaps in human resource capacity in these professional job categories, and the need to establish context for consideration of this issue.

The table below indicates that the single most common job category in public health units is public health nurse. All 36 public health units also have public health inspectors, dental hygienists/dental assistants and dietitians/public health nutritionists, and almost all have health promoters (33 public health units) and epidemiologists (35 public health units).

Less than half of public health units employ librarians (17 public health units) and speech-language pathologists (12 public health units). Information on the remaining job categories that were included in the board of health survey but not shown in the table below is available in Table 2: Indicators by Public Health Unit.

Numbers of FTEs by Specific Job Categories

	Number of public health units reporting FTEs	Total FTEs across all health units	Median across all health units
Public health nurses	36	2,717.2	45.5
Public health inspectors	36	900.5	14.0
Dental hygienists/dental assistants	36	286.1	4.4
Dietitian/nutritionists	36	203.1	3.4
Health promoters	33	416.7	6.2
Epidemiologists	35	72.6	1.0
Nurse practitioners	19	28.5	1.1
Librarians	17	20.1	1.0
Speech-language pathologists	12	64.3	4.4

First Nations, Métis and Inuit Diabetes Network Case Study

An example of current work taking place with First Nations is **Ottawa Public Health's** work with the First Nations, Métis and Inuit Diabetes Network. With diabetes among Ontario Aboriginals three times higher than that in non-Aboriginal populations, the Ottawa Aboriginal community recognized the need for a more coordinated approach to diabetes education. Ottawa Public Health, working with Ottawa Aboriginal organizations, initiated the formation of a network that includes the Canadian Diabetes Association, Heart and Stroke Foundation, and the Diabetes Education Program of Ottawa.

The strength of the First Nations, Métis and Inuit Diabetes Network is its Aboriginal membership and its commitment to collectively engage, discuss, and arrive at a shared understanding on planning diabetes education while ensuring the efforts reflect the three distinct populations. As a result, the network has been able to move toward developing and sharing culturally relevant resources, training, and service approaches to diabetes prevention, as well as bring a focus to the prevention of other chronic diseases.

The First Nations, Métis and Inuit Diabetes Network is building on its interdisciplinary and intersectoral membership to attract new service, research, and academic partners to work together to reduce the burden of this preventable chronic disease among Ottawa's approximately 60,000 Aboriginals.

Case Study 12

23. Number of Vacant Positions by Job Category

The number of vacant positions by job category is defined as *the number of job vacancies for staff positions in the following job categories for which there had been a job posting and that had remained vacant between May 1, 2008 and date of survey in November, 2008. The job categories are: associate medical officer of health, public health nurse, registered nurse, registered practical nurse, nurse practitioner, public health inspector, dentist, dental hygienist/dental assistant, health promoter, dietitian/public health nutritionist, speech-language pathologist, epidemiologist, heart health coordinator and librarian.*

Information on the number of vacancies in specific job categories is important because it identifies areas of potential gaps in public health unit human resource capacity that may have both local and system wide implications.

Boards of health were asked to report the number of positions that had been advertised and had remained vacant over the last six months in specific job categories. This indicator measures persistent vacancies that boards of health are trying to fill but where they have been unable to attract suitable candidates.

Boards of health reported minimal persistent vacancies in positions for registered nurses, registered practical nurses, dentists, and librarians. In each of these categories, the number of job vacancies that had remained unfilled after a six month posting was less than 1 FTE across all public health units.

The largest proportion of ongoing vacancies in public health units are for associate medical officer of health positions, with almost 25% of the total reported FTE positions sitting vacant for the last six months, and for nurse practitioners with approximately 15% of the total reported FTE positions vacant over the last six months. The other job categories where concern about the inability to fill positions has been noted (epidemiologist, registered practical nurse, speech-language pathologist) show province wide vacancy rates of between 4.7% and 9.1%.

Numbers of Vacant Positions by Job Categories

	Associate MOH	Nurse practitioner	Epidemiologist	Registered practical nurse	Speech-language pathologist
Total number of vacant positions (for the last 6 months)	6.3	4.4	6.5	5.5	3.0
Total FTE staff positions	25.6	28.5	71.6	100.3	64.3
Total number of vacant positions as a % of Total FTE staff positions	24.6%	15.3%	9.1%	5.5%	4.7%

Boards of health also reported that these numbers may underrepresent the impact of persistent vacancies because of the lateral movement of staff into vacant positions to backfill for a maternity leave, or as part of a vacancy management plan that delays recruitment for a part of a year. These types of situations were specifically excluded from this measure, in order to get a picture of long term vacancies in certain job categories.

Healthy Menus for Arenas Case Study

In developing strategies to encourage healthy eating, health units are exploring ways to get beyond the use of broadcast messages to a whole population and are looking at strategies that address the specific locations where people eat meals away from home.

An innovative local approach led by the **Durham Region Health Department** is occurring whereby a Healthy Menus for Arenas program is currently operating in five Durham arenas. This program was based on the positive results of a 2007 pilot study, which found that arena users will make healthy food choices if options are available at arena concession stands.

Healthy menu options were developed by Public Health Nurses and Nutritionists in collaboration with the Heart and Stroke Foundation of Ontario, Canadian Cancer Society, Canadian Diabetes Association, Canadian Liver Foundation, FoodSense Vending Services, and local Municipal Recreation Facilities.

Further initiatives have also been introduced in support of healthy eating in other recreational facilities, including a communication campaign and a coaches' incentive program. Along with Health Department funding, financial support has also been received from the local Heart Health Coalition (Durham Lives!), the Public Health Agency of Canada's Diabetes Strategy, and the Canadian Cancer Society, Ontario Division.

Case Study 13

24. Employment Status of Medical Officers of Health

The indicator employment status of medical officers of health is defined as *a situation where the medical officer of health is employed on a permanent full time basis with the board of health.*

Strong medical officer of health (MOH) leadership is essential in public health to protect the community's health, and assume overall responsibility for management of the delivery of public health programs and services.

Under the HPPA, each board of health is responsible for recruiting a qualified MOH to fill the position on a permanent, full time basis. In the event that the MOH office becomes vacant, the Act requires that the board of health appoint an Acting MOH while it works expeditiously to fill the position. Boards may also appoint one or more Associate MOHs.

The appointment of both MOHs and AMOHs requires approval by the Minister of Health and Long-Term Care and the qualifications for these positions are specified in regulation.

Public health units with acting MOHs (as of December 31st, 2008)

Type of Public Health Unit	Public Health Unit	Length of time MOH position has been filled on an acting basis
Rural Northern Regions	Northwestern	> 2 years
	Porcupine	> 7 years
Mainly Rural	Eastern Ontario	> 2 years
	Elgin-St. Thomas	> 12 years
	Haldimand-Norfolk	> 12 years
	Oxford County	> 11 years
	Perth District	> 2 years
Urban/Rural Mix	Chatham-Kent	> 6 years
	Lambton	> 10 years
Sparsely Populated Urban-Rural Mix	Timiskaming	> 12 years
Urban Centres	Wellington-Dufferin-Guelph	> 3 years

In terms of full time status, three public health units reported that they have MOHs who are working less than a full time equivalent, and two public health units share one FTE.

Building Internal Evaluation Capacity Case Study

The Leeds, Grenville and Lanark District Health Unit has developed a plan to build organizational capacity for program evaluation and evidence-based public health practice. The goal is to integrate the planning and evaluation function into all public health professional job functions within the health unit and thus build an organizational culture of continuous quality improvement.

The plan involves implementing a comprehensive strategy of policies, supportive environments, infrastructure development, and staff education and training. The goal of the plan is to enhance the skills of public health professionals in the foundations of effective, evidence-based public health practice. The strategy includes the launch of a learning series to enhance knowledge and skills, and the creation of an Evaluation Community of Practice, which is an informal network supporting the exchange of ideas and experiences in program evaluation.

Ultimately, building organizational capacity for program evaluation will enhance accountability to stakeholders and the quality of public health programs delivered to the community.

Case Study 14

25. Staff Length of Service

The indicator staff length of service is defined as *the percent of current full and part time public health unit staff who have been employed continuously by the public health unit, by length of service.*

Length of staff service is a commonly used measure of staff retention and turnover. High staff turnover rates affect organizational stability and capacity, since it is recognized that an organization needs to retain staff in order to maintain stability in operations, transfer corporate knowledge, and support the orientation of new staff. On the other hand, an organization where the majority of staff have over 20 years of service may have less change in their organizational culture.

Board of health reporting on the length of service of their staff is summarized in the table below. The figures represent the percentage of the staff in a board of health that were reported to have been with the board of health for the designated period of time.

Across the province, about 9% of staff have been with their board of health for less than one year. In this category, the majority of boards (27) reported rates between 5% and 15%, with one board having double the average, with just over 20% of their staff in this category.

Data collected through the survey of public health units found that:

- in the “more than 1 year but less than 5 years” category, 20 boards reported this as their peak in staff length of service, with ranges from 19.2% to 43.0% of all staff.
- in the category “more than 5 but less than 10 years”, 13 boards reported that the majority of their staff had a length of service that fit within this category, with rates ranging from 16.4% to 38.0%.

For the majority of public health units, the highest proportion of staff were in these two specific categories. This suggests that staff may be near the beginning of their careers or are moving between public health units every few years.

Staff Length of Service

Rates across all public health units	Up to 1 year	More than 1 year, but less than 5 years	More than 5, but less than 10 years	More than 10, but less than 20 years	More than 20 years
Lowest %	0.0%	19.2%	16.4%	6.6%	4.6%
Highest %	20.5%	43.0%	38.0%	31.3%	21.0%
Average length of service – all health units	9.3%	31.3%	27.8%	18.0%	13.6%

In a few cases, boards of health were unable to confirm whether all their staff had worked continuously for the public health unit or had spent some time working in other departments within the municipal or regional government. This will primarily impact the reporting on administrative and corporate support staff (such as IT, communications, HR), who have transferable skills. Given that these staff positions are a minority of all public health positions, the effect will be minor but it may have skewed the length of service upward for boards of health that are part of municipal or regional governments, since the reporting was on staff length of service with the same employer.

26. Familiarity with Public Health Unit Programs and Services

The indicator familiarity with public health unit programs and services is defined as *whether a board of health has assessed local community members' familiarity with any of the public health unit's programs and services.*

Although it is an important component of public health practice, indicators that measure community engagement and awareness of public health are not yet well developed or validated. For this report, data were collected from boards of health on whether they had assessed local community members' familiarity with their programs and services. Of the 36 boards of health, 26 reported that they had most recently conducted an assessment on this issue between 2005 and 2008, and a further 6 had last conducted an assessment between 1998 and 2004.

In other jurisdictions, the leading edge practice is to collect information on community partners' awareness of a public health organization directly from the partner organizations and stakeholders. Survey tools are used to question staff in settings such as other health care services, schools, housing organizations and outreach programs about their knowledge and opinions of the availability and delivery of public health services in their community.

Building community awareness is a necessary first step towards building community engagement. But this is a challenge for public health because interventions are often invisible to the community. Public health does not usually receive credit for news stories that do not happen, such as preventing disease outbreaks or long term health outcomes that are improved for a whole population over a generation.

Because of this paradox, members of the general public are often unaware of the role and mandate of public health. Community organizations that public health works with every day may also under estimate the role that public health plays in influencing public policy and contributing to new knowledge about what works to create and sustain change in communities.

The foundational principles guiding public health service delivery in Ontario speak directly to the issue of partnership and collaboration. The OPHS describe partnership and collaboration as involving partnerships within the health sector (e.g., Local Health Integration Networks and primary health care) and other sectors (e.g., education, social services, housing, workplace health and safety system, and environment).

Community collaborations and citizen engagement can occur in the areas of assessment, planning, delivery, management, and evaluation of programs and services. Boards of health need to use their influence to achieve and maintain the leadership role required to create the conditions necessary for effective program outcomes.

The Health Bus Case Study

The Health Bus began as a vision of the Niagara-based Wise Guys charity, which provided funding to allow **Niagara Region Public Health** to purchase a bus and convert it into a mobile health care facility for the homeless. The Health Bus is permanently staffed by a team leader and a public health nurse. In addition, staff from the sexual health program, the dental program and the mental health program provide services on a rotating or occasional basis.

The initial homeless target population has been expanded to include vulnerable, marginalized, and isolated populations. Niagara Region Public Health undertook extensive collaboration and consultation with community partners to determine the services required and the best locations at which to reach the target population, and works to keep community agencies abreast of Health Bus services and service locations.

The Health Bus provides a wide range of health services, including:

- treatment for minor medical conditions
- general, mental, and sexual health counselling
- foot care
- immunizations
- sexually transmitted disease testing and treatment
- needle exchange
- dental assessments and
- referrals to appropriate medical and dental service providers

Despite demands to expand the coverage area, the Health Bus has been able to maintain its focus on providing access to the target population. One of the Health Bus's strengths is its visibility and the trust it has developed with the target population. The Health Bus has been successful in increasing client, community, and staff satisfaction in providing health care to a traditionally poorly served population.

Case Study 15

27. Issuance of a Health Status Report

The indicator issuance of a health status report is defined as *situations where a board of health has issued a health status report or other health intelligence or information product that considered inequities in health outcomes and health determinants.*

A health status report or other health intelligence or information product includes any publication designed for distribution to the public and partners that used health status statistics and provided analysis of these statistics to describe the inequity of health outcomes or health determinants among various populations in the public health unit's catchment area.

Issuing a health status report provides information about the community which the public health unit serves that can be used to guide programming and resource decisions. It also works to educate the community about the role of public health programs in keeping a community healthy.

Health status reports are usually customized to highlight local issues. They can be about a single issue or a specific population or age group, or they can provide an overview of the general health of a community, often in comparison to provincial or national averages.

All boards of health issued a local health status report between 2006 and 2008, with one exception, which issued a report in 2000.

Collaboration with First Nations Case Study

As an example of inclusion at the governance level, the **Peterborough County-City Board of Health** (PCCHU) has signed an agreement with Curve Lake First Nation and Hiawatha First Nation for comprehensive public health services.

Both communities contribute their share of the 25% local funding, and the council of each band appoints one of its members to the board of health for one, two, or three years. Curve Lake First Nation and Hiawatha First Nation also may jointly appoint a representative. In Peterborough, Curve Lake First Nation Chief Keith Knott has served as a Board Member since 2002, including a term as Chair in 2004. The relationship with these two communities continues to evolve and PCCHU continues to act as a resource, a facilitator, an educator, a trainer, and an advocate as needs arise.

PCCHU has partnered with staff at the Curve Lake First Nation Health Centre on a youth tobacco-prevention strategy. Curve Lake First Nation and Hiawatha First Nation are partners in the Health Canada funded smoking cessation project and also have partnered with PCCHU on a proposal to the Canadian Tobacco Control Research Initiative.

Services offered by the health unit, such as HBHC home-visiting, food handler training and certification, parenting groups (such as Nobody's Perfect), and food security initiatives, such as "Come Cook with Me" enhance the programs that already exist within the First Nation. Child care is provided, so parents can have some time for themselves, forge new friendships, and learn new skills.

Case Study 16

28. Strategic Plan

The indicator for strategic plan is defined as *whether a board of health reports having a strategic plan in place that covers the current period (2008)*.

A strategic plan is an organizational document that generally covers a period of three to five years, presents the organization's mission and vision, describes the relationship of programs to community needs and establishes priorities for action within a specific timeframe and with specific resources.

The existence of a strategic plan is an indicator of good governance because it signals a purposeful approach to planning and priority setting for the organization. Such plans are also a key element in capacity building because they provide an opportunity for an organization to consider its strengths and weaknesses, and to make plans to address these.

Strategic plans are commonly used among boards of health, with 24 of the 36 boards of health reporting having a strategic plan current as of 2008. Three boards of health had strategic plans that expired prior to 2008, two boards of health have a strategic plan that began in 2009, and seven reported that they do not have a strategic plan in place.

29. Emergency Response Plan Tested

The indicator emergency response plan tested is defined as *whether a board of health has an internal emergency response plan and whether it was tested between January 1, 2007 and the date of the survey in November, 2008*. Testing an emergency response plan would include activities such as running a table top exercise, testing a telephone contact list of all staff, and staging a mock emergency scenario.

All boards of health reported that they had an internal emergency response plan in place, and the majority (29) had tested their plans since January 1, 2007. Seven boards of health reported they had not tested their plans since this date.

Of the 29 boards of health that reported they had tested their plans, most used more than one method to assess the strengths and weaknesses of their plans. The most common methods were table top exercises (18 boards of health) and scenarios or simulations (17 boards of health). The third most common method, used by 15 boards of health, was to conduct a call out or fan out exercise, which tests the ability to contact all staff or designated people by telephone and other electronic means.

More than seventy percent of boards of health that had tested their plans (21 of 29 boards of health) used at least two of these methods and 10 boards of health had completed multiple versions of a testing exercise over this time period.

In addition, eight of the boards of health that had tested their plans have also faced real emergency situations during this period, and reported that they have been able to identify ways to improve their emergency response plans based on these experiences.

30. Accreditation Status

The accreditation status indicator is defined as *whether the board of health participates in an accreditation process, and if so, indicates the accrediting organization and current accreditation status.*

Accreditation sets benchmarks of consistent standards for public health services that should be met by boards of health. It also provides a process for quality improvement by identifying areas for improvement in efficiency and performance. In doing so, accreditation acts as a continuous quality improvement mechanism and embeds this as a feature of the public health culture.

Fourteen boards of health were accredited at the time of the survey. A further seven boards of health are preparing to undertake, or are currently undertaking the accreditation process.

Of the 21 boards of health involved in accreditation, 19 are accredited with or working towards accreditation with the Ontario Council on Community Health Accreditation (OCCHA), one is accredited with Accreditation Canada, and one is accredited with the National Quality Institute.

Operation Hairspray Case Study

Ottawa Public Health has developed a health protection initiative that works with community members to provide health information to populations at risk. Operation Hairspray trains African and Caribbean hairdressers and barbers to deliver culturally appropriate information about HIV/AIDS prevention strategies to their customers and to members of local African and Caribbean communities.

Volunteers in Operation Hairspray are trained as peer educators and acquire the knowledge and skills needed to impart STI and HIV/AIDS prevention information while they are interacting with their clients. Over the course of 12 months, 19 peer volunteers were recruited and trained across Ottawa. In total, they made more than 14,000 contacts with clients and community members, sharing information and a variety of different written publications on basic HIV/AIDS prevention, and distributing more than 24,000 condoms. South East Ottawa Centre Healthy Communities created a database to house information collected by the peer volunteers.

In 2008, Ottawa Public Health developed a successful partnership with Somerset West Community Health Centre to expand the reach of the project by recruiting and training an additional 20 peer volunteers. The AIDS Community Action Programme (ACAP) provided time-limited funding for Operation Hairspray, Phase 2: Spray the Word. To date, an additional seven peer volunteers have been recruited and trained.

Case Study 17

31. Medical Officer of Health Performance Evaluation

The indicator medical officer of health performance evaluation is defined as *the completion of a regularly scheduled performance evaluation of the medical officer of health, by type of evaluator and by year of the most recent evaluation.*

The majority of boards of health (32) report that their medical officer of health receives a regularly scheduled performance evaluation, and three report that MOH performance evaluation does not occur within their boards of health. One board of health did not respond to this question.

In terms of frequency, about two thirds of those that have regular performance evaluations (21 of 32) report that reviews are done annually. An additional four boards of health conduct MOH performance evaluations every 2 years and the remaining boards of health use varying schedules.

In terms of who conducts the performance evaluations, 23 boards of health use a committee of board members, and two use a self evaluation method. Among the remaining boards of health that conduct performance evaluations, the performance evaluation was conducted by the Chief Administrative Officer (3), the City Manager or Deputy City Manager (2) or the Commissioner of Health (2). In two of these cases, the senior manager also received input from members of the board of health. Two boards of health did not report on their method of evaluation.

32. Medical Officer of Health Reporting Relationships

The indicator medical officer of health (MOH) reporting relationships is defined as *situations where the Medical Officer of Health attends board of health meetings and/or standing committee meetings, and whether he or she participated in the meetings. Participation includes attending meetings and providing reports, advice or presentations to the board.*

The MOH is entrusted with statutory responsibilities to guard and protect the community's health. In order to fulfill these responsibilities, the HPPA specifies that the MOH "report directly to the board of health on issues related to public health concerns and to public health programs and services".¹²⁵

Boards of health were asked to describe how their MOHs reported to their boards of health in 2007, with participation including activities such as providing written or verbal reports, presenting items, or participating in the meeting to address issues under discussion.

In the majority of cases (23), MOHs reported directly to the board of health while 10 others have the MOH report to both a standing committee of the board and to the board of health itself. In two cases, the MOH reports only to a standing committee of the board.

33. Board Member Orientation

The indicator board member orientation is defined as *situations where new board of health members are provided with an orientation to the roles and responsibilities of the board of health, the duties of members and public health functions and issues.*

In order to effectively carry out their responsibilities, new members of any board of directors require a thorough understanding of their service sector. An orientation program for new members to a board of health should include information on public health in Ontario; the board's roles and responsibilities, as well as the individual's role and responsibilities; the board's vision and objectives; existing provincial legislation related to boards of health; the roles and responsibilities of the board of health in relation to the medical officer of health; the Ontario Public Health Standards; and information about relevant organizations.

Orientation of board members is supported by the Association of Local Public Health Agencies through training programs and resources.

Of the 36 boards of health, 35 reported that they routinely orient new board members and that this orientation includes training or information on the core functions of public health and the board of health's governance responsibilities.

34. Board Self-Evaluation

The indicator board self-evaluation is defined as *situations where a board of health has engaged in a process to evaluate its governance processes and organizational effectiveness.*

Board self-evaluation is usually a requirement for the accreditation of an organization.

Of the 36 boards of health, 13 reported that they regularly evaluate their performance to improve systems and processes, including an assessment of the governing body's own structures, processes and team functioning. The most recent review time frames ranged from 2003 to 2008, with 9 occurring in 2007 or 2008.

The remaining 23 boards of health reported that their boards do not undertake a self evaluation process.

Working with Correctional Facilities Case Study

The Halton Region Health Department's Communicable Disease Control team has launched a program to assist and support health in the two “Super Jails” (Maplehurst and the Vanier Centre) within its jurisdiction. Maplehurst Correctional Complex, with a population of 1,182 and a turnover rate of 30 inmates per day, is the largest male correctional facility in Canada. The Vanier Centre for Women is a 333-bed medium- and maximum-security facility with an almost 100% turnover rate every 18 to 21 days and an 80% recidivism rate.

The Communicable Disease Control team provides program support to both facilities and works closely with the jail's health services and administration to ensure routine admission testing, including testing for tuberculosis, and prompt reporting of communicable disease issues for appropriate follow-up and treatment. At both facilities, 95% of the workload is TB related, including latent TB infections (LTBIs), active disease follow-up, treatment and contact management.

In addition, the Food Safety team conducts regular compliance inspections of the kitchen facilities at both locations. One is a commercial-grade food-production facility that provides more than 9,000 meals daily to five other provincial institutions. The other provides the meals for inmates at both Maplehurst and Vanier. In both kitchens, inmates assist in the production and assembly of meals.

In this role, Halton Region Public Health has been involved in both investigating food-safety-related complaints and outbreaks, including those resulting from contaminated food products and intentional adulteration. As well, staff respond to environmental health issues, including mould and indoor air quality issues.

The health unit also runs a Sexual Health and Needle Exchange Program that provides Maplehurst and Vanier inmates with education and case management for those diagnosed with a sexually transmitted infection (STI), and general education on STIs, including HIV/AIDS and hepatitis A, B, and C.

Case Study 18



Section V:

Moving Towards Performance Reporting

Context for Performance Management in Public Health

Public health interventions contribute to the effectiveness and outcomes of the health care system in a number of ways, including:

- reducing the need for emergency room and acute services through prevention efforts, so that fewer people develop conditions that require hospitalization
- providing information on population health status and needs through surveillance, to assist with health care planning and demand analysis
- improving health outcomes for broad populations through community based partnerships and collaboration with other health care providers.

Around the world, governments and communities are implementing performance measurement and management strategies in order to better address increasingly complex health issues and growing demand for services. The need to demonstrate program effectiveness and cost efficiency is driving the development of performance measures in all parts of the health care system.

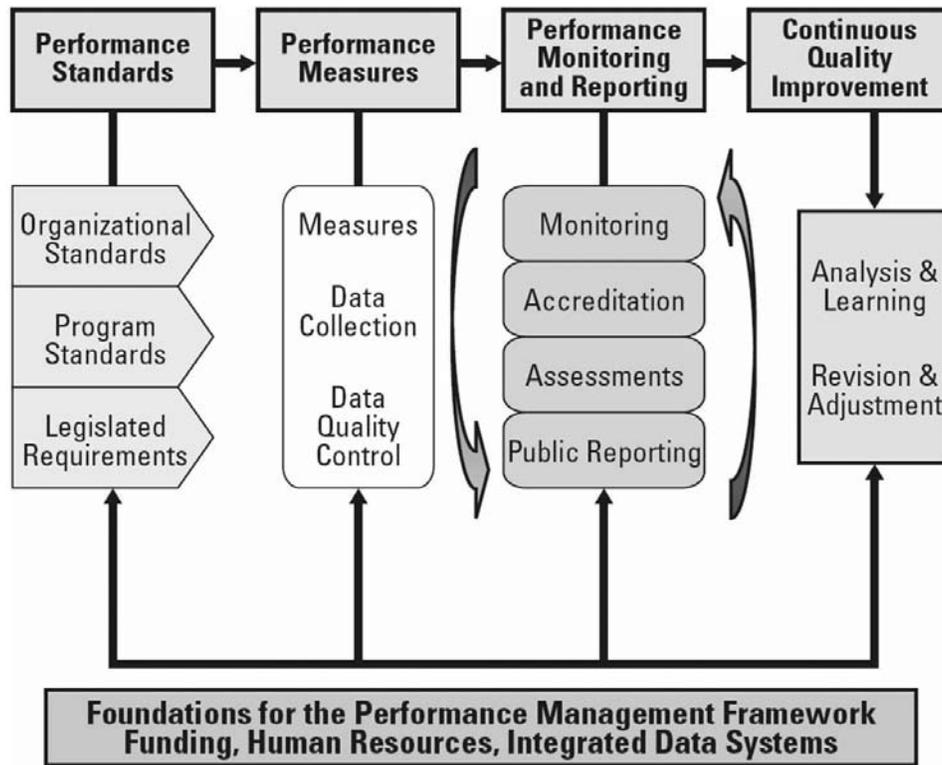
Ontario's work in implementing performance management within public health is congruent with this global trend within the health sector. It is also consistent with the performance reporting that is emerging on Ontario's health care system, such as the MOHLTC Health System Scorecard and from the Ontario Health Quality Council.

The development of this report has benefited from some of the lessons learned in other jurisdictions. Every jurisdiction faces the lack of reliable, meaningful performance indicators and corresponding data. As with other jurisdictions, data on process measures or need for services tend to be more readily available than data on the outcomes of population based interventions or how these outcomes are achieved.

All parts of the system, including acute care, primary care, public health, and long-term care, as well as Local Health Integrated Networks (LHINs), government, provincial associations, and provincial and regional service networks need to champion the changes required to shift from reactive, episodic acute care to proactive health protection, health promotion and chronic disease prevention and management. Leadership, skills development, incentives, and quality improvement across the health system and within individual organizations are pre-requisite to successful implementation of sustainable change.

This report represents the ministry's first steps towards developing a product to inform the development of the public health performance management system based on the conceptual approach presented in the Capacity Review Committee's (CRC) 2006 final report.¹²

CRC Vision for Performance Management in Public Health



Source: Capacity Review Committee. Revitalizing Ontario's public health capacity: the final report of the Capacity Review Committee. Toronto, ON: Queen's Printer for Ontario; 2006, p.25. Reproduced with permission.

As the CRC's diagram illustrates, a performance management system requires the development of tools and business processes focused on:

- setting clear performance goals and expectations that span multiple dimensions of the organization
- measuring progress
- reporting on performance and assessing the risks to achieving goals and expectations
- evaluating how effective the system is in achieving goals and building knowledge
- ongoing adjustments to incorporate new knowledge and circumstances

Some framework components, such as the release of the Ontario Public Health Standards and amendments to the HPPA to permit the use of accountability agreements, have been developed. Others, however, still are in early stages of development or redesign. Creating the tools and processes to properly support this framework is a long-term project that will align with, and build on, existing systems and processes.

Developing a Performance Management Culture

As a first product of the new approach to performance management in public health, it is hoped that this report will serve as a catalyst for a cultural shift within the sector. Such a shift involves moving away from an exclusive focus on measuring compliance and reporting on processes, and moving towards measuring outcomes and looking for ways to improve practices.

This shift in focus does not diminish the importance of tracking processes or delivering on program requirements. Performance management is far more than simply meeting minimum standards. Under the new performance management system, organizations within the public health system will need to work together to:

- identify current achievement levels
- explore ways to achieve more with the same resources
- use a continuous quality improvement approach to support change

As the performance management system matures, it is assumed that provincial level public reporting on all requirements and outcomes would be inappropriate and unmanageable. However, boards of health are responsible for ensuring that they are fulfilling and managing all requirements as a necessary part of their responsibilities for effective governance and management.

Moving forward, it will be necessary to balance provincial reporting on key high-level outcomes of primary importance to protecting and improving the public's health and the need to have enough information available to identify sectoral pressure points in order to be able to intervene when it is in the public's interest to do so.

Future Indicators

Through the process of developing this initial report it became clear that the kinds of indicators that directly measure performance of public health programs and services are not currently available. While Ontario's work in this area is building on the work of other jurisdictions, a review of the literature shows that it takes time; there are no ready made answers or systems that can be adopted quickly or without customization.

Developing these future indicators will be an iterative process as information needs are clarified and defined over time. The consensus-building phase of indicator selection and the more technical phases of indicator definition and development will require a significant investment of time and effort to properly consider the issues, the implications, and possible alternatives. It will also require engagement with public health professionals to develop a consensus that the right things are being measured, in the right ways, for the right purpose.

Once appropriate measures are identified as priorities for development, it will also be necessary to develop or modify data collection mechanisms and procedures for ensuring consistency in data collection.

Over time, it is anticipated that the indicators included in this report may be amended, or replaced in order to include a focus on sector-level risk assessment measures. Currently, measures that assess the strengths and weaknesses of public health have not been agreed upon, have not been clearly developed and defined and therefore are not likely to be supported by existing data sources.

Requirements for a Performance Management System

Developing an effective public health performance management system will require substantial infrastructure which will take time to design and implement. It is anticipated that much of this change will happen within the context of existing local and provincial resources.

The infrastructure required to support a performance management approach features:

- valid and reliable indicators
- accurate and reliable baseline data for each indicator
- a robust data-collection system
- policy on the use of targets
- knowledge about how program activities change outcomes
- consideration of local conditions, constraints, and program/organizational capacity to change outcomes
- organizational capacity to manage data, interpret results, and undertake actions to support operational changes

Some of the tasks required to support implementation of this vision include:

- reaching consensus on which indicators to develop that will report on program outcomes and allow the assessment of risks to the public
- designing and validating the identified indicators
- developing and implementing corresponding data-collection tools
- developing and implementing new accountability mechanisms that clarify roles, responsibilities, and reporting requirements
- developing and implementing supports and incentives for improving practices

The ministry, with its sister ministries (MHP and MCYS) and the advice of the Performance Management Working Group, is currently planning how best to accomplish these important tasks.

Implementation Challenges

Experience with performance management in other systems and jurisdictions has highlighted certain common implementation challenges. In Ontario, these challenges include the following:

- The individuals and organizations within the sector already have an existing set of relationships, areas of expertise, and ownership for data systems, processes, and tools, all of which are likely to be impacted by the implementation process.
- Success ultimately requires changes in attitudes and behaviours. This will require the use of change-management strategies at all levels of the sector.
- Current participants have different levels of experience and expertise in understanding and using performance management approaches. Some public health units are farther ahead than the ministry; others are newer to the ideas and process changes required for performance management. To fully engage staff at all levels, implementation will have to be concrete and practical. If the individuals within the sector do not share an understanding of accountability or performance management, the system will face strategy dilution which will undermine the implementation's effectiveness.

- This new approach to performance management is occurring at the same time as the Ontario Agency for Health Protection and Promotion is becoming active and all parties are in the process of establishing new relationships and determining appropriate linkages and roles.
- The significance of the issues faced in developing the day-to-day processes for working with data and ensuring data quality and integrity cannot be underestimated. The importance of using data to drive program delivery is emphasized in the Foundational Standard of the OPHS, and public health units are already working on ways to integrate these requirements into their processes.

Implementation Opportunities

Along with the challenges, there are opportunities to be leveraged, including:

- The substantial capacity and performance management expertise already at work within the Ontario public health sector. This can be marshalled to support the implementation of performance management at the sector level.
- The fact that many public health units and other stakeholders already are implementing compatible performance management practices at the local level. This presents the opportunity to learn from each other and benefit from our collective experience.
- As the Ontario Agency for Health Protection and Promotion becomes more operational, new capacity in such areas as assessing evidence, exchanging knowledge, collecting and analyzing data, and carrying out professional development activities will become available just as that additional capacity is needed.
- Performance management is about working smarter, not harder. The principles of performance management support working smarter by collecting data once for multiple uses and restricting collection to only the data that will be used to inform decisions. These principles will need to inform our work in order for everyone in the sector to see the benefits.

Conclusion

The ministry, in collaboration with MHP and MCYS, is pleased to be offering this report on public health in Ontario as an initial step towards implementing a new approach to performance management.

In the process of developing this report, with the advice of the Performance Management Working Group and others, experience has been gained as to the iterative decision making processes that are a vital and necessary part of developing this new performance management approach. Moving from a compliance framework to a performance management framework does not necessarily require new resources; what is most fundamental is a shift in thinking and in organizational culture to support continuous quality improvement.

The intended outcome of the performance management framework is to emphasize improvements through informed decision making, appropriate accountability, and sustainability of the Ontario public health system. Reaching this outcome will require that the ministries involved in public health continue to engage with organizations in Ontario's public health sector as well as those in the broader health care sector. Partnerships and collaborative efforts are a vital aspect of supporting a strong, flexible, and responsive public health system that is able to demonstrate improvements and achievements over time.





Appendices

Appendix 1: Peer Groups

A peer group is a cluster of health units with similar social and economic factors. From a practical perspective, the impact of social and economic factors on health outcomes can be seen more clearly by clustering the health units and comparing results within peer groups.

The peer groups used in this report are drawn from Statistics Canada's 2007 peer groups, which use 2007 health region boundaries and 2001 Census data. Across Canada there are nine peer groups identified by letters A through I. Ontario health units fall into six of these peer groups. The following tables provide a breakdown of Ontario health units by peer groups, the principal characteristics of each of the peer groups, and the variables used in the cluster analysis to determine the peer groups.

The method used to determine the peer groups is described on the Statistics Canada website.¹²⁶ "Statistics Canada uses a statistical method to achieve maximum statistical differentiation between health regions. Twenty-four variables were chosen to cover as many of the social and economic determinants of health as possible, using data collected at the health region level mostly from the Census of Canada. Concepts covered include:

- basic demographics (for example, population change and demographic structure),
- living conditions (for example, socio-economic characteristics, housing, and income inequality), and
- working conditions (for example, labour market conditions)."

For additional information please refer to the website at the following address:

<http://www.statcan.gc.ca/pub/82-221-x/2008001/5202322-eng.htm>

Table A: Ontario health units by peer group

2007 Peer Groups	Health Unit
Peer Group A:	
Urban/Rural Mix	Brant County Health Unit City of Hamilton Health Unit Hastings and Prince Edward Counties Health Unit Chatham-Kent Health Unit Kingston, Frontenac and Lennox and Addington Health Unit Lambton Health Unit Middlesex-London Health Unit Niagara Regional Area Health Unit Peterborough County-City Health Unit
Peer Group B:	
Urban Centre	Durham Regional Health Unit Halton Regional Health Unit City of Ottawa Health Unit Peel Regional Health Unit Waterloo Health Unit Wellington-Dufferin-Guelph Health Unit Windsor-Essex County Health Unit York Regional Health Unit
Peer Group C:	
Sparsely Populated Urban-Rural Mix	The District of Algoma Health Unit North Bay Parry Sound District Health Unit Sudbury and District Health Unit Thunder Bay District Health Unit Timiskaming Health Unit
Peer Group E:	
Mainly Rural	Elgin-St. Thomas Health Unit Grey Bruce Health Unit Haldimand-Norfolk Health Unit Haliburton, Kawartha, Pine Ridge District Health Unit Huron County Health Unit Leeds, Grenville and Lanark District Health Unit Oxford County Health Unit Perth District Health Unit Renfrew County and District Health Unit The Eastern Ontario Health Unit Simcoe Muskoka District Health Unit
Peer Group G:	
Metro Centre	City of Toronto Health Unit
Peer Group H:	
Rural Northern Regions	Northwestern Health Unit Porcupine Health Unit

Table B: Principal characteristics of peer groups¹²⁷

Peer group	Principal characteristics
A	Urban-rural mix from coast to coast Average percentage of Aboriginal population Low male population Slow population growth from 1996 to 2001
B	Mainly urban centres with moderately high population density Low percentage of government transfer income Rapid population growth from 1996 to 2001
C	Sparsely populated urban-rural mix from coast to coast Average percentage of Aboriginal population Negative population growth
D	Rural regions mainly in the central Prairies Moderate Aboriginal population Moderately high percentage of government transfer income Almost equal numbers of men and women Negative population growth
E	Mainly rural regions in Quebec, Ontario and the Prairies High proportion of people recently moved to or within these regions since 1996 Average percentage of Aboriginal population Moderate population growth
F	Northern and remote regions Very high Aboriginal population Moderately high percentage of government transfer income Slightly higher male population Moderate population growth
G	Largest metro centres with an average population density of 3,934 people per square kilometre Low Aboriginal population Moderate percentage of government transfer income High female population
H	Rural northern regions High Aboriginal population High male population Negative population growth
I	Mainly rural Eastern regions Very high percentage of government transfer income Negative population growth Low percentage of people having moved to or within these regions since 1996

Source: Statistics Canada. Health Indicators. 82-221-X., no. 1. Health regions and peer groups. Ottawa, Ont.: Minister of Industry; 2008. Adapted with permission.

Table C: Variables used in cluster analysis to define peer groups¹²⁸

Variable	Definitions	Source
2001 Population	Estimate of the total number of individuals living in a region.	Statistics Canada, Census 2001 (unadjusted)
Aboriginal Percentage	Proportion of a regions' total population self-identifying with an Aboriginal group.	Statistics Canada, 2001 Census, 2001 Census Coverage Studies, and Demography Division (population estimates)
Average Dwelling Value	Average expected value of an owner-occupied, non-farm, non-reserve dwelling (including the value of the land the dwelling is on) at the time of the Census.	Statistics Canada, 2001 Census
Average Income	Average family income for persons aged 15 and over, from all sources.	Statistics Canada, 2001 Census
Post-secondary graduates	Population aged 25 to 54 who have obtained a post-secondary certificate, diploma, or degree	Statistics Canada, 2001 Census (special tabulations)
Employment Rate (25 to 54)	Number of employed persons aged 25 to 54 divided by the total number of individuals between the ages of 25 and 54 in a given region.	Statistics Canada, 2001 Census (special tabulations) Health Region Peer Groups 2003, June 2004, Page 17
Growth Rate	Percent change in a regions population estimate from 1996 to 2001.	Statistics Canada, 1996 and 2001 Census (unadjusted)
Government Transfer Income	Proportion of all income that came from government transfers (e.g., GIS/OAS, C/QPP, EI, etc.) for the population 15 years of age and older. EI, etc.) for the population 15 years of age and older.	Statistics Canada, 2001 Census
Housing Affordability	Proportion of total households spending 30% or more of total household income on shelter.	Statistics Canada, 2001 Census
Immigrant Percentage	Those immigrants who came to Canada from 1991 to 2001 as a proportion of the total population.	Statistics Canada, 2001 Census
Median share of income	Proportion of income (from all sources) held by the bottom half of all households, based on the median household income for that specific community.	Statistics Canada, 2001 Census (special tabulations)

Table C: Variables used in cluster analysis to define peer groups (cont'd)

Variable	Definitions	Source
Internal Migrant Mobility	Proportion of people that lived in a different Canadian municipality at the time of the previous Census (5-year internal migrants). This excludes Canadians in households outside Canada (military and government personnel).	Statistics Canada, 2001 Census Health Region Peer Groups 2003, June 2004, Page 18
Lone-Parent Families	Proportion of lone-parent families among all census families living in private households. A census family refers to a married or common-law couple or lone parent with at least one never-married son or daughter living in the same household.	Statistics Canada, 2001 Census
Long Term Unemployment Rate	Proportion of the labour force aged 15 and over who did not have a job any time during the current or previous year.	Statistics Canada, 2001 Census
Low Income 15+	Proportion of persons in economic families and unattached individuals with 2000 incomes below the Statistics Canada low-income cut-off (LICO). The cut-offs represent levels of income where people spend disproportionate amounts of money for food, shelter, and clothing. LICOs are based on family size and degree of urbanization; cut-offs are updated to account for changes in the consumer price index. Data were not derived for economic families or unattached individuals in the Territories or on Indian Reserves.	Statistics Canada, 2001 Census
Low Income Children	Proportion of children under age 18 living in economic families with 2000 incomes below Statistics Canada's low-income cut-offs (LICO). Data were not derived for economic families or unattached individuals in the Territories or on Indian Reserves.	Statistics Canada, 2001 Census
Male-Female Ratio	Total number of males in a given region in 2001 divided by the total number of females.	Statistics Canada, 2001 Census

Table C: Variables used in cluster analysis to define peer groups (cont'd)

Variable	Definitions	Source
Owner-Occupied Dwellings	Proportion of dwellings in which the owner also lives. Band housing and collective dwellings (i.e. rooming houses, nursing homes, military camps etc.) are excluded from both numerator and denominator.	Statistics Canada, 2001 Census, Health Region Peer Groups 2003, June 2004, Page 19
Population Density	Number of people per square kilometre.	Statistics Canada, 2001 Census and Geography Division (special tabulations)
Population under 15	Proportion of the population in a given region under the age of 15 (2001 population).	Statistics Canada, 2001 Census (unadjusted)
Population 65 Years and Older	Proportion of the population in a given region aged 65 years and older (2001 population).	Statistics Canada, 2001 Census (unadjusted)
Strong MIZ	Census Metropolitan and Census Agglomeration Influenced Zones represents the proportion of the population living in Census Metropolitan Areas (CMAs), Census Agglomerations (CAs) and communities that fall outside CMAs/CAs that have at least 30% of the employed labour force commuting to CMAs/CAs. The larger the proportion, the stronger the relationship between the specific community and a nearby CMA/CA.	Statistics Canada, 2001 Census (special tabulations)
Unemployment Rate	Total number of unemployed individuals 15 and older divided by the total number of individuals 15 and older participating in the labour force.	Statistics Canada, 2001 Census
Visible Minority	Proportion of the population belonging to a visible minority group. As defined by the Employment Equity Act (1986), visible minorities are persons (other than Aboriginal people) who are non-Caucasian in race or non-white in colour.	Statistics Canada, 2001 Census

Appendix 2: Health Unit Profile Variable Definitions

#	Variable	Definition	Data Source
1	Size of Region (km ²)	Land area of health unit in square kilometres.	Statistics Canada, 2006 Census of Population
2	Population (2007)	Number of individuals residing in the health unit based on population estimates.	Provincial Health Planning Database (PHPDB), December 2008
3	Population Growth Rate (2002-2007)	The difference between the population at the end of the period and the population at the beginning of the period relative to the population at the beginning of the period; 2002 to 2007 Population Estimates Change (%).	Provincial Health Planning Database (PHPDB), December 2008
4	Population Density (km ²) (2007)	Number of individuals residing in the health unit (2007 Estimates) divided by the land area of the health unit in square kilometres.	Size of region: Statistics Canada, 2006 Census of Population; Population Estimates: Provincial Health Planning Database, December 2008
5	% Immigrants	Immigrants are persons who are, or have ever been, landed immigrants in Canada. A landed immigrant is a person who has been granted the right to live in Canada permanently by immigration authorities. Some immigrants have resided in Canada for a number of years, while others are more recent arrivals. Most immigrants are born outside Canada, but a small number were born in Canada. Includes immigrants who landed in Canada prior to Census Day, May 16, 2006 relative to the non-institutionalized population.	Statistics Canada, 2006 Census of Population
6	First Nations	A First Nation, or Band, is a group of people for whom lands have been set aside or declared to be a band for the purposes of the Indian Act.	First Nations Profiles, Indian and Northern Affairs Canada, 2008

Appendix 2: Health Unit Profile Variable Definitions (cont'd)

#	Variable	Definition	Data Source
7	Employment Rate	Number of persons employed in the week (Sunday to Saturday) prior to Census Day (May 16, 2006), expressed as a percentage of the total population 15 years and over excluding institutional residents.	Statistics Canada, 2006 Census of Population
8	Housing Affordability	Households (total renters and owners) spending 30% or more of total household income on shelter expenses. Shelter expenses include payments for electricity, oil, gas, coal, wood or other fuels, water and other municipal services, monthly mortgage payments, property taxes, condominium fees and rent. This excludes band housing on First Nation reserves.	Statistics Canada, 2006 Census of Population
9	% of Persons under 18 years of age in Low Income Households (after tax)	Proportion of persons <18 years in low-income households relative to the total number of children <18 years in private households. Proportion of children <18 years living under LICOs after tax. After tax income refers to total income from all sources minus federal, provincial and territorial income taxes paid for 2005. Refers to the position of an economic family or a person 15 years and over not in an economic family in relation to Statistics Canada's low income before-tax or after-tax cut-offs. Since each family member shares the income status of that family, percentages in low income can be derived for all persons in private households.	Statistics Canada, 2006 Census of Population
10	% with Post Secondary Education	Proportion of population ages 25-64 years completing a post-secondary education relative to the total non-institutional population 25-64 years of age. Post-secondary education includes: Apprenticeship or trades certificate or diploma; College, CEGEP or other non-university certificate or diploma; University certificate or diploma below the bachelor level; and University certificate, diploma or degree.	Statistics Canada, 2006 Census of Population

Appendix 2: Health Unit Profile Variable Definitions (cont'd)

#	Variable	Definition	Data Source
11	Size of Birth Cohort (2007)	Number of live births for the 2007 calendar year based on hospital newborn admissions weighing 500 grams or more. Note that the provincial total includes unknown but not out of province births as analyzed by residence of mother.	Provincial Health Planning Database (PHPDB), Inpatient Discharges, February 2009
12	% Francophone Population	Number of people with French as their mother tongue. Mother tongue refers to the first language learned at home in childhood and still understood by the individual at the time of the census. Definition of Francophone status includes a response of French as a first language including: French (single response); English and French (multiple); French and non-official language (multiple) + English and French and non-official language(s) (multiple).	Statistics Canada, 2006 Census of Population
13	% Speaking neither English nor French	Proportion of individuals who cannot conduct a conversation in either of the official languages of Canada (in English only, in French only, in both English and French).	Statistics Canada, 2006 Census of Population
14	Cost of Nutritious Food Basket for a Family of Four (2008)	The nutritious food basket is a food costing tool that is a measure of the cost of healthy eating based on Canada's current nutrition recommendations. It consists of a weekly cost of a fixed basket of food items for various age/sex groups, expressed for a reference family of four (a man and woman, each aged 25-49 years; a boy, 13-15 years of age; and a girl 7-9 years old).	Submitted by Public Health Units to Ministry of Health Promotion, Chronic Disease Prevention & Health Promotion Branch, 2008

Appendix 2: Health Unit Profile Variable Definitions (cont'd)

#	Variable	Definition	Data Source
15	# Food Premises (2006)	Encompass premises where food or milk is manufactured, processed, prepared, stored, handled, displayed, distributed, transported, sold or offered for sale, but does not include a private residence as defined under the <i>Health Promotion and Protection Act</i> . Included are the total number of high, moderate and low risk permanent (year round) food premises.	Ministry of Health and Long-Term Care, Food Safety Audit 2006.
16	# Long-term Care Homes	Number of Long-Term Care Homes in the health unit. A long-term care (LTC) home provides care and services for people who no longer are able to live independently or who require onsite nursing care, 24-hour supervision or personal support. Nursing homes under the <i>Nursing Homes Act</i> , approved charitable homes for the aged under the <i>Charitable Institutions Act</i> and homes under the <i>Homes for the Aged and Rest Homes Act</i> are all LTC homes. This definition includes all Nursing Homes and Homes for Aged. It does not include temporary and interim facilities. It excludes retirement homes and supportive housing.	Provincial Health Planning Database (PHPDB), Institution Data [2008]. Updated on advice of individual public health units.
17	# Hospital Sites	Number of hospital sites in the health unit.	Ministry of Health and Long-Term Care, 2008. Updated on advice of individual public health units.
18	# Licensed Day Nurseries	Number of licensed child care centres under section 1 of the Day Nurseries Act in the health unit.	Based on data from Ministry of Children and Youth Services, 2008. Updated on advice of individual public health units.

Appendix 2: Health Unit Profile Variable Definitions (cont'd)

#	Variable	Definition	Data Source
19	# Personal Service Settings (estimated)	Estimated number of personal service settings as defined in the Infection Control in Personal Services Settings Protocol (1998) include any facility where there is a risk of exposure to blood, such as but not limited to, hairdressing and barber shops, tattoo and body piercing studios, electrolysis, and aesthetic clinics.	Board of Health Survey, 2008
20	# Schools	Number of public and separate schools in a health unit. Excludes private schools. Schools that share facilities are counted individually.	Based on data from Ministry of Education, 2008. Updated on advice of individual public health units.
21	# School Boards	Number of school boards in a health unit. Includes both English and French language school boards for public and separate schools. Does not include boards of private schools. The Ontario total reflects the number of unique school boards in Ontario. Because some school boards cross over into multiple health units the sum total of the column is different from the Ontario total.	Based on data from Ministry of Education, 2008. Updated on advice of individual public health units.
22	# Small Drinking Water Systems	Number of small drinking water systems within each health unit as per the inventories submitted by health units and their review by the Environmental Health Branch. Small drinking water systems are defined as per O. Reg 318/08 and O. Reg 319/08 under the <i>Health Protection and Promotion Act</i> .	Ministry of Health and Long-Term Care, 2008.

Appendix 2: Health Unit Profile Variable Definitions (cont'd)

#	Variable	Definition	Data Source
23	# Municipalities	Number of Ontario single and lower tier municipalities within each health unit.	Based on data from Ministry of Municipal Affairs and Housing, 2008. Updated on advice of individual public health units.
24	Board of Health Governance Model	<p>There are five types of governance models as follows:</p> <p>Autonomous: Separate from any municipal organization but with multi-municipal representation (including citizen representatives appointed by municipalities); potential for provincial appointees.</p> <p>Autonomous/Integrated: Only one municipality appoints representatives (including citizen representatives); potential for provincial appointees. Operate within municipal administrative structure.</p> <p>Regional: Boards are Councils of Regional Government (federations of local municipalities); no citizen representatives; no provincial appointees.</p> <p>Single-Tier: Boards are Councils of Single Tier Municipalities (area with only one level of municipal government); no citizen representatives; no provincial appointees.</p> <p>Semi-Autonomous: Single-tier Council appoints members to a separate “board of health” (including citizen representatives); Council approves budget and staffing; no provincial appointees.</p>	Ministry of Health and Long-Term Care, 2008.

Appendix 3: Indicator Definitions

1. Teen Pregnancy

Definition:

The teen pregnancy rate estimates the number of pregnancies (resulting in live births, still births and therapeutic abortions) per 1,000 females age 15 -19 years.

Data Source(s):

Numerator: Number of deliveries (live birth and still births): Inpatient Discharges, Provincial Health Planning Database, Ministry of Health and Long-Term Care
Therapeutic abortions: Therapeutic Abortions Summary, Provincial Health Planning Database, Ministry of Health and Long-Term Care

Denominator: Population Estimates, Provincial Health Planning Database, Ministry of Health and Long-Term Care

Formula:

$$\left\{ \frac{\text{Total number of deliveries (live births and stillbirths) and therapeutic abortions for females age 15-19 years (2007 calendar year)}}{\text{Total number of females age 15-19 years (2007 calendar year)}} \right\} \times 1,000$$

Notes:

- Intellihealth therapeutic abortions summary report was used to derive the number of therapeutic abortions for females ages 15-19 years
- IntelliHealth\ 20 - Ontario Special Reports\Therapeutic Abortion Summary. Report # 20-0001 was used to derive the number of therapeutic abortions
- Intellihealth\05 Inpatient Discharges\Hospital Births\ Deliveries - Ontario x Mother's Age: Report #: 05-0004 was used to derive the number of deliveries
- Analyzed by mother's usual place of residence, not place of birth
- Analyzed by ICD 10-CA codes containing Z37 for live births and stillbirths by mother's date of discharge, and mother's age at time of delivery
- Excludes births and therapeutic abortions to females residing out-of-province; excludes estimates of fetal loss; excludes abortions conducted with females residing out of province

2. Low Birth Weight

Definition:

The low birth weight rate indicator estimates the rate of singleton live births weighing 500-2499 grams immediately upon birth, based on the mother’s usual place of residence per the total for singleton live births weighing at least 500 grams per 1,000 births.

Data Source(s):

Numerator: Inpatient Services Provincial Health Planning Database, Ministry of Health and Long-Term Care

Denominator: Inpatient Services (Hospital Data), Provincial Health Planning Database, Ministry of Health and Long-Term Care

Formula:

$$\left\{ \frac{\text{Total number of singleton live births weighing between 500 and 2499 grams (2007 calendar year)}}{\text{Total number of singleton live births weighing at least 500 grams (2007 calendar year)}} \right\} \times 1,000$$

Notes:

- Excludes births with weights recorded under 500 grams due to possible entry errors with still born births
- Excludes multiple births
- PHPDB Qualifications: Newborns (entry code=N) at date of admission; Patient Diagnosis Codes (beginning with Z380, Z381, Z382) for the Calendar Year (2007). Weights for singleton live births (greater than or equal to 500); Weights for low births weights (greater than or equal to 500 grams and less than 2500 grams)
- Intellihealth\05 Inpatient Discharges\Hospital Births\ Low Birth Weight, Singleton Births: Report # 05–0004 was used to derive both the numerator and denominator
- The indicator is not limited to full-term births and also includes pre-term births
- Analyzed by mother’s usual place of residence, not place of birth
- Excludes births to mothers who reside out of province

3. Breastfeeding Duration

Definition:

The breastfeeding duration rate indicator estimates the proportion of mothers age 15-55 years who breastfed (not exclusively) their last baby (born within the past five years) for a duration of six months or more.

Data Source(s):

<i>Numerator:</i>	Canadian Community Health Survey Cycles 2.1, 3.1 and Canadian Community Health Survey 2007, Statistics Canada, Ontario Share Files distributed by the Ministry of Health and Long-Term Care
<i>Denominator:</i>	Canadian Community Health Survey Cycles 2.1, 3.1 and Canadian Community Health Survey 2007, Statistics Canada, Ontario Share Files distributed by the Ministry of Health and Long-Term Care

Formula:

$$\left\{ \frac{\text{Total weighted number of female respondents age 15-55 years who gave birth in the past five years and who breastfed (non-exclusively) their child for at least six months}}{\text{Total weighted number of female respondents age 15-55 years who gave birth in the past five years}} \right\} \times 100$$

Notes:

- This indicator was derived by combining three cycles of the Canadian Community Health Survey (CCHS) in order to obtain reportable and stable data for breastfeeding duration estimates at the public health unit level in Ontario. Simply using one survey to estimate for breastfeeding duration resulted in unstable estimates for the majority of public health units in Ontario, and in many cases the data was unreportable
- Numerator: MEX_06= Six Months (9), Seven to Nine Months(10), Ten to Twelve Months (11), One year or more (12)
- Denominator: MEX_01=Has given birth in the last five years (1)
- Excluded not applicable (96) and not stated (99) responses to MEX_01. Exclusion of women who are currently breastfeeding (MEXC_05=2)
- PHU 3545 was dropped, 3547 = North Bay, and 3560 = Simcoe in CCHS 2.1 due to amalgamations of public health units
- There was insufficient sample size to stratify the data for each public health unit for CCHS 2007, and therefore cycles 2.1, 3.1, and CCHS 2007 of the CCHS were combined according to methods outlined by Thomas and Wannell.¹²⁹ Both the separate and pooled approaches to combining cycles of the CCHS were considered. The separate approach to combining cycles of CCHS was used in the report
- As there were not consistent trends over time over the 3 individual estimates for breastfeeding duration, combining the 3 cycles of the CCHS did not diminish the data output in any way

4. Postpartum Contact

Definition:

The postpartum contact indicator is defined as the percentage of families who consented to a post-partum phone call under the Healthy Babies Healthy Children (HBHC) program and who received a post-partum phone call or contact from the health unit within 48 hours of release from hospital after giving birth.

Data Source(s):

Numerator: Integrated Services for Children Information System, Ministry of Children and Youth Services
Denominator: Integrated Services for Children Information System, Ministry of Children and Youth Services

Formula:

$$\left\{ \frac{\text{\# of families who were contacted by the health unit within 48 hours of hospital discharge (2007 calendar year)}}{\text{\# of families (with or without a Parkyn) who consented to be contacted by the health unit (2007 calendar year)}} \right\} \times 100$$

Notes:

- Data extracted on July 27, 2008
- Not based on all live births. Families must have consented to receiving an HBHC phone call
- Items 21.1/21.0 on the ISCIS extract report were used

5. Smoking Prevalence

Definition:

The smoking prevalence indicator estimates the age-standardized proportion of people age 12 years and older who are current smokers (daily or occasional cigarette smokers).

- Current smoker – daily smoker or occasional smoker
- Daily smoker – smoking at least one cigarette per day
- Occasional smoker – does not have at least one cigarette per day

Data Source(s):

Numerator: Canadian Community Health Survey 2007, Statistics Canada, Ontario Share File distributed by the Ministry of Health and Long-Term Care

Denominator: Canadian Community Health Survey 2007, Statistics Canada, Ontario Share File distributed by the Ministry of Health and Long-Term Care

Formula:

$$\left\{ \frac{\text{Weighted number of respondents age 12+ years who are current (daily + occasional) cigarette smokers}}{\text{Weighted total number of respondents age 12+ years}} \right\} \times 100$$

Notes:

- Numerator: SMK_DSTY= Daily Smoker (1) or Occasional Smoker (former daily smoker) (2) and Occasional Smoker (3)
- Denominator: SMK_DSTY= Daily (1), Occasional (2) Occasional (3) Former Daily Smoker (4) Former Occasional Smoker (5) and Never Smoker (6)
- Not Answered ((99), based on Don't Know, Refusals, and Not Stated to at least one of the questions) responses were excluded
- Age groups in years used for direct age-standardization: 12-19, 20-34, 35-49, 50-64, 65-74, 75+
- Direct age-standardization to the 1991 Canadian population

6. Youth Lifetime Smoking Abstinence

Definition:

The youth lifetime smoking abstinence indicator estimates the proportion of young people age 12-19 years who have never smoked a whole cigarette.

Data Source(s):

Numerator: Canadian Community Health Survey 2007, Statistics Canada, Ontario Share File distributed by the Ministry of Health and Long-Term Care

Denominator: Canadian Community Health Survey 2007, Statistics Canada, Ontario Share File distributed by the Ministry of Health and Long-Term Care

Formula:

$$\left\{ \frac{\text{Weighted number of respondents age 12-19 years who have never smoked at least one whole cigarette}}{\text{Weighted total number of respondents age 12-19 years}} \right\} \times 100$$

Notes:

- Based on CCHS Question SMK_01B “Have you ever smoked a whole cigarette?”
- Numerator: SMK_01=No (2)
- Denominator: SMK_01= Yes (1), No (2) or Not Applicable (6)
- Refusals (8) and Not Stated (9) responses were excluded

7. Adult Heavy Drinking

Definition:

The adult heavy drinking episode indicator estimates the age-standardized proportion of people age 20 years and older who reported consuming five or more drinks on at least one occasion during the previous 12 months.

Data Source(s):

Numerator: Canadian Community Health Survey 2007, Statistics Canada, Ontario Share File distributed by the Ministry of Health and Long-Term Care

Denominator: Canadian Community Health Survey 2007, Statistics Canada, Ontario Share File distributed by the Ministry of Health and Long-Term Care

Formula:

$$\left\{ \frac{\text{Weighted number of respondents who are age 20+ years who reported consuming 5 or more drinks, on at least one occasion during the previous 12 months}}{\text{Weighted number of respondents age 20+ years who did or did not drink}} \right\} \times 100$$

Notes:

- Numerator ALC_3=Less than once per month(2), Once per month(3), 2-3 times per month(4), Once per week(5), More than once per week (6)
- Denominator: ALC_1= Yes (1), No (2)
- Don't Know (97), Refusal (98), Not Stated (99) responses were excluded
- Age groups in years used for direct age-standardization: 20-34, 35-49, 50-64, 65-74, 75+
- Direct age-standardization to the 1991 Canadian population

8. Youth Heavy Drinking

Definition:

The youth heavy drinking episode indicator identifies the proportion of people age 12-19 years who reported consuming five or more drinks on at least one occasion during the previous 12 months.

Data Source(s):

Numerator: Canadian Community Health Survey 2007, Statistics Canada, Ontario Share File distributed by the Ministry of Health and Long-Term Care

Denominator: Canadian Community Health Survey 2007, Statistics Canada, Ontario Share File distributed by the Ministry of Health and Long-Term Care

Formula:

$$\left\{ \frac{\text{Weighted number of respondents age 12-19 years who reported consuming 5 or more drinks on at least one occasion during the previous 12 months}}{\text{Weighted number of respondents age 12-19 years who did or did not drink}} \right\} \times 100$$

Notes:

- Numerator: ALC_3=Less than once per month(2), Once per month(3), 2-3 times per month(4), Once per week(5), More than once per week (6)
- Denominator: ALC_1= Yes (1) No (2)
- Don't Know (97), Refusal (98), Not Stated (99) responses were excluded

9. Physical Activity Index

Definition:

The physical activity index indicator estimates the age-standardized proportion of the population age 12 years and older by level of energy expenditure in the categories active and moderately active in their leisure time physical activity.

- Active = respondents who average 3.0+ kcal/kg/day of energy expenditure
- Moderately active = respondents who average 1.5-2.9 kcal/kg/day
- Inactive = respondents with energy expenditure levels less than 1.5 kcal/kg/day

Data Source(s):

Numerator: Canadian Community Health Survey 2007, Statistics Canada, Ontario Share File distributed by the Ministry of Health and Long-Term Care

Denominator: Canadian Community Health Survey 2007, Statistics Canada, Ontario Share File distributed by the Ministry of Health and Long-Term Care

Formula:

$$\left\{ \frac{\text{Weighted number of respondents age 12+ years by physical activity index categories active and moderately active}}{\text{Weighted number of respondents age 12+ years}} \right\} \times 100$$

Notes:

- Numerator: PACDPAI= active (1) or moderately active (2)
- Denominator: PACDPAI= active (1) and moderately active (2) and inactive (3)
- Excluded not stated responses (9) from denominator
- Age groups in years used for direct age-standardization: 12-19, 20-34, 35-49, 50-64, 65-74, 75+
- Direct age-standardization to the 1991 Canadian population
- Respondents were asked about their participation in various types of physical activities in the previous three-month period, as well as the frequency and duration of each activity

10. Healthy Body Mass Index

Definition:

The healthy body mass index indicator estimates the age-standardized proportion of people age 18 years and older whose self reported height and weight denote a healthy body mass index (BMI). BMI is calculated using the person’s weight in kilograms divided by their height in metres squared. The International Standard for BMI is: <18.5 (underweight), 18.5-24.9 (acceptable weight), 25-29.9 (overweight), and 30 or higher (obese). The World Health Organization considers a BMI in the range of 18.5-24.9 to be healthy for most adults.

Classification	BMI Category	Risk of developing health problems
Underweight	<18.5	Increased
“Normal or Healthy” Weight, Acceptable Weight Range	18.5 – 24.9	Least
Overweight	25.0 – 29.9	Increased
Obese		
Class I	30.0 – 34.9	High
Class II	35.0 – 39.9	Very high
Class III	≥ 40.0	Extremely high

Data Source(s):

Numerator: Canadian Community Health Survey 2007, Statistics Canada, Ontario Share File distributed by the Ministry of Health and Long-Term Care

Denominator: Canadian Community Health Survey 2007, Statistics Canada, Ontario Share File distributed by the Ministry of Health and Long-Term Care

Formula:

$$\left\{ \frac{\text{Weighted number of respondents age 18+ years (excluding pregnant women and breastfeeding women) with BMI of 18.5-24.9}}{\text{Weighted number of respondents age 18+ years (excluding pregnant women and breastfeeding women)}} \right\} \times 100$$

Notes:

- CCHS excludes pregnant women, as well as women age 18-49 years who did not answer the pregnancy question. The index is calculated for those age 18 years and over, excluding pregnant and lactating women, as well as persons less than 3 feet tall or greater than 6 feet 11 inches.¹³⁰ There was an additional exclusion of women who were currently breastfeeding (MEX_05=1), and respondents who chose ‘Not applicable’ (96) or Not Stated (99) responses in the indicator calculation
- Numerator: HWTDISW = Normal or healthy weight (2)
- Denominator: HWTDISW = Underweight (1), Normal or healthy weight (2), Overweight (3), and Obese (4-6)
- Age groups in years used for direct age-standardization: 18-34, 35-49, 50-64, 65-74, 75+
- Direct age-standardization to the 1991 Canadian population

11. Fruit and Vegetable Consumption

Definition:

The fruit and vegetable consumption indicator estimates the age-standardized proportion of the population age 12 years and older that reported consuming fruits and vegetables five or more times per day.

Data Source(s):

Numerator: Canadian Community Health Survey 2007, Statistics Canada, Ontario Share File distributed by the Ministry of Health and Long-Term Care

Denominator: Canadian Community Health Survey 2007, Statistics Canada, Ontario Share File distributed by the Ministry of Health and Long-Term Care

Formula:

$$\left\{ \frac{\text{Weighted number of respondents age 12+ years who Consumed fruit and vegetables five or more times per day}}{\text{Weighted number of respondents age 12+ years}} \right\} \times 100$$

Notes:

- Numerator: FVCGTOT= 5 to 10 “servings” of fruit and vegetables (2) and more than 10 “servings” of vegetables (3)
- Denominator: FVCGTOT= less than 5 “servings” (1), 5 to 10 “servings” of fruit and vegetables (2) and more than 10 “servings” of vegetables (3)
- Excluded if answer was not stated
- Age groups in years used for direct age-standardization: 12-19, 20-34, 35-49, 50-64, 65-74, 75+
- Direct age-standardization to the 1991 Canadian population

12. Fall-Related Hospitalizations among Seniors

Definition:

The fall-related hospitalization rate indicator estimates the age-standardized number of injury-related hospital separations that are due to falls in seniors age 65 years and older per 100,000 population.

Data Source(s):

Numerator: Discharge Abstract Database, Canadian Institute for Health Information
Distributed by Population Health Planning Database, Ministry of Health and Long-Term Care

Denominator: Population Estimates, Population Health Planning Database, Ministry of Health and Long-Term Care

Formula:

$$\left\{ \frac{\text{Number of hospital separations due to falls
In those age 65+ years (2007 calendar year)}}{\text{Total population age 65+ years (2007 calendar year)}} \right\} \times 100,000$$

Notes:

- Age groups in years for direct age-standardization: 65-74, 75-85, and 85+
- Direct age-standardization to the 1991 Canadian population
- Includes Accidental Falls (ICD-10-CA: W00-W19) with external causes
- PHPDB Qualifications: Calendar Year (2007); Ages (greater than or equal to 65); Patient diagnosis beginning with W0 or W1 in ICD-10-CA Block Codes including diagnosis with external cause diagnoses
- IntelliHealth\Shared Reports\PHU\Fall Related Hospitalizations 65120

13. Enteric Illnesses Incidence

Definition:

The enteric illnesses age-standardized incidence rate estimates the total number of reported cases of selected enteric illnesses per 100,000 population.

Selected reporting fields include:

- Amebiasis
- Botulism
- Campylobacter Enteritis
- Cholera
- Cryptosporidiosis
- Cyclosporiasis
- Food Poisoning, All Causes
- Gastroenteritis, Institutional Outbreaks
- Giardiasis
- Hepatitis A
- Listeriosis
- Paratyphoid fever
- Typhoid Fever
- Salmonellosis
- Shigellosis
- Trichinosis
- Verotoxin producing E.coli including Hemolytic Uremic syndrome (HUS)
- Yersiniosis

Data Source(s):

Numerator: Integrated Public Health Information System, Ministry of Health and Long-Term Care
Denominator: Population Estimates, Provincial Health Planning Database, Ministry of Health and Long-Term Care

Formula:

$$\left\{ \frac{\text{Total number of new reported cases of selected enteric illnesses (2007 Calendar year)}}{\text{Total population (2007 Calendar year)}} \right\} \times 100,000$$

Notes:

- Data was extracted on February 3, 2009 from the Integrated Public Health Information System
- Includes both sporadic and outbreak reportable enteric cases that met the provincial surveillance case definition
- Age groups in years used for direct age-standardization: 0-4, 5-9, 10-14, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90+
- Direct age-standardization to the 1991 Canadian population

14. Respiratory Infection Outbreaks in Long-Term Care Homes

Definition:

The respiratory infection outbreak indicator estimates the number of confirmed respiratory infection outbreaks in long-term care homes between September 1, 2006 and August 31, 2007.

Data Source(s):

Integrated Public Health Information System, Ministry of Health and Long-Term Care

Formula:

Number of confirmed respiratory infection outbreaks in Long-Term Care homes for the 2006/2007 respiratory virus surveillance season.

Notes:

- Data was extracted on February 2, 2009 from the Integrated Public Health Information System.
- Indicated by selecting Long-Term Care Home option in the Exposure Setting Type Field for outbreaks in iPHIS
- Outbreaks that do not meet the case definition for a confirmed respiratory infection outbreak in a long-term care home were removed
- The report is called: List of created Outbreaks - Child Care Facilities Highlighted - for HU use
- Cognos ReportNet path: Public Folders > CRN 1.0 > Shared Communicable Diseases Reports > Management Reports > QA Reports

15. Chlamydia Incidence

Definition:

The age-standardized chlamydia incidence rate indicator estimates the total number of reported chlamydia cases per 100,000 population.

Data Source(s):

Numerator: Integrated Public Health Information System, Ministry of Health and Long-Term Care

Denominator: Provincial Health Planning Database, Ministry of Health and Long-Term Care

Formula:

$$\left\{ \frac{\text{Total number of new reported cases of chlamydia (2007 calendar year)}}{\text{Total population (2007 calendar year)}} \right\} \times 100,000$$

Notes:

- Data was extracted on February 3, 2009 from iPHIS.
- Age groups in years used for direct age-standardization: <10, 10-14, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65+
- Direct age-standardization to the 1991 Canadian population

16. Immunization Coverage for Hepatitis B

Definition:

The immunization coverage for hepatitis B indicator estimates the proportion of grade 7 students who have completed the immunization series against hepatitis B by the end of grade 7.

Data Source(s):

Numerator: As reported by public health units to Public Health Division, Ministry of Health and Long-Term Care

Denominator: As reported by public health units to Public Health Division, Ministry of Health and Long-Term Care

Formula:

$$\left\{ \frac{\text{\# of grade 7 students who have completed the immunization series against hepatitis B by the end of grade 7 (vaccinated before or during grade 7 by physician or public health) (2007/2008 school year)}}{\text{Total number of Grade 7 students (2007/2008 school year)}} \right\} \times 100$$

Notes:

- Data as complete as of June 30, 2008 (2007/2008 school year) for grade 7 students (birth year 1995)
- Hepatitis B immunization is not a designated disease under the ISPA (*Immunization of School Pupils Act*) and therefore health units are not required to report Hepatitis B immunization rates; reporting is voluntary
- All public health units are required to report Hepatitis B coverage rates to the Ministry of Health and Long-Term Care. Some public health units also record Hepatitis B coverage rates in the IRIS reporting data system; use of this system is voluntary
- This indicator is specific to the school-based immunization program, and does not include all immunizations against Hepatitis B as administered by the public health unit (e.g. doses administered in other setting or populations/age groups, such as sexual health clinics)

17. Immunization Coverage for Measles, Mumps, and Rubella

Definition:

The immunization coverage for measles, mumps and rubella indicator estimates the proportion of school children age 7 years who are known to be complete for age for vaccination against measles, mumps and rubella.

Data Source(s):

Numerator: Immunization Record Information System, 36 locally maintained databases shared with the Public Health Division, Ministry of Health and Long-Term Care

Denominator: Immunization Record Information System, 36 locally maintained databases shared with the Public Health Division, Ministry of Health and Long-Term Care

Formula:

$$\left\{ \frac{\text{Number of school children age seven years who are known by the health unit to be complete for age for vaccination against measles, mumps and rubella (2007/2008 school year)}}{\text{Number of children enrolled in school (2007/2008 school year)}} \right\} \times 100$$

Notes:

- Data as complete on June 30, 2008 (2007/2008 school year) for 7 year olds (birth year 2000)
- Data was extracted from IRIS, August 2008 to January 2009
- Vaccination information is collected only for children attending schools that public health units have screened
- Some children/students may not be eligible for a vaccine due to medical contraindication. This information may be collected and recorded in IRIS. However, ineligible children are not excluded from the denominator of vaccine coverage calculations since not all IRIS vaccine coverage reports summarize this information
- Children/students with exemptions (medical, philosophical, conscience or religious) or with no information are treated as incomplete

18. Adverse Water Quality Incidents

Definition:

Number of adverse water quality incidents from drinking water systems subject to O.Reg 170/03/O.Reg 252/05 and unregistered drinking water systems.

Data Source(s):

Drinking Water Programs Branch, Ministry of the Environment

Formula:

Number of adverse water quality incidents from drinking water systems subject to O.Reg 170/03/O.Reg 252/05 and unregistered drinking water systems for the 2007 calendar year

Notes:

- Exceedances from schools and day cares subject to O.Reg 243/07 not included in this summary
- O.Reg 170/03, a.k.a. Drinking Water Systems included year round residential systems as well as designated facilities including schools, daycares and nursing homes
- O.Reg 252/05 a.k.a. Non-Residential and Non-Municipal Seasonal Residential Systems That Do Not Serve Designated Facilities

Standard Population

The following 1991 Canadian population is the referent population used in the age-standardized indicators in this report.¹³¹

Standard Population 1991 Canadian Population	
Age (years)	Total population by age
<1	403,061
1-4	1,550,285
5-9	1,953,045
10-14	1,913,115
15-19	1,926,090
20-24	2,109,452
25-29	2,529,239
30-34	2,598,289
35-39	2,344,872
40-44	2,138,891
45-49	1,674,153
50-54	1,339,902
55-59	1,238,441
60-64	1,190,217
65-69	1,084,588
70-74	834,024
75-79	622,221
80-84	382,303
85-89	192,410
90 +	95,467
Total	28,120,065
Additional Age Groups Used	
Age (years)	Total population by age
10-11	777,691
12-15	1,135,424
15-17	1,149,377

19. Total Board of Health Expenditures

Definition:

Total board of health expenditures in 2007 for “core and related public health programs and services”, including spending based on revenue from all sources including all government funding (federal, provincial and municipal), user fees (such as Part 8 inspection fees), one time funding, fee for service contracts, research funding, and all other grants and donations. Excludes projected expenditures for EMS and animal control services, which are not part of the public health mandate.

Data Source(s):

Survey of boards of health, 2008

Formula:

Total board of health actual expenditures from all sources

Notes:

- Consolidates reporting on existing board of health funding levels
- In this report and survey “related programs” refers to a group of programs that are defined by public health units as ancillary to their core public health programs and services. This definition was used in the data collection for this indicator in order to allow public health units to provide information on all current programs regardless of funding source. However, when used in the context of the Program Based Grants (PBG) funding agreement “Related Programs” refers to a specific group of programs that are funded through the PBG grant and these are: Infectious Diseases Control, West Nile Virus/ VBD, PHRED, Unorganized Territories, AIDS Hotline, SIECCAN, Infection Prevention and Control Nurses (new in 2008/09), Small Drinking Water Systems, and one time funding received through PBG.
- The inclusion of one time or time limited funding may skew the reporting for some boards of health
- Lack of clear definition of categories of funding by “core public health”, “public health related” and “other services delivered by public health” resulted in some lack of congruence in categorization across all boards of health
- Data were collected on expenditures by program, but did not include information on funding sources or cost sharing arrangements

20. Board of Health Expenditure Variance

Definition:

Percent variance between a board of health's projected annual budget for "core and related public health programs and services", and year-end actual expenditures in with revenue from all sources in 2007.

Data Source(s):

Survey of boards of health, 2008

Numerator: Board of health year-end total expenditures and projected annual expenditures on core and related public health programs and services with revenues from all sources

Denominator: Board of health projected annual expenditures on core and related public health programs and services reflecting revenue from all sources

Formula:

$$\left\{ \frac{(\text{year-end actual expenditures} - \text{projected annual expenditures})}{\text{projected annual expenditures}} \right\} \times 100$$

Notes:

- Note that these categories do not align with those used by the ministry in its Program Based Grant funding package, where "Related Programs" has a specific meaning; see notes under Total Board of Health Expenditures for further detail.
- Boards report that variances are usually program or funding source specific
- There has historically been underspending in board of health budgets due to the local municipal council control on the overall budget and the timing of ministry budget approvals. In some places, councils insist that program spending cannot exceed the prior year amount until ministry final budget approval is received
- Unexpected in year activities will impact actual expenditures of some boards of health, and therefore skew their variances

21. Expenditures on Training and Professional Development

Definition:

Percent of board of health total actual expenditures for “core and related public health programs and services” used to support staff training and professional development in 2007.

Staff training and professional development costs include training and educational services for vocational, technical training, professional courses and seminars; may include payments to external trainers, conference registration fees, tuition fees and payments for associated textbooks, registration and course delivery costs such as library access fees, costs associated with conferences, seminars and internally developed courses, as well as associated event costs such as payments to guest speakers, trainers, catering and space rental fees. Excludes any associated travel costs and any fees paid to register with a professional regulatory body.

Data Source(s):

Survey of boards of health, 2008

Numerator: Actual board of health expenditures on staff training and professional development

Denominator: Total board of health actual expenditures (core and related)

Formula:

$$\left\{ \frac{\text{Board of health actual expenditures on staff training and professional development}}{\text{Total board of health actual expenditures}} \right\} \times 100$$

Notes:

- Larger public health units may be able to achieve economies of scale that would lower their per staff cost for training and development
- Survey did not collect information on the number of staff trained or number of days of training purchased
- Reported expenditures may be estimates due to complexity of accessing training and development expenses that meet the proposed definition within the timeframe
- Excluding travel costs may limit the ability to interpret the overall impact of training costs on the budgets of health units with high travel costs (i.e. northern health units)

22. Number of FTEs by Job Category

Definition:

Indicates the number of full time equivalent (FTE) positions in 2007 in each of the following specified professional job categories. FTE is defined by local board of health HR policies.

- a) Public Health Nurse
- b) Registered Nurse
- c) Registered Practical Nurse
- d) Nurse Practitioner
- e) Public Health Inspector
- f) Dentist
- g) Dental Hygienist/Dental Assistant
- h) Health Promoter
- i) Dietitian/Public Health Nutritionist
- j) Speech-Language Pathologist
- k) Epidemiologist
- l) Heart Health Coordinator
- m) Librarian

Data Source(s):

Survey of boards of health, 2008

Formula:

Number of FTEs per professional job category

Notes:

- Indicator does not cover all job categories within a board of health; a decision was made to collect data on direct service job categories of interest in relation to assessing local service capacity
- The number of FTEs does not necessarily reflect the number of staff working in these positions due to job sharing or part-time work
- Differences in local use of job titles may result in under-reporting or inconsistencies between categories
- Managers were excluded from this reporting, which may affect reporting on capacity where managers also work directly in programs

23. Number of Vacant Positions by Job Category

Definition:

The number of job vacancies for staff positions in the following job categories for which there had been a job posting and that had remained vacant between May 1, 2008 and date of survey in November, 2008.

- a) Associate Medical Officer of Health
- b) Public Health Nurse
- c) Registered Nurse
- d) Registered Practical Nurse
- e) Nurse Practitioner
- f) Public Health Inspector
- g) Dentist
- h) Dental Hygienist/Dental Assistant
- i) Health Promoter
- j) Dietitian/Public Health Nutritionist
- k) Speech-Language Pathologist
- l) Epidemiologist
- m) Heart Health Coordinator
- n) Librarian

Data Source(s):

Survey of boards of health, 2008

Formula:

Number of vacant positions by job category

Notes:

- Indicator does not cover all job categories within a board of health; a decision was made to collect data on direct service job categories of interest in relation to assessing local service capacity
- Does not capture full length of vacancies that began before May 1, 2008
- Does not show full extent of lack of local capacity where vacancies are being managed by reassignment and backfilling by existing staff

24. Employment Status of Medical Officers of Health

Definition:

Indicates where a medical officer of health is employed on a permanent, full time basis with a board of health. FTE is defined by local board of health HR policies.

Data Source(s):

Survey of boards of health, 2008

Formula:

Number of positions by full time status, with values to not exceed 1.0 FTE

Notes:

- Some boards of health consider MOH time spent providing on call service to contribute to or exceed the requirement for full time status
- There is no standardized definition of “full time” across all boards of health

25. Staff Length of Service

Definition:

Indicates the percentage of current full and part time public health unit staff who have been employed continuously by the public health unit by length of service in years.

Periods of time for employment include: up to 1 year; more than 1 year but less than 5 years; more than 5 years but less than 10 years; more than 10 years but less than 20 years; and more than 20 years.

Data Source(s):

Survey of boards of health, 2008

Numerator: Number of public health unit staff employed for specific periods of time

Denominator: Total number of full and part time public health unit staff

Formula:

$$\left\{ \frac{\text{Number of public health unit staff employed for specific periods of time}}{\text{Total number of public health unit staff}} \right\} \times 100$$

Notes:

- Staff length of service may be influenced by overall demographics of the local workforce or the presence of training programs (influenced by recruitment through placements)
- Regionally and municipally based boards of health will not be able to disaggregate the data on employment length of service for staff that have worked for the organization in different departments throughout their careers. This will affect primarily administrative and information management staff, however, the overall effect on total employee length of service will be small

26. Familiarity with Public Health Unit Programs and Services

Definition:

Indicates whether a board of health has assessed local community members' familiarity with any of the public health unit's programs and services.

Data Source(s):

Survey of boards of health, 2008

Formula:

Yes, with year and method of most recent assessment; no

Notes:

- Original intent was to report on degree of community members' familiarity with public health unit programs and services based on local surveys
 - Although data was collected by most health units (through Rapid Risk Factor Surveillance System (RRFSS) or local survey), consent to share this data was not included in the instructions of the original surveys, and therefore local results are not available
 - RRFSS module includes seeking information on community members' basic familiarity with the existence of public health services, use of health unit service, how respondent has heard about health unit program and service, and satisfaction with use of health unit program and service
- Lack of a consistent definition of "assessing community members' familiarity with public health unit programs and services" may contribute to inconsistency in reporting

27. Issuance of a Health Status Report

Definition:

Indicates whether a board of health has issued a health status report or other health intelligence or information product that considered inequities in health outcomes and health determinants at any time in the past.

A health status report or other health intelligence or information product is defined as including any publication that was designed for distribution to the public that used health status statistics and provided analysis of these statistics to describe the equity of health outcomes or health determinants.

Data Source(s):

Survey of boards of health, 2008

Formula:

Yes and year; no

Notes:

- Many public health units publish high quality local health status reports that are available on their websites
- There is no standardized definition of inequities in health outcomes in order to compare results between health units
- Assessing only the existence of a report without assessment of the scope of the publication
- Relevance of the data in local reports is time sensitive; older reports may not be reflective of current situations
- Reporting includes both focused health issue reports and comprehensive community wide health status reports

28. Strategic Plan

Definition:

Indicates whether a board of health reports having a strategic plan in place that covers the current period (2008).

Data Source(s):

Survey of boards of health, 2008

Formula:

Yes, with years of strategic plan; no

Notes:

- Having a strategic plan will improve organizational performance only where it is well implemented and amended over time in response to emerging situations
- Assesses only the existence of a strategic plan without assessment of the scope of the plan
- Lack of consistency in the content and rigor of strategic planning makes compilation of results difficult to interpret
- Does not provide information on how the strategic plan is used to influence operations and achieve strategic goals

29. Emergency Response Plan Tested

Definition:

Indicates whether a board of health has an internal board of health emergency response plan and whether the plan was tested between January 1, 2007 and the date of the survey in November, 2008. Testing an emergency response plan includes activities such as running a table top exercise, testing a telephone call out list of all staff, and holding a mock emergency scenario.

Data Source(s):

Survey of boards of health, 2008

Formula:

Yes, with description of testing method; no

Notes:

- Included as a measure of public health unit emergency preparedness; provides a starting point for the development of possible future indicators, which may relate to community awareness of public health's role in emergency preparedness or effectiveness of staff training in emergency preparedness
- Because municipalities are required to have an organizational emergency response plan, nil responses were not anticipated
- Criteria for testing the plan were self-defined and described by boards of health
- Lack of a threshold for adequacy of testing an emergency response plan will limit interpretation of results

30. Accreditation Status

Definition:

Indicates whether a board of health participates in an accreditation process by accrediting body and current accreditation status.

Data Source(s):

Survey of boards of health, 2008

Formula:

Yes, by specific accrediting body, by accreditation status; no

Notes:

- Boards of health may have been accredited in the past, but not currently accredited
- There are differences in scope of accreditation standards across different organizations
- Numbers include boards of health that are both accredited and currently in the process of becoming accredited

31. Medical Officer of Health Performance Evaluation

Definition:

Indicates completion of a regularly scheduled performance evaluation of the medical officer of health, by type of evaluator, and year of the most recent evaluation.

Data Source(s):

Survey of boards of health, 2008

Formula:

Yes, with date of most recent evaluation and type of evaluator; no

Notes:

- Capacity Review Committee (CRC) survey of board of health management governance practices found wide variations in depth and scope of MOH performance evaluation practices
- The methods of staff evaluations used and the rigor of the processes is influenced by different governance models across boards of health
- Does not capture performance evaluation practices relating to other executive officers, such as CAOs and CEOs

32. Medical Officer of Health Reporting Relationships

Definition:

Indicates medical officer of health attendance at board of health meetings and/or standing committee meetings, and whether he or she participated in the meetings. Participation includes attending meetings and providing reports, advice or presentations to the board.

Data Source(s):

Survey of boards of health, 2008

Formula:

Yes on reporting to board of health, standing committee or both; no
Yes on attending specific meetings; no

Notes:

- Survey data indicate that some medical officers of health participate in meetings of a standing committee as well as meetings of the board of health
- Does not describe the quality of the medical officer of health's interaction with the board

33. Board Member Orientation

Definition:

Indicates situations where new board of health members are provided with an orientation to the roles and responsibilities of the board of health, the duties of members and information to understand public health functions and issues.

Data Source(s):

Survey of boards of health, 2008

Formula:

Yes; no

Notes:

- Presence of board orientation does not indicate whether orientations are influencing governance capacity or effectiveness
- Lack of consistency in the content and rigor of orientation of board members makes results difficult to interpret

34. Board Self-Evaluation

Definition:

Indicates whether a board of health has engaged in a process to evaluate its governance processes and organizational effectiveness.

Data Source(s):

Survey of boards of health, 2008

Formula:

Yes; no

Notes:

- Presence of board self evaluation does not indicate whether board self evaluations influence governance practices or effectiveness
- Lack of consistency in the content and rigor of board self evaluation makes results difficult to interpret



References

- ¹ Last JM, editor. A dictionary of public health. New York: Oxford University Press; 2006.
- ² O'Connor DR. Part one: report of the Walkerton Inquiry: the events of May 2000 and related issues. Toronto, ON: Queen's Printer for Ontario; 2002. Retrieved April 23, 2009 from: <http://www.attorneygeneral.jus.gov.on.ca/english/about/pubs/walkerton/part1/>.
- ³ O'Connor DR. Part two: report of the Walkerton Inquiry: a strategy for safe drinking water. Toronto, ON: Queen's Printer for Ontario; 2003. Retrieved April 23, 2009 from: <http://www.attorneygeneral.jus.gov.on.ca/english/about/pubs/walkerton/part2/>.
- ⁴ Expert Panel on SARS and Infectious Disease Control, Walker D. For the public's health: a plan of action. Final report of the Ontario Expert Panel on SARS and Infectious Disease Control. Toronto, ON: Queen's Printer for Ontario; 2004. Retrieved April 23, 2009 from: http://www.health.gov.on.ca/english/public/pub/ministry_reports/walker04/walker04_mn.html.
- ⁵ Expert Panel on SARS and Infectious Disease Control, Walker D. For the public's health: initial report of the Ontario Expert Panel on SARS and Infectious Disease Control. Toronto, ON: Queen's Printer for Ontario; 2003. Retrieved April 23, 2009 from: http://www.health.gov.on.ca/english/public/pub/ministry_reports/walker_panel_2003/walker_panel.html.
- ⁶ National Advisory Committee on SARS and Public Health, Naylor D. Learning from SARS: the renewal of public health in Canada. Ottawa, ON: Health Canada; 2003. Retrieved April 23, 2009 from: <http://www.phac-aspc.gc.ca/publicat/sars-sras/pdf/sars-e.pdf>.
- ⁷ SARS Commission, Campbell A. Spring of fear: final report. Toronto, ON: Queen's Printer for Ontario; 2006. Retrieved April 23, 2009 from: http://www.health.gov.on.ca/english/public/pub/ministry_reports/campbell06/online_rep/index.html.
- ⁸ SARS Commission, Campbell A. The SARS Commission second interim report: SARS and public health legislation. Toronto, ON: Queen's Printer for Ontario; 2005. Retrieved April 23, 2009 from: http://www.health.gov.on.ca/english/public/pub/ministry_reports/campbell05/campbell05.pdf.
- ⁹ SARS Commission, Campbell A. The SARS Commission interim report: SARS and public health in Ontario. Toronto, ON: Queen's Printer for Ontario; 2004. Retrieved April 23, 2009 from: http://www.health.gov.on.ca/english/public/pub/ministry_reports/campbell04/campbell04.pdf.
- ¹⁰ Ministry of Health and Long-Term Care, Public Health Division. Operation health protection: an action plan to prevent threats to our health and to promote a healthy Ontario. Toronto, ON: Queen's Printer for Ontario; 2004. Retrieved April 23, 2009 from: http://www.health.gov.on.ca/english/public/pub/ministry_reports/consumer_04/oper_healthprotection04.pdf.
- ¹¹ *Health Protection and Promotion Act*, R.S.O. 1990, c. H7. Retrieved April 14, 2009 from: http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90h07_e.htm.

References

- 12 Capacity Review Committee. Revitalizing Ontario's public health capacity: the final report of the Capacity Review Committee. Toronto, ON: Queen's Printer for Ontario; 2006. Retrieved April 23, 2009 from: http://www.health.gov.on.ca/english/public/pub/ministry_reports/capacity_review06/capacity_review06.pdf.
- 13 Nutbeam, D. Health promotion glossary. Geneva, Switzerland: World Health Organization; 1998. Retrieved April 14, 2009 from: http://www.who.int/hpr/NPH/docs/hp_glossary_en.pdf.
- 14 Ministry of Health and Long-Term Care, Public Health Division. Ontario public health standards. Toronto, ON: Queen's Printer for Ontario; 2008. Retrieved April 8, 2009 from: http://www.health.gov.on.ca/english/providers/program/pubhealth/oph_standards/ophs/progstds/pdfs/ophs_2008.pdf.
- 15 Statistics Canada. Health Indicators. 82-221-X., no. 1. Health regions and peer groups. Ottawa, On. Minister of Industry; 2008. Retrieved April 15, 2009 from: <http://www.statcan.gc.ca/pub/82-221-x/2008001/5202322-eng.htm>
- 16 Woodward G, Manuel D, Goel V. Developing a balanced scorecard for public health. Toronto, ON: Institute for Clinical Evaluative Sciences; 2004. Retrieved April 14, 2009 from: http://www.ices.on.ca/file/Scorecard_report_final.pdf.
- 17 Ontario Health Quality Council. Qmonitor: 2008 report on Ontario's Health System. Toronto, ON: Queen's Printer for Ontario; 2008. Retrieved April 14, 2009 from: http://www.ohqc.ca/pdfs/ohqc_2008_report_-_english.pdf.
- 18 Ministry of Health and Long-Term Care. Ontario Health System Scorecard 2007/08. Toronto, ON: Queen's Printer for Ontario; 2008.
- 19 Health Canada. Healthy Canadians: a federal report on comparable health indicators 2006. Ottawa, ON: Her Majesty the Queen in Right of Canada; 2006. Retrieved April 14, 2009 from: http://www.hc-sc.gc.ca/hcs-sss/alt_formats/hpb-dgps/pdf/pubs/2006-fed-comp-indicat/2006-fed-comp-indicat-eng.pdf.
- 20 The Chief Public Health Officer's report on the state of public health in Canada 2008: addressing health inequalities. Ottawa, ON: Her Majesty the Queen in Right of Canada; 2008. Retrieved April 14, 2009 from: <http://www.phac-aspc.gc.ca/publicat/2008/cpho-aspc/pdf/cpho-report-eng.pdf>.
- 21 Dunkley G, Ciliska D, Michelin L, et al. Towards outcome measurement for Ontario boards of health: a planning and evaluation model via an analysis of the Ontario mandatory health programs and services guidelines. Hamilton, ON: Public Health Research, Education, and Development Program; 2002. Retrieved April 14, 2009 from: <http://www.phred-redsp.on.ca/Docs/Reports/Ottawa/PlanEvaluationModelJan02.PDF>.
- 22 Paranjothy S, Broughton H, Adappa R, Fone D. Teenage pregnancy: who suffers? Arch Dis Child. 2009;94(3):239-45.
- 23 Dryburgh, H. Teenage pregnancy. Health Reports. 2000;12(1): 9-19. Retrieved April 14, 2009 from: <http://www.statcan.gc.ca/studies-etudes/82-003/archive/2000/5299-eng.pdf>.
- 24 Federal, Provincial, and Territorial Advisory Committee on Population Health. Statistical report on the health of Canadians. Ottawa, ON: Statistics Canada; 1999. Retrieved April 14, 2009 from: <http://www.statcan.gc.ca/pub/82-570-x/82-570-x1997001-eng.pdf>.

- 25 Chen XK, Wen SW, Fleming N, Demissie K, Rhoads GG, Walker M. Teenage pregnancy and adverse birth outcomes: a large population based retrospective cohort study. *Int J Epidemiol.* 2007 Apr;36(2):368-73.
- 26 Kearney MS, Levine PB. Socioeconomic disadvantage and early childbearing. Cambridge, MA: National Bureau of Economic Research; 2007. Retrieved April 14, 2009 from: <http://www.nber.org/papers/w13436.pdf>.
- 27 Luong, M. Life after teenage motherhood. *Perspectives on Labour and Income.* 2008; 6-13. Retrieved April 15, 2009 from: <http://www.statcan.gc.ca/pub/75-001-x/2008105/pdf/10577-eng.pdf>.
- 28 East PL, Reyes BT, Horn EJ. Association between adolescent pregnancy and a family history of teenage births. *Perspect Sex Reprod Health.* 2007 Jun;39(2):108-15.
- 29 Wellings, K. Causes and consequences of teenage pregnancy. In: Baker P, Guthrie K, Hutchinson C, Kane R, Wellings K, eds. *Teenage pregnancy and reproductive health.* London: Royal College of Obstetricians and Gynaecologists; 2007. p.70.
- 30 Core Health Indicators Work Group. Perinatal mortality. In: *Core indicators for public health in Ontario.* Toronto, ON: Association of Public Health Epidemiologists in Ontario; 2005. Retrieved April 15, 2009 from: <http://www.apheo.ca/index.php?pid=145#comments>.
- 31 Cole C, Hagadorn J, Kim C, et al. Criteria for determining disability in infants and children: low birth weight. Evidence report/technology assessment no. 70. Rockville, MD: Agency for Healthcare Research and Quality; 2002. Retrieved April 15, 2009 from: <http://www.ahrq.gov/downloads/pub/evidence/pdf/lbw/lbw.pdf>.
- 32 Matsuo, H. The health consequences of low birth weight: literature review and critique. UCL working paper no. 23. Louvain-la-Neuve, Belgium: l'Université catholique de Louvain; 2005. Retrieved April 14, 2009 from: <http://www.uclouvain.be/cps/ucl/doc/sped/documents/dt23.pdf>.
- 33 Canadian Institute of Child Health. Fact sheet: low birth weight. In: *The health of Canada's children: a CICH profile.* Ottawa, ON: Canadian Institute of Child Health; 2000. Retrieved April 15, 2009 from: <http://www.cich.ca/PDFFiles/ProfileFactSheets/English/LBWEng.pdf>.
- 34 Perinatal Education Program of Eastern Ontario. Factors and interventions associated with low birth weight. In: *Prevention of low birth weight in Canada: literature review and strategies.* 2nd ed. Toronto, ON: Best Start; 1998. Retrieved April 15, 2009 from: http://www.beststart.org/resources/lbw_aware/pdf/lbw_aware/lbw_rpt/lbw98TOC.html.
- 35 Almond D, Chay KY, Lee DS. The costs of low birth weight. *Quarterly Journal of Economics.* 2005. 120(3):1031-1083. Retrieved April 14, 2009 from: http://www.nber.org/~almond/qje_bw_final.pdf.
- 36 Kramer MS. Intrauterine growth and gestational duration determinants. *Pediatrics.* 1987;80:502-511.
- 37 World Health Organization. Breastfeeding [Internet]. Geneva: World Health Organization; 2009. Retrieved April 15, 2009 from: ; 2009. Retrieved April 15, 2009 from: <http://www.who.int/topics/breastfeeding/en/>.

References

- 38 Canadian Paediatric Society; Dietitians of Canada; Health Canada. Benefits of breastfeeding to infants in Canada. In: Nutrition for healthy term infants. Ottawa, ON: Minister of Public Works and Government Services Canada; 2005. Retrieved April 15, 2009 from: http://www.hc-sc.gc.ca/fn-an/pubs/infant-nourrisson/nut_infant_nourrisson_term_3-eng.php#benefits.
- 39 Owen CG, Martin RM, Whincup PH, Smith GD, Cook DG. Does breastfeeding influence risk of type 2 diabetes in later life? A quantitative analysis of published evidence. *American Journal of Clinical Nutrition*. 2006;84(5):1043-1054. Retrieved April 15, 2009 from: <http://www.ajcn.org/cgi/reprint/84/5/1043.pdf>.
- 40 College of Family Physicians of Canada. Infant feeding policy statement 2004. Toronto, ON: College of Family Physicians of Canada; 2004. Retrieved April 15, 2009 from: http://www.cfpc.ca/local/files/Communications/Health%20Policy/Final_04Infant_Feeding_Policy_Statement.pdf.
- 41 Breastfeeding Committee for Canada. Breastfeeding statement of the Breastfeeding Committee for Canada. Toronto, ON: The Committee; 2002. Retrieved April 15, 2009 from: <http://breastfeedingcanada.ca/pdf/webdoc5.pdf>.
- 42 Statistics Canada. Canadian community health survey—cycle 2.1 [data file]. Ottawa, ON: Statistics Canada; 2003.
- 43 Statistics Canada. Canadian community health survey [data file]. Ottawa, ON: Statistics Canada; 2005.
- 44 Statistics Canada. Canadian Community Health Survey 2007 [data file]. Ottawa, ON: Statistics Canada; 2008.
- 45 Ministry of Health and Long-Term Care. Healthy babies healthy children protocol. Toronto, ON: Queen's Printer for Ontario; 2008. Retrieved April 15, 2009 from: http://www.health.gov.on.ca/english/providers/program/pubhealth/oph_standards/ophs/progstds/protocols/hbhc.pdf.
- 46 Ministry of Health Promotion. Smoke-free Ontario Strategy [Internet]. Retrieved August 7, 2009 from: http://intra.mhp.gov.on.ca/what_we_do/smoke_free_ontario/strategy.asp
- 47 *Smoke-Free Ontario Act*, S.O. 1994, c. 10. Retrieved April 15, 2009 from: http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_94t10_e.htm.
- 48 Health Canada. Youth smoking in Canada. CTUMS: Canadian Tobacco Use Monitoring Survey. Annual. 2000;Feb-Dec: 3. Retrieved April 17, 2009 from: http://www.hc-sc.gc.ca/hc-ps/tobac-tabac/research-recherche/stat/_ctums-esutc_fs-if/2000-youth-eng.php.
- 49 Kaufman AR, Augustson EM. Predictors of regular cigarette smoking among adolescent females: does body image matter? *Nicotine Tob Res*. 2008;10(8):1301-9.
- 50 Leatherdale ST, Hammond D, Ahmed R. Alcohol, marijuana, and tobacco use patterns among youth in Canada. *Cancer Causes Control*. 2008;19(4):361-9.
- 51 Shields, M. Youth smoking. *Health Reports*. 2005;16(3):53-57. Retrieved April 17, 2009 from: <http://www.statcan.gc.ca/pub/82-003-x/82-003-x2004003-eng.pdf>.

- 52 Roerecke M, Haydon E, Giesbrecht N. Alcohol and chronic disease: an Ontario perspective. Toronto, ON: Alcohol Policy Network, Ontario Public Health Association; 2007. Retrieved April 17, 2009 from: http://www.apolnet.ca/resources/pubs/rpt_ChronicDisease.pdf.
- 53 APOLNET. Statistical overview of alcohol use. Toronto, ON: Alcohol Policy Network; 2008. Retrieved April 20, 2009 from: <http://www.apolnet.ca/AboutUsHome.html>.
- 54 Mukamal KJ. Patient information: risks and benefits of alcohol. Waltham, MA: UpToDate; 2007. Retrieved April 20, 2009 from: <http://www.uptodate.com/patients/content/topic.do?topicKey=~6WTzKjHnjBtd1>.
- 55 Ministry of Health and Long-Term Care. Alcohol and substance abuse prevention [Internet]. Toronto, ON: Queen's Printer for Ontario; 2006. Retrieved April 15, 2009 from: <http://www.health.gov.on.ca/english/public/pub/hpromo/hpromo.html#1>.
- 56 Mercer GW (Applied Research and Evaluation Services, University of British Columbia). Estimating the presence of alcohol and drug impairment in traffic crashes and their costs to Canadians: 1999 to 2006. Oakville, ON: Mothers Against Drunk Driving Canada; 2009. Retrieved April 20, 2009 from: http://www.madd.ca/english/research/estimating_presence.pdf.
- 57 Core Health Indicators Work Group. Heavy drinking episodes. In: Core indicators for public health in Ontario. Toronto, ON: Association of Public Health Epidemiologists in Ontario; 2009. Retrieved April 15, 2009 from: <http://www.apheo.ca/index.php?pid=123>.
- 58 SMARTRISK. The economic burden of injury in Ontario. Toronto, ON: Queen's Printer for Ontario; 2006. Retrieved April 17, 2009 from: http://www.mhp.gov.on.ca/english/injury_prevention/Smartrisk-EBI-Ont-2006.pdf.
- 59 Brewer RD, Swahn MH. Binge drinking and violence. *JAMA*. 2005;294(5):616-8.
- 60 Kuo M, Adlaf EM, Lee H, Gliksman L, Demers A, Wechsler H. More Canadian students drink but American students drink more: comparing college alcohol use in two countries. *Addiction*. 2002 Dec;97(12):1583-92. Retrieved April 20, 2009 from: <http://www.hsph.harvard.edu/cas/Documents/Canadian1/CanadaPaper.pdf>.
- 61 Centers for Disease Control and Prevention Women and alcohol. Atlanta, GA: Centers for Disease Control and Prevention; 2007. Retrieved April 20, 2009 from: <http://www.cdc.gov/Features/WomenAndAlcohol/>.
- 62 Tapert SF, Caldwell L, Burke C. Alcohol and the adolescent brain: human studies. *Alcohol Res Health*. 2004-2005;28(4):205-212. Retrieved April 20, 2009 from: <http://pubs.niaaa.nih.gov/publications/arh284/205-212.pdf>.
- 63 Leslie K. Alcohol and drug use among teenagers. *CMAJ*. 2008 Jan 15;178(2):149. Retrieved April 20, 2009 from: <http://www.cmaj.ca/cgi/reprint/178/2/149.pdf>.
- 64 Chamberlain EA, Solomon RM. Minimizing impairment-related youth traffic deaths: the need for comprehensive provincial action. *Can J Public Health*. 2008;99(4):267-70. Retrieved April 20, 2009 from: <http://journal.cpha.ca/index.php/cjph/article/view/1657/1841.pdf>.

References

- 65 Rehm J, Giesbrecht N, Patra J, Roerecke M. Estimating chronic disease deaths and hospitalizations due to alcohol use in Canada in 2002: Implications for policy and prevention strategies. *Prev Chronic Dis*. 2006;3(4):A121.
- 66 Rehm J, Patra J, Popova S. Alcohol-attributable mortality and potential years of life lost in Canada 2001: Implications for prevention and policy. *Addiction*. 2006;101(3):373-84.
- 67 Beck KH, Treiman KA. The relationship of social context of drinking, perceived social norms, and parental influence to various drinking patterns of adolescents. *Addict Behav*. 1996;21(5):633-44.
- 68 Pedersen ER, LaBrie JW. Normative misperceptions of drinking among college students: a look at the specific contexts of prepartying and drinking games. *J Stud Alcohol Drugs*. 2008;69(3):406-11.
- 69 Simons-Morton B. Prospective association of peer influence, school engagement, drinking expectancies, and parent expectations with drinking initiation among sixth graders. *Addict Behav*. 2004;29(2):299-309.
- 70 Miller JW, Naimi TS, Brewer RD, Jones SE. Binge drinking and associated health risk behaviors among high school students. *Pediatrics*. 2007;119(1):76-85.
- 71 World Health Organization. Global status report on alcohol 2004. Geneva: World Health Organization; 2004. pp. 35-58. Retrieved April 23, 2009 from: http://www.who.int/substance_abuse/publications/globalstatusreportalcohol2004_healtheffects.pdf.
- 72 Jones M, O'Beney, C. Promoting mental health through physical activity: examples from practice. *J Ment Health Prom*. 2004;3(1):39-47.
- 73 Warburton DE, Katzmarzyk PT, Rhodes RE, Shephard RJ. Evidence-informed physical activity guidelines for Canadian adults. *Can J Public Health*. 2007;98 Suppl 2:S16-68.
- 74 Katzmarzyk PT, Gledhill N, Shephard RJ. The economic burden of physical inactivity in Canada. *CMAJ*. 2000 Nov 28;163(11):1435-40.
- 75 Janssen I, Lam M, Katzmarzyk PT. Influence of overweight and obesity on physician costs in adolescents and adults in Ontario, Canada. *Obes Rev*. 2009;10(1):51-7.
- 76 Herman KM, Craig CL, Gauvin L, Katzmarzyk PT. Tracking of obesity and physical activity from childhood to adulthood: The Physical Activity Longitudinal Study. *Int J Pediatr Obes*. 2008 Dec 15:1-8.
- 77 Ministry of Health Promotion. ACTIVE 2010: Ontario's sport and physical activity strategy. Toronto, ON. Queen's Printer for Ontario; 2005. Available from: http://www.mhp.gov.on.ca/English/sportandrec/physical_activity/active2010-strategy-e.pdf.
- 78 World Health Organization. Obesity: preventing and managing the global epidemic: report of a WHO consultation. WHO Technical Report Series #894. Geneva: World Health Organization; 2000. Table 2.1: Classification of adults according to BMI, p. 9. Retrieved August 11, 2009 from: [http://whqlibdoc.who.int/trs/WHO_TRS_894_\(part1\).pdf](http://whqlibdoc.who.int/trs/WHO_TRS_894_(part1).pdf).
- 79 Luo W, Morrison H, de Groh M, et al. The burden of adult obesity in Canada. *Chronic Dis Can*. 2007;27(4):135-44.

- ⁸⁰ Statistics Canada. Leading causes of death in Canada – 2005 [Internet]. 84-215-X. Ottawa, ON: Statistics Canada, 2009. Table 3-6: Ten leading causes of death, by sex and geography, 2005 – Ontario. Retrieved April 20, 2009 from: <http://www.statcan.gc.ca/pub/84-215-x/2009000/tbl/t019-eng.pdf>.
- ⁸¹ Ontario. Ministry of Health and Long-Term Care. Ontario launches Diabetes Strategy [press release]. July 22, 2008. Retrieved April 20, 2009 from: <http://www.newswire.ca/en/releases/archive/July2008/22/c6499.html>.
- ⁸² Public Health Agency of Canada. Living with diabetes. National diabetes fact sheet. Ottawa: Public Health Agency of Canada; 2008. Retrieved August 6, 2009 from: http://www.phac-aspc.gc.ca/publicat/2008/ndfs-fnrd-08/ndfs_lwd-fnrd_vad-eng.php.
- ⁸³ Heart and Stroke Foundation of Canada. 2004 Annual Report Card on Canadians' Health. Ottawa: Heart and Stroke Foundation of Canada; 2004.
- ⁸⁴ Nathan SA, Develin E, Grove N, Zwi AB. An Australian childhood obesity summit: the role of data and evidence in 'public' policy making. *Aust New Zealand Health Policy*. 2005 Jul 20;2:17. Retrieved April 20, 2009 from: <http://www.anzhealthpolicy.com/content/pdf/1743-8462-2-17.pdf>.
- ⁸⁵ Jillings C, Samis S. Is fat the new tobacco? Strategies for addressing the obesity epidemic in Canada. 12th EUPHA conference: urbanisation and health: new challenges in health promotion and prevention. *Eur J Public Health*. 2004; 14(Suppl 1): 35.
- ⁸⁶ Lobstein T, Baur L, Uauy R; IASO International Obesity TaskForce. Obesity in children and young people: a crisis in public health. *Obes Rev*. 2004;5 Suppl 1:4-104.
- ⁸⁷ Guo SS, Wu W, Chumlea WC, Roche AF. Predicting overweight and obesity in adulthood from body mass index values in childhood and adolescence. *Am J Clin Nutr*. 2002;76(3):653-8. Retrieved August 6, 2009 from: <http://www.ajcn.org/cgi/reprint/76/3/653.pdf>.
- ⁸⁸ Whitaker RC, Wright JA, Pepe MS, Seidel KD, Dietz WH. Predicting obesity in young adulthood from childhood and parental obesity. *N Engl J Med*. 1997;337(13):869-73. Retrieved August 6, 2009 from: <http://content.nejm.org/cgi/reprint/337/13/869.pdf>.
- ⁸⁹ Koplan JP, Liverman CT, Kraak VI. Preventing childhood obesity: health in the balance. Washington, DC: National Academies Press; 2005.
- ⁹⁰ Basrur SV. 2004 Chief Medical Officer of Health report: healthy weights, healthy lives. Toronto, ON: Queen's Printer for Ontario; 2004. Available from: http://www.health.gov.on.ca/english/public/pub/ministry_reports/cmoh04_report/healthy_weights_112404.pdf.
- ⁹¹ Ministry of Health Promotion. Ontario's action plan for healthy eating and active living. Toronto, ON: Queen's Printer for Ontario; 2006. Retrieved April 20, 2009 from: <http://www.mhp.gov.on.ca/english/health/HEAL/actionplan-EN.pdf>.
- ⁹² World Cancer Research Fund and American Institute for Cancer Research. Food, nutrition, physical activity, and the prevention of cancer: a global perspective. Washington, DC: AIRC; 2007.

References

- 93 Hung HC, Joshipura KJ, Jiang R, et al. Fruit and vegetable intake and risk of major chronic disease. *J Natl Cancer Inst.* 2004;96(21):1577-84.
- 94 Hall JN, Moore S, Harper SB, Lynch JW. Global variability in fruit and vegetable consumption. *Am J Prev Med.* 2009;36(5):402-409, e5.
- 95 Shields M. Nutrition: findings from the Canadian Community Health Survey. Measured obesity: overweight Canadian children and adolescents [Internet]. Ottawa, ON: Statistics Canada; 2005. Chart 9: Overweight and obesity rates, by fruit and vegetable consumption, household population aged 2 to 17, Canada excluding territories, 2004. Retrieved April 23, 2009 from: <http://www.statcan.gc.ca/pub/82-620-m/2005001/c-g/child-enfant/4053588-eng.htm>.
- 96 National Safety Council. Falls leading cause of injury death for people 65 and older [press release]. May 7, 2008. Retrieved April 23, 2009 from: <http://www.nsc.org/news/nr050708.aspx>.
- 97 Public Health Agency of Canada, Division of Aging and Seniors. Report on seniors' falls in Canada. Ottawa, ON: Minister of Public Works and Government Services Canada; 2005. Retrieved April 23, 2009 from: http://www.phac-aspc.gc.ca/seniors-aines/pubs/seniors_falls/pdf/seniors-falls_e.pdf.
- 98 Stevens JA, Corso PS, Finkelstein EA, Miller TR. The costs of fatal and non-fatal falls among older adults. *Inj Prev.* 2006 Oct;12(5):290-5. Retrieved August 5, 2009 from: <http://injuryprevention.bmj.com/cgi/reprint/12/5/290.pdf>.
- 99 Tiedemann AC, Murray SM, Munro B, Lord SR. Hospital and non-hospital costs for fall-related injury in community-dwelling older people. *N S W Public Health Bull.* 2008 Sep-Oct;19(9-10):161-5.
- 100 SMARTRISK. The economic burden of injury in Ontario. Toronto: Smartrisk; 2006. p. 47-48. Retrieved August 5, 2009 from: http://www.oninjuryresources.ca/downloads/Ontario_Economic_Burden_of_Injury.pdf.
- 101 Beard J, Rowell D, Scott D, van Beurden E, Barnett L, Hughes K, Newman B. Economic analysis of a community-based falls prevention program. *Public Health.* 2006 Aug;120(8):742-51. Epub 2006 Jul 5.
- 102 Ontario Injury Prevention Resource Centre. Falls across the lifespan: evidence-based practice synthesis document. Toronto: Smartrisk; 2008. Retrieved August 5, 2009 from: <http://www.oninjuryresources.ca/downloads/misc/FallsReview-D8.pdf>.
- 103 Public Health Agency of Canada. Report on seniors' falls in Canada. Ottawa: Public Health Agency of Canada; 2005. Retrieved August 5, 2009 from: http://www.phac-aspc.gc.ca/seniors-aines/pubs/seniors_falls/pdf/seniors-falls_e.pdf.
- 104 Majowicz SE, Edge VL, Fazil A, et al. Estimating the under-reporting rate for infectious gastrointestinal illness in Ontario. *Can J Public Health.* 2005;96(3):178-81.
- 105 Ministry of Health and Long-Term Care, Public Health Division and Long-Term Care Homes Branch. A guide to the control of respiratory infection outbreaks in long-term care homes. Toronto, ON: Queen's Printer for Ontario; 2004. p.19. Retrieved April 23, 2009 from: http://www.health.gov.on.ca/english/providers/pub/pubhealth/ltc_respoutbreak/ltc_respoutbreak.pdf.

- ¹⁰⁶ Chong CP, Street PR. Pneumonia in the elderly: a review of the epidemiology, pathogenesis, microbiology, and clinical features. *South Med J*. 2008;101(11):1141-5.
- ¹⁰⁷ Chan Carusone SB, Walter SD, Brazil K, Loeb MB. Pneumonia and lower respiratory infections in nursing home residents: predictors of hospitalization and mortality. *J Am Geriatr Soc*. 2007 ;55(3):414-9.
- ¹⁰⁸ Public Health Agency of Canada. 2002 Canadian sexually transmitted infections surveillance report. *Can Commun Dis Rep*. 2005;31(Suppl 2):1-39. Retrieved April 23, 2009 from: http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/05pdf/31s2_e.pdf.
- ¹⁰⁹ Wong T, Singh A, Mann J, Hansen L, McMahon, S. Gender differences in bacterial STIs in Canada. *BMC Women's Health*. 2004;4(Suppl 1):S26. Retrieved April 23, 2009 from: <http://www.pubmedcentral.nih.gov/picrender.fcgi?artid=2096668&blobtype=pdf>.
- ¹¹⁰ Zuckerman J, van Hattum J, Cafferkey M, et al. Should hepatitis B vaccination be introduced into childhood immunisation programmes in northern Europe? *Lancet Infect Dis*. 2007;7(6):410-9.
- ¹¹¹ Tepper ML, Gully PR. Lovers and livers: Hepatitis B as an STD. *Can J Hum Sexuality*. 1997; 6(2): 135-142.
- ¹¹² Piot P, Goilav C, Kegels E. Hepatitis B: transmission by sexual contact and needle sharing. *Vaccine*. 1990 Mar;8 Suppl:S37-40.
- ¹¹³ Ministry of Health and Long-Term Care. Publicly funded immunization schedules for Ontario – January 2009 [Internet]. Toronto, ON: Queen's Printer for Ontario; 2009. Retrieved April 23, 2009 from: <http://www.health.gov.on.ca/english/providers/program/immun/pdf/schedule.pdf>.
- ¹¹⁴ Perry RT, Halsey NA. The clinical significance of measles: a review. *J Infect Dis*. 2004;189 (Suppl 1):S4-16.
- ¹¹⁵ Masarani M, Wazait H, Dinneen M. Mumps orchitis. *J R Soc Med*. 2006;99(11):573-5.
- ¹¹⁶ Anonymous. Rubella (German measles) in pregnancy. *Paediatr Child Health*. 2007 Nov;12(9):798-802.
- ¹¹⁷ *Immunization of School Pupils Act*, R.S.O. 1990, c. I.1. Retrieved April 23, 2009 from: http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90i01_e.htm.
- ¹¹⁸ O. Reg. 169/03. Retrieved April 23, 2009 from: http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_030169_e.htm.
- ¹¹⁹ *Safe Drinking Water Act*, S.O. 2002, c.32. Retrieved April 23, 2009 from: http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_02s32_e.htm.
- ¹²⁰ O. Reg. 170/03. Retrieved April 23, 2009 from: http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_030170_e.htm.
- ¹²¹ O. Reg. 318/08. Retrieved April 23, 2009 from: http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_080318_e.htm.
- ¹²² O. Reg. 319/08. Retrieved April 23, 2009 from: http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_080319_e.htm.

- ¹²³ Capacity Review Committee. Revitalizing Ontario's public health capacity: a discussion of issues and options. Toronto, ON: Queen's Printer for Ontario; 2005. Retrieved April 15, 2009 from: http://www.health.gov.on.ca/english/public/pub/ministry_reports/capacity_review05/capacity_review05.pdf.
- ¹²⁴ Capacity Review Committee. Revitalizing Ontario's public health capacity: a discussion of issues and options. Toronto, ON: Queen's Printer for Ontario; 2005. Retrieved April 15, 2009 from: http://www.health.gov.on.ca/english/public/pub/ministry_reports/capacity_review05/capacity_review05.pdf.
- ¹²⁵ Health Protection and Promotion Act, R.S.O. 1990, c. H7, s. 67(1). Retrieved April 14, 2009 from: http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90h07_e.htm.
- ¹²⁶ Statistics Canada. Health Indicators. 82-221-X., no. 1. Health regions and peer groups. Ottawa, Ont.: Minister of Industry; 2008. Retrieved April 15, 2009 from: <http://www.statcan.gc.ca/pub/82-221-x/2008001/5202322-eng.htm>
- ¹²⁷ Statistics Canada. Health Indicators. 82-221-X., no. 1. Health regions and peer groups. Ottawa, Ont.: Minister of Industry; 2008. Retrieved April 15, 2009 from: <http://www.statcan.gc.ca/pub/82-221-x/2008001/hregions-regionss/5202306-eng.htm>
- ¹²⁸ Statistics Canada. Health Indicators. 82-221-X., no. 1. Health regions and peer groups. Ottawa, Ont.: Minister of Industry; 2008. Retrieved April 15, 2009 from: <http://www.statcan.gc.ca/pub/82-221-x/2008001/hregions-regionss/5215169-eng.pdf>
- ¹²⁹ Thomas S, Wannell B. Combining cycles of the Canadian Community Health Survey. Health Reports. 2009;20(1):53-60. Retrieved June 18, 2009 from <http://www.statcan.gc.ca/pub/82-003-x/2009001/article/10795-eng.pdf>.
- ¹³⁰ Statistics Canada. Health indicators [Internet]. 82-221-X., no. 1. Ottawa, ON: Minister of Industry; 2008. p. 21. Retrieved April 20, 2009 from: <http://www.statcan.gc.ca/pub/82-221-x/82-221-x2008001-eng.pdf>.
- ¹³¹ Bains N. Standardization of rates. Toronto: Association of Public Health Epidemiologists in Ontario; 2009. Retrieved July 2, 2009 from: http://www.apheo.ca/resources/indicators/Standardization%20report_NamBains_FINALMarch16.pdf.