# Conclusion

This report represents an important first step toward examining patterns of diabetes prevalence, health outcomes and service availability in Ontario communities. The findings we present will enable local policymakers and health planners to examine the performance of key measures relevant to diabetes care in a given region or community. This information, in turn, can be used to set regional priorities for program planning and development and can help with the development of regional indicators to measure and guide improvement.

#### LESSONS LEARNED

Diabetes prevalence rates were highest in the Greater Toronto Area and in Ontario's First Nations communities. The last decade has seen a dramatic rise in the prevalence of diabetes in Ontario, affecting all segments of the population and all regions. However, ethnic groups that have a greater predisposition for developing diabetes (those of First Nations, South Asian, African and Hispanic descent) continue to experience the greatest burden of diabetes in terms of disease prevalence and incidence. Our findings call for comprehensive, culturally appropriate diabetes prevention programs targeting high-risk communities, in addition to broader-scale policies aimed at curbing the ongoing rise in obesity and diabetes.

### Diabetes complication rates were highest in northern and rural areas of the province—

where access to care is more challengingand lowest in urban areas. Further research is needed to fully understand the factors driving these disparities and how they can be addressed. Outcomes may be narrowed in part by greater access to care; however, variations in risk across populations related to ethnicity and the social determinants of health may also play a role. Measures to improve the health of high-risk populations will need to address the geographic barriers to accessing care experienced by those living in remote settings, as well as non-geographic barriers (e.g., language, poverty, medication costs, access to affordable and healthy foods, and opportunities for physical activity). While complication rates were generally lowest in urban communities, the *number* of people experiencing these complications was greatest in such areas, which has an enormous impact on health service provision and planning.

#### Concomitant medical and mental health

*problems were common* among people living with diabetes in Ontario. For practitioners, competing medical and social issues may detract from diabetes care; for patients, coexisting conditions such as depression and arthritis can impede one's ability to make changes in diet or activity levels, to lose weight, or to adhere to therapies. These findings underscore the need for patientcentred models of chronic disease management that address multiple conditions concurrently. More complex patients may benefit from primary care models that have access to team members from other disciplines, such as social workers, mental health workers and case managers, and from specialist diabetes programs, such as the newly developed Complex Diabetes Care Centres and other specialist models.

#### Access to diabetes programs and services

was greatest in urban centres. However, given the high burden of diabetes in urban communities, existing service capacity in these regions may still be insufficient. Diabetes programs and their satellites appear to be well distributed throughout the province. but we did not have information on the number of employees at each site, the services offered or clients seen (including volumes, demographics, comorbidities or details on diabetes control). Such information is essential for understanding the extent to which existing services are meeting the needs of local populations with diabetes and the efficiency with which these services are being utilized. Enhanced programs and services designed for those living in poverty, recent immigrants and First Nations populations could help reduce the burden of diabetes in these high-risk groups.

The distribution of endocrinologists was limited largely to major centres. As the majority of individuals with diabetes live in or close to a major centre, the geographical location of these specialists may not be an impediment for them. Those living in remote settings, however, are likely to experience substantial barriers to accessing care from specialists. If so, a variety of means may be necessary to remedy this gap, including capitalizing on existing telemedicine initiatives. The Ministry of Health and Long-Term Care has a well-established mobile retinal screening program that serves northern communities where access to eye care specialists is more limited. However, there are a number of areas in the province where ophthalmologists are lacking. Access to optometrists was much greater, potentially filling an important gap in access to eye care for the diabetic population. Our data sources lacked information on wait times for specialists and other non-geographic barriers to accessing these services.

### NEXT STEPS

ICES and its collaborators will continue to measure and report on patterns of health care and health-system use at the provincial level in key areas related to diabetes. The measures presented in the report are those that could be readily identified with existing provincial data holdings at ICES. However, some information needs could not be addressed by the data sources available to us. For instance, we were unable to assess many aspects of diabetes care and management in the outpatient setting. We measured fairly advanced complications of diabetes including hospitalization for heart disease or stroke, dialysis for end-stage renal disease or the need for amputation. However, our data sources lacked the ability to capture less advanced complications, such as microalbuminuria or mild reductions in kidney function or whether target levels of glucose, blood pressure or cholesterol are being met. These limitations may, in part, be addressed through implementation of the Ontario Diabetes Registry, which will give health care providers dates and results of key laboratory tests, such as A1C and cholesterol, and will enable providers to compare their practice results to regional and provincial averages. In addition, the Diabetes Registry is

designed to serve as a common electronic medical record for people with diabetes where clinical information, such as blood pressure readings, will be entered in a standardized way that facilitates data recall and comparison.

Components of the Ontario Diabetes Strategy (ODS) were implemented, in part, to reduce regional variations in diabetes care and improve health outcomes for all populations with diabetes. The results of our analyses are available for Diabetes Regional Coordination Centres, Local Health Integration Networks and other organizations to use for priority setting, planning and quality improvement activities. By implementing interventions at the population and practice levels, it will be possible to expedite progress and achieve maximal impact. Findings from this report provide baseline data for ongoing surveillance activities related to diabetes incidence. prevalence and disease outcomes. Our findings, together with data from the ODS Key Performance Measures and other sources. will aid in the evaluation of diabetes service programs and care delivery models currently underway or in development.

Optimizing care for the growing population with diabetes will continue to challenge the Ontario health care system in the years ahead. This report is designed to provide Ontarians with an impartial visual representation of the current state of diabetes in the province. Further research will be essential for ongoing evaluations of diabetes care in Ontario.

# References

- Manuel DG, Rosella LCA, Tuna M, Bennett C. How Many Canadians Will Be Diagnosed with Diabetes Between 2007 and 2017? Assessing Population Risk. Toronto: Institute for Clinical Evaluative Sciences; 2010. Accessed February 28, 2012 at http://www.ices.on.ca/file/Diabetes%20 Risks%20June%2016%202010.pdf.
- 2 Lipscombe LL, Hux JE. Trends in diabetes prevalence, incidence, and mortality in Ontario, Canada 1995–2005: a populationbased study. *Lancet*. 2007; 369(9563): 750–6.
- 3 Booth GL, Lipscombe LL, Bhattacharyya O, et al. Diabetes. In: Bierman AS, editor. Project for an Ontario Women's Health-Evidence Based Report: Volume 2. Toronto: Institute for Clinical Evaluative Sciences and St. Michael's Hospital; 2010. Accessed February 28, 2102 at <u>http://www. powerstudy.ca/the-power-report/thepower-report-volume-2/diabetes.</u>
- 4 Flegal KM, Carroll MD, Ogden CL, Curtin LR. Prevalence and trends in obesity among US adults, 1999–2008. JAMA. 2010; 303(3):235–41.
- 5 Hux JE, Booth GL, Slaughter PM, Laupacis A. *Diabetes in Ontario*. Toronto: Institute for Clinical Evaluative Sciences, 2003.

- 6 Goeree R, Lim ME, Hopkins R, Blackhouse G, Tarride JE, Xie F, O'Reilly D. Prevalence, total and excess costs of diabetes and related complications in Ontario, Canada. *Can J Diabetes*. 2009; 33(1):35–45.
- 7 Colhoun HM, Betteridge DJ, Durrington PN, et al. Primary prevention of cardiovascular disease with atorvastatin in type 2 diabetes in the Collaborative Atorvastatin Diabetes Study (CARDS): multicentre randomised placebo controlled trial. Lancet. 2004; 364(9435):685–96.
- 8 Nathan DM, Cleary PA, Backlund JY, et al. Intensive diabetes treatment and cardiovascular disease in patients with type 1 diabetes. N Engl J Med. 2005; 353(25):2643–53.
- 9 Holman RR, Paul SK, Bethel MA, Matthews DR, Neil HA. 10-Year follow-up of intensive glucose control in type 2 diabetes. N Engl J Med. 2008; 359(15):1577–89.
- 10 Patel A, MacMahon S, Chalmers J, et al. Intensive blood glucose control and vascular outcomes in patients with type 2 diabetes. *N Engl J Med*. 2008; 358(24): 2560–72.

- 11 UK Prospective Diabetes Study Group. Tight blood pressure control and risk of macrovascular and microvascular complications in type 2 diabetes: UKPDS 38. BMJ. 1998; 317(7160):703–13.
- 12 The Diabetes Control and Complications Trial Research Group. The effect of intensive treatment of diabetes on the development and progression of long-term complications in insulin-dependent diabetes mellitus. *N Engl J Med.* 1993; 329(14):977–86.
- 13 Gaede P, Vedel P, Larsen N, Jensen GV, Parving HH, Pedersen O. Multifactorial intervention and cardiovascular disease in patients with type 2 diabetes. N Engl J Med. 2003; 348(5):383–93.
- 14 Booth GL, Kapral MK, Fung K, Tu JV. Recent trends in cardiovascular complications among men and women with and without diabetes. *Diabetes Care*. 2006; 29(1):32–7.
- 15 Lipscombe LL, Austin PC, Manuel DG, Shah BR, Hux JE, Booth GL. Incomerelated differences in mortality among people with diabetes mellitus. *CMAJ*. 2010; 182(1):E1-17.

- 16 Canadian Diabetes Association Clinical Practice Guidelines Expert Committee. Canadian Diabetes Association 2008 clinical practice guidelines for the prevention and management of diabetes in Canada. *Can J Diabetes*. 2008; 32(suppl 1): S1–201.
- 17 Jaakkimainen L, Shah BR, Kopp A. Sources of physician care for people with diabetes. In: Hux JE, Booth GL, Slaughter PM, Laupacis A, editors. *Diabetes in Ontario*. Toronto: Institute for Clinical Evaluative Sciences; 2003. Accessed February 28, 2012 at <u>http://www.ices.on.</u> <u>ca/webpage.cfm?site\_id=1&org\_</u> <u>id=67&morg\_id=0&gsec\_id=0&item\_</u> <u>id=1312&type=atlas</u>.
- 18 Glazier RH, Klein-Geltink J, Kopp A, Sibley LM. Capitation and enhanced fee-forservice models for primary care reform: a population-based evaluation. CMAJ. 2009; 180(11):E72–81.
- 19 Kiran T, Victor JC, Kopp A, Shah BR, Glazier RH. The relationship between financial incentives and quality of diabetes care in Ontario, Canada. *Diabetes Care*. 2012 Mar 28 [Epub ahead of print].

- 20 Shojania KG, Ranji SR, McDonald KM, et al. Effects of quality improvement strategies for type 2 diabetes on glycemic control: a meta-regression analysis. JAMA. 2006; 296(4):427–40.
- 21 Renders CM, Valk GD, Griffin SJ. Interventions to improve the management of diabetes in primary care, outpatient, and community settings: a systemic review. *Diabetes Care*. 2001; 24(10):1821–33.
- 22 Ontario Ministry of Health and Long-Term Care. About the Ontario Diabetes Strategy. Accessed February 28, 2012 at <u>http:// health.gov.on.ca/en/ms/diabetes/en/</u> <u>about\_diabetes\_strategy.html</u>.
- 23 Booth GL, Hux JE. Relationship between avoidable hospitalizations for diabetes mellitus and income level. *Arch Intern Med.* 2003; 163(1):101–6.
- 24 Canavan RJ, Unwin NC, Kelly WF, Connolly VM. Diabetes- and non-diabetes-related lower extremity amputation incidence before and after the introduction of better organized diabetes foot care: continuous longitudinal monitoring using a standard method. *Diabetes Care*. 2008; 31(3): 459–63.
- 25 Driver VR, Madsen J, Goodman RA. Reducing amputation rates in patients with diabetes at a military medical center: the limb preservation service model. *Diabetes Care*. 2005; 28(2):248–53.

- 26 The Emerging Risk Factors Collaboration. Diabetes mellitus, fasting glucose, and risk of cause-specific death. *N Engl J Med.* 2011; 364(9):829–41.
- 27 Haller H, Ito S, Izzo JL Jr, et al. Olmesartan for the delay or prevention of microalbuminuria in type 2 diabetes. N Engl J Med. 2011; 364(10):907–17.
- 28 Lewis EJ, Hunsicker LG, Bain RP, Rohde RD; for the Collaborative Study Group. The effect of angiotensin-converting-enzyme inhibition on diabetic nephropathy. *N Engl J Med*. 1993; 329(20):1456–62.
- 29 Lipscombe LL, Lévesque LE, Gruneir A, Fischer HD, Juurlink DN, Gill SS, Herrmann N, Hux JE, Anderson GM, Rochon PA. Antipsychotic drugs and the risk of hyperglycemia in older adults without diabetes: a population-based observational study. Am J Geriatr Psychiatry. 2011; 19(12):1026–33.
- 30 Becker T, Hux J. Risk of acute complications of diabetes among people with schizophrenia in Ontario, Canada. *Diabetes Care*. 2011; 34(2):398–402.
- 31 Law MR, Cheng L, Dhalla IA, Heard D, Morgan SG. The effect of cost on adherence to prescription medications in Canada. CMAJ. 2012: 184(3):297–302.

- 32 Piette JD, Heisler M, Wagner TH. Problems paying out-of-pocket medication costs among older adults with diabetes. *Diabetes Care*. 2004; 27(2):384–91.
- 33 Creatore MI, Moineddin R, Booth G, Manuel DH, DesMeules M, McDermott S, Glazier RH. Age- and sex-related prevalence of diabetes mellitus among immigrants to Ontario, Canada. CMAJ. 2010; 182(8):781–9.
- 34 Oster RT, Johnson JA, Hemmelgarn BR, King M, Balko SU, Svenson LW, Crowshoe L, Toth EL. Recent epidemiologic trends of diabetes mellitus among status Aboriginal adults. *CMAJ*. 2011; 183(12):E803–8.
- 35 Norris SL, Lau J, Smith SJ, Schmid CH, Engelgau MM. Self-management education for adults with type 2 diabetes: a meta-analysis on the effect on glycemic control. *Diabetes Care*. 2002; 25(7):1159–71.
- 36 Deakin T, McShane CE, Cade JE, Williams RD. Group based training for selfmanagement strategies in people with type 2 diabetes mellitus. *Cochrane Database Syst Rev.* 2005; (2):CD003417.
- 37 Jaakkimainen L, Upshur RE, Klein-Geltink JE, Leong A, Maaten S, Schultz SE, Wang L, editors. Primary Care in Ontario. Toronto: Institute for Clinical Evaluative Sciences; 2006. Accessed February 28, 2012 at <u>http://www.ices.on.ca/file/PC\_atlas\_prelims\_complete.pdf</u>.

- 38 Glazier RH, Gozdyra P, Yeritsyan N.
  - Geographic Access to Primary Care and Hospital Services for Rural and Northern Communities: Report to the Ontario Ministry of Health and Long-Term Care. Toronto: Institute for Clinical Evaluative Sciences; 2011. Accessed February 28, 2012 at <u>http://www.ices.on.ca/file/</u> Geographic Access to Care Eng.pdf.
- 39 Glazier RH, Zagorski BM, Rayner J. Comparison of Primary Care Models in Ontario by Demographics, Case Mix and Emergency Department Use, 2008/09 to 2009/10. Toronto: Institute for Clinical Evaluative Sciences; 2012. Accessed March 8, 2012 at <u>http://www.ices.on.ca/file/ ICES\_Primary%20Care%20Models%20</u> English.pdf.
- 40 CNIB National Office. Canadian National Institute of Blindness Client Database. Toronto, 2002.
- 41 Early Treatment Diabetic Retinopathy Study Research Group. Photocoagulation for diabetic macular edema. Early Treatment Diabetic Retinopathy Study report number 1. Arch Ophthalmol. 1985; 103(12):1796–806.

- 42 The Diabetic Retinopathy Study Research Group. Photocoagulation treatment of proliferative diabetic retinopathy: the second report of diabetic retinopathy study findings. *Ophthalmology*. 1978; 85(1): 82–106.
- 43 Hux JE, Ivis, F, Flintoft V, Bica A. Diabetes in Ontario: determination of prevalence and incidence using a validated administrative data algorithm. *Diabetes Care*. 2002; 25(3):512–6.
- 44 Jenks GF, Caspall FC. Error on choroplethic maps: definition, measurement, reduction. *Ann Assoc Am Geogr.* 1971; 61(2):217–44.
- 45 Creatore MI, Booth GL, Manuel DG, Moineddin R, Glazier RH. Diabetes screening among immigrants: a population-based urban cohort study. *Diabetes Care*. 2012; 35(4):754–61.

Appendices

#### APPENDIX A / DATA SOURCES AND DEFINITIONS OF MEASURES INCLUDED IN THIS REPORT

Measure	Data Source(s)	Codes/Definitions*							
1 Diabetes prevalence, March 31, 2011	<ul> <li>Registered Persons Database (RPDB)</li> <li>Ontario Diabetes Database (ODD)</li> </ul>	<b>By LHIN, subLHIN and CSD:</b> Denominator: Total eligible population from the RPDB living in each region or community on March 31, 2011. Exclusions: Age < 20 or > 105 years; invalid health card number; missing or invalid postal code. Numerator: Number in the ODD on March 31, 2011.							
2 Diabetes incidence, one-year (2009/10) or five-year (2005/06-2009/10)	<ul> <li>Registered Persons Database (RPDB)</li> <li>Ontario Diabetes Database (ODD)</li> </ul>	By LHIN and subLHIN (one-year incidence): Denominator: Total eligible population without diabetes from RPDB living in each region on March 31, 2009. Exclusions: Age < 20 or > 105 years; invalid health card number; missing or invalid postal code on March 31, 2009; preexisting diabetes based on previous records in the ODD on or before March 31, 2009. Numerator: Number of new entries in the ODD during the period from April 1, 2009 to March 31, 2010 (inclusive).	<b>By CSD (five-year incidence):</b> Denominator: Total eligible population without diabetes from RPDB living in each community on March 31, 2005. Exclusions: Age < 20 or > 105 years; invalid health card number; missing or invalid postal code; preexisting diabetes based on previous records in the ODD on or before March 31, 2005. Numerator: Number of new entries in the ODD during the period from April 1, 2005 to March 31, 2010 (inclusive).						
3 Number of adults with diabetes who had at least one hospitalization or emergency department (ED) visit for hyper- or hypoglycemia, 2006/07–2010/11	<ul> <li>Ontario Diabetes Database (ODD)</li> <li>Canadian Institute of Health Information Discharge Abstract Database (CIHI-DAD)</li> <li>National Ambulatory Care Reporting System (NACRS)</li> </ul>	<ul> <li>By LHIN, subLHIN and CSD:</li> <li>Denominator: Total eligible population with diabetes in the ODD living in each region or community of 2006. Exclusions: Age &lt; 20 or &gt; 105 years; invalid health card number; missing or invalid postal code Numerator: Number of people with one or more of the following outcomes during the period from Ap March 31, 2011 (inclusive):</li> <li>1. Hospitalization for hyper- or hypoglycemia based on CIHI-DAD records with any of the following IC E100, E101, E110, E111, E130, E131, E140, E141 (hyperglycemia with coma or acidosis); E15, E160, E1 E1063, E1163, E1363, E1463 (hypoglycemia). Hospitalizations listing the above diagnostic codes were regardless of whether or not these were specified as being the 'most responsible diagnosis,' as lon diagnosis was present at the time of admission and not a complication arising during the hospital s' M' or '1'). Suspected cases were also included.</li> <li>2. ED visits based on NACRS records with any of the following ICD-10 codes listed as the main reaso to the ED (dxtype = 'Main'): E100, E101, E110, E111, E130, E131, E140, E141 (hyperglycemia); R73802, R73812 (blood glucose Coase supersection and supersect</li></ul>							

\*Death records were used to verify that all individuals captured in the Registered Persons Database were alive on the index date before including them in the population denominators. LHIN = Local Health Integration Network; CSD = census subdivision

Measure	Data Source(s)	Codes/Definitions*
4 Number of adults with diabetes who had at least one hospitalization or emergency department (ED) visit for skin and soft tissue infection or foot ulcer, 2006/07–2010/11	<ul> <li>Ontario Diabetes Database (ODD)</li> <li>Canadian Institute of Health Information Discharge Abstract Database (CIHI-DAD)</li> <li>National Ambulatory Care Reporting System (NACRS)</li> </ul>	<ul> <li>By LHIN and subLHIN:</li> <li>Denominator: Total eligible population with diabetes in the ODD living in each region on March 31, 2006. Exclusions: Age &lt; 20 or &gt; 105 years; invalid health card number; missing or invalid postal code.</li> <li>Numerator: Number of people with one or more of the following outcomes during the period from April 1, 2006 to March 31, 2011 (inclusive):</li> <li>1. Hospitalization for skin and soft tissue infection or foot ulcer, based on CIHI-DAD records where any of the following ICD-10 codes were listed as the most responsible diagnosis (dxtype = 'M'): L00-L05, L08, M725, M726, A480, E1051, E1151, E1351, E1451, R02, E1061, E1161, E1361, E1461, E1070, E1071, E1171, E1371, E1471. Suspected cases were also included.</li> <li>2. ED visits based on NACRS records where any of the following ICD-10 codes were listed as the 'main' reason for coming to the ED (dxtype = 'Main'): L00-L05, L08, M725, M726, A480, E1051, E1151, E1351, E1070, E1071, E1171, E1371, E1471. Cases of varying severity (any CTAS level) and suspected cases were also included.</li> </ul>
5 Number of adults with diabetes who had at least one hospitalization or emergency department (ED) visit for any acute complication (hyper- or hypoglycemia, skin and soft tissue infection, or foot ulcer), 2006/07– 2010/11	<ul> <li>Ontario Diabetes Database (ODD)</li> <li>Canadian Institute of Health Information Discharge Abstract Database (CIHI-DAD)</li> <li>National Ambulatory Care Reporting System (NACRS)</li> </ul>	<ul> <li>By CSD:</li> <li>Denominator: Total eligible population with diabetes in the ODD living in each community on March 31, 2006. Exclusions: Age &lt; 20 or &gt; 105 years; invalid health card number; missing or invalid postal code.</li> <li>Numerator: Number of people with one or more of the following outcomes during the period from April 1, 2006 to March 31, 2011 (inclusive):</li> <li>1. Hospitalization for hyper- or hypoglycemia, skin and soft tissue infection, or foot ulcer, based on CIHI-DAD records with any of the following ICD-10 codes: E100, E101, E110, E111, E130, E131, E140, E141 (hyperglycemia with coma or acidosis); E15, E160, E161, E162, E1063, E1163, E1363, E1463 (hypoglycemia); L00-L05, L08, M725, M726, A480, E1051, E1151, E1351, E1451, R02, E1061, E1161, E1361, E1461, E1070, E1071, E1171, E1371, E1471 [skin or soft tissue infection or foot ulcer]; specified as being the 'most responsible diagnosis' (dxtype = 'M') or, for hyper- or hypoglycemia, skin and soft tissue infection, or foot ulcer, based on NACRS records with any of the following ICD-10 codes isted as the 'main' reason for coming to the ED [dxtype = 'Main']: E100, E101, E110, E111, E130, E131, E140, E141 (hyperglycemia with coma or acidosis); E15, E160, E161, E162, E1063, E1163, E1363, E1463 (hypoglycemia); R73802, R73812 (blood glucose &gt; 14 mmol/L); L00-L05, L08, M725, M726, A480, E1051, E1151, E1351, E1461, E1161, E1361, E1461, E1070, E1071, E1171, E1371, E1471 (skin and soft tissue infection or foot ulcer). Cases of varying severity (any CTAS level) and suspected cases were also included.</li> </ul>

\*Death records were used to verify that all individuals captured in the Registered Persons Database were alive on the index date before including them in the population denominators. LHIN = Local Health Integration Network; CSD = census subdivision

Measure	Data Source(s)	Codes/Definitions*
6 Number of adults with diabetes who had at least one hospitalization for a cardiovascular condition, 2006/07– 2010/11	<ul> <li>Ontario Diabetes Database (ODD)</li> <li>Canadian Institute of Health Information Discharge Abstract Database (CIHI-DAD)</li> </ul>	<ul> <li>By LHIN and subLHIN:</li> <li>Denominator: Total eligible population with diabetes in the ODD living in a given region on March 31, 2006.</li> <li>Exclusions: Age &lt; 20 or &gt; 105 years; invalid health card number; missing or invalid postal code.</li> <li>Numerator: Number of people with one or more of the following codes between April 1, 2006 and March 31, 2011:</li> <li>1. Hospitalization for acute myocardial infarction (AMI): based on CIHI-DAD records with most responsible diagnosis of AMI (ICD-10 codes I21 and I22, dxtype = 'Main'); or</li> <li>2. Hospitalization for stroke: based on CIHI-DAD records with the most responsible diagnosis of stroke (ICD code = I61, I63, I64, dxtype = 'Main'); or</li> <li>3. Hospitalization for congestive heart failure (CHF): based on CIHI-DAD records with most responsible diagnosis of CHF (ICD-10 code I50; dxtype = 'Main'); or</li> <li>4. Hospitalization for unstable angina (UA): based on CIHI-DAD records with most responsible diagnosis of UA (ICD-10 code I20; dxtype = 'Main'); or</li> <li>5. Hospitalization for transient ischemic attack (TIA) based on CIHI-DAD records with most responsible diagnosis of TIA (ICD-10 codes G450, G453, G458, G459; dxtype = 'Main').</li> </ul>
7 Number of adults with diabetes who had a lower extremity amputation, 2006/07–2010/11	<ul> <li>Ontario Diabetes Database (ODD)</li> <li>Canadian Institute of Health Information Discharge Abstract Database (CIHI-DAD)</li> </ul>	<b>By LHIN and subLHIN:</b> <i>Denominator</i> : Total eligible population with diabetes in ODD and living in a given region on March 31, 2006. Exclusions: Age < 20 or > 105 years; invalid health card number; missing or invalid postal code. <i>Numerator</i> : Number of people with one or more amputations during the period from April 1, 2006 to March 31, 2011, based on the presence of any of the following Canadian Classification of Interventions (CCI) procedure codes in CIHI-DAD: 1VC93, 1VG93, 1VQ93, 1WA93, 1WE93, 1WI93, 1WJ93, 1WK93, 1WL93, 1WM93, 1WN93. These procedure codes were not included if they occurred in the setting of cancer or major trauma (identified by the following ICD-10 diagnostic codes if present on the same admission: C40.2, C40.3, C46.1, C47.2, C49.2, D16.2, D16.3, D21.2, S72–S79, S82–S89, S97, S98, T02.3, T02.5–T02.9, T03.3–T03.9, T04.3–T04.9, T05.3–T05.9, T07, T13.2– T13.9, T14.2–T14.9].

\*Death records were used to verify that all individuals captured in the Registered Persons Database were alive on the index date before including them in the population denominators. LHIN = Local Health Integration Network

Measure	Data Source(s)	Codes/Definitions*
8 Number of adults with diabetes who received chronic dialysis or kidney transplantation, 2006/07–2010/11	<ul> <li>Ontario Diabetes Database (ODD)</li> <li>Ontario Health Insurance Plan (OHIP) Database</li> <li>Canadian Organ Replacement Register (CORR) Database</li> <li>Canadian Institute of Health Information Discharge Abstract Database (CIHI-DAD)</li> <li>Trillium Gift of Life Network (TGLN) Database</li> </ul>	<ul> <li>By LHIN and subLHIN:</li> <li>Denominator: Total eligible population with diabetes in the ODD living in a given region on March 31, 2006. Exclusions: Age &lt; 20 or &gt; 105 years; invalid health card number; missing or invalid postal code.</li> <li>Numerator: Number of people fulfilling the following algorithms for chronic dialysis or kidney transplantation during the period from April 1, 2006 to March 31, 2011.</li> <li>1. Chronic dialysis – any of the following: <ul> <li>a) Chronic dialysis record in CORR; or</li> <li>b) Chronic dialysis, defined as dialysis for a minimum duration of 90 days, based on OHIP claims with any of the following fee codes: R849, G323, G326, G330, G331, G332, G333, G860, G861 G862, G863, G864, G865, G866. Duration = last date [minus] first date [minus] any gaps &gt; 21 days.</li> </ul> </li> <li>2. Kidney transplantation – any of the following: <ul> <li>a) Record in TGLN database;</li> <li>b) OHIP claim including fee code for kidney transplantation: E769, E771, S434 or S435; or</li> <li>c) Procedure codes from CIHI-DAD: Canadian Classification of Procedures (CCP) code V42.0 [prior to April 1, 2002] or Canadian Classification of Interventions (CCI) code Z940 [from April 1, 2002 onwards].</li> </ul> </li> </ul>

\*Death records were used to verify that all individuals captured in the Registered Persons Database were alive on the index date before including them in the population denominators. LHIN = Local Health Integration Network

Measure	Data Source(s)	Codes/Definitions*
9 Number of adults with diabetes who had any chronic complication (hospitalization for a cardiovascular condition, lower extremity amputation or end-stage renal disease), 2006/07– 2010/11	<ul> <li>Ontario Diabetes Database (ODD)</li> <li>Ontario Health Insurance Plan (OHIP) Database</li> <li>Canadian Organ Replacement Register (CORR) Database</li> <li>Canadian Institute of Health Information Discharge Abstract Database (CIHI-DAD)</li> <li>Trillium Gift of Life Network (TGLN) Database.</li> </ul>	<ul> <li>By CSD:</li> <li>Denominator: Total eligible population with diabetes in ODD in a given community on March 31, 2006.</li> <li>Exclusions: Age &lt; 20 or &gt; 105 years; invalid health card number; missing or invalid postal code.</li> <li>Numerator: Number of people with one or more of the following chronic complications during the period from April 1, 2006 to March 31, 2011:</li> <li>1. Hospitalization for a cardiovascular condition;</li> <li>2. Lower extremity amputation; or</li> <li>3. End-stage renal disease, defined as chronic dialysis or kidney transplantation, using the same definitions as in measures 6, 7 and 8 listed above.</li> </ul>
10 Number of adults with diabetes who had an additional chronic medical condition, 2006/07– 2008/09	<ul> <li>Ontario Diabetes Database (ODD)</li> <li>Ontario Health Insurance Plan (OHIP) Database</li> </ul>	<b>By LHIN and subLHIN:</b> Denominator: Total eligible population with diabetes in the ODD living in a given region on March 31, 2006. Exclusions: Age < 20 or > 105 years; invalid health card number; missing or invalid postal code. Numerator: Number of people with one or more additional medical co-morbidities (besides diabetes) between April 1, 2006 and March 31, 2009 based on the variable CADG5 generated by the Johns Hopkins ACG classification system, using OHIP claims over the three-year period from 2006/07 to 2008/09 to identify conditions including but not limited to chronic heart disease, chronic lung disease, chronic kidney disease, chronic liver disease and cancer. OHIP claims with dxcode 250 (diabetes) were excluded from the algorithm.

\*Death records were used to verify that all individuals captured in the Registered Persons Database were alive on the index date before including them in the population denominators. CSD = census subdivision; LHIN = Local Health Integration Network

Measure	Data Source(s)	Codes/Definitions*
<b>11</b> Number of adults with diabetes who made a <b>mental</b> <b>health visit</b> for a psychotic or nonpsychotic illness, 2006/07– 2008/09	<ul> <li>Ontario Diabetes Database (ODD)</li> <li>Ontario Health Insurance Plan (OHIP) Database</li> </ul>	By LHIN and subLHIN:         Denominator: Total eligible population with diabetes in the ODD living in a given region on March 31, 2006.         Exclusions: Age < 20 or > 105 years; invalid health card number; missing or invalid postal code.         Numerator: Number of people who made a visit to a doctor from April 1, 2006 to March 31, 2009 for any of the following mental health issues:         1. Psychotic illness (OHIP diagnostic codes for psychosis 295, 296, 297, 298);         2. Nonpsychotic illness (OHIP diagnostic codes for depression or anxiety 300, 301, 302, 306, 309, 311);         3. Substance abuse (OHIP diagnostic codes 897, 898, 899, 900).
<b>12</b> Percentage of economic families with low income, 2005	• 2006 Census of Canada	By LHIN and subLHIN: Percentage of economic families living below Statistics Canada's Low Income Cut-Off (LICO, after tax) in 2005. Families who lived at this income level devoted a larger share of their after-tax income (at least 20% more than average) to necessities of food, shelter and clothing. Please refer to Statistics Canada 2006 census manuals for more details. To calculate the LICO measure at the subLHIN level, we aggregated values from smaller Census of Canada geographical areas (dissemination areas, DAs) to their respective subLHIN, weighting by the number of families in each DA.
<b>13</b> Percentage of <b>visible minorities</b> , 2006	• 2006 Census of Canada	<b>By LHIN and subLHIN:</b> Percentage of the population living in each region that self-identified as belonging to a visible minority group. The Census of Canada refers to visible minorities using the following definition from the federal <i>Employment</i> <i>Equity Act</i> : "persons other than Aboriginal peoples who are non-Caucasian in race or non-white in colour."
14 Locations of diabetes education programs, 2011	<ul> <li>Diabetes Regional Coordination Centres (RCCs)</li> </ul>	Each of the 14 Diabetes RCCs provided an inventory of locations for the main diabetes education programs in their respective LHIN(s), as well as their outreach and satellite locations in 2011.

\*Death records were used to verify that all individuals captured in the Registered Persons Database were alive on the index date before including them in the population denominators. LHIN = Local Health Integration Network

Measure	Data Source(s)	Codes/Definitions*
15 Locations of endocrinologists and eye specialists, 2010/2011	<ul> <li>ICES Physician Database (IPDB)</li> <li>Corporate Provider Database (CPDB)</li> </ul>	Locations of endocrinologists and ophthalmologists in 2010 came from the IPDB. Locations of optometrists came from the CPDB and cover the period from April 1, 2010 to March 31, 2011.

\*Death records were used to verify that all individuals captured in the Registered Persons Database were alive on the index date before including them in the population denominators.

#### APPENDIX B / REFERENCE MAPS OF CENSUS SUBDIVISIONS IN ONTARIO

CSD No.	CSD UID	CSD Name	CSD No.	CSD UID	CSD Name	CSD N	o. CSD UID	CSD Name
1	3501005	South Glengarry	26	3507033	Westport	51	3512004	Tyendinaga Mohawk
2	3501007	Akwesasne (Part) 59	27	3507040	Rideau Lakes			Territory
3	3501011	South Stormont	28	3507042	Athens	52	3512005	Belleville
4	3501012	Cornwall	29	3507052	Merrickville-Wolford	53	3512015	Quinte West
5	3501020	South Dundas	30	3507065	North Grenville	54	3512020	Stirling-Rawdon
6	3501030	North Dundas	31	3509001	Montague	55	3512026	Centre Hastings
7	3501042	North Stormont	32	3509004	Smiths Falls	56	3512030	Tweed
8	3501050	North Glengarry	33	3509010	Drummond/North	57	3512036	Madoc
9	3502001	East Hawkesbury			Elmsley	58	3512046	Marmora and Lake
10	3502008	Hawkesbury	34	3509015	Tay Valley	59	3512048	Tudor and Cashel
11	3502010	Champlain	35	3509021	Perth	60	3512051	Limerick
12	3502023	Alfred and Plantagenet	36	3509024	Beckwith	61	3512054	Wollaston
13	3502025	The Nation/La Nation	37	3509028	Carleton Place	62	3512058	Faraday
14	3502036	Clarence-Rockland	38	3509030	Mississippi Mills	63	3512061	Bancroft
15	3502044	Casselman	39	3509039	Lanark Highlands	64	3512065	Carlow/Mayo
16	3502048	Russell	40	3510005	Frontenac Islands	65	3512076	Hastings Highlands
17	3506008	Ottawa	41	3510010	Kingston	66	3513020	Prince Edward
18	3507004	Edwardsburgh/Cardinal	42	3510020	South Frontenac	67	3514004	Brighton
19	3507006	Augusta	43	3510035	Central Frontenac	68	3514014	Cramahe
20	3507008	Prescott	44	3510045	North Frontenac	69	3514019	Hamilton
21	3507014	Elizabethtown-Kitley	45	3511005	Loyalist	70	3514020	Port Hope
22	3507015	Brockville	46	3511015	Greater Napanee	71	3514021	Cobourg
23	3507017	Front of Yonge	47	3511030	Stone Mills	72	3514024	Alnwick/Haldimand
24	3507021	Leeds and the Thousand	48	3511035	Addington Highlands	73	3514027	Alderville First Nation
		Islands	49	3512001	Tyendinaga	74	3514045	Trent Hills
25	3507024	Gananoque	50	3512002	Deseronto	75	3515003	Asphodel-Norwood

CSD No.	CSD UID	CSD Name		CSD No.	CSD UID	CSD Name	CSD No.	CSD UID	CSD Name
76	3515005	Otonabee-South	] [	99	3519044	Whitchurch-Stouffville	126	3524001	Oakville
		Monaghan		100	3519046	Aurora	127	3524002	Burlington
77	3515008	Hiawatha First Nation		101	3519048	Newmarket	128	3524009	Milton
78	3515013	Cavan-Millbrook-North Monaghan		102	3519049	King	129	3524015	Halton Hills
79	3515014	Peterborough		103	3519054	East Gwillimbury	130	3525005	Hamilton
80	3515015	Smith-Ennismore-		104	3519070	Georgina	131	3526003	Fort Erie
	0010010	Lakefield		105	3519076	Chippewas of Georgina	132	3526011	Port Colborne
81	3515019	Curve Lake First Nation				Island First Nation	133	3526014	Wainfleet
		35		106	3520005	Toronto	134	3526021	West Lincoln
82	3515023	Douro-Dummer		107	3521005	Mississauga	135	3526028	Pelham
83	3515030	Havelock-Belmont-		108	3521010	Brampton	136	3526032	Welland
	0515007	Methuen		109	3521024	Caledon	137	3526037	Thorold
84	3515037	North Kawartha		110	3522001	East Garafraxa	138	3526043	Niagara Falls
85	3515044	Galway-Cavendish and Harvey		111	3522008	Amaranth	139	3526047	Niagara-on-the-Lake
86	3516010	Kawartha Lakes		112	3522010	East Luther Grand Valley	140	3526053	St. Catharines
87	3518001	Pickering		113	3522012	Mono	141	3526057	Lincoln
88	3518005	Aiax		114	3522014	Orangeville	142	3526065	Grimsby
80	3518009	Whithy		115	3522016	Mulmur	143	3528018	Haldimand County
07	2510007			116	3522019	Melancthon	144	3528035	New Credit (Part) 40A
01	2510013			117	3522021	Shelburne	145	3528037	Six Nations (Part) 40
02	2510017	Scurace		118	3523001	Puslinch	146	3528052	Norfolk County
02	2510020	Mississauras of Souraa		119	3523008	Guelph	147	3529005	Brant
73	3310022	Island		120	3523009	Guelph/Eramosa	148	3529006	Brantford
94	3518029	Uxbridge		121	3523017	Erin	149	3529020	Six Nations (Part) 40
95	3518039	Brock		122	3523025	Centre Wellington	150	3529021	New Credit (Part) 40A
96	3519028	Vaughan		123	3523033	Mapleton	151	3530004	North Dumfries
97	3519036	Markham		124	3523043	Minto	152	3530010	Cambridge
98	3519038	Richmond Hill		125	3523050	Wellington North	153	3530013	Kitchener
								20000.0	

CSD No.	CSD UID	CSD Name	CSD No.	CSD UID	CSD Name	CSD No.	CSD UID	CSD Name
154	3530016	Waterloo	182	3537001	Pelee	209	3539018	Munsee-Delaware Nation
155	3530020	Wilmot	183	3537003	Leamington			1
156	3530027	Wellesley	184	3537013	Kingsville	210	3539021	Oneida 41
157	3530035	Woolwich	185	3537016	Essex	211	3539027	Thames Centre
158	3531011	Stratford	186	3537028	Amherstburg	212	3539033	Middlesex Centre
159	3531013	Perth South	187	3537034	LaSalle	213	3539036	London
160	3531016	St. Marys	188	3537039	Windsor	214	3539041	North Middlesex
161	3531025	West Perth	189	3537048	Tecumseh	215	3539047	Adelaide Metcalfe
162	3531030	Perth East	190	3537064	Lakeshore	216	3539060	Lucan Biddulph
163	3531040	North Perth	191	3538003	St. Clair	217	3540005	South Huron
164	3532002	Norwich	192	3538004	Walpole Island 46	218	3540010	Bluewater
165	3532004	Tillsonburg	193	3538007	Dawn-Euphemia	219	3540025	Central Huron
166	3532012	South-West Oxford	194	3538015	Brooke-Alvinston	220	3540028	Goderich
167	3532018	Ingersoll	195	3538016	Enniskillen	221	3540040	Huron East
168	3532027	Zorra	196	3538018	Oil Springs	222	3540046	Howick
169	3532038	East Zorra-Tavistock	197	3538019	Petrolia	223	3540050	Morris-Turnberry
170	3532042	Woodstock	198	3538025	Sarnia 45	224	3540055	North Huron
171	3532045	Blandford-Blenheim	199	3538030	Sarnia	225	3540063	Ashfield-Colborne- Wawanosh
172	3534005	Bayham	200	3538031	Point Edward	226	35/100/	South Bruce
173	3534010	Malahide	201	3538035	Plympton-Wyoming	227	3541015	Huron-Kinloss
174	3534011	Aylmer	202	3538040	Lambton Shores	228	3541024	Kincardine
175	3534020	Central Elgin	203	3538043	Warwick	229	3541032	Brockton
176	3534021	St. Thomas	204	3538056	Kettle Point 44	230	3541043	Arran-Elderslie
177	3534024	Southwold	205	3539002	Newbury	231	3541045	Saugeen Shores
178	3534030	Dutton/Dunwich	206	3539005	Southwest Middlesex	232	3541055	South Bruce Peninsula
179	3534042	West Elgin	207	3539015	Strathroy-Caradoc	233	3541057	Saugeen 29
180	3536020	Chatham-Kent	208	3539017	Chippewas of the Thames	234	3541060	Nevaashiinigmiing 27
181	3536029	Moravian 47			First Nation 42			, sas

CSD No.	CSD UID	CSD Name	CSD No.	CSD UID	CSD Name	CSD No.	CSD UID	CSD Name
235	3541069	Northern Bruce Peninsula	261	3543069	Christian Island 30	287	3547046	Horton
236	3542004	West Grey	262	3543070	Christian Island 30A	288	3547048	Renfrew
237	3542005	Southgate	263	3543071	Тау	289	3547056	Whitewater Region
238	3542015	Grey Highlands	264	3543072	Penetanguishene	290	3547064	Pembroke
239	3542029	Hanover	265	3543074	Midland	291	3547070	North Algona
240	3542037	Chatsworth	266	3544002	Gravenhurst			Wilberforce
241	3542045	Blue Mountains	267	3544018	Bracebridge	292	3547075	Laurentian Valley
242	3542047	Meaford	268	3544027	Lake of Bays	293	3547076	Petawawa
243	3542053	Georgian Bluffs	269	3544042	Huntsville	294	3547090	Laurentian Hills
244	3542059	Owen Sound	270	3544053	Muskoka Lakes	295	3547096	Deep River
245	3543003	Adjala-Tosorontio	271	3544065	Georgian Bay	296	3547098	Head, Clara and Maria
246	3543005	Clearview	272	3544071	Wahta Mohawk Territory	297	3548001	South Algonquin
247	3543007	New Tecumseth	273	3544073	Moose Point 79	298	3548013	Papineau-Cameron
248	3543009	Springwater	274	3546005	Highlands East	299	3548019	Mattawan
249	3543014	Bradford West	275	3546015	Minden Hills	300	3548021	Mattawa
		Gwillimbury	276	3546018	Algonquin Highlands	301	3548022	Calvin
250	3543015	Severn	277	3546024	Dysart and Others	302	3548027	Bonfield
251	3543017	Innisfil	278	3547002	Arnprior	303	3548031	Chisholm
252	3543019	Ramara	279	3547003	McNab/Braeside	304	3548034	East Ferris
253	3543021	Essa	280	3547008	Greater Madawaska	305	3548044	North Bay
254	3543023	Oro-Medonte	281	3547020	Brudenell, Lyndoch and	306	3548055	West Nipissing/
255	3543031	Collingwood			Raglan		05/00/0	Nipissing Ouest
256	3543042	Barrie	282	3547030	Madawaska Valley	307	3548069	lemagamı
257	3543050	Mnjikaning First Nation 32 (Rama First Nation 32)	283	3547033	Killaloe, Hagarty and Richards	308 309	3548072 3548073	Bear Island 1 Nipissing 10
258	3543052	Orillia	284	3547035	Bonnechere Valley	310	3548091	Nipissing, Unorganized,
259	3543064	Wasaga Beach	285	3547037	Pikwakanagan			South Part
260	3543068	Tiny			(Golden Lake 39)	311	3548094	Nipissing, Unorganized,
			286	3547043	Admaston/Bromley			North Part

CSD No.	CSD UID	CSD Name	CSD No.	CSD UID	CSD Name	CSD No.	CSD UID	CSD Name
312	3549003	Seguin	340	3549079	Naiscoutaing 17A	362	3551094	Manitoulin, Unorganized,
313	3549005	The Archipelago	341	3549095	Parry Sound,			West Part
314	3549012	McMurrich/Monteith			Unorganized, North East Part	363	3551100	Zhiibaahaasing 19A (Cockburn Island 19A)
315	3549014	Perry	342	3549096	Parry Sound,	364	3552001	French River/Rivière des
316	3549018	Kearney			Unorganized,			Français
317	3549019	Armour			Centre Part	365	3552004	StCharles
318	3549022	Burk's Falls	343	3551001	Tehkummah	366	3552013	Markstay-Warren
319	3549024	Ryerson	344	3551006	Central Manitoulin	367	3552017	Whitefish River (Part) 4
320	3549028	McKellar	345	3551011	Assiginack	368	3552023	Sables-Spanish Rivers
321	3549031	McDougall	346	3551017	Northeastern Manitoulin	369	3552026	Espanola
322	3549032	Parry Sound	2/7	2551021		370	3552028	Baldwin
323	3549036	Carling	347	3551021	Billings	371	3552031	Nairn and Hyman
324	3549039	Whitestone	348	3551024	Gordon	372	3552051	Whitefish Lake 6
325	3549043	Magnetawan	349	3551026	Gore Bay	373	3552052	Mattagami 71
326	3549046	Strong	350	3551028	Burpee and Mills	374	3552053	Chapleau 74A
327	3549048	Sundridge	351	3551031	Barrie Island	375	3552054	Duck Lake 76B
328	3549051	Joly	352	3551034	Cockburn Island	376	3552055	Mountbatten 76A
329	3549054	Machar	353	3551035	Zhiibaahaasing 19 (Cockburn Island 19)	377	3552058	Chapleau 75
330	3549056	South River	354	3551036	Killarney	378	3552092	Chapleau
331	3549060	Powassan	355	3551040	Whitefish River (Part) 4	379	3552093	Sudbury, Unorganized,
332	3549066	Callander	356	3551041	Sucker Creek 23			North Part
333	3549071	Nipissing	357	3551042	Sheguiandah 24	380	3553005	Greater Sudbury/ Grand Sudbury
334	3549072	Shawanaga 17	358	3551043	Wikwemikong Unceded	3.91	3553070	Wabaanitai 11
335	3549073	Parry Island First Nation	359	3551044	Sheshegwaning 20	202	2554001	
336	3549075	Henvey Inlet 2	360	3551045	M'Chigeeng 22	202	2554001	Latchford
337	3549076	French River 13			(West Bay 22)	20/	255/000	
338	3549077	Dokis 9	361	3551091	Manitoulin, Unorganized,	304	255/01/	Honnic
339	3549078	Magnetewan 1			Mainland	385	3004014	ndi i is

CSD No.	CSD UID	CSD Name	CSD	No. CSD UID	CSD Name	CSD No.	CSD UID	CSD Name
386	3554020	Temiskaming Shores	412	3556042	Cochrane	437	3557014	Tarbutt and Tarbutt
387	3554021	Hudson	413	3556048	Smooth Rock Falls			Additional
388	3554024	Kerns	414	3556052	Fauquier-Strickland	438	3557016	Johnson
389	3554026	Harley	415	3556056	Moonbeam	439	3557019	Plummer Additional
390	3554029	Casey	416	3556066	Kapuskasing	440	3557021	Bruce Mines
391	3554032	Brethour	417	3556070	Val Rita-Harty	441	3557026	Thessalon 12
392	3554034	Hilliard	418	3556073	Opasatika	442	3557028	Thessalon
393	3554036	Armstrong	419	3556076	Hearst	443	3557035	Huron Shores
394	3554038	Thornloe	420	3556077	Mattice-Val Côté	444	3557038	Blind River
395	3554042	James	421	3556091	Cochrane, Unorganized,	445	3557039	Spanish
396	3554044	Charlton and Dack			South West Part	446	3557040	North Shore
397	3554049	Evanturel	422	3556092	Cochrane, Unorganized,	447	3557041	Elliot Lake
398	3554052	Englehart	423	3556093	Fort Albany (Part) 67	448	3557051	Macdonald, Meredith and Aberdeen Additional
399	3554054	Chamberlain	424	3556094	Factory Island 1	449	3557061	Sault Ste. Marie
400	3554056	Matachewan	425	3556095	Constance Lake 92	450	3557066	Prince
401	3554057	Matachewan 72	426	3556096	Moose Factory 68	451	3557071	Sagamok
402	3554058	McGarry	427	3556098	Cochrane. Unorganized.	452	3557072	Serpent River 7
403	3554062	Larder Lake			South East Part	453	3557073	Mississagi River 8
404	3554066	Gauthier	428	3556100	Flying Post 73	454	3557074	Garden River 14
405	3554068	Kirkland Lake	429	3556102	New Post 69A	455	3557075	Rankin Location 15D
406	3554091	Timiskaming,	430	3556104	New Post 69	456	3557076	Michipicoten
(07		Unorganized, East Part	431	3556106	Moosonee	457	3557077	Goulais Bay 15A
407	3554094	Timiskaming, Unorganized, West Part	432	3557001	Jocelyn	458	3557078	Gros Cap 49
408	3556014	Black River-Matheson	433	3557004	Hilton	459	3557079	Dubreuilville
409	3556027	Timmins	434	3557006	Hilton Beach	460	3557082	Missanabie 62
410	3556031	Iroquois Falls	435	3557008	St. Joseph	461	3557091	White River
411	3556033	Abitibi 70	436	3557011	Laird	462	3557094	Algoma, Unorganized,
								South East Part

CSD No.	CSD UID	CSD Name	CSD No.	SD No. CSD UID CSD Name		CSD No.	CSD UID	CSD Name
463	3557095	Algoma, Unorganized,	490	3558076	Aroland 83	516	3559064	Rainy Lake 26A
		North Part	491	3558080	Ojibway Nation of	517	3559065	Seine River 23B
464	3557096	Hornepayne			Saugeen (Savant Lake)	518	3559066	Seine River 23A
465	3558001	Neebing	492	3558085	Osnaburgh 63A	519	3559068	Rainy Lake 17A
466	3558003	Fort William 52	493	3558090	Thunder Bay,	520	3559069	Rainy Lake 17B
467	3558004	Thunder Bay	101	2550005		521	3559090	Rainy River, Unorganized
468	3558011	Oliver Paipoonge	494	3558095	Seine River ZZAZ	522	3559092	Long Sault 12
469	3558012	Gillies	495	3558097	Whitesand	523	3560001	Ignace
470	3558016	O'Connor	496	3558100	Lac des Mille Lacs 22A1	524	3560004	Whitefish Bay 32A
471	3558019	Conmee	497	3559001	Atikokan	525	3560005	Whitefish Bay 33A
472	3558028	Shuniah	498	3559011	Alberton	526	3560007	Sabaskong Bay (Part) 35C
473	3558034	Dorion	499	3559012	Fort Frances	527	3560008	Sioux Narrows-Nestor
474	3558041	Red Rock	500	3559016	La Vallee	027		Falls
475	3558044	Nipigon	501	3559019	Emo	528	3560010	Kenora
476	3558051	Schreiber	502	3559024	Chapple	529	3560021	Machin
477	3558054	Terrace Bay	503	3559026	Manitou Rapids 11	530	3560024	Eagle Lake 27
478	3558059	Marathon	504	3559031	Morley	531	3560027	Dryden
479	3558060	Pic Mobert North	505	3559040	Dawson	532	3560032	Ear Falls
480	3558061	Pic Mobert South	506	3559042	Rainy River	533	3560034	Sioux Lookout
481	3558062	Pic River 50	507	3559047	Lake of the Woods	534	3560042	Red Lake
482	3558063	Pays Plat 51	508	3559048	Sabaskong Bay (Part) 35C	535	3560046	Slate Falls
483	3558064	Lake Helen 53A	509	3559051	Big Grassy River 35G	536	3560049	Pickle Lake
484	3558065	Gull River 55	510	3559052	Big Island Mainland 93	537	3560050	Fort Albany (Part) 67
485	3558066	Manitouwadae	511	3559053	Saug-a-Gaw-Sing 1	538	3560051	Attawapiskat 91A
486	3558067	Ginoogaming First Nation	512	3559060	Neguaguon Lake 25D	539	3560052	Marten Falls 65
487	3558068	Long Lake 58	513	3559061	Rainy Lake 18C	540	3560053	Fort Hope 64
488	3558069	Rocky Bay 1	514	3559062	Agency 1	541	3560054	Cat Lake 63C
489	3558075	Greenstone	515	3559063	Couchiching 16A	542	3560055	Ospahurgh 63B
	0000070	0.00101010				072	0000000	condour gri cob

3560083

569

Whitefish Bay 34A

CSD No.	CSD UID	CSD Name		CSD No.	CSD UID	CSD Name	
543	3560056	Lac Seul 28		570	3560084	Wabauskang 21	
544	3560057	Wabigoon Lake 27		571	3560085	Wunnumin 1	
545	3560058	English River 21		572	3560086	Summer Beaver	
546	3560059	Weagamow Lake 87		573	3560087	Sachigo Lake 2	
547	3560060	Northwest Angle 33B		574	3560088	Wapekeka 2	
548	3560061	Wabaseemoong		575	3560089	The Dalles 38C	
549	3560062	Lake of the Woods 31G		576	3560090	Kenora, Unorganized	
550	3560063	Sabaskong Bay 35D		577	3560091	Peawanuck	
551	3560064	Shoal Lake 34B2		578	3560093	Neskantaga	
552	3560065	Lake of the Woods 37		579	3560095	Bearskin Lake	
553	3560066	Kenora 38B		580	3560096	Kasabonika Lake	
554	3560067	Poplar Hill		581	3560097	Muskrat Dam Lake	
555	3560068	Shoal Lake (Part) 39A		582	3560098	Kingfisher Lake 1	
556	3560069	Rat Portage 38A		583	3560100	Wawakapewin	
557	3560070	Deer Lake				(Long Dog Lake)	
558	3560071	Sandy Lake 88		584	3560102	MacDowell Lake	
559	3560072	Wunnumin 2		585	3560104	Kee-Way-Win	
560	3560074	Wapekeka 1	-	Technical note: (	Census subdivisi	ons were derived from the	
561	3560075	Kitchenuhmaykoosib Aaki 84 (Big Trout Lake)	2006 Census of Canada.				
562	3560076	Sachigo Lake 1					
563	3560077	Pikangikum 14					
564	3560078	Fort Severn 89					
565	3560079	Webequie					
566	3560080	North Spirit Lake					
567	3560081	Lansdowne House					
568	3560082	Shoal Lake (Part) 40					

Census subdivisions in the Erie St. Clair LHIN (1), by CSD number



Technical note: Census subdivisions were derived from the 2006 Census of Canada.

Census subdivisions in the South West LHIN (2), north view, by CSD number



Technical note: Census subdivisions were derived from the 2006 Census of Canada.

Census subdivisions in the South West LHIN (2), south view, by CSD number



Technical note: Census subdivisions were derived from the 2006 Census of Canada.

BOUNDARIES

- LHIN

CSD

LHIN 3

Census subdivisions in the Waterloo Wellington LHIN (3), by CSD number

For names of census subdivisions, see pages 319-326.



Technical note: Census subdivisions were derived from the 2006 Census of Canada.

Census subdivisions in the Hamilton Niagara Haldimand Brant LHIN (4), by CSD number

For names of census subdivisions, \* Toronto **7**<sup>106</sup> see pages 319-326. , Guelph ★ Mississauga  $\star$ Kitchener-Waterloo Burlington Hamilton \* <sup>139</sup> <sup>140</sup>★St Catharines <sup>148</sup> \*Brantford , Simcoe BOUNDARIES CSD ----- LHIN 50 km LHIN 4

Technical note: Census subdivisions were derived from the 2006 Census of Canada.

Census subdivisions in the Central West LHIN (5), by CSD number



Technical note: Census subdivisions were derived from the 2006 Census of Canada.

Census subdivisions in the Mississauga Halton LHIN (6), by CSD number







Technical note: Census subdivisions were derived from the 2006 Census of Canada.

Census subdivisions in the Toronto Central LHIN (7) and the Central LHIN (8), by CSD number



Technical note: Census subdivisions were derived from the 2006 Census of Canada.

Census subdivisions in the Central East LHIN (9) and the North Simcoe Muskoka LHIN (12), by CSD number



Technical note: Census subdivisions were derived from the 2006 Census of Canada.

Census subdivisions in the South East LHIN (10) and the Champlain LHIN (11), by CSD number



Technical note: Census subdivisions were derived from the 2006 Census of Canada.

#### EXHIBIT B.10a

Census subdivisions in the North East LHIN (13), south view, by CSD number

For names of census subdivisions, see pages 319-326.





Technical note: Census subdivisions were derived from the 2006 Census of Canada.

#### **EXHIBIT B.10b**

Census subdivisions in the North East LHIN (13), north view, by CSD number



Technical note: Census subdivisions were derived from the 2006 Census of Canada.

#### EXHIBIT B.11a

Census subdivisions in the North West LHIN (14), southwest view, by CSD number



Technical note: Census subdivisions were derived from the 2006 Census of Canada.

#### EXHIBIT B.11b

Census subdivisions in the North West LHIN (14), north view, by CSD number



Technical note: Census subdivisions were derived from the 2006 Census of Canada.

#### EXHIBIT B.11c

Census subdivisions in the North West LHIN (14), southeast view, by CSD number



Technical note: Census subdivisions were derived from the 2006 Census of Canada.

Institute for Clinical Evaluative Sciences (ICES)

G1 06, 2075 Bayview Avenue Toronto, Ontario M4N 3M5

Email: info@ices.on.ca 416.480.4055



www.ices.on.ca