The Unequal City 2015:

Income and Health Inequities in Toronto – Technical Report

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INTRODUCTION

In 2008, Toronto Public Health released *The Unequal City: Income and Health Inequalities in Toronto.* The report showed that there were differences in health between income groups in Toronto, that low income groups had worse health for most health status indicators, and that differences in health affected people in all income groups, not just the worst off. *The Unequal City 2015: Income and Health Inequities* report builds on those findings by:

- Providing updated information on differences in health between income groups in Toronto for 34 health status indicators
- Measuring how strongly income is related to differences in health
- Exploring how the relationship between income and health inequities has changed over time.

The Unequal City 2015: Income and Health Inequities report provides a summary of the details found in this technical document. These details include:

- The methodology used to explore current income-related health inequities in Toronto and the change in those inequities over time
- The population characteristics of the income groups used in the analysis
- The findings for each indicator
- A discussion and summary of the key findings and limitations of the analysis
- Detailed information on the indicators and data sources.

This technical document is intended to accompany the summary report.

METHODS

The following section describes the methodology for studying the relationship between income and health inequities over time in Toronto. In this report, differences in health status between groups based on modifiable and unjust factors, such as low income, are considered to be health inequities. All other differences are labeled health differences.

The analysis conducted for this report assessed:

- Current differences in health levels between income groups
- How strongly income is related to health inequities
- How the relationship between income and health inequities has changed over approximately 10 years.

Nineteen health status indicators were selected for analysis in this report. Fifteen indicators measured male and female health separately, two measured health for females only, and two measured health for males and females combined. In total, 34 sex-specific health status indicators were analyzed representing overall health and well-being, chronic disease, health behaviours, communicable disease, injury and reproductive health. The analysis used data from 1999 to 2012 from the health care system, death records and broad-based government surveys.

The analytic approach involved three stages of analysis:

- Step 1: Dividing and assigning the population into equal groups by income level
- Step 2: Calculating rates of health status by income level for each indicator of health status at several points in time
- Step 3: Calculating summary measures of inequality for each indicator of health status at several points in time.

Step 1: Dividing and assigning the population into equal groups by income level

Income was chosen as the basis for assessing health inequities for this report. Income is an important determinant of health and is closely linked to health status, in part because it is closely related to many other factors that affect health. Analytical methods using income as the basis for assessing health inequities are well established and widely recognized.

Income measures also correlate well with other measures of socio-economic status and disadvantage. A key consideration for this analysis was the availability of quality income data that was available for early and recent time points, comparable over time, and consistent with the time periods of the indicators being analyzed. Toronto data for existing indices of disadvantage and variables capturing other socio-economic factors (e.g., Ontario Marginalization Index) are not currently available for a recent time point or are not comparable over several points in time. High quality income data (Tax Filer data) for Toronto which allowed for comparisons between previous and recent time points was available, making income the best choice for this analysis.

In order to assess differences in health status by income, Toronto's residents were divided into equally sized groups according to income level. Two different methods were used to assign the population to income groups, based on the data source for each health status indicator. Both methods are described in more detail below. The two methods for assigning income levels are not directly comparable to each other. Despite their differences, they are similar in that they are both able to divide the population into groups based on relative measures of income adjusted for household or family size.

Area-Based Income Groups

Ecological Assignment

For 14 of the 19 health status indicators selected, no information was available about a person's income. For these indicators, the Toronto population was assigned to income groups based on the low income rate in the geographic area where they lived, using small geographical areas called census tracts. The city of Toronto's population of residents who file taxes (tax filers) was divided into five equally size groups (quintiles) based on the proportion of individuals living below the Statistics Canada after-tax Low Income Measure (LIM) in each census tract. Using this method, individuals represented in health status data were assigned to an income group based on the prevalence of low income in the census tract where they live.

All Toronto census tracts were divided into quintiles based on the increasing proportion of tax filers who reported their annual income below the LIM cut-off, which is adjusted for family size and composition. Quintile 1 (Q1) had the highest proportion of people living below the LIM, and Quintile 5 (Q5) had the lowest. Each of the five quintiles represents approximately 20% of the total Toronto tax filer population. Population counts, income and selected demographic characteristics for each income quintile are presented in Table 1 (Page 11). The number and proportion of people in each of the five income quintiles varies slightly due to discrepancies between the census and tax filer populations. The census population is slightly larger than the tax filer population and their age and geographical distributions are slightly different. For these reasons, each of the five income quintiles for 2010 represent between 18.7% and 20.7% of the census population (see Table 1).

Tax Filer Data and the Low Income Measure (LIM)

The income measure used to assign census tracts into the area-based income quintiles was the after-tax Low Income Measure (LIM), derived from the Statistics Canada's Annual Income Estimates for Census Families and Individuals (T1 Family File). The T1 Family File provides administrative records of income for all individuals who filed taxes in Canada that year. People are categorized as belonging to couple families with or without children, belonging to lone-parent families, and as persons not in census families. The T1 Family File has a high level of representativeness, providing income information for 95% of Canadians in 2010[i].

The Low Income Measure (LIM) is an income level defined as 50% of the median Canadian income in a given year, adjusted for family size and composition. A family reporting income below the LIM threshold corresponding to their size and composition is considered to be low income. Adjusting for family size and composition helps to account for the increased spending needs of larger families, as well as the difference in needs between adults and children. The after-tax LIM was used because it reflects a family's income after all tax payments, tax credits and government transfers, making it a better representation of a family's ability to purchase daily necessities and other goods and services.

Change Over Time

Three sets of income quintiles were created using tax filer data from 2000, 2005 and 2010. These years correspond with the time periods of the 2001, 2006 and 2011

[i] Statistics Canada. 2012. *Detailed information for 2010, Annual Income Estimates for Census Families and Individuals (T1 Family File).* Statistics Canada Catalogue. http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SurvId=1475&InstaId=131602&SDDS=4105 (accessed April 2015)

Canadian censuses. Data captured by the census reflects the previous year because respondents are asked to report on the circumstances of the previous year. Between these time points, several census tracts shifted to different income quintiles. Between 2005 and 2010, less than 30% of census tracts moved to a different quintile. Approximately 25% of all census tracts moved up or down by one quintile and less than 3% of all census tracts moved up or down more than one quintile. Health status data was assigned to income quintiles representing the closest year of income data. Health status data from 1999 to 2002 was assigned to income quintiles representing tax filer data from 2000, health data from 2003 to 2007 was assigned to 2005 income quintiles, and health data from 2008 to 2012 was assigned to 2010 income quintiles.

Income Groups Based on Self Reported Income

Five of the 19 health status indicators selected for this report used health status data from the Canadian Community Health Survey (CCHS). The CCHS includes self reported income data. This allowed for the creation of income groups based on individual level data, instead of the area-based income groups used for the other 14 indicators. For CCHS data, self reported data on income and household size was used to assign survey respondents to three equally sized groups (tertiles), based on Statistics Canada's methodology for income adequacy deciles.

Income adequacy tertiles were calculated for each respondent using the adjusted ratio of their total household income to the Statistics Canada Low Income Cut-Off (LICO) corresponding to their household size. This ratio provides a relative measure of each individual's household income compared to the household income of all other respondents in Toronto. The tertiles were recalculated for each time period (cycle) of the CCHS. Individuals were assigned to tertiles based on the rank order of all ratios from smallest to largest, so that the low income tertile contained respondents with the smallest ratios and the high income tertile contained respondents with the largest ratios.

The LICOs are income thresholds below which a household is likely to spend significantly more of its income on food, shelter and clothing than the average family. LICO values are adjusted for household and community size. LICO values used for the analysis in this report are based on the 1992 Family Expenditures Survey and are indexed to inflation.

Step 2: Calculating rates of health status by income level for each health status indicator

Indicator Selection

The health status indicators selected for inclusion in this analysis were chosen because of their ability to represent the overall burden of poor health in Toronto, the scope of Toronto Public Health's work, and health issues across the life course. Indicator selection was limited to technically robust indicators which allowed for analysis that was reliable, statistically valid and consistent over time, and for which quality and timely data was available. Where possible, indicators included in *The Unequal City: Income and Health Inequalities* (2008) were selected for inclusion in *The Unequal City 2015*. As outlined above, the indicators selected reflected overall health and well-being, chronic disease, health behaviours, communicable disease, injury and reproductive health. The analysis used data from 1999 to 2012 from the health care system, death records and broad-based government surveys.

Health Status Analysis

The 19 health status indicators selected were analyzed on a sex-specific basis by calculating the rates of health status for each income group for several points in time. Where appropriate, multiple years of health status data were combined to generate more stable estimates. Population data from the Canadian Census was used for the denominator in the calculation of all indicators except for Diabetes Prevalence, Readiness to Learn, Singleton Low Birth Weight and the five indicators based on CCHS data (please see Appendix A for more information on each indicator). For the 11 indicators using population data from the Canadian Census, 2001 census data was used for the calculation of 1999 to 2003 health status rates, 2006 census data was used for the calculation of 2004 to 2008 health status rates, and 2011 census data was used for 2009 to 2012 health status rates. Health status indicators using data from the CCHS combined data from two cycles, representing four years of data, to make up each time point.

Health status rates were age-standardized for all indicators except for Life Expectancy, Readiness to Learn, Singleton Low Birth Weight, Teen Pregnancy. The remaining 15 indicators were directly age-standardized within each income group to the 1991 Canadian population to account for potential differences in the age structure of each income group, and changes in the age structure of the population over time. For all except the three cancer-related indicators, 95% confidence intervals were calculated assuming a normal distribution. For lung cancer incidence, colorectal cancer incidence and breast cancer incidence, 95% confidence intervals were calculated using a Poisson distribution to account for low case counts.

Step 3: Calculating summary measures of inequality for each health status indicator

In order to better understand how population health varies across income groups, the income and health relationship for each indicator was quantified using summary measures of inequality. These measures were used to describe the distribution of income group-specific rates of health status across income groups. To assess how the relationship between income and health changed over time, these measures were calculated for several time points for each indicator, using HD*Calc software (Version 1.2.4; National Cancer Institute, 2013).

Absolute and Relative Measures of Inequality

The summary measures of inequality used in this analysis measure differences in health across income groups in either absolute or relative terms. Absolute measures are based on arithmetic differences between the rates of income groups. Absolute measures provide information about the scale of the differences between income groups and are impacted by changes that affect all income groups in overall rates. Relative measures are based on and describe proportional differences between the rates of income groups. Relative measures are not sensitive to changes in overall rates of health status. They provide a standardized measure of inequity and are therefore useful for comparing inequities between different indicators and different time periods.

Summary Measures of Inequality

The following five measures were used to quantify and summarize the income and health relationship in Toronto for each health status indicator analyzed, and to describe changes in this relationship over time. For additional details on these measures, including how they are calculated and their strengths and limitations, please see Public Health Ontario's 2013 *Summary Measures of Socioeconomic Inequalities in Health* report.[i]

Rate Difference

The rate difference measured the absolute difference between the rates of the highest and lowest income group. Large rate differences indicate high levels of absolute inequities. A rate difference is considered statistically significant if the 95% confidence interval does not include the value of zero.

[i] Ontario Agency for Health Protection and Health Promotion (Public Health Ontario). *Summary Measures of Socioeconomic Inequalities in Health*. Toronto, ON: Queen's Printer for Ontario: 2013.)

Rate Ratio

The rate ratio is a relative measure of the rate of the highest income group divided by the rate of the lowest income group. Large rate ratios indicate high levels of relative inequity. A rate ratio is considered statistically significant if the 95% confidence interval does not include the value of one.

Population Attributable Fraction

The population attributable fraction is the estimated potential reduction in the overall occurrence of a health outcome or behaviour if everyone experienced the same rate as the highest income group. This measure can be used as an absolute or relative measure of inequality. The reduction can be expressed as the absolute number of cases prevented, and as a percent reduction of the total number of cases in the population. Large population attributable fractions indicate high levels of inequity.

Slope Index of Inequality (SII)

The Slope Index of Inequality (SII) is an absolute summary measure of inequality, which describes the absolute rate difference between the extreme ends of the income distribution, as predicted by a regression model incorporating information from all income groups. Positive SII values indicate worse health among those with low incomes and negative SII values indicate worse health among those with high incomes. SII values are considered to be statistically significant if the 95% confidence interval does not include the value of zero. If the SII value is not statistically significant, rates of health status are considered to be similar across the income distribution. Changes in SII values over time are considered to be statistically significant when the 95% confidence intervals of two time points do not overlap.

Relative Index of Inequality (RII)

The Relative Index of Inequality (RII) is a relative summary measure of inequality, which describes the difference between the extreme ends of the income distribution, relative to the population mean, as predicted by a regression model incorporating information from all income groups. Positive RII values indicate worse health among those with low incomes and negative RII values indicate worse health among those with high incomes. RII values are considered to be statistically significant if the 95% confidence interval does not include the value of zero. If the RII value is not statistically significant, rates of health status are considered to be similar across the income distribution. Changes in RII values over time are considered statistically significant when the 95% confidence intervals of two time points do not overlap.

RESULTS

To analyze differences in health status across income levels in Toronto, the population was divided into equally sized groups based on either the proportion of people living in families earning less than the Low Income Measure (LIM) in each census tract, or based on self reported household income, depending on the data source.

Table 1 compares five LIM income quintiles by a number of select demographic indicators, using 2010 tax filer data, 2011 Canadian Census data, and 2006 Canadian long form census data. The percent of people living below the LIM in each census tract varied from 63.3% of residents in the least advantaged census tract to 3.4% of residents in the most advantaged census tract. In Toronto, 22.7% of the population lived in low income families in 2010. Median incomes ranged between census tracts from $15,910 to $167,730. The range of median incomes of census tracts in Q1 ($15,901 - $37,750) did not overlap with the range of median incomes of census tracts in Q5 ($40,740 - $167,730).

Table 2 compares three income groups by a number of select demographic characteristics, based on self reported data from the Canadian Community Health Survey (CCHS). Household incomes reported in 2009 to 2012 in Toronto ranged from $20 to $9,000,000.

The socio-demographic indicators compared in Table 1 and Table 2 follow a gradient across income groups. The lowest income quintile and the low income CCHS income group each contain the highest proportion of lone parent families and household, families and households living in rented dwellings, visible minorities (racialized groups), and recent immigrants. This pattern suggests that the income groups used in this report reflect the broader context of many social determinants of health.

Table 1. Low Income Measure (LIM) Income Quintile Characteristics, Toronto, 2010
LIM Income Quintiles

	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Toronto Total*
Population[1]	489,915	517,682	518,989	545,522	541,824	2,615,060
Living Below LIM[2] (%)	37.3	27.0	21.7	17.2	10.1	22.7
Range of LIM Reported in Each Census Tract[2] (%)	63.3 – 30.2	30.2 – 24.2	24.2 – 19.5	19.4 – 14.6	14.6 – 3.4	63.3 – 3.4
Range of Census Tract Median Income [2] ($)	15,910 – 37,750	26,300 – 46,800	29,030 – 48,370	32,780 – 71,640	40,740 –167,730	15,910 – 167,730
Lone Parent Families[2] (%)	27.6	23.9	22.3	19.1	14.9	21.3
Private Dwellings Rented[3] (%)	65.5	49.1	45.0	41.6	29.6	45.5
Recent Immigrants (2001-2006)[3] (%)	31.4	23.8	19.1	16.4	12.5	21.6
Visible Minority**, [3] (%)	68.2	63.7	52.0	35.2	18.4	46.9

Notes: Based on census families, which refers to a married couple and the children, if any, of either or both spouses; a couple living common law and the children, if any, of either or both partners; or, a lone parent of any marital status with at least one child living in the same dwelling and that child or those children.

*Numbers do not add due to data suppression and rounding.

**Visible Minority is the term used by Statistics Canada to reflect race for the 2006 Canada Census. Many local service providers, advocates and researchers working on issues related to race and racism use the term "racialized group" rather than terms that refer to a person's skin colour or race such as "visible minority". Referring to individuals as racialized recognizes that society creates and uses racial categories to identify and treat some individuals differently than others.

Source: 1. 2011 Canada Census, Statistics Canada.
2. 2010 Annual income estimates for census families and individuals (T1 Family File). Statistics Canada.
3. 2006 Canada Census, Statistics Canada.

Table 2. Canadian Community Health Survey Income Group Characteristics, Age 12 and Older, Toronto, 2009 to 2012.

	Low Income	Middle Income	High Income	Toronto Total
Population*	479,590	494,525	474,568	1,448,682
Median Household Income	25,000	60,000	130,000	75,000
Household Income Range ($)	20 – 78,000	38,000 –150,000	75,000 – 9,000,000	20 – 9,000,000
Rented dwellings (%)	68.4	39.1	21.4	43.0
Recent Immigrants (past 5 years) (%)	17.1	7.7	2.9	9.2
Lone Parent Households (%)	15.5	8.9	3.7	9.4

Notes: Based on households, referring to refers to a person or group of persons who occupy the same dwelling and do not have a usual place of residence elsewhere in Canada or abroad. The household may consist of a family group such as a census family, of two or more families sharing a dwelling, of a group of unrelated persons or of a person living alone.

* Approximately 40% of the sample was excluded from the analysis due to lack of household income data.

Source: Canadian Community Health Survey, 2009 - 2012. Statistics Canada, Share File, Knowledge Management and Reporting Branch, Ontario Ministry of Health and Long-Term Care.

Health Status Indicators

Nineteen selected health status indicators are described in detail in the following pages. Fifteen indicators measured male and female health separately, two measured health for females only, and two measured health for males and females combined for a total of 34 sex-specific indicators. Each of these 19 indicators (or 34 sex-specific indicators) is described in up to three pages:

First Page: Most recent time point

The first page describes health status for each income group for the most recent time point based on available data. The overall rate, rate difference, and rate ratio are described in accompanying tables. The population attributable fraction is described, where appropriate in an accompanying interpretation. Reported risk difference and risk ratio values are statistically significant, unless otherwise stated. For many indicators, health status follows a gradient across income groups, where differences are found across all income groups, and not just between the highest and lowest income groups.

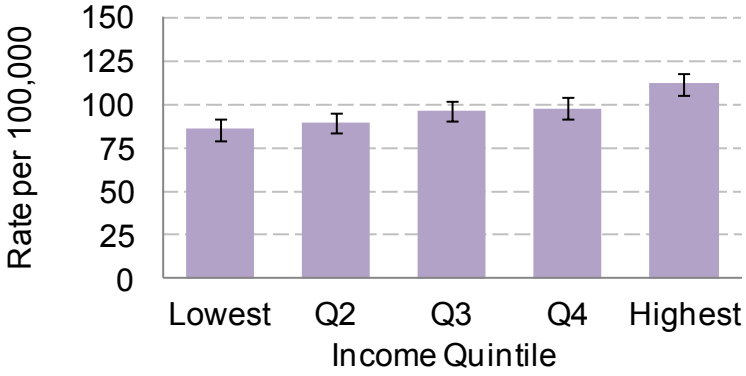
Second and Third Pages: Trends in health status over time

The following two pages describe trends in the rates of health inequities over time. Males and females in are described on separate pages. Trends in health inequities over time are summarized in three figures:

- Figure (a) describes the income specific rates of health status, as well as the rate for the entire city of Toronto, for each of the time points available
- Figure (b) describes the changes in absolute inequities for each time point available, using the Slope Index of Inequality (SII). See page 9 for more details
- Figure (c) describes the changes in relative inequities for each time point available, using the Relative Index of Inequality (RII). See page 9 for more details.

Breast Cancer Incidence

Figure 1. Breast Cancer Incidence Rate, by Income, Females, Toronto, 2008 to 2012 Combined



Toronto Rate
97.1 per 100,000

Rate Difference (Q5 – Q1)
26.0 per 100,000

Rate Ratio (Q5 / Q1)
1.3 times

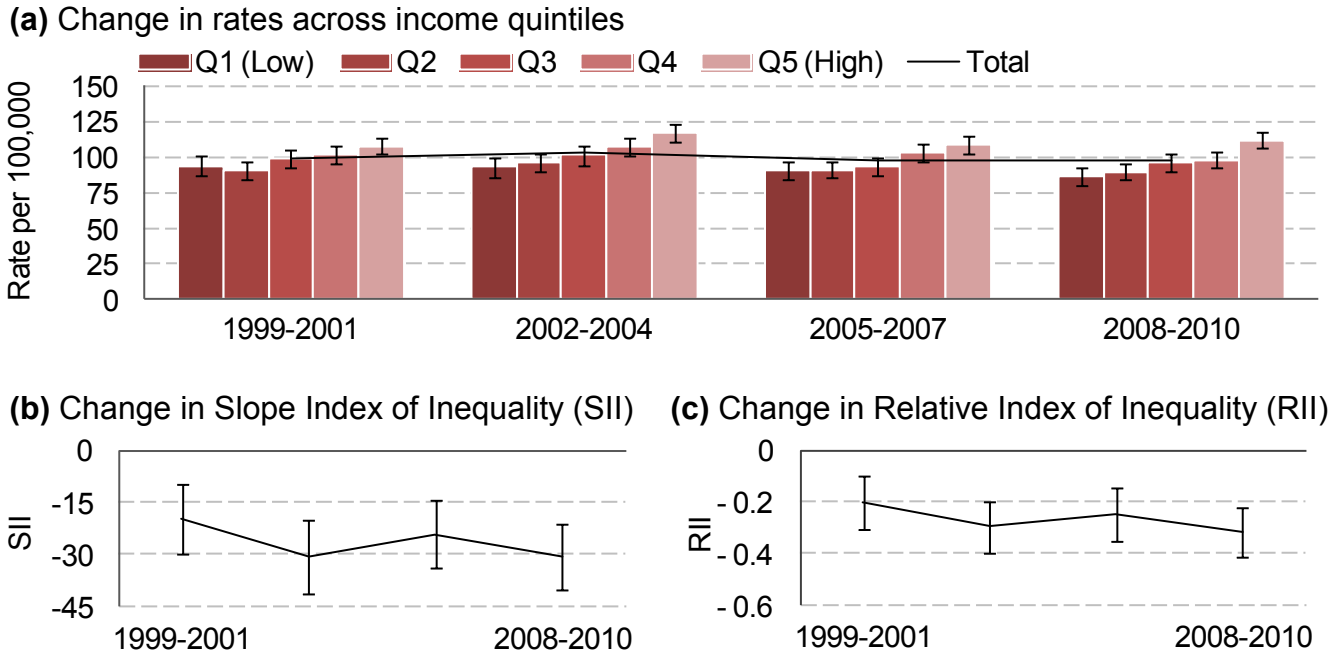
1. Income refers to population quintile established based on proportion of the population living below the LIM in census tracts.
2. Rates are age standardized within each income quintile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Cancer Care Ontario (Ontario Cancer Registry), 2008-2010, extracted May 2014.

- In 2008 to 2012, there was a stepwise gradient in the rate of female breast cancer incidence across income quintiles. The rate in the highest income quintile (Q5), at 112.0 per 100,000, was highest and significantly different from the rate in the lowest income quintile (Q1), at 86.0 per 100,000. The difference was 26.0 per 100,000. The rate in Q5 was 1.3 times the rate in Q1.

Trends in Breast Cancer Incidence

Figure 2. Breast Cancer Incidence Rate, by Income, Females, Toronto, 1999 to 2001 Combined to 2008 to 2010 Combined



1. Income refers to population quintile established based on proportion of the population living below the LIM in census tracts.
2. Rates are age standardized within each income quintile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Cancer Care Ontario (Ontario Cancer Registry), 1999-2010, extracted May 2014.

Breast cancer incidence rates remained relatively stable since the 1999 to 2001 period

The breast cancer incidence rate was 99.5 per 100,000 in the 1999 to 2001 period and 97.1 per 100,000 in the 2008 to 2012 period. (Figure 2a).

Higher rates of breast cancer are found in the higher income quintiles

Figures 2b and 2c show that over the analysis period, negative and statistically significant SII and RII values were found for all time points, indicating significant absolute and relative inequities where the breast incidence rate was generally higher for females in higher income quintiles than in lower income quintiles.

Health differences have persisted over time

There were no significant changes in SII (Figure 2b) or RII (Figure 2c) values during this time period.

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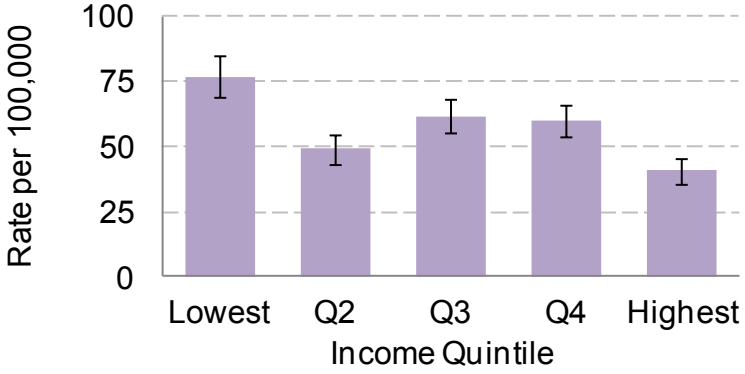
Cardiovascular Disease Premature Mortality

Figure 3. Cardiovascular Disease Premature Mortality Rate, by Income, Adults less than 75 Years, Toronto, 2009 and 2010 Combined

Male Cardiovascular Disease Mortality Rate

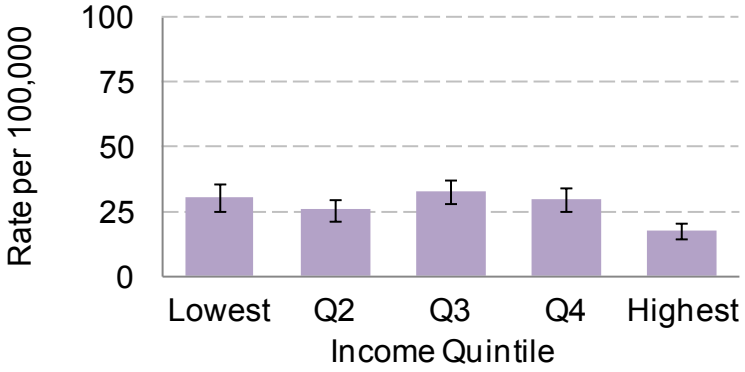


Toronto Rate
56.8 per 100,000

Rate Difference (Q1 – Q5)
35.8 per 100,000

Rate Ratio (Q1 / Q5)
1.9 times

Female Cardiovascular Disease Mortality Rate



Toronto Rate
26.9 per 100,000

Rate Difference (Q1 – Q5)
12.7 per 100,000

Rate Ratio (Q1 / Q5)
1.7 times

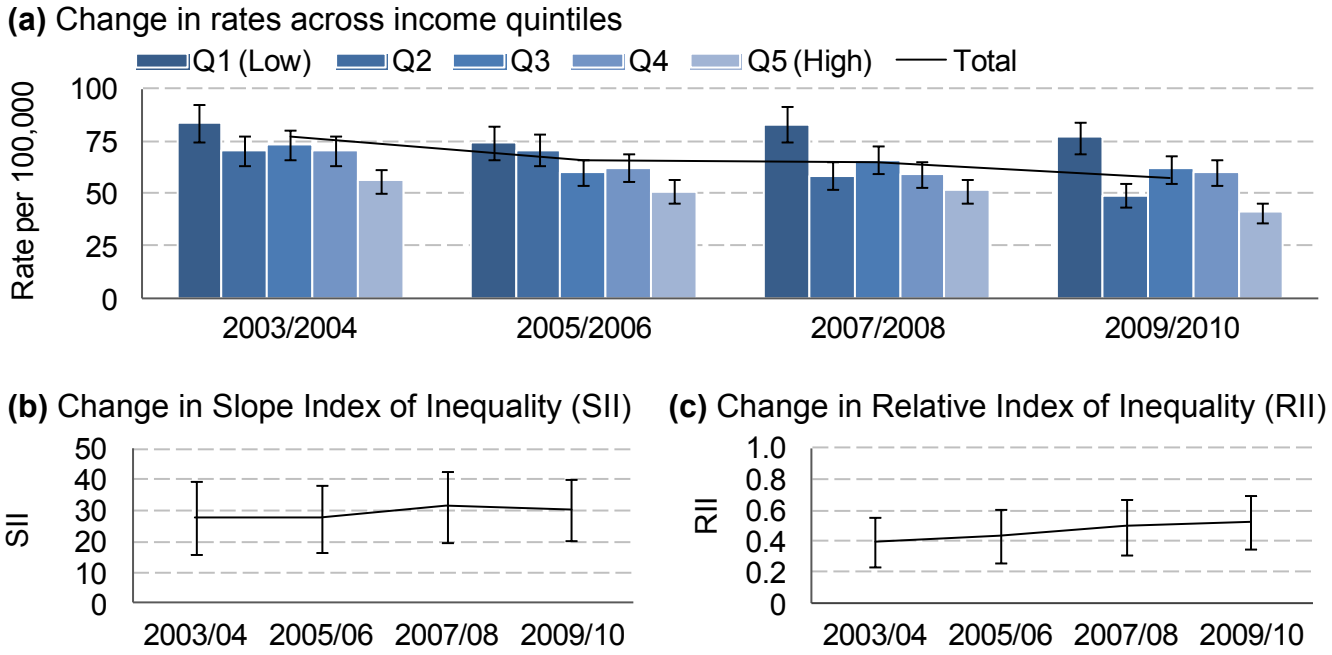
1. Income refers to population quintile established based on proportion of the population living below the LIM in census tracts.
2. Rates are age standardized within each income quintile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Ontario Mortality Data 2009-2010, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: September 2014.

- For males, there was a gradient in the rate of cardiovascular disease (CVD) premature mortality across income quintiles. The rate in the lowest income quintile (Q1), at 76.6 per 100,000, was highest and significantly different from the rate in the highest income quintile (Q5), at 40.8 per 100,000. The difference was 35.8 per 100,000. The rate in Q1 was 1.9 times the rate in Q5.
- For females, the rate of CVD premature mortality in the lowest income quintile (Q1), at 30.5 per 100,000, was significantly higher than the rate in the highest income quintile (Q5) only, at 17.8 per 100,000. The difference was 12.7 per 100,000. The rate in Q1 was 1.7 times the rate in Q5
- If all males and females had the same rate of CVD premature mortality as the highest income quintile, there would be 314 or 31% fewer deaths from CVD before age 75.

Trends in Cardiovascular Disease Premature Mortality in Males

Figure 4. Cardiovascular Disease Premature Mortality Rate, by Income, Males less than 75 Years, Toronto, 2003 and 2004 Combined to 2009 and 2010 Combined



1. Income refers to population quintile established based on proportion of the population living below the LIM in census tracts.
2. Rates are age standardized within each income quintile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Ontario Mortality Data 2003-2010, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: September 2014.

Cardiovascular disease premature mortality has decreased since 2003 to 2004

The cardiovascular disease (CVD) premature mortality rate for males decreased from 76.8 per 100,000 in 2003 to 2004 to 56.8 per 100,000 in 2009 to 2010. (Figure 2a).

Higher rates of CVD premature mortality are found in the lower income quintiles

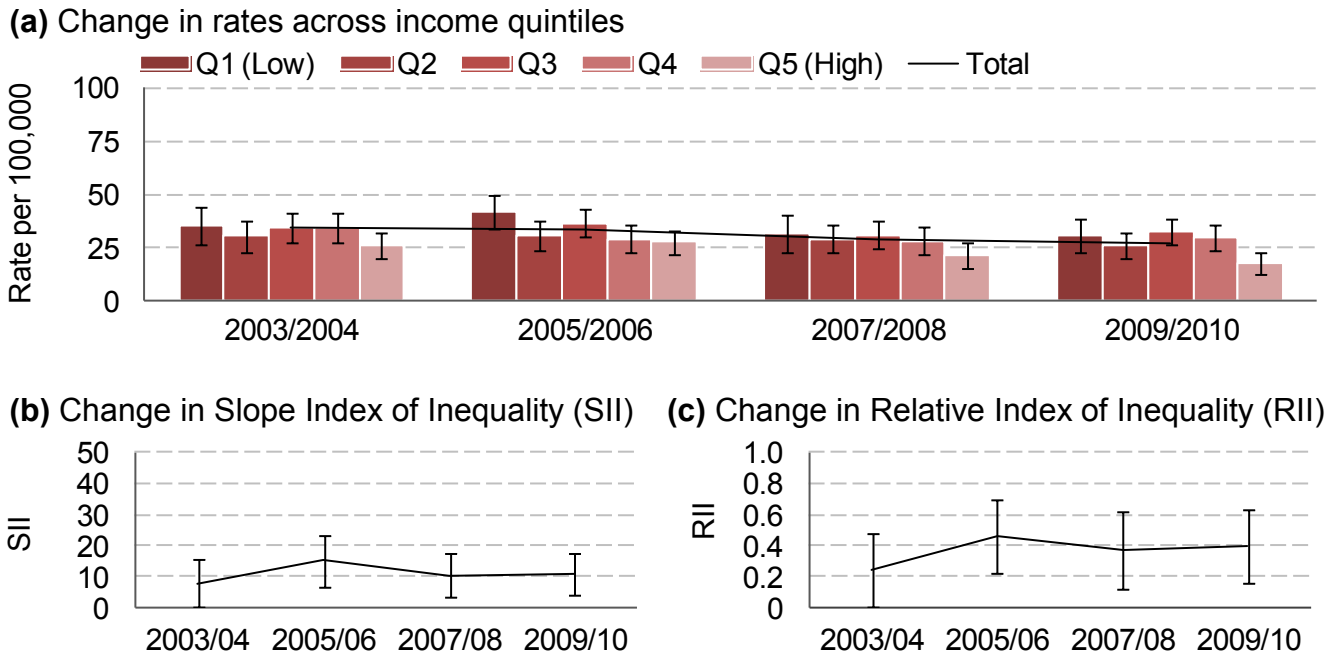
Figures 4b and 4c show that over the analysis period, positive and statistically significant SII and RII values were found for all time points, indicating significant absolute and relative inequities where the rate of CVD premature mortality was generally higher for males in lower income quintiles than in higher income quintiles.

Health inequities have persisted over time

There were no significant changes in the strength of absolute (Figure 4b) or relative (Figure 4c) inequities during this time period.

Trends in Cardiovascular Disease Premature Mortality in Females

Figure 5. Cardiovascular Disease Premature Mortality Rate, by Income, Females less than 75 Years, Toronto, 2003 and 2004 Combined to 2009 and 2010 Combined



1. Income refers to population quintile established based on proportion of the population living below the LIM in census tracts.
2. Rates are age standardized within each income quintile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Ontario Mortality Data 2003-2010, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: September 2014.

Cardiovascular disease premature mortality has decreased since 2003 to 2004

The cardiovascular disease premature (CVD) mortality rate for females decreased from 34.5 per 100,000 in 2003 to 2004 to 26.9 per 100,000 in 2009 to 2010. (Figure 5a).

Higher rates of CVD premature mortality are found in the lower income quintiles

Figures 5b and 5c show that over the analysis period, positive and statistically significant SII and RII values were found for all time points, indicating significant absolute and relative inequities where the rate of CVD premature mortality was generally higher for females in lower income quintiles than in higher income quintiles.

Health inequities have persisted over time

There were no significant changes in the strength of absolute (Figure 5b) or relative (Figure 5c) inequities over time.

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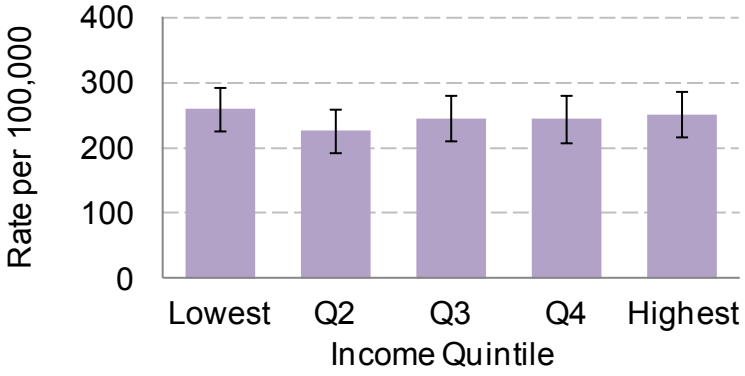
Childhood Unintentional Injury Hospitalizations

Figure 6. Unintentional Injury Hospitalization Rate, by Income, Children age 0 to 14, Toronto, 2011 and 2012 Combined

Male Unintentional Injury Hospitalization Rate

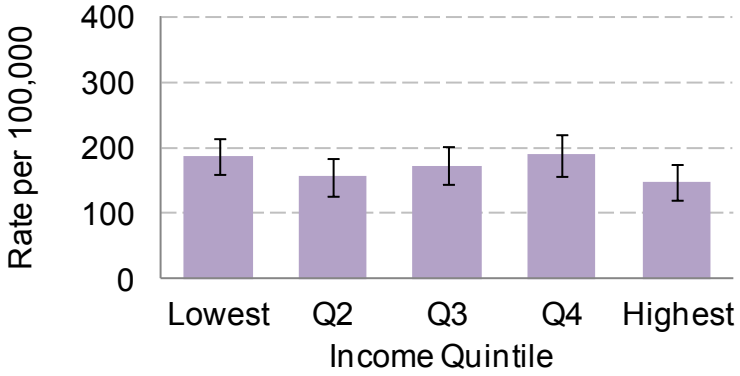


Toronto Rate
248.4 per 100,000

Rate Difference (Q1 – Q5)
Not statistically significant

Rate Ratio (Q1 / Q5)
Not statistically significant

Female Unintentional Injury Hospitalization Rate



Toronto Rate
172.5 per 100,000

Rate Difference (Q1 – Q5)
Not statistically significant

Rate Ratio (Q1 / Q5)
Not statistically significant

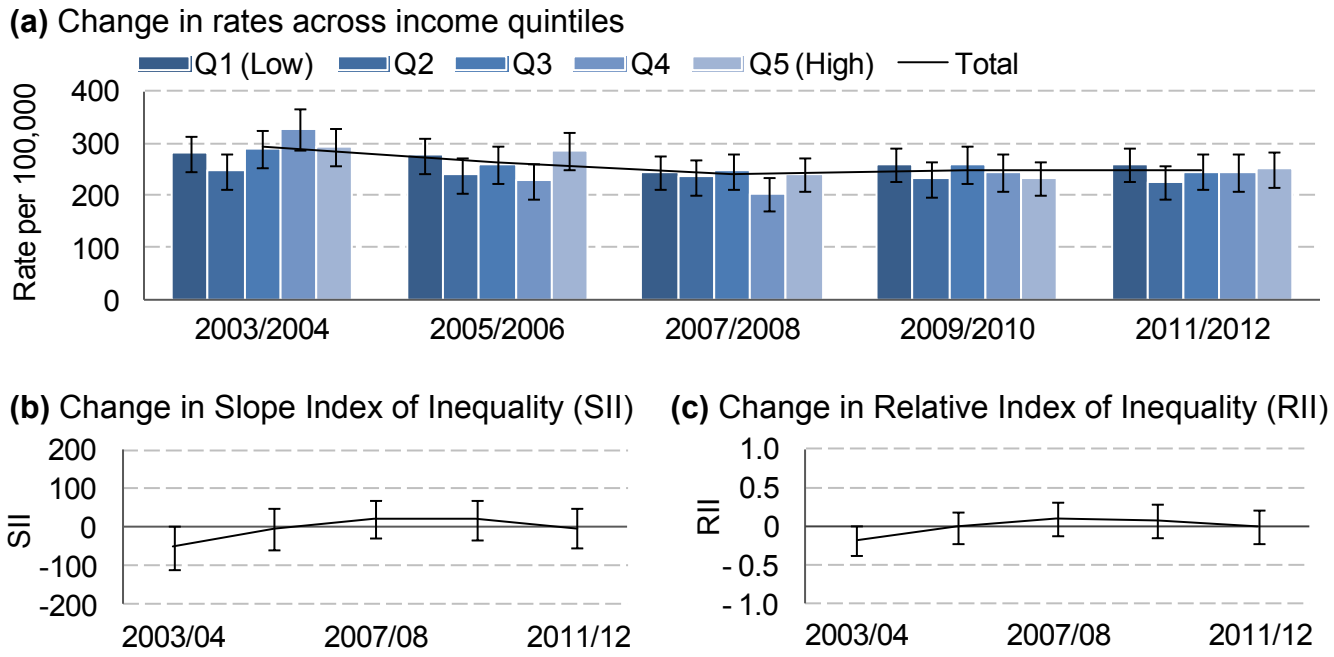
1. Income refers to population quintile established based on proportion of the population living below the LIM in census tracts.
2. Rates are age standardized within each income quintile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Inpatient Discharges 2011-2012, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: April 2014.

- For both males and females, there were no significant differences in the rates of unintentional injury hospitalizations among children age 0 to 14 across income quintiles for the 2011 to 2012 period.

Trends in Childhood Unintentional Injury Hospitalizations in Males

Figure 7. Unintentional Injury Hospitalization Rate, by Income, Males Age 0 to 14, Toronto, 2003 and 2004 Combine to 2011 and 2012 Combined



1. Income refers to population quintile established based on proportion of the population living below the LIM in census tracts.
2. Rates are age standardized within each income quintile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Inpatient Discharges 2003-2012, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: April 2014.

Childhood unintentional injury hospitalizations have decreased since 2003 to 2004

The unintentional injury hospitalization rate for males aged 0 to 14 decreased from 293.4 per 100,000 during 2003 to 2004, to 248.4 per 100,000 during 2011 to 2012. (Figure 7a).

Rates of childhood unintentional injury hospitalizations are equally distributed across income groups

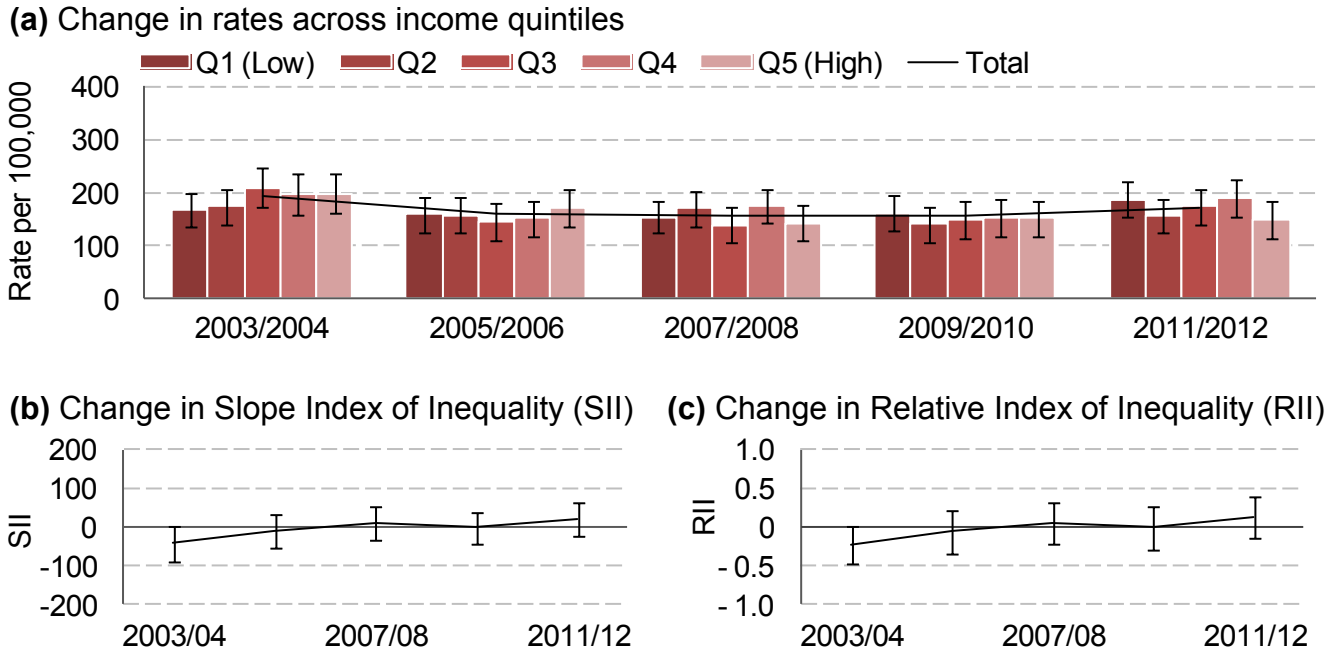
Figures 7b and 7c show that over the analysis period, the rate unintentional injury hospitalizations among males aged 0 to 14 was fairly similar across all income groups. Small variations were observed between income quintiles, but the differences in quintile specific rates were generally not statistically significant. The 95% confidence intervals for the SII and RII overlapped with zero for all time points, indicating that there were no significant absolute (Figure 7b) and relative (Figure 7c) inequities for those time points.

The equal distribution of health across income groups has persisted over time

There were no significant changes in SII (Figure 7b) or RII (Figure 7c) values for childhood unintentional injury hospitalizations for males during this time period.

Trends in Childhood Unintentional Injury Hospitalizations in Females

Figure 8. Unintentional Injury Hospitalization Rate, by Income, Females Age 0 to 14, Toronto, 2003 and 2004 Combine to 2011 and 2012 Combined



1. Income refers to population quintile established based on proportion of the population living below the LIM in census tracts.
2. Rates are age standardized within each income quintile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Inpatient Discharges 2003-2012, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: April 2014.

Childhood unintentional injury hospitalizations have decreased since 2003 to 2004

The unintentional injury hospitalization rate for females age 0 to 14 decreased from 191.8 per 100,000 during 2003 to 2004, to 172.5 per 100,000 during 2011 to 2012. (Figure 8a).

Rates of childhood unintentional injury hospitalizations are equally distributed across income groups

Figures 8b and 8c show that over the analysis period, the rate unintentional injury hospitalizations among females aged 0 to 14 was fairly similar across all income groups. Small variations were observed between income quintiles, but the differences in quintile specific rates were generally not statistically significant. The 95% confidence intervals for the SII and RII overlapped with zero for all time points, indicating that there were no significant absolute (Figure 8b) and relative (Figure 8c) inequities for those time points.

The equal distribution of health across income groups has persisted over time

There were no significant changes in SII (Figure 8b) or RII (Figure 8c) values for childhood unintentional injury hospitalizations for females during this time period.

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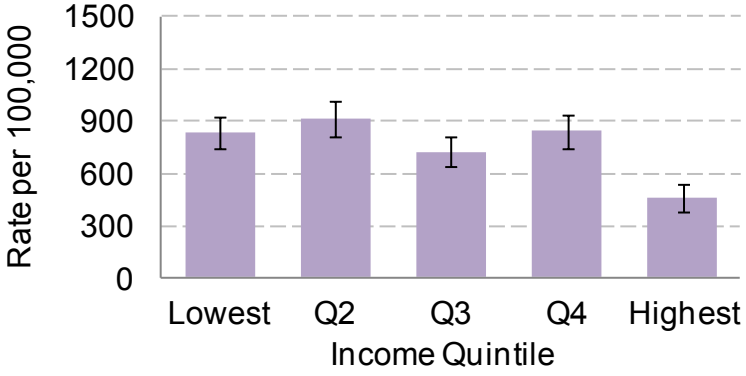
Chlamydia Incidence in Young Adults

Figure 9. Chlamydia Incidence Rate in Young Adults Age 15 to 24, by Income, Toronto, 2012

Male Chlamydia Incidence Rate

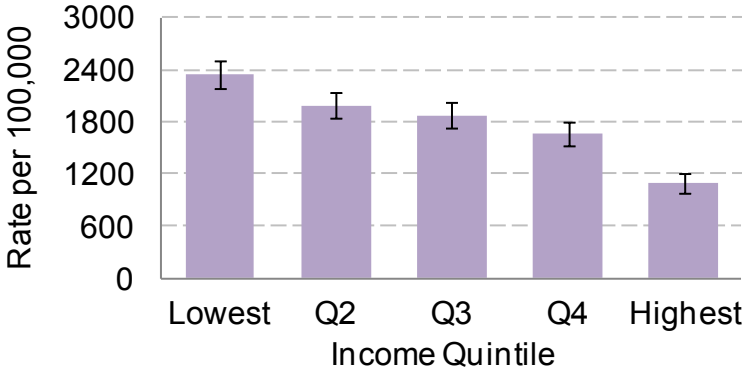


Toronto Rate
764.9 per 100,000

Rate Difference (Q1-Q5)
372.4 per 100,000

Rate Ratio (Q1 / Q5)
1.8 times

Female Chlamydia Incidence Rate



Toronto Rate
1,819.7 per 100,000

Rate Difference (Q1-Q5)
1,263.6 per 100,000

Rate Ratio (Q1 / Q5)
2.2 times

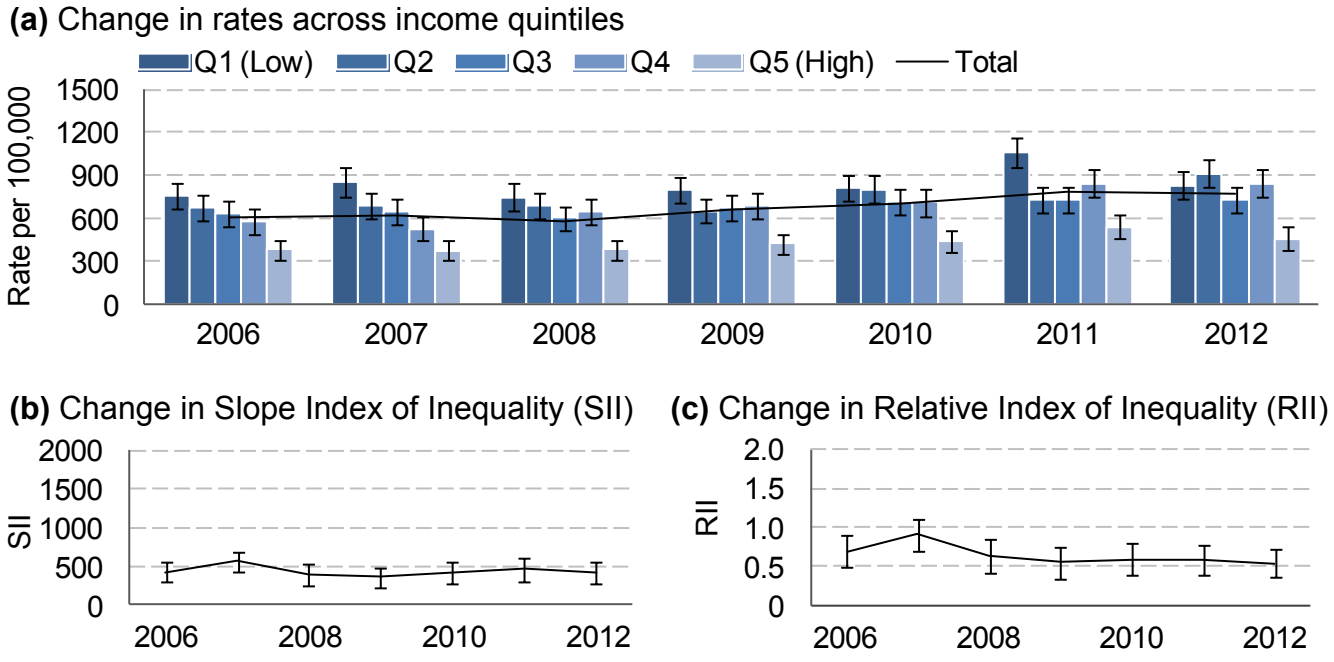
1. Income refers to population quintile established based on proportion of the population living below the LIM in census tracts.
2. Rates are age standardized within each income quintile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.
4. Different scales are used for males and females.

Source: Integrated Public Health Information System, Toronto Public Health, extracted May 13 2013.

- For male young adults, the rate of chlamydia in the lowest income quintile (Q1), at 832.4 per 100,000, was significantly higher than the rate in the highest income quintile (Q5) only, at 460.0 per 100,000. The difference was 372.4 per 100,000. The rate in Q1 was 1.8 times the rate in Q5.
- For female young adults, there was a gradient in the rate of chlamydia incidence across income quintiles. The rate in the lowest income quintile (Q1), at 2,352.7 per 100,000, was highest and significantly different from the highest income quintile (Q5), at 1,089.1 per 100,000. The difference was 1,263.6 per 100,000. The rate in Q1 was 2.2 times the rate in Q5.
- If all young adults in Toronto experienced the same chlamydia incidence rate as the highest income quintile, there would be 1,720 or 40% fewer chlamydia cases in youth per year.

Trends in Chlamydia Incidence in Male Young Adults

Figure 10. Chlamydia Incidence Rate in Male Young Adults Age 15 to 24, by Income, Toronto, 2006 to 2012



1. Income refers to population quintile established based on proportion of the population living below the LIM in census tracts.
2. Rates are age standardized within each income quintile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Integrated Public Health Information System, Toronto Public Health, extracted May 13 2013.

Chlamydia incidence rates have increased since 2006

The chlamydia incidence rate for male young adults increased from 606.9 per 100,000 in 2006 to 764.9 per 100,000 in 2012. (Figure 10a).

Higher rates of chlamydia incidence are found in the lower income quintiles

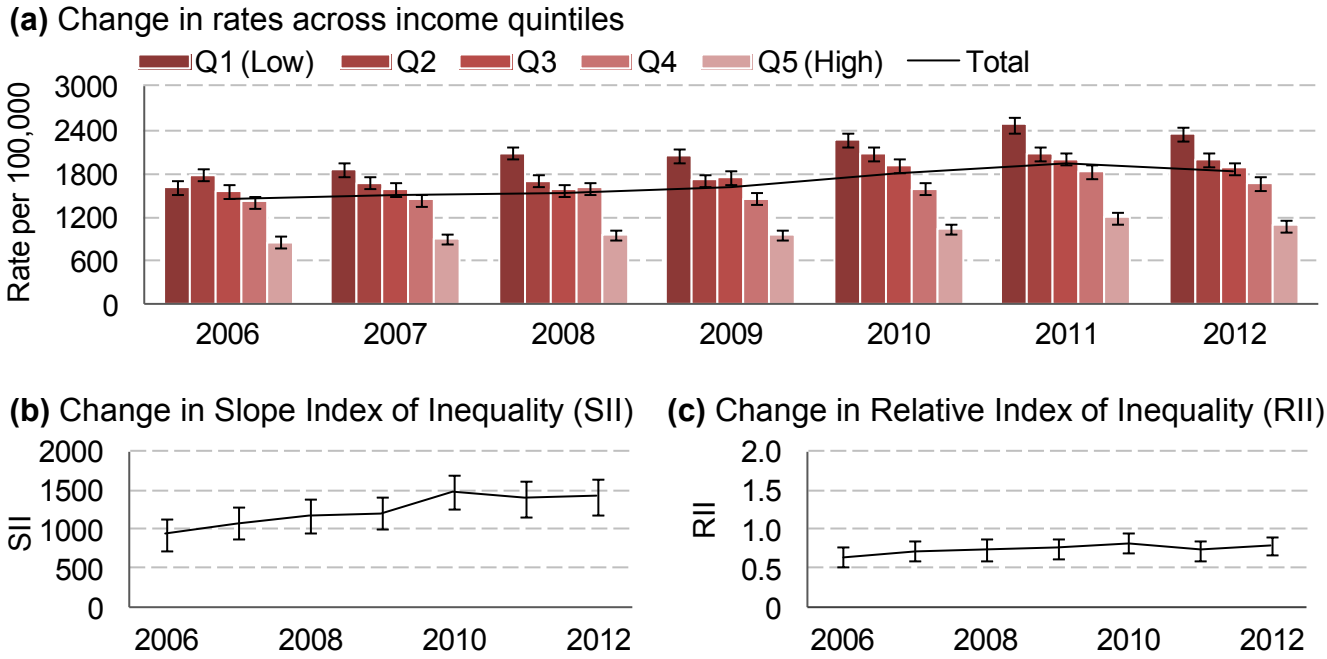
Figures 10b and 10c show that over the analysis period, positive and statistically significant SII and RII values were found for all time points, indicating significant absolute and relative inequities where the chlamydia incidence rate was generally higher for males in lower income quintiles than in higher income quintiles.

Health inequities have persisted over time

There were no significant changes in the strength of absolute (Figure 10b) or relative (Figure 10c) inequities during this time period.

Trends in Chlamydia Incidence in Female Young Adults

Figure 11. Chlamydia Incidence Rate in Female Young Adults Age 15 to 24, by Income, Toronto, 2006 to 2012



1. Income refers to population quintile established based on proportion of the population living below the LIM in census tracts.
2. Rates are age standardized within each income quintile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Integrated Public Health Information System, Toronto Public Health, extracted May 13 2013.

Chlamydia incidence rates have increased since 2006

The chlamydia infection rate for female young adults age 15 to 24 increased from 1,452.5 per 100,000 in 2006 to 1,819.7 per 100,000 in 2012. (Figure 11a).

Higher rates of chlamydia infection are found in the lower income quintiles

Figures 11b and 11c show that over the analysis period, positive and statistically significant SII and RII values were found for all time points, indicating significant absolute and relative inequities where chlamydia incidence was generally higher for females in lower income quintiles than in higher income quintiles.

Absolute health inequities have increased over time; relative inequities have persisted

There was an approximately proportionate increase in infection rate across income quintiles, accompanied by a more prominent increase in the rate of the lowest income quintile (Q1). This contributed to an increase in absolute difference between low and high income quintiles, and significantly higher SII in 2010, 2011, and 2012 compared with 2006. (Figure 11b). Relative inequities have remained stable, and there were no significant changes in the RII during this time period (Figure 11c).

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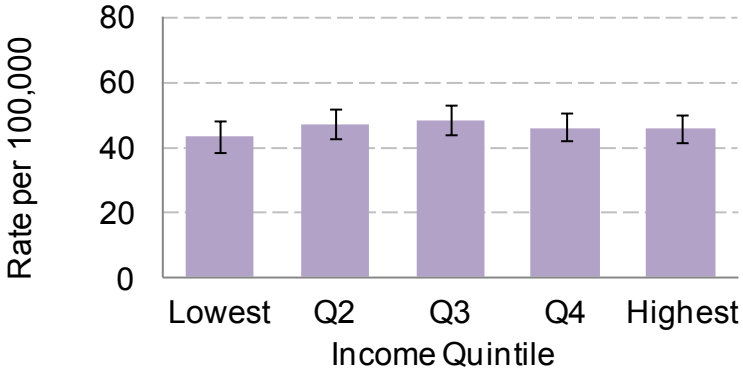
Colorectal Cancer Incidence

Figure 12. Colorectal Cancer Incidence Rate, by Income, Toronto, 2008 to 2010 Combined

Male Colorectal Cancer Incidence Rate

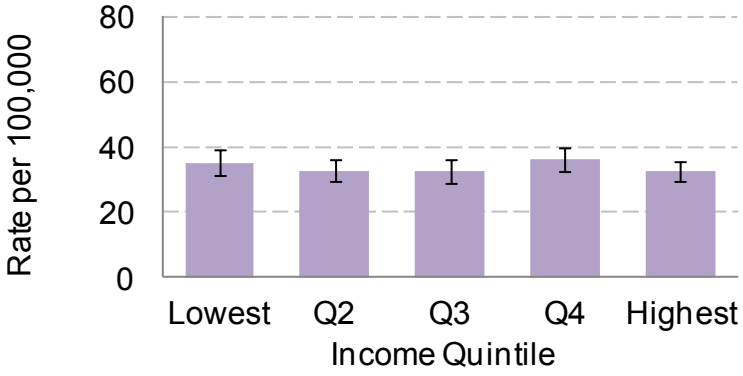


Toronto Rate
46.2 per 100,000

Rate Difference (Q1 – Q5)
Not statistically significant

Rate Ratio (Q1 / Q5)
Not statistically significant

Female Colorectal Cancer Incidence Rate



Toronto Rate
33.6 per 100,000

Rate Difference (Q1 – Q5)
Not statistically significant

Rate Ratio (Q1 / Q5)
Not statistically significant

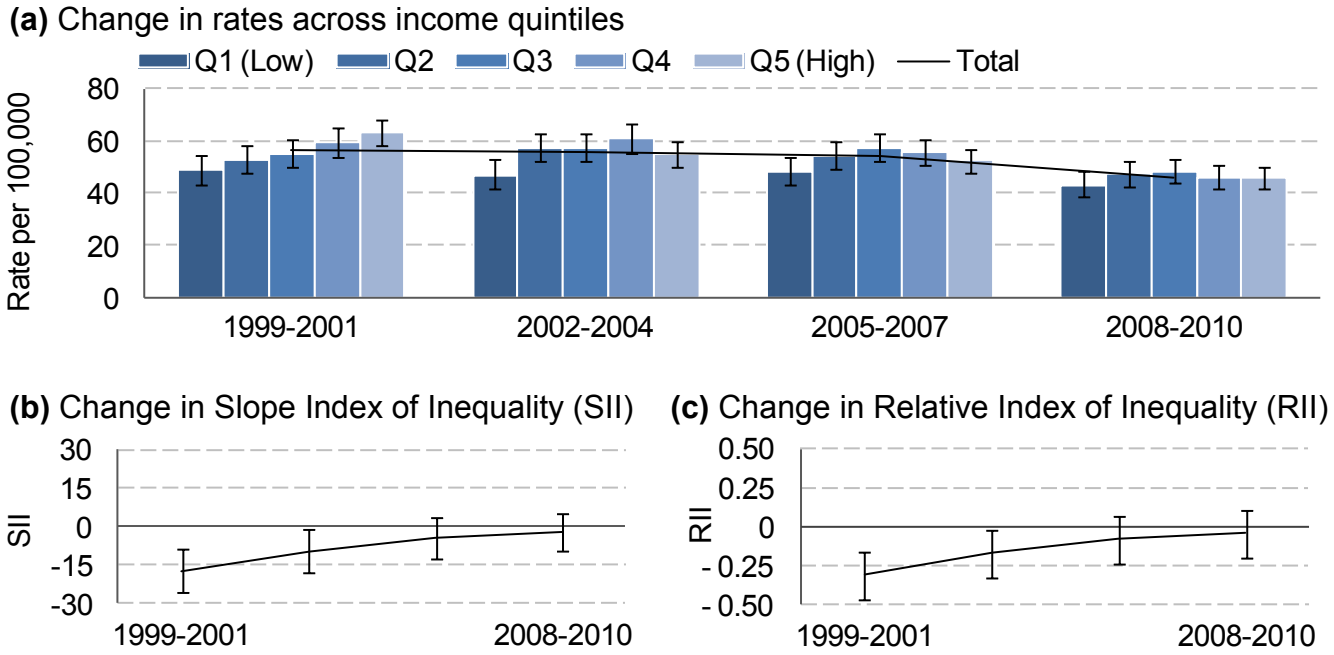
1. Income refers to population quintile established based on proportion of the population living below the LIM in census tracts.
2. Rates are age standardized within each income quintile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Cancer Care Ontario (Ontario Cancer Registry), 2008-2010, extracted May 2014.

- There were no significant differences in colorectal cancer incidence among males and females across income quintiles for the 2008 to 2010 period.

Trends in Colorectal Cancer Incidence in Males

Figure 13. Colorectal Cancer Incidence, by Income, Males, Toronto, 1999 to 2001 Combined to 2008 to 2010 Combined



1. Income refers to population quintile established based on proportion of the population living below the LIM in census tracts.
2. Rates are age standardized within each income quintile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Cancer Care Ontario (Ontario Cancer Registry), 1999-2010, extracted May 2014.

Colorectal cancer incidence has decreased since the 1999 to 2001 period

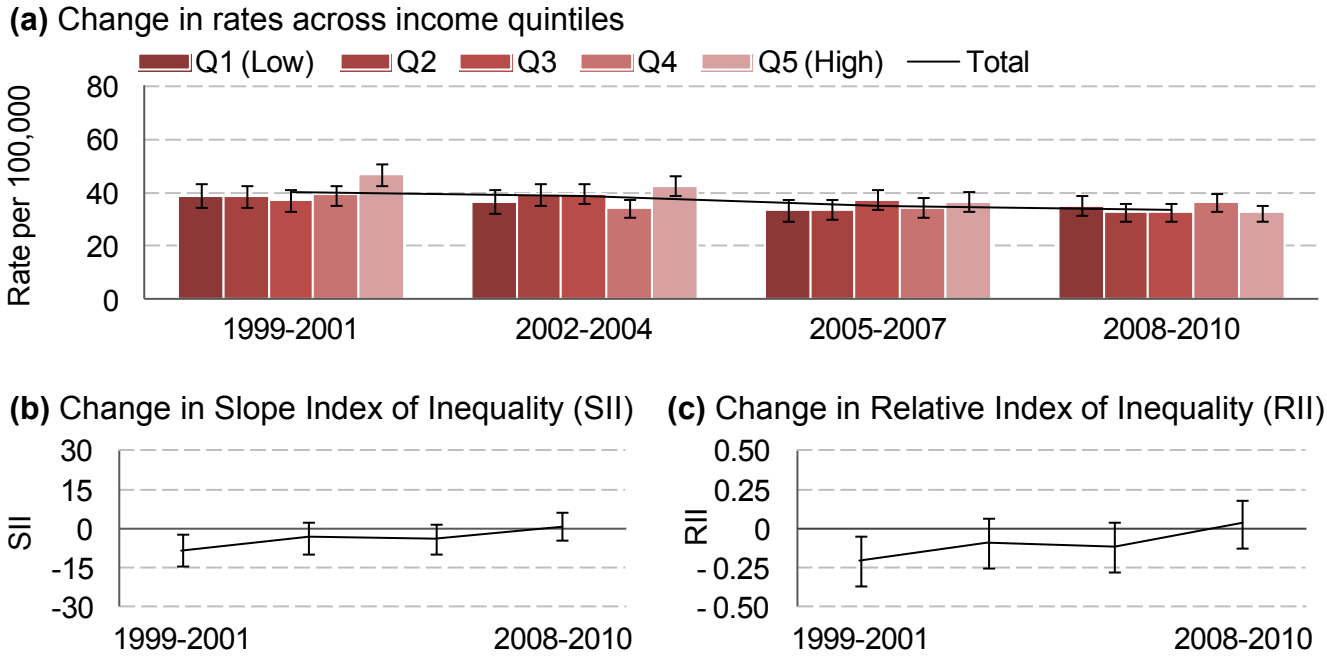
The colorectal cancer incidence rate for males in Toronto decreased from 56.6 per 100,000 during 1999 to 2001, to 46.2 per 100,000 during 2008 to 2010. (Figure 13a).

Colorectal cancer incidence has decreased most for the high income quintiles. This has decreased differences over time.

During the 1999 to 2001 period and the 2002 to 2004 period, there were significant inequities in colorectal cancer incidence, where the incidence rate was higher for males in higher income quintiles than in lower income quintiles. While rates decreased over time for all income quintiles, the greatest decline was seen among the high income quintiles. This resulted in a more even distribution of health across income quintiles, and during the 2005 to 2007 and 2008 to 2010 periods, there were no statistically significant absolute (Figure 13b) or relative (Figure 13c) inequities.

Trends in Colorectal Cancer Incidence in Females

Figure 14. Colorectal Cancer Incidence, by Income, Females, Toronto, 1999 to 2001 Combined to 2008 to 2010 Combined



1. Income refers to population quintile established based on proportion of the population living below the LIM in census tracts.
2. Rates are age standardized within each income quintile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Cancer Care Ontario (Ontario Cancer Registry), 1999-2010, extracted May 2014.

Colorectal cancer incidence has decreased since the 1999 to 2001 period

The colorectal cancer incidence rate for females in Toronto decreased from 40.3 per 100,000 during 1999 to 2001, to 33.6 per 100,000 during 2008 to 2010. (Figure 14a).

Colorectal cancer incidence has decreased most for the high income quintiles. This has decreased differences over time.

In the 1999 to 2001 period, there were significant inequities in colorectal cancer incidence, where the incidence rate was higher for females in the highest income quintile compared to other quintiles. While rates decreased over time for all income quintiles, the greatest decline was seen in the highest income quintile. This has resulted in a more even distribution of health across income quintiles, and during the 2002 to 2004, 2005 to 2007 and 2008 to 2010 periods, there were no statistically significant absolute (Figure 14b) or relative (Figure 14c) inequities.

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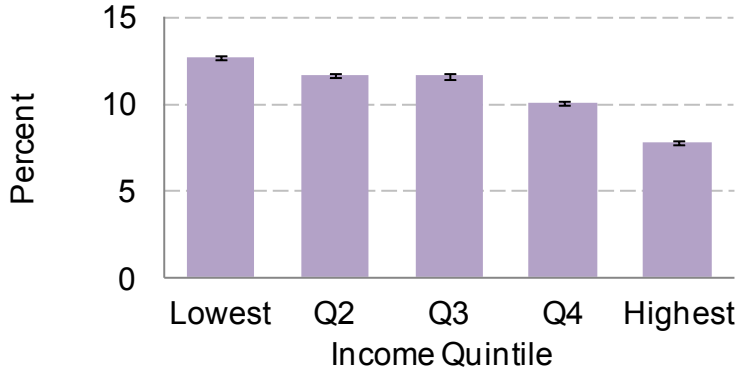
Diabetes Prevalence

Figure 15. Diabetes Prevalence Rate, by Income, Adults 20 and Older, Toronto, 2012

Male Diabetes Prevalence Rate

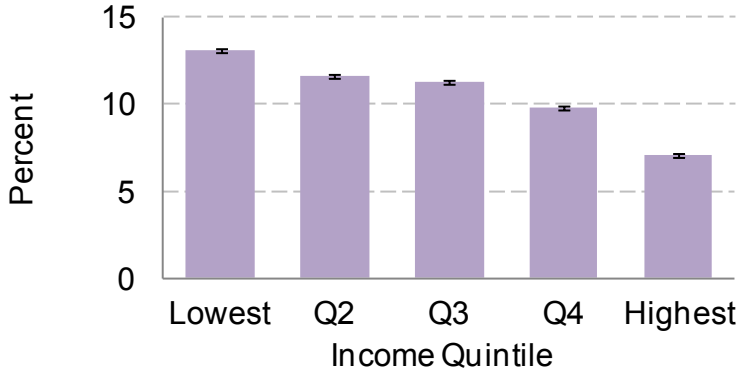


Toronto Rate
10.6%

Rate Difference (Q1 – Q5)
4.9 percentage points

Rate Ratio (Q1 / Q5)
1.6 times

Female Diabetes Prevalence Rate



Toronto Rate
10.3%

Rate Difference (Q1 – Q5)
6.0 percentage points

Rate Ratio (Q1 / Q5)
1.9 times

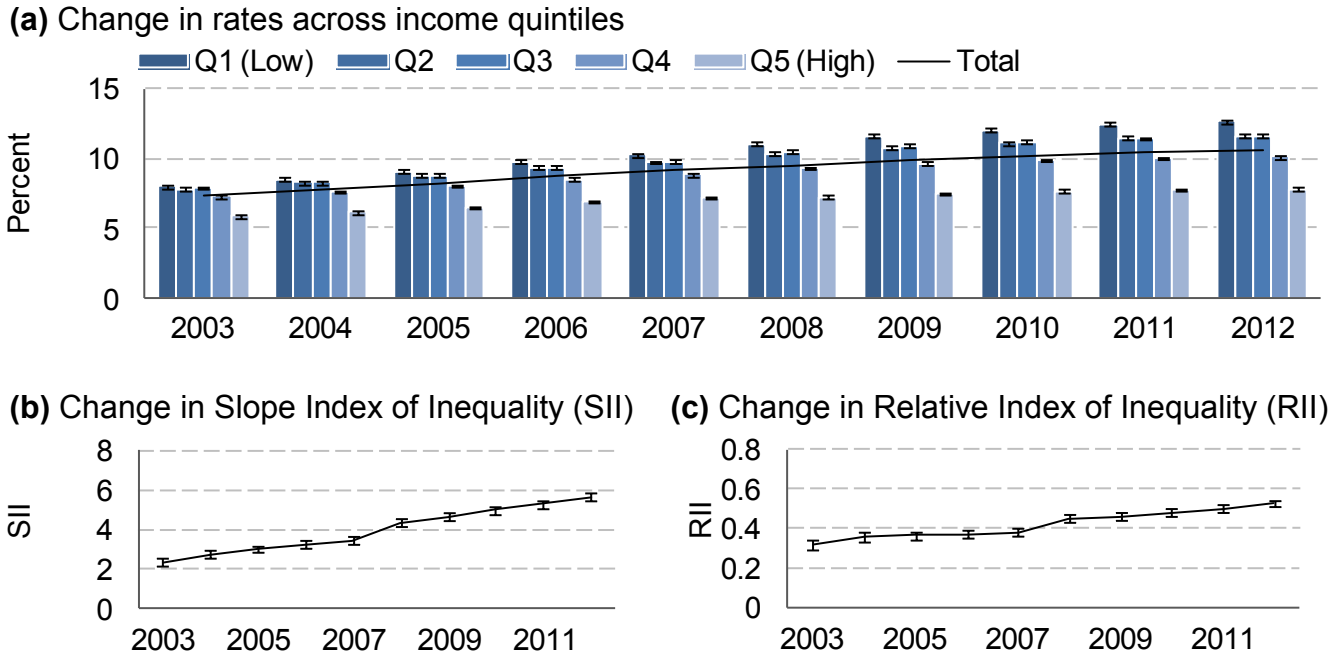
1. Income refers to population quintile established based on proportion of the population living below the LIM in census tracts.
2. Rates are age standardized within each income quintile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Numerator – Ontario Diabetes Database, Institute for Clinical Evaluative Sciences (ICES).
Denominator – Registered Persons Database, Ministry of Health and Long-Term Care and ICES.

- For both males and females, there was a gradient in diabetes prevalence rates across income quintiles in Toronto. The rate in the lowest income quintile (Q1) was highest and significantly different from the rate in the highest income quintile (Q5).
- For males, the rate of diabetes prevalence in the lowest income quintile was 12.7%, compared to 7.8% in the highest income quintile. The difference was 4.9 percentage points. The rate in Q1 was 1.6 times the rate in Q5.
- For females, the rate in the lowest income quintile was 13.1%, compared to 7.1% in the highest income quintile. The difference was 6.0 percentage points. The rate in Q1 was 1.9 times the rate in Q5.
- If all adults in Toronto experienced the same rate as the highest income group, there would be 62,111 or 29% fewer people livings with diabetes per year.

Trends in Diabetes Prevalence in Males

Figure 16. Diabetes Prevalence Rate, by Income, Males Age 20 and Older, Toronto, 2003 to 2012



1. Income refers to population quintile established based on proportion of the population living below the LIM in census tracts.
2. Rates are age standardized within each income quintile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Numerator - Ontario Diabetes Database, Institute for Clinical Evaluative Sciences (ICES).
Denominator – Registered Persons Database, Ministry of Health and Long-Term Care and ICES.

Diabetes prevalence has increased since 2003

The diabetes prevalence rate for males in Toronto increased from 7.3% in 2003 to 10.6% in 2012. (Figure 16a).

Higher rates of diabetes prevalence are found in the lower income quintiles

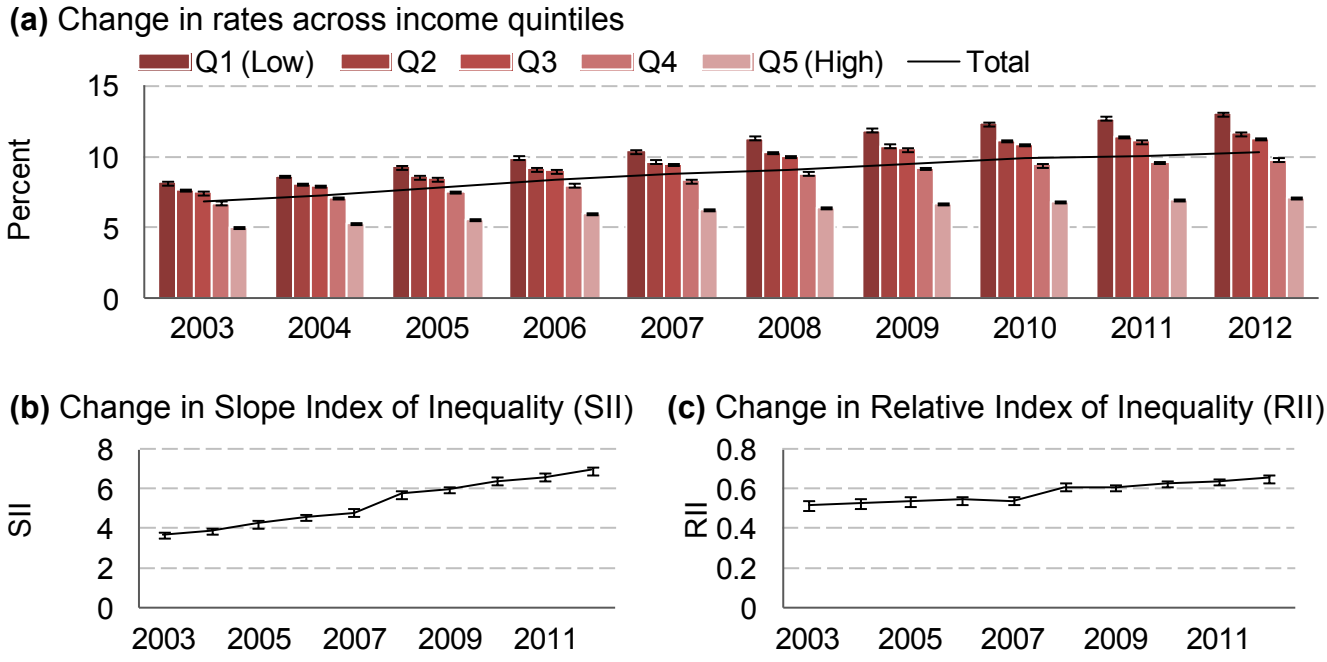
Figures 16b and 16c show that over the analysis period, positive and statistically significant SII and RII values were found for all time points, indicating significant absolute and relative inequities where the diabetes prevalence rate was higher for males in lower income quintiles than in higher income quintiles.

Health inequities have worsened over time

Diabetes prevalence rates have increased for male adults in all income groups over time, with a disproportionately large increase in lower income groups, contributing to a statistically significant increase in both absolute (Figure 16b) and relative (Figure 16c) inequities over time.

Trends in Diabetes Prevalence in Females

Figure 17. Diabetes Prevalence Rate, by Income, Females Age 20 and Older, Toronto, 2003 to 2012



1. Income refers to population quintile established based on proportion of the population living below the LIM in census tracts.
2. Rates are age standardized within each income quintile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Numerator - Ontario Diabetes Database, Institute for Clinical Evaluative Sciences (ICES).
Denominator – Registered Persons Database, Ministry of Health and Long-Term Care and ICES.

Diabetes prevalence has increased since 2003

The diabetes prevalence rate for females in Toronto increased from 6.9% in 2003 to 10.3% in 2012. (Figure 17a).

Higher rates of diabetes prevalence are found in the lower income quintiles

Figures 17b and 17c show that over the analysis period, positive and statistically significant SII and RII values were found for all time points, indicating significant absolute and relative inequities where the diabetes prevalence rate was higher for males in lower income quintiles than in higher income quintiles.

Health inequities have worsened over time

The diabetes prevalence rates increased for female adults in all income groups over time, with a disproportionately larger increase in lower income groups, contributing to a statistically significant increase in both absolute (Figure 17b) and relative (Figure 17c) inequities over time.

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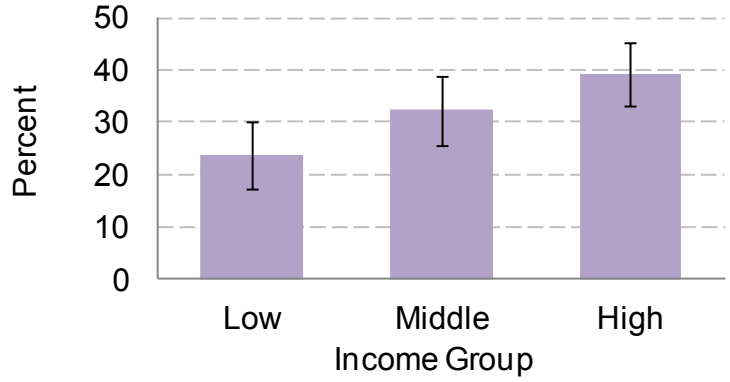
Exceeding the Low Risk Alcohol Drinking Guidelines

Figure 18. Exceeding the Low Risk Alcohol Drinking Guidelines, by Income, Adults Age 20 to 64, Toronto, 2009 to 2012 Combined

Males Exceeding the Low Risk Alcohol Drinking Guidelines Rate

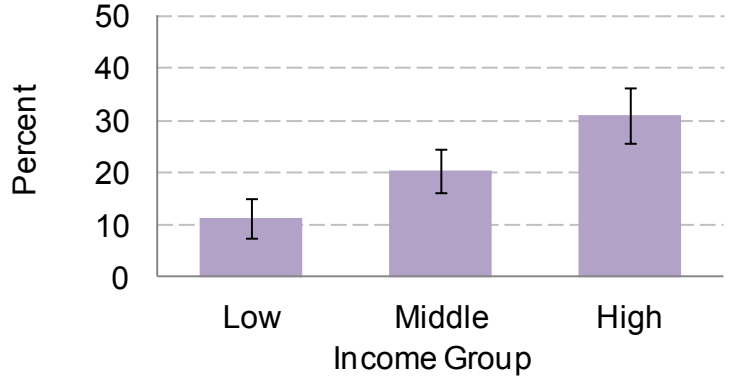


Toronto Rate
32.1%

Rate Difference (High – Low)
15.6 percentage points

Rate Ratio (High / Low)
1.7 times

Females Exceeding the Low Risk Alcohol Drinking Guidelines Rate



Toronto Rate
20.3%

Rate Difference (High – Low)
19.6 percentage points

Rate Ratio (High / Low)
2.7 times

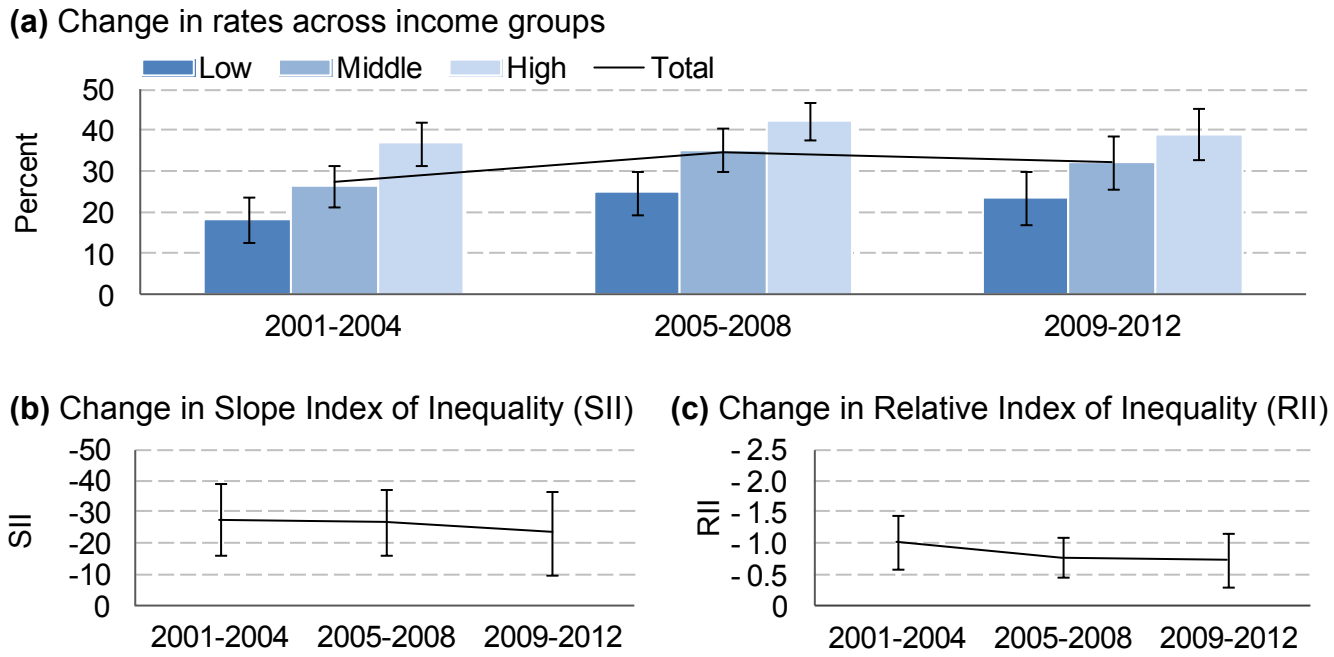
1. The low risk alcohol drinking guidelines are described in detail in Appendix A.
2. Income refers to the income adequacy tertile, derived from CCHS income adequacy deciles.
3. Rates are age standardized within each income tertile to the 1991 Canadian Census population.
4. Error bars (I) denote 95% confidence intervals.

Source: Canadian Community Health Survey, 2009 - 2012. Statistics Canada, Share File, Knowledge Management and Reporting Branch, Ontario Ministry of Health and Long-Term Care.

- For both males and females, there was a gradient in exceeding the Low Risk Alcohol Drinking Guidelines (LRADG) rate across income tertiles in Toronto. The rate in the low high group was highest and significantly different from the rate in the low income group.
- For males in the high income group, 39.1% exceeded the LRADG, compared to 23.6% in the low income group. The difference was 15.6 percentage points. The rate in the high income group was 1.7 times the rate in the low income group.
- For females in the high income group 31.1% exceeded the LRADG, compared to 11.4% in the high income group. The difference was 19.6 percentage points. The rate in the high income group was 2.7 times the rate in the low income group.

Trends in Exceeding the Low Risk Alcohol Drinking Guidelines in Males

Figure 19. Exceeding the Low Risk Alcohol Drinking Guidelines, by Income, Males Age 20 to 64, Toronto, 2001 to 2004 Combined to 2009 to 2012 Combined



1. The low risk alcohol drinking guidelines are described in detail in Appendix A.
2. Income refers to the income adequacy tertile, derived from CCHS income adequacy deciles.
3. Rates are age standardized within each income tertile to the 1991 Canadian Census population.
4. Error bars (I) denote 95% confidence intervals.

Source: Canadian Community Health Survey, 2001 - 2012. Statistics Canada, Share File, Knowledge Management and Reporting Branch, Ontario Ministry of Health and Long-Term Care.

Unhealthy alcohol use has decreased since the 2001 to 2004 period

The rate of exceeding the Low Risk Alcohol Drinking Guidelines (LRADG) in males has increased from 27.5% in 2001 to 2004 to 32.5% in 2009 to 2012. (Figure 19a).

Higher rates of exceeding the LRADG are found in the high income group

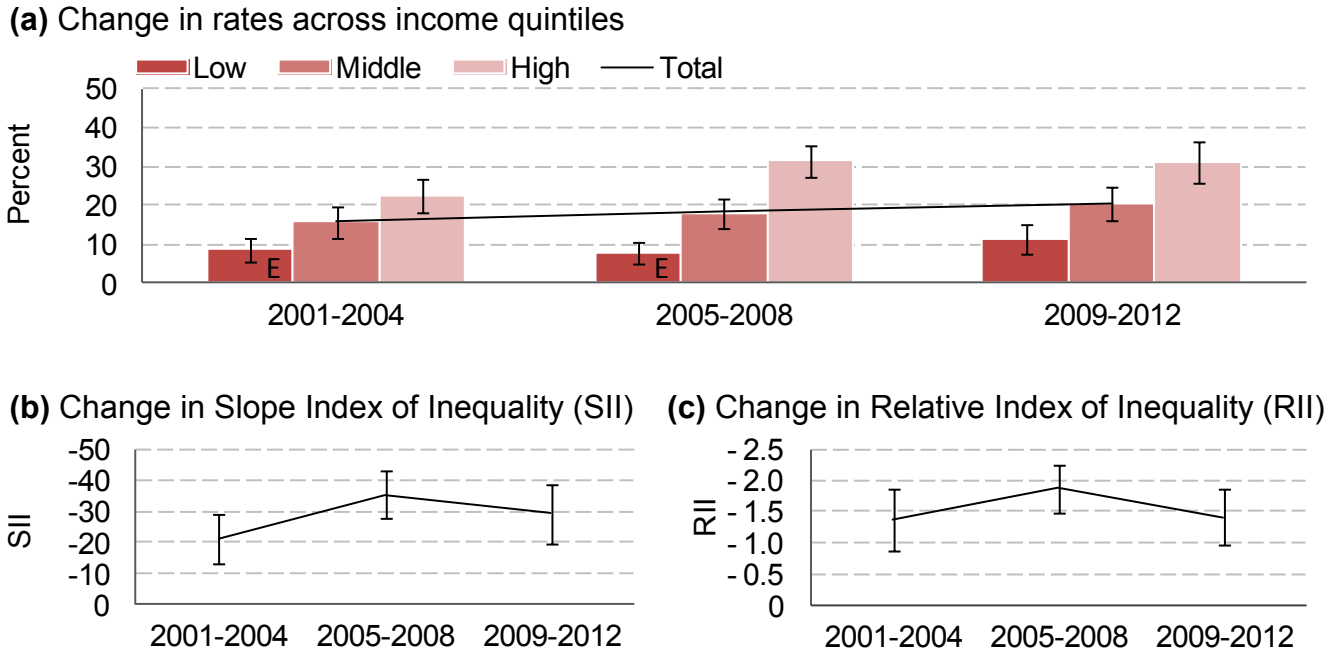
Figures 19b and 19c show that over the analysis period, negative and statistically significant SII and RII values were found for all time points, indicating significant absolute and relative differences where lower income males were generally more likely to exceed the LRADG compared to higher income males.

Health differences have persisted over time

There were no significant changes in the strength of absolute (Figure 19b) or relative (Figure 19c) differences during this time period.

Exceeding the Low Risk Alcohol Drinking Guidelines in Females

Figure 20. Exceeding the Low Risk Alcohol Drinking Guidelines, by Income, Females Age 20 to 64, Toronto, 2001 to 2004 Combined to 2009 to 2012 Combined



1. Income refers to the income adequacy tertile, derived from CCHS income adequacy deciles.
2. Rates are age standardized within each income tertile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

E Moderately high sampling variability; interpret with caution.

Source: Canadian Community Health Survey, 2001 - 2012. Statistics Canada, Share File, Knowledge Management and Reporting Branch, Ontario Ministry of Health and Long-Term Care.

Unhealthy alcohol use has decreased since the 2001 to 2004 period

The rate of exceeding the Low Risk Alcohol Drinking Guidelines (LRADG) in females has increased from 16.0% in 2001 to 2004 to 20.3% in 2009 to 2012. (Figure 20a).

Higher rates of exceeding the LRADG are found in the high income group

Figures 20b and 20c show that over the analysis period, negative and statistically significant SII and RII values were found for all time points, indicating significant absolute and relative inequities where lower income males were generally more likely to exceed the LRADG compared to higher income males.

Health differences have persisted over time

There were no significant changes in the strength of absolute (Figure 20b) or relative (Figure 20c) differences during this time period.

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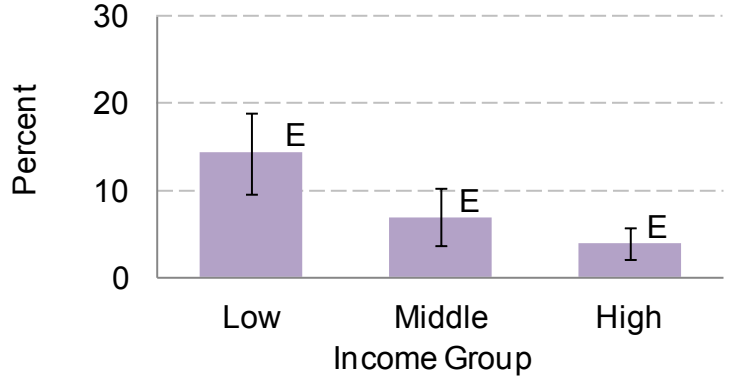
Fair or Poor Self Rated Health

Figure 21. Percent Self Rated Health As "Fair" or "Poor", by Income, Adults Age 20 to 64, Toronto, 2009 to 2012 Combined

Male Self Rated Health as "Fair" or "Poor"

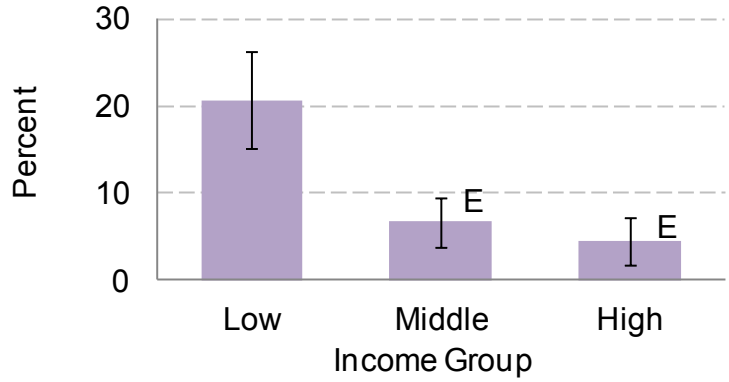


Toronto Rate
8.0%

Rate Difference (Low – High)
10.5 percentage points

Rate Ratio (Low / High)
3.8 times

Female Self Rated Health as "Fair" or "Poor"



Toronto Rate
11.2%

Rate Difference (Low – High)
16.2 percentage points

Rate Ratio (Low / High)
4.6 times

1. Income refers to the income adequacy tertile, derived from CCHS income adequacy deciles.
2. Rates are age standardized within each income tertile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

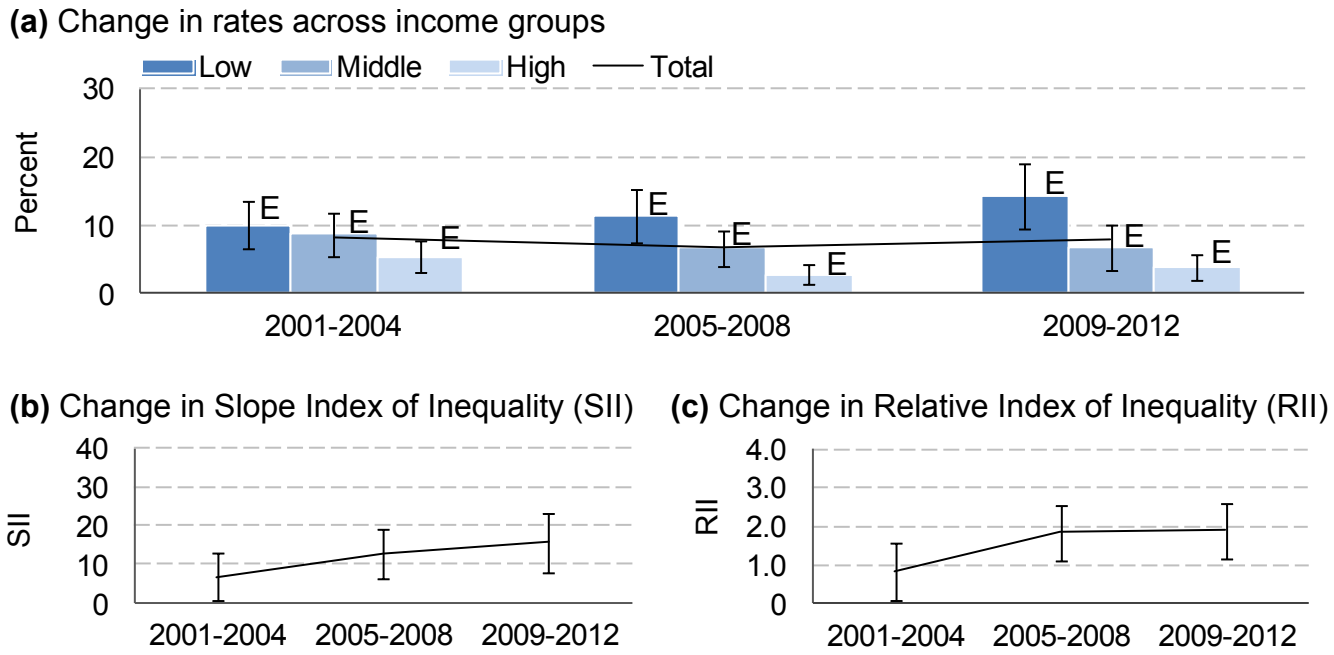
E Moderately high sampling variability; interpret with caution.

Source: Canadian Community Health Survey, 2009 - 2012. Statistics Canada, Share File, Knowledge Management and Reporting Branch, Ontario Ministry of Health and Long-Term Care.

- For both male and females, there was a gradient in the percent self rated health as fair or poor across income groups in Toronto. People in the low income group were more likely to rate health as "fair'" or "poor" compared to the high income group.
- For males in the high income group, 14.3% rated health as "fair" or "poor", compared to 3.8% in the low income group. The difference was 10.5 percentage points. The rate in the high income group was 3.8 times the rate in the low income group.
- For females in the high income group, 20.7%, rated health as "fair" or "poor", compared to 4.5% in the low income group. The difference was 16.2 percentage points. The rate in the high income group was 4.6 times the rate in the low income group.
- If all adults age 20 to 64 in Toronto had the same rate as the high income group, there would be 55,823 or 57% fewer adults reporting their health as "fair" or 'poor" per year.

Trends Fair or Poor Self Rated Health in Males

Figure 22. Percent Self Rated Health As "Fair" or "Poor", by Income, Males Age 20 to 64, Toronto, 2001 to 2004 Combined to 2009 to 2012 Combined



1. Income refers to the income adequacy tertile, derived from CCHS income adequacy deciles.
2. Rates are age standardized within each income tertile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

E Moderately high sampling variability; interpret with caution.

Source: Canadian Community Health Survey, 2001 - 2012. Statistics Canada, Share File, Knowledge Management and Reporting Branch, Ontario Ministry of Health and Long-Term Care.

Fair or poor self rated health rates have remained stable since the 2001 to 2004 period

The percent of males self rate their health as "fair" or "poor" was approximately 8.0% between 2001 to 2004 and 2009 to 2012. (Figure 22a).

Higher rates of fair or poor self rated health are found in the low income group

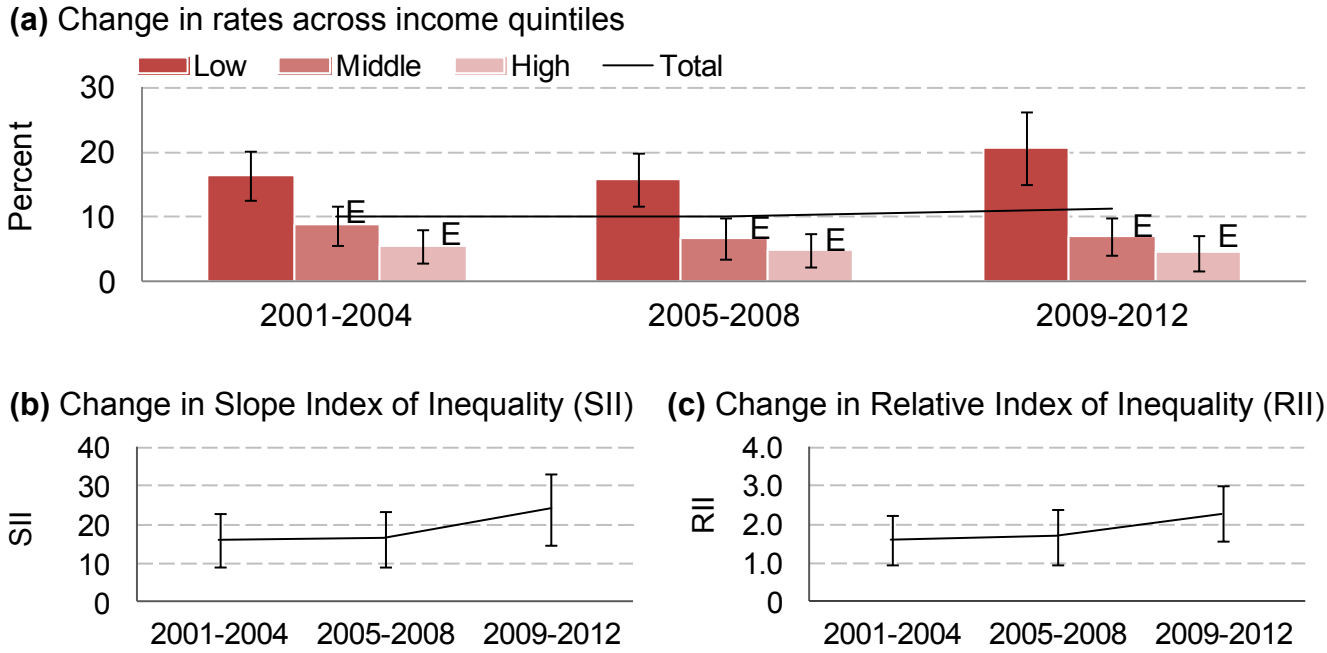
Figures 22b and 22c show that over the analysis period, positive and statistically significant SII and RII values were found for all time points, indicating significant absolute and relative inequities. Lower income males were generally more likely to rate their health as "fair" or "poor" compared to higher income males.

Health inequities have persisted over time

There were no significant changes in the strength of absolute (Figure 22b) or relative (Figure 22c) inequities during this time period.

Trends Fair or Poor Self Rated Health in Females

Figure 23. Percent Self Rated Health As "Fair" or "Poor", by Income, Females Age 20 to 64, Toronto, 2001 to 2004 Combined to 2009 to 2012 Combined



1. Income refers to the income adequacy tertile, derived from CCHS income adequacy deciles.
2. Rates are age standardized within each income tertile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

E Moderately high sampling variability; interpret with caution.

Source: Canadian Community Health Survey, 2001 - 2012. Statistics Canada, Share File, Knowledge Management and Reporting Branch, Ontario Ministry of Health and Long-Term Care.

Current smoker rates have increased since the 2001 to 2004 period

The rate of female fair or poor self rated health has increased from 10.0% in 2001 to 2004 to 11.2% in 2009 to 2012. (Figure 23a).

Higher rates of fair or poor self rated health are found in the low income group

Figures 23b and 23c show that over the analysis period, positive and statistically significant SII and RII values were found for all time points, indicating significant absolute and relative inequities. Lower income females were generally more likely to rate their health as "fair" or "poor" compared to higher income males.

Health inequities have persisted over time

There were no significant changes in the strength of absolute (Figure 23b) or relative (Figure 23c) inequities during this time period.

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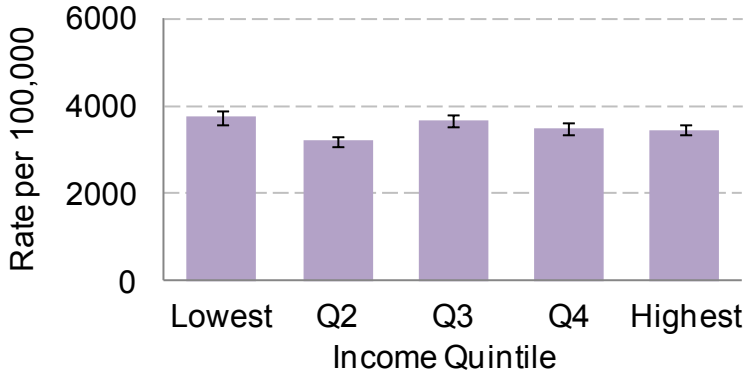
Fall-Related Emergency Department Visits in Older Adults

Figure 24. Fall-Related Emergency Department Visit Rate, by Income, Adults 65 and Older, Toronto, 2011 and 2012 Combined

Male Fall-Related Emergency Department Visit Rate

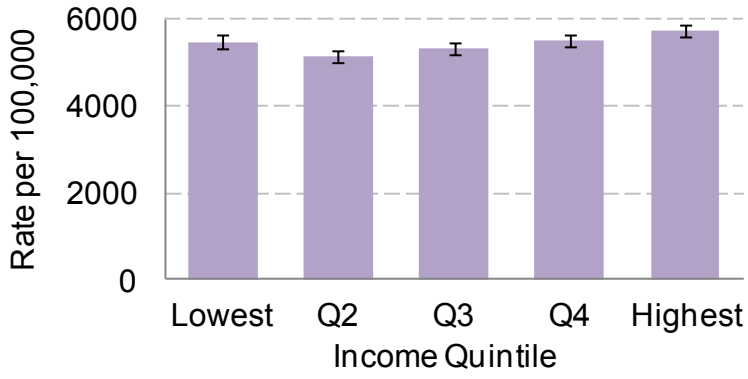


Toronto Rate
3,562.7 per 100,000

Rate Difference (Q1 – Q5)
Not statistically significant

Rate Ratio (Q1 / Q5)
Not statistically significant

Female Fall-Related Emergency Department Visit Rate



Toronto Rate
5,519.0 per 100,000

Rate Difference (Q1 – Q5)
Not statistically significant

Rate Ratio (Q1 / Q5)
Not statistically significant

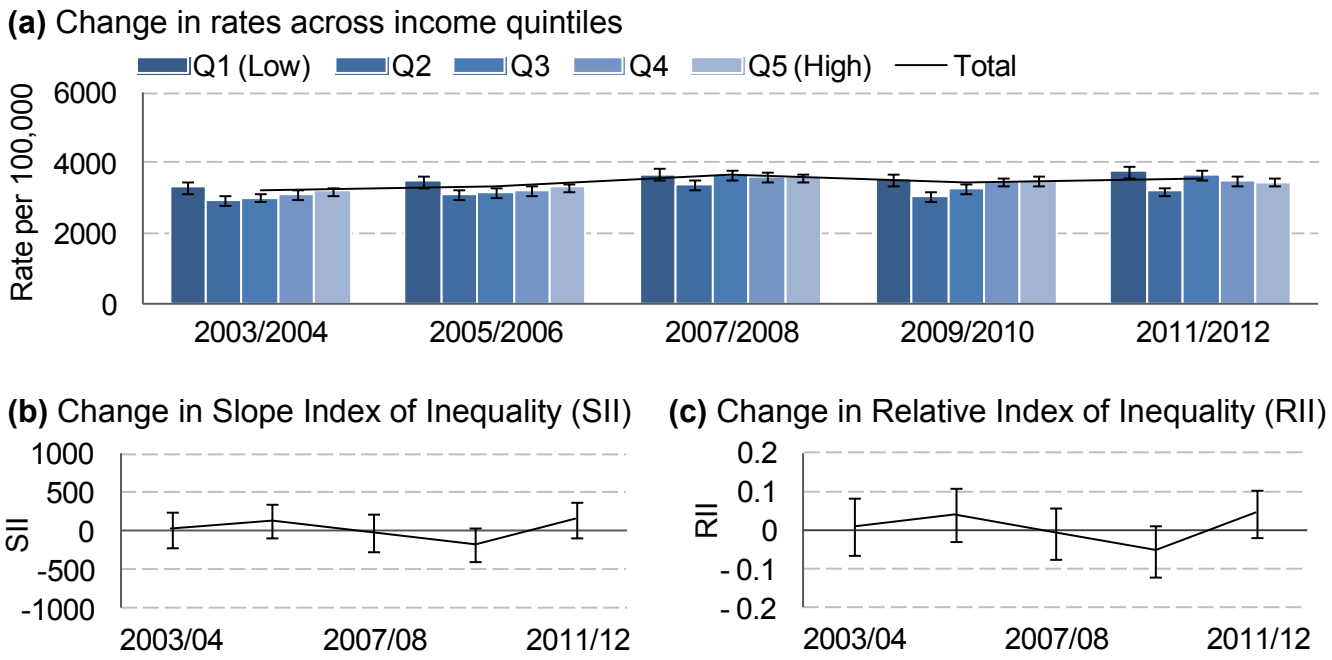
1. Income refers to population quintile established based on proportion of the population living below the LIM in census tracts.
2. Rates are age standardized within each income quintile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Ambulatory Emergency External Cause 2011-2012, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: April 2015.

- For males age 65 and older, there was no clear gradient in rates of fall-related emergency department (ED) visits across income quintiles. The rate for the lowest income quintile (Q1) was not significantly different from the rate in quintiles 3 and 4, but significantly higher than the rate in quintiles 2 and 5.
- For females age 65 and older, there was a "close to" stepwise gradient of increasing rates of fall-related ED visits across increasing income groups. The lowest income quintile (Q1) was the exception to this pattern. The rate for the lowest income quintile was significantly higher than the rate in quintile 2 but not significantly different from all other quintiles.

Trends in Fall-Related Emergency Department Visits Among Male Older Adults

Figure 25. Fall-Related Emergency Department (ED) Visit Rate, by Income, Males Age 65 and Older, Toronto, 2003 and 2004 Combined to 2011 and 2012 Combined



1. Income refers to population quintile established based on proportion of the population living below the LIM in census tracts.
2. Rates are age standardized within each income quintile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Ambulatory Emergency External Cause 2003-2012, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: April 2015.

Fall-related emergency department visits have increased since the 2003 to 2004 period

The rate of fall-related ED visits for older male adults increased from 3,192.5 per 100,000 during 2003 to 2004, to 3,562.7 per 100,000 during 2011 to 2012. (Figure 24a).

Rates of fall-related ED visits are equally distributed across income groups

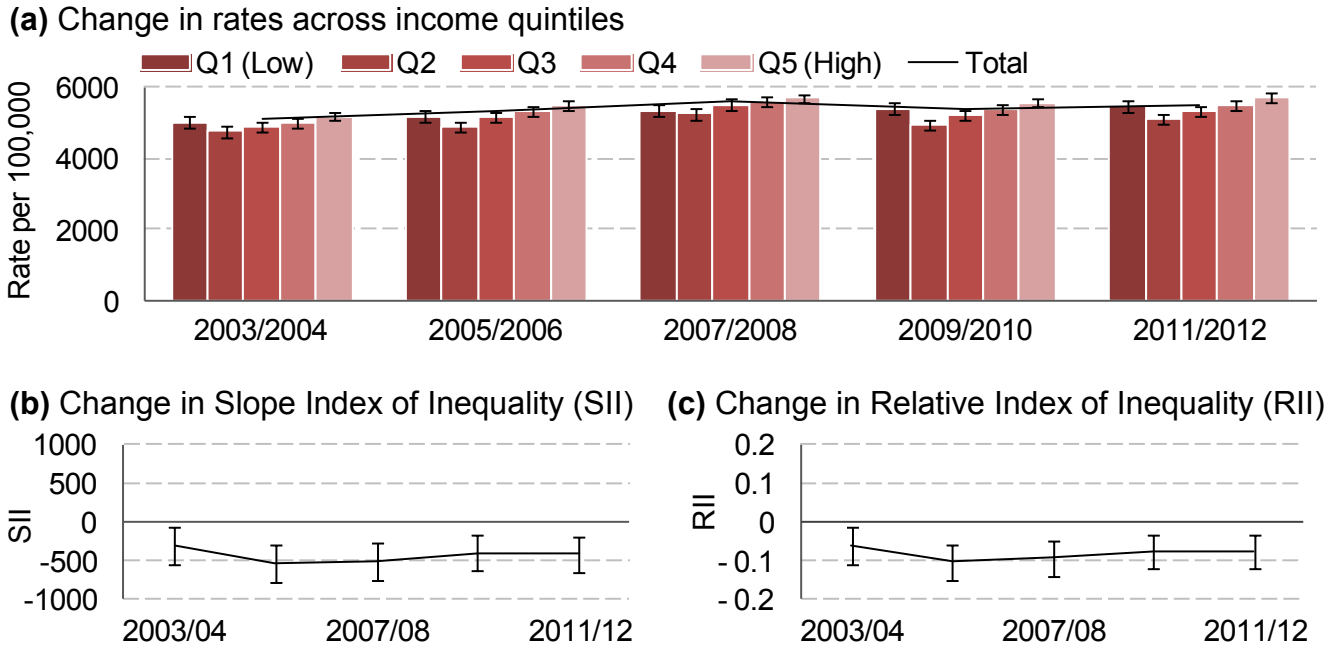
Figures 25b and 25c show that over the analysis period, the rate ED visits among male older adults was fairly similar across all income groups. Small variations were observed between income quintiles, but the differences in quintile specific rates were not statistically significant. The 95% confidence intervals for the SII and RII overlapped with zero for all time points, indicating that there were no significant absolute (Figure25b) and relative (Figure 25c) inequities for those time points. The lowest income quintile (Q1) was an exception, and exhibited rates higher than would be expected for a linear income and health relationship.

The equal distribution of health across income groups has persisted over time

There were no significant changes in SII (Figure 25b) or RII (Figure 25c) values for fall-related ED visits for male older adults during this time period.

Trends in Fall-Related Emergency Department Visits Among Female Older Adults

Figure 26. Fall-Related Emergency Department (ED) Visit Rate, by Income, Females Age 65 and Older, Toronto, 2003 and 2004 Combined to 2011 and 2012 Combined



1. Income refers to population quintile established based on proportion of the population living below the LIM in census tracts.
2. Rates are age standardized within each income quintile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Ambulatory Emergency External Cause 2003-2012, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: April 2015.

Fall-related emergency department visits have increased since the 2003 to 2004 period

The rate of fall-related ED visits for older female adults increased from 5,100.7 per 100,000 during 2003 to 2004, to 5,519.0 per 100,000 during 2011 to 2012. (Figure 26a).

Higher rates of fall-related ED visits were found in the higher income groups

Figures 26b and 26c show that over the analysis period, negative and statistically significant SII and RII values were found for all time points, indicating significant absolute and relative inequities where the rate of fall-related ED visits was generally higher for females in high income quintiles than in lower income quintiles. The lowest income quintile (Q1) was an exception, and exhibited rates higher than would be expected for a linear income and health relationship.

Health differences have persisted over time

There were no significant changes in SII (Figure 26b) or RII (Figure 26c) values for fall-related ED visits for female older adults during this time period.

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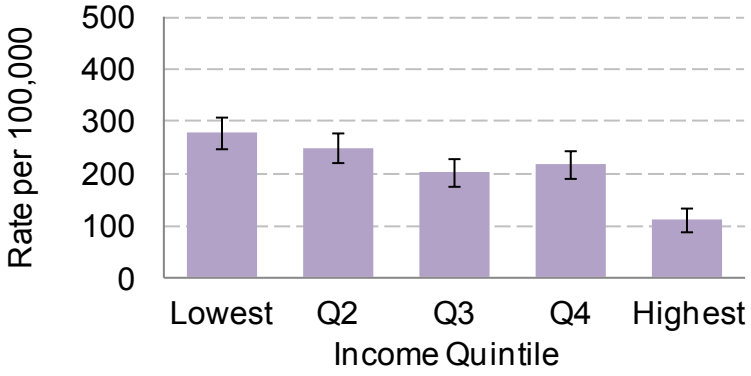
Gonorrhea Incidence in Young Adults

Figure 27. Gonorrhea Incidence Rate in Young Adults Age 15 to 29, by Income, Toronto, 2011 and 2012 Combined

Male Gonorrhea Incidence Rate

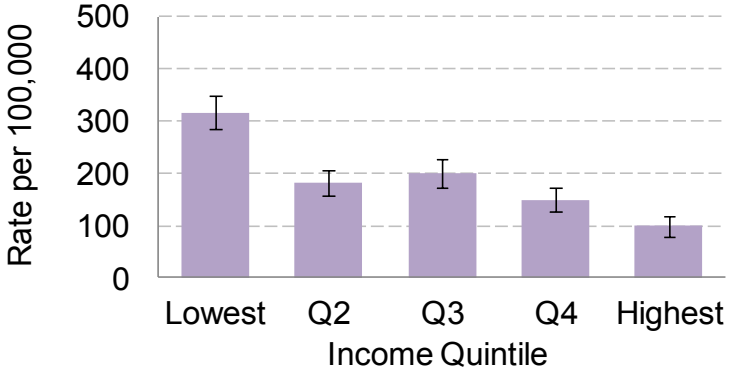


Toronto Rate
206.5 per 100,000

Rate Difference (Q1 – Q5)
165.3 per 100,000

Rate Ratio (Q1 / Q5)
2.5 times

Female Gonorrhea Incidence Rate



Toronto Rate
172.4 per 100,000

Rate Difference (Q1 – Q5)
217.5 per 100,000

Rate Ratio (Q1 / Q5)
3.2 times

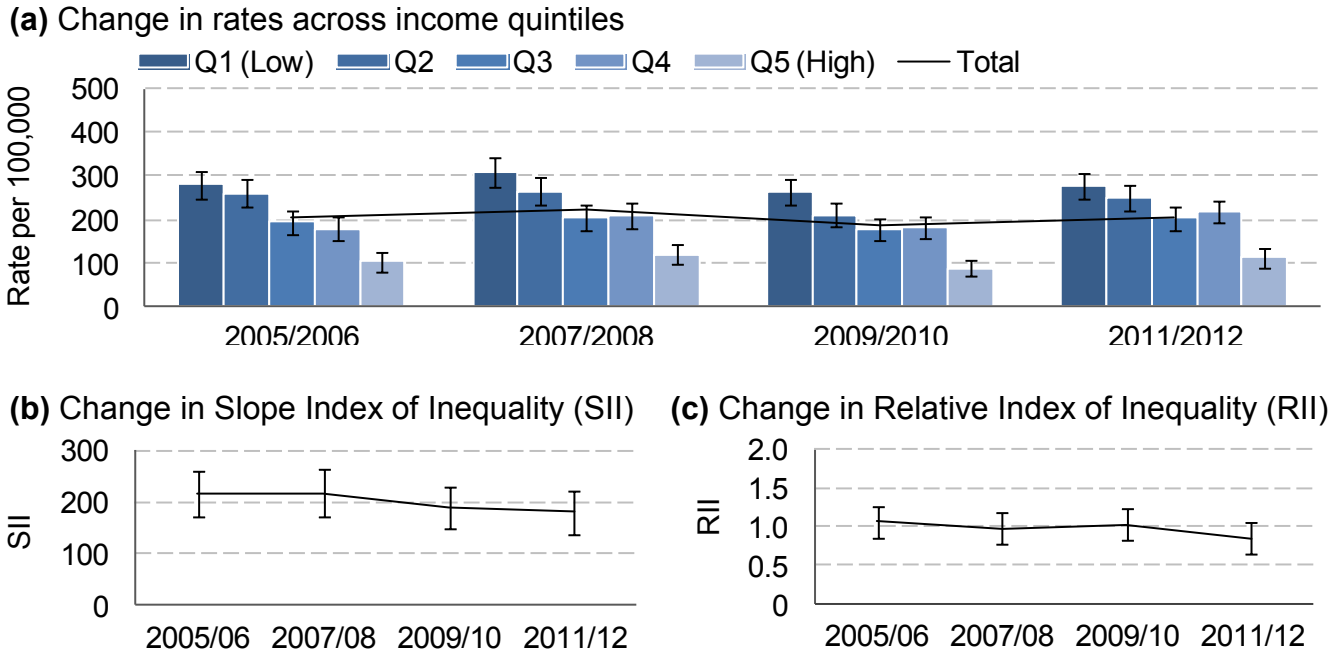
1. Income refers to population quintile established based on proportion of the population living below the LIM in census tracts.
2. Rates are age standardized within each income quintile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Integrated Public Health Information System, Toronto Public Health, extracted May 13 2013.

- For both male and female young adults, there was a gradient in gonorrhea incidence rates across income quintiles in Toronto. The rate in the lowest income quintile (Q1) was highest and significantly different from the rate in the highest income quintile (Q5).
- For males, the rate in the lowest income quintile was 277.6 per 100,000 people, compared to 112.2 per 100,000 in the highest income quintile. The difference was 165 per 100,000. The rate in Q1 was 2.5 times the rate in Q5.
- For females, the rate in the lowest income quintile was 316.6 per 100,000 people, compared to 99.1 per 100,000 in the highest income quintile. The difference was 217.5 per 100,000. The rate in Q1 was 3.2 times the rate in Q5.
- If all young adults in Toronto experienced the same gonorrhea rate as the highest income quintile, there would be 329 or 48% fewer gonorrhea cases in young adults per year.

Trends in Gonorrhea Incidence in Male Young Adults

Figure 28. Gonorrhea Incidence Rate in Male Young Adults Age 15 to 29, by Income, Toronto, 2005 and 2006 Combined to 2011 and 2012 Combined



1. Income refers to population quintile established based on proportion of the population living below the LIM in census tracts.
2. Rates are age standardized within each income quintile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Integrated Public Health Information System, Toronto Public Health, extracted May 13 2013.

Gonorrhea incidence rates have been stable since the 2005 to 2006 period

The gonorrhea incidence rate for male young adults remained relatively stable between 2005 to 2006 and 2011 to 2012. During 2011 to 2012, the rate was 206.5 per 100,000. (Figure 28a).

Higher rates of gonorrhea incidence are found in the lower income quintiles

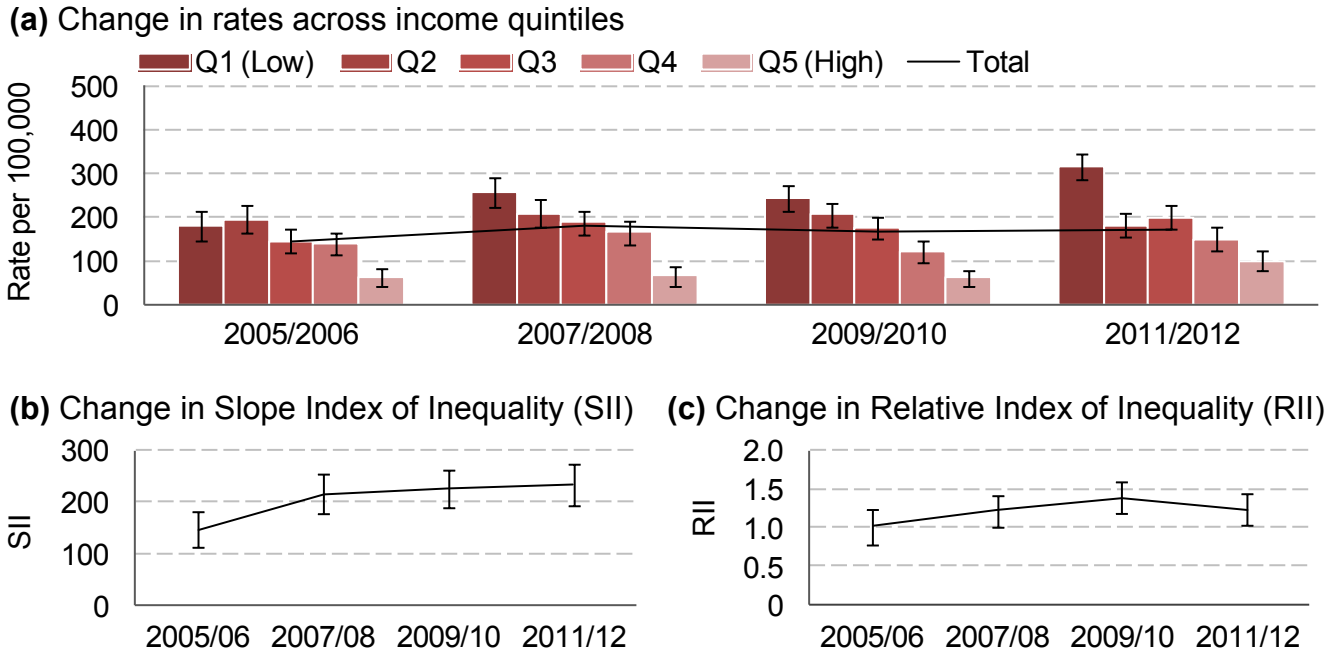
Figures 28b and 28c show that over the analysis period, positive and statistically significant SII and RII values were found for all time points, indicating significant absolute and relative inequities where the gonorrhea incidence rate was generally higher for males in lower income quintiles than in higher income quintiles.

Health inequities have persisted over time

There were no significant changes in the strength of absolute (Figure 28b) or relative (Figure 28c) inequities during this time period.

Trends in Gonorrhea Incidence in Female Young Adults

Figure 29. Gonorrhea Incidence Rate in Female Young Adults Age 15 to 29, by Income, Toronto, 2005 and 2006 Combined to 2011 and 2012 Combined



1. Income refers to population quintile established based on proportion of the population living below the LIM in census tracts.
2. Rates are age standardized within each income quintile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Integrated Public Health Information System, Toronto Public Health, extracted May 13 2013.

Gonorrhea incidence rates have increased since the 2005 to 2006 period

The gonorrhea incidence rate for females age 15 to 29 increased from 145.5 per 100,000 in the 2005 to 2006 period to 172.4 per 100,000 in the 2011 to 2012 period. (Figure 29a).

Higher rates of gonorrhea incidence are found in the lower income quintiles

Figures 29b and 29c show that over the analysis period, positive and statistically significant SII and RII values were found for all time points, indicating significant absolute and relative inequities where gonorrhea incidence was generally higher for females in lower income quintiles than in higher income quintiles.

Absolute health inequities have increased over time; relative inequities have persisted

The increase in the overall rate was driven by an approximately proportionate increase in incidence rate across income quintiles. This contributed to an increase in absolute difference between the lowest and highest income quintiles, and significantly higher SII values in 2009 to 2010 and 2011 to 2012 compared with the 2005 to 2006 period (Figure 29b). Relative inequities remained stable, and there were no significant changes in RII values during this time period (Figure 29c).

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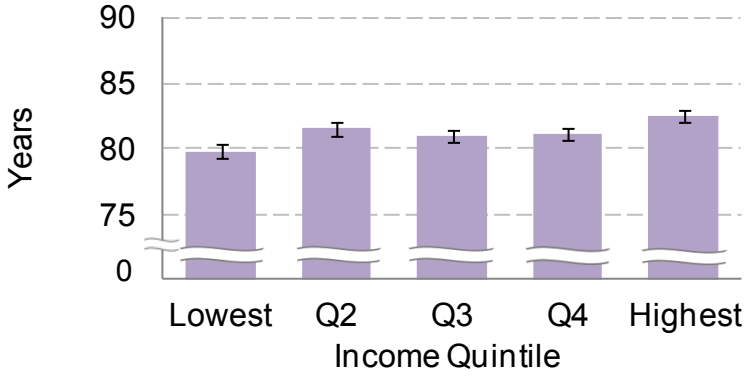
Life Expectancy

Figure 30. Life Expectancy At Birth, by Income, Toronto, 2009 and 2010 Combined

Male Life Expectancy

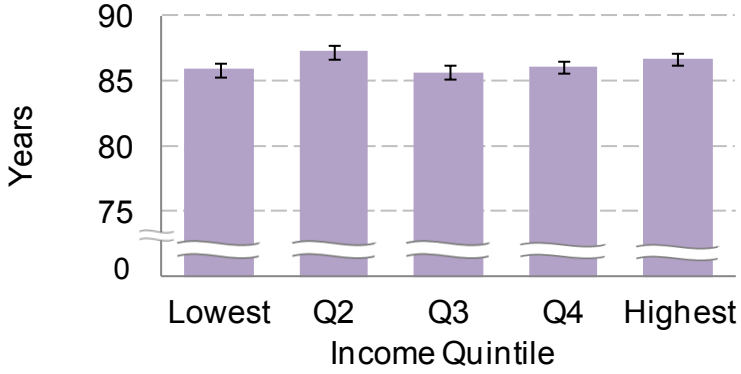


Toronto Rate
81.1 years

Absolute Difference (Q5 – Q1)
2.7 years

Relative Ratio (Q5 / Q1)
1.03 times (significant)

Female Life Expectancy



Toronto Rate
86.3 years

Absolute Difference (Q5 – Q1)
0.8 years

Relative Ratio (Q5 / Q1)
1.01 times (significant)

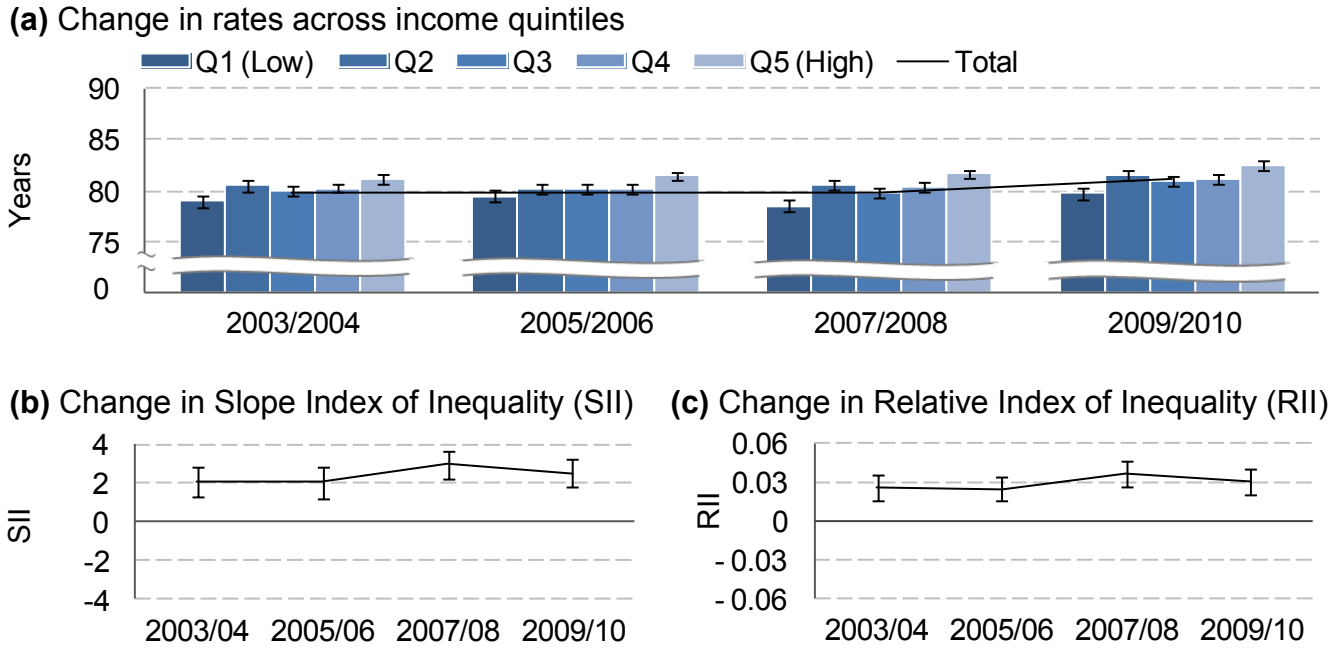
1. Income refers to population quintile established based on proportion of the population living below the LIM in census tracts.
2. Error bars (I) denote 95% confidence intervals.

Source: Ontario Mortality Data 2009-2010, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: September 2014.

- For males, there was a gradient in life expectancy across income quintiles. Life expectancy in the lowest income quintile (Q1), at 79.8 years, was lowest and significantly different from life expectancy in the highest income quintile (Q5), at 82.5 years. The difference was 2.7 years of life expectancy.
- For females, there was no clear gradient in life expectancy across income quintiles. Life expectancy in the lowest income quintile (Q1) was not significantly different from life expectancy in quintiles 3, 4, and 5, but was significantly lower than life expectancy in quintile 2.

Trends in Life Expectancy in Males

Figure 31. Life Expectancy At Birth, by Income, Males, Toronto, 2003 and 2004 Combined to 2009 and 2010 Combined



1. Income refers to population quintile established based on proportion of the population living below the LIM in census tracts.
2. Error bars (I) denote 95% confidence intervals.
3. SII and RII values have been inverted, to reflect higher life expectancy is the desired outcome.

Source: Ontario Mortality Data 2003-2010, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: September 2014.

Life expectancy has increased since the 2003 to 2004 period

Life expectancy for males increased from 79.7 years in 2003 to 2004 to 81.1 years in 2009 to 2010. (Figure 31a).

Higher life expectancy is found in the higher income quintiles

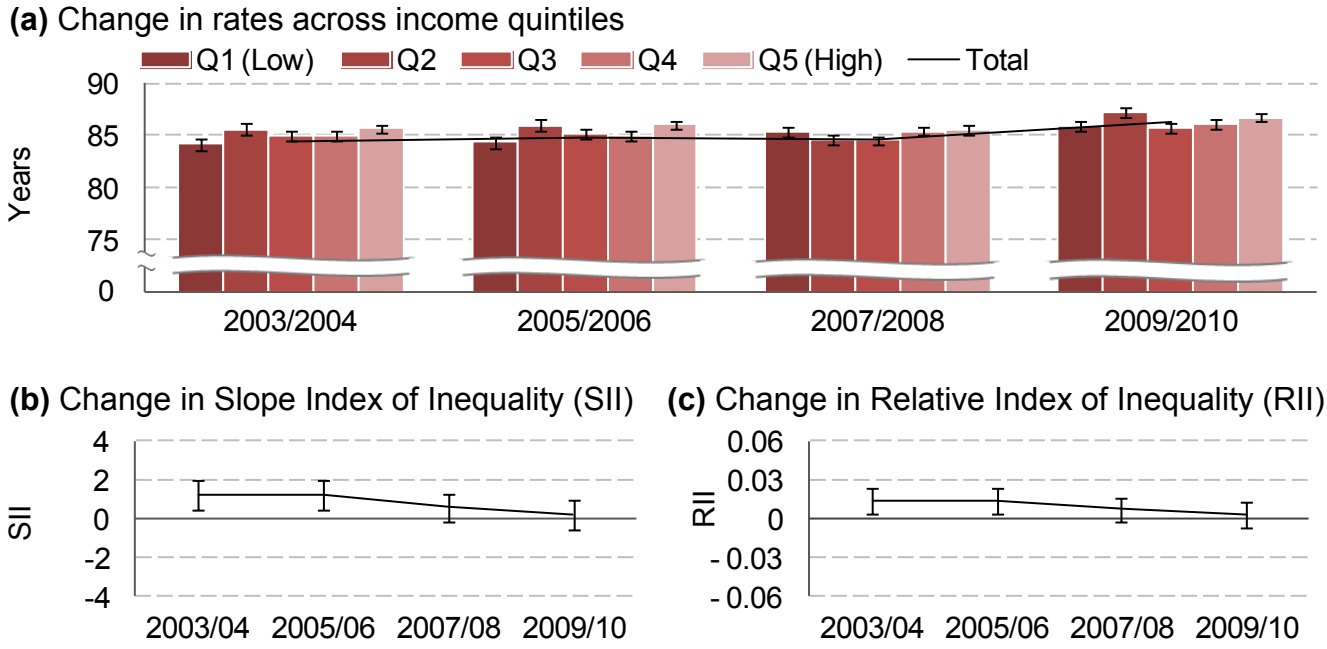
SII and RII values were inverted for this analysis to reflect that increased life expectancy is the desirable outcome. Figures 31b and 31c show that over the analysis period, positive and statistically significant SII and RII values were found for all time points, indicating significant absolute and relative inequities where life expectancy was generally higher for males in high income quintiles than in lower income quintiles.

Health inequities have persisted over time

There were no significant changes in the strength of absolute (Figure 31b) or relative (Figure 31c) inequities during this time period.

Trends in Life Expectancy in Females

Figure 32. Life Expectancy At Birth, by Income, Females, Toronto, 2003 and 2004 Combined to 2009 and 2010 Combined



1. Income refers to population quintile established based on proportion of the population living below the LIM in census tracts.
2. Error bars (I) denote 95% confidence intervals.
3. SII and RII values have been inverted, to reflect higher life expectancy is the desired outcome.

Source: Ontario Mortality Data 2003-2010, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: September 2014.

Life expectancy has increased since the 2003 to 2004 period

Life expectancy for females increased from 84.5 years in 2003 and 2004 to 86.3 years in 2009 and 2010. (Figure 32a).

Life expectancy increased most for the low income quintiles. This has decreased inequities over time.

During the 2003 to 2004 and 2005 to 2006 periods, there were significant inequities in female life expectancy among females, where life expectancy was higher for females in higher income quintiles than in lower income quintiles. While life expectancy increased over time for all income quintiles, there was a proportionally greater increase in life expectancy among the lowest income quintiles. This resulted in a more even distribution of health across income quintiles, and during the 2007 to 2008 and 2009 to 2010 periods, there were no statistically significant absolute (Figure 32b) or relative (Figure 32c) inequities. This result should be interpreted with caution, as individual income quintiles continued to exhibit statistically significant differences in 2008 and 2009.

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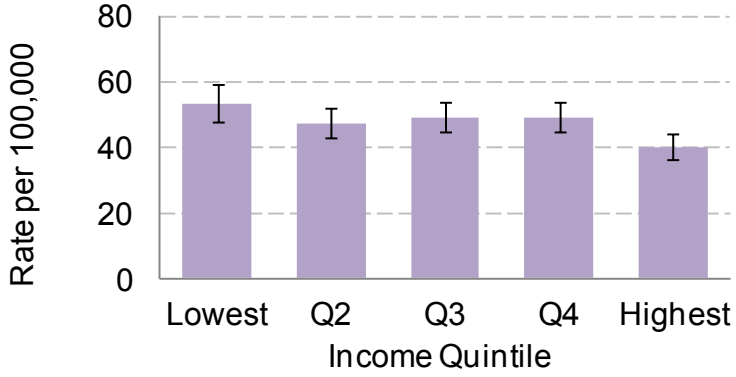
Lung Cancer

Figure 33. Lung Cancer Incidence Rate, by Income, Toronto, 2008 to 2010 Combined

Male Lung Cancer Incidence Rate

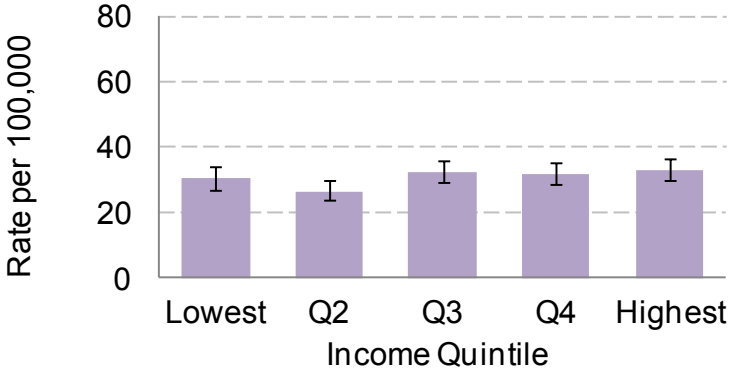


Toronto Rate
47.4 per 100,000

Rate Difference (Q1 – Q5)
13.4 per 100,000

Rate Ratio (Q1 / Q5)
1.3 times

Female Lung Cancer Incidence Rate



Toronto Rate
31.1 per 100,000

Rate Difference (Q1 – Q5)
Not statistically significant

Rate Ratio (Q1 / Q5)
Not statistically significant

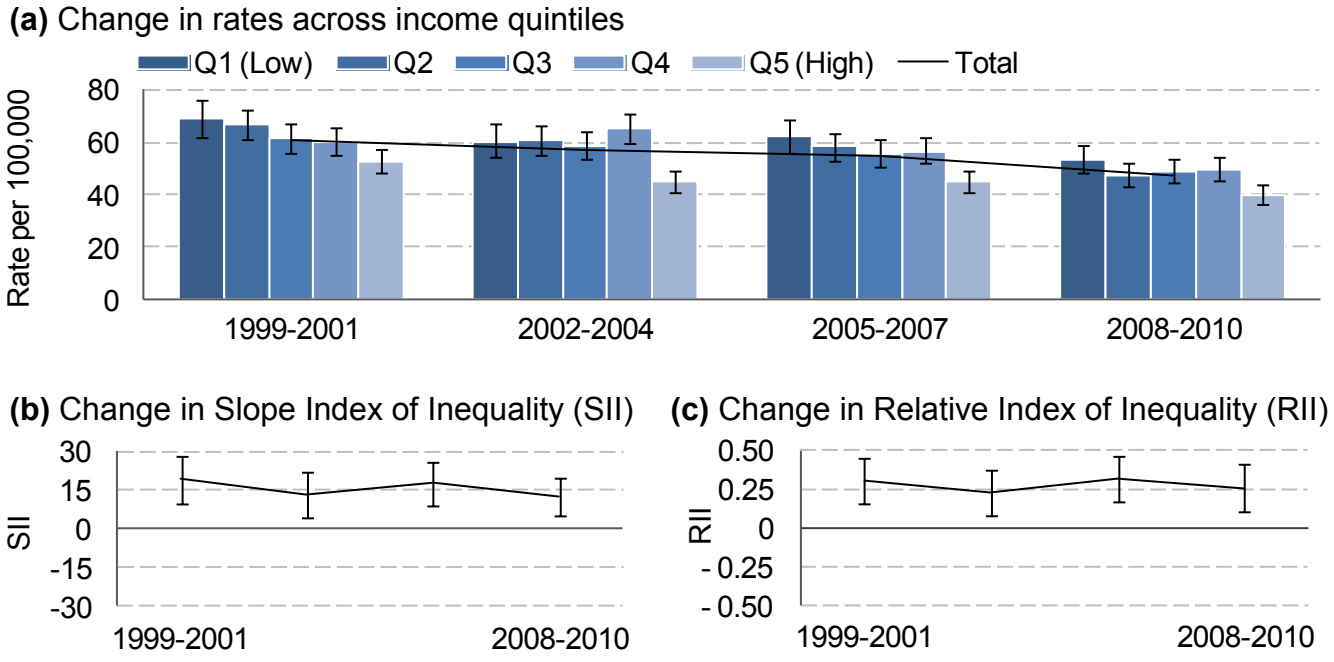
1. Income refers to population quintile established based on proportion of the population living below the LIM in census tracts.
2. Rates are age standardized within each income quintile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Cancer Care Ontario (Ontario Cancer Registry), 2008-2010, extracted May 2014.

- For males, there was a gradient in the rate of lung cancer incidence across income quintiles. The rate in the lowest income quintile (Q1), at 53.5 per 100,000, was highest and significantly different from the rate in the highest income quintile (Q5), at 40.1 per 100,000. The difference was 13.4 per 100,000. The rate in Q1 was 1.3 times the rate in Q5.
- For females, all income quintiles experienced similar rates of lung cancer incidence, and there was no health and income gradient.
- If all males experienced the rate of lung cancer incidence as the highest income quintile (Q5), there would be 293 or 16% fewer cases of lung cancer incidence in Toronto per year.

Trends in Lung Cancer Incidence in Males

Figure 34. Lung Cancer Incidence Rate, by Income, Males, Toronto, 1999 to 2001 Combined to 2008 to 2010 Combined



1. Income refers to population quintile established based on proportion of the population living below the LIM in census tracts.
2. Rates are age standardized within each income quintile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Cancer Care Ontario (Ontario Cancer Registry), 1999-2010, extracted May 2014.

Lung cancer incidence has decreased since the 1999 to 2001 period

The rate of lung cancer incidence in males has decreased from 61.1 per 100,000 in 1999 to 2001 to 47.4 per 100,000 in 2008 to 2010. (Figure 34a).

Higher rates of lung cancer incidence are found in the lower income quintiles

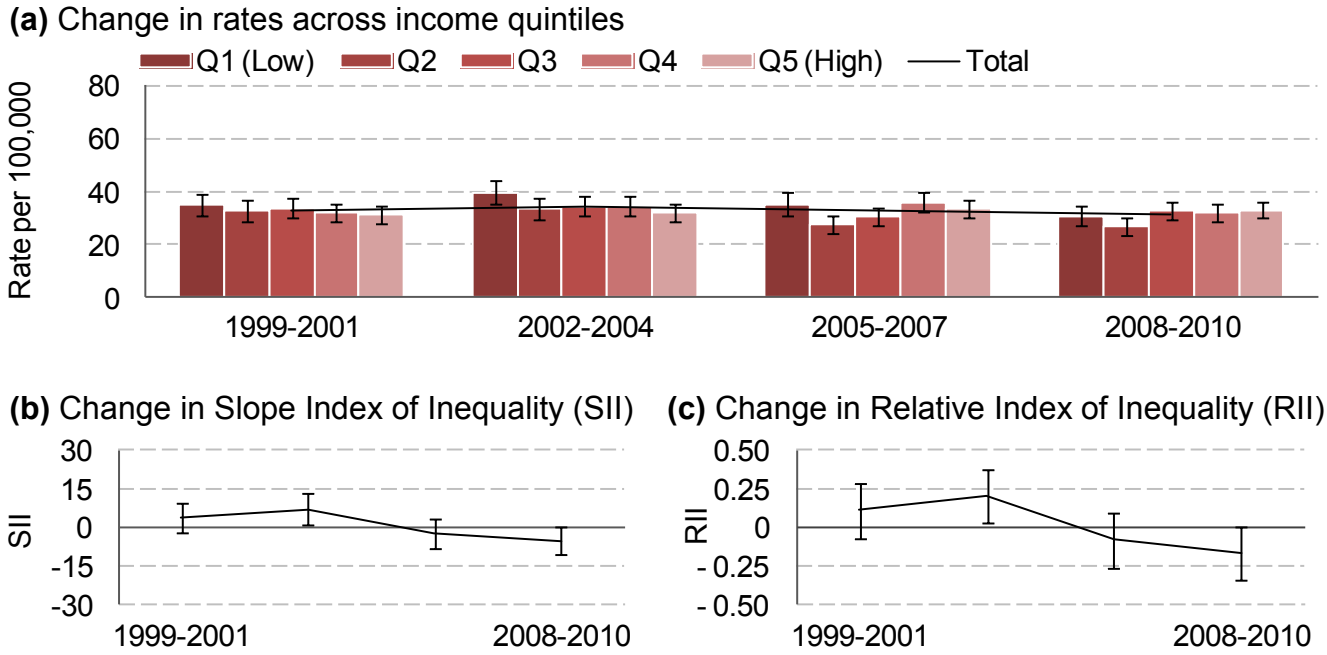
Figures 34b and 34c show that over the analysis period, positive and statistically significant SII and RII values were found for all time points, indicating significant absolute and relative inequities where the lung cancer incidence rate was generally higher for males in lower income quintiles than in higher income quintiles.

Health inequities have persisted over time

There were no significant changes in the strength of absolute (Figure 34b) or relative (Figure 34c) inequities during this time period.

Trends in Lung Cancer Incidence in Females

Figure 35. Lung Cancer Incidence Rate, by Income, Females, Toronto, 1999 to 2001 Combined to 2008 to 2010 Combined



1. Income refers to population quintile established based on proportion of the population living below the LIM in census tracts.
2. Rates are age standardized within each income quintile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Cancer Care Ontario (Ontario Cancer Registry), 1999-2010, extracted May 2014.

Lung cancer incidence rates have been stable since the 1999 to 2001 period

The lung cancer incidence rate for females has remained relatively stable between 1999 to 2001 and 2008 to 2010. During 2008 to 2010, the rate was 31.1 per 100,000. (Figure 35a).

Rates of female lung cancer incidence are equally distributed across income groups

Figures 35b and 35c show that over the analysis period, the rate lung cancer incidence among females was similar across all income groups. Small variations were observed between income quintiles, but the differences in quintile specific rates were not statistically significant. The SII and RII 95% confidence intervals overlapped with zero for all time points except for 2002 to 2004, indicating that there are no significant absolute (Figure 35b) and relative (Figure 35c) inequities for those time points.

The equal distribution of health across income groups has persisted over time

There were no significant changes in the SII (Figure 35b)) or RII (Figure 35c) values over time. Positive and statistically significant SII and RII values were found for the 2002 to 2004 period, but this pattern of inequity was not sustained over time.

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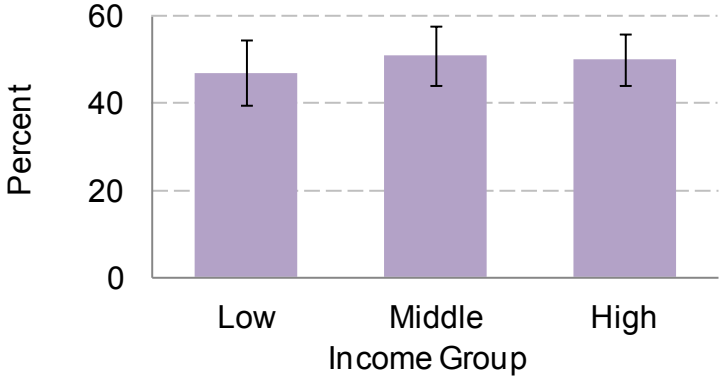
Overweight and Obesity

Figure 36. Percent Overweight or Obese, by Income, Adults Age 20 to 64, Toronto, 2009 to 2012

Male Overweight and Obese

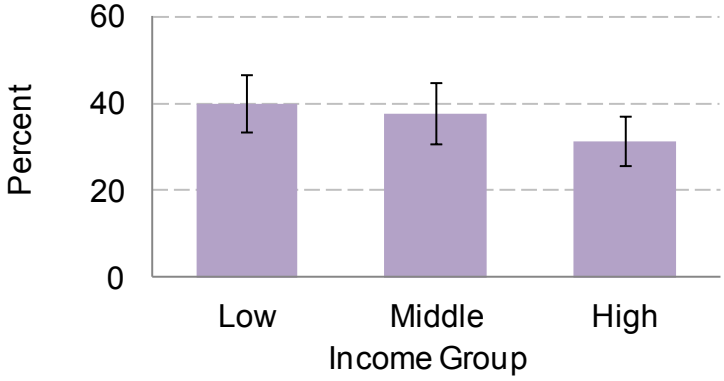


Toronto Rate
49.6%

Rate Difference (Low – High)
Not statistically significant

Rate Ratio (Low / High)
Not statistically significant

Female Overweight and Obese



Toronto Rate
36.6%

Rate Difference (Low – High)
Not statistically significant

Rate Ratio (Low / High)
Not statistically significant

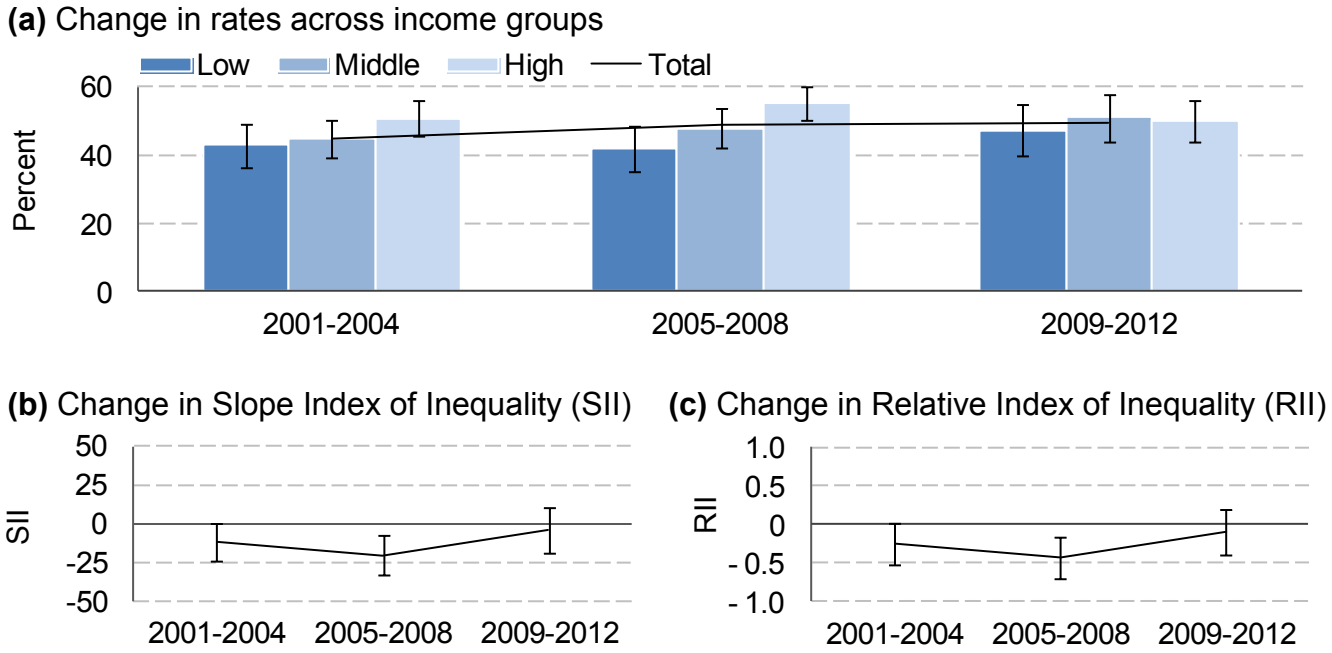
1. Income refers to the income adequacy tertile, derived from CCHS income adequacy deciles.
2. Rates are age standardized within each income tertile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Canadian Community Health Survey, 2009 - 2012. Statistics Canada, Share File, Knowledge Management and Reporting Branch, Ontario Ministry of Health and Long-Term Care.

- There were no significant differences overweight or obesity rate among males and females across income quintiles for the 2009 to 2012 period.

Trends in Overweight and Obesity in Males

Figure 37. Percent Overweight or Obese, by Income, Males Age 20 to 64, Toronto, 2001 to 2004 Combined to 2009 to 2012 Combined



1. Income refers to the income adequacy tertile, derived from CCHS income adequacy deciles.
2. Rates are age standardized within each income tertile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Canadian Community Health Survey, 2001 - 2012. Statistics Canada, Share File, Knowledge Management and Reporting Branch, Ontario Ministry of Health and Long-Term Care.

Overweight and obesity has increased since the 2001 to 2004 period

The rate of overweight and obesity has increased from 48.6% in 2001 to 2004 and 49.6% in 2009 to 2012. (Figure 37a).

Rates of overweight and obesity are equally distributed across income groups

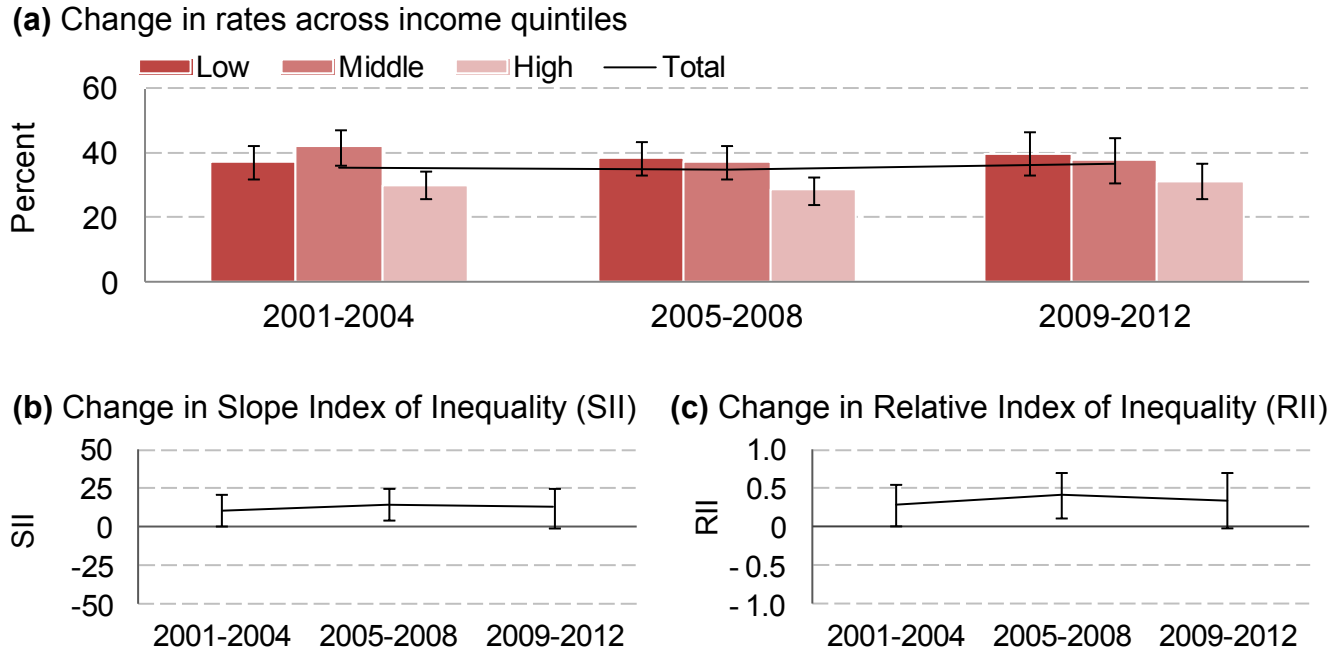
Figures 40b and 40c show that over the analysis period, the overweight and obesity rate among males was similar across all income groups. Small variations were observed between income groups, but the differences were not statistically significant. The 95% confidence intervals for the SII and RII overlapped with zero for all time points except for 2005 to 2008, indicating that there were no significant absolute (Figure 37b) and relative (Figure 37c) inequities for those time points.

The equal distribution of health across income groups has persisted over time

There were no significant changes in the SII (Figure 37b) or RII (Figure 37c) values over time. Positive and statistically significant SII and RII values were found for the 2005 to 2008 period, but this pattern of differences was not sustained over time.

Trends in Overweight and Obesity in Females

Figure 38. Percent Overweight or Obese, by Income, Females Age 20 to 64, Toronto, 2001 to 2004 Combined to 2009 to 2012 Combined



1. Income refers to the income adequacy tertile, derived from CCHS income adequacy deciles.
2. Rates are age standardized within each income tertile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Canadian Community Health Survey, 2001 - 2012. Statistics Canada, Share File, Knowledge Management and Reporting Branch, Ontario Ministry of Health and Long-Term Care.

Overweight and obesity has increased since the 2001 to 2004 period

The rate of overweight and obesity has increased from 35.0% in 2001 to 2004 to 36.6% in 2009 to 2012. (Figure 38a).

Increases in sampling variation have affected the apparent nature of the income and health relationship for overweight and obesity rates over time

In 2009 to 2012, the SII and RII 95% confidence intervals overlapped with zero, indicating that there were no significant health inequities for female rates of overweight and obesity across income quintiles. Although this change resulted in the nature of health inequities improving over time, the actual SII and RII values were smaller in 2009 to 2012 compared to 2001 to 2004. The health inequity improvements seen over time were not related to changes in the distribution of health across income groups, but were instead related to an increase in sampling variation which widened the 95% confidence intervals, affected the significance of the SII and the RII in 2009 to 2012.

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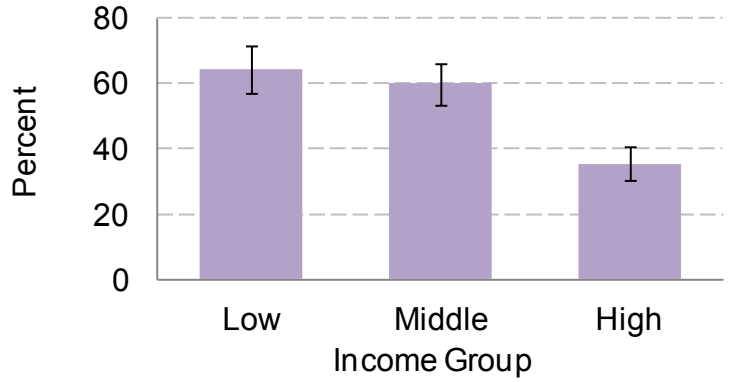
Physical Inactivity

Figure 39. Physical Inactivity Rate, by Income, Adults Age 20 to 64, Toronto, 2009 to 2012

Male Physical Inactivity Rate

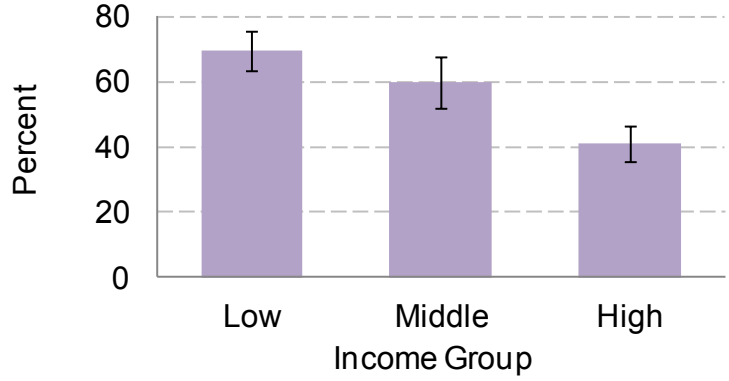


Toronto Rate
52.6%

Rate Difference (Low – High)
28.9 percentage points

Rate Ratio (Low / High)
1.8 times

Female Physical Inactivity Rate



Toronto Rate
57.7%

Rate Difference (Low – High)
28.8 percentage points

Rate Ratio (Low / High)
1.7 times

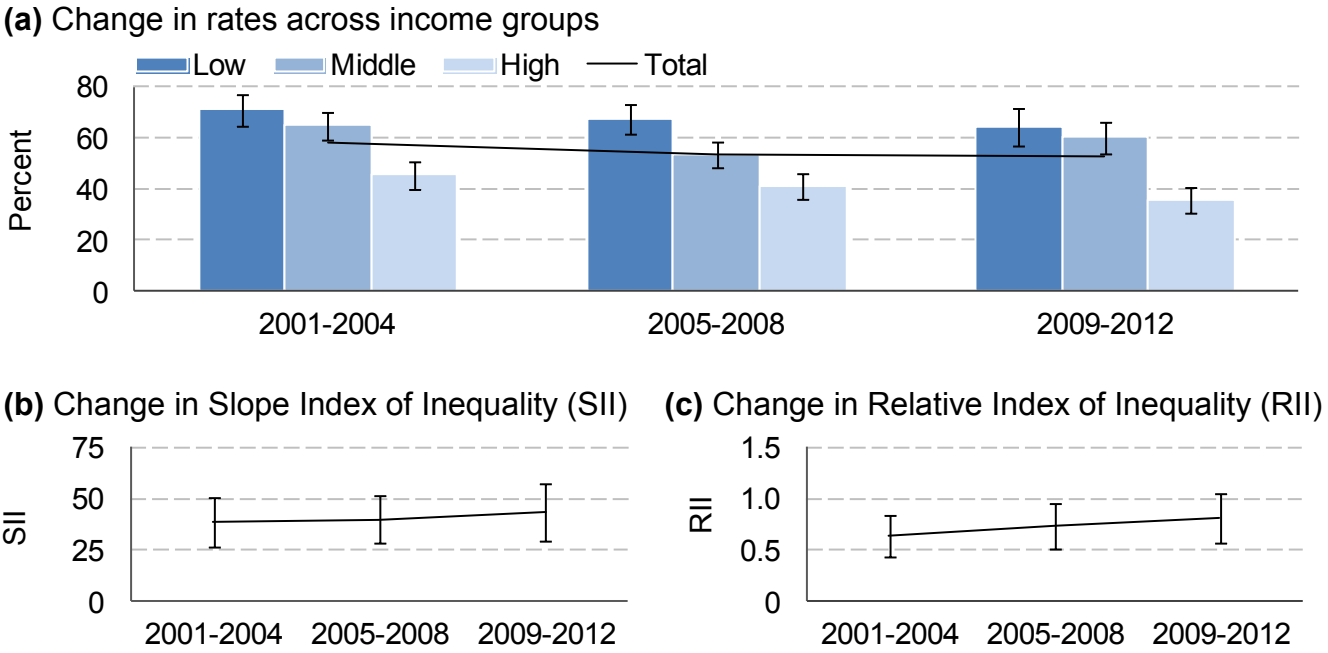
1. Income refers to the income adequacy tertile, derived from CCHS income adequacy deciles.
2. Rates are age standardized within each income tertile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Canadian Community Health Survey, 2009 - 2012. Statistics Canada, Share File, Knowledge Management and Reporting Branch, Ontario Ministry of Health and Long-Term Care.

- For both males and females, there was a gradient in physical inactivity rates across income tertiles in Toronto. The rate in the low income group was highest and significantly different from the rate in the high income group
- For males in the low income group, 64.4% were physically inactive, compared to 35.5% in the high income group. The difference was 28.9 percentage points. The rate in the low income group was 1.8 times the rate in the high income group.
- For females in the low income group, 69.6% were physically inactive, compared to 40.8% in the high income group. The difference was 28.9 percentage points. The rate in the low income group was 1.7 times the rate in the high income group.
- If all adults in Toronto experienced the same rate as the high income group, there would be 180,278 or 32% fewer physically inactive people per year.

Trends in Physical Inactivity in Males

Figure 40. Physical Inactivity Rate, by Income, Males Age 20 to 64, Toronto, 2001 to 2004 Combined to 2009 to 2012 Combined



1. Income refers to the income adequacy tertile, derived from CCHS income adequacy deciles.
2. Rates are age standardized within each income tertile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Canadian Community Health Survey, 2001 - 2012. Statistics Canada, Share File, Knowledge Management and Reporting Branch, Ontario Ministry of Health and Long-Term Care.

Physical inactivity decreased since the 2001 to 2004 period

The rate of physical inactivity in males decreased from 58.3%in 2001 to 2004 to 52.6% in 2009 to 2012. (Figure 40a).

Higher rates of physical inactivity are found in the low income group

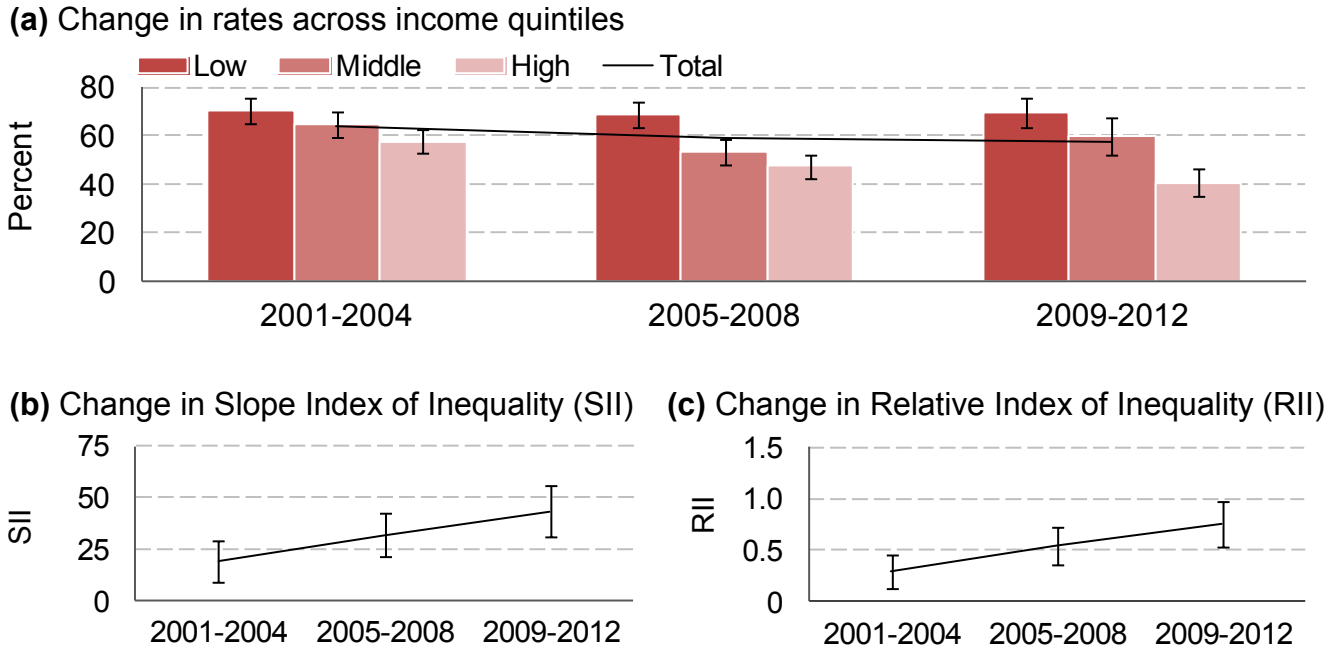
Figures 40b and 40c show that over the analysis period, positive and statistically significant SII and RII values were found for all time points, indicating significant absolute and relative inequities where the physical inactivity rate was generally higher for lower income males compared to higher income males.

Health inequities have persisted over time

There were no significant changes in the strength of absolute (Figure 40b) or relative (Figure 40c) inequities during this time period.

Trends in Physical Inactivity in Females

Figure 41. Physical Inactivity Rate, by Income, Females Age 20 to 64, Toronto, 2001 to 2004 Combined to 2009 to 2012 Combined



1. Income refers to the income adequacy tertile, derived from CCHS income adequacy deciles.
2. Rates are age standardized within each income tertile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Canadian Community Health Survey, 2001 - 2012. Statistics Canada, Share File, Knowledge Management and Reporting Branch, Ontario Ministry of Health and Long-Term Care.

Physical inactivity decreased since 2001 to 2004

The rate of physical inactivity in males has decreased from 64.2%in 2001 to 2004 to 57.7% in 2009 to 2012. (Figure 41a).

Higher rates of physical inactivity are found in the low income group

Figures 41b and 41c show that over the analysis period, positive and statistically significant SII and RII values were found for all time points, indicating significant absolute and relative inequities where the physical inactivity rate was generally higher for lower income females compared to higher income females.

Health inequities have become significantly worse over time

Physical inactivity rates have improved significantly for the high income group, but did not improve for the low and middle income groups. This has resulted in statistically significant increases in absolute (Figure 41b) and relative (Figure 41c) inequities over time.

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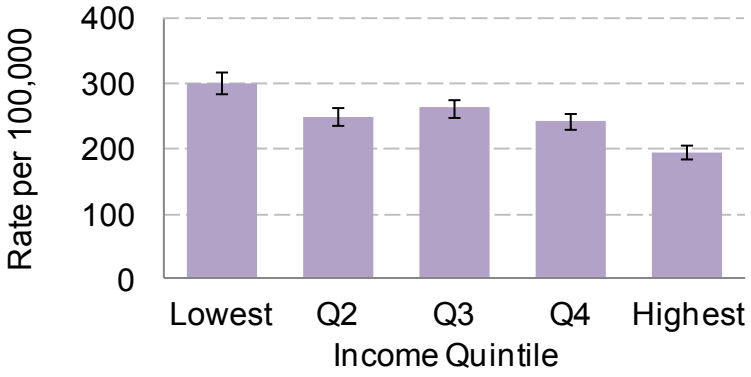
Premature Mortality

Figure 42. All Cause Premature Mortality Rate, by Income, Adults less than 75 Years, Toronto, 2009 and 2010 Combined

Male Premature Mortality Rate

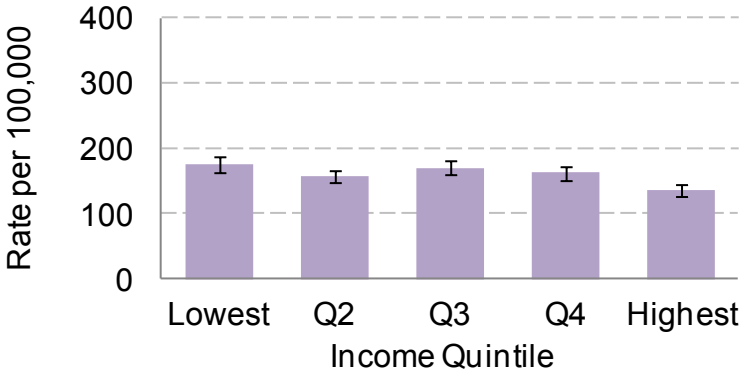


Toronto Rate
248.7 per 100,000

Rate Difference (Q1 – Q5)
105.9 per 100,000

Rate Ratio (Q1 / Q5)
1.5 times

Female Premature Mortality Rate



Toronto Rate
160.7 per 100,000

Rate Difference (Q1 – Q5)
38.9 per 100,000

Rate Ratio (Q1 / Q5)
1.3 times

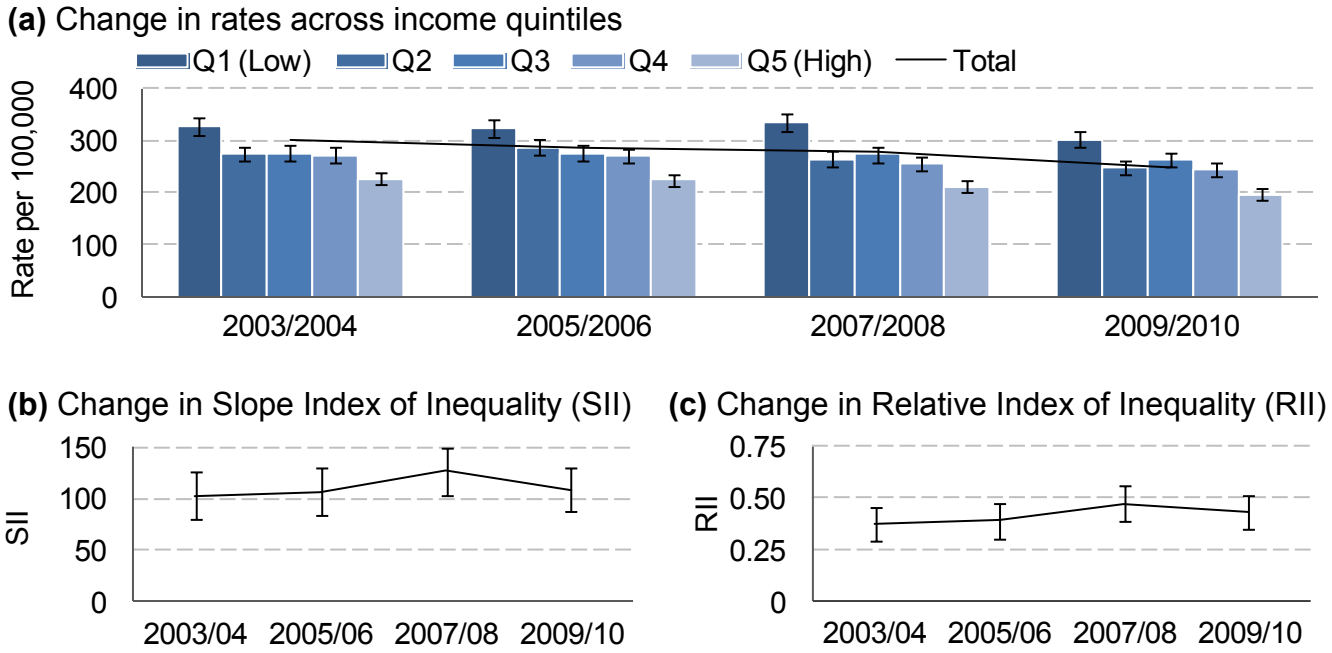
1. Income refers to population quintile established based on proportion of the population living below the LIM in census tracts.
2. Rates are age standardized within each income quintile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Ontario Mortality Data 2009-2010, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: September 2014.

- For both male and females, there was a gradient in premature mortality rates across income quintiles in Toronto. The rate in the lowest income quintile (Q1) was highest and significantly different from the rate in the highest income quintile (Q5).
- For males, the premature mortality rate for males in the lowest income quintile was 301.5 per 100,000 people, compared to 195.6 per 100,000 in the highest income quintile. The difference was 105.9 per 100,000. The rate in Q1 was 1.5 times the rate in Q5.
- For females, the rate in the lowest income quintile was 176.2 per 100,000 people, compared to 137.3 per 100,000 in the highest income quintile. The difference was 38.9 per 100,000. The rate in Q1 was 1.3 times the rate in Q5.
- If everyone experienced the same rate as the highest income quintile, there would be 932 or 19% fewer premature deaths in Toronto.

Trends in Premature Mortality in Males

Figure 43. Premature Mortality Rate, by Income, Males less than 75 Years, Toronto, 2003 and 2004 Combined to 2009 and 2010 Combined



1. Income refers to population quintile established based on proportion of the population living below the LIM in census tracts.
2. Rates are age standardized within each income quintile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Ontario Mortality Data 2003-2010, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: September 2014.

Premature mortality has decreased since 2003 to 2004 period

The premature mortality rate for males decreased from 301.6 per 100,000 in 2003 to 2004 to 248.7 per 100,000 in 2009 to 2010. (Figure 43a).

Higher rates of premature mortality are found in the lower income quintiles

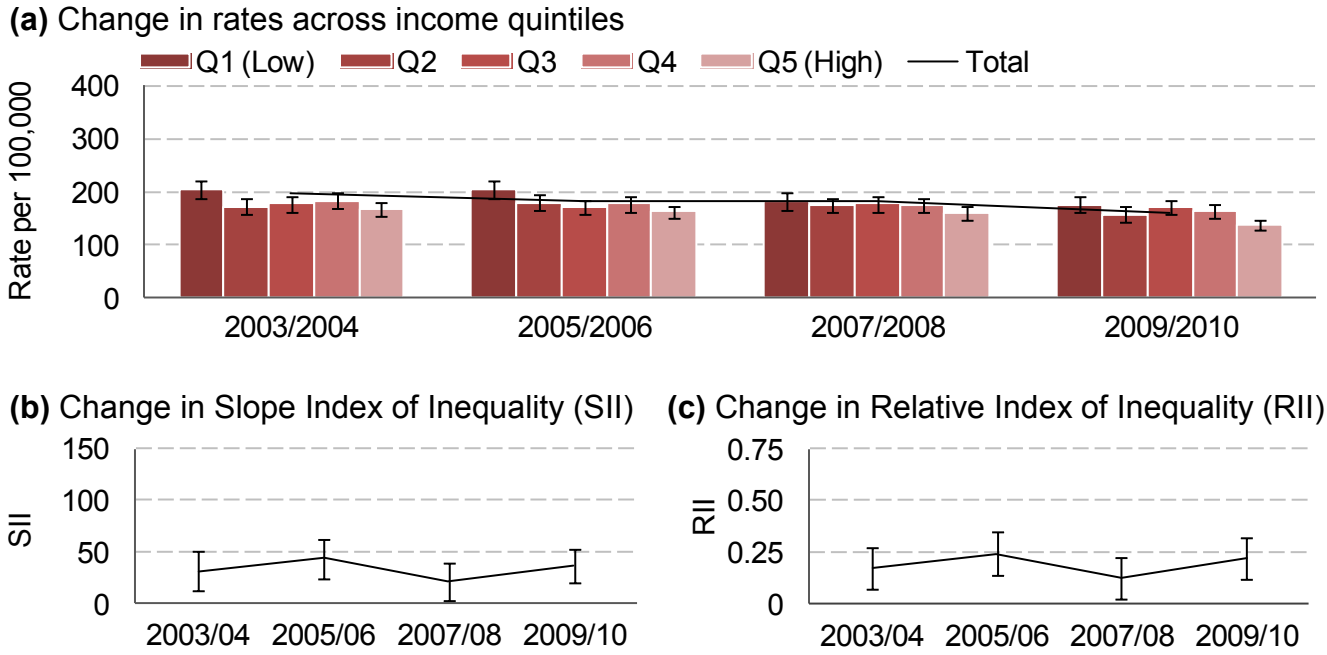
Figures 43b and 43c show that over the analysis period, positive and statistically significant SII and RII values were found for all time points, indicating significant absolute and relative inequities where the rate of premature mortality was generally higher for males in lower income quintiles than in higher income quintiles.

Health inequities have persisted over time

There were no significant changes in the strength of absolute (Figure 43b) or relative (Figure 43c) inequities during this time period.

Trends in Premature Mortality in Females

Figure 44. Premature Mortality Rate, by Income, Females less than 75 Years, Toronto, 2003 and 2004 Combined to 2009 and 2010 Combined



1. Income refers to population quintile established based on proportion of the population living below the LIM in census tracts.
2. Rates are age standardized within each income quintile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Ontario Mortality Data 2003-2010, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: September 2014.

Premature mortality has decreased since 2003 to 2004 period

The premature mortality rate for females decreased from 196.9 per 100,000 in 2003 to 2004 to 160.7 per 100,000 in 2009 to 2010. (Figure 44a).

Higher rates of premature mortality are found in the lower income quintiles

Figures 44b and 44c show that over the analysis period, positive and statistically significant SII and RII values were found for all time points, indicating significant absolute and relative inequities where the rate of premature mortality was generally higher for females in lower income quintiles than in higher income quintiles.

Health inequities have persisted over time

There were no significant changes in the strength of absolute (Figure 44b) or relative (Figure 44c) inequities over time.

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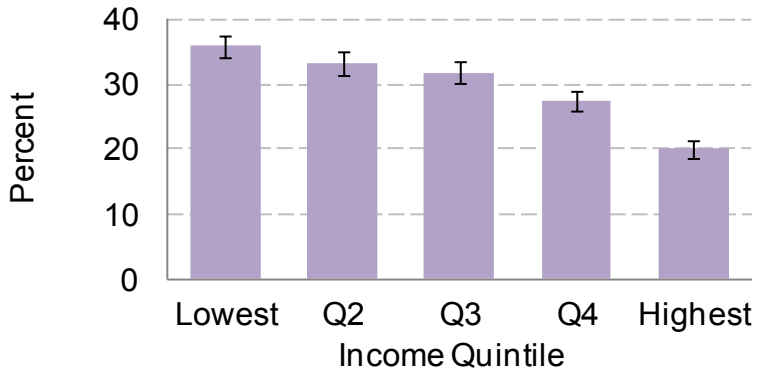
Readiness to Learn

Figure 45. Senior Kindergarten Children Not Ready to Learn at School Entry, by Income, Toronto, 2010/2011



Toronto Rate
29.9%

Rate Difference (Q1 – Q5)
15.8 percentage points

Rate Ratio (Q1 / Q5)
1.8 times

1. Readiness to learn at school entry is measured using the Early Development Instrument. Children are considered to be not ready to learn if they are vulnerable across one or more domains. See Appendix B for more information.
2. Income refers to population quintile established based on proportion of the population living below the LIM in census tracts.
3. Error bars (I) denote 95% confidence intervals.

Source: Offord Centre for Child Studies, McMaster University, 2011.

- During the 2010/2011 school year, there was a stepwise gradient in the percent of children who are considered not ready to learn at school entry across income quintiles, where the rate in the lowest income quintile (Q1), at 35.8%, was highest and significantly different from the rate in the highest income quintile (Q5), at 20.0%. The difference was 15.8 percentage points. The rate in Q1 was 1.8 times the rate in Q5.
- If all senior kindergarten children in Toronto had the same level of readiness to learn as those in the highest income quintile, there would be 2,141 or 33% more children who are ready to learn at school entry every year.
- Due to methodological changes in way the Early Development Instrument was administered over time, time trends are not available for this indicator.

Singleton Low Birth Weight

Figure 46. Singleton Low Birth Weight Rate, by Income, Toronto, 2011 to 2012 Combined

Toronto Rate
5.7 per 100

Rate Difference (Q1 – Q5)
1.9 per 100

Rate Ratio (Q1 / Q5)
1.4 times

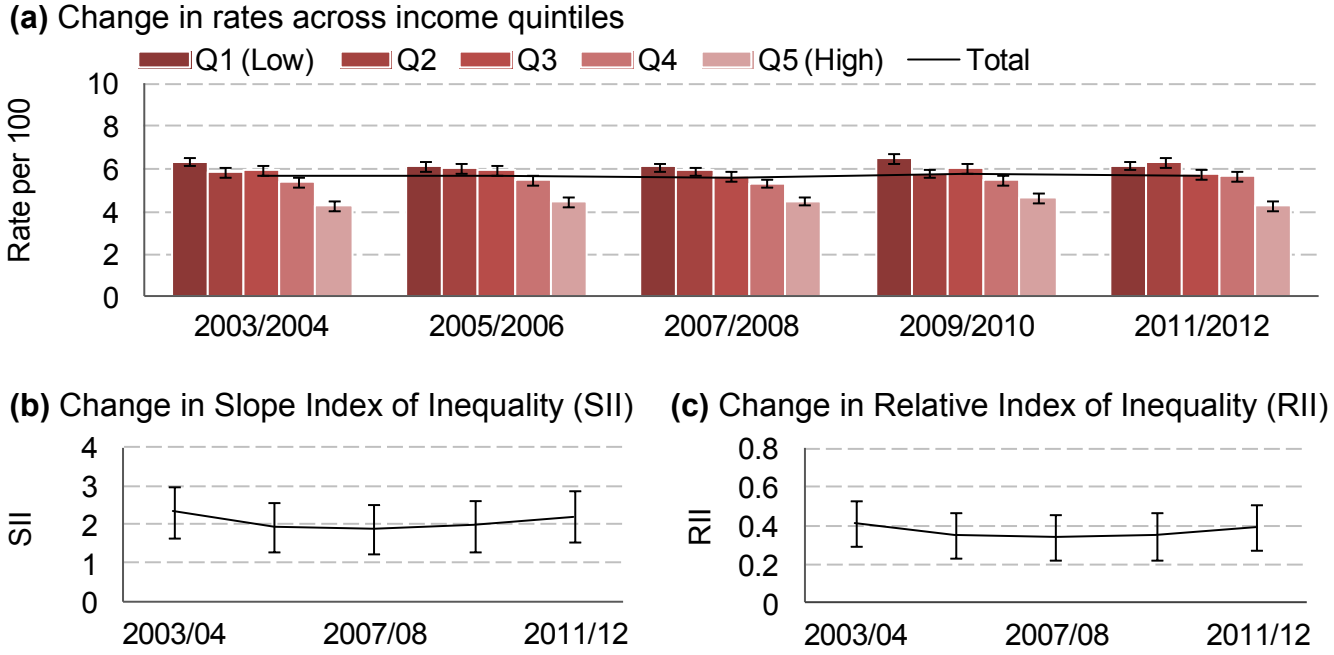
1. Singleton low birth weight includes singleton infants born with a birth weight of less than 2,500 grams.
2. Income refers to population quintile established based on proportion of the population living below the LIM in census tracts.
3. Error bars (I) denote 95% confidence intervals.

Source: Inpatient Discharges 2011-2012, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: April 2014.

- In 2011 to 2012, there was a gradient in the rate of singleton low birth weight births across income quintiles. The rate in the lowest income quintile (Q1), at 6.2 per 100, was significantly different from the rate in the lowest income quintile (Q1), at 4.3 per 100. The difference was 1.9 per 100. The rate in Q1 was 1.4 times the rate in Q5.
- If all singleton babies in Toronto experienced the same low birth weight rate of the highest income quintile, there would be 611 or 18% fewer low birth weight babies born per year.

Trends in Singleton Low Birth Weight

Figure 47. Singleton Low Birth Weight Rate, by Income, Toronto, 2003 and 2004 Combined to 2011 and 2012 Combined



1. Singleton low birth weight includes singleton infants born with a birth weight of less than 2,500 grams.
2. Income refers to population quintile established based on proportion of the population living below the LIM in census tracts.
3. Error bars (I) denote 95% confidence intervals.

Source: Inpatient Discharges 2003-2012, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: April 2014.

Singleton low birth weight rates have remained stable since the 2003 to 2004 period

The singleton low birth weight rate has remained relatively stable between 2003 to 2004 and 2011 to 2012. During 2011 to 2012, the rate was 5.7 per 100. (Figure 47a).

Higher rates of singleton low birth weight births are found in the lower income quintiles

Figures 47b and 47c show that over the analysis period, positive and statistically significant SII and RII values were found for all time points, indicating significant absolute and relative inequities where the singleton low birth weight rate was generally higher for lower income quintiles than for higher income quintiles.

Health inequities have persisted over time

There were no significant changes in the strength of absolute (Figure 47b) or relative (Figure 47c) inequities during this time period.

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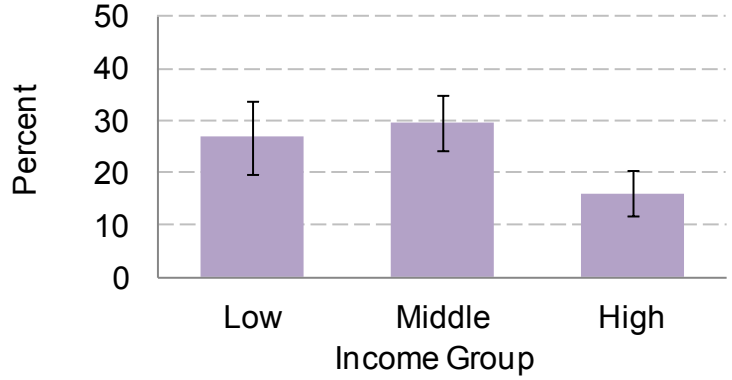
Smoking

Figure 48. Percent Current Smoker, by Income, Adults Age 20 to 64, Toronto, 2009 to 2012 Combined

Male Current Smoker Rate

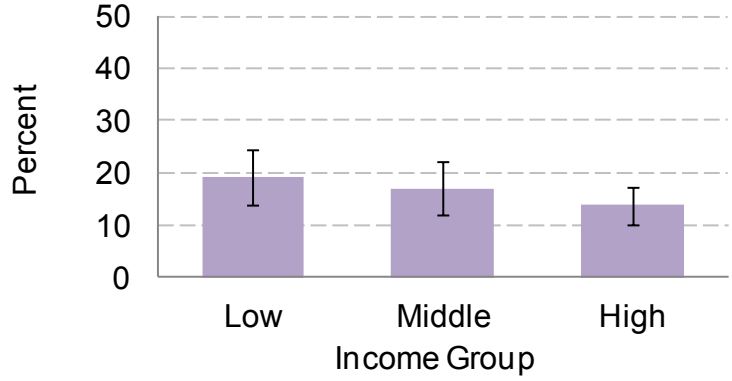


Toronto Rate
29.3%

Rate Difference (Low – High)
10.9 percentage points

Rate Ratio (Low / High)
1.7 times

Female Current Smoker Rate



Toronto Rate
20.6%

Rate Difference (Low – High)
Not statistically significant

Rate Ratio (Low / High)
Not statistically significant

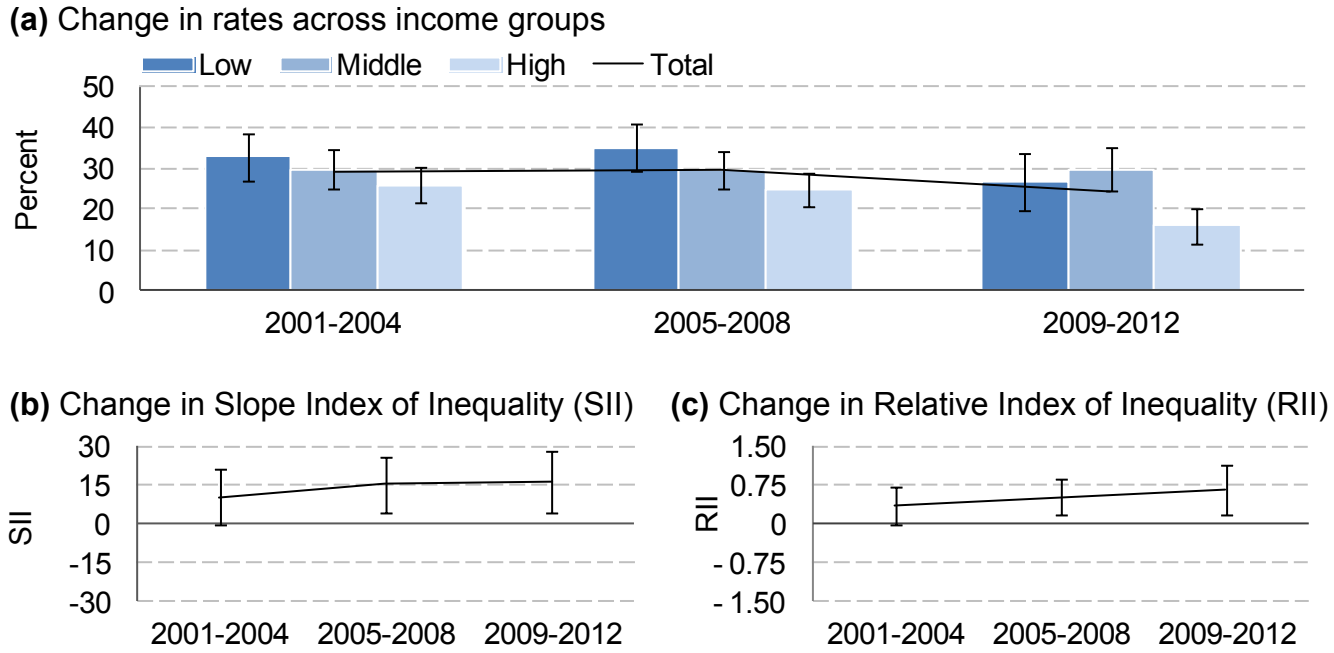
1. Income refers to the income adequacy tertile, derived from CCHS income adequacy deciles.
2. Rates are age standardized within each income tertile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Canadian Community Health Survey, 2001 - 2012. Statistics Canada, Share File, Knowledge Management and Reporting Branch, Ontario Ministry of Health and Long-Term Care.

- There was no clear gradient in current smoking rates across income groups. However, males in the low income group were more likely to be current smokers compared to the high income group, at 26.9% and 16.0% respectively. The difference was 10.9 percentage points. The rate in the low income group was 1.7 times the rate in the low income group.
- For females, there were no statistically significant differences in current smoker rates between income groups.
- If all adults age 20 to 64 in Toronto experienced the same current smoker rate as the high income group, there would be 60,104 or 28% fewer current smokers per year.

Trends in Smoking in Males

Figure 49. Percent Current Smoker, by Income, Males Age 20 to 64, Toronto, 2001 to 2004 Combined to 2009 to 2012 Combined



1. Income refers to the income adequacy tertile, derived from CCHS income adequacy deciles.
2. Rates are age standardized within each income tertile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Canadian Community Health Survey, 2001 - 2012. Statistics Canada, Share File, Knowledge Management and Reporting Branch, Ontario Ministry of Health and Long-Term Care.

Current smoking has decreased since the 2001 to 2004 period

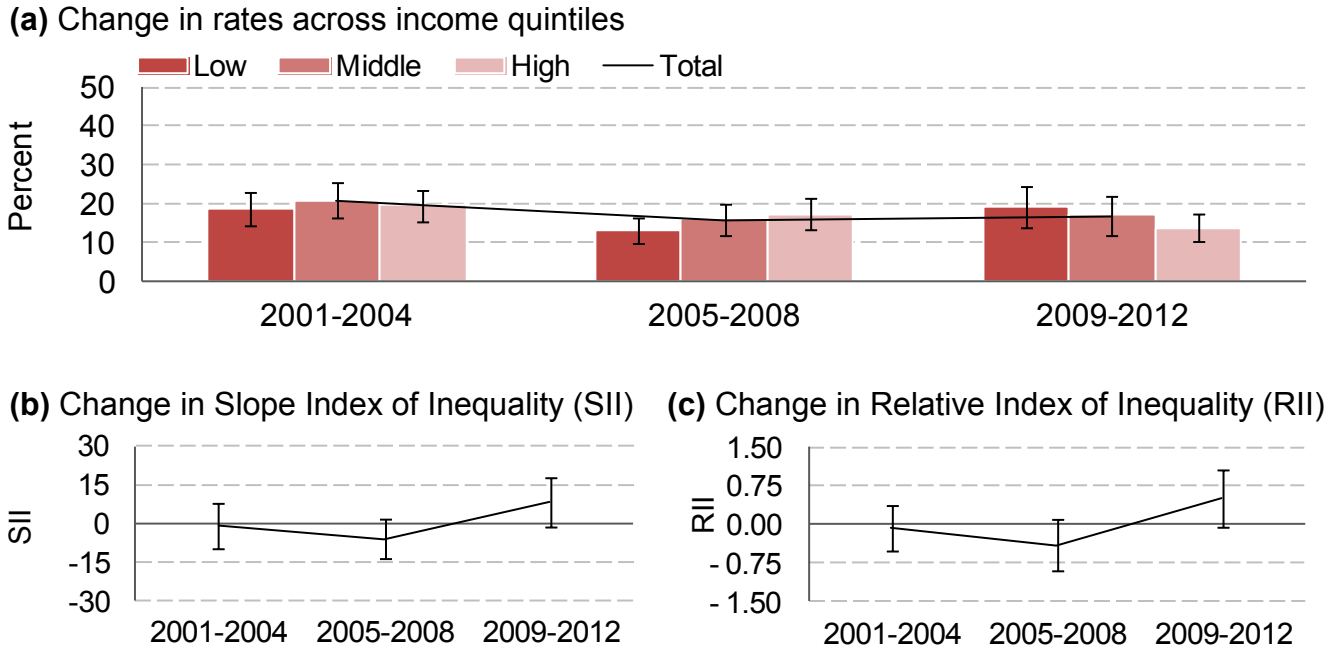
Current smoking rates among males decreased from 29.3% in 2001 to 2004 to 24.1% in 2009 to 2012. (Figure 49a).

Health has improved most for the high income group. This has increased health inequities over time

Figure 49a shows that during 2001 to 2004, the current smoking rate was similar across all income groups. The 95% confidence intervals for the SII (Figure 49b) and RII (Figure 49c) overlapped zero, indicating that there were no significant inequities between income groups. Over time, the rate decreased most for the high income group. This resulted in an increase in the SII and RII values over time, and for the 2005 to 2008 and the 2009 to 2012 periods, there were statistically significant relative and absolute inequities.

Trends in Smoking in Females

Figure 50. Percent Current Smoker, by Income, Females Age 20 to 64, Toronto, 2001 to 2004 Combined to 2009 to 2012 Combined



1. Income refers to the income adequacy tertile, derived from CCHS income adequacy deciles.
2. Rates are age standardized within each income tertile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Canadian Community Health Survey, 2001 - 2012. Statistics Canada, Share File, Knowledge Management and Reporting Branch, Ontario Ministry of Health and Long-Term Care.

Current smoking has decreased since the 2001 to 2004 period

Current smoking rates among females decreased from 20.6% in 2001 to 2004 to 16.9% in 2009 to 2012. (Figure 50a).

Rates current smokers are equally distributed across income groups

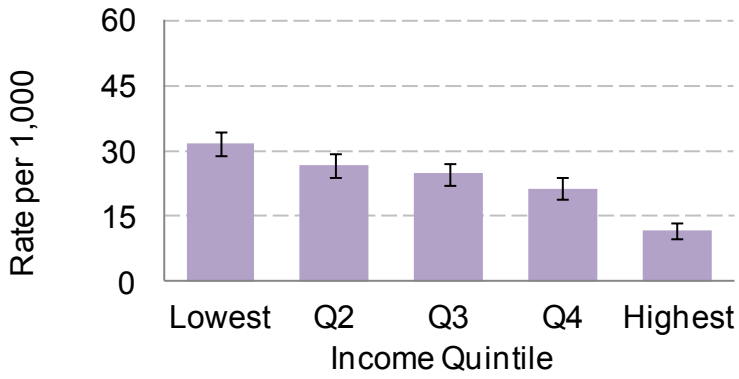
Figures 50b and 50c show that over the analysis period, current smoking rates among were similar across all income groups. The 95% confidence intervals for the SII and RII overlapped with zero for all time points, indicating that there were no significant absolute (Figure 50b) and relative (Figure 50c) inequities between income groups.

The equal distribution of health across income groups has persisted over time

There were no significant changes in SII (Figure 50b) or RII (Figure 50c) values for current smoking rate in females during this time period.

Teen Pregnancy

Figure 51. Teen Pregnancy Rate, by Income, Females Age 15 to 19, Toronto, 2012



Toronto Rate
23.6 per 1,000

Rate Difference (Q1 – Q5)
19.8 per 1,000

Rate Ratio (Q1 / Q5)
2.7 times

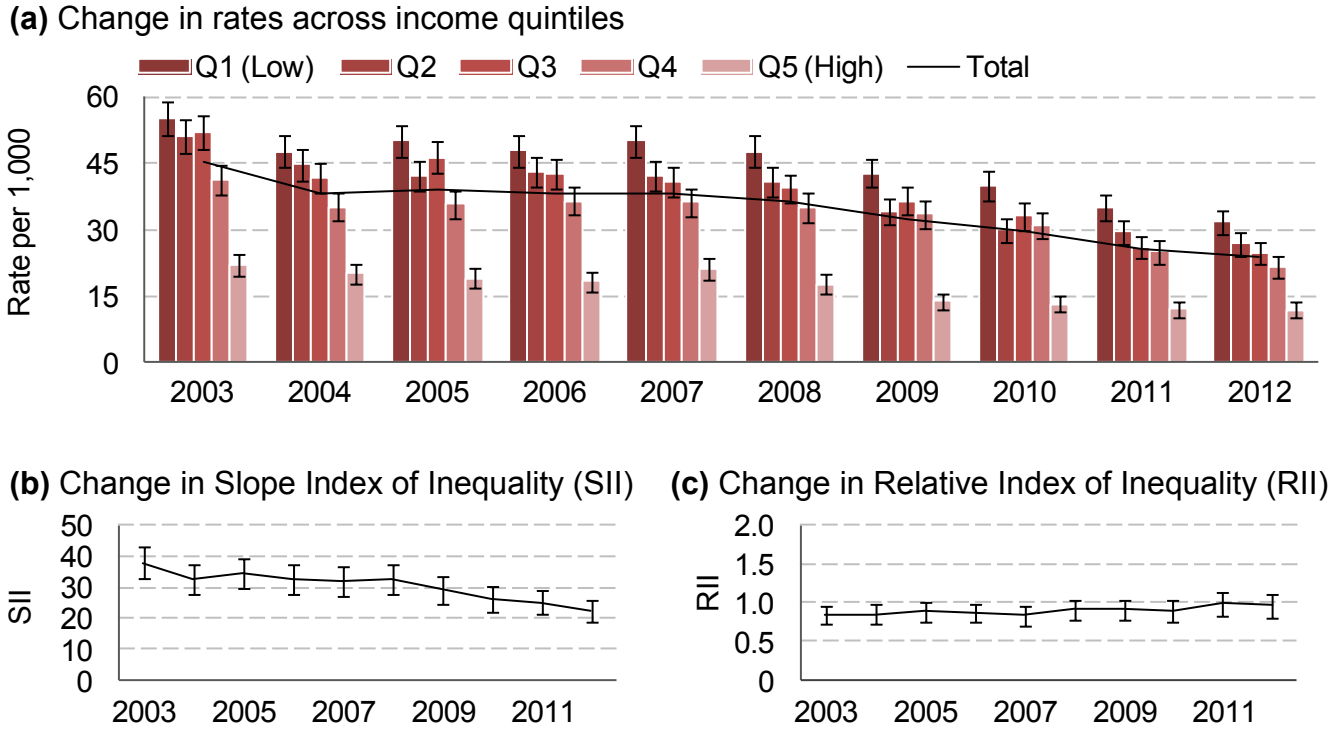
1. Income refers to population quintile established based on proportion of the population living below the LIM in census tracts.
2. Rates are age standardized within each income quintile to the 1991 Canadian Census population.
3. Error bars (I) denote 95% confidence intervals.

Source: Inpatient Discharges and Hospital and Medical Services Data, 2012; Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: April 2014.

- The teen pregnancy rate represents the proportion of women age 15 to 19 who gave birth (live or stillborn) or had a therapeutic abortion (performed in a hospital, private physician's office or abortion clinic).
- In 2012, there was a stepwise gradient in teen pregnancy rates across income quintiles, where the rate for teens in the lowest income quintile (Q1), at 31.7 per 1,000 was highest and significantly different from the rate in the highest income quintile (Q5), at 11.9 per 1,000. The difference was 19.8 per 1,000. The rate in Q1 was 2.7 times the rate in Q5.
- If all females age 15 to 19 in Toronto experienced the same teen pregnancy rate as the highest income quintile, there would be 843 or 49% fewer teen pregnancies per year.

Trends in Teen Pregnancy

Figure 52. Teen Pregnancy Rate, by Income, Females Age 15 to 19 Toronto, 2003 to 2012



1. Income refers to population quintile established based on proportion of the population living below the LIM in census tracts.
2. Error bars (I) denote 95% confidence intervals.

Source: Inpatient Discharges and Hospital and Medical Services Data, 2003-2012; Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: April 2014.

Teen pregnancy rates have decreased since 2003

Teen pregnancy rate decreased from 45.2 per 1,000 in 2003 to 23.6 per 1,000 in 2012. (Figure 52a).

Higher rates of teen pregnancy are found in the lower income quintiles

Between 2003 and 2012, teen pregnancy rates were consistently highest in the lowest income quintile and significantly different from higher income quintiles. Statistically significant absolute (Figure 52b) and relative (Figure 52c) inequities were observed for all time points.

Absolute health inequities have decreased over time; relative inequities have persisted

There was an approximately proportionate decrease in teen pregnancy rates across income quintiles. This contributed to a reduction in absolute difference between low and high income quintiles, and a statistically significant lower SII in 2010, 2011, and 2012 compared with 2003 (Figure 52b). However, there were no significant changes in the strength of relative inequities during this time period (Figure 52c).

DISCUSSION

This report describes the current relationship between income and health in Toronto for 34 sex-specific health status indicators, measures the strength of this relationship and assesses changes in this relationship over approximately ten years. While there is extensive evidence showing a clear link between income and health, this report is the first to use a comprehensive set of health indicators to analyze how health inequities have changed over time in Toronto.

This section presents a summary of key findings of the analysis conducted for this report, followed by a discussion of its limitations.

Summary of Key Findings

Nineteen indicators of overall health and wellbeing, chronic disease, communicable disease, injury, reproductive health and health behaviours were selected for this report. Thirty-four sex-specific indicators were analyzed using data from 1999 to 2012. Fifteen indicators measured both male and female health separately, two measured health for females only, and two measured health for males and females combined.

Two key findings emerged from the analysis:

- Low income groups in Toronto often have worse health. For the most recent years of data analyzed, 20 of the 34 health status indicators assessed for this report showed significant health inequities where low income groups had worse health.
- Overall, health inequities in Toronto have not improved over time. For the first years of data analyzed, low income groups had worse health for 21 of the 34 health status indicators analyzed. Over approximately ten years, health inequities persisted for 16 indicators, became worse for four indicators and improved for one indicator.

The following graphs and interpretations describe key findings related to changes in the income and health relationship for all health status indicators that were analyzed for this report. These findings reflect relative differences in health between income groups because they are based on the Relative Index of Inequality (RII) summary measure of inequality.

Changes in the Income and Health Relationship for Men

Over the 7 to 12 years of data analyzed, the income and health relationship stayed the same for the majority of health status indicators for males based on the Relative Index of Inequality (RII). The relationship changed in a meaningful way for 3 of 15 indicators. Health inequities became worse for:

- **Diabetes:** Between 2003 and 2012, inequities in men's diabetes rates became more pronounced. Diabetes prevalence increased for all men in Toronto but this increase was greater for low income groups, resulting in a wider gap than was seen ten years earlier. This increase in the strength of the relationship between income and diabetes was statistically significant.
- **Smoking:** Over the most recent 12 years, differences in men's smoking rates between income groups have grown. From 2001 to 2004, male smoking rates were not significantly different across all income groups. From 2009 to 2012, smoking rates had improved among high income men but had not improved for low income men. During this 12 year period, differences in smoking rates between income groups became more pronounced, resulting in significant health inequities for the 2009 to 2012 period.

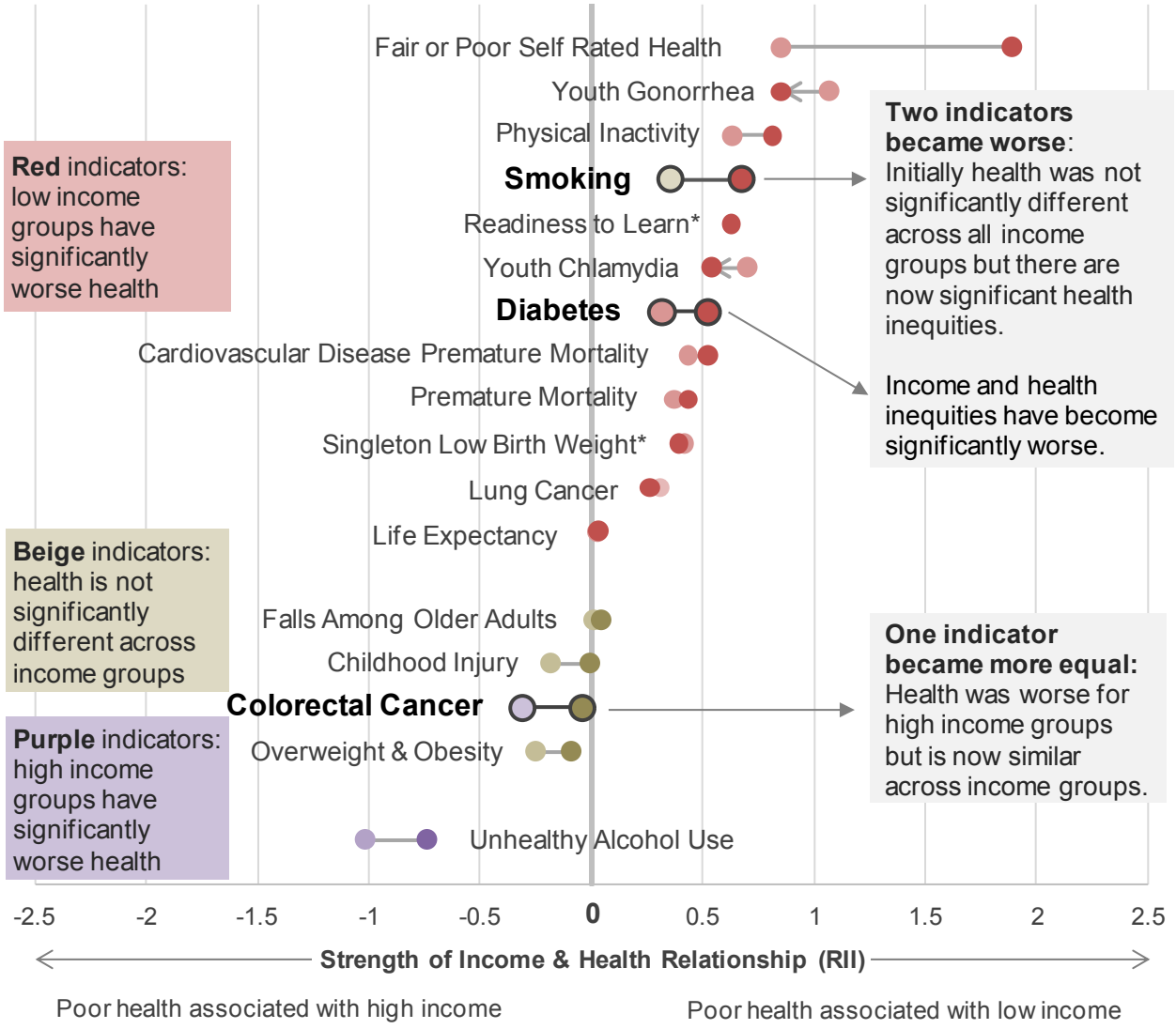
Differences in health between income groups decreased for:

- **Colorectal Cancer:** Over the 12 years analyzed, differences in men's colorectal cancer rates between income groups became smaller. From 1999 to 2001, men in higher income groups were more likely to get colorectal cancer. Twelve years later, male colorectal cancer incidence had improved across all income groups and had improved more for higher income groups, resulting in similar colorectal cancer rates across all income groups for the 2008 to 2010 time period.

The income and health relationship did not change for the other 12 male-specific health status indicators or the two indicators of combined male and female health that were analyzed. Several of these indicators showed improvements in health status for men overall in Toronto, but the majority continued to show health inequities where the lowest income groups had the worst health.

Changes in relative health inequities for Toronto men

Over the 7 to 12 years of data analyzed, relative differences between income groups did not change between the **initial** and **most recent** time points for 12 of the 15 indicators of male health, and the two indicators of combined male and female health*.



Lighter shaded circles depict initial time point; darker shaded circles depict most recent time point.

Apparent large changes in the strength of the income and health relationship for some indicators, such as Fair or Poor Self Rated Health, are related to high sampling variability, and do not reflect meaningful changes.

* Singleton Low Birth Weight and Readiness to Learn measure health for males and females combined. Readiness to Learn cannot be directly compared to previous years due to changes in the way it is measured. Low income groups had worse health for both the most recent and earlier measurements.

Changes in the Income and Health Relationship for Women

Over the 7 to 12 years of data analyzed, the majority of health status indicators for females did not show a change in the income and health relationship based on the Relative Index of Inequality (RII). The relationship changed in a meaningful way for 4 of 17 health status indicators. Health inequities became worse for:

- **Diabetes:** Between 2003 and 2012, inequities in women's diabetes rates became more pronounced. Diabetes prevalence increased for all women in Toronto but this increase was greater for low income groups, resulting in a wider gap than was seen ten years earlier. This increase in the strength of the relationship between income and diabetes was statistically significant.
- **Physical Inactivity:** Over the most recent 12 year period, differences in women's physical inactivity between income groups have grown. Physical inactivity rates improved for high income women but did not improve for low income women, leading to significantly greater inequities in physical inactivity.

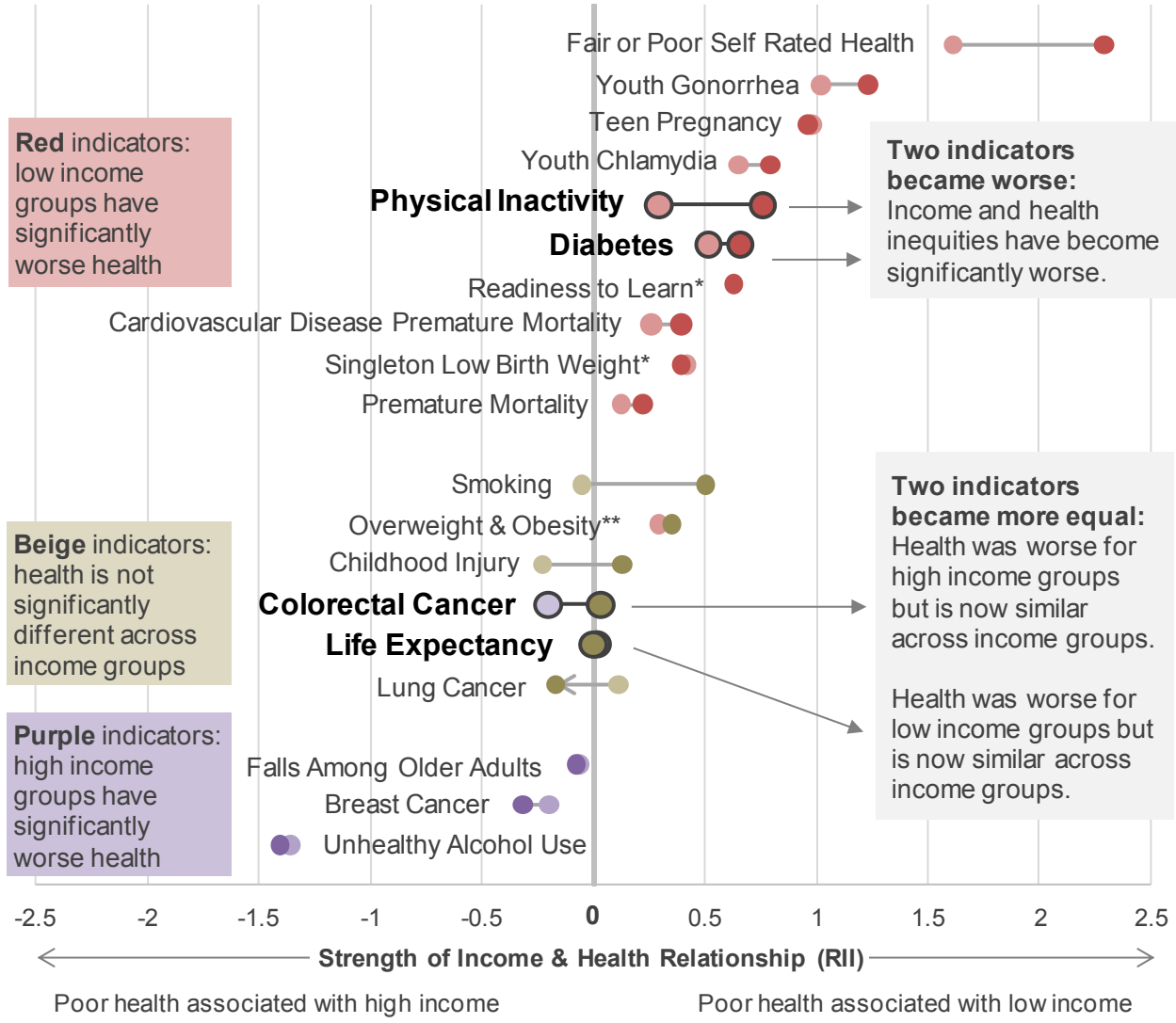
Differences in health between income groups decreased for:

- **Colorectal Cancer:** Differences in women's colorectal cancer rates decreased over the most recent 12 year period. From 1999 to 2001, women in higher income groups were more likely to get colorectal cancer. Twelve years later, women's colorectal cancer incidence rates had improved across all income groups and had improved more for higher income groups, resulting in similar colorectal cancer rates across all income groups for the 2008 to 2010 period.
- **Life Expectancy:** Inequities in women's life expectancy have decreased over the eight year period analyzed. In 2003/04, women in low income groups lived significantly shorter lives than women in higher income groups. Eight years later, women's life expectancy had improved across all income groups and had improved more for low income groups, causing life expectancy to be similar across all income groups in 2009/10.

The income and health relationship did not change for the other 13 female-specific health status indicators or the two indicators of combined male and female health that were analyzed. Several of these indicators showed improvements in health status for women overall in Toronto, but the majority continued to show health inequities where the lowest income groups had the worst health.

Changes in relative health inequities for Toronto women

Over the 7 to 12 years of data analyzed, relative differences between income groups did not change between the **initial** and **most recent** time points for 13 of the 17 female indicators of health, and the two indicators of combined male and female health*.



Lighter shaded circles depict initial time point; darker shaded circles depict most recent time point.

Apparent large changes in the strength of the income and health relationship for some indicators, such as Fair or Poor Self Rated Health, are related to high sampling variability, and do not reflect meaningful changes.

* Singleton Low Birth Weight and Readiness to Learn measure health for males and females combined. Readiness to Learn cannot be directly compared to previous years due to changes in the way it is measured. Low income groups had worse health for both the most recent and earlier measurements.

** Although the RII value increased for Overweight and Obesity over time, the health inequities seen initially were no longer significant at the most recent time point due to sampling variability in the data source. For more information, please see the detailed results for Overweight and Obesity on pages 61-63.

Limitations

The analysis conducted for this report used recognized and validated analysis techniques and high quality data sources. However, there are some limitations to the analysis and data sources that should be acknowledged.

Area-Based (Ecological) Analysis

The income quintiles used in this analysis were assigned ecologically, meaning that individuals were assigned an income level based on the proportion of the population living below the Low income Measure (LIM) within their census tract of residence. Assigning income levels to individuals based on where they live introduces the possibility of misattributing income to health outcomes. All ecological analyses can also be subject to ecological fallacy, where associations observed for aggregate groups of people do not necessarily reflect true associations for the individuals within those groups.

The income quintiles used in this analysis most directly describe the general affluence of an area, measured in terms of the proportion of low income families living in the area. Within each quintile, there is a certain amount of misattribution, where some residents are assigned to income quintiles that do not represent their own experiences. The effect of this misattribution is difficult to determine. The middle income quintiles may be more likely to experience misattribution, since individual income levels in these areas are more heterogeneous than in the highest and lowest income quintiles.

Another limitation of ecological analyses is that it is not possible to control for potential confounders through stratification for those variables where only ecological data exists. The health status data used in this analysis contained individual level information on age and sex, allowing the analysis to control for possible confounding with those factors through age standardization and stratification by sex. The ecological nature of the income level analysis prevented stratification by other determinants of health where only ecological data was available.

Census Tracts

Census tracts were used as the geographic unit for assigning income level. Census tracts usually have a population between 2,500 and 8,000 people. Census tracts are delineated to represent areas which are as homogeneous as possible in terms of socioeconomic characteristics, but they were not designed with the goals of this study in mind. The specific boundaries chosen for the census tracts could have an effect on the strength of the association between income and health measured in this analysis. The

use of different geographic boundaries or different sized geographic areas might affect the findings of this analysis.

Communicable Disease Reporting

The Youth Chlamydia and Youth Gonorrhea indicators measure only those cases of sexually transmitted infections which are reported to public health. Reports rely on a passive surveillance system, wherein laboratories, physicians, other health care providers, and institution administrators are entrusted to know the regulations, recognize that the suspected disease is on the provincial reportable disease list, and will promptly inform public health. The rates for Toronto and the income specific groups are underreported for several reasons including:

- Not all infections with a reportable communicable disease cause clinical signs and symptoms.
- Individuals who experience symptomatic illness do not all seek medical care.
- Health care providers do not always recognize that a diagnostic laboratory test is warranted.

Differences in the reported rates of communicable disease over time are influenced by changes in the factors related to communicable disease screening and surveillance. Changes in the reported rates of chlamydia and gonorrhea are in part related to the introduction of less invasive and more accurate testing as well as increase in screening and testing of high risk groups. Additionally, in 2013, the surveillance case definitions for reportable communicable diseases in Ontario were revised in the Infectious Disease Protocol of the Ontario Public Health Standards (OPHS), which replaced the Mandatory Programs and Services Guidelines. These updated case definitions apply to all cases of reportable communicable diseases reported to public health on or after April 28, 2009. Epi-linked cases were previously confirmed, but now they do not meet the confirmed case definition, and are no longer reportable. As such, the number of confirmed cases may be expected to decrease. Epi-linked cases refer to people with clinical signs and symptoms consistent with the disease and who: a) have had contact with a laboratory-confirmed case during the case's communicable period, and/or b) has been exposed to a known source or setting where transmission of a communicable disease has been confirmed. The onset of the signs and symptoms are within an incubation period of their contact/exposure.

Cross Sectional Analysis

The income and health relationship was assessed for several time points using a cross sectional analysis. Individuals were assigned income levels based on characteristics reported only at the time of the health status event. This method of analysis does not

account for changing income levels across an individual's lifetime. Health status outcomes are influenced by an individual's experiences through their entire life course, and a cross sectional analysis is not able to fully capture those experiences.

Slope Index of Inequality and Relative Index of Inequality Assumptions

The Slope Index of Inequality (SII) and the Relative Index of Inequality (RII) are summary measures of inequality that were used to assess changes in the income and health relationship over time for all health status indicators in this analysis. These measures are derived from linear regression models, and rely on the same assumptions, including the assumption of linearity. For health status indicators where the distribution of health across income groups was not perfectly linear, the use of the SII and RII may not have provided as accurate and appropriate a summary of differences between income groups.

Timeframe of Analysis

This analysis tracks changes in the relationship between income and health over a 7 to 12 year period. For some indicators, this time frame may not be long enough to assess changes in the health status of the population and between income groups. Typically, changes in health outcomes such as chronic disease prevalence and mortality take place gradually, and over a longer period of time. These indicators tend to be influenced by all the determinants affecting a person's health throughout their lifetime, and it may take decades before outcomes are detected in the population. Changes in other indicators, including health-related behaviours and some health outcomes, can be seen over a shorter timeframe. Readiness to Learn, a predictor of children's future success, is an example of an indicator that tends to change over a short time period because it reflects early childhood, which is a time of important and rapid development.

Timeliness of Data

The measurement of the relationship between income and health in this analysis is influenced by the timeliness of census data collection. Health status data for all except one indicator (Readiness to Learn) in this report are collected and available on an annual basis, however, population counts used as denominator data are collected in five year intervals through the Canadian Census (annual estimates of population counts are not available at the census tract level in Toronto). For this analysis, multiple years of health status data we're assigned to a population denominator which is only updated every five years. To address this limitation, health status data in this analysis were matched to denominator data from the closest census year, for a maximum of two years before or after the census year. However, health outcomes occurring in years furthest from the census year may experience a slight mismatch between numerator and

denominator. Apparent changes in rates over time may also be influenced by updates to the denominator, as the sudden addition of 5 years of additional population growth in the denominator may artificially lower rates.

In 2010, the federal government replaced the mandatory long form census with the voluntary National Household Survey (NHS). The voluntary nature of the NHS had serious negative implications for data quality, reliability and comparability over time. Some groups of people tend to respond to voluntary surveys less than others, which introduces bias. Populations that have historically been less inclined to respond to surveys include immigrants, Aboriginal people and those with lower education and income levels. For these reasons, the NHS was not used for this analysis. The demographic indicators which described the 2010 LIM income quintiles found in Table 1 instead used data from the 2006 long-form Canada Census. This has introduced a lag in the timeliness of the data used to describe the certain demographic characteristics.

Other limitations related to specific data sources can be found in Appendix B.

Appendix A: Health Status Indicators

Breast Cancer Incidence

3 years of data combined for each time point, 4 time points in total.
Initial time point: 1999 to 2001 combined; most recent time point: 2008 to 2010 combined.
Data source: Cancer Care Ontario (Ontario Cancer Registry), 1999-2010, extracted May 2014.
Description: Incidence of breast cancer among females, based on International Classification of Diseases, 9th revision (ICD-9). Measured as rate per 100,000 population per year.

Cardiovascular Disease Premature Mortality

2 years of data combined for each time point, 4 time points in total
Initial time point: 2003 to 2004 combined; most recent time point: 2009 to 2010 combined
Data source: Ontario Mortality Data 2003-2010, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: September 2014.
Description: Death occurring before the age of 75 years, where cardiovascular disease was recorded as the leading cause. Measured as rate per 100,000 population per year.

Childhood Unintentional Injury Hospitalizations

2 years of data combined for each time point, 5 time points in total.
Initial time point: 2003 to 2004 combined; most recent time point: 2011 to 2012 combined.
Data source: Inpatient Discharges 2003-2012, IntelliHEALTH ONTARIO, Ontario Ministry of Health and Long-Term Care, Date Extracted: April 2014.
Description: Hospitalizations for unintentional injuries among children aged 0 to 14 years old, based on International Classification of Diseases, 10th revision, (ICD-10). A hospitalization occurs when a patient is admitted as an inpatient to a hospital after being seen in the emergency department for an unscheduled visit. Unintentional injuries are injuries from accidental causes, and do not include suicide, self-harm, and violence. Measured as rate per 100,000 population per year.

Chlamydia Infection Among Young Adults

Single year of data for each time point, 7 time points in total.
Initial time point: 2006; most recent time point: 2012.
Data Source: Integrated Public Health Information System (iPHIS), Toronto Public Health, extracted May 13 2013.
Description: Incidence of chlamydia among young adults 15-24 years old. Measured as rate per 100,000 population per year.

Colorectal Cancer Incidence

3 years of data combined for each time point, 4 time points in total.
Initial time point: 1999 to 2001 combined; most recent time point: 2008 to 2010 combined.
Data source: Cancer Care Ontario (Ontario Cancer Registry), 1999-2010, extracted May 2014.
Description: Incidence of colorectal cancer, based on International Classification of Diseases, 9th revision (ICD-9). Measured as rate per 100,000 population per year.

Diabetes Prevalence

Single year of data for each time point, 10 time points in total.
Initial time point: 2003; most recent time point: 2012.
Data Source: Numerator - Ontario Diabetes Database (ODD), Institute for Clinical Evaluative Sciences (ICES). Denominator – Registered Persons Database (RPDB), Ministry of Health and Long-Term Care and ICES.
Description: Prevalence of diabetes among adults age 20 and older with a valid OHIP card. Measured as rate per 100,000 population per year.

Exceeding the Low Risk Drinking Guidelines

2 cycles of the Canadian Community Health Survey (CCHS) representing 4 years of data combined for each time point, 3 time points in total.
Initial time point 2001 to 2004 combined; most recent time point: 2009 to 2012 combined.
Data Source: Canadian Community Health Survey, 2001 - 2012. Statistics Canada, Share File, Knowledge Management and Reporting Branch, Ontario Ministry of Health and Long-Term Care.
Description: The proportion of the adults age 20 to 64 who self reported exceeding the Canadian Centre for Substance Abuse's Canadian Low-Risk Drinking Guidelines, defined as drinking: no more than ten drinks in the previous week, more than two drinks

on a single day in the previous week, consuming alcohol on six or seven days in the previous week, and/or five or more drinks on one occasion at least once per month for the last 12 months for females; and more than 15 drinks in the previous week, more than three drinks on a single day in the previous week, consuming alcohol on six or seven days in the previous week, and/or five or more drinks on one occasion at least once per month for the last 12 months for males. Women who were pregnant or breastfeeding were excluded from this indicator.

Fair and Poor Self Rated Health

2 cycles of the Canadian Community Health Survey (CCHS) representing 4 years of data combined for each time point, 3 time points in total.
Initial time point 2001 to 2004 combined; most recent time point: 2009 to 2012 combined
Data Source: Canadian Community Health Survey, 2001 - 2012. Statistics Canada, Share File, Knowledge Management and Reporting Branch, Ontario Ministry of Health and Long-Term Care.
Description: The proportion of the population age 20 to 64 who answer "Fair" or "Poor" when asked: "In general, would you say your health is: 'excellent', 'very good', 'good', 'fair', or 'poor'?"

Fall-related emergency department visits among older adults

2 years of data combined for each time point, 5 time points in total.
Initial time point: 2003 to 2004 combined; most recent time point: 2011 to 2012 combined.
Data Source: Ambulatory Emergency External Cause 2003-2012, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: April 2014
Description: Emergency department visits for falls among adults 65 years and older. An ED visit occurs when a person presents the emergency department, or a hospital-based urgent care centre, either by their own means or by ambulance, and without a prior scheduled appointment. Measured as rate per 100,000 population per year.

Gonorrhea Infection Among Young Adults

2 years of data combined for each time point, 4 time points in total.
Initial time point: 2005 to 2006 combined; most recent time point: 2011 to 2012 combined.
Data Source: Integrated Public Health Information System (iPHIS), Toronto Public Health, extracted May 13 2013.

Description: Incidence of gonorrhea among young adults 15-29 years old. Measured as rate per 100,000 population per year.

Life expectancy

2 years of data combined for each time point, 4 time points in total.
Initial time point: 2003 to 2004 combined; most recent time point: 2009 to 2010 combined.
Data source: Ontario Mortality Data 2003-2010, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: September 2014.
Description: Life expectancy represents the average number of years a group born at a specific time will live, and is based on the current death rates across age groups. Measured as years of life expected at birth.

Lung Cancer Incidence

3 years of data combined for each time point, 4 time points in total.
Initial time point: 1999 to 2001 combined; most recent time point: 2008 to 2010 combined.
Data source: Cancer Care Ontario (Ontario Cancer Registry), 1999-2010, extracted May 2014.
Description: Incidence of lung cancer, based on International Classification of Diseases, 9th revision (ICD-9). Measured as rate per 100,000 population per year.

Premature Mortality

2 years of data combined for each time point, 4 time points in total.
Initial time point: 2003 to 2004 combined; most recent time point: 2009 to 2010 combined.
Data source: Ontario Mortality Data 2003-2010, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: September 2014.
Description: Death occurring before the age of 75 years, from all recorded causes. Measured as rate per 100,000 population per year.

Overweight and Obesity

2 cycles of the Canadian Community Health Survey (CCHS) representing 4 years of data combined for each time point, 3 time points in total.
Initial time point 2001 to 2004 combined; most recent time point: 2009 to 2012 combined.

Data Source: Canadian Community Health Survey, 2001 - 2012. Statistics Canada, Share File, Knowledge Management and Reporting Branch, Ontario Ministry of Health and Long-Term Care.
Description: The proportion of the population age 20 to 64 who are overweight or obese, based on self reported height and weight measurements. Overweight and obesity are estimated using a scale called the Body Mass Index (BMI). BMI is calculated by dividing an individual's weight in kilograms by the square of their height in metres. According to the International Classification System outlined by the World Health Organization (WHO), a BMI of under 18.5 is considered underweight, 18.5 to 24.9 represents healthy weight, 25.0 to 29.9 is overweight, and 30.0 and greater is obese. Pregnant women and individuals reporting height under 0.91m or over 2.11m height are excluded. BMI can misclassify adults who are naturally very lean or who have very high muscle mass. Some evidence has shown that the risk factors associated with overweight and obesity correspond to different BMI cut-offs for different ethno-racial groups, particularly Asians, who may be at a higher risk at a lower weight. However, the WHO recommends the cut-offs used here as the international standard.

Physical Inactivity

2 cycles of the Canadian Community Health Survey (CCHS) representing 4 years of data combined for each time point, 3 time points in total.
Initial time point 2001 to 2004 combined; most recent time point: 2009 to 2012 combined.
Data Source: Canadian Community Health Survey, 2001 - 2012. Statistics Canada, Share File, Knowledge Management and Reporting Branch, Ontario Ministry of Health and Long-Term Care.
Description: The proportion of the population age 20 to 64 who considered to be physically inactive based on self report physical activity. Physical activity is based on estimates of the total amount of energy used in leisure time per day. This is determined by asking survey respondents how often and how long on average per session they participated in a list of 21 popular physical activities over the past three months. Each activity is assigned an intensity level. The frequency of participation in each activity is multiplied by the average duration and the intensity level, and each activity is then summed to achieve a measure of total daily leisure time energy expenditure in kcal/kg/day. Energy expenditure is categorized into inactive (<1.5 kcal/kg/day), moderately active (>=1.5 & <3 kcal/kg/day), and active (>=3 kcal/kg/day categories. These estimates assume that all activities are performed at a standard intensity level, which in many cases is not true. This reduces the validity of this measure. This estimate also does not capture physical activity done at work or as housework. Because physical activity for all purposes reduces risk of health problems, measures of leisure time and

transportation activity alone may not be sufficient to determine the health risk associated with physical inactivity in the population.

Readiness to Learn

Single point in time, representing the 2010-2011 school year.
Data Source: Offord Centre for Child Studies, McMaster University, 2013 .
Description: Percent of kindergarten children who are considered vulnerable in terms of readiness to according to the Early Development Instrument (EDI). The EDI evaluates readiness to learn among senior kindergarten students attending public and Catholic schools by looking at five domains: physical health and well-being, social knowledge and competence, emotional health and maturity, language and cognitive development, and communication skills and general knowledge. 'Vulnerable' children are in the bottom 10th percentile on one or more domains. The rates are based on Ontario cut-off values.
See Appendix B for more details about the EDI.

Singleton Low Birth Weight Rate

2 years of data combined for each time point, 5 time points in total.
Initial time point: 2003 to 2004 combined; most recent time point: 2011 to 2012 combined.
Data source: Inpatient Discharges 2003, Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: April 2014.
Description: live singleton births less than 2500g (5.5 pounds), regardless of gestational age. Measured as rate per 100 singleton births per year.

Smoking

2 cycles of the Canadian Community Health Survey (CCHS) representing 4 years of data combined for each time point, 3 time points in total.
Initial time point 2001 to 2004 combined; most recent time point: 2009 to 2012 combined.
Data Source: Canadian Community Health Survey, 2001 - 2012. Statistics Canada, Share File, Knowledge Management and Reporting Branch, Ontario Ministry of Health and Long-Term Care.
Description: The proportion of the population age 20 to 64 who self reported that the smoke cigarettes either "daily" or "occasionally" when asked the question: "At the present time, do you smoke cigarettes daily, occasionally, or not at all?"

Teen Pregnancy

Single year of data for each time point, 10 time points in total.
Initial time point: 2003; most recent time point: 2012.
Data source: Inpatient Discharges and Hospital and Medical Services Data, 2003-2012; Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: April 2014.
Description: Pregnancies among females 15 to 19 years old. The number of pregnancies is estimated by summing the total number of hospital deliveries (both live and stillbirths) and therapeutic abortions captured by hospital inpatient discharge and ambulatory care data and medical services data which include abortions performed in both abortion clinics and private physicians' offices. The total number of pregnancies is underestimated because spontaneous abortions (i.e. miscarriages) and home deliveries are not captured by the data sources used for this analysis.

Appendix B: Data Sources

Canadian Community Health Survey (CCHS) Data

The CCHS is a joint initiative of Statistics Canada and Health Canada aimed at providing health information at the regional and provincial levels. Data for this cross-sectional survey was collected between January and December, for the specific years used in this report, from persons aged 12 or older living in private occupied dwellings in all provinces and territories. With the exclusion of individuals living on Indian Reserves and on Crown Lands, institutional residents, full-time members of the Canadian Forces, and residents of certain remote regions, the CCHS covered approximately 98% of the Canadian population aged 12 and over.

The survey sampled one randomly selected respondent per household, either through face-to-face or telephone interview. The CCHS is weighed to account for proportional representation of groups with different characteristics, however, it does not always provide a representative picture of the whole population. The CCHS tends to under-represents people of low income, people with low education, and new immigrants. The income and health behaviour data used in this report are also self reported. Therefore, these data may be subject to inaccurate recall and social acceptability bias

The CCHS excludes people living on Indian reserves and Crown Lands, residents of institutions, full-time members of the Canadian forces, and some residents in remote areas. The telephone frame methodology used by the CCHS only covers people with listed phone numbers and who are at home when the surveyor calls. Undercoverage of potential respondents is a growing problem with the increasing popularity of cellular phones. This undercoverage can bias the results. Complex, multi-stage weighting strategies are used to moderate these and other biases (i.e., non-response).

Three time periods of the CCHS data was used: 2001-2004, 2005-2008 and 2009-2012. Several years of CCHS data were combined to stabilize the estimates in this report. This means that changes over time will not be seen, however the larger sample allows for potential patterns in the data across income categories to be shown.

Cancer Incidence Data

Cancer Care Ontario (CCO) operates the Ontario Cancer Registry (OCR). The OCR is the largest patient-specific population-based cancer incidence registry in Canada and it covers the entire province of Ontario, registering all newly-diagnosed cases of invasive neoplasia, except non-melanoma skin cancer or cancer deaths. The Registry is

compiled by linking administrative data, clinical and demographic data from four major data sources:

1) Hospital discharge and ambulatory care records with cancer diagnoses in the CIHI (Canadian Institute of Health information) DADS and NACRS databases (Discharge Abstract Database and National Ambulatory Care Reporting System)
2) Pathology reports with any mention of cancer from hospitals and private laboratories
3) Records from Regional Cancer Centres or Princess Margaret Hospital
4) Ontario death certificates with cancer as the underlying cause of death

All cancer-related data on these records are reviewed by an electronic system of medical logic to produce consolidated information about the cancer diagnosis. Cancer diagnoses are classified according to the International Classification of Diseases for Oncology, 3rd edition (ICDO-3). Based on an independent case-finding study conducted in Ontario in 2002, the weighted estimate of the completeness of ascertaining histologically confirmed cases (all sites combined), diagnosed in 1996, was 98.5%. The diagnostic criterion method estimates that the percentage of registered cases that have been microscopically verified is 83.0% for women and 82.0% for men.

Census Data

Conducted by Statistics Canada, the Census provides information about Canada's demographic, social and economic characteristics. The Census is conducted every five years. The most recent census took place on May 16, 2011.In May 2011, households received either a letter or a questionnaire package. All households were asked to complete 10 questions on basic topics such as relationship to Person 1 and age, sex, marital status, language, and consent to future releases of personal information. For the first time, there was no mandatory long form; the questions normally asked on the census long form were asked in a voluntary survey instead—the National Household Survey (NHS)—which was distributed approximately four weeks after the census.

The Census includes every person living in Canada on Census Day, as well as Canadians who are abroad. Information can also be obtained for smaller levels of geography such as cities and areas within a city.

Although Statistics Canada attempts to count every person, some people or groups are missed or underrepresented in each Census. For example, people may be traveling, some dwellings are hard to find, some are homeless and some individuals or groups refuse to participate. Statistics Canada takes this into account and estimates an 'under coverage' rate. Statistics Canada reported a 2011 population for the City of Toronto of

2,615,060. When the under coverage is taken into account, however, the population could be about 2,704,622.

> **Census Tract:** A small geographic area in and urban centre with an urban core population of 50,000 or more. Each census tract has a population of approximately 2,500 to 8,000. In 2011 there were 544 census tracts in Toronto.

Diabetes Data

Diabetes rates were calculated at The Institute for Clinical Evaluative Sciences (ICES) using the Ontario Diabetes Database (ODD) and the Registered Persons Database (RPDB) calculated the diabetes information presented in this report. The ODD is maintained at ICES through a comprehensive research agreement with the Ontario Ministry of Health and Long-Term Care (MOHLTC). The Ontario Diabetes Database employs a validated algorithm to identify people with diabetes using data on hospitalizations and physician visits. Hospital discharge abstracts, collected by the Canadian Institute for Health Information (CIHI), were used to identify people who had been hospitalized with a new or pre-existing diagnosis of diabetes, based on a specific code (250.x) in any diagnostic field. Physician claim records held by the Ontario Health Insurance Plan (OHIP) were also used to identify any individuals with visits to a physician for diabetes (diagnostic code 250). Individuals were considered to have diabetes if they had at least one hospitalization or two physician service claims over a two-year period. This algorithm has been validated and found to have sensitivity and specificity rates for a diabetes diagnosis of 86 percent and 97 percent, respectively (i.e., the algorithm correctly identifies 86 percent of people who have diabetes, and 97 percent of those identified who actually have diabetes, based on data in their health records). Once it has been registered in the ODD, a person's record remains there until death or migration out of the province.

The Registered Persons Database (RPDB) is an electronic registry of all individuals who are eligible for coverage under the Ontario Health Insurance Plan (OHIP) in a given year. Since numerators for diabetes rates are linked to addresses in the RPDB, the RPDB was used to create the population denominator. While patients' addresses are normally updated at the time of hospitalization, there is no mechanism within the OHIP system to routinely update all addresses.

For this reason, RPDB addresses, which are the only ones available for OHIP claims, can be outdated as far back as 1990. The RPDB may include people who left Ontario but did not inform the MOHLTC; it may also include a few people who died but could not be linked to RPDB files. To exclude these persons, only those individuals who had one or more health claims in the previous three-year period and who possessed a valid Ontario postal code were included in the analyses.

Early Development Instrument (EDI) Data

Early Development Instrument (EDI) is a population-based measure of children's readiness to learn that is completed by teachers for all children in senior kindergarten (SK). The EDI is an assessment of children's optimal developmental health in five different domains: physical health and well-being; social competence; emotional maturity; language and cognitive development; and communication skills and general knowledge. Examples of the topics covered in the different domains include:

- Physical health and well being (Child is healthy, independent, ready each day, etc);
- Social competence (Child gets along with peers, follows directions, is self confident, etc);
- Emotional maturity (Child helps others, is patient, not aggressive or anxious, etc);
- Language and cognitive development (Child is interested in reading and writing, can count and recognize numbers, shapes, etc); and,
- Communication skills and general knowledge (Child can tell a story, communicate with adults and children, articulate themselves clearly, etc.).

Based on teacher's responses to the survey questions for each student, a score is calculated between 0 and 10 for the 5 domains. A score of '10' is the best possible score. Children who score at or below the 10th percentile cut-off for that domain are categorized as “vulnerable” for that given EDI domain. For the purposes of this report and for tracking change over time in the future, the Ontario baseline results were used for the 10th percentile cut-off points.

The interpretation of “vulnerable” is that the child is, on average, more likely to be limited in his or her development in this area than a child who receives scores above the 10th percentile cut-off. Children who score at or below the 10th percentile cut-off on one or more EDI domains are categorized at vulnerable in terms of school readiness or "not ready to learn".

Readiness to learn does not guarantee academic success but students with low EDI scores are much less likely to met expectations on standardized testing in later years compared with those students with high EDI scores.[i,ii]

[i] Brinkman, S., Gregory, T., Harris, J. et al. (2013) Association Between the Early Development Instrument at Age 5, and reading and Numeracy Skills at Age 8, 10 and 12: a Prospective Linked Data Study. *Child Indicators Research* 6, 695-708.

[ii] Calman, R.C.,Crawford, P.J. (2013) Starting Early: Teaching, Learning and Assessment: Linking early-childhood development with academic outcomes – a detailed look. Report prepared for the Education Quality and Accountability Office (EQAO).

Although the EDI is completed for individual children, it is not a diagnostic tool and the results are intended to be aggregated at various levels (e.g., neighborhood, community) to assess the readiness to learn of the group. Research suggests there are considerable individual differences in teachers' ability to evaluate readiness to learn relative to direct, child-based assessments and therefore comparisons at the individual, classroom and school level are not considered to be reliable.[i]

The Early Development Instrument is completed for children attending publicly funded schools in the City of Toronto including Toronto District School Board (TDSB), Toronto Catholic District School Board (TCDSB), Conseil Scolaire de district du Centre Sud-Ouest (CSDCSO) and Conseil scolaire du district catholique du Centre-Sud (CSDCCS). The Toronto cohort does not include children who attend a private school; or are home schooled; or who live in Toronto but attend a school outside of the City.

Results are based on all valid responses for non-special needs children living within the City of Toronto. It excludes children who have been in class less than one month or whose attendance status is unknown or who are missing information for two or more EDI domains. The Toronto sample for the 2010/2011 school year consisted of 21,848 non-Special Needs SK students.

For income quintiles, five groups, each containing approximately 20% of the population, were created by ranking Toronto's census tracts based on the percentage of residents living below the Statistics Canada after-tax Low Income Measure (LIM), based on 2010 Tax filer (T1FF) data. Quintile 1 includes the census tracts with the highest percent of people living below the LIM and represents the lowest income quintile. Quintile 5 includes the census tracts with the lowest percent of people living below the LIM, making it the highest income quintile. LIM is an income level set at 50% of the median family income in Canada in a given year, adjusted for household size.

EDI data has been collected in Toronto for three cycles: 2004/5, 2008/09 and 2010/2011 school years. The methodology for collection and analysis of the EDI changed slightly after the 2004/5 cycle, so time trend analysis for this indicator is not possible.

Results of the EDI can be interpreted in two ways: prospectively, i.e., how children's school readiness will impact their success at school and what can be done to improve this outcome; and retrospectively, toward the early years of future cohorts. Prospective applications have established the predictive validity of EDI in relation to subsequent school achievement scores during grades three and six. The retrospective view takes a

[i] Hymel, S., LeMare, L., McKee. (2011) The Early Development Instrument: An Examination of Convergent and Discriminant Validity. *Social Indicators Research* 103: 267-282.

preventive as opposed to a curative approach in supporting the improvement of the first 5 years of life to ensure a positive impact on development. Children's readiness to learn is influenced by a child's early years experience including family and community factors that shape their development. Early intervention can make significant impact on academic performance later in life.

For more information on the EDI, consult the Offord Centre for Child Studies, www.offordcentre.com

Emergency Department Visits

National Ambulatory Care Reporting System (NACRS) contains administrative, clinical, financial, and demographic data for ambulatory care visits in Canada. Ambulatory care visits are a source of morbidity information available through IntelliHEALTH. Ambulatory visits include emergency department visits, day procedures, medical day/night care, and high-cost ambulatory clinics including dialysis, cardiac catheterization, and oncology (including all regional cancer centres).

The "Main Problem" represents the patient's main problem or diagnosis as determined during the ED visit. All visits have one main problem and up to nine other problems. Unlike the inpatient data, the only diagnosis types available are ‘main' or ‘other'. Problems/diagnoses are reported using ICD-10-CA.

Hospitalization Data

The hospitalization data was obtained from the Discharge Abstract Database System (DAD) originally developed in 1974 by the Ministry of Health of Ontario and the Canadian Institute for Health Information (CIHI). It contains demographic, administrative and clinical data for all acute care discharges (including hospital delivery and birth data) in Ontario. The data is reported for completed cases only (discharges). Hospitals do not report on cases that are still being treated.

After each patient is discharged, a medical records coder at the hospital completes an abstract according to the instructions outlined in the CIHI Abstracting Manual. Hospitals submit data to CIHI in one-month batches. After validity checks and cleaning, CIHI supplies the year-to-date (current) file to the MOHLTC.

Hospitalization data was used for hospitalization rates, as well as low birth weight and teen pregnancy indicators.

Mortality Data

The Office of the Registrar General obtains mortality data from death certificates that were completed by physicians. Residential information is based on the deceased person's geographic place of residence. Since 1993, Ontario residents who died outside of the province are excluded from Death Database. Causes are those that initiated the sequence of morbid events leading to death, and co-morbidity can contribute some uncertainty as to underlying cause(s) of death.

Three years of data were required to be aggregated to support the analysis conducted for this report across Low Income Measure(LIM) quintiles. Over recent years the completeness and accuracy of address information, especially postal code, in the mortality files have improved. Over 15% of records were either missing a postal code or had an invalid postal code in the 2002 data file. Therefore mortality records from the years 2001, 2003 and 2004 were used in this report due to the level of completeness of the postal code data.

The change in coding from the ICD-9 to the ICD-10 coding standards in 2000 may affect the comparability of rates with those coded using the previous version of the ICD coding standard. The data used in this report for the years 2001, 2003 and 2004 are not directly affected by the change in coding standards. However death data for 2005 to 2010 are affected by the change in coding standards.

Reportable Communicable Disease Data

Toronto Public Health is responsible for collecting case information on reportable communicable diseases. Physicians and laboratories are required to report specific communicable disease cases that fulfill laboratory or clinical case definitions and are listed as reportable by the Health Promotion and Protection Act.

There is possibility of considerable under reporting of cases for some communicable diseases.

Tax Filer Data (Low Income Measure)

Tax filer data is the commonly used term for a set of standardised data products generated from T1 tax files by Statistics Canada's Income Statistics Division (ISD). The formal term is "Annual Estimates for Census Families and Individuals". Income data are collected from all Canadians who filed a T1 tax return. Tax filers from the same family are linked based on common links (e.g. spousal SIN, name, address, Canada Child Tax Benefit data. Tax filer data provides income statistics by family size, age and sex. Tax filer data is very accurate and has very good coverage of the population. It is

also available annually and at the level of geography to do income quintile analysis. It uses the Low Income Measure (LIM) as its measure of low income, rather that the Low Income Cut-off (LICO).

The LIM is a strictly relative measure, based only on the current median income of the population and family size. It is defined as less than half the median family income (income adjusted for the family size). LIM is a more recent measure in Canada (produced since 1991), introduced to be a complement to the LICO and for use in international comparisons. LIM bases low income on census families. People are either defined as living in a census family (couples (married or common law); parent(s) and children living at the same address) or not living in a census family. Low income is based on family income for census families or individual income for people not living in census families.

Teen Pregnancy Data

Teen pregnancy is based on hospital delivery data and therapeutic abortion data for women aged 15 to 19 years in 2000 to 2012.

Hospital delivery data: captures the number of women who deliver at least one live or stillborn infant in an Ontario hospital. These deliveries are coded to the home address of the woman. While it does not capture at-home births, it does include unregistered births, thereby making it more complete than vital statistics data. Most teen deliveries would occur in a hospital. Records with missing, incorrect or non-Toronto postal codes could not be allocated to a census tract.

Therapeutic abortion data: captures data on the number of women who undergo a therapeutic abortion in a hospital or a clinic in Ontario.