Understanding our Communities' Health

Current Health Status of People Residing in the Southwestern Public Health Region

Population Health Assessment
Southwestern Public Health
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Contents

Please see the technical appendix for a more detailed description of the methods, including data sources, measures and limitations.

The references for this report are at the end of each section, except for demographics and health equity which function as one chapter. Therefore, the reference, figure and table numbering restarts at one in each section. This was done to ensure that program areas could use the sections as stand-alone chapters.

Summary

This population health assessment report highlights key health issues in the Southwestern Public Health region, which includes Oxford County, Elgin County and the City of St. Thomas. Based on the most current local data, the following should be areas of focus when developing the new Southwestern Public Health (SWPH) strategic plan, program plans and implementing interventions:

Health equity

- The living wage in the County of Elgin and City of St. Thomas ($16.03/hour) and Oxford County ($17.34/hour) is higher than the current provincial minimum wage ($14.00/hour)
- Almost one-quarter (24.2%) of people living in the SWPH region had less than a high school education, which was higher than Ontario (17.5%)
- In the SWPH region, there are pockets of residential instability (i.e., more people who do not own houses, who move frequently and who live alone) in urban areas, which has negative effects on health (e.g., potentially avoidable deaths)
- In the SWPH region, there are areas with more material deprivation (i.e., more people who cannot afford basic resources and services such as housing, food and clothing) in urban centres and in the municipalities of Malahide and Bayham, which has negative effects on health (e.g., mental health emergency department visits)

Mental health

- A higher proportion of women in the SWPH region reported concerns about depression during pregnancy (13.6%) and a history of postpartum depression during pregnancy (5.4%) than in Ontario (7.5% and 2.1%, respectively)
- The rates of emergency department visits and hospitalizations for suicide and self-harm were higher in the SWPH region compared to Ontario over the last three years (2015 to 2017)

Chronic disease

- The leading cause of death in the SWPH region between 2008 and 2012 was ischemic heart disease

- The rate of hospitalizations due to cardiovascular diseases was higher in the SWPH region than in Ontario between 2013 and 2017
- The rate of hospitalizations due to ischemic heart disease was higher in Oxford County compared to both Elgin St. Thomas (for the years 2015 and 2016) and Ontario (2013 onwards)
- The rate of hospitalizations due to chronic obstructive pulmonary disease (COPD) was higher in Elgin St. Thomas compared to Ontario between 2012 to 2016, whereas the rate in Oxford County was similar to Ontario during this time
- The rate of hospitalizations due to diabetes was higher in the SWPH region compared to Ontario from 2014 to 2017

Substance use

- From 2015 to 2016, there were higher proportions of adults who were current smokers (daily and occasional) (23.0% versus 18.0%), daily smokers (16.8% versus 12.9%) and former smokers (29.4% versus 24.0%) in the SWPH region compared to Ontario
- The proportion of smoke-free homes was lower in the SWPH region compared to Ontario (85.7% versus 89.6%)
- More people residing in the SWPH region used marijuana or hashish in their lifetime compared to Ontario (34.6% versus 30.1%)
- Rates of impaired driving charges from alcohol and/or drugs were higher than Ontario in parts of Oxford County (South-West Oxford and Zorra) and the City of St. Thomas from 2013 to 2017

Injuries

- Compared to Ontario, people living in the SWPH region had over 2x the rate of unintentional injuries and 1.5x the rate of motor vehicle collisions attributable to alcohol
- The rates of emergency department visits and hospitalizations for falls, transportation accidents and being struck by or against an object were higher in the SWPH region compared to Ontario over the last five years (2013 to 2017)
- The rates of emergency department visits for neurotrauma (including traumatic brain injuries, concussions and spinal cord injuries) were higher in the SWPH region compared to Ontario over the last five years (2013 to 2017)

- From 2013 to 2017, the five-year average rate of hospitalizations for concussions was higher in the SWPH region than in Ontario (8.3 versus 4.2 per 100,000, respectively)
- From 2015 to 2016, a higher proportion of people living in the SWPH region reported that they had a sunburn in the past 12 months compared to Ontario (44.6% versus 31.7%)

Physical activity and healthy weights

- A lower proportion of adults in the SWPH region (63.7%) were considered active or moderately active compared to Ontario (69.3%) and a higher proportion of adults in the SWPH region (36.4%) were considered somewhat active or sedentary compared to Ontario (30.7%)
- Youth in Elgin St. Thomas spent less time travelling in active ways (91.6 minutes) in the last seven days compared to youth in both Oxford County (351.5 minutes) and Ontario (227 minutes)
- A higher proportion of adults, aged 18 and over, were classified as obese in the SWPH region (28.7%) compared to Ontario (19.5%)

Infectious diseases

- Incidence rates of influenza in SWPH were lower than Ontario in the 2016/2017 and 2017/2018 flu seasons
- The incidence rate of pertussis (whooping cough) in the SWPH region was higher than Ontario from 2013 to 2016 combined
- Campylobacteriosis was the most commonly reported enteric disease, representing 41.7% of all enteric diseases in the SWPH region between 2013 and 2017
- The five-year average incidence rate of cryptosporidiosis in the SWPH was higher than Ontario (2013 to 2017)
- Vector-borne diseases are relatively rare in the SWPH region, accounting for only 0.37% of all infectious diseases reported

Demographics

In 2016, the total number of people residing in the Southwestern Public Health (SWPH) region was 199,840. The total populations of Elgin County (including St. Thomas) and Oxford County were 88,978 and 110,862, respectively. The population of Elgin County increased by 1.7% from 2011, while the population in Oxford County increased by 4.9% in the same time period.[1]

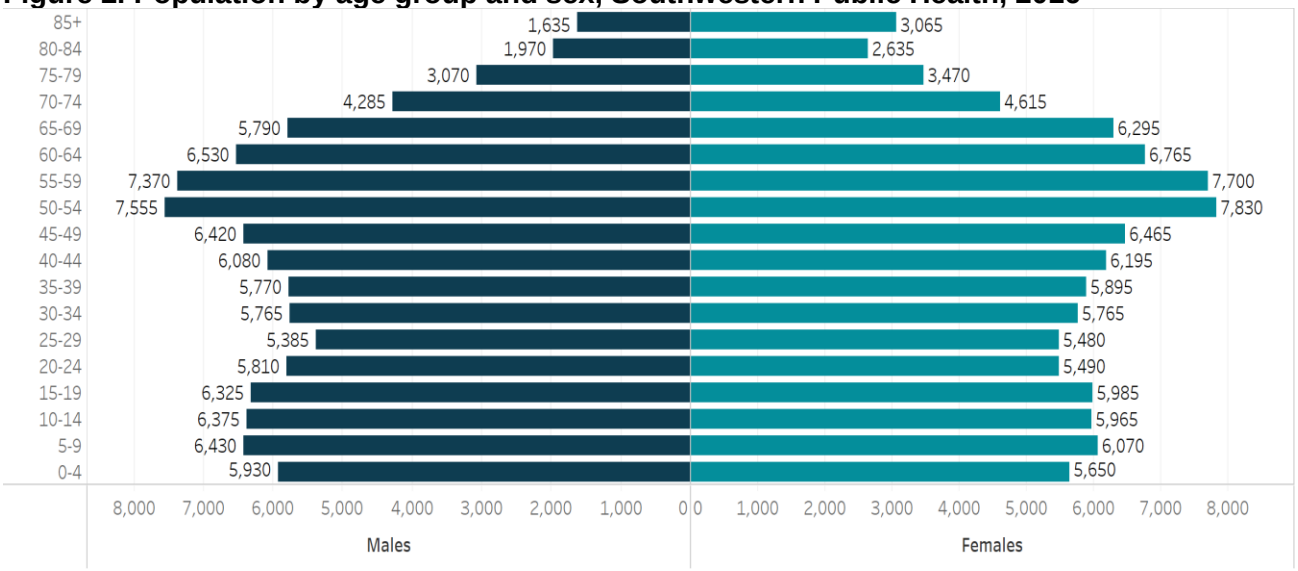
Data source:
The demographics section of the report uses data from the 2016 Census

Figure 1. Population size by municipality, Southwestern Public Health, 2016[1]

Note: the smaller lines within each municipality are dissemination areas, each of which contain 400 to 700 people. Dissemination areas are the smallest standard geographic area reported by Statistics Canada and are stable over time.

The average age of residents living in the SWPH region was 41 years old, which was the same as Ontario.[1] There were nearly twice as many women as men aged 85 years and older (Figure 2). This is not unexpected based on sex differences in mortality rates.[2] Figure 2 also highlights the aging Baby Boomer generation, which in 2016 included people aged 51 to 70 years old.[3] In 2016, about 27% of the total population were Baby Boomers.[4]

Figure 2. Population by age group and sex, Southwestern Public Health, 2016[1]



In the SWPH region, there were slightly more seniors (65 years and older) (18.4%) and children (12.0%) compared to Ontario (Figure 3).

Over half (52.2%) of residents in the SWPH region were married and 22.8% were single; the latter was slightly lower than Ontario (28.3%) (Figure 4).

Figure 3. Population by age group, Southwestern Public Health and Ontario, 2016[1]

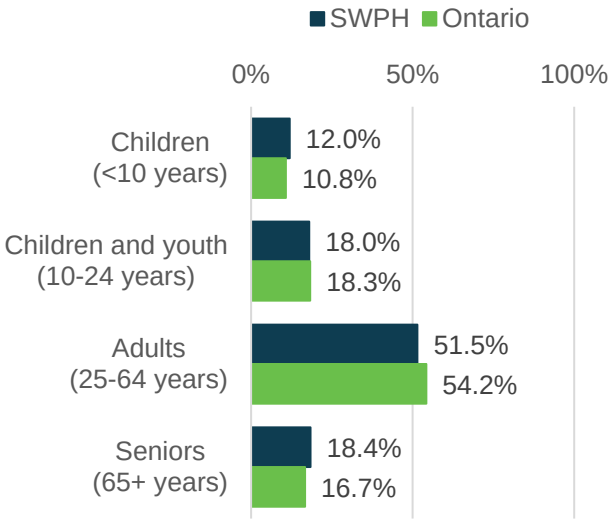
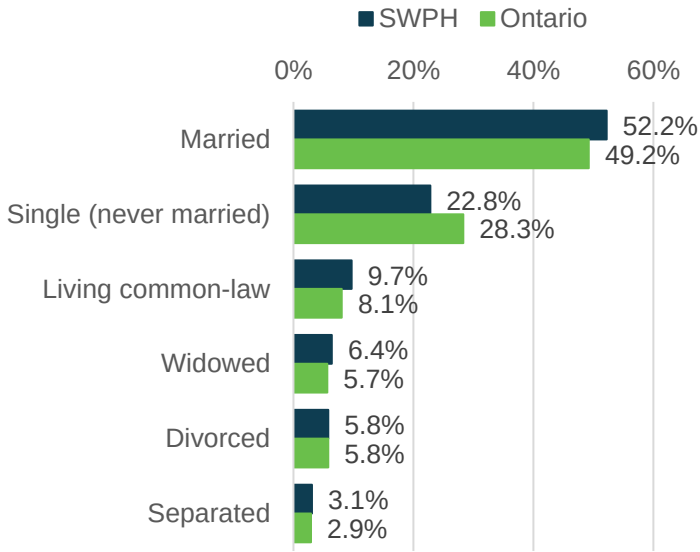


Figure 4. Marital status, Southwestern Public Health and Ontario, 2016[1]



Among families, 14.3% were lone parents which was lower than Ontario (17.1%). In both the SWPH region and Ontario, most lone parents were female (77.8% and 80.4%, respectively).[1]

In the SWPH region, 2.0% of the population identified as Indigenous (i.e., First Nations, Métis, Inuk (Inuit) or a combination of identities).[1] This proportion is comparable to Ontario at 2.8%. It is important to note that people living on two nearby reserves, Chippewas of the Thames First Nation and Oneida Nation of the Thames, are not included in this count because they chose not to complete the Census.[5] Therefore, this data largely represents people living off-reserve.

Slightly more people in the SWPH region (3.1%) identified as a visible minority than identified as Indigenous. This mostly includes people who identify as South Asian, Chinese, Black, Filipino, Latin American, Arab, Southeast Asian, West Asian, Korean or Japanese.[1]

The proportion of visible minorities residing in the SWPH region (3.1%) was much lower than the proportion of visible minorities residing in Ontario (29.3%)[1]

About one in ten (10.8%) people living in the SWPH region reported immigrating to Canada; mostly prior to 1981. Recently, 0.6% of residents (1,200 people) obtained their landed immigrant or permanent resident status between 2011 and 2016. Among all immigrants, the top five places of birth were Mexico, the United Kingdom, Netherlands, the United States and Germany. Among recent immigrants, the top four places of birth were Mexico, the United States, the Philippines and Jamaica. Notably, most people in the SWPH region who immigrated from Mexico now live in Elgin County.[1]

All immigrants

1. Mexico: 18.7%

2. United Kingdom: 17.2%

3. Netherlands: 16.0%

4. United States: 6.1%

5. Germany: 4.3%

Recent immigrants

1. Mexico: 30.8%

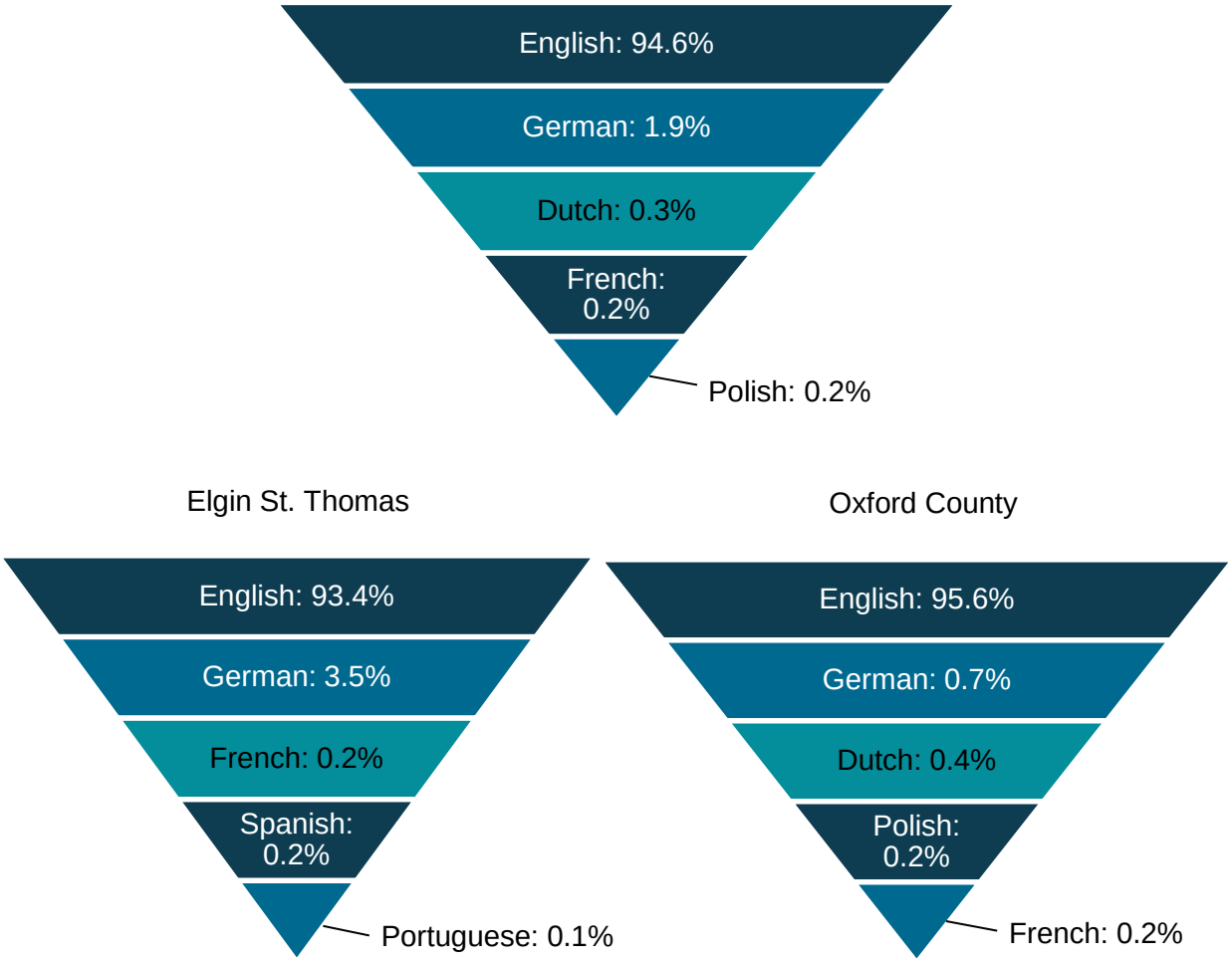
2. United States: 11.3%

3. Philippines: 7.9%

4. Jamaica: 5.0%

Most people living in the SWPH region (94.6%) primarily spoke English at home (Figure 5). German was the second most common language and it was largely spoken by people living in Elgin County. Together, the country of birth and language data highlights the presence of a Low German Speaking Mennonite community in Elgin County. However, the German language Census category includes both high and low German; therefore, it is hard to determine the exact proportion of Low German Speaking Mennonites living in the SWPH region. Dutch was the third most common language spoken at home, which was more common in Oxford County and may partially represent the Netherlands Reformed community.[1]

Figure 5. Language spoken most often at home, Southwestern Public Health, 2016[1]

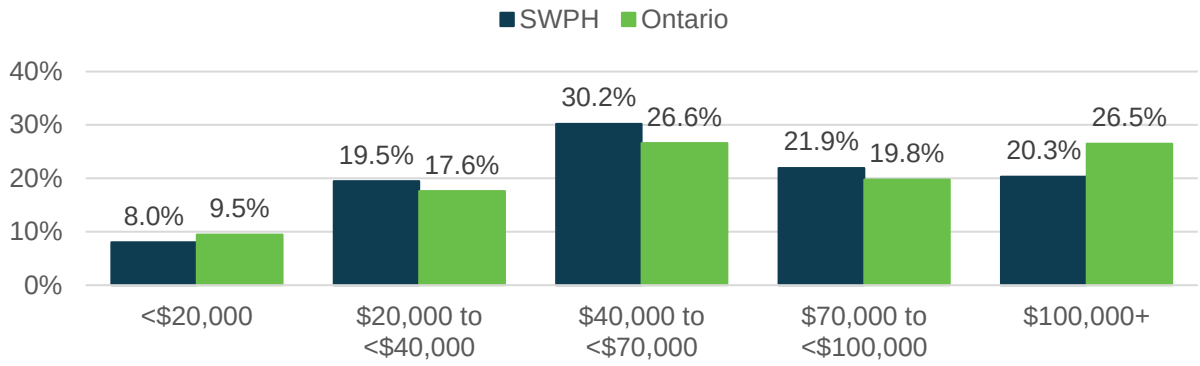


Health Equity

The social determinants of health such as income, education, employment, social status and gender along with lifestyle choices, environmental and biological factors determine the health of the population.[6] Addressing inequities, or unfair and avoidable differences between groups of people, based on these determinants is important for preventing poor health at a population level. In terms of income, people living in the SWPH region had a similar distribution of income compared to Ontario, with slightly fewer people at the high and low ends (i.e., in the less than $20,000 and $100,000 or more categories) (Figure 6).

Data source: The household income and low-income data is from the 2016 Census

Figure 6. Household income after-tax, Southwestern Public Health, 2015[1]



12.4% are living with a low income, which does not reflect the proportion of people struggling to make ends meet

According to the low-income measure after-tax (LIM-AT), an individual earning $22,133 per year or a two-person household earning $31,301 per year would be considered low income.[7] Based on this measure, in 2015, 12.4% of people living in the SWPH region were living with a low income, which was slightly lower than Ontario (14.4%).[1,a] It is important to recognize that the per cent of people living with a low income does not reflect the per cent of the population that is struggling to make ends meet. A household with two adults working full-time and two dependents needs to earn $67,176 per year in Oxford County and $57,853 per year in Elgin St. Thomas to meet their basic needs.[8,9] Meanwhile, the LIM-AT cut-off for a household of four is $44,266 per year.[7]

[a] This estimate cannot be compared to previous years due to changes in methodology between the 2011 National Household Survey and the 2016 Census. Please see the technical appendix for more information.

In 2015, among employed residents of the SWPH region aged 18 years and older, 3.6% or 4,930 people were working poor compared to 5.5% in Ontario.[10] An individual living alone is considered working poor based on an income after tax between $3,001 and $22,133. The working poor estimate excludes individuals that were post-secondary students (part-time or full-time), children of any age living at home and people who did not file their taxes, which may disproportionately include people living with a low income.[10]

Data source: The working poor data is from Tax filer (T1 Family File) records

Among SWPH residents who are 15 years and older and in the labour force, 5.4% were unemployed, which was lower than Ontario (7.4%).[1] Over one-third of residents (34.8%) were not in the labour force.[1] This may be for any number of reasons, such as an illness or disability, home responsibilities, school attendance or retirement.

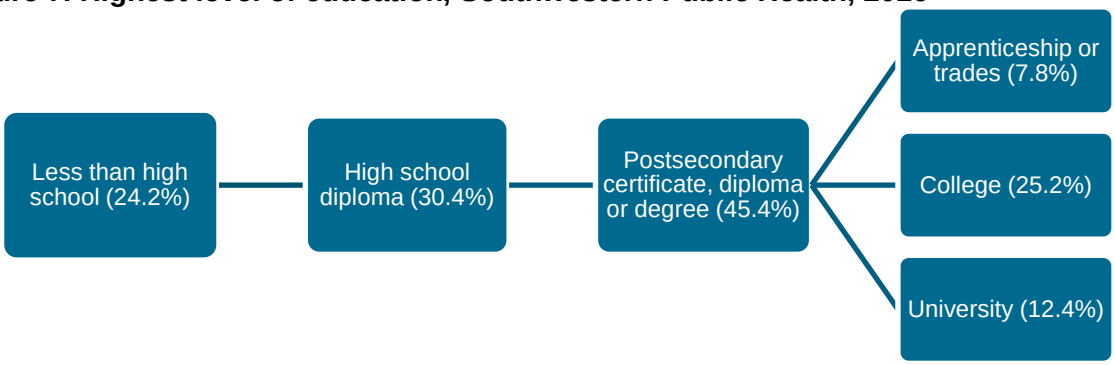
3.6% of people are working poor and 5.4% of people in the labour force are unemployed

In the London economic region (i.e., Elgin, Middlesex and Oxford counties), employers identified that the top five hard to fill positions were for: 1) customer service staff, 2) French teachers, 3) truck drivers, 4) production associates and 5) farm labourers. Some of these positions were hard to fill due to a lack of applicants, qualifications, work experience, interpersonal skills and technical skills.[11] Some of these desired skills may be gained through increasing access to postsecondary education. Almost half of SWPH residents 15 years and older (45.4%) achieved postsecondary education (i.e., a certificate, diploma or degree) through an apprenticeship, college or university (Figure 7). However, some of these positions may be hard to fill due to their unpredictable schedule, low wages and precarious nature (unstable and unprotected).

Data source: The employment and education data are from the 2016 Census and the Employer One Survey

Almost one-quarter of SWPH residents (24.2%) had less than a high school education, which was higher than Ontario (17.5% less than high school, 27.4% high school diploma, 55.1% postsecondary)[1]

Figure 7. Highest level of education, Southwestern Public Health, 2016[1]



Recently, the living wage was calculated for Oxford County and Elgin St. Thomas, and both calculations were higher than the current minimum wage

One strategy to help reduce income inequality and poverty, especially among the working poor, is to promote a living wage. A living wage provides families with sufficient income to cover the costs of daily living such as housing, food, clothing, child care and transportation.[12] Recently, the living wage was calculated for Oxford County and Elgin St. Thomas, and both calculations were higher than the current minimum wage. In Oxford County, a family of four requires a living wage of $17.34 per hour for each parent working full-time (37.5 hours/week).[8] In Elgin St. Thomas, the living wage was slightly lower at $16.03; however, this calculation differed slightly from Oxford County's as it accounted for a child care subsidy.[9] The living wage calculation is a conservative estimate of costs and does not include some important expenses such as debt payments, home ownership, savings for children's education or retirement and pets.[9] However, the living wage calculation highlights that the current minimum wage rate is still not enough for families to make ends meet.

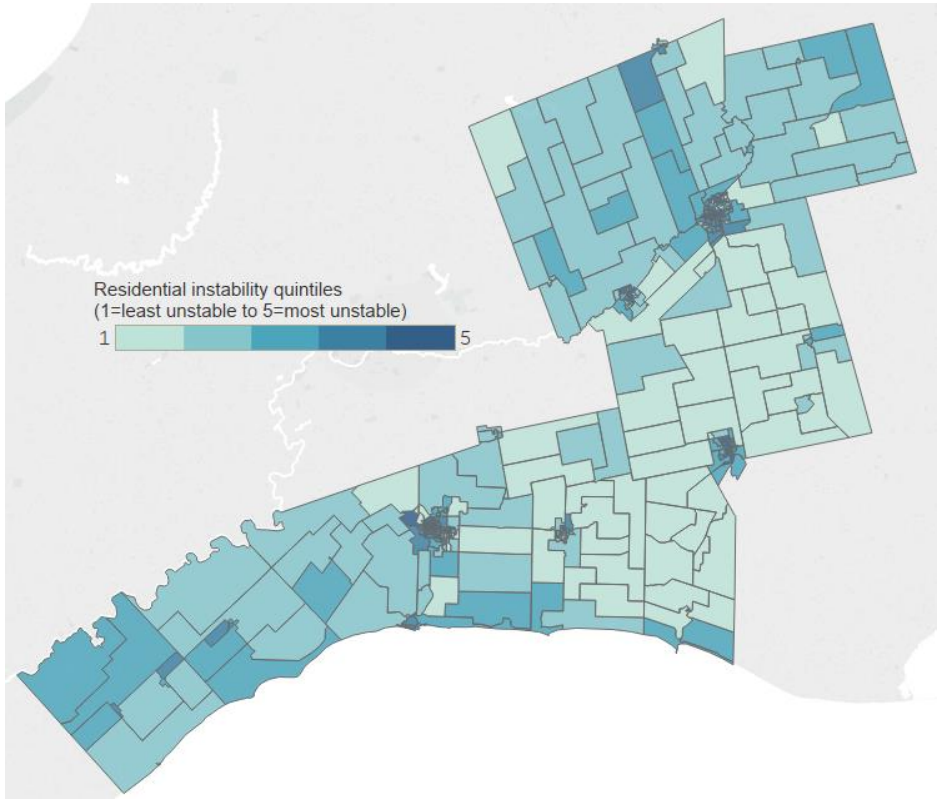
Data source:
The living wage calculation uses many different data sources, as described in the technical appendix. Housing affordability data is from the 2016 Census.

One of the largest costs in the living wage calculation was shelter. In fact, 20.4% of people living in the SWPH region spent 30% or more of their income on shelter costs compared to 27.7% of Ontario residents (excluding farms).[1] This data highlights the importance of affordable housing. Unaffordable housing can lead to precarious housing situations such as rent and utility arrears, evictions and homelessness.[13] Housing first approaches have been shown to effectively reduce homelessness by moving people as quickly as possible from the street or emergency shelters into permanent housing with personalized supports such as support to maintain housing, access training or find employment.[14]

Data source: The 2016 ON-Marg uses data from the 2016 Census

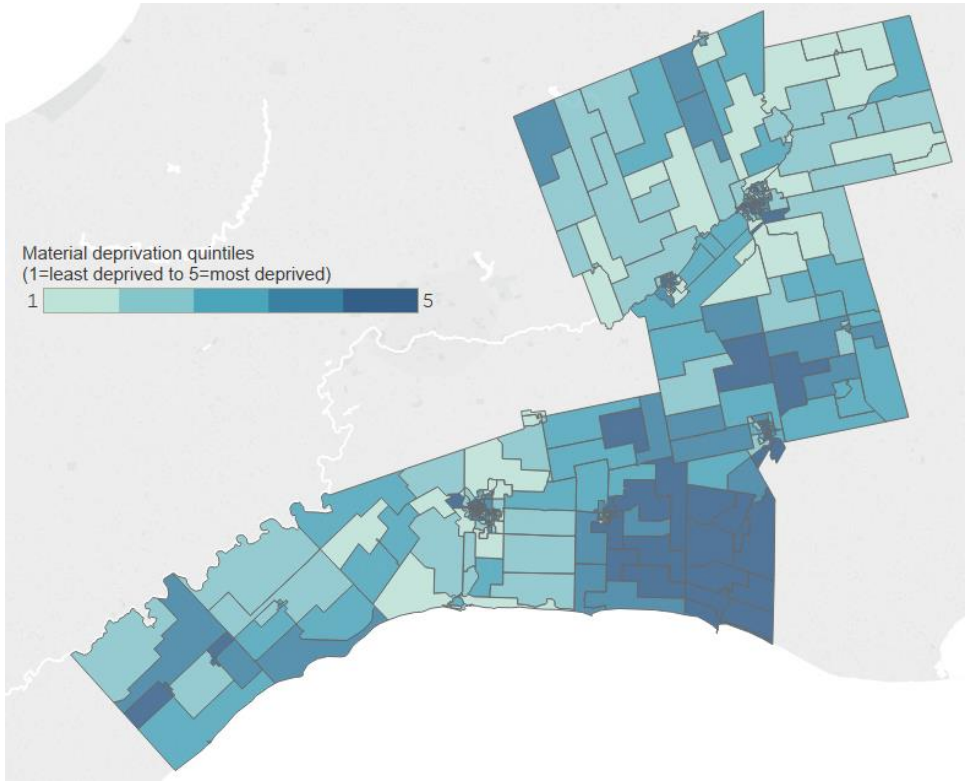
The Ontario Marginalization Index (ON-Marg) is a tool that combines demographic indicators to measure disparities by geography. These indicators are grouped together to create four categories representing different aspects of marginalization: 1) residential instability, 2) material deprivation, 3) dependency and 4) ethnic concentration.[15]

Figure 8. Residential instability by dissemination areas, Southwestern Public Health, 2016[15]



Residential instability includes measures of housing, age and marital status to identify areas with more people who do not own houses, who move frequently and who live alone.[16] In the SWPH region, there are pockets of residential instability in the urban areas (Figure 8). The negative effects of marginalization, including residential instability, on health are numerous. For example, if all areas experienced the same rate of potentially avoidable mortality (i.e., deaths from preventable or treatable causes before 75 years of age) as the most residentially stable area, 126 deaths could be avoided in Elgin County compared to 92 deaths in Oxford County over a two-year period.[17] This equates to a reduction in the rate of deaths by 28.9 per 100,000 population in Elgin County and 19.0 per 100,000 population in Oxford County.[17] Similarly, reducing residential instability could reduce mental health emergency department visits, 100% alcohol-attributable hospitalizations and the number of singleton births (e.g., not twins, triplets) with a low birth weight.[18-20]

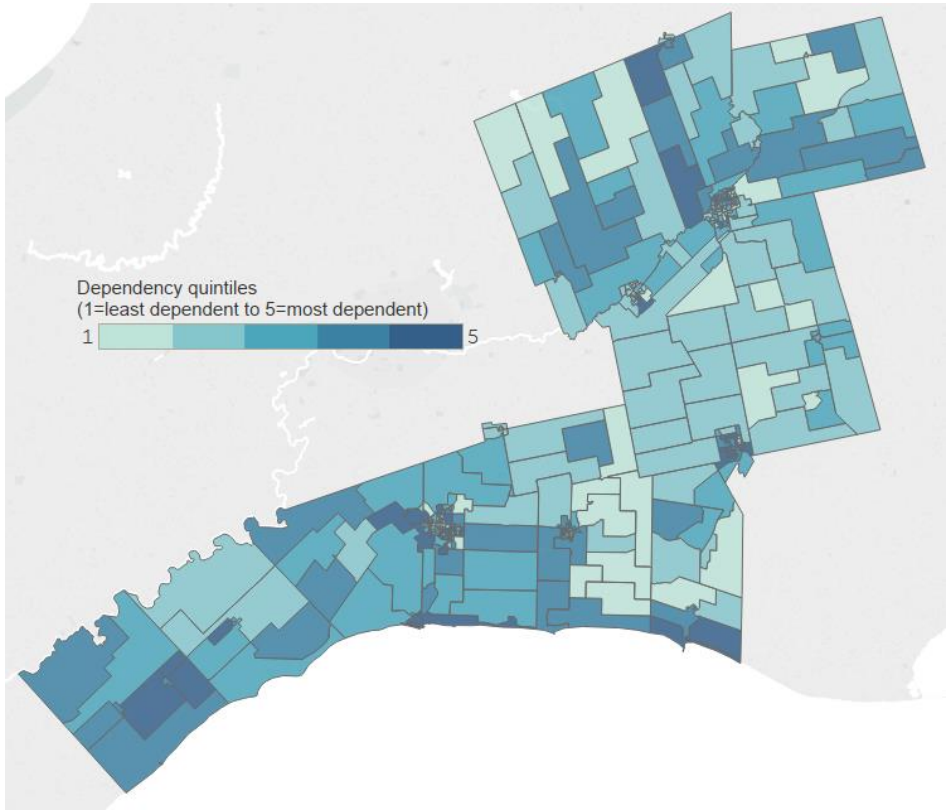
Figure 9. Material deprivation by dissemination areas, Southwestern Public Health, 2016[15]



Material deprivation includes measures of lone-parent families, low income and poor housing conditions.[16] Someone with high material deprivation cannot afford basic resources and services such as housing, food and clothing. In the SWPH region, there are areas with more material deprivation in the urban centres and in the municipalities of Malahide and Bayham (Figure 9). Like residential instability, material deprivation has a negative effect on potentially avoidable mortality. If all areas experienced the same rate of potentially avoidable mortality as the least materially deprived area, then 122 deaths in Elgin County and 73 deaths in Oxford County could be avoided over a two-year period.[17] This translates to a reduction in the rate of deaths by 28.0 per 100,000 population and 15.1 per 100,000 population, respectively.[17]

The negative effects of material deprivation can also be seen in mental health emergency department visits. If all areas had the same emergency department visit rate as the least materially deprived area, there could be 643 fewer mental health emergency department visits in Elgin County and 1,008 fewer in Oxford County over a two-year period.[18] This could reduce the rate of emergency department visits by 31.4 per 100,000 population in Elgin County and by 35.6 per 100,000 population in Oxford County.[18] Similar associations were found for 100% alcohol-attributable hospitalizations.[19] However, the association between material deprivation and low birth weight was not as clear.[20]

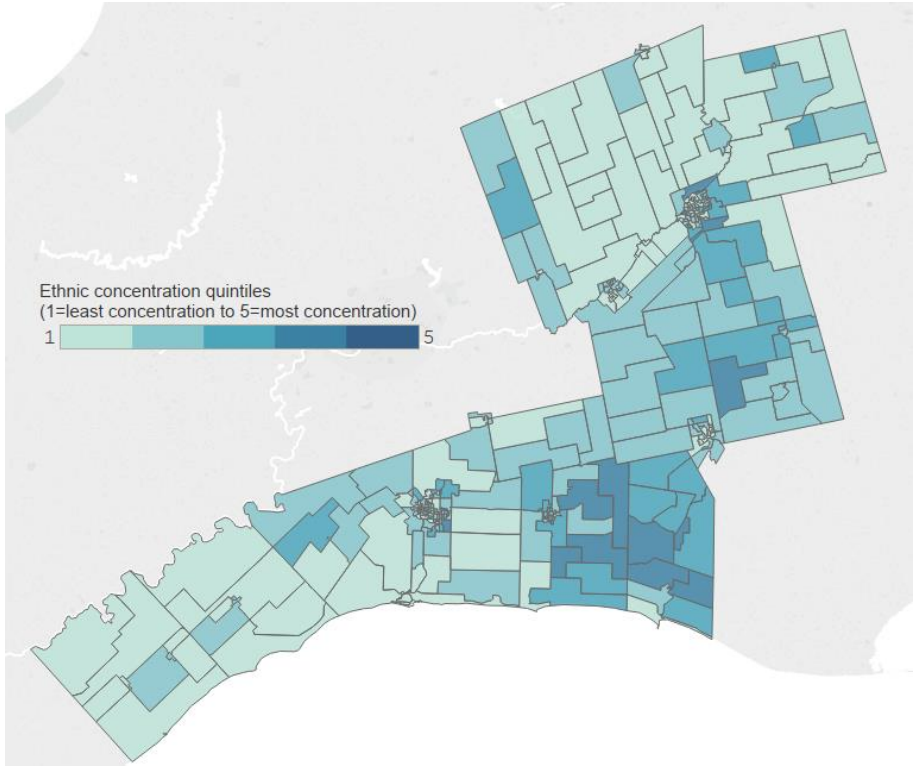
Figure 10. Dependency by dissemination areas, Southwestern Public Health, 2016[15]



Dependency is a measure of the proportion of people who may require more financial and service support because of their age and employment situation. It is measured by combining the overall per cent of seniors in the population, the dependency ratio (i.e., ratio of people aged 0 to 14 years and 65 years and older compared to people aged 15 to 64 years) and the proportion of people not participating in the labour force. Figure 10 shows that there are pockets of dependency throughout the SWPH region. The association between dependency and health outcomes varied between Elgin County and Oxford County. This may be due to differing levels of dependency in each area (i.e., dependency appears to be higher in Elgin County).

Interestingly, dependency appears to have a protective effect on mental health emergency department visits.[18] In particular, if all areas had the same level of dependency as the least dependent area, mental health emergency department visits could increase by 225 visits in Elgin County (11.0 per 100,000 population) and by 14 visits in Oxford County (0.5 per 100,000 population) over a two-year period.[15] The association between dependency and other health outcomes was mixed.[17,19,20]

Figure 11. Ethnic concentration by dissemination areas, Southwestern Public Health, 2016[15]



Ethnic concentration measures the per cent of the population identifying as recent immigrants or visible minorities. Research has shown that recent immigrants tend to have better health than Canadian-born people, but this effect diminishes over time the longer one lives in Canada (i.e., the "healthy immigrant effect").[21] On the other hand, visible minorities may experience poorer health due to experiences of discrimination.[22] The effects of ethnic concentration on health appear to be mixed. Research has shown both positive and negative effects, perhaps due to opposing protective and harmful factors (e.g., social integration versus discrimination).[23] This research acknowledges that there are also regional and contextual factors that influence the effect of ethnic concentration on health; therefore, the effects may vary between different ethnic groups.[23]

Compared to the province, most of the SWPH region had very little ethnic concentration, which is not surprising as most recent immigrants tend to settle in large urban centres such as Toronto, Montreal and Vancouver.[23] In the SWPH region, the areas with the most ethnic concentration were in Malahide and Bayham (Figure 11). Ethnic concentration appeared to be both a protective factor and a risk factor for potentially avoidable mortality (i.e., differed between Elgin County and Oxford County).[17] However, there were negative associations between ethnic concentration and health for mental health emergency department visits, 100% alcohol-attributable hospitalizations and low birth weight, although these effects were sometimes quite small.[18-20]

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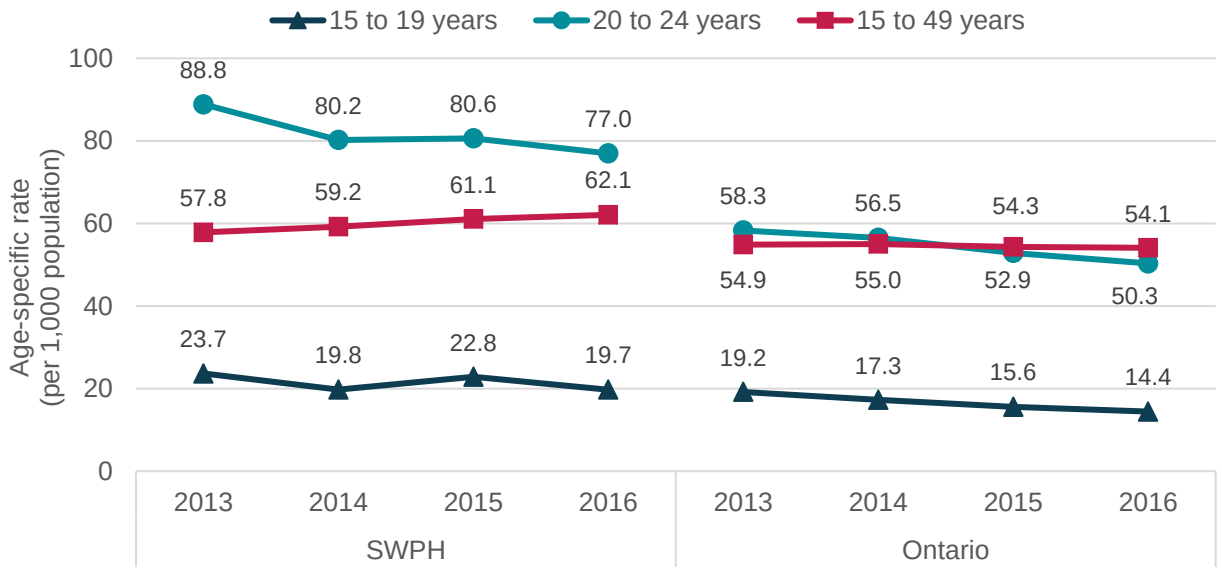
Healthy Growth and Development

Reproductive Health

The overall pregnancy rate (which includes births and therapeutic abortions[b]) in the SWPH region has increased slightly since 2013. In 2016, the pregnancy rate among females aged 15 to 49 years in the SWPH region was 62.1 per 1,000, which was slightly higher than Ontario (54.1 per 1,000).[1] From 2013 to 2016, the pregnancy rate among young adults (20 to 24 years) in the SWPH region was higher than in Ontario; although, in both regions, the rates have declined over time (Figure 1). The teen (15 to 19 years) pregnancy rate in the SWPH region was similar over the last four years (2013 to 2016) and was comparable to Ontario.

Figure 1. Pregnancy rates by age group, Southwestern Public Health and Ontario, 2013-2016[1]

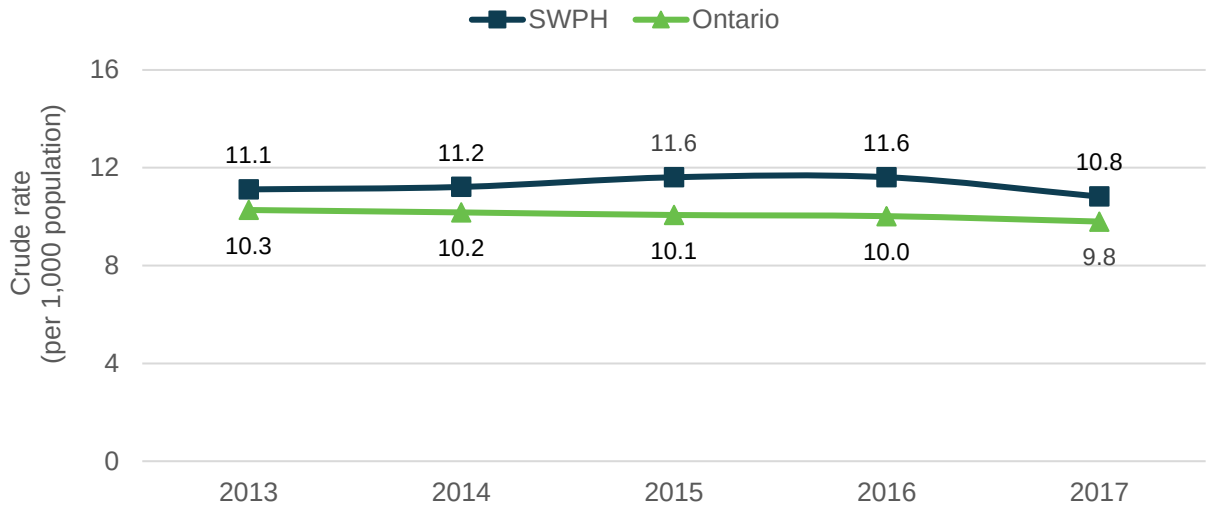


Data source:
The pregnancy data is from the BORN Information System and the therapeutic abortion data is from hospital and medical services data obtained via IntelliHEALTH ONTARIO

[b] Therapeutic abortions may be an indicator of unwanted or unplanned pregnancy or may be performed to discontinue pregnancies with abnormal findings (e.g., neural tube defects) because of prenatal screening. Medically/pharmacologically-induced abortions, those induced by the emergency contraceptive pill, RU 486, or methotrexate (usually reserved for ectopic pregnancies) are not captured in the therapeutic abortion data.

Over the last five years (2013 to 2017), the crude live birth rate (including births where the baby breathes or shows any other evidence of life (not stillbirths), but doesn't necessarily mean a viable birth) was similar for the SWPH region and Ontario at around 10 to 11 births per 1,000 population each year (Figure 2).

Figure 2. Crude live birth rate, Southwestern Public Health and Ontario, 2013-2017[2]

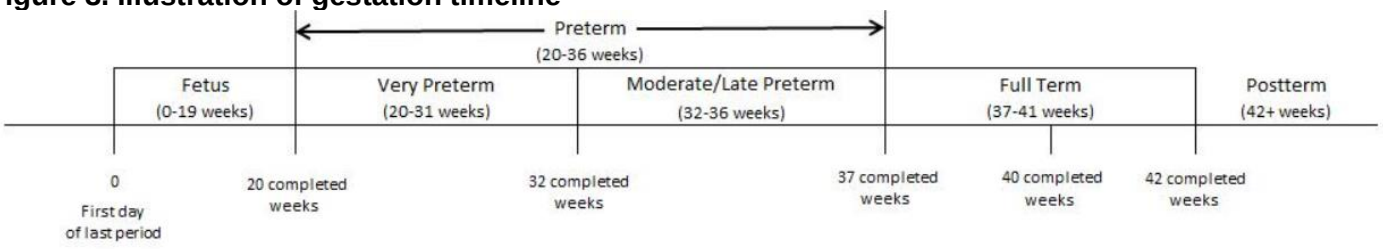


From 2013 to 2017 combined, 3.3% of births in the SWPH region were multiple births (e.g., twins, triplets), which was comparable to Ontario (3.4%).[3]

Data source:
The remainder of the reproductive health data is from the BORN Information System

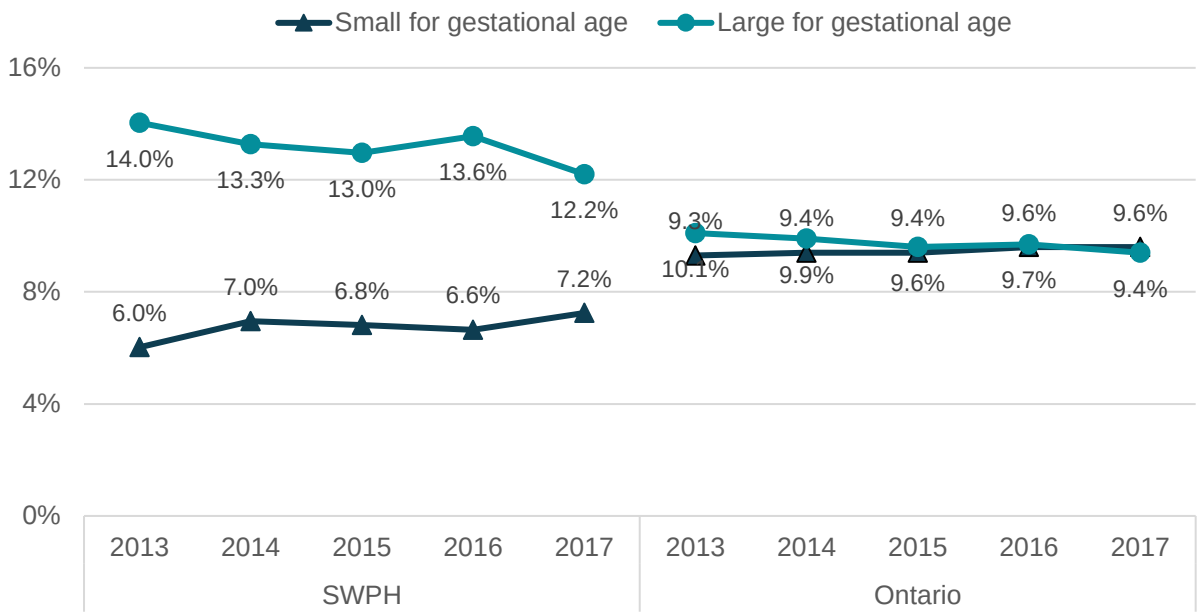
Pre-term, or premature births, include live births that happened between 20- and 37-weeks gestation (Figure 3). Infants born pre-term are at increased risk for respiratory distress syndrome, chronic lung disease, cardiovascular disorders, asthma and hearing and vision loss.[4] From 2013 to 2017 combined, 6.9% of live births in the SWPH region were pre-term births, which was comparable to Ontario (7.9%).[3]

Figure 3. Illustration of gestation timeline[5]



From 2013 to 2017, about 80% of singleton infants (i.e., not twins, triplets or part of multiple births) in both the SWPH region and Ontario were average in size for their gestational age.[3] In Ontario, about 10% of infants were small for their gestational age and 10% were large for their gestational age.[c] In the SWPH region, a higher proportion of infants were large for their gestational age relative to small for their gestational age (Figure 4). Infants that are large for their gestational age have higher risk of experiencing birth complications and developing diabetes, obesity, metabolic syndrome, asthma and cancer in later life.[6]

Figure 4. Infant size for gestational age, singleton live births, Southwestern Public Health and Ontario, 2013-2017[3]



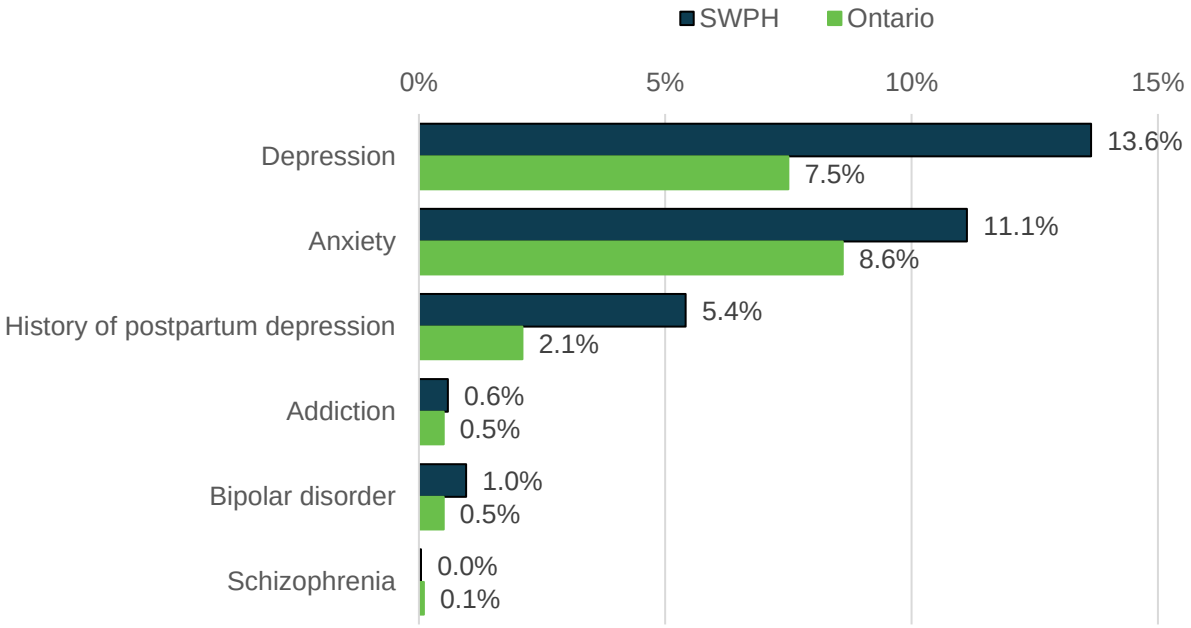
[c] **Small for gestational age:** singletons weighing less than 90% of babies of the same sex and gestational age (from 22 to 43 weeks) in the same Canadian cohort.

Large for gestational age: singletons weighing more than 90% of babies of the same sex and gestational age (from 22 to 43 weeks) in the same Canadian cohort.

Maternal Mental Health and Substance Use

Three-quarters (75.8%) of women in the SWPH region did not report mental health concerns during pregnancy, which was comparable to Ontario (79.8%) based on combined data from 2013 to 2017.[3] However, in the SWPH region, a larger proportion of pregnant women reported concerns about depression and a history of postpartum depression during pregnancy than in Ontario (Figure 5).

Figure 5. Mental health concerns during pregnancy, Southwestern Public Health and Ontario, 2013-2017 (combined)[3]



Data source:
Maternal mental health and substance use data is from the BORN Information System

Over the same time period, most pregnant women in both the SWPH region (86.7%) and Ontario (87.8%) reported that they did not smoke cigarettes at the time of giving birth. However, 7.1% of pregnant women in the SWPH region reported smoking less than 10 cigarettes/day compared to 4.4% in Ontario.[3]

From 2013 to 2017, 97.3% of women in the SWPH region and 93.0% in Ontario did not consume alcohol during pregnancy and 97.3% (SWPH region) and 93.2% (Ontario) did not consume drugs.[3] These data may underestimate substance use among pregnant women because this is self-reported and there is stigma associated with smoking, drinking alcohol and using drugs during pregnancy.

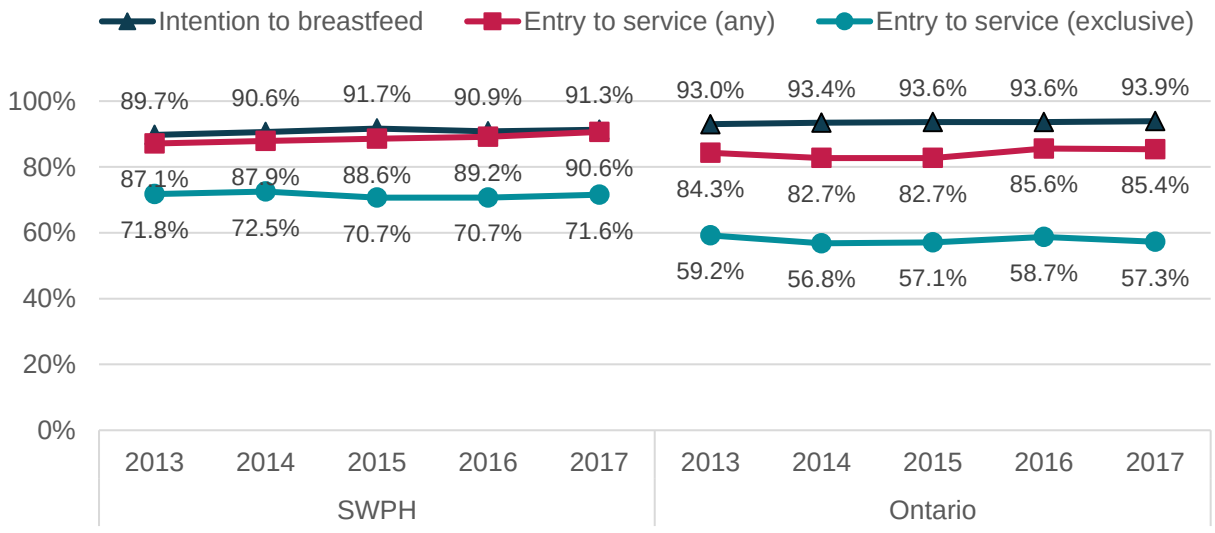
Infant Feeding

Data source: Intention to breastfeed and entry to service data is from the BORN Information System. Breastfeeding at 2 months, 6 months and 12 months is from BFI Online.

The proportion of mothers exclusively breastfeeding was consistently lower than any breastfeeding (i.e., breast milk and formula) in both Elgin St. Thomas and Oxford County. Exclusive breastfeeding means that infants did not receive formula or other liquids such as water, juice and tea (does not apply to vitamins or medications). This measure also excludes infants who were given solid foods before five and a half months of age.[7] There is no exclusive breastfeeding measure for 12 months due to the importance of introducing solids by the time the baby is 6 months.

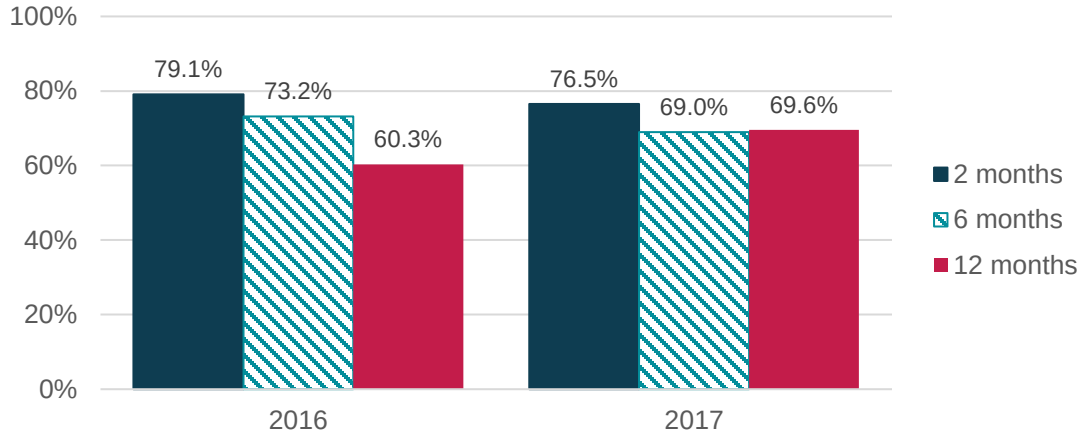
Most women (around 90% each year between 2013 and 2017) in both the SWPH region and Ontario reported that they intended to breastfeed (when asked during their pregnancy or at birth) (Figure 6). At entry to public health service (i.e., at discharge from a hospital/birth centre or three days postpartum for home births), the per cent of mothers in the SWPH region doing any breastfeeding was also around 90%, but only 85% of Ontario mothers reported the same (Figure 6). At entry to service, almost 90% of SWPH mothers reported breastfeeding their child, but only about 70% reported exclusively breastfeeding. A higher proportion of mothers in the SWPH region reported exclusive breastfeeding at entry to service compared to Ontario (around 60%) (Figure 6).

Figure 6. Intention to breastfeed during pregnancy or at birth and breastfeeding at entry to service, Southwestern Public Health and Ontario, 2013-2017[3]



In both Elgin St. Thomas and Oxford County, the proportion of mothers breastfeeding generally decreased as the infants aged. In 2017, 76.5% of mothers in Elgin St. Thomas were breastfeeding at 2 months and this per cent decreased to 69.0% at 6 months and 69.6% at 12 months (Figure 7).[8,d]

Figure 7. Any breastfeeding, Elgin St. Thomas, 2016-2017[8]



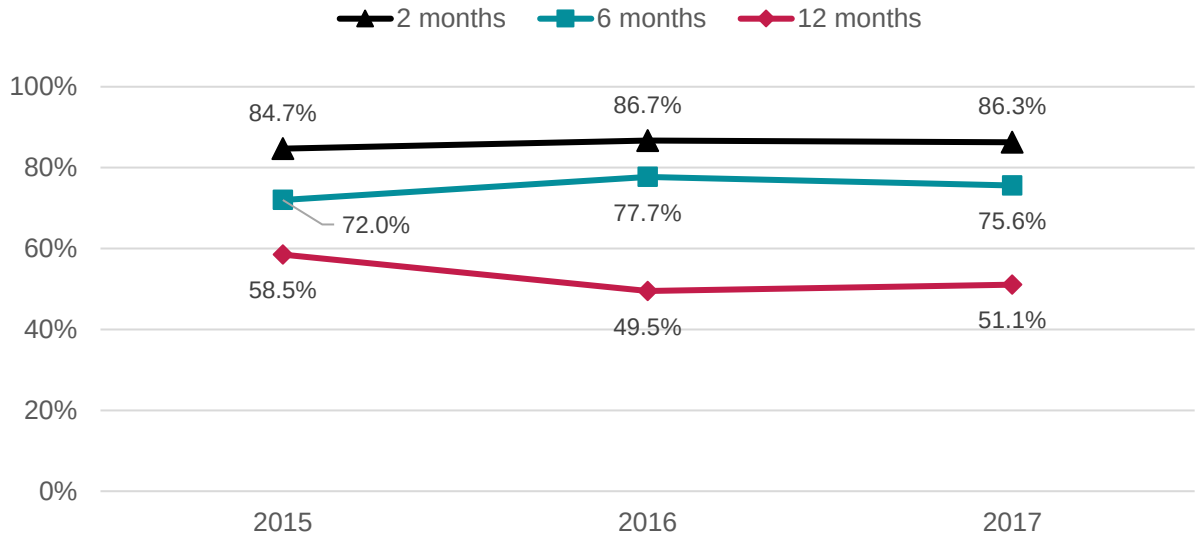
Note: The new multiple time point prospective questionnaires developed by the Infant Feeding Surveillance Locally Driven Collaborative Project (LDCP) were implemented in Elgin St. Thomas on January 1, 2016. The twelve month any breastfeeding data is based on a partial sample of babies for 2017 (i.e., those born between January 1 to July 24, 2017).

This data was analyzed cross-sectionally; therefore, fewer mothers were included in the 12-month time point than the 6-month time point, as participants were lost to follow-up over time. Therefore, although it may appear that mothers started breastfeeding again at 12 months in 2017, this slight increase from the 6-month time point is likely because the sample included different people. Please see the technical appendix for more information.

[d] The infant feeding surveillance prospective questionnaires were analyzed separately for Elgin St. Thomas and Oxford County because the surveys differ slightly in how they are administered and are currently stored in separate BFI Online databases. There is no comparable data for the province because each health unit administers infant feeding surveys in slightly different ways.

In 2017, 86.3% of mothers in Oxford County were breastfeeding at 2 months and this per cent decreased to 75.6% at 6 months and to 51.1% at 12 months (Figure 8).[8]

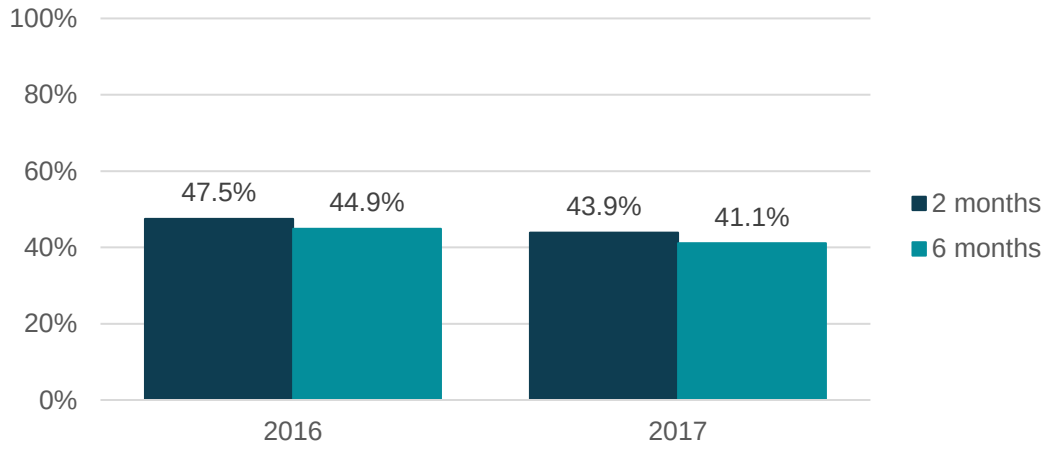
Figure 8. Any breastfeeding, Oxford County, 2015-2017[8]



Note: For 2015, the proportions are based on a partial year of data collection because the new multiple time point prospective questionnaires developed by the Infant Feeding Surveillance Locally Driven Collaborative Project (LDCP) were implemented in Oxford County in June 2015. The twelve month any breastfeeding data is based on a partial sample of babies for 2017 (i.e., those born between January 1 to July 24, 2017).

In 2017, 43.9% of mothers in Elgin St. Thomas were exclusively breastfeeding at 2 months and 41.1% were exclusively breastfeeding at "around" 6 months (i.e., at 5 months) (Figure 9).[8]

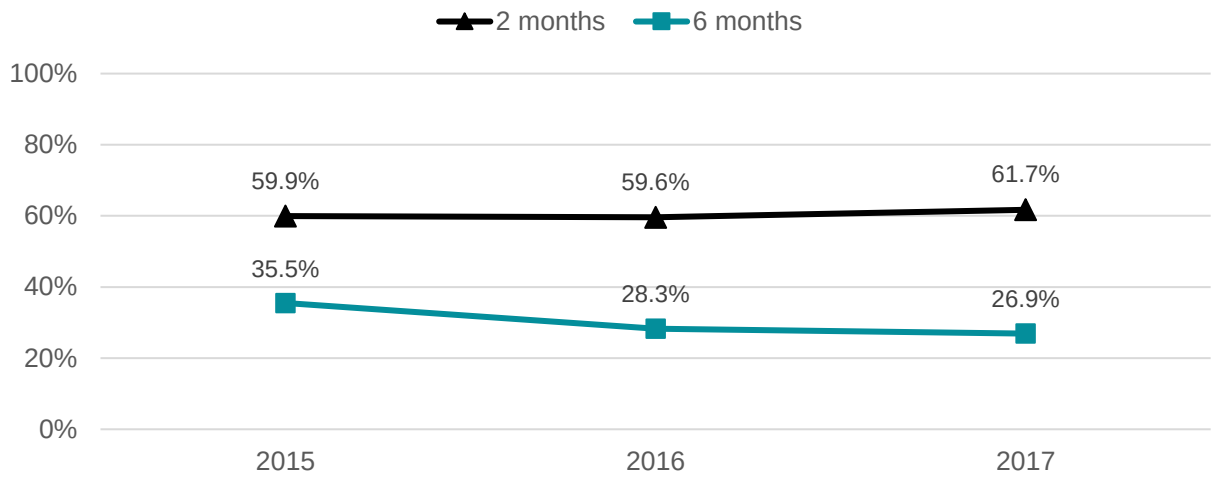
Figure 9. Exclusive breastfeeding, Elgin St. Thomas, 2016-2017[8]



Note: The new multiple time point prospective questionnaires developed by the Infant Feeding Surveillance Locally Driven Collaborative Project (LDCP) were implemented in Elgin St. Thomas on January 1, 2016.

In 2017, 61.7% of mothers in Oxford County were exclusively breastfeeding at 2 months and this decreased to 26.9% at "around" 6 months (i.e., at 5.5 months) (Figure 10).[8] This pattern was quite different from mothers in Elgin St. Thomas where a similar proportion were exclusively breastfeeding at 2 months and 6 months (around 40%; Figure 9); however, this finding may be due to differences in how the surveys were administered between the two sites (e.g., different age ranges available for response options which affected the definition of "around" six months, frequency of reminders to complete the survey).

Figure 10. Exclusive breastfeeding, Oxford County, 2015-2017[8]



Note: For 2015, the proportions are based on a partial year of data collection because the new multiple time point prospective questionnaires developed by the Infant Feeding Surveillance Locally Driven Collaborative Project (LDCP) were implemented in Oxford County in June 2015.

Early Childhood Development

The Early Development Instrument (EDI) is a questionnaire that kindergarten teachers complete in the second half of the school year to measure children's ability upon school entry to meet age-appropriate developmental expectations in five domains:

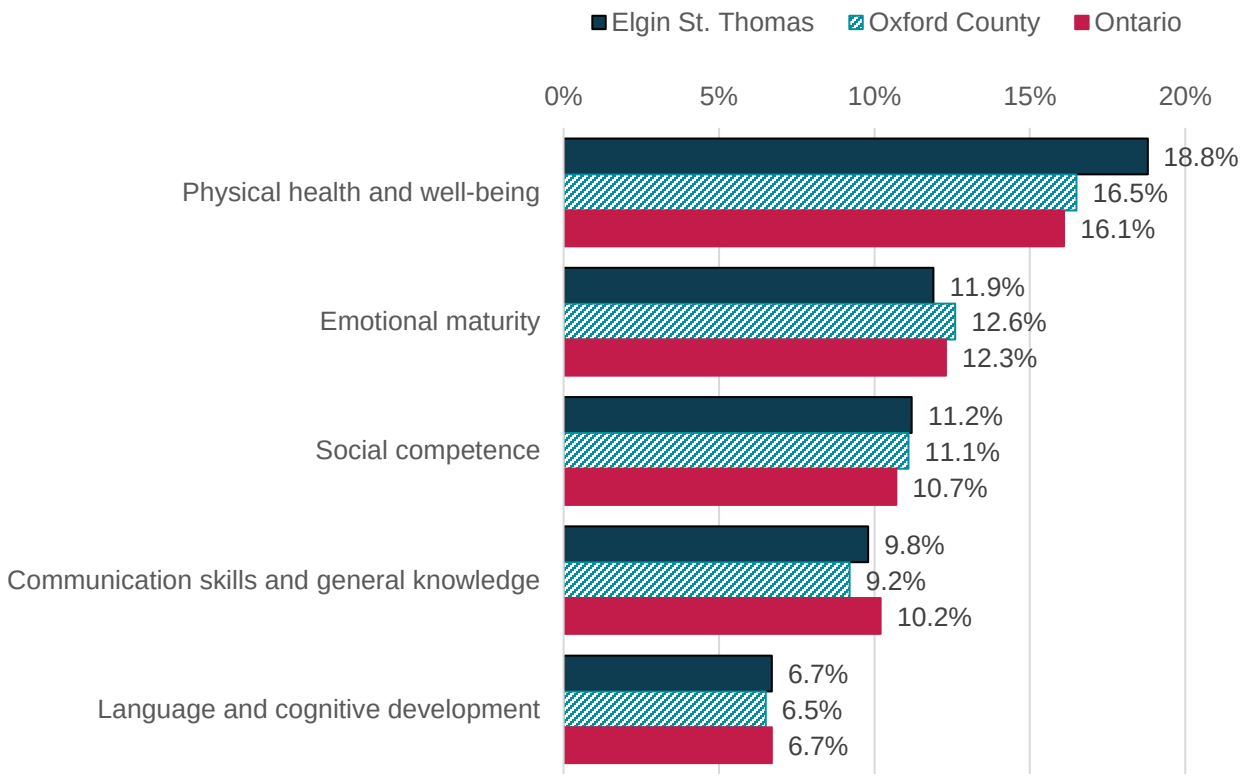
Data source:
The Early Development Instrument (EDI) data was provided by the Oxford EarlyON Child and Family Centre, Oxford Community Child Care and St. Thomas-Elgin Social Services, Children's Services

1. **Physical health and well-being:** includes questions about being physically ready for school (e.g., not tired or hungry), independence and motor skills.
2. **Social competence:** includes questions about getting along with others and helping others, respectfulness to adults, self-confidence and self-control, ability to follow class routines and ability to adjust to changes.

3. **Emotional maturity:** includes questions about aggressive, anxious or impulsive behaviour as well as concentration and helping others.
4. **Language and cognitive development:** includes questions about interest in books, reading, writing and basic math as well as ability to read and write simple sentences and complex words, count and recognize numbers and shapes.
5. **Communication skills and general knowledge:** includes questions about ability to tell stories to other children and adults, articulation and understanding others.

Children who score in the vulnerable range on these domains are at increased risk for later challenges in school.[9] In the 2014/2015 school year, almost one in five students entering school in the SWPH region were vulnerable on the physical health and well-being domain (Figure 11). About one in ten students were vulnerable on the social competence, emotional maturity and communication skills and general knowledge domains (Figure 11). The percentages of students scoring in the vulnerable range across these domains were similar to Ontario (Figure 11).[11]

Figure 11. Per cent of children scoring as vulnerable on the Early Development Instrument (EDI) by domain, Elgin St. Thomas, Oxford County and Ontario, 2014/2015[10,11]



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School Health

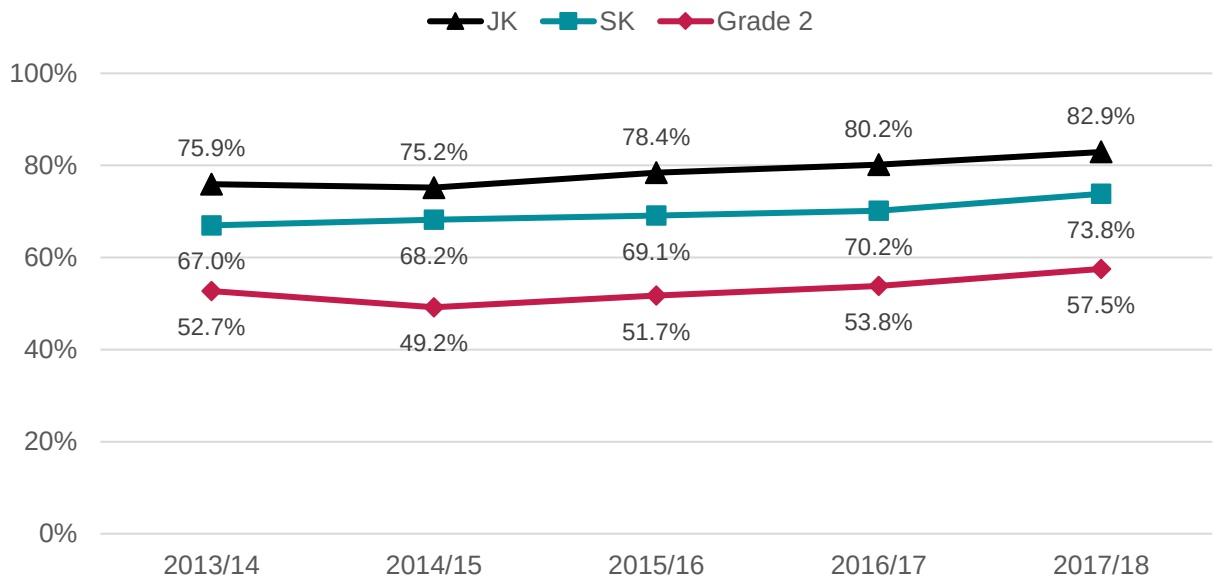
Oral Health

Every school year, SWPH conducts oral health screening (to check if dental care is needed) for junior kindergarten (JK), senior kindergarten (SK) and grade 2 students in all public schools (including Catholic schools) and some private schools. In the 2017/18 school year, about 80% of students in these grades were screened.[1] The other 20% of students were either absent during the day of the screening, excluded from the screening (e.g., had a cold sore or behavioural issues) or did not have consent to be screened.

At school entry (JK), about 80% of children screened were caries-free, or free from cavities. This decreased to about 70% in SK and to about 50% to 60% in grade 2 (Figure 1).

Children in higher grades were less likely to be cavity-free

Figure 1. Caries-free children by grade, Southwestern Public Health schools, 2013/14-2017/18 school years[1]

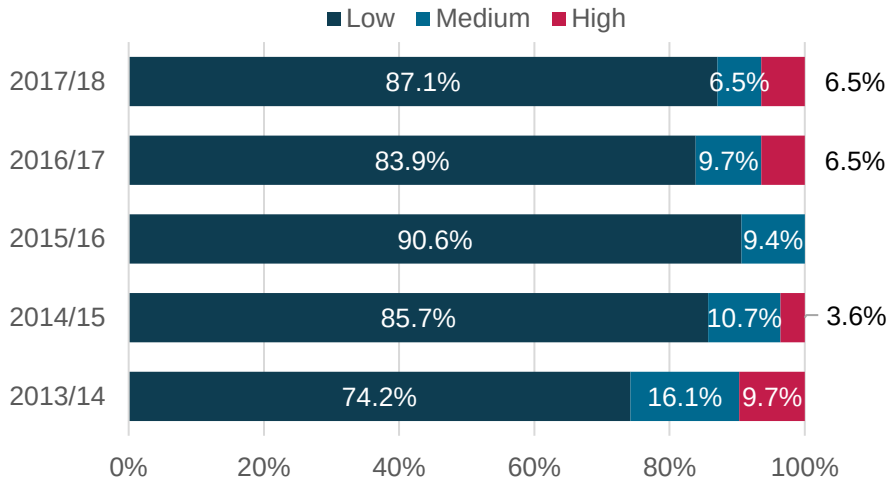


Data source:
The oral health screening data is from the Oral Health Information Support System (OHISS)

A school's screening results during grade 2 determine the screening intensity level for that school. Schools with a high or medium intensity screening level need to have children in more grades screened than the minimum JK, SK and grade 2 cohorts.

Over the last five years, schools in the SWPH region have differed in screening intensity levels based on their location (i.e., in Oxford County or Elgin St. Thomas). Historically, most schools in Oxford County had a low screening intensity (Figure 2). During the 2017/18 school year, 6.5% of schools in Oxford County were medium intensity and 6.5% were high intensity.

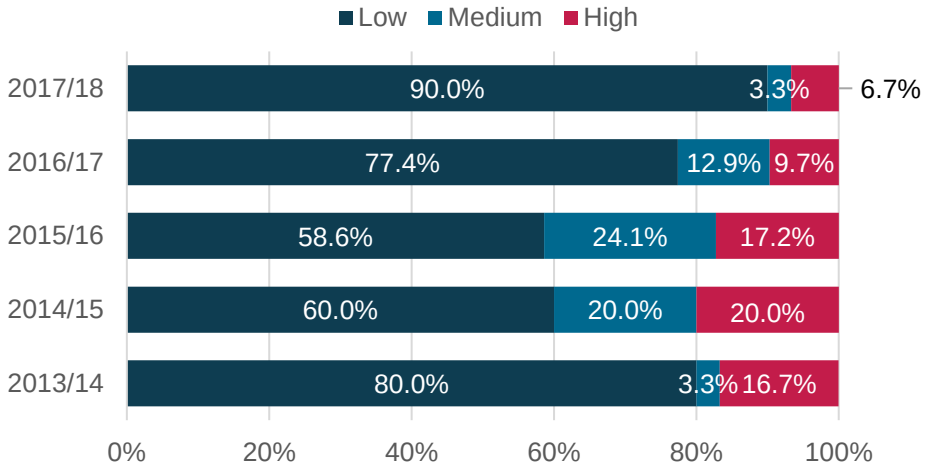
Figure 2. Grade 2 screening intensity level, Oxford County schools, 2013/14-2017/18 school years[1]



If 14% or more of grade 2 students had at least two teeth affected by decay, then that school would be considered high intensity and grade 4 and grade 7 students would also need to be screened.

Conversely, a higher proportion of schools in Elgin St. Thomas had high screening intensity levels in the past five years (Figure 3). Most recently, screening intensity levels were similar between Oxford County and Elgin St. Thomas schools. During the last school year (2017/2018), 3.3% of schools in Elgin St. Thomas were medium intensity and 6.7% of schools were high intensity.

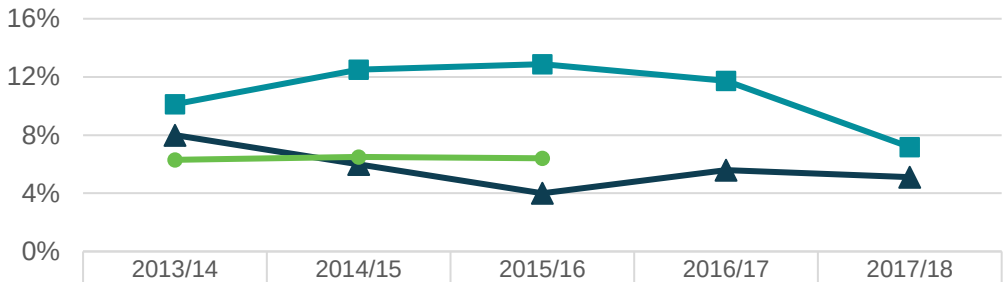
Figure 3. Grade 2 screening intensity level, Elgin St. Thomas schools, 2013/14-2017/18 school years[1]



If between 9.5% and <14% of grade 2 students had at least two teeth affected by decay, then that school would be considered medium intensity and grade 7 students would also need to be screened.

Within the SWPH region, there were also differences in the proportion of children who needed urgent dental treatment by school location. In Oxford County schools, the proportion was typically below 6% in recent years, which was comparable to Ontario (Figure 4). In Elgin St. Thomas schools, the proportion has historically been closer to 12%. However, in the most recent school year, this decreased to 7.2% which is more similar to Oxford County and Ontario.

Figure 4. Children in need of urgent dental treatment, Southwestern Public Health schools by county and Ontario, 2013/14-2017/18 school years[1]



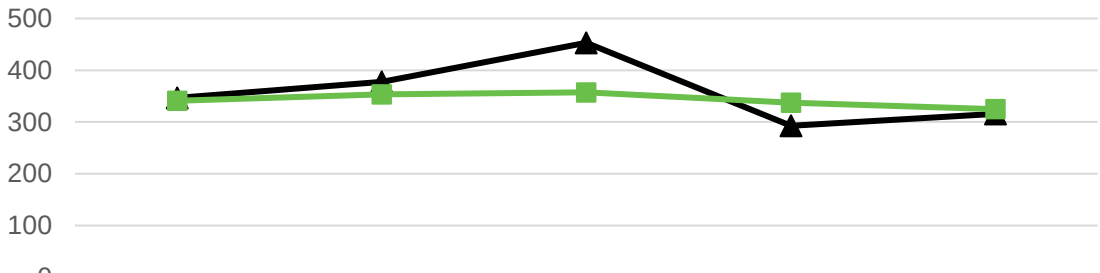
	2013/14	2014/15	2015/16	2016/17	2017/18
Oxford County	8.0%	6.0%	4.0%	5.6%	5.1%
Elgin St. Thomas	10.1%	12.5%	12.9%	11.7%	7.2%
Ontario	6.3%	6.5%	6.4%		

Note: Ontario data is not available past the 2015/16 school year due to changes to the eHealth Ontario Collaboration site. Ontario data is not available for the other oral health screening indicators.

Data source:
The oral health day surgery data is from the National Ambulatory Care Reporting System (NACRS), obtained via IntelliHEALTH ONTARIO

Among children less than 18 years old, the age-specific rate of day surgeries for caries was mostly similar between people living in the SWPH region and Ontario over the last five years. An exception was in 2015 when rates were higher in the SWPH region. The SWPH rate subsequently decreased below the Ontario rate in the following year (Figure 5).

Figure 5. Age-specific rate of day surgeries for caries (per 100,000 population), children less than 18 years old, Southwestern Public Health and Ontario, 2013-2017[2]



	2013	2014	2015	2016	2017
SWPH	346.4	377.4	453.0	292.7	315.8
Ontario	341.1	353.3	357.4	337.5	324.8

Visual Health

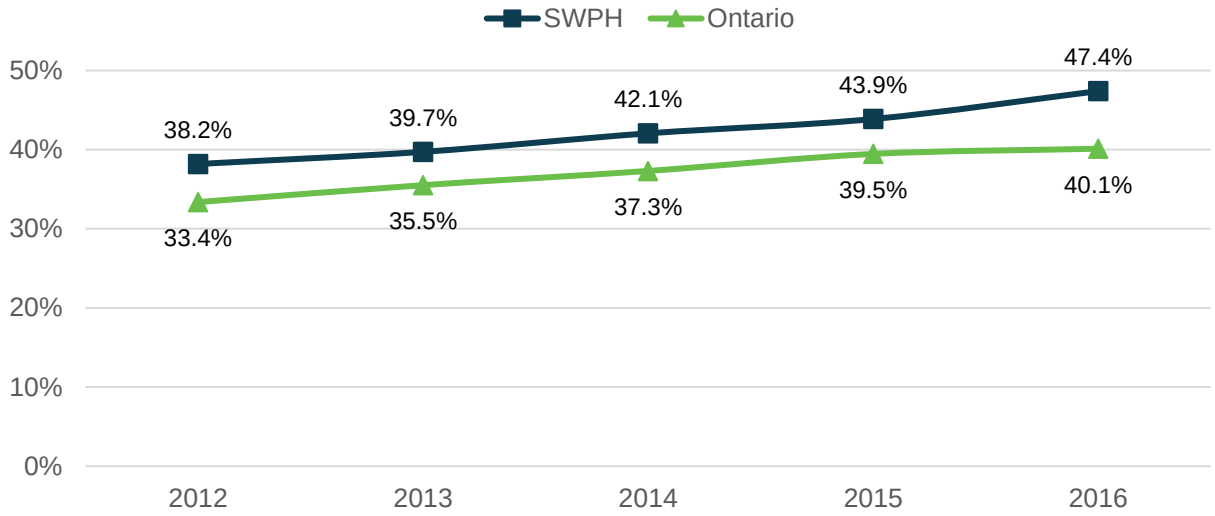
As of January 2018, public health units are mandated by the Ministry of Health and Long-Term Care to provide or ensure provision of annual vision screening to SK children in all schools.[3] Parents or guardians of children that are identified as needing visual health services and/or treatment will be referred to an optometrist for a comprehensive eye exam.

Data source:
The visual assessment data is from medical services billing data, obtained via IntelliHEALTH ONTARIO

Less than half of children aged 4 and 5 years old had a visual assessment each year

From 2012 to 2016, the per cent of 4- and 5-year-old children with at least one visit in that year to a family physician, ophthalmologist or optometrist for a visual assessment increased over time for both people residing in the SWPH region and Ontario (Figure 6). The per cent of 4- and 5-year-old children receiving visual assessments in each of these years was consistently slightly higher in the SWPH region than Ontario.

Figure 6. Visual assessments among children aged 4 and 5 years old, Southwestern Public Health and Ontario, 2012-2016[4]



Immunization Coverage

One of the National Immunization Strategy (NIS) objectives for 2016 to 2021 is to increase immunization coverage.[5] Public health units are required to track immunization coverage, including infant and childhood immunizations (usually administered by health care providers) as well as immunizations administered by public health through school-based programs. Among children (7-year-olds) attending school in Oxford County, up-to-date coverage[e] for all antigens fell below the NIS childhood coverage goal of 95% (Figure 7). However, some antigens were close to meeting this goal, particularly those administered as combination vaccines such as measles, mumps and rubella (e.g., MMR) and diphtheria, tetanus, pertussis and polio (e.g., DTaP-IPV, Tdap-IPV). In previous school years, children attending school in Elgin St. Thomas met or surpassed the NIS immunization coverage goal of 95% for measles, mumps, rubella and meningococcal C conjugate (MCC) (Figure 8). However, in the most recent school year, all antigens fell below the coverage goal in Elgin St. Thomas.

In the SWPH region, most antigen coverage did not meet the National Immunization Strategy childhood coverage goal of 95%

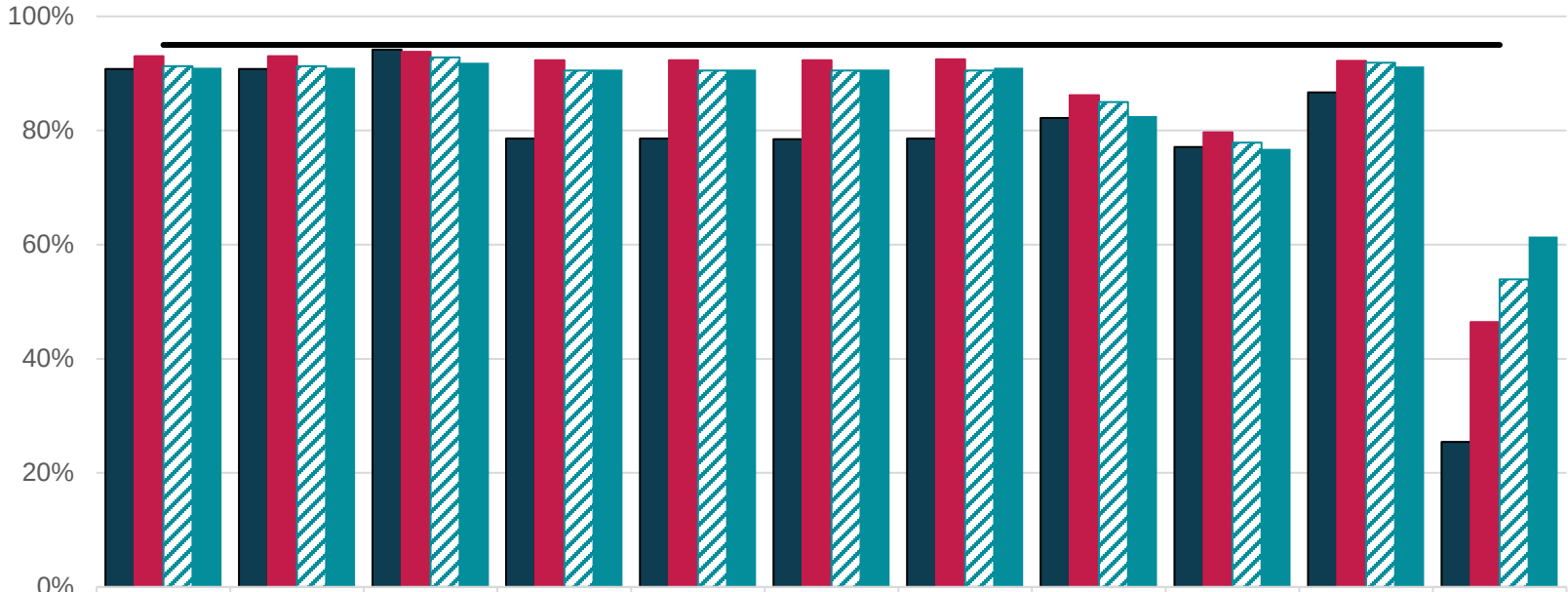
Haemophilus influenzae type B (Hib), pneumococcal and varicella coverage was lower than the national coverage goal in both areas. Hib and invasive pneumococcal disease are not part of the *Immunization of School Pupils Act (ISPA)*; therefore, immunization uptake may be lower because immunization is not enforced by public health or records for students may be missing because they are not requested as part of the suspension process. Varicella was recently added as an *ISPA* disease in the 2014/15 school year; however, the publicly-funded varicella vaccine is only administered to children born in 2010 or later. Therefore, the first cohort of 7-year-olds that will fall under *ISPA* for this disease will be captured in the 2017/18 school year.

Differences in immunization coverage between the two SWPH regions may be due to differences in the populations attending school in each county or differences in the immunization enforcement (i.e., suspension) processes (such as limiting suspensions to certain times of year or issuing suspensions throughout the year).

Data source:
The immunization coverage data is from the Digital Health Immunization Repository (DHIR), which is accessed via Panorama Enhanced Analytical Reporting (PEAR). This data was analyzed by Public Health Ontario, as described in the technical appendix.

[e] Up-to-date coverage is a measure of protection against a disease. It means that the student has an age-appropriate number of valid doses of the specified antigen-containing vaccine or has a recorded exemption based on evidence of immunity.[6]

Figure 7. Up-to-date immunization coverage by antigen, 7-year old students attending school in Oxford County, 2013/14-2016/17 school years[6,7]



	Measles	Mumps	Rubella	Diphtheria	Tetanus	Pertussis	Polio	Hib	Pneumo	MCC	Varicella
2013/14	90.8%	90.8%	94.2%	78.6%	78.6%	78.5%	78.6%	82.2%	77.1%	86.7%	25.4%
2014/15	93.0%	93.0%	93.8%	92.3%	92.3%	92.3%	92.5%	86.2%	79.7%	92.2%	46.4%
2015/16	91.3%	91.3%	92.8%	90.5%	90.5%	90.5%	90.5%	85.0%	77.9%	91.9%	53.9%
2016/17	91.0%	91.0%	91.9%	90.7%	90.7%	90.7%	91.0%	82.5%	76.8%	91.2%	61.4%
Goal*	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%

*The NIS coverage goals state that by 2025, childhood immunization coverage by 7 years of age should be 95%.[5]
Hib = *Haemophilus influenzae* type B; Pneumo = pneumococcal; MCC = meningococcal C conjugate.
Note: Panorama was implemented in Oxford County in 2013, which may explain why coverage rates were lower for many immunizations in the first school year.

Figure 8. Up-to-date immunization coverage by antigen, 7-year old students attending school in Elgin St. Thomas, 2013/14-2016/17 school years[6,7]

	Measles	Mumps	Rubella	Diphtheria	Tetanus	Pertussis	Polio	Hib	Pneumo	MCC	Varicella
2013/14	95.9%	95.9%	97.4%	92.5%	92.5%	92.5%	92.6%	88.7%	82.0%	91.8%	26.6%
2014/15	95.3%	95.2%	96.8%	91.5%	91.5%	91.5%	91.8%	91.8%	85.6%	95.1%	50.6%
2015/16	94.7%	94.7%	96.3%	92.5%	92.5%	92.5%	92.6%	86.4%	86.2%	94.4%	60.6%
2016/17	90.4%	90.4%	93.1%	89.1%	89.1%	89.0%	89.5%	83.0%	81.1%	90.9%	63.1%
Goal*	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%

*The NIS coverage goals state that by 2025, childhood immunization coverage by 7 years of age should be 95%.[5]
Hib = *Haemophilus influenzae* type B; Pneumo = pneumococcal; MCC = meningococcal C conjugate.

The NIS coverage goal for adolescents is lower than the coverage goal for children (90% versus 95%, respectively).[5] Adolescents are assessed at 12 years of age for hepatitis B and quadrivalent meningococcal conjugate (MCV4) and at 17 years of age for most other antigens. From 2013/14 to 2016/17, 13-year-old females were assessed for human papilloma virus (HPV) coverage. Starting in 2016/17, both 12-year-old males and females as well as 13-year-old females started to be assessed for HPV coverage (Table 1).

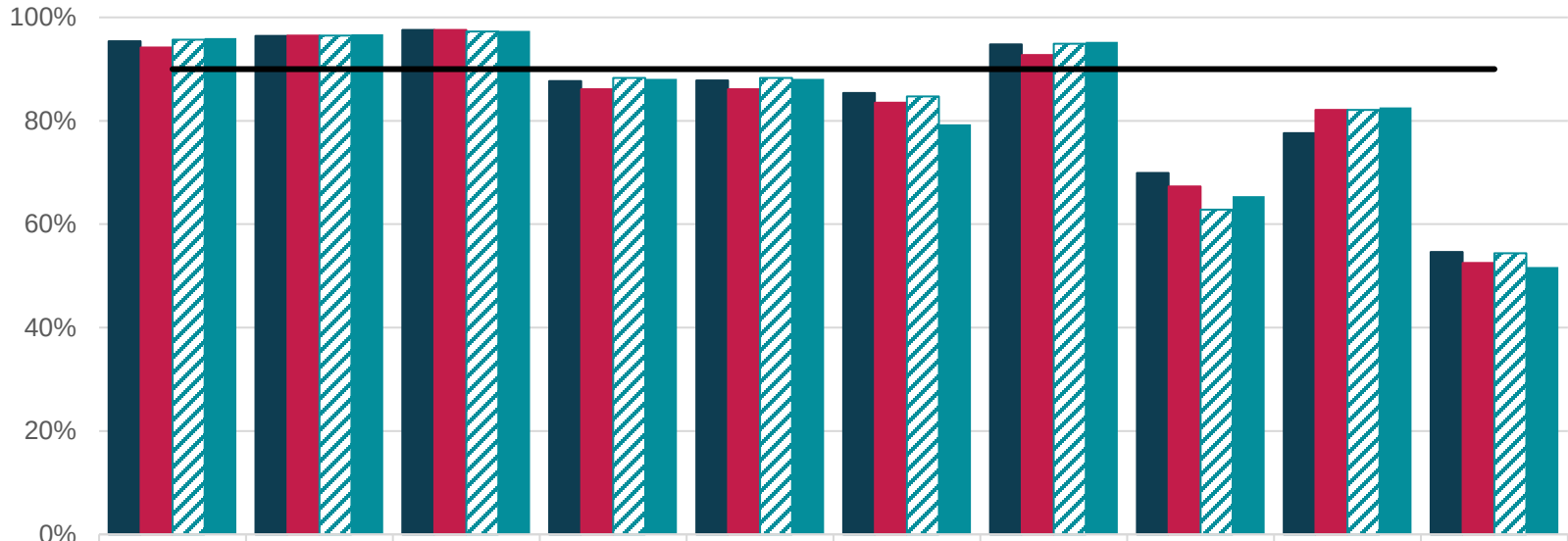
Table 1. Ontario publicly funded routine immunization schedule from infancy to adolescence, 2016[8]

Antigen	2 months	4 months	6 months	12 months	15 months	18 months	4-6 years	Grade 7*	14-16 years
Diphtheria Tetanus Pertussis Polio									 (no polio)
Hib									
Pneumococcal									
Rotavirus									
MCC									
Measles Mumps Rubella									
Varicella									
Hepatitis B									
MCV4									
HPV									

*The data quality of grade in Panorama is poor; therefore, date of birth is typically used as a proxy to capture 12- and 13-year-olds.
Hib = *Haemophilus influenzae* type B; MCC = meningococcal C conjugate; MCV4 = quadrivalent meningococcal conjugate; HPV = human papilloma virus.
Rotavirus became part of the publicly funded immunization schedule in 2011; therefore, coverage will be assessed among 7-year-olds starting in the 2018/19 school year.

Among adolescents attending school in Oxford County, immunization coverage exceeded the 90% target for measles, mumps, rubella and polio (Figure 9). Immunization coverage was lower for hepatitis B and HPV (65.4% and 51.7%, respectively in 2016/17), likely because they are not *ISPA* designated diseases so obtaining the immunization and/or immunization records or valid exemptions is not enforced by public health. Similar coverage rates were found among adolescents going to school in Elgin St. Thomas (Figure 10).

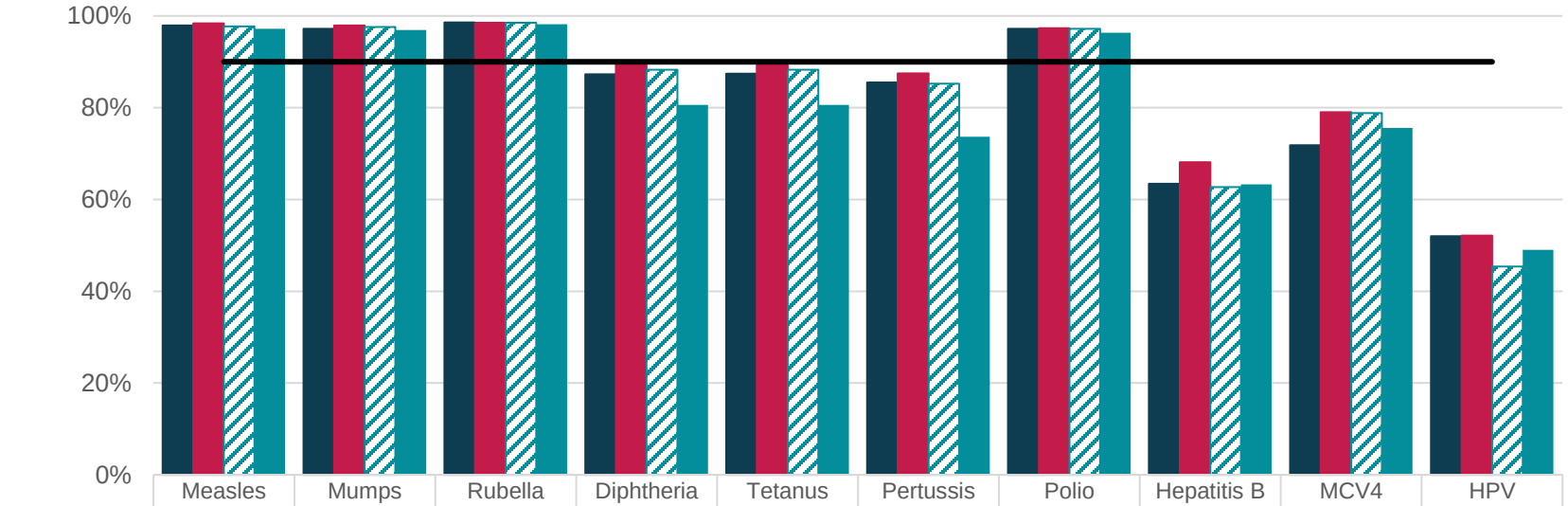
Figure 9. Up-to-date immunization coverage by antigen, adolescents attending school in Oxford County, 2013/14-2016/17 school years[6,7]



	Measles	Mumps	Rubella	Diphtheria	Tetanus	Pertussis	Polio	Hepatitis B	MCV4	HPV
2013/14	95.4%	96.4%	97.6%	87.7%	87.8%	85.4%	94.8%	69.9%	77.6%	54.6%
2014/15	94.2%	96.5%	97.6%	86.1%	86.1%	83.5%	92.7%	67.3%	82.1%	52.5%
2015/16	95.7%	96.5%	97.3%	88.3%	88.3%	84.7%	94.9%	62.8%	82.1%	54.4%
2016/17	96.0%	96.7%	97.4%	88.1%	88.1%	79.3%	95.3%	65.4%	82.6%	51.7%
Goal*	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%

*The NIS coverage goals state that by 2025, adolescent immunization coverage by 17 years of age should be 90%.[5]
MCV4 = quadrivalent meningococcal conjugate; HPV = human papilloma virus.

Figure 10. Up-to-date immunization coverage by antigen, adolescents attending school in Elgin St. Thomas, 2013/14-2016/17 school years[6,7]



	Measles	Mumps	Rubella	Diphtheria	Tetanus	Pertussis	Polio	Hepatitis B	MCV4	HPV
2013/14	97.9%	97.2%	98.6%	87.3%	87.4%	85.5%	97.2%	63.4%	71.8%	52.0%
2014/15	98.4%	97.9%	98.5%	89.7%	89.7%	87.5%	97.3%	68.1%	79.0%	52.1%
2015/16	97.7%	97.6%	98.5%	88.3%	88.3%	85.2%	97.2%	62.7%	78.8%	45.4%
2016/17	97.2%	96.9%	98.2%	80.6%	80.6%	73.7%	96.3%	63.3%	75.6%	49.0%
Goal*	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%

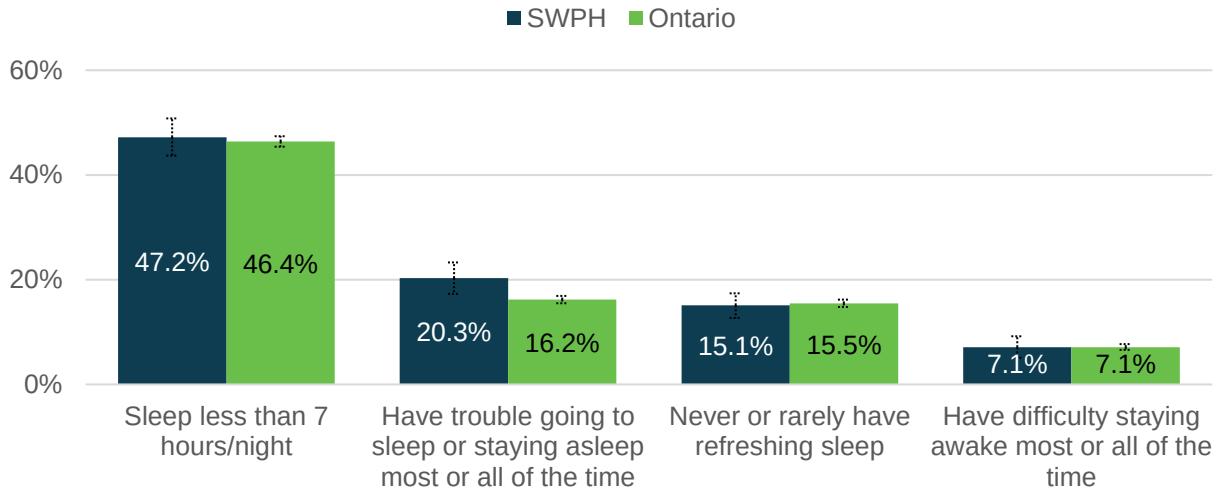
*The NIS coverage goals state that by 2025, adolescent immunization coverage by 17 years of age should be 90%.[5]
MCV4 = quadrivalent meningococcal conjugate; HPV = human papilloma virus.

Sleep

Sleep has recently been adopted as an important public health issue in the Ontario Public Health Standards. It is an important protective factor for well-being as poor sleep has been linked to various chronic diseases. Healthy sleep is characterized by minimal difficulty falling and staying asleep, feeling refreshed after sleep, sustained alertness during waking hours and adequate sleep duration.[9] People aged 12 years and older residing in the SWPH region had similar sleep behaviours to people across Ontario (Figure 11). However, within the SWPH region, a higher proportion of people living in Elgin St. Thomas had trouble going to sleep or staying asleep most or all of the time in comparison to Ontario (21.4% versus 16.2%).[10] Additionally, a higher proportion of people living in Elgin St. Thomas had difficulty staying awake most or all of the time compared to people living in Oxford County (10.3% versus 4.5%).[10]

Data source: The sleep data is from the Canadian Community Health Survey (CCHS)

Figure 11. Sleep behaviours, Southwestern Public Health and Ontario, 2015-2016[10]



The National Sleep Foundation recommends that adults sleep between 7 to less than 10 hours per night and that children and youth sleep slightly longer (Table 2).[11] From 2015 to 2016, 75.6% of children and youth in the SWPH region generally obtained the recommended hours of sleep per night.[10]

Table 2. Sleep duration recommendations by age group[11]

Age group*	Recommended hours of sleep/night
12 to 13 years	9 to <12 hours
14 to 17 years	8 to <11 hours
18 to 64 years	7 to <10 hours

*Data for children under 12 years old is not available from the Canadian Community Health Survey.

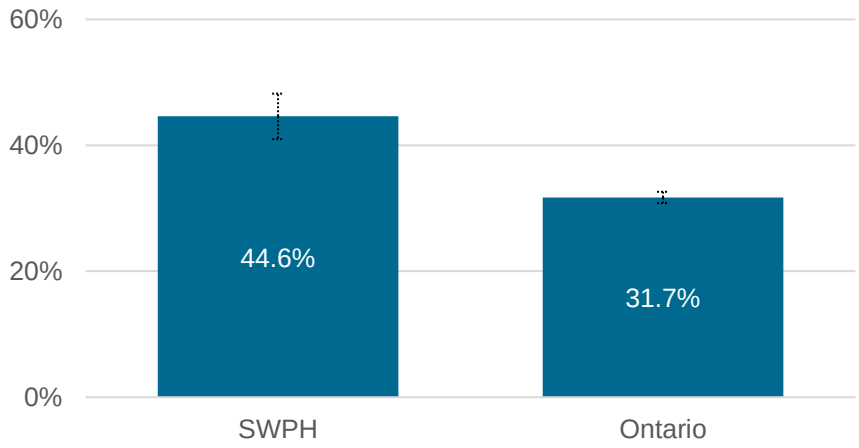
Sun Safety and Tanning Beds

From 2015 to 2016, 67.7% of people residing in the SWPH region reported that they protect themselves from the sun, which was comparable to Ontario (71.8%).[12] According to Canadian Partnership Against Cancer recommendations, sun protection signifies spending less than 30 minutes in the sun during peak hours or spending 30 minutes or more in the sun but always or often doing at least one of the following:

- seeking shade
- avoiding the sun
- wearing protective clothing and a hat
- wearing sunscreen (SPF 15 or higher) on the face and body[12]

Although sun safety behaviour was reportedly similar between people living in the SWPH region and Ontario, a higher proportion of SWPH residents reported that they had a sunburn in the past 12 months compared to Ontario (44.6% versus 31.7%) (Figure 12).[12]

Figure 12. Age-standardized proportion of residents who had a sunburn in the past 12 months, Southwestern Public Health and Ontario, 2015-2016[12]



From 2015 to 2016, 4.2%[a] of people living in the SWPH region reported using a tanning bed in the past 12 months. This was comparable to Ontario (2.7%).[12] Over half (64.7%) of people living in the SWPH region that used a tanning bed reported that they did so to get a base tan prior to sun exposure.[12]

Data source:
The sun safety and tanning bed data is from the Canadian Community Health Survey (CCHS)

[a] This per cent should be interpreted with caution due to its high variability.

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Chronic Disease Prevention and Well-being

Mortality, Morbidity and Self-reported Health

Mortality

Data source: Death and hospitalization data are from IntelliHEALTH ONTARIO

The top ten leading causes of death were similar in the SWPH region and Ontario. The leading cause of death in both regions was ischaemic heart disease, accounting for 22.0% and 17.2% of all causes of death, respectively (Table 1). In the SWPH region, this was followed by lung cancer (7.7%), dementia and Alzheimer's disease (7.4%) and cerebrovascular disease (6.7%). Of note, nine of the ten leading causes of death were chronic diseases.

Table 1. Top 10 leading causes of death, Southwestern Public Health and Ontario, 2008-2012 (combined)[1]

	SWPH			Ontario	
Cause of death	Rank	Average annual number of deaths	Proportion of all deaths	Rank	Proportion of all deaths
Ischaemic heart disease	1	323.2	22.0%	1	17.2%
Cancer of lung and bronchus	2	113	7.7%	3	8.3%
Dementia and Alzheimer's disease	3	108.2	7.4%	2	8.6%
Cerebrovascular diseases	4	99	6.7%	4	6.5%
Chronic lower respiratory diseases	5	74.8	5.1%	5	4.7%
Cancer of colon, rectum and anus	6	60	4.1%	6	4.0%
Diabetes	7	59.2	4.0%	7	3.7%
Cancer of lymph, blood and related	8	47.2	3.2%	8	3.3%
Influenza and pneumonia	9	39.6	2.7%	9	2.5%
Breast cancer	10	32.8	2.2%	10	2.4%

Morbidity

The leading cause of hospitalization in both the SWPH region and Ontario was due to diseases of the circulatory system like heart disease and high blood pressure, accounting for 16.6% of all hospitalizations in both regions using combined data from 2013 to 2017 (Table 2). In the SWPH region, the next leading causes of hospitalization were due to injuries and poisonings (13.0%), diseases of the digestive system (12.6%) such as appendicitis and hernias and diseases of the respiratory system (11.8%) like bronchitis and asthma.

Table 2. Top 10 leading causes of hospitalization*, Southwestern Public Health and Ontario, 2013-2017 (combined)[2]

	SWPH		Ontario	
Cause of hospitalization	Rank	Proportion of all hospitalizations	Rank	Proportion of all hospitalizations
Diseases of the circulatory system	1	16.6%	1	16.6%
Injuries and poisonings	2	13.0%	3	12.6%
Diseases of the digestive system	3	12.6%	2	14.5%
Diseases of the respiratory system	4	11.8%	4	11.8%
Diseases of the genitourinary system	5	5.9%	5	6.0%
Endocrine, nutritional and metabolic diseases	6	3.7%	7	3.7%
Infectious and parasitic diseases	7	3.4%	6	4.1%
Diseases of the musculoskeletal system and connective tissue	8	2.3%	9	2.2%
Diseases of the nervous system	9	1.7%	10	1.9%
Neoplasms	10	1.6%	8	2.3%

*Mental disorders are excluded from this indicator

Self-perceived health

Self-perceived health is an individual's assessment of their overall health status (i.e., excellent, very good, good, fair or poor).[3] Studies have demonstrated the reliability and validity of this indicator and have shown that poor self-rated health is associated with disease and death.[3]

Overall, 62.5% of individuals in the SWPH region rated their health to be excellent or very good, which was comparable to Ontario (61.4%). A similar proportion of individuals in both the SWPH region and Ontario rated their health as good (25.2% and 27.6%, respectively). Lastly, 12.4% of individuals in the SWPH region and 11.0% in Ontario reported their health as fair or poor.

Data source: Self-perceived health data was from the Canadian Community Health Survey (CCHS)

Potentially avoidable mortality

Potentially avoidable mortality refers to the idea that some deaths can be avoided by either preventing the development of disease (e.g., vaccinations or through changing behavioral risk factors like smoking) or delaying the development of disease through measures such as screening and treatment.[5] This indicator highlights the importance of modifiable risk factors and public health interventions in reducing mortality.

The rate of potentially avoidable deaths in the SWPH region was higher than Ontario in 2008, 2009 and 2012 but was similar to Ontario in 2010 and 2011 (Figure 1). Overall, the leading cause of avoidable death was cancer in both the SWPH region and Ontario. The rates of potentially avoidable death due to cardiovascular causes and unintentional injuries (e.g., exposure to fire, heat and toxic substances) were higher in the SWPH region compared to Ontario (Table 3).

Figure 1. Age-standardized rate (per 100,000 population) of potentially avoidable death, Southwestern Public Health and Ontario, 2008-2012[1]

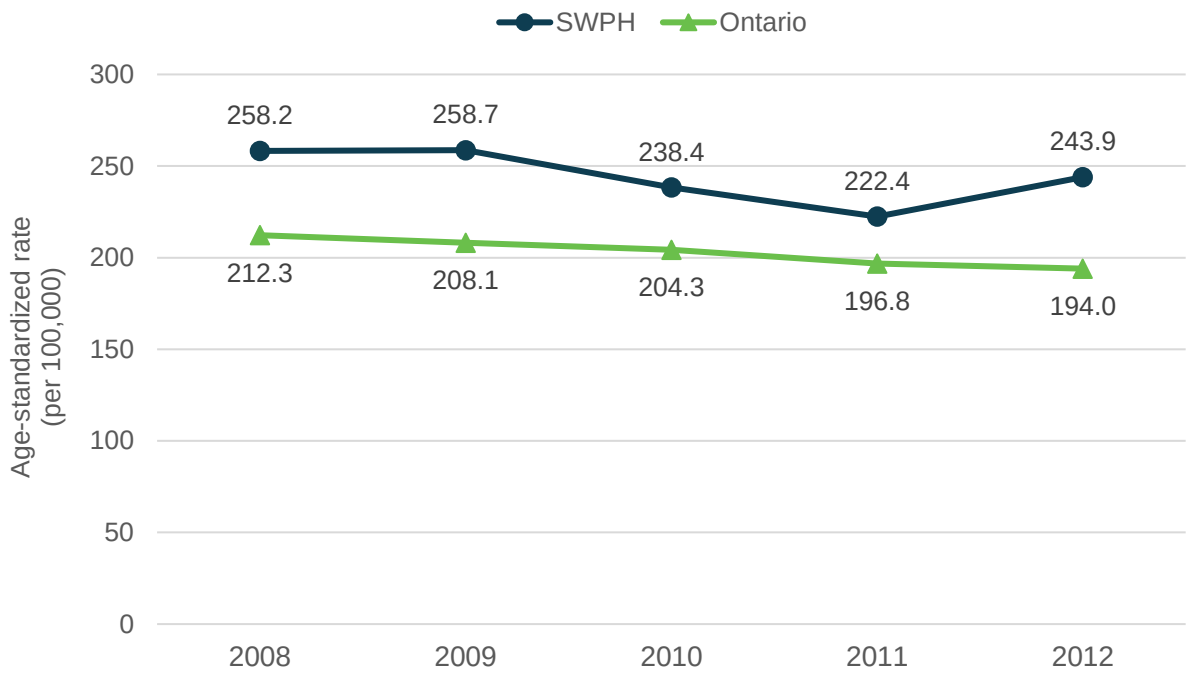


Table 3. Leading causes of potentially avoidable deaths, Southwestern Public Health and Ontario, 2008-2012 (combined)[1]

	SWPH		Ontario	
Cause of death	Rank	5-year average age-standardized rate (per 100,000)	Rank	5-year average age-standardized rate (per 100,000)
Cancer	1	80.7	1	73.7
Cardiovascular diseases	2	70.4*	2	51.6
Unintentional injuries	3	22.1*	3	15.5
Respiratory diseases	4	14.8	4	10.8
Nutritional diseases	5	12.2	6	9.6
Infections	6	10.5	7	9.4
Intentional injuries	7	9.6	5	10.1
Alcohol and drugs	8	7.5	8	6.9
Infant and maternal causes	9	7.1	9	6.3
Digestive diseases	10	5.1	10	4.5

*Indicates a statistically significant difference in the rates between the SWPH region and Ontario

Chronic Diseases

The following conditions are considered chronic diseases of public health importance in the Ontario Public Health Standards.[6]

Cardiovascular diseases

The leading cause of hospitalization in the SWPH region was cardiovascular diseases, which covers a broad range of conditions that affect the circulatory system such as heart disease, stroke and congenital heart defects.[7]

The rate of hospitalizations due to cardiovascular diseases was consistently higher in the SWPH region than Ontario between 2013 and 2017 (Figure 2). The mortality rate due to cardiovascular diseases in the SWPH region was higher than Ontario from 2008 to 2011 but was similar to Ontario in 2012 (Figure 3).

Data source:
Chronic disease data was obtained from IntelliHEALTH ONTARIO

Figure 2. Age-standardized rate (per 100,000 population) of hospitalizations due to cardiovascular diseases, Southwestern Public Health and Ontario, 2013-2017[2]

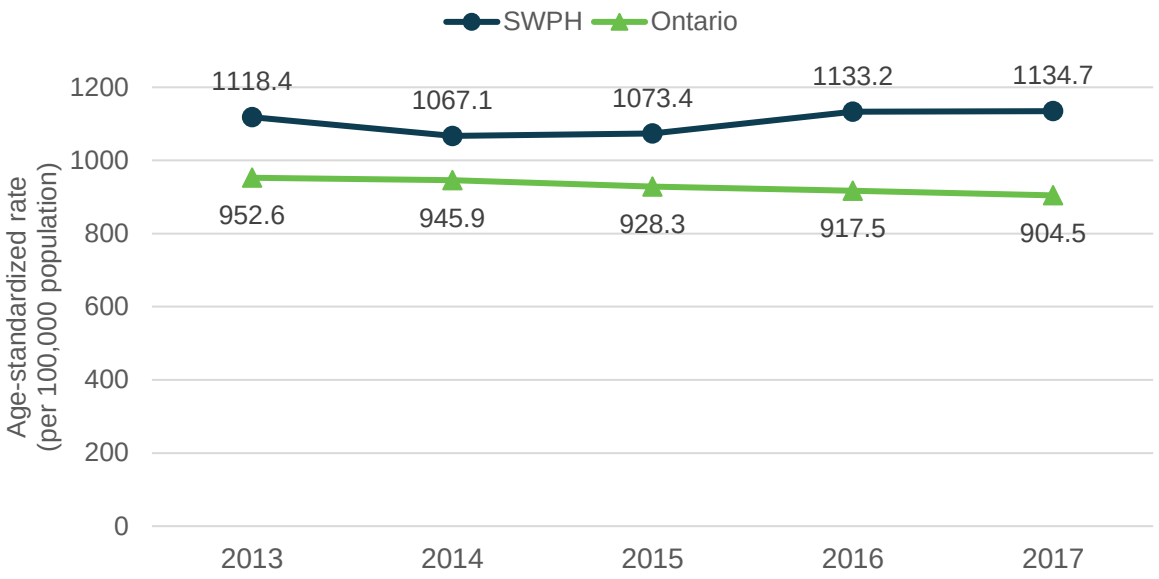
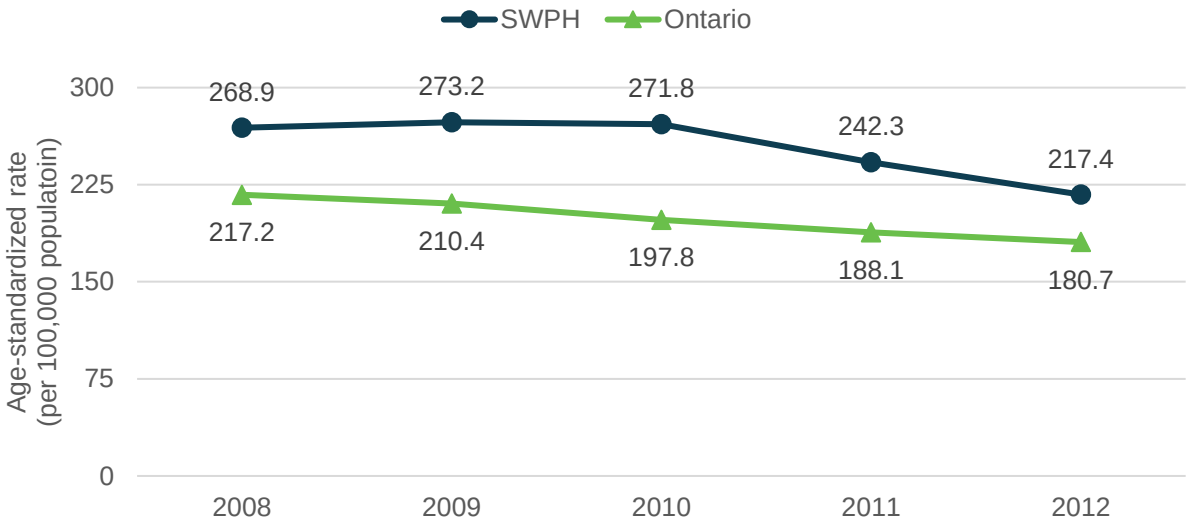


Figure 3. Age-standardized rate (per 100,000 population) of deaths due to cardiovascular diseases, Southwestern Public Health and Ontario, 2008-2012[1]

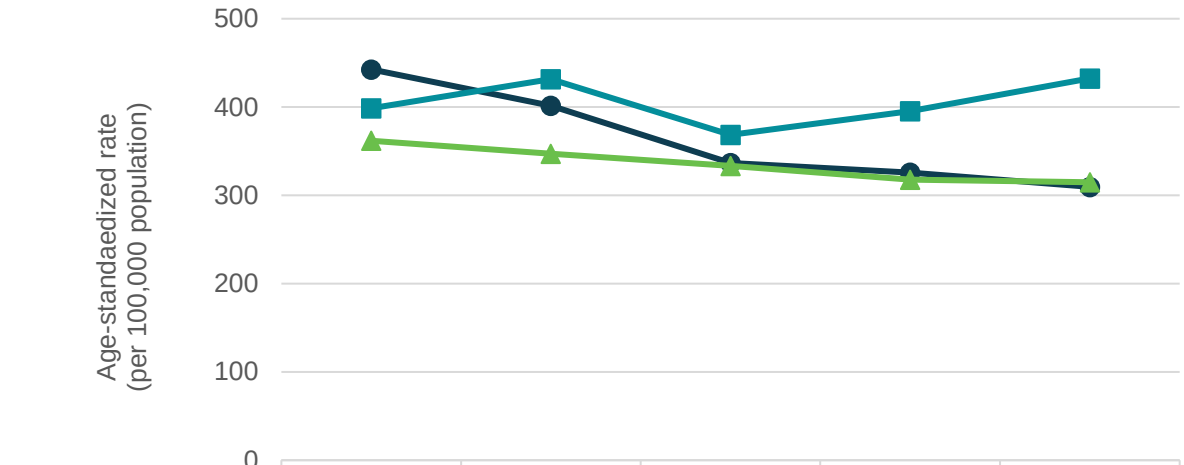


Ischaemic heart disease

Ischaemic heart disease was the leading cause of death in both the SWPH region and Ontario between 2008 and 2012. It results from a buildup of plaque inside the arteries that supply blood and oxygen to the heart and can lead to chest pain, shortness of breath and heart attack.[8] Risk of ischaemic heart disease can be reduced through lifestyle changes such as healthy eating, participating in physical activity and smoking cessation.[8]

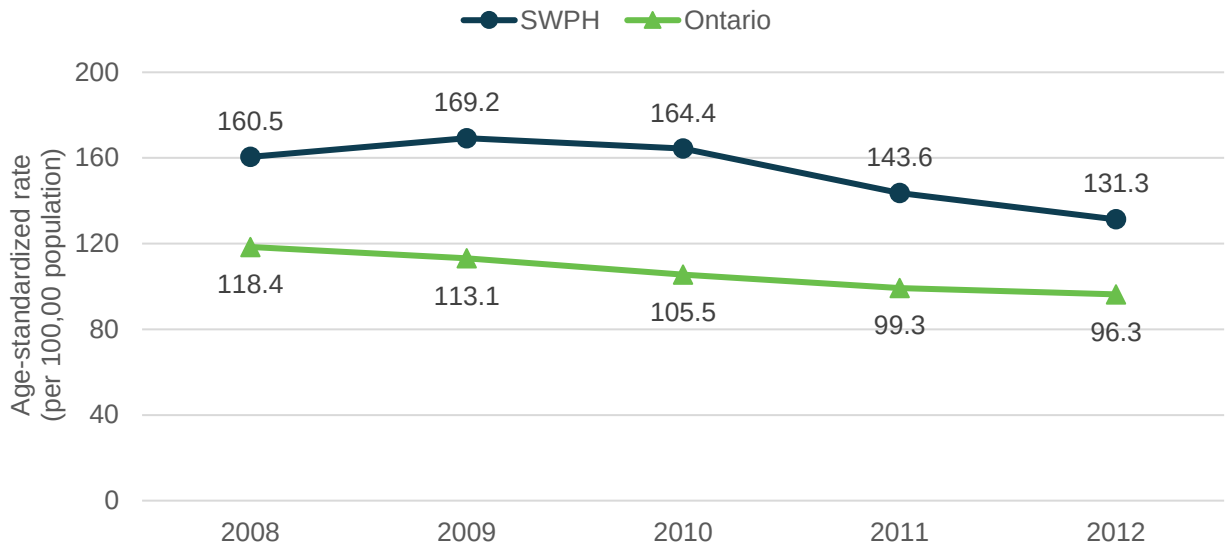
The rate of hospitalizations due to ischaemic heart disease was higher in Elgin St. Thomas than Ontario in 2012 and 2013 but became similar to Ontario after 2013. In Oxford County, the rate of hospitalizations was similar to Ontario only in 2012 and was higher than Ontario after 2012. When comparing Elgin St. Thomas and Oxford County, the hospitalization rate was similar in both regions from 2012 to 2014, but the rate was higher in Oxford county in 2015 and 2016 (Figure 4). The mortality rates due to ischaemic heart disease in Elgin St. Thomas and Oxford County were similar and are therefore presented for the whole SWPH region (Figure 5). The mortality rate due to ischaemic heart disease in the SWPH region was higher than Ontario between 2008 and 2012 (Figure 5).

Figure 4. Age-standardized rate (per 100,000 population) of hospitalizations due to ischaemic heart disease, Elgin St. Thomas, Oxford County and Ontario, 2012-2016[2,9]



	2012	2013	2014	2015	2016
Elgin St.Thomas	442.6	401.3	336.6	325.7	309.6
Oxford County	398.5	431.4	368.5	395.5	432.4
Ontario	361.8	347.2	333.5	317.9	314.8

Figure 5. Age-standardized rate (per 100,000 population) of mortality due to ischaemic heart disease, Southwestern Public Health and Ontario, 2008-2012[1]



Cerebrovascular diseases and strokes

Cerebrovascular diseases are the fourth leading cause of death in the SWPH region and include a number of conditions that affect the vessels that supply blood to the brain, such as stenosis (narrowing of blood vessels), aneurysms (weakening of artery walls) and vascular malformations.[10] A stroke occurs when a blood vessel in the brain becomes blocked and cuts blood supply to certain parts of the brain or when a weakened blood vessel ruptures, ultimately resulting in brain damage and cell death.[10]

The rate of hospitalizations due to cerebrovascular diseases and strokes in the SWPH region were similar to Ontario from 2013 to 2015 and higher than Ontario in 2016 and 2017 (Figure 6). The mortality rates due to cerebrovascular diseases and strokes in the SWPH region were similar to Ontario between 2008 and 2012 (Figure 7).

Figure 6. Age-standardized rate (per 100,000 population) of hospitalizations due to cerebrovascular diseases and strokes, Southwestern Public Health and Ontario, 2013-2017[2]

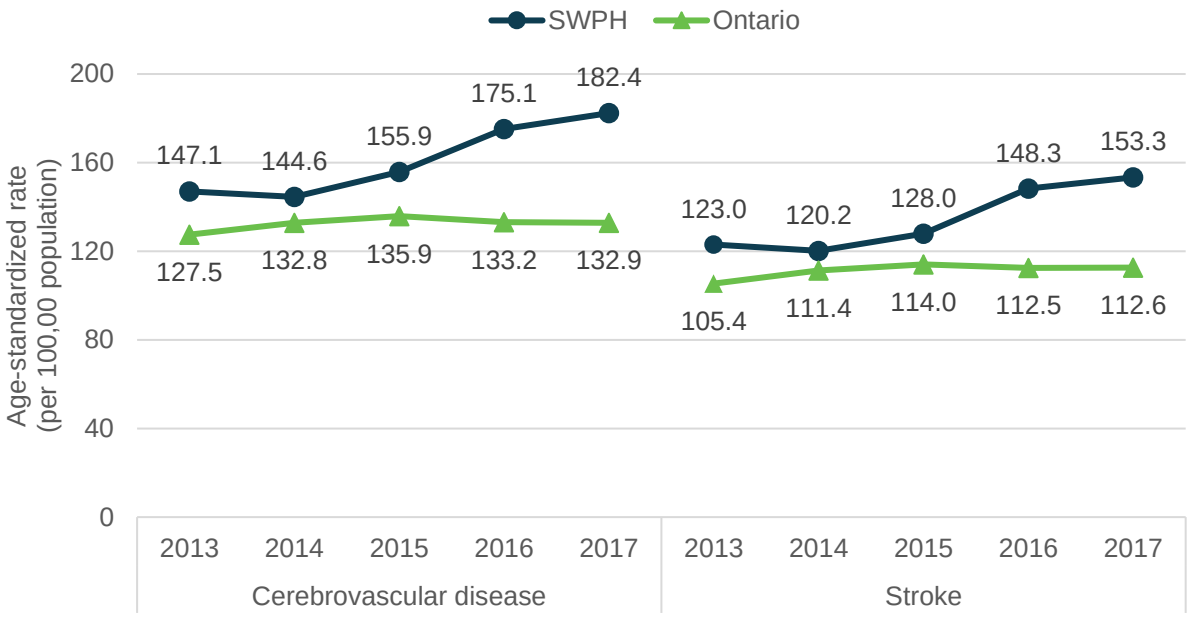
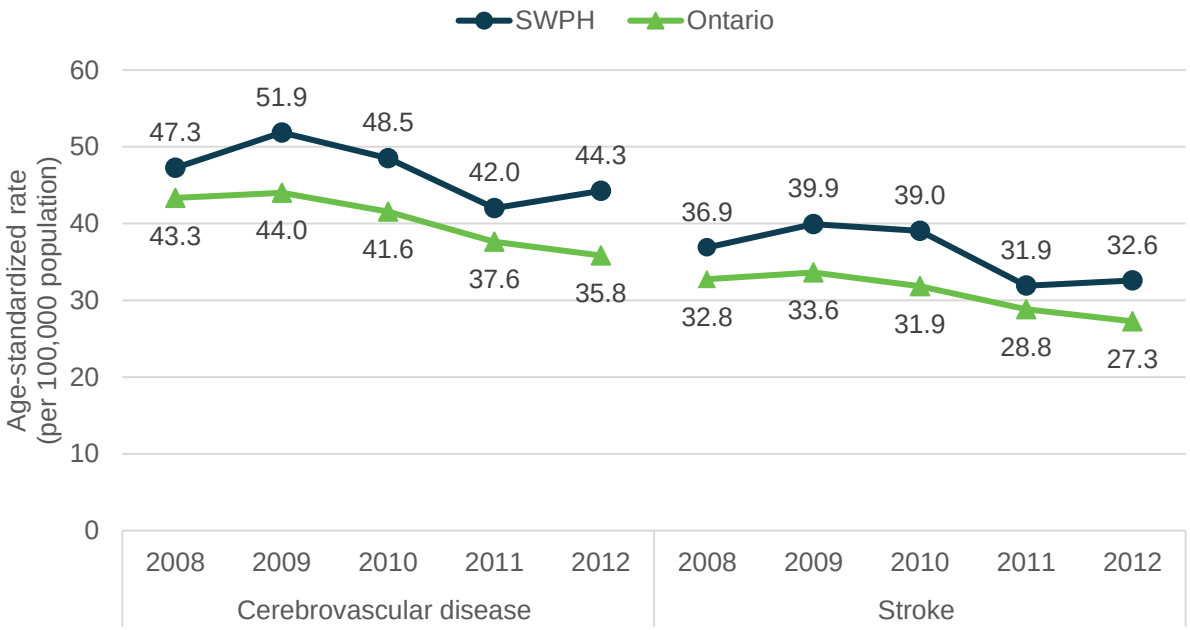


Figure 7. Age-standardized rate (per 100,000 population) of deaths due to cerebrovascular diseases and strokes, Southwestern Public Health and Ontario, 2008-2012[1]



Chronic obstructive pulmonary disease

Chronic obstructive pulmonary disease (COPD) is a chronic respiratory disease that encompasses conditions such as chronic bronchitis and emphysema and results in shortness of breath, coughing and wheezing.[11,12] Cigarette smoking is the underlying cause in approximately 80% to 90% of COPD cases.[11,12]

The rate of hospitalizations due to COPD was higher in Elgin St. Thomas compared to Ontario between 2012 to 2016, whereas the rates in Oxford County were similar to Ontario during this time (Figure 8). When comparing Elgin St. Thomas and Oxford County, the hospitalization rates in Elgin St. Thomas were similar to Oxford County in 2015 but were higher than Oxford County from 2012 to 2014 and in 2016 (Figure 8). The mortality rate due to COPD was higher in Elgin St. Thomas compared to Ontario in 2009 and 2012, otherwise the mortality rate was similar in all three regions (Figure 9). Historically, Elgin St. Thomas and Oxford County have often had higher proportions of daily smokers than Ontario.[13]

Figure 8. Age-standardized rate (per 100,000 population) of hospitalizations due to COPD, Elgin St. Thomas, Oxford County and Ontario, 2012-2016[2,9]

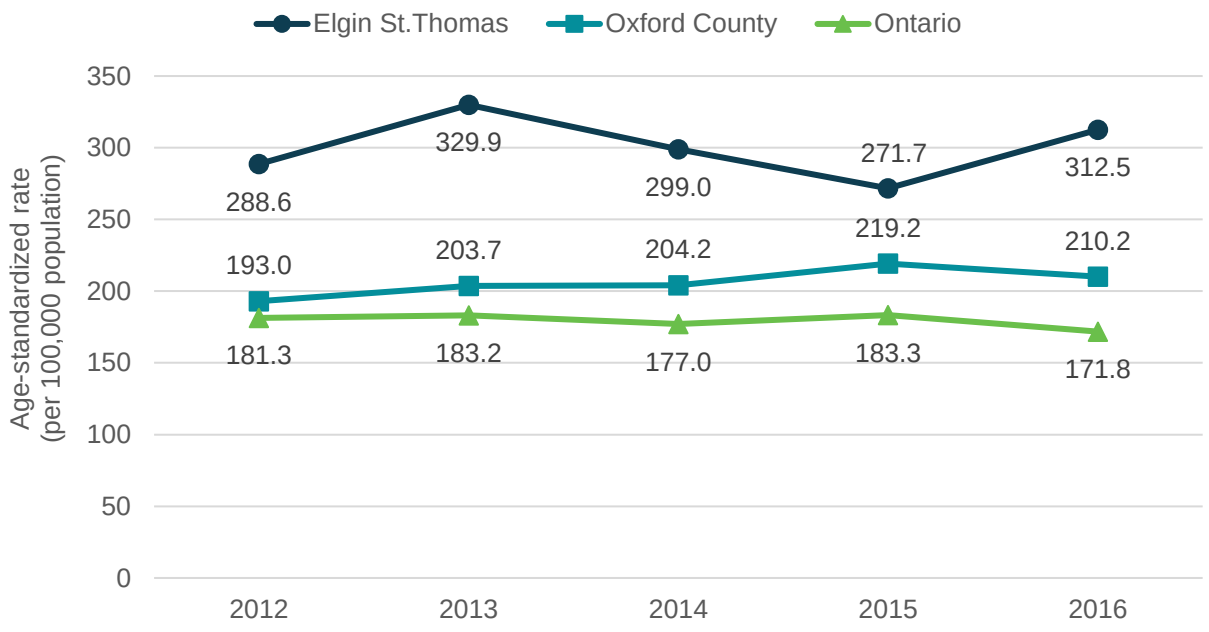
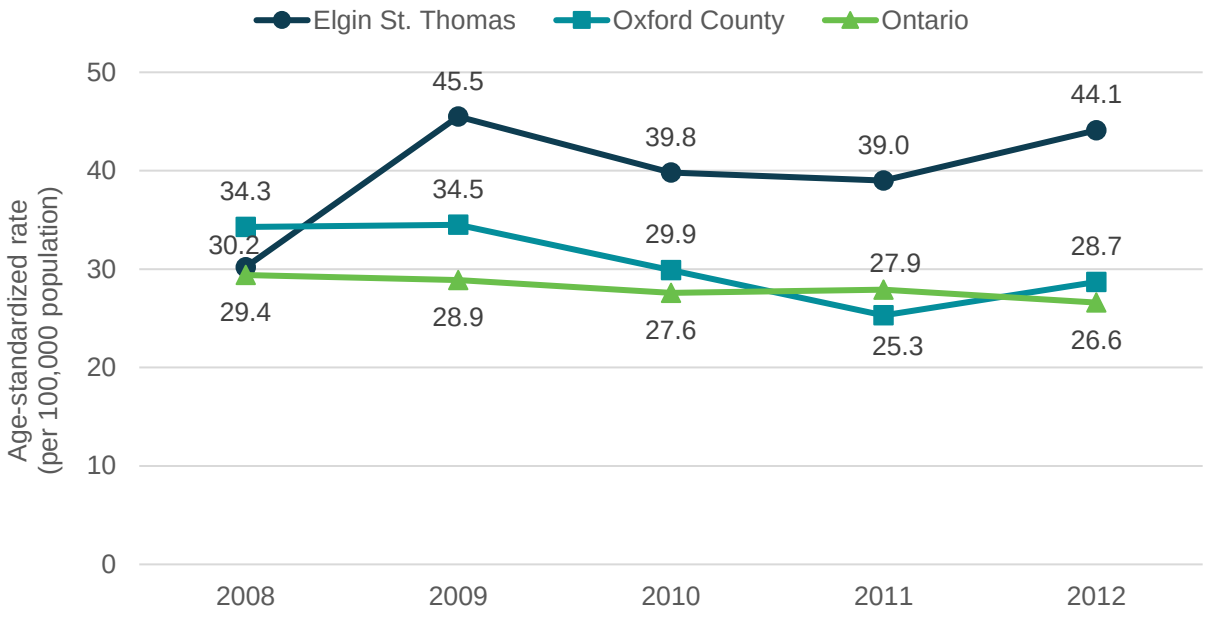


Figure 9. Age-standardized rate (per 100,000 population) of deaths due to COPD, Elgin St. Thomas, Oxford County and Ontario, 2008-2012[1,9]

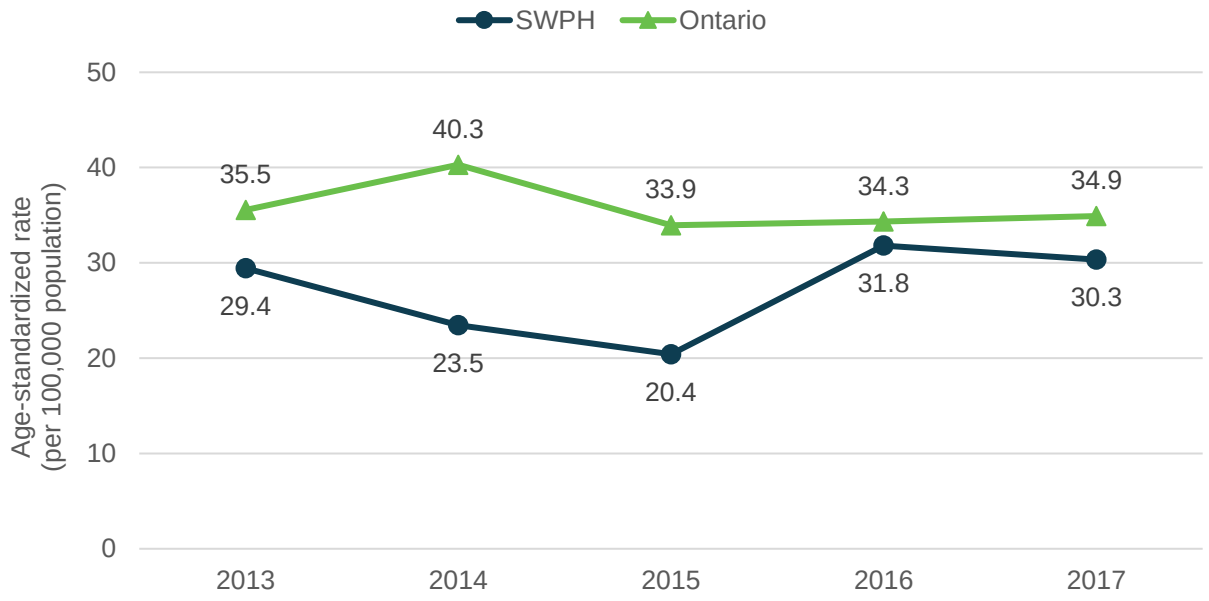


Asthma

Asthma is a chronic condition that causes coughing, shortness of breath, chest tightness and wheezing. Symptoms can be aggravated after exercise, exposure to allergens, viral respiratory infections or irritant fumes.[14]

The rate of hospitalizations due to asthma were similar between the SWPH region and Ontario from 2013 to 2017 (Figure 10). The five-year average crude rate of mortality due to asthma in the SWPH region was 0.61 deaths per 100,000 population between 2008 and 2012, which was similar to Ontario (0.75 deaths per 100,000 population) during this time.[1]

Figure 10. Age-standardized rate (per 100,000 population) of hospitalizations due to asthma, Southwestern Public Health and Ontario, 2013-2017[2]



Diabetes

Diabetes is a chronic condition in which the body has difficulty producing or using insulin, a hormone that controls the amount of glucose (sugar) in the blood. This results in high blood sugar which can cause complications such as kidney disease, heart attack and stroke.[15]

The rate of hospitalizations due to diabetes (Type 1 and Type 2) was higher in the SWPH region compared to Ontario from 2014 to 2017 and was similar in 2013 (Figure 11). The mortality rate due to diabetes was similar in both the SWPH region and Ontario between 2008 and 2012 (Figure 12).

Figure 11. Age-standardized rate (per 100,000 population) of hospitalizations due to diabetes, Southwestern Public Health and Ontario, 2013-2017[2]

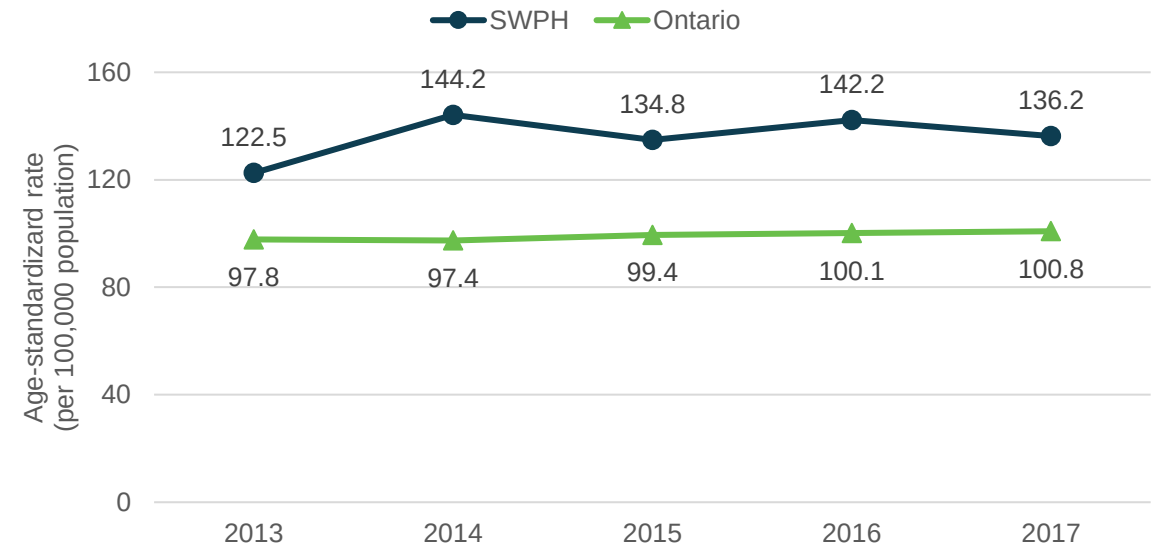
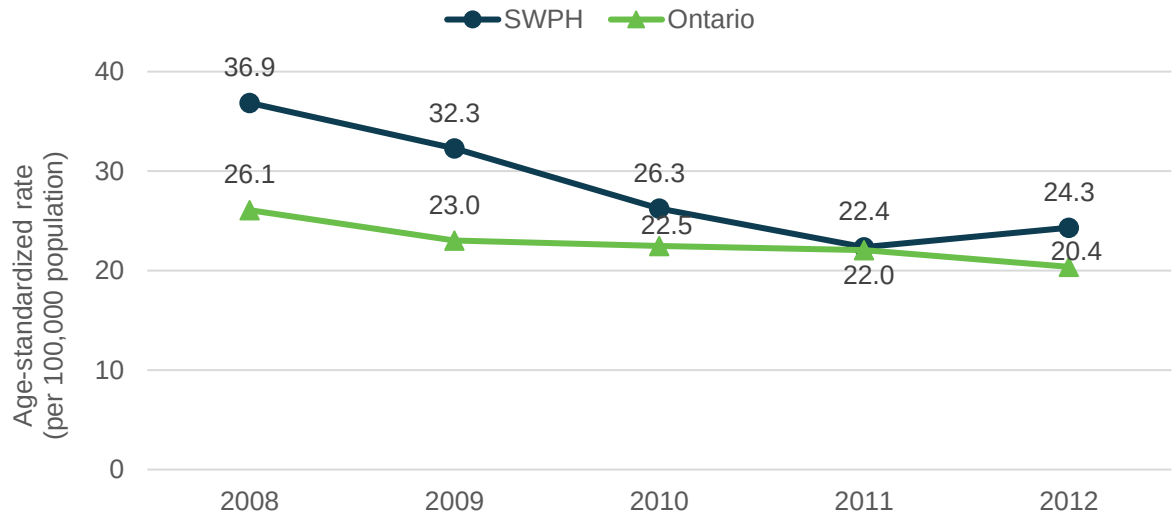


Figure 12. Age-standardized rate (per 100,000 population) of deaths due to diabetes, Southwestern Public Health and Ontario, 2008-2012[1]



Cancer

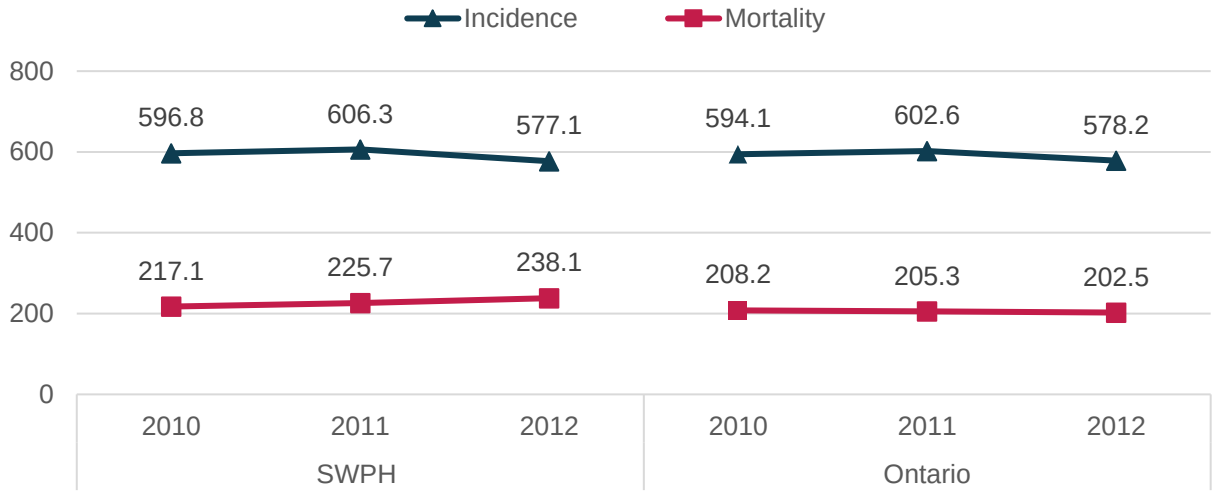
Cancer causes a significant proportion of deaths in the SWPH region. Four types of cancers were within the top 10 leading causes of deaths and most notably, cancer of the lung and bronchus was the second leading cause of death.

Data source:
Cancer incidence and mortality data is from Cancer Care Ontario's SEER*Stat

Figure 13. Age-standardized incidence and mortality rates (per 100,000 population) for selected cancers, Southwestern Public Health and Ontario, 2010-2012[16]

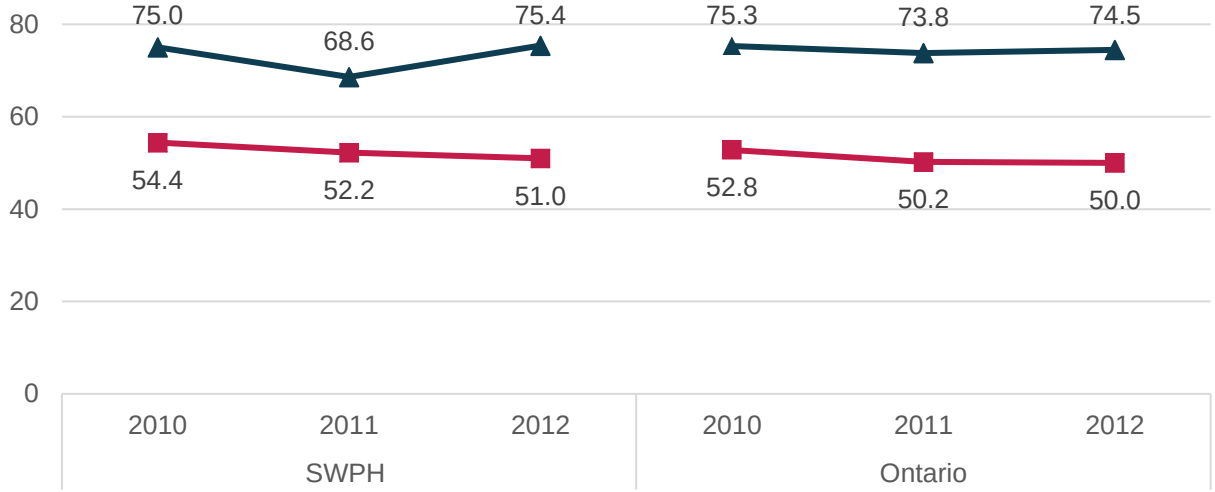
All cancers

The incidence rate of all cancers was similar for both the SWPH region and Ontario between 2010 and 2012. The mortality rate of all cancers in the SWPH region was higher than Ontario in 2012.



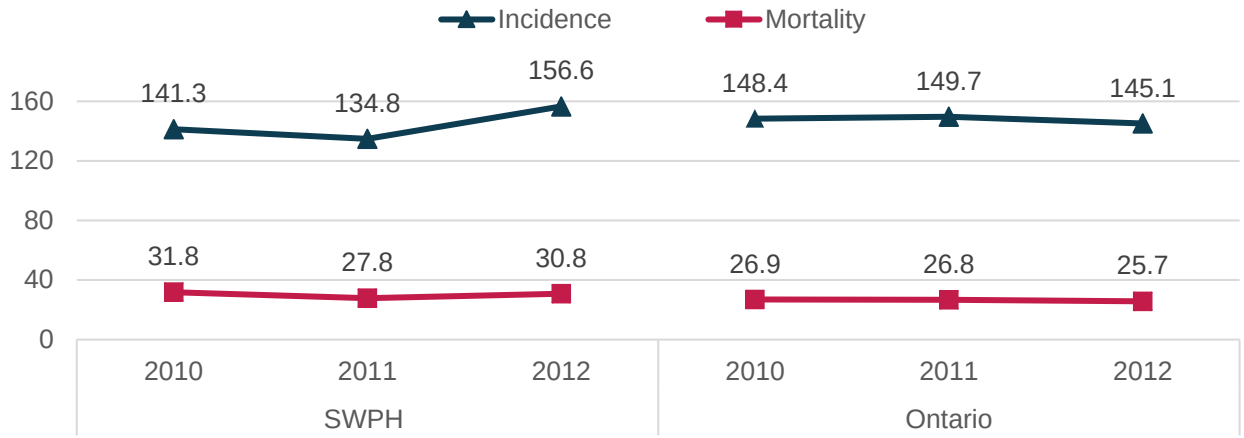
Lung cancer

The incidence and mortality rate of lung cancer was similar for both the SWPH region and Ontario.



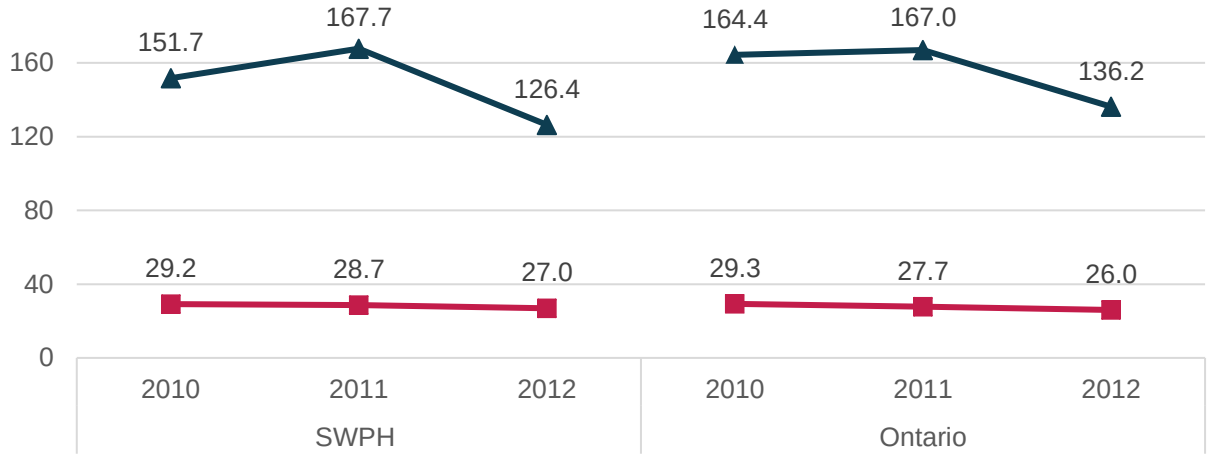
Breast cancer (females only)

The incidence and mortality rate of breast cancer among females was similar between the SWPH region and Ontario.



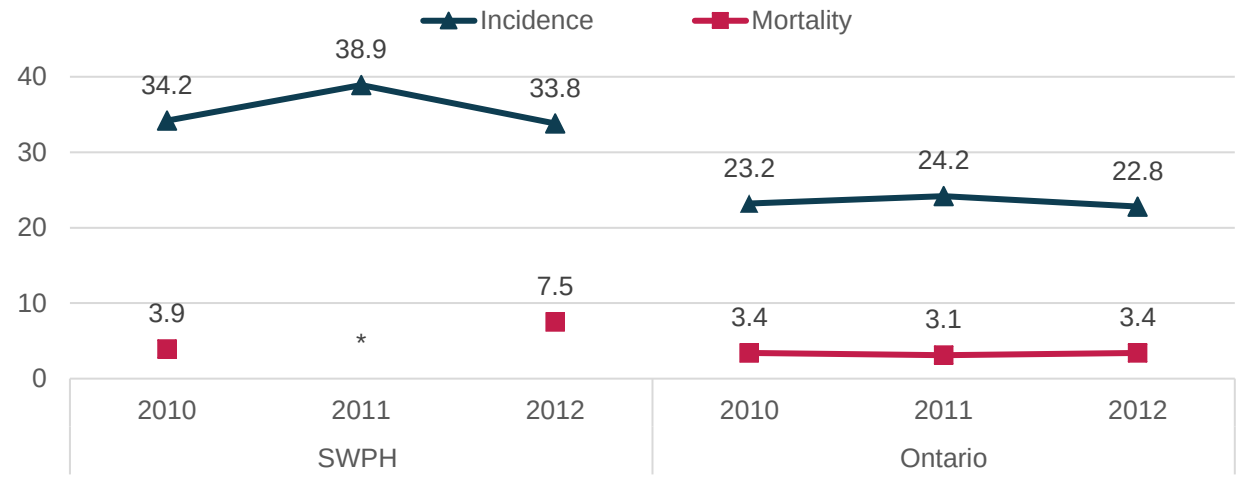
Prostate cancer (males only)

The incidence and mortality rate of prostate cancer among males was similar between the SWPH and Ontario.



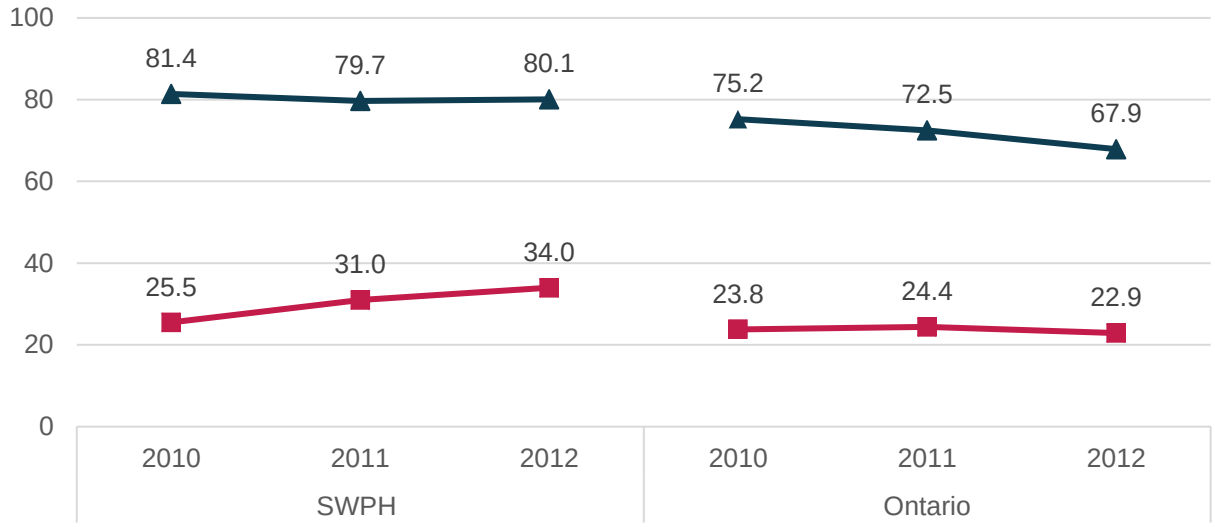
Melanoma (skin cancer)

The incidence of melanoma in the SWPH region was consistently higher than Ontario between 2010 and 2012. The mortality rate of melanoma in the SWPH region was similar to Ontario in 2010 but higher than Ontario in 2012. The mortality rate in 2011 for the SWPH region was suppressed due to small numbers.



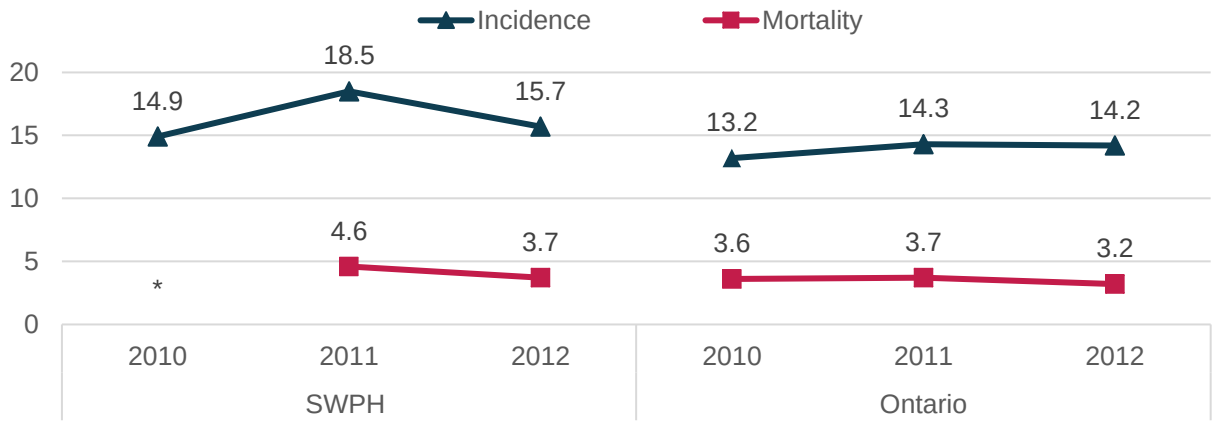
Colorectal cancer

The incidence of colorectal cancer was similar between the SWPH region and Ontario. The mortality rate of colorectal cancer in the SWPH region was higher than Ontario in 2011 and 2012.



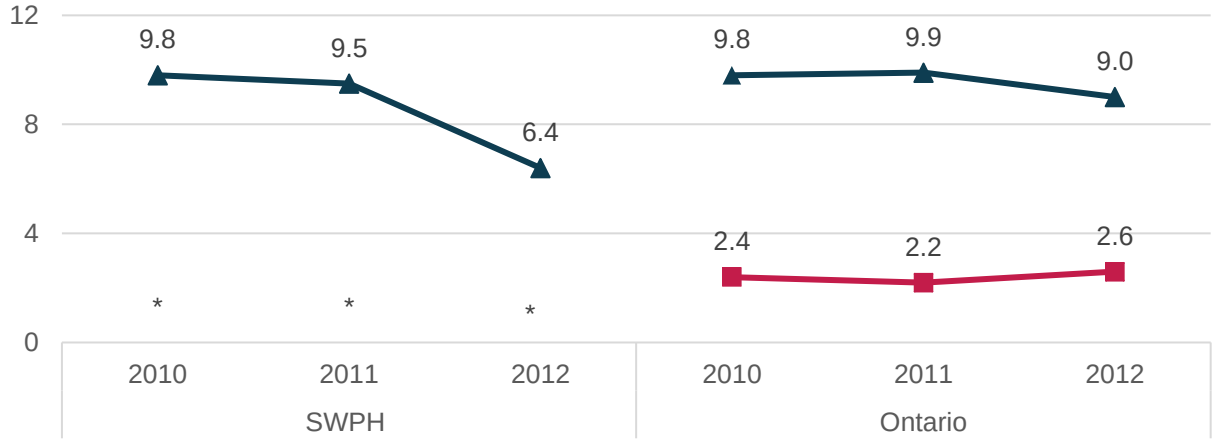
Oral cancer

The incidence and mortality rate of oral cancer was similar between the SWPH region and Ontario. The mortality rate was suppressed in 2010 for the SWPH region due to small numbers.



Cervical cancer (females only)

The incidence rate of cervical cancer was similar between the SWPH region and Ontario. The mortality rate for cervical cancer in the SWPH region was suppressed due to small numbers.



Physical Activity

Adult and youth physical activity

According to the Canadian Physical Activity (CPA) guidelines, adults aged 18 to 64 years should participate in at least 150 minutes of moderate- to vigorous-intensity[f] aerobic physical activity per week in bouts of 10 minutes or more to achieve health benefits.[17] The Canadian Community Health Survey collects information on physical activity and categorizes activity levels based on the following criteria:

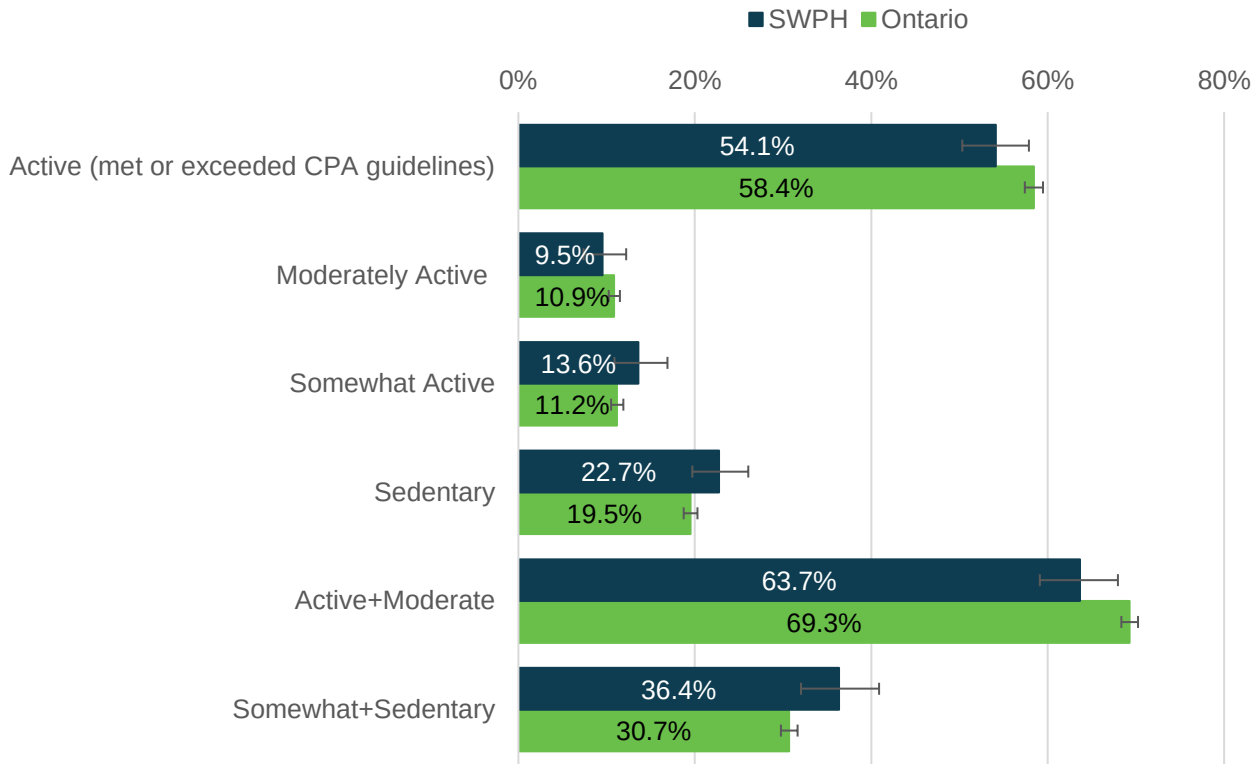
- **Active**: 150 minutes of moderate- to vigorous-intensity aerobic physical activity per week (meets CPA guidelines)
- **Moderately active**: 75 to 149 minutes per week
- **Somewhat active**: 0 to 74 minutes per week
- **Sedentary**: 0 minutes per week

Data source: Physical activity data is from the Canadian Community Health Survey (CCHS)

In the SWPH region, 54.1% of adults (18 years and older) met or exceeded the Canadian Physical Activity guidelines of 150 minutes of moderate- to vigorous-intensity aerobic physical activity per week; this was similar to Ontario (58.4%) (Figure 16). A lower proportion of adults in the SWPH region (63.7%) were considered active or moderately active compared to Ontario (69.3%) and a higher proportion of adults in the SWPH region (36.4%) were considered somewhat active or sedentary (inactive) compared to Ontario (30.7%) (Figure 14).

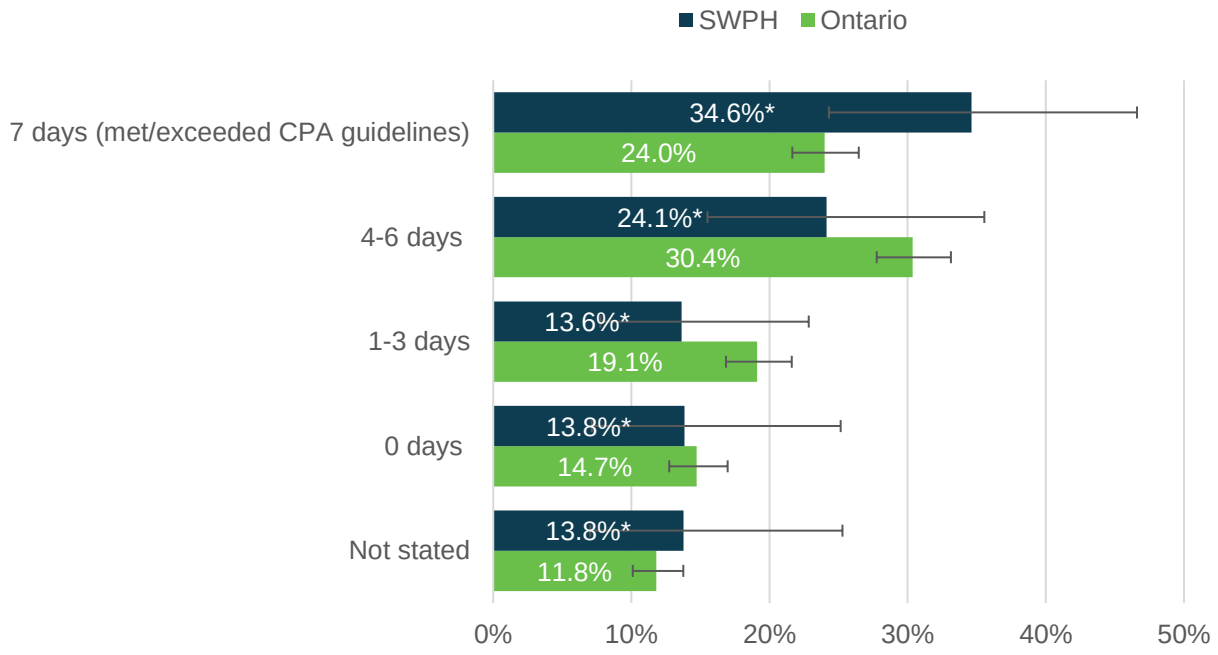
[f] Moderate-intensity physical activity refers to physical activity performed at 3.0-5.9 times the intensity of rest for adults. Generally, it is intense enough to elevate heart rate, but a person can talk during these activities. Vigorous-intensity physical activity refers to physical activity performed 6.0 or more times the intensity of rest for adults and older adults. Generally, it increases heart rate substantially, elevates body temperature quickly and a person cannot say more than a few words without pausing for a breath.[18]

Figure 14. Proportion of adults, age 18 and older, by physical activity category, Southwestern Public Health and Ontario, 2015-2016[4]



The Canadian 24-hour movement guidelines for children and youth recommend that youth (ages 5 to 17 years) spend at least 60 minutes each day on moderate to vigorous physical activity to achieve health benefits.[20] In the SWPH region, 34.6% of youth either met or exceeded these guidelines (i.e., spent at least 60 minutes on moderate to vigorous physical activity every day of the week), which was similar to Ontario (Figure 15).

Figure 15. Proportion of youth, age 12-17 years, by number of days meeting or exceeding the Canadian physical activity guidelines[4]



*High variability results, interpret with caution.

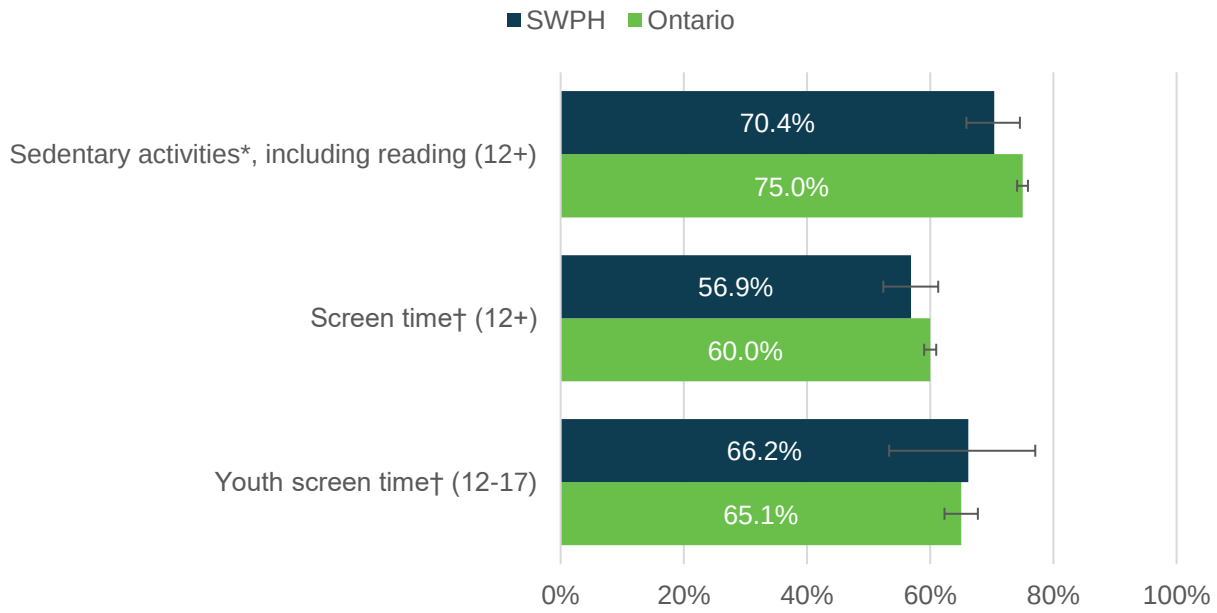
Sedentary activity and screen time

Sedentary activity is defined as activities that involve sitting or lying down for long periods during the day. This includes using a screen device such as a computer, phone or TV (i.e., “screen time”) but can also be reading, drawing and talking while sitting.[19] Sedentary behavior has been identified as a risk factor for several chronic conditions such as heart disease and diabetes.[19] It is important to note that sedentary activity and physical activity are not mutually exclusive. For example, an individual considered active could still engage in sedentary activity for the majority of the day.

In the SWPH region, over half (56.9%) of individuals aged 12 years and older reported spending 15 or more hours of leisure time on sedentary activities excluding reading (i.e. screen time) per week; this was similar to Ontario (60%) (Figure 16). Individuals aged 12 years and older in the SWPH region reported spending an average of 22.6 hours per week during leisure time on screen time, which was similar in Ontario (22.5 hours) (Figure 17).

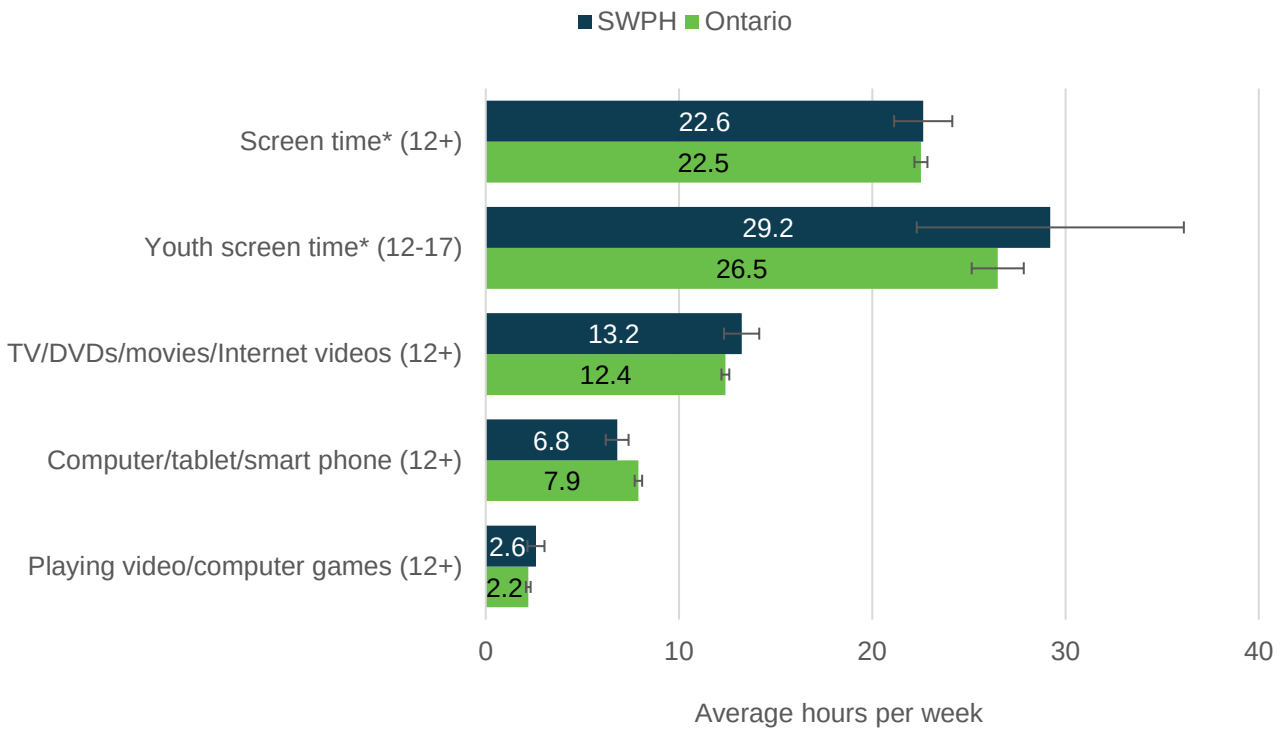
The Canadian Society for Exercise Physiology recommends that youth aged 12 to 17 years spend no more than two hours per day (14 hours per week) on screen time.[19] In the SWPH region, 66.2% of youth spent 15 or more hours of leisure time on sedentary activities per week, which was similar in Ontario (65.1%) (Figure 16). Youth spent an average of 29.2 hours on screen time per week in the SWPH region and 26.5 hours per week in Ontario (Figure 17).

Figure 16. Proportion of population that spent 15 or more hours of leisure time on sedentary activities per week, Southwestern Public Health and Ontario, 2015-2016[4]



Note: excludes time spent at school or work
* sedentary activity includes reading, using a computer, using the Internet, playing video games and watching tv or videos
† screen time includes using a computer, using the Internet, playing video games and watching TV or videos

Figure 17. Average number of hours of leisure time spent on sedentary activities per week, Southwestern Public Health and Ontario, 2015-2016[4]

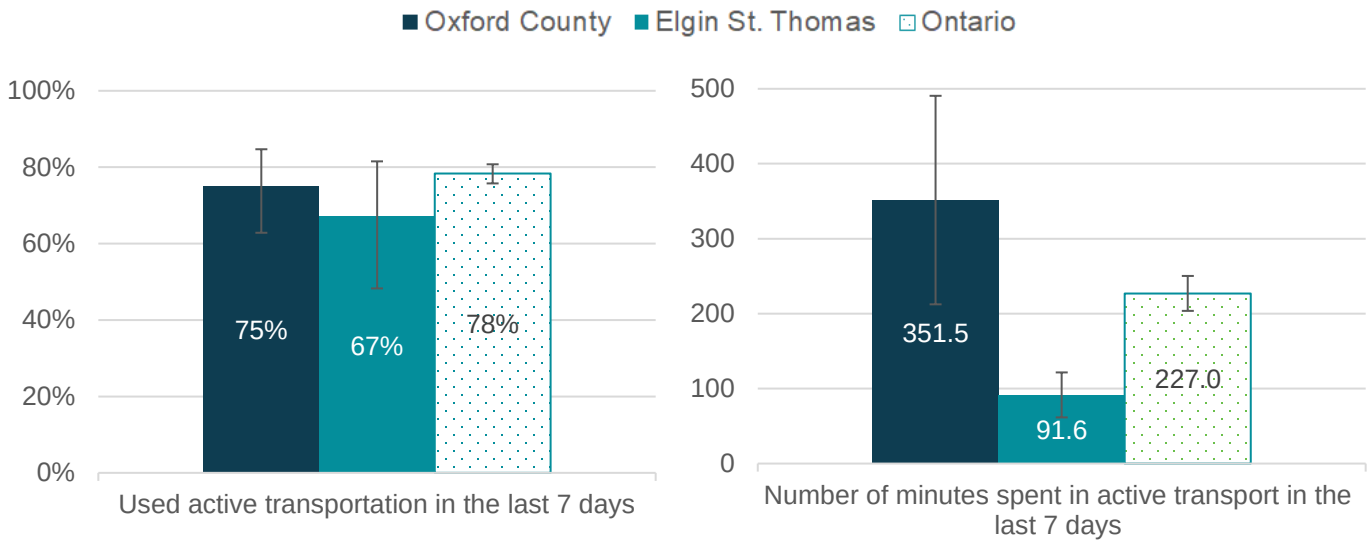


Note: excludes time spent at school or work
*screen time includes using a computer, using the Internet, playing video games and watching TV or videos

Active transportation

Active transportation is physical activity used as a means of transportation, such as walking and cycling.[21] Overall, a similar (i.e. not statistically significantly different) proportion of youth aged 12 to 17 years reported using active transportation in the last 7 days in Oxford County, Elgin St. Thomas and Ontario (Figure 18). However, when looking at the number of minutes spent by youth travelling in active ways, youth in Elgin St. Thomas spent less time traveling in active ways (91.6 minutes) than youth in Oxford county (351.5 minutes) and Ontario (227.0 minutes); youth in Oxford County and Ontario spent a similar amount of time travelling in active ways (Figure 18).

Figure 18. Proportion of youth, aged 12-17 years, that used active transportation in the last 7 days and average time (minutes) travelling in active ways in the last 7 days, Oxford County, Elgin St. Thomas and Ontario, 2015-2016[4]



Nutrition and Healthy Weights

Body Mass Index (BMI)[g] is a calculation based on an individual's height and weight and is used to classify body weight (Table 4).[22,23] Although BMI is considered an important indicator of health, other factors such as lifestyle, fitness level and comorbidities should be considered when determining the health risk of an individual.[23]

Data source: Nutrition and healthy weight data are from the Canadian Community Health Survey (CCHS)

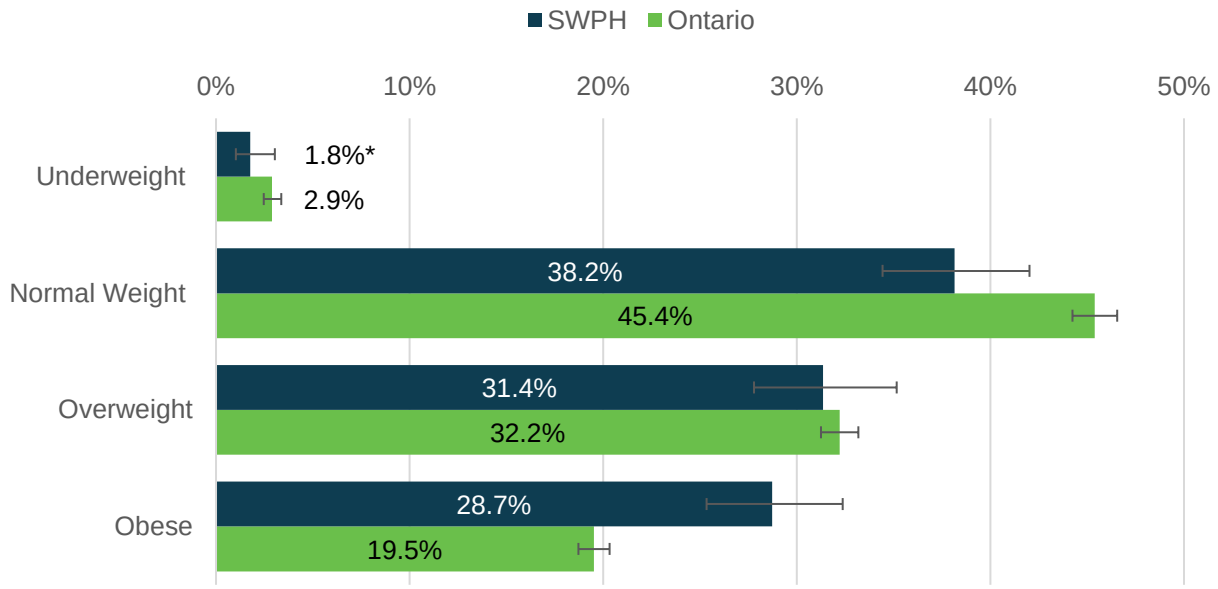
A higher proportion of adults (18 years and older) were classified as obese in the SWPH region (28.7%) compared to Ontario (19.5%) (Figure 19). The proportion of adults classified as overweight was similar for both the SWPH region (31.4%) and Ontario (32.2%). A lower proportion of adults in the SWPH region (38.2%) were classified as having a normal weight compared to Ontario (45.4%).

[g] Body Mass Index (BMI) is the only measure currently available at the population level to assess weight; however, there are limitations to its use. Body type and muscle mass can result in misclassification. For example, athletes with a larger proportion of muscle mass typically score as overweight even though they are a healthy weight. BMI also does not measure health. An individual who is classified as overweight and who is active, may be healthier than another individual classified as normal weight who is sedentary. BMI should only be used to assess weight, not health, at the population level. It is not intended to assess weight or health at an individual level. There are many other factors (nutrition, physical activity, smoking, alcohol and substance use, blood work results and blood pressure) that should be considered when assessing health. Assessment of healthy growth and development for children and youth 19 years and under should track height and weight measurements over a period of time using the World Health Organization growth charts.

Table 4. Body weight classification according to Body Mass Index (BMI) category

Classification	BMI category (kg/m^2)
Underweight	<18.5
Normal	18.5-24.9
Overweight	25.0-29.9
Obese	≥ 30.0

Figure 19. Proportion of adults, aged 18 years and older, by BMI classification, Southwestern Public Health and Ontario, 2015-2016[4]

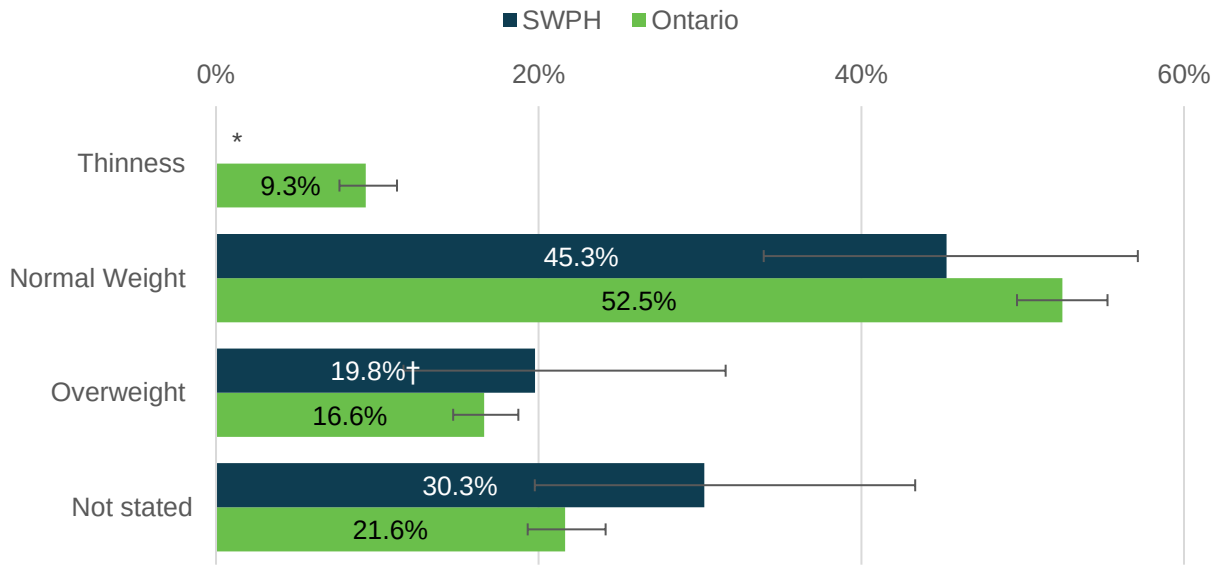


*These proportions should be interpreted with caution due to high variability.

Since adolescents are still growing, their BMI classification[h] is different than the standard classification used for adults. BMI cut-offs for the overweight and obese categories are lower for adolescents compared to adults, are sex-specific and increase with every year of age.[24] For example, the BMI cut-off for the obese category is different for girls aged 12 years (25kg/m^2) than for boys aged 12 years (23.5kg/m^2). In the SWPH region, 45.3% of adolescents (12 to 17 years) were of a normal weight according to the adolescent BMI classification, which was similar to Ontario (52.3%) (Figure 20). A similar proportion of adolescents were considered overweight in the SWPH region (19.8%) and Ontario (16.6%).

[h] BMI classifications are based on age- and sex-specific BMI cut-off points as defined by Cole and Lobstein. Cut-off points are based on pooled international data for BMI and linked to the widely internationally accepted adult BMI cut-off points of 18.5 (normal), 25 (overweight) and 30 (obese).

Figure 20. Proportion of adolescents, aged 12-17 years, by BMI classification, Southwestern Public Health and Ontario, 2015-2016[4]

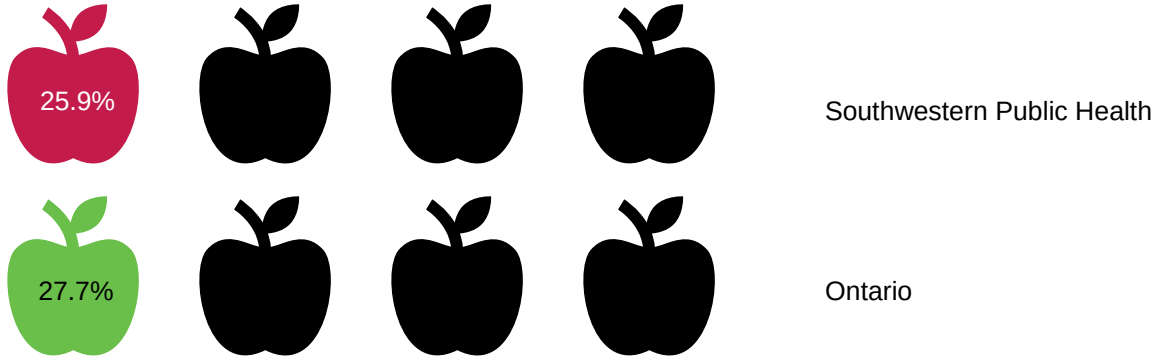


* This proportion is suppressed due to its extremely high variability.
†This proportion should be interpreted with caution due to its high variability.

Fruit and vegetable consumption

Fruits and vegetables are an important part of a healthy diet and have been associated with a decreased risk of cardiovascular disease and other chronic conditions.[25] Overall, the frequency of fruit and vegetable consumption was low in SWPH; slightly over one-quarter of the population (aged 12 years and older) reported that they consumed fruits and vegetables five or more times a day in the SWPH region (25.9%). This was similar in Ontario (27.7%) (Figure 21).

Figure 21. Proportion of the population who consumed vegetables and fruits five or more times a day*, Southwestern Public Health and Ontario, 2015-2016[4]



Note: This is not an indicator of the quantity of fruit and vegetable consumption.

Mental Health

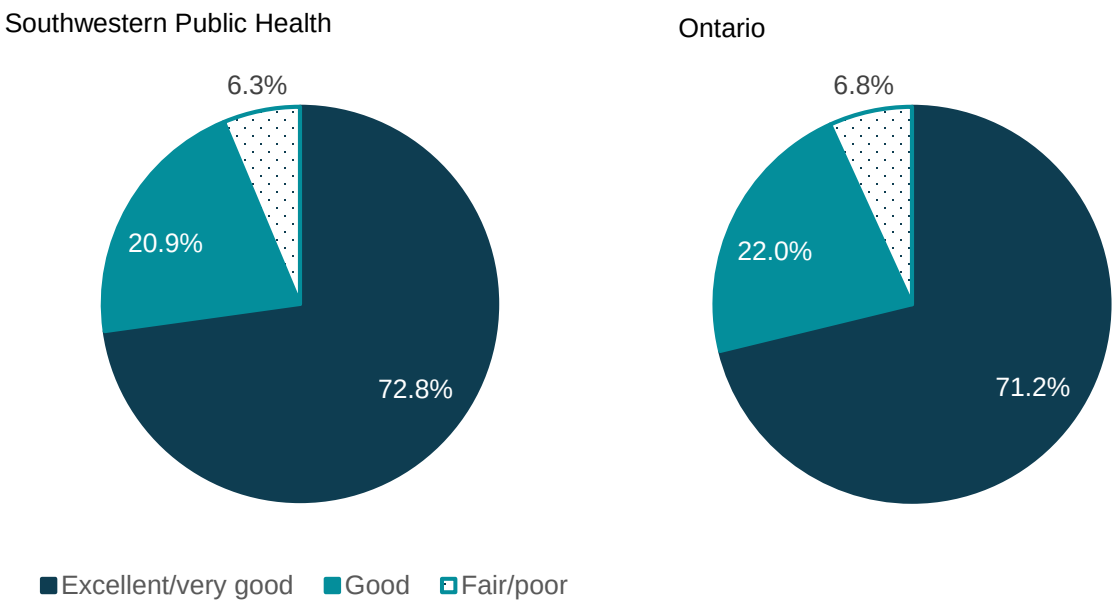
Self-perceived mental health

Self-perceived mental health is measured by asking respondents to score their mental health on a five-point scale (excellent, very good, good, fair, poor). This can serve as a broad indicator for the proportion of individuals experiencing some form of mental health issue (e.g., mental health disorders, emotional difficulties and stress).[26,27]

Overall, 72.8% of the population in the SWPH region reported excellent or very good mental health, which was comparable to Ontario (71.2%) (Figure 22). A similar proportion of the population reported fair or poor health in the SWPH region (6.3%) and Ontario (6.8%).

Data source: Self-reported mental health data is from the Canadian Community Health Survey (CCHS)

Figure 22. Self-reported mental health, Southwestern Public Health and Ontario, 2015-2016[4]



Life satisfaction

Satisfaction with life is a subjective indicator that has been positively correlated with good mental and physical health.[28] It is measured by asking individuals to rate their current life satisfaction on a scale from 0 to 10, which is then grouped into five categories (not satisfied, very dissatisfied, dissatisfied, neither satisfied nor dissatisfied, satisfied and very satisfied). In the SWPH region, life satisfaction was high with 92.5% of the population (aged 12 years and older) reporting they were satisfied or very satisfied with life in general; a similar proportion was reported in Ontario (92.6%).

Sense of belonging

Research has also demonstrated an association between a sense of belonging to a local community and positive health outcomes.[29] In the SWPH region, 72.1% of the population (aged 12 and older) reported a somewhat strong or very strong sense of belonging to their local community; a similar proportion was seen in Ontario (71.2%) (Figure 23).

Figure 23. Sense of belonging to the local community, Southwestern Public Health and Ontario, 2015-2016[4]

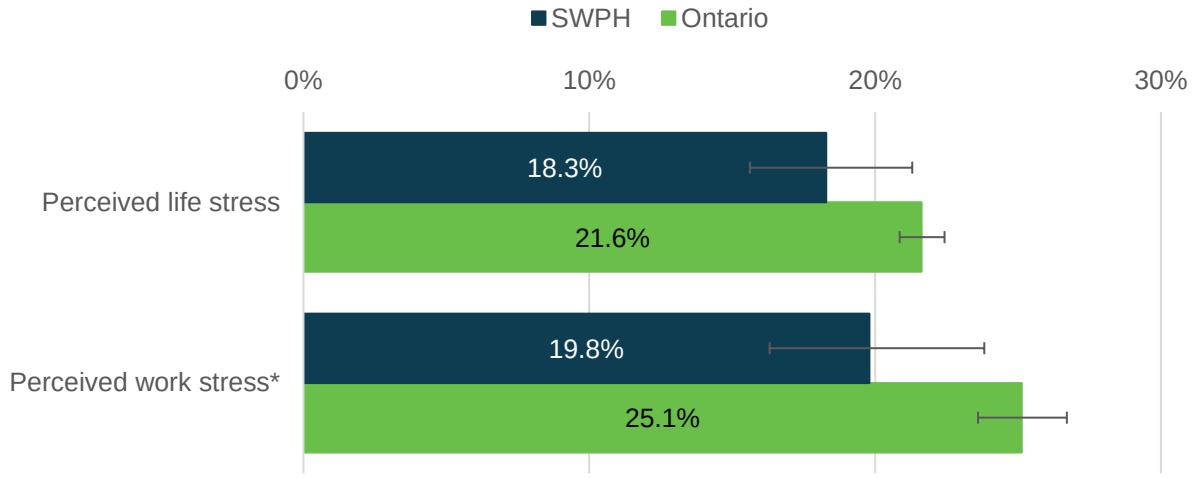
Perceived life and work stress

While some level of stress is considered beneficial, consistent levels of stress have been associated with several mental health and medical conditions such as depression, anxiety, high blood pressure and sleep disorders.[30] Common life stressors include financial strain, unemployment/employment, parenting and health issues.[31] Work stressors include job strain (i.e. relates to high psychological demands and little decision-making power), job insecurity and lack of a supportive work environment.[32]

Perceived life stress was similar in the SWPH region and Ontario. Around one-fifth of the population (18.3% in the SWPH region and 21.6% in Ontario) indicated that most days of their life were quite a bit or extremely stressful (Figure 24). Around one-fifth (19.8%) of respondents

from SWPH who had worked at a job or business in the past 12 months indicated that most days at work were quite a bit or extremely stressful, which was similar to Ontario (25.1%).

Figure 24. Percentage of respondents who indicated most days of their life or most days at work were quite a bit or extremely stressful, Southwestern Public Health and Ontario, 2015-2016[4]



*This question was only asked of respondents that had worked at a job or business in the past 12 months

Self-reported depression

Depression is a mood disorder that is characterized by persistent feelings of sadness, helplessness, loss of interest, change in appetite or weight and sleep disturbances that last for more than two weeks.[33] Approximately one-fifth (20.4%) of people living in the SWPH region reported experiencing depression in the past two weeks (which included mild, moderate, moderately severe and severe depression); this was similar to Ontario (21.8%) (Figure 25).

Figure 25. Self-reported depression in the past two weeks, Southwestern Public Health and Ontario, 2015-2016[4]

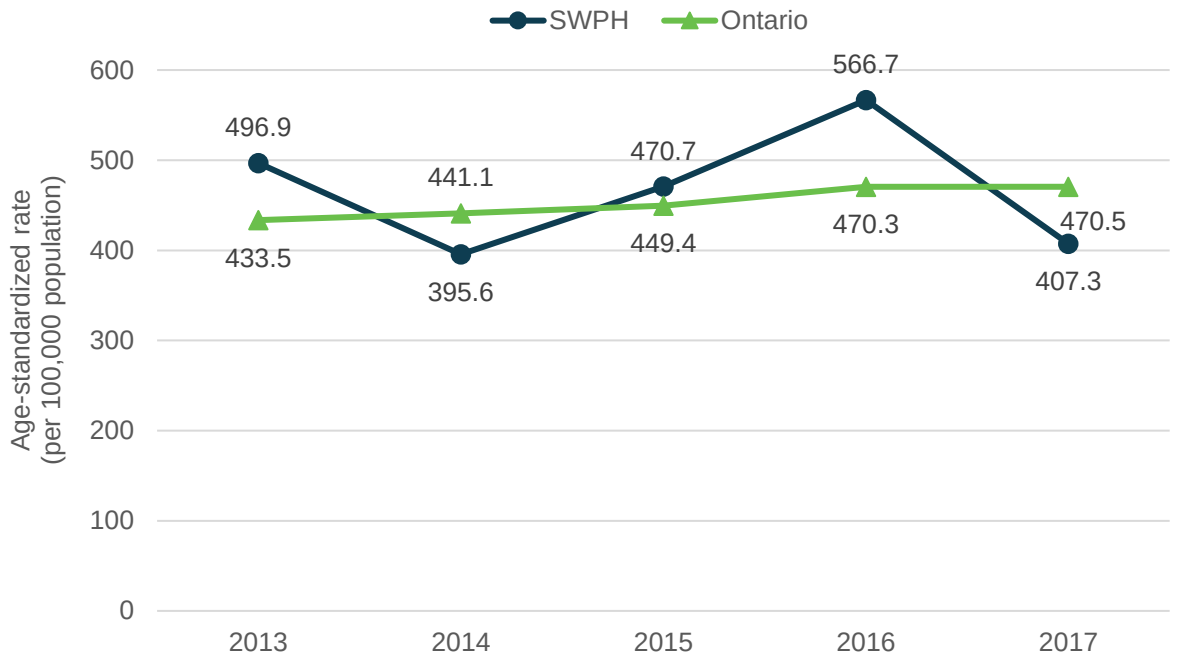
Hospitalizations for mental health

This indicator encompasses both hospital discharges (i.e., hospital visits with a mental health diagnosis upon discharge, death or transfer to another facility) as well as individuals admitted to designated adult inpatient mental health beds. Hospitalizations for mental health diagnoses include substance-related disorders such as alcohol dependency and opioid abuse, self-harm, personality disorders, schizophrenia as well as mood disorders such as depression and bipolar affective disorder. Of note, hospitalizations for mental health are only a small proportion of the true prevalence of mental illness in the population as many cases may not require hospitalization, are seen in outpatient settings or do not seek care at all.

Data source: Mental health hospitalization data is from the Discharge Abstract Database (DAD) and the Ontario Mental Health Reporting System (OMHRS) obtained via IntelliHEALTH ONTARIO

The rate of hospitalizations due to mental health in the SWPH region was higher than Ontario in 2013 and 2016 but was similar to Ontario in 2014, 2015 and 2017 (Figure 26).

Figure 26. Age-standardized rate (per 100,000 population) of hospitalizations for mental health, Southwestern Public Health and Ontario, 2013-2017[2,34]



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Substance Use and Injury Prevention

Data about opioid use and related harms were not included in this report because SWPH conducts opioid surveillance and routinely communicates up-to-date information to stakeholders.

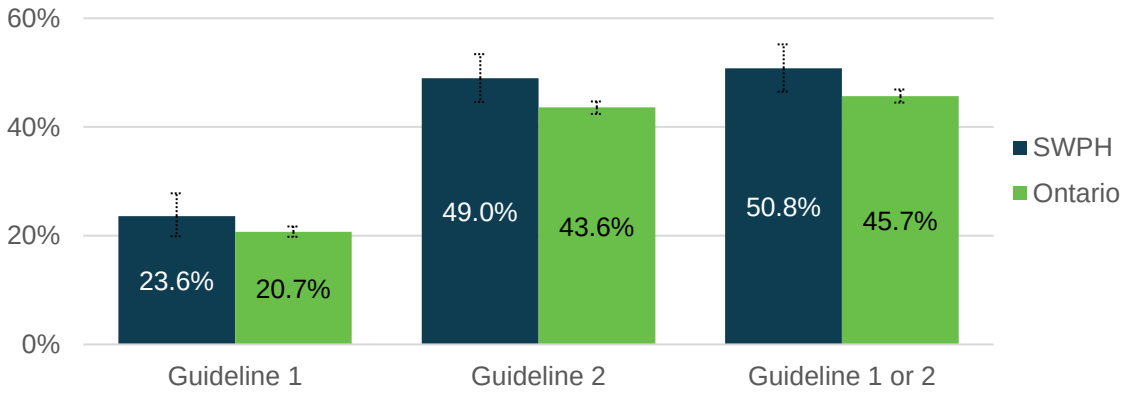
Alcohol

The low-risk alcohol drinking guidelines (LRADGs) were created to increase awareness of the health risks of alcohol use and influence health behaviour.[1] There are five guidelines – the first guideline aims to reduce long-term health risks (e.g., heart disease, liver disease, digestive problems, cancer) by emphasizing the need for non-drinking days every week and for restricting intake to no more than 10 drinks a week for women (no more than 2 drinks a day on most days) and no more than 15 drinks a week for men (no more than 3 drinks a day on most days).[1] From 2015 to 2016, 23.6% of people 19 years and older (excluding pregnant and breastfeeding women) living in the SWPH region exceeded this guideline. This was comparable to Ontario (20.7%) (Figure 1).[2]

50.8% of people living in the SWPH region exceeded either LRADG 1 or 2, which was comparable to Ontario (45.7%)[2]

The second guideline aims to reduce short-term health risks (e.g., injuries, alcohol poisoning, violence) by emphasizing the need to limit drinking to no more than three drinks (women) or four drinks (men) on any single occasion.[1] From 2015 to 2016, almost half (49.0%) of people 19 years and older (excluding pregnant and breastfeeding women) living in the SWPH region exceeded this guideline. This was comparable to Ontario (43.6%) (Figure 1).[2]

Figure 1. Age-standardized per cent of residents who exceeded the low-risk alcohol drinking guidelines 1 and 2, Southwestern Public Health and Ontario, 2015-2016[2]



Heavy drinking is measured as having five or more drinks on at least one occasion per month in the past 12 months for males and four or more drinks on at least one occasion per month in the past 12 months for females. From 2015 to 2016, 20.5% of people living in the SWPH region were considered heavy drinkers. This was comparable to Ontario (18.0%).[2]

Data source:
The alcohol and tobacco use data are from the Canadian Community Health Survey (CCHS)

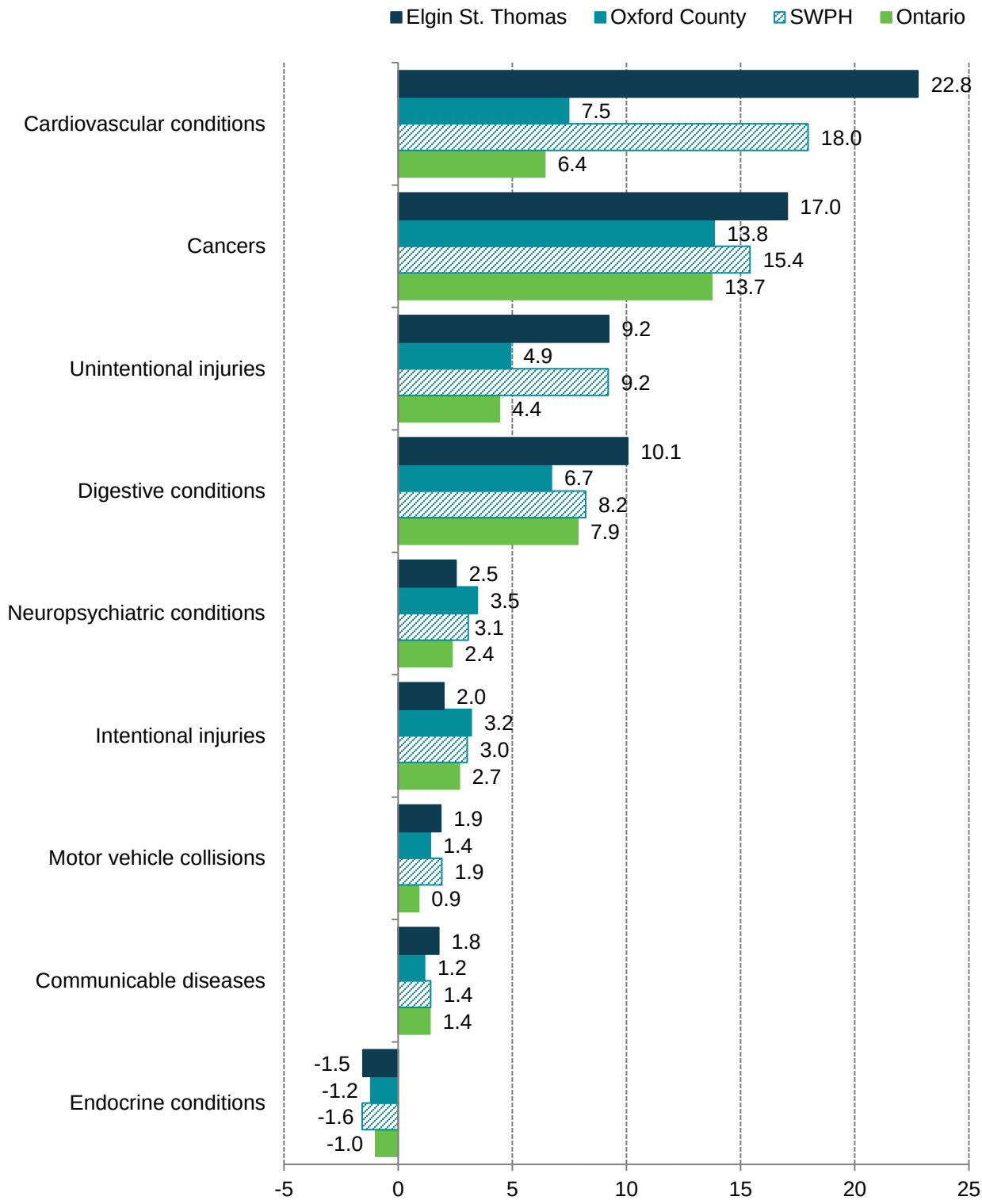
The LRADGs also recommend delaying drinking until the late teens for children and youth.[1] Although the legal age for purchasing alcohol in Ontario is 19 years, from 2015 to 2016, 32.8% of SWPH youth (12 to 18 years) consumed alcohol in the past 12 months. This was comparable to Ontario (30.2%).[2]

Alcohol-attributable deaths indicate how many deaths could be avoided if residents did not consume alcohol. There are some conditions that are 100% attributable to alcohol (i.e., are caused entirely by alcohol), such as alcohol-induced liver disease and alcohol-induced pancreatitis. However, alcohol-attributable deaths can also include other conditions that are partly attributable to alcohol (e.g., hypertension, breast cancer, epilepsy). The conditions 100% and partly attributable to alcohol use include communicable diseases, cancers, endocrine conditions, neuropsychiatric conditions, cardiovascular conditions, digestive conditions, motor vehicle collisions and unintentional and intentional injuries.[3] These conditions were chosen based on recent scientific evidence showing causation between alcohol consumption and health outcomes.[3] A more detailed list of conditions is included in the technical appendix.

Cardiovascular conditions were the top cause of alcohol-attributable deaths among people living in the SWPH region whereas cancers were the top cause in Ontario[4]

Using data over a five-year period (from 2008-2012), there were on average 95 deaths per year that had a primary cause attributable to alcohol among people aged 15 years and older living in the SWPH region.[4] This equates to a crude rate of 58.6 per 100,000 population 15 years and older, which was higher than Ontario (38.8 per 100,000).[4] People living in the SWPH region had higher rates of alcohol-attributable deaths from cardiovascular conditions and unintentional injuries compared to Ontario (Figure 2). There were also some differences between people living in Elgin St. Thomas compared to people living in Oxford County, particularly for alcohol-attributable deaths from cardiovascular conditions; the rate was more than three times higher in Elgin St. Thomas compared to Oxford County.

Figure 2. Five-year average crude rate (per 100,000 population) of deaths attributable to alcohol by health condition group, residents 15 years and older, Southwestern Public Health and Ontario, 2008-2012 (combined)[4]



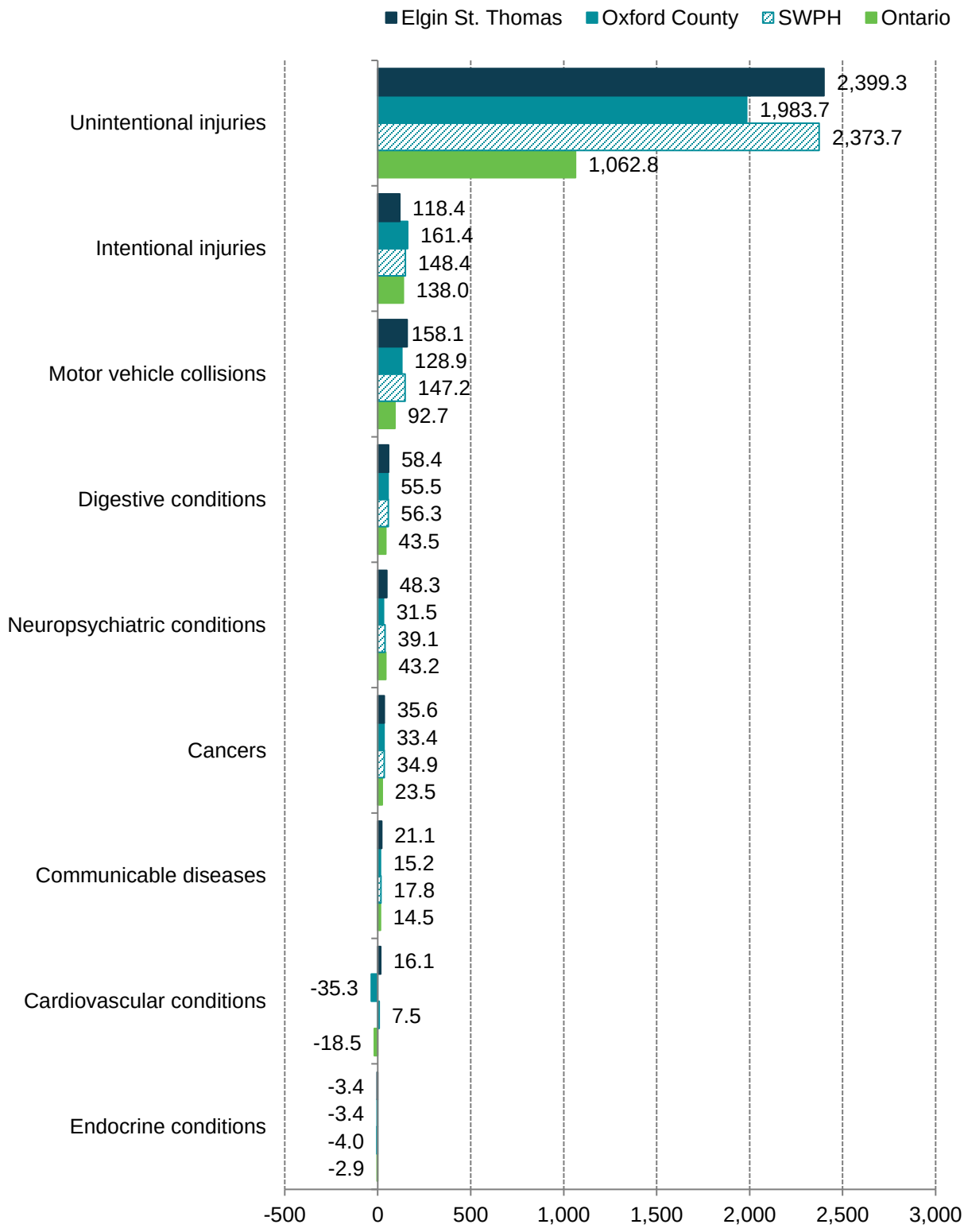
Alcohol-attributable hospitalizations indicate the proportion of hospitalizations that could disappear if residents did not consume alcohol. As is the case for alcohol-attributable deaths, there are hospitalizations for some conditions that are 100% attributable to alcohol and some that are partly attributable to alcohol. The conditions included here are the same as those used above for alcohol-attributable deaths. Importantly, hospitalizations for injuries do not account for injuries caused by another person's drinking. Similarly, conditions that do not directly affect the person drinking alcohol, such as fetal alcohol spectrum disorder (FASD), are not included.

Using data over a five-year period (from 2012-2016), there were on average 4,666 hospitalizations per year that were attributable to alcohol among residents aged 15 years and older living in the SWPH region.[5] This equates to a crude rate of 2,820.9 per 100,000 population 15 years and older, which was higher than Ontario (1,396.8 per 100,000).[5] Most of these hospitalizations were from unintentional injuries such as falls, fires, drowning, accidental poisoning by alcohol and accidental poisoning by other substances (Figure 3).[5] There were some differences between people living in Elgin St. Thomas compared to people living in Oxford County. For example, the rate of intentional injuries attributable to alcohol was higher in Oxford County (161.4 per 100,000) compared to Elgin St. Thomas (118.4 per 100,000).[5] However, the rate of unintentional injuries attributable to alcohol was higher in Elgin St. Thomas (2,399.3 per 100,000) compared to Oxford County (1,983.7 per 100,000).[5]

Compared to Ontario, people living in the SWPH region had more than 2x the rate of unintentional injuries and 1.5x the rate of motor vehicle collisions attributable to alcohol[5]

Interestingly, endocrine conditions such as diabetes and cardiovascular conditions (in Ontario and Oxford County only) had negative rates, indicating a positive effect of alcohol use on hospitalizations. However, cardiovascular conditions were the top cause of alcohol-attributable deaths among people living in the SWPH region. Therefore, any benefits from potentially reduced hospitalizations may not equate to a reduction in deaths from the same cause. In terms of endocrine conditions, the potential reduction in hospitalizations and deaths appear to be minimal which likely does not outweigh the other risks of alcohol use.

Figure 3. Five-year average crude rate (per 100,000 population) of hospitalizations attributable to alcohol by health condition group, residents 15 years and older, Southwestern Public Health and Ontario, 2012-2016 (combined)[5]

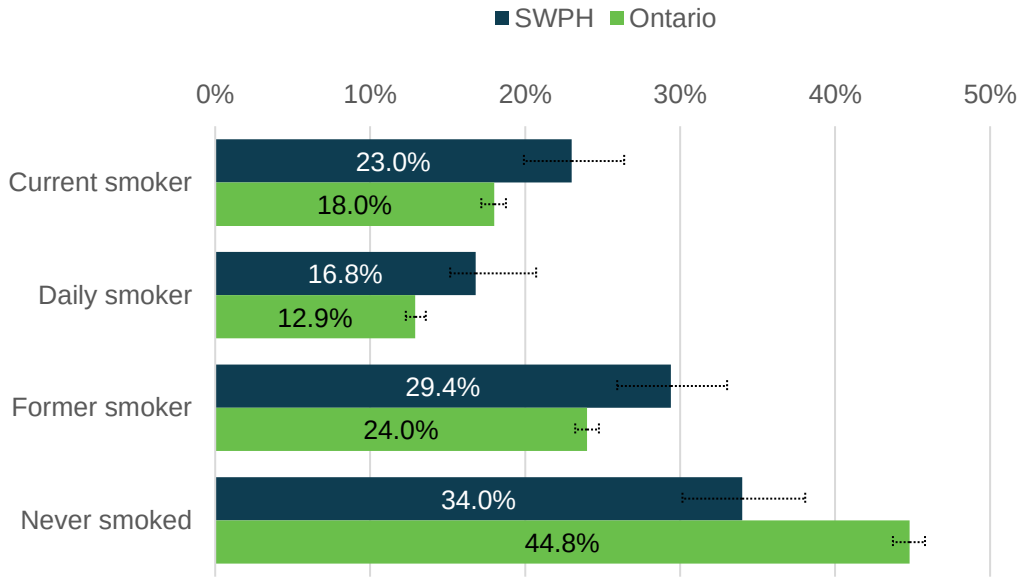


Tobacco

Although alcohol use was similar between people living in the SWPH region and Ontario, tobacco use was higher in the SWPH region

From 2015 to 2016, there were higher proportions of adults who were current smokers (daily and occasional), daily smokers and former smokers in the SWPH region compared to Ontario (Figure 4). About one-third (34.0%) of adults living in the SWPH region completely abstained from smoking cigarettes in their lifetime compared to 44.8% of adults in Ontario.[2] The proportion of youth (12 to 19 years) completely abstaining from cigarettes was much higher than adults in both the SWPH region and Ontario (81.6% versus 89.7%, respectively).[2]

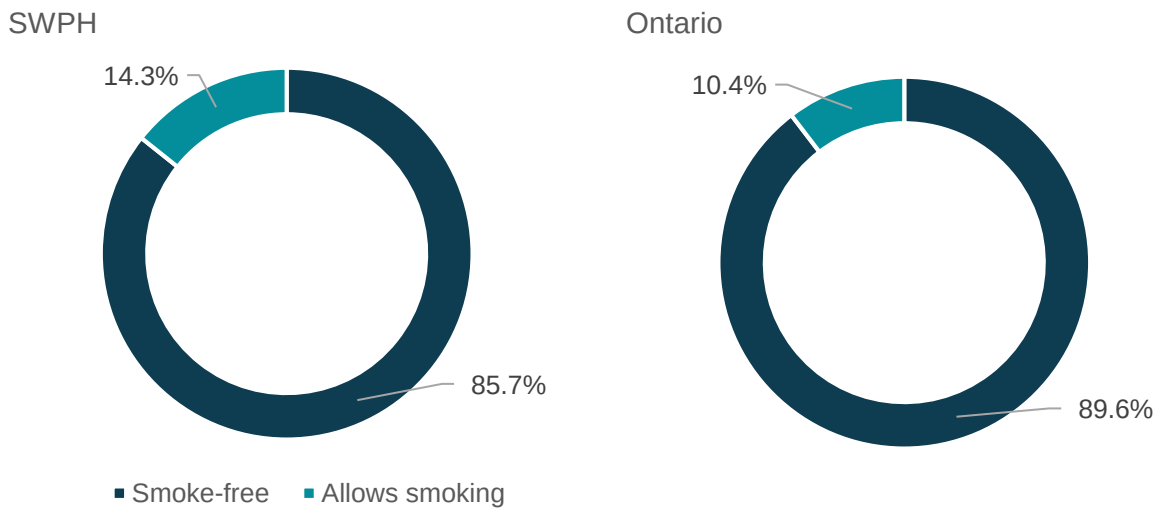
Figure 4. Age-standardized smoking status, adults 20 years and older, Southwestern Public Health and Ontario, 2015-2016[2]



The most common place that non-smokers reported being exposed to second-hand smoke was in public places. From 2015 to 2016, 10.6% of non-smokers living in the SWPH region reported being exposed to second-hand smoke every day or almost every day in the last month in public places such as bars, restaurants, shopping malls and arenas.[2] This was lower than the proportion of non-smokers in Ontario who were exposed to second-hand smoke (16.6%).[2] Compared to public places, a smaller proportion of non-smokers reported being exposed to second-hand smoke in the last month in the home (3.8%[i] in the SWPH region and 3.8% in Ontario) and in a vehicle (3.4%[f] in the SWPH region and 3.9% in Ontario). [2]

Most homes in both the SWPH region and Ontario were smoke-free. However, from 2015 to 2016, the proportion of smoke-free homes was lower in the SWPH region compared to Ontario (85.7% versus 89.6%) (Figure 5).[2]

Figure 5. Proportion of smoke-free homes, Southwestern Public Health and Ontario, 2015-2016[2]



The proportion of smoke-free homes among households with children under 16 years old was similar in the SWPH region compared to Ontario (93.9% and 96.0%, respectively) and was higher than the overall proportion of smoke-free homes (not considering the presence of children as presented in Figure 5).[2]

[i] These per cents should be interpreted with caution due to high variability.

Cannabis

Data source:
The cannabis data is from a Tell City Hall survey

From May to June 2018, people living in Ontario were asked about their cannabis use, opinions and knowledge about provincial plans for legalization. The percentage of people who reported using cannabis in the past 12 months was 41% in the SWPH region and 39% in Ontario.[6] This estimate is much higher than other traditional cannabis use data sources (i.e., the Canadian Community Health Survey, which is discussed in the next section). Due to differences in methodology between these two surveys, these estimates are not comparable. Among people who reported using cannabis in the past 12 months, 49% reported using it for medical reasons (prescribed and non-prescribed), which was similar to Ontario (44%).[6] Over half (63%) of SWPH residents using cannabis reported using it weekly or more compared to 66% in Ontario.[6]

Most people in the SWPH region and Ontario reported that their cannabis use would remain the same after legalization (90% and 87%, respectively)[6]

In the SWPH region, 64% of people supported the federal government's decision to legalize cannabis, which was the same as Ontario.[6] However, among people who are likely to use cannabis for non-medical purposes once it is legalized, only half (52%) of SWPH residents reported that they would access cannabis through approved retail sources – 34% reported that they would buy it the way they do now. Similarly, 67% of Ontarians reported that they would access cannabis through approved retail sources whereas 36% reported that they would buy it the way they do now.[6]

Half (54%) of people living in the SWPH region were aware of the legal age to purchase and consume cannabis (19 years), which was comparable to Ontario (52%).[6] Less than half of people living in the SWPH region would like our municipalities to start allowing all forms of cannabis consumption in:

- cannabis-only lounges (i.e., a lounge that doesn't serve liquor) (48%)
- all stores where cannabis is sold (40%)
- all lounges where liquor is sold (37%)
- all restaurants where liquor is sold (28%)

Illicit Drugs

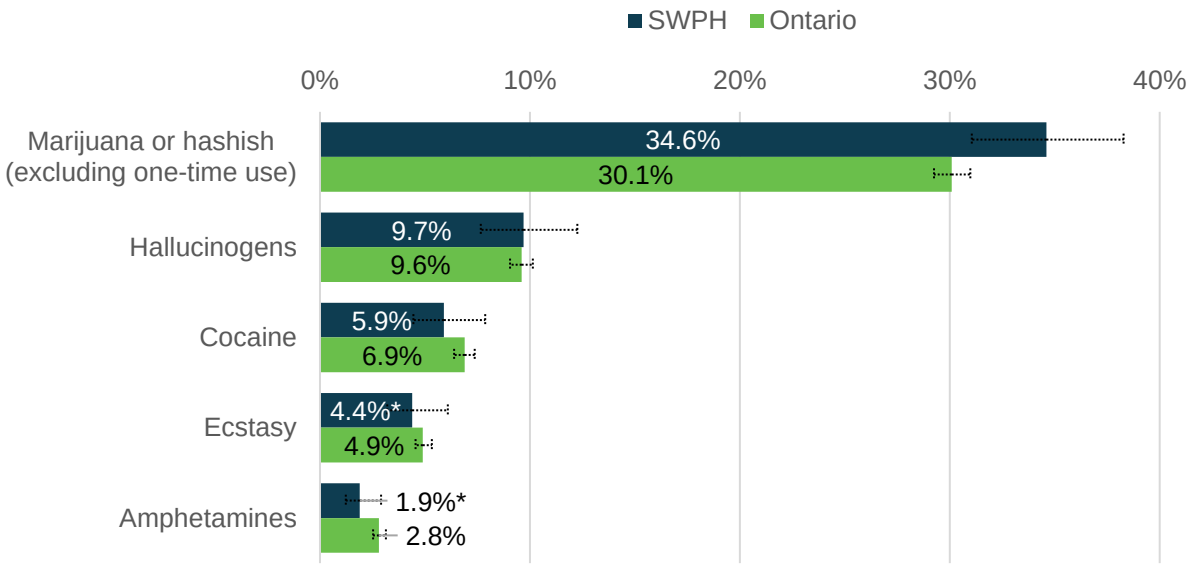
Data source:
The illicit drug use data is from the Canadian Community Health Survey (CCHS)

From 2015 to 2016, almost half (43.4%) of people residing in the SWPH region reported that they used illicit drug(s) in their lifetime. This rate was higher than Ontario where 37.6% reported using illicit drug(s) in their lifetime.[2] This excludes one time use of marijuana or hashish. A smaller proportion of people in both the SWPH region and Ontario reported that they used illicit drug(s) in the past 12 months (12.5% and 11.8%, respectively).[2]

More people residing in the SWPH region used marijuana or hashish in their lifetime compared to Ontario (34.6% versus 30.1%)[2]

The most common type of illicit drug used was marijuana or hashish (Figure 6). Almost half (43.2%) of people residing in the SWPH region reported using marijuana or hashish at least once in their lifetime compared to 37.2% of people in Ontario.[2] This decreased to 34.6% and 30.1%, respectively when excluding one-time use.[2] A smaller proportion of people reported using marijuana or hashish in the past 12 months (11.0% in the SWPH region and 10.9% in Ontario, respectively).[2] A similar proportion of people living in the SWPH region and Ontario reported using other types of illicit drugs, such as cocaine, ecstasy and amphetamines in their lifetime.

Figure 6. Age-standardized per cent of residents who reported ever using an illicit drug by type of drug, Southwestern Public Health and Ontario, 2015-2016[2]



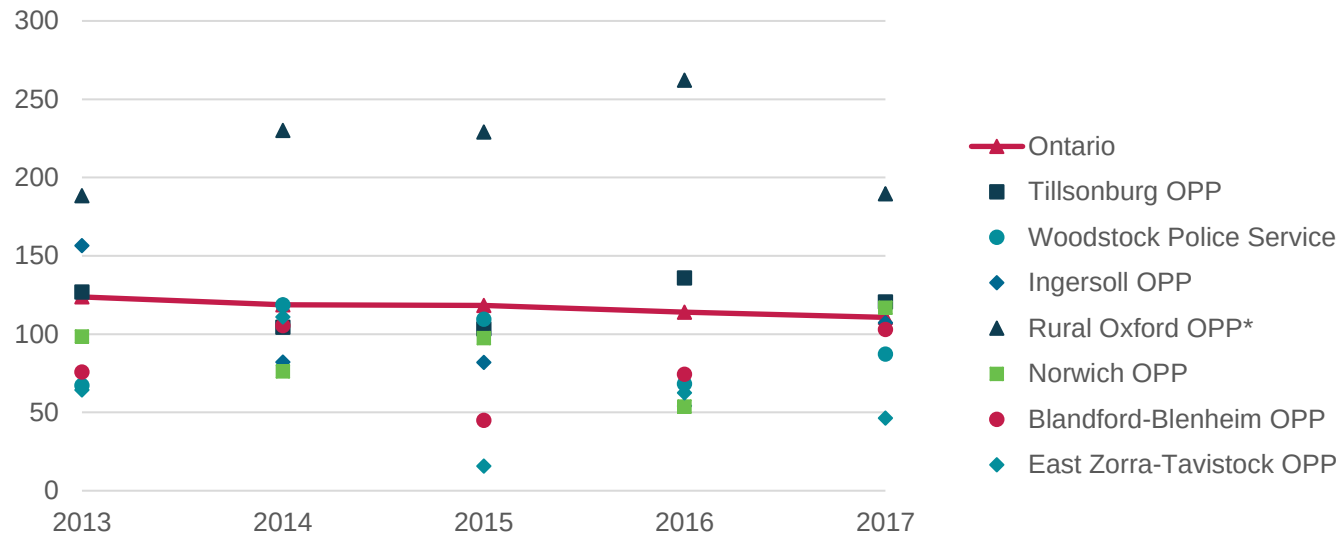
*These per cents should be interpreted with caution due to high variability.

Impaired Driving

The crude rate of people charged with impaired driving (from alcohol and/or drugs) in the SWPH region was typically lower than in Ontario. However, the rates appear to be consistently higher than Ontario in rural Oxford and St. Thomas (Figure 7 and Figure 8).

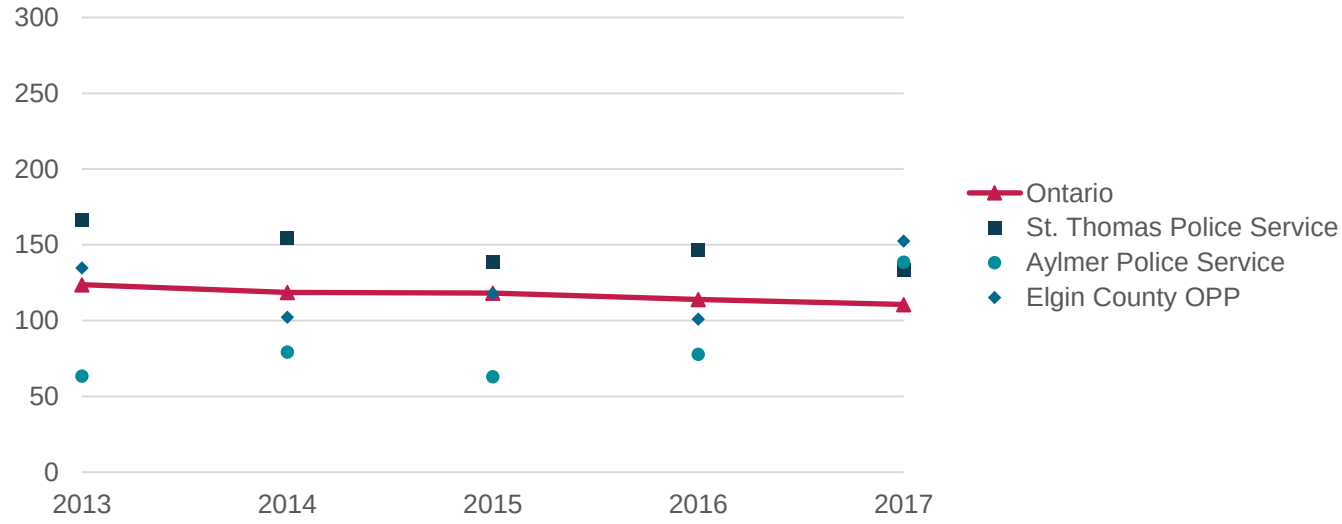
Data source:
The impaired driving data is from the Uniform Crime Reporting Survey

Figure 7. Crude rate of people charged with impaired driving (per 100,000 population aged 12 years and older) by police services in Oxford County and Ontario, 2013-2017[7]



*Statistics Canada does not define rural Oxford. Rather, it is assumed that it refers to South-West Oxford and Zorra, as those are the only municipalities not included as separate police service areas.

Figure 8. Crude rate of people charged with impaired driving (per 100,000 population aged 12 years and older) by police services in Elgin St. Thomas and Ontario, 2013-2017[7]

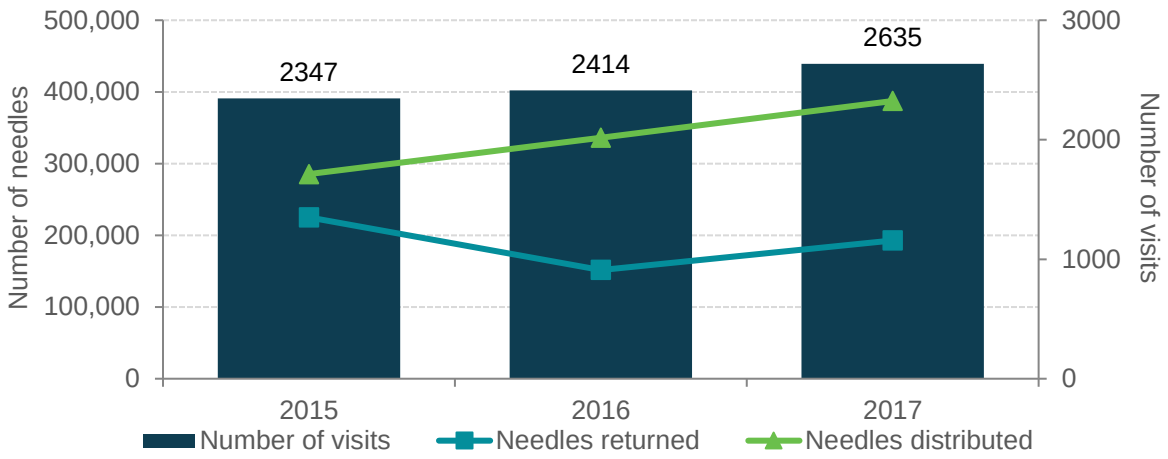


Needle Syringe Program

The SWPH needle syringe program, which aims to prevent the spread of blood-borne infections, is currently offered at five sites across the region (two in St. Thomas, one in Woodstock, one in Ingersoll and one in Tillsonburg) – some of which are new (e.g., Ingersoll started in 2016). Over the last three years (2015 to 2017), the number of visits to this program and the number of needles distributed have steadily increased (Figure 9). The number of needles returned, however, has remained similar over time. Notably, needles can be returned in other ways, including bins in the community.

Data source:
The needle syringe program data is from Southwestern Public Health

Figure 9. Needle syringe program use, Southwestern Public Health, 2015-2017[8]



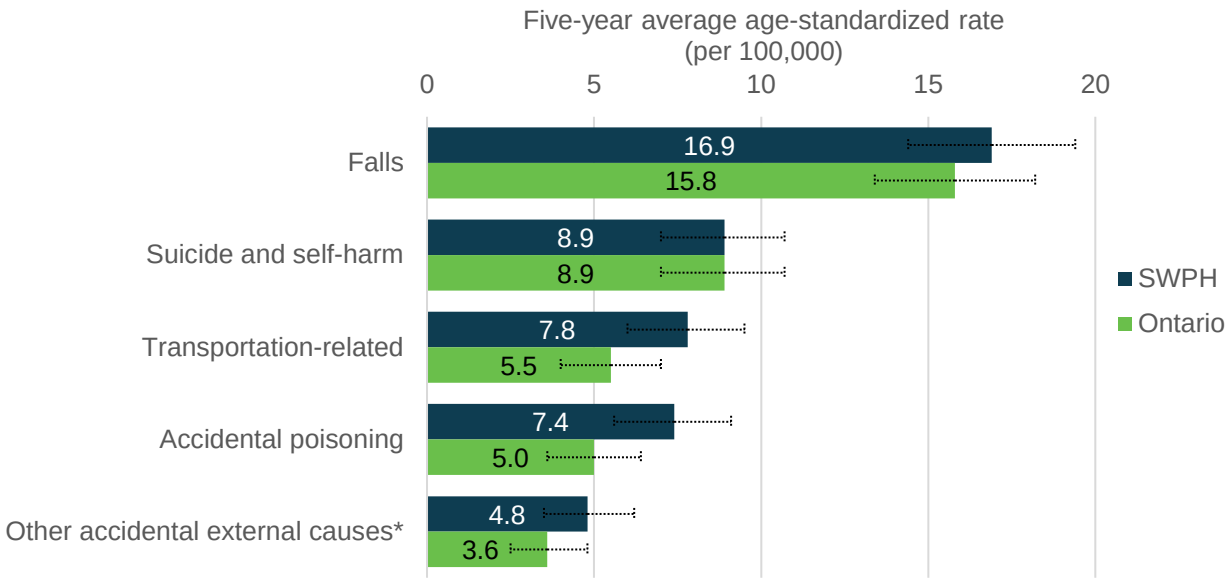
Injuries

From 2008 to 2012, the injury causing the highest rate of death in both the SWPH region and Ontario was falls. On average, there were 16.9 deaths per 100,000 population each year due to falls in the SWPH region (Figure 10).[9] The next most common causes of death due to injuries were suicides and self-harm followed by transportation-related injuries such as motor vehicle collisions, cyclist injuries and water transport accidents (Figure 10).

Data source:
The mortality data is from the Ontario Office of the Registrar General obtained via IntelliHEALTH ONTARIO

There were some types of injuries with small numbers of deaths over a five-year period that could not be age-standardized. Among people living in the SWPH region, these included deaths (number in brackets) from injuries of undetermined intent (8), assault (7), fires and flames (6) and drowning (5).[9]

Figure 10. Five-year average age-standardized rate (per 100,000 population) of deaths due to injuries, Southwestern Public Health and Ontario, 2008-2012 (combined)[9]



*Other unintentional external causes include injuries such as exposure to electric current, radiation and extreme ambient air temperature and pressure; contact with venomous animals and plants; contact with heat and hot substances and overexertion.

Falls were the most common injury leading to emergency department visits, hospitalizations and deaths

Falls were also the most common injury leading to emergency department (ED) visits and hospitalizations in both the SWPH region and Ontario. Over the last five years (2013 to 2017), both the rates of ED visits and hospitalizations for falls were consistently higher in the SWPH region compared to Ontario, even when accounting for a larger proportion of older adults living in the SWPH region (Figure 11). While the root causes of theses falls are unknown, most happened at home followed by schools or other public areas and residential institutions.[10]

From 2013 to 2017 in the SWPH region, the highest number of ED visits and hospitalizations due to injuries were for the following reasons:[10]

Emergency department visits

1. Falls
2. Struck by or against an object
3. Overexertion
4. Cut or pierced by an object
5. Transportation-related injuries

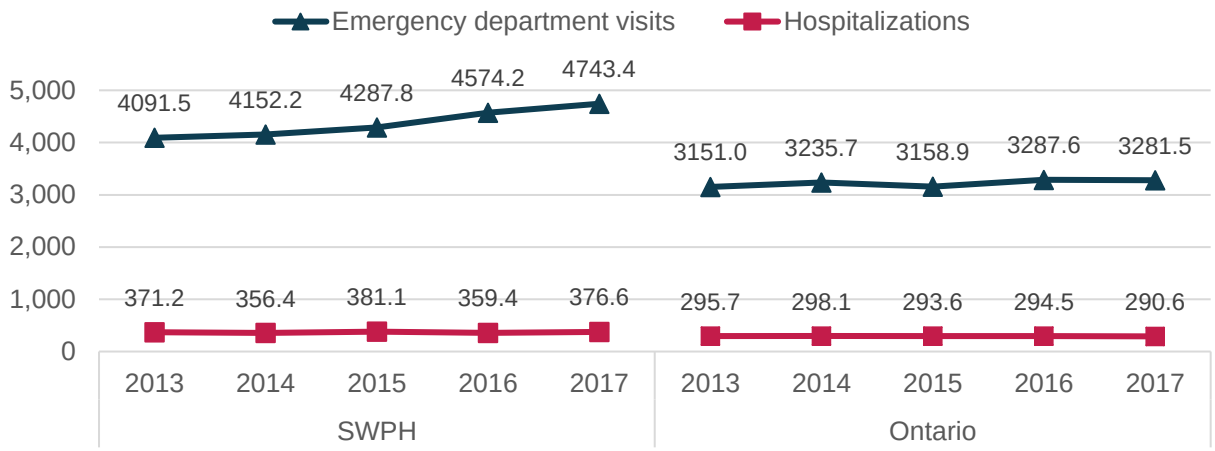
Hospitalizations

1. Falls
2. Transportation-related injuries
3. Suicide and self-harm
4. Struck by or against an object
5. Accidental poisoning

Figure 11. Age-standardized rate (per 100,000 population) of emergency department visits and hospitalizations for selected injuries, Southwestern Public Health and Ontario, 2013-2017[10]

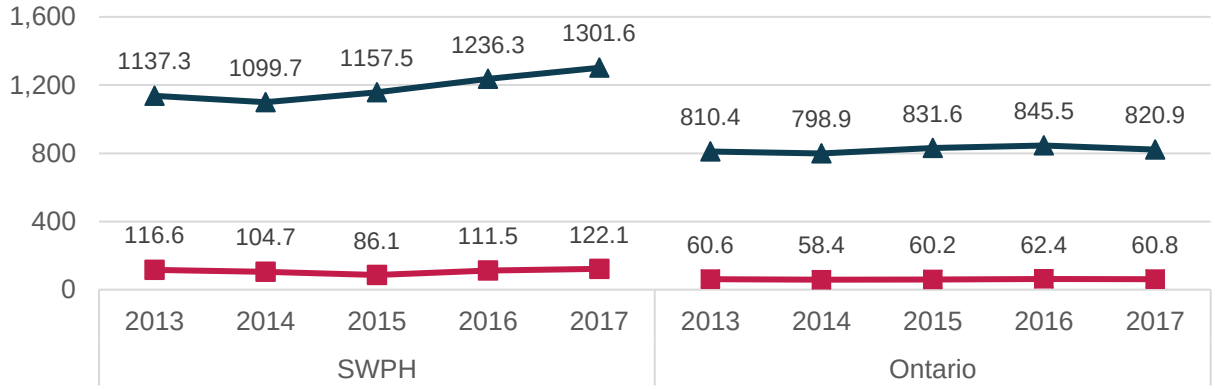
Falls

The rates of ED visits and hospitalizations were consistently higher in the SWPH region compared to Ontario across all years



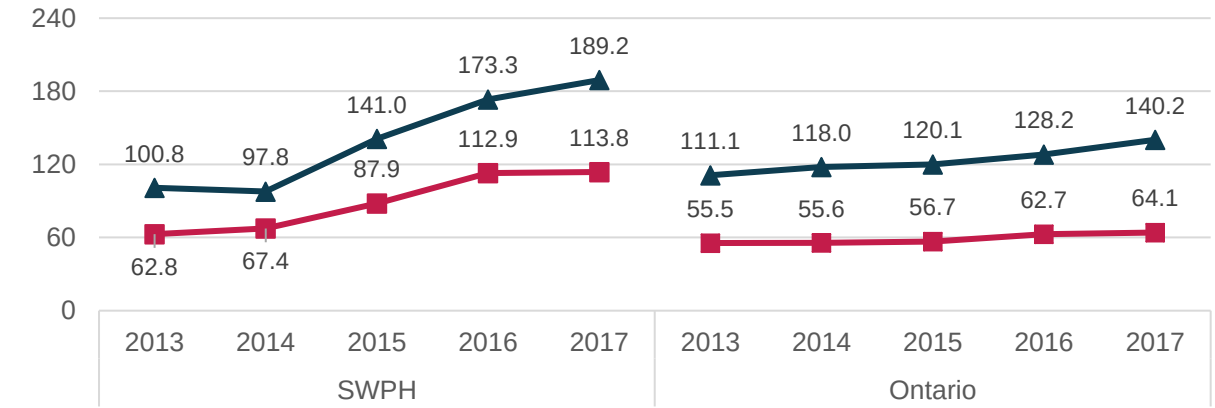
Transportation-related injuries

The rates of ED visits and hospitalizations were consistently higher in the SWPH region compared to Ontario across all years



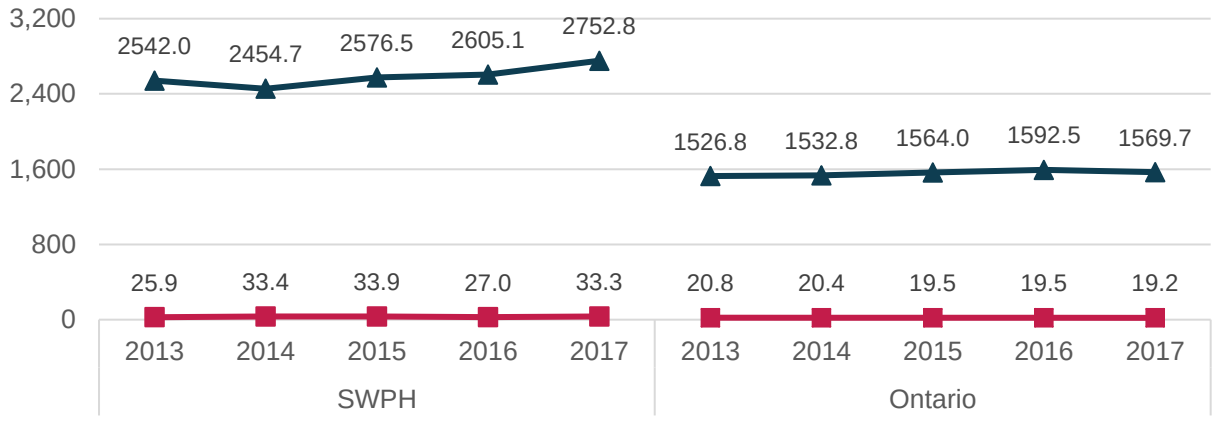
Suicide and self-harm

The rates of ED visits and hospitalizations were higher in the SWPH region compared to Ontario from 2015-2017



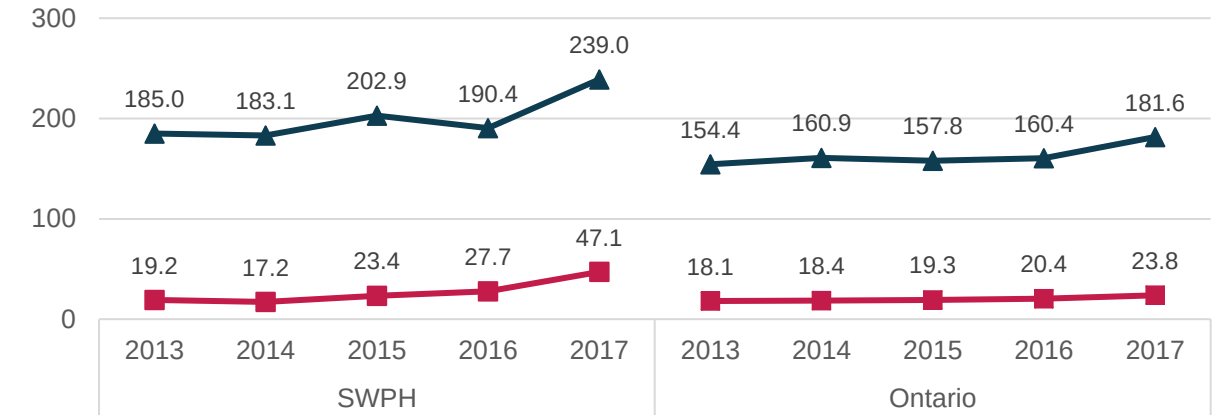
Struck by or against an object

The rates of ED visits were consistently higher in the SWPH region compared to Ontario across all years



Accidental poisoning

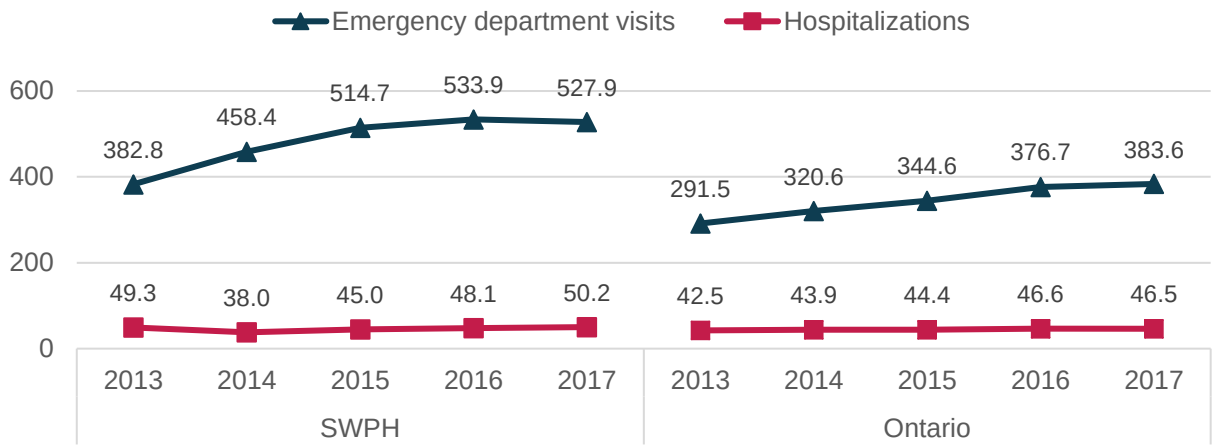
The rate of ED visits and hospitalizations were higher in the SWPH region compared to Ontario in 2017



Neurotraumas were considered separately from the above injuries as they are often a focus of public health activities. From 2013 to 2017, the rates of ED visits for neurotrauma (including traumatic brain injuries, concussions and spinal cord injuries) were consistently higher among people living in the SWPH region compared to Ontario (Figure 12). However, the rates of hospitalizations were similar between the SWPH region and Ontario over the same time period.

Data source:
The emergency department and hospitalization data are from the National Ambulatory Care Reporting System obtained via IntelliHEALTH ONTARIO

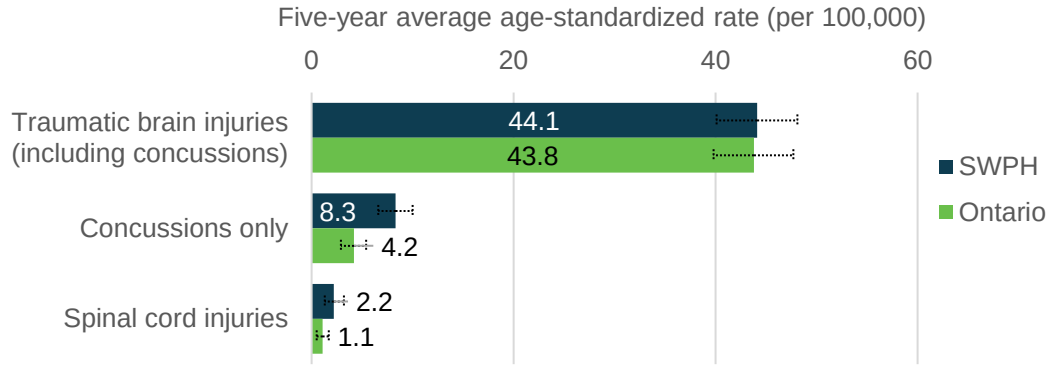
Figure 12. Age-standardized rate (per 100,000 population) of emergency department visits and hospitalizations for neurotrauma, Southwestern Public Health and Ontario, 2013-2017[10]



The majority (on average over 95%) of ED visits and hospitalizations for neurotrauma were from traumatic brain injuries such as post-concussion syndrome, skull or facial fractures and intracranial injuries (including concussions).[10] Although concussions are considered traumatic brain injuries, they formed a relatively small proportion of all ED visits (not pictured) and hospitalizations for neurotrauma (Figure 13).

From 2013 to 2017, the five-year average rate of hospitalizations for concussions was higher in the SWPH region than in Ontario (8.3 versus 4.2 per 100,000, respectively) (Figure 13).[10] Spinal cord injuries were rarely reported in the ED, with 27 visits in the SWPH region from 2013 to 2017; however, 81% (22) of these spinal injuries were transferred from the emergency department to become hospitalizations, indicating that they were severe.[10]

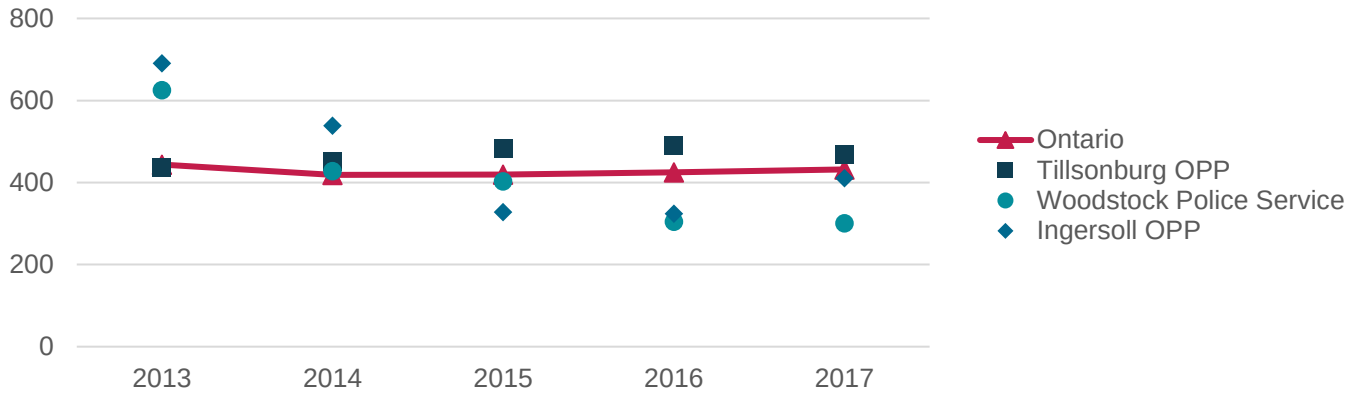
Figure 13. Five-year average age-standardized rate (per 100,000 population) of hospitalizations by type of neurotrauma, Southwestern Public Health and Ontario, 2013-2017 (combined)[10]



Violence

In the SWPH region, the rate of people charged with violent Criminal Code violations such as homicide, assault, using a firearm, robbery and arson varied by police service area. For example, Tillsonburg had similar rates to the province, whereas Woodstock and Ingersoll previously had higher rates that have since decreased or become similar to Ontario (Figure 14).

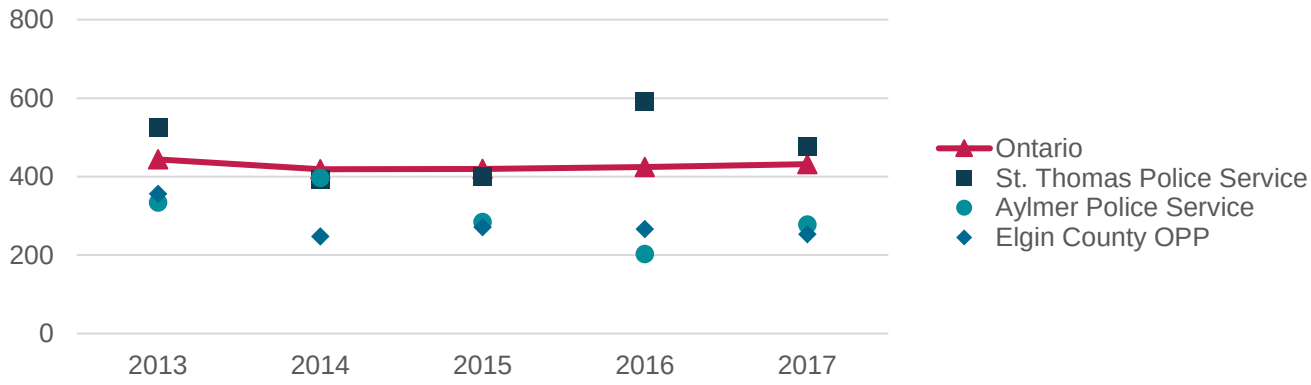
Figure 14. Crude rate of people charged with violent Criminal Code violations (per 100,000 population aged 12 years and older) by top three highest police services in Oxford County and Ontario, 2013-2017[7]



In Elgin County (excluding St. Thomas), the rates of people charged with violent Criminal Code violations were consistently lower or similar to Ontario over the last five years, whereas the rates in St. Thomas were consistently similar to or higher than Ontario (Figure 15).

Data source:
The violence data is from the Uniform Crime Reporting Survey

Figure 15. Crude rate of people charged with violent Criminal Code violations (per 100,000 population aged 12 years and older) by police services in Elgin St. Thomas and Ontario, 2013-2017[7]



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Healthy Environments

Air Quality Health Index (AQHI)

The Air Quality Health Index (AQHI) is a 10-point scale that quantifies regional air quality and its health effects .[1] It is intended to guide the public's decision-making regarding participation in outdoor activities to reduce exposure to air pollution. The AQHI is calculated based on the risk of three pollutants known to affect human health: ozone (O_3), fine particulate matter ($PM_{2.5}$), and nitrogen dioxide (NO_2).

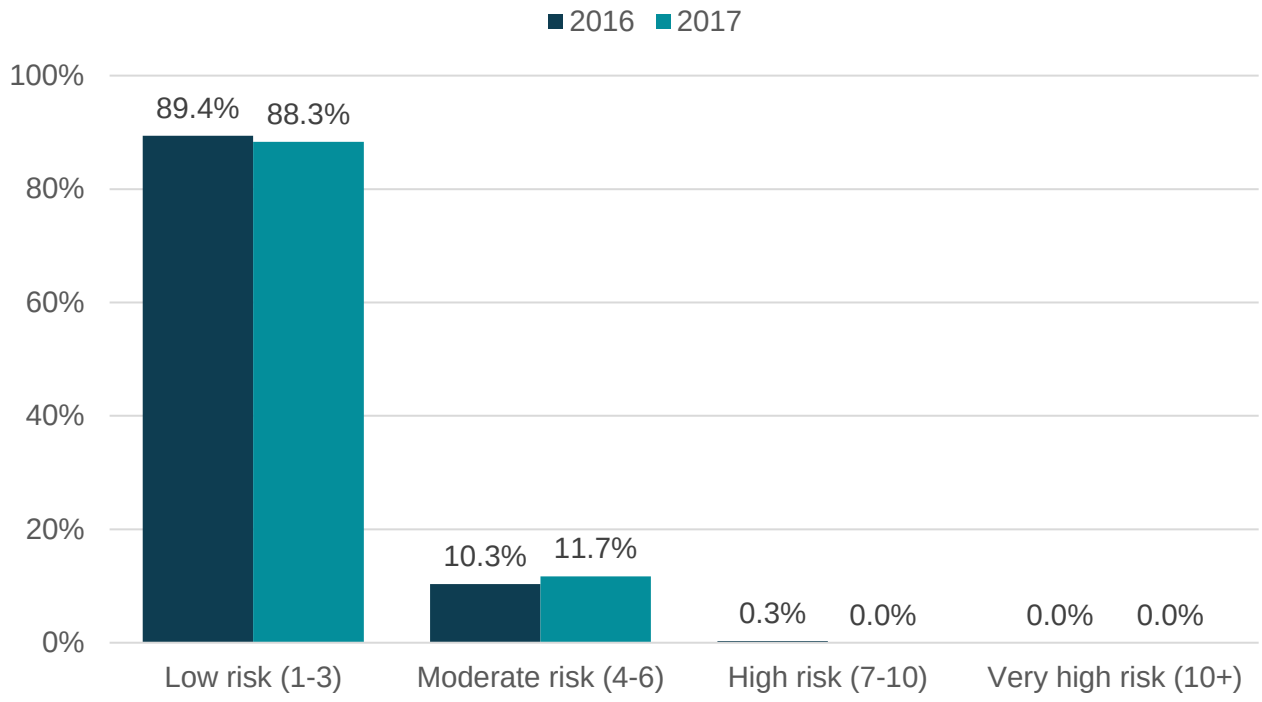
The scale is categorized based on health risk:

1. **Low risk (1-3) -** Ideal air quality for general population. People at higher risk of being affected by poor air quality (e.g., people with heart or respiratory problems) can enjoy usual outdoor activities.
2. **Moderate risk (4-6) -** No need to modify usual outdoor activities for the general population unless experiencing symptoms such as coughing or throat irritation. People at higher risk should consider reducing or rescheduling strenuous activities if they are experiencing respiratory symptoms.
3. **High risk (7-10) –** The general population should consider reducing or rescheduling strenuous activities if experiencing symptoms. Those at higher risk should reduce or reschedule strenuous activities outdoors.
4. **Very high risk (10+) -**The general population should reduce or reschedule strenuous activities outdoors. Those at higher risk should avoid strenuous activities.

Data source: The Air Quality Health Index data is from the Air Quality Information System available through Air Quality Ontario.

Of the days with available air quality data in 2017, the SWPH region reported low risk air quality 88% of the time and moderate risk 12% of the time. There were no high risk or very high-risk air quality days in the SWPH region in 2017. The overall trend in 2016 was similar, except for one day reported as high risk (Figure 1).

Figure 1. Proportion of days of the year by Air Quality Health Index, Southwestern Public Health, 2016-2017[2]



Smog and Air Health Advisories

The Ontario Ministry of Environment, Conservations and Parks and Environment Canada issue both Special Air Quality Statements (SAQS) and Smog and Air Health Advisories (SAHA) through an email notification service.[7] Special Air Quality Statements are issued when the AQHI is forecasted to reach or has reached the high-risk category for one to two hours. Smog and Air Health Advisories are issued when the AQHI is forecasted to reach or has reached the high-risk category for at least three hours.[7]

Data source: Smog and Air Health Advisories is from Air Quality Ontario.

In the SWPH region, there was only 1 SAQS issued in 2016 and no SAHA were issued between 2016-2017.

Pollutant Concentrations

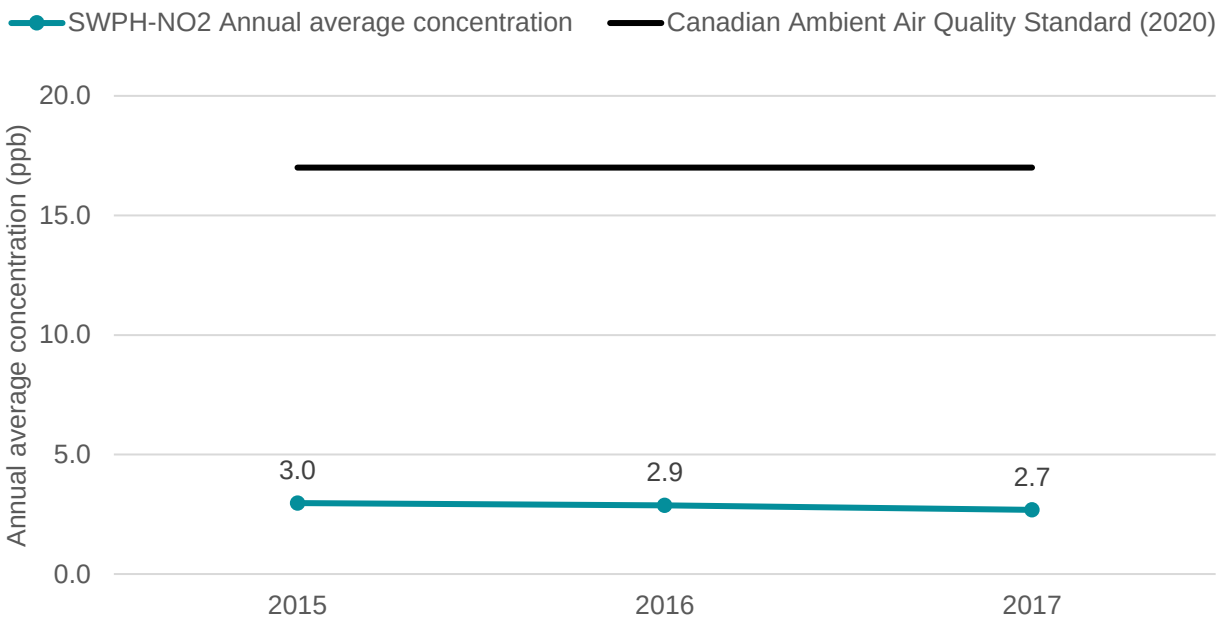
Nitrogen Dioxide (NO2)

Data source: Pollutant concentration data is from the Air Quality Information System available through Air Quality Ontario.

Nitrogen dioxide is a reddish-brown, foul-smelling gas that is released into the air through the burning of fossil fuels.[3] The largest source of NO_2 emissions is the transportation sector (e.g. road vehicles, trucks, buses). Other sources of NO_2 include industrial processes and power plants.[3,4] Exposure to NO_2 can irritate lungs, decrease lung function and increase susceptibility to lung infections. [3,4]

In 2017, the annual average concentration of NO_2 was 2.7 parts per billion (ppb) at the Port Stanley air monitoring site. Similar annual average concentrations have been observed since 2015. The 2020 Canadian Ambient Air Quality Standard (CAAQS)[j] for annual NO_2 concentrations is 17.0 ppb. [5]

Figure 2. Annual average concentration of NO_2 (ppb), Southwestern Public Health (Port Stanley air monitoring site)[k], 2015-2017[2]



Note: NO_2 concentration data was not available prior to 2015.

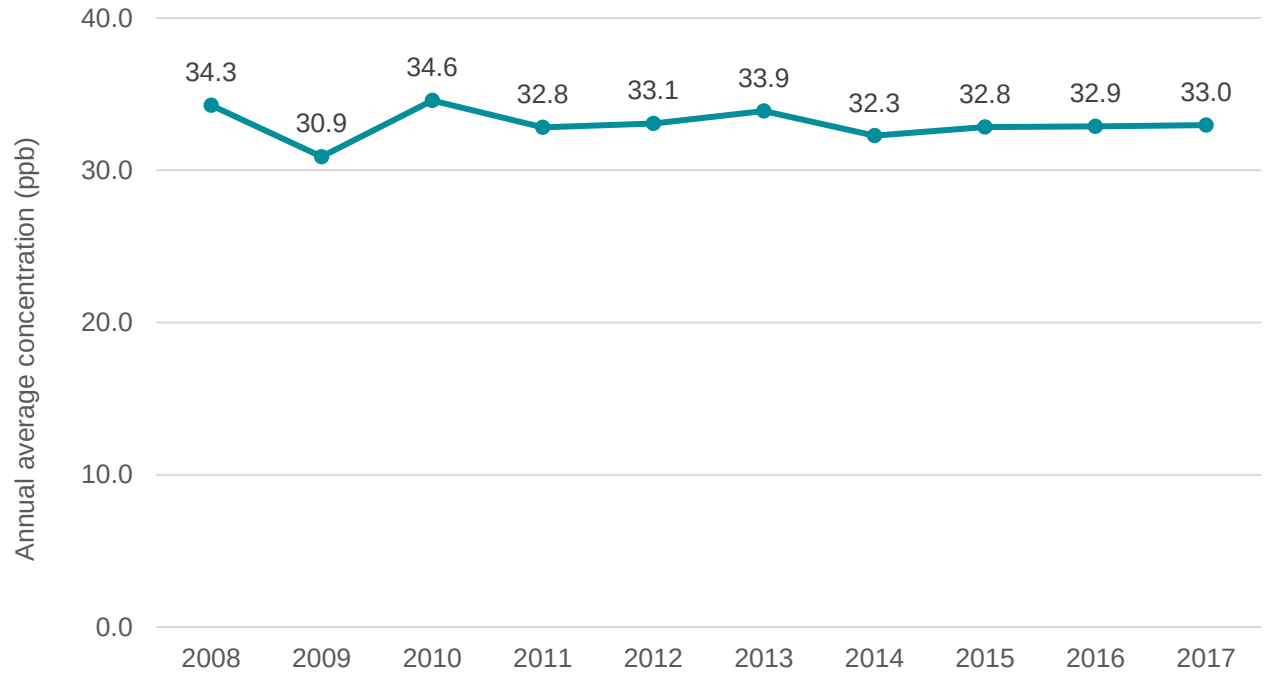
[j] The Canadian Ambient Air Quality Standards were established to improve air quality, protect human health and the environment.[5]
[k] The Port Stanley air monitoring site is the only site located within the SWPH region.

Ground-Level Ozone (O3)

Ozone is a colourless, odourless gas and is a component of smog. It is emitted from chemical reactions between nitrogen oxides and volatile organic compounds.[6] Although ozone at higher altitudes serves to protect the earth from ultraviolet radiation, ground level ozone can be harmful to human health. It can irritate the respiratory tract and eyes and cause coughing. Ground-level ozone is also associated with increased hospital admissions for respiratory symptoms.[6]

In 2017, the annual mean concentration of O_3 in the SWPH region was 33.0 ppb and has remained consistently between 31 and 35 ppb since 2008 (Figure 3).

Figure 3. Annual mean concentration of ground-level ozone (O_3), Southwestern Public Health (Port Stanley), 2008-2017[2]



Note: There is no CAAQS for annual concentrations of Ozone.

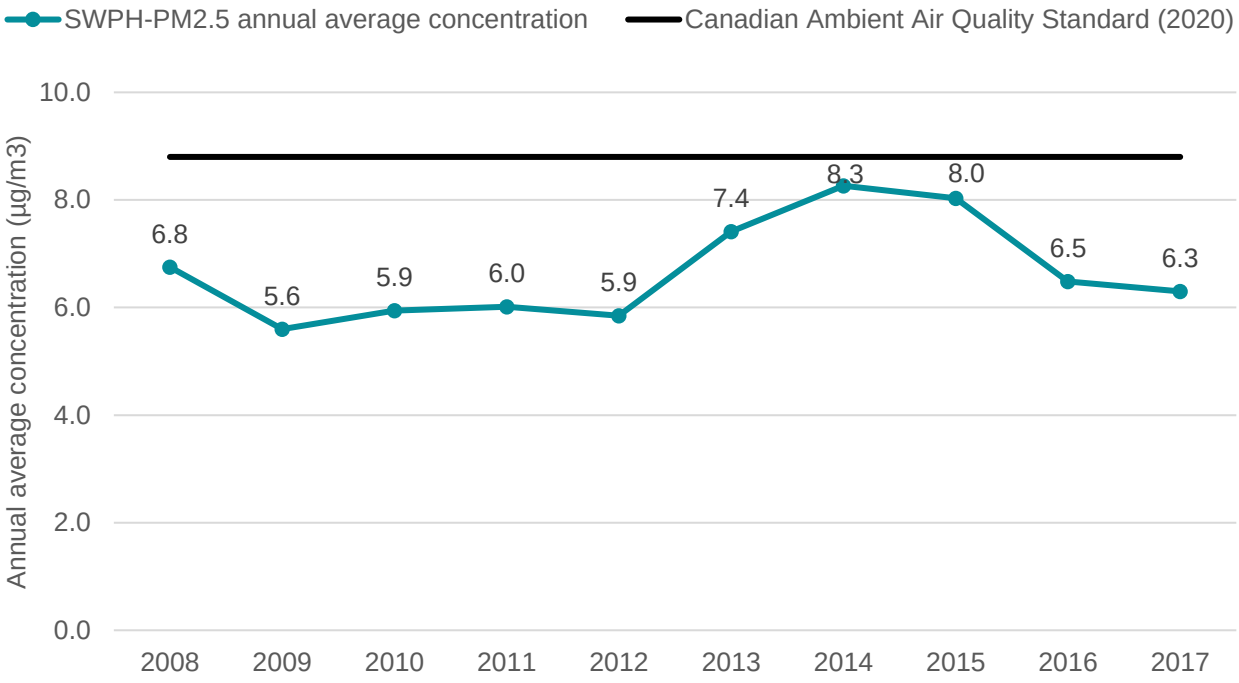
Fine Particulate Matter (PM2.5)

Solid particles and liquid droplets in the air that are less than 2.5 microns in diameter are defined as fine particulate matter ($PM_{2.5}$).[7] $PM_{2.5}$ is primarily emitted through fuel combustion (e.g., motor vehicles, power generation, residential fire places). Due to its size, $PM_{2.5}$ can travel farther into the lungs compared to larger particles and pose a danger to human health.

Exposure to $PM_{2.5}$ has been associated with decreased lung function, increased respiratory symptoms and other serious health effects such as premature death.[7]

In the SWPH region, the annual average concentration of $PM_{2.5}$ was 6.3 micrograms (µg)/m^3 in 2017 and levels have typically ranged between 5.6 µg/m^3 and 8.3 µg/m^3 since 2008 (Figure 4). In the SWPH region, the concentration of $PM_{2.5}$ has remained below the 2020 CAAQS for annual $PM_{2.5}$ concentration (8.8 µg/m^3).[5]

Figure 4. Annual average concentration of fine particulate matter ($PM_{2.5}$), Southwestern Public Health (Port Stanley air monitoring site), 2008-2017[2]



Extreme Weather Advisories

Southwestern Public Health issues extreme weather advisories to inform residents about weather conditions that may impact health. These alerts are issued through the SWPH website and its Facebook and Twitter accounts. Heat alerts are issued under any one of the following circumstances:

1. The forecast shows a humidex of 40°C or higher, or
2. The humidex is forecast to rise to 36°C or higher, combined with an Environment Canada Smog Alert or

3. The maximum temperature is 32°C or higher for three consecutive days.[9]

SPWH issues cold weather alerts when:

1. current or anticipated weather conditions are at or below -15°C or -20°C with wind chill
2. or when there are extreme weather conditions, such as a blizzard or ice storm.[9]

In 2017, there were four heat alerts issued in the SWPH region: two in Oxford county and two in Elgin St. Thomas (Figure 5). The highest number of heat alerts for both regions were issued in 2016. In 2017, there were three cold weather advisories issued in the SWPH region: two in Oxford County and one in Elgin St. Thomas (Figure 5). The highest number of cold weather alerts for both regions were issued in 2014 and 2015. Differences between Elgin St. Thomas and Oxford County may be due to changes to heat and cold alert criteria over time.

Table 1. Number of extreme weather advisories issued, Oxford County and Elgin St. Thomas, 2013-2017[10]

Year	Cold Alerts		Heat Alerts	
	Oxford County	Elgin St. Thomas	Oxford County	Elgin St. Thomas
2013	2	1	0	3
2014	8	9	2	1
2015	7	10	2	2
2016	2	3	6	7
2017	2	1	2	2

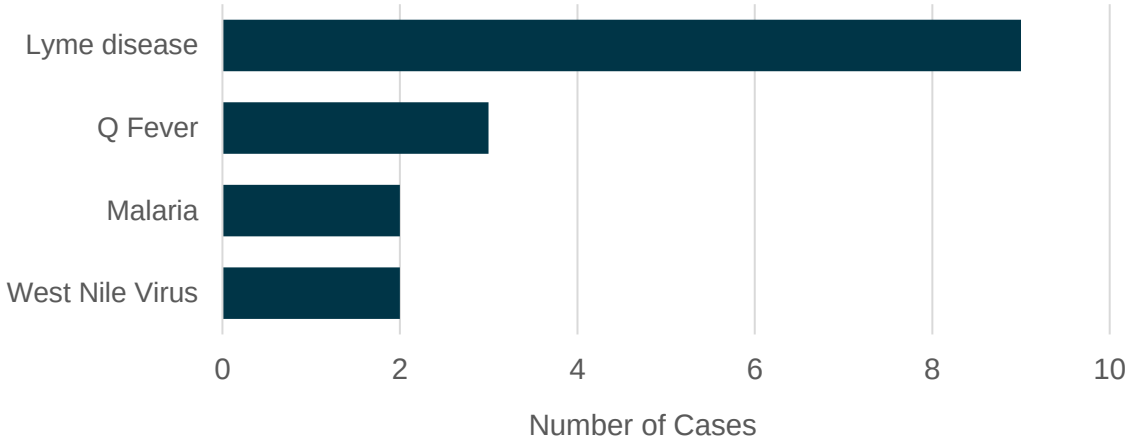
Vector-borne and Zoonotic Diseases

Vector-borne diseases are a class of communicable diseases that are caused by viruses, bacteria or parasites and are transmitted to humans by the bite of infected insects such as mosquitos, ticks and sandflies.[11] Vector-borne diseases are particularly sensitive to environmental factors. For example, rising global temperatures can lengthen the season of vector activity as well as introduce disease into new areas previously considered inhabitable by vectors. Zoonotic diseases are infectious diseases that are transmitted between animals and humans but do not require a vector and can be spread through direct or indirect contact.[12]

Vector-borne and zoonotic diseases are relatively rare in the SWPH region, accounting for only 0.4% (16/4,318 cases) of all infectious diseases reported to SWPH. Lyme disease was most commonly reported among SWPH residents between 2013 and 2017, with nine cases. The next most common vector-born and zoonotic diseases among SWPH residents for this time period were Q fever (three cases), malaria (two cases) and West Nile Virus (two cases) (Figure 5).

Data source: The vector-borne and zoonotic disease data is the from the Integrated Public Health Information System (iPHIS)

Figure 5. Most commonly reported vector-borne and zoonotic diseases, Southwestern Public Health, 2013-2017[13]



Lyme Disease

Lyme disease is caused by the bacteria *Borrelia burgdorfei* and is spread through the bite of infected black-legged ticks.[14] Ticks can become infected by the bacteria when they feed on infected animals such as birds or rodents. Once infected, ticks can transmit the bacteria to humans and pets. Symptoms of Lyme disease include rash (sometimes resembling a target or "bulls-eye"), fever, chills, headache and muscle pain.[15]

Among SWPH residents, two cases of Lyme disease were reported in 2017 and a total of nine cases[l] were reported between 2013 and 2017 (two in Elgin St. Thomas and seven in Oxford

[l] Refers to cases among local residents and not necessarily locally acquired cases.

County) (Table 4). The five-year average crude rate of Lyme disease in the SWPH region (0.89 cases per 100,000) was lower than Ontario (2.84 cases per 100,000) (Table 4).

Southwestern Public Health also conducts Lyme disease surveillance, which involves the testing of black-legged ticks to determine if any are positive for Lyme disease. In 2017, there were 19 locally-acquired black-legged ticks in the SWPH region submitted for testing by residents living in the SWPH region, of which one was positive for Lyme disease. Of note, all three ticks that tested positive for Lyme disease between 2013 and 2017 were submitted for testing in Elgin St. Thomas. There were no positive ticks found in Oxford County during this time, which may suggest that residents acquired the disease in an area with more endemic Lyme disease such as eastern Ontario (Table 2).[16]

Table 2. Number of black-legged ticks submitted by residents and number that tested positive for Lyme disease, Elgin St. Thomas and Oxford County, 2013-2017[17]

	Elgin St. Thomas			Oxford County		
Year	Black-legged ticks submitted	Locally acquired black-legged ticks submitted	Locally acquired black-legged ticks positive for Lyme disease	Black-legged ticks submitted	Locally acquired black-legged ticks submitted	Locally acquired black-legged ticks positive for Lyme disease
2013	1	1	0	2	1	0
2014	6	6	1	2	1	0
2015	10	7	1	12	4	0
2016	11	10	0	10	3	0
2017	29	16	1	11	3	0

Q Fever

Q fever is caused by the bacteria *Coxiella burneti* which is found in the birth tissues, milk, feces and urine of cattle, sheep and goats.[18] Transmission occurs by inhaling air that contains dust contaminated by excrements of infected herd animals.[18] Therefore, people that work with animals or animal products are at an increased risk for Q fever. In the SWPH region, there were no cases of Q fever in 2017 and three cases between 2013 and 2017 (Table 4).

Malaria

Malaria is caused by five parasites in group called Plasmodium; malaria is spread to humans through the bite of an infected female mosquito.[19] Those at highest risk of contracting malaria

are individuals travelling to areas where malaria is prevalent such as West Africa, Oceania and certain parts of South Asia and South America.[20] In the SWPH region, there were no cases of malaria in 2017 and two cases of malaria between 2013 and 2017, both travel-related (Table 4).

West Nile Virus

West Nile Virus (WNV) is caused by the bite of an infected mosquito and is a seasonal disease, with the highest risk occurring from mid-July to early September.[21] Approximately 70% to 80% of people infected with the virus show no symptoms. Symptomatic individuals present with fever, headache, body aches and swollen lymph glands. Although anyone is at risk for developing more severe symptoms, people over 50 years old, those with chronic diseases and those with compromised immune systems are at a higher risk.[22]

There was one case of WNV reported to SWPH in 2017 and two cases reported between 2013 and 2017. Both cases originated from Oxford County. There were no cases of WNV in Elgin St. Thomas during this time.

Southwestern Public Health also conducts vector surveillance for WNV. Samples of mosquitoes are collected during the summer and tested to determine if any are positive for the virus. In 2017, there were no mosquitos that tested positive for WNV in Elgin St. Thomas and one that tested positive in Oxford County. Of note, all positive tests in mosquitos between 2013 and 2017 in the SWPH region were from Oxford County. There were no positive tests in mosquitos from Elgin St. Thomas (Table 3).

Table 3. Number of mosquito pools testing positive for West Nile Virus, Elgin St. Thomas, Oxford County and Ontario, 2013-2017[17]

Year	ESTPH	OCPH	ON
2013	0	0	196
2014	0	0	56
2015	0	0	94
2016	0	2	211
2017	0	1	409

Table 4. Number of confirmed cases and crude incidence rate (per 100,000 population) for vector-borne diseases, Southwestern Public Health and Ontario, 2017 and 2013-2017 (combined)[13]

	Southwestern Public Health				Ontario	
Disease	Number of Cases, 2017	Number of Cases, 2013-2017	Crude rate, 2017	Five-year average crude rate, 2013-2017	Crude rate, 2017	Five-year average crude rate, 2013-2017
Lyme disease	2	9	0.98	0.89	6.46	2.84
Q Fever	0	3	0	0.30	0.11	0.17
Malaria*	0	2	0	0.20	1.51	1.43
West Nile Virus	1	2	0.49	0.20	1.08	0.41
Rabies	0	0	0	0	0	0
Lassa fever	0	0	0	0	0	0
Plague	0	0	0	0	0	0
Yellow fever*	0	0	0	0	0	0
Echinococcus Multilocularis infection	0	0	0	0	0	0
Hantavirus Pulmonary Syndrome	0	0	0	0	0	0
Psittacosis/Ornithosis	0	0	0	0	0	0
Tularemia	0	0	0	0	0	0

*As of May 1, 2018, malaria and yellow fever are no longer reportable diseases in Ontario

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Food Safety

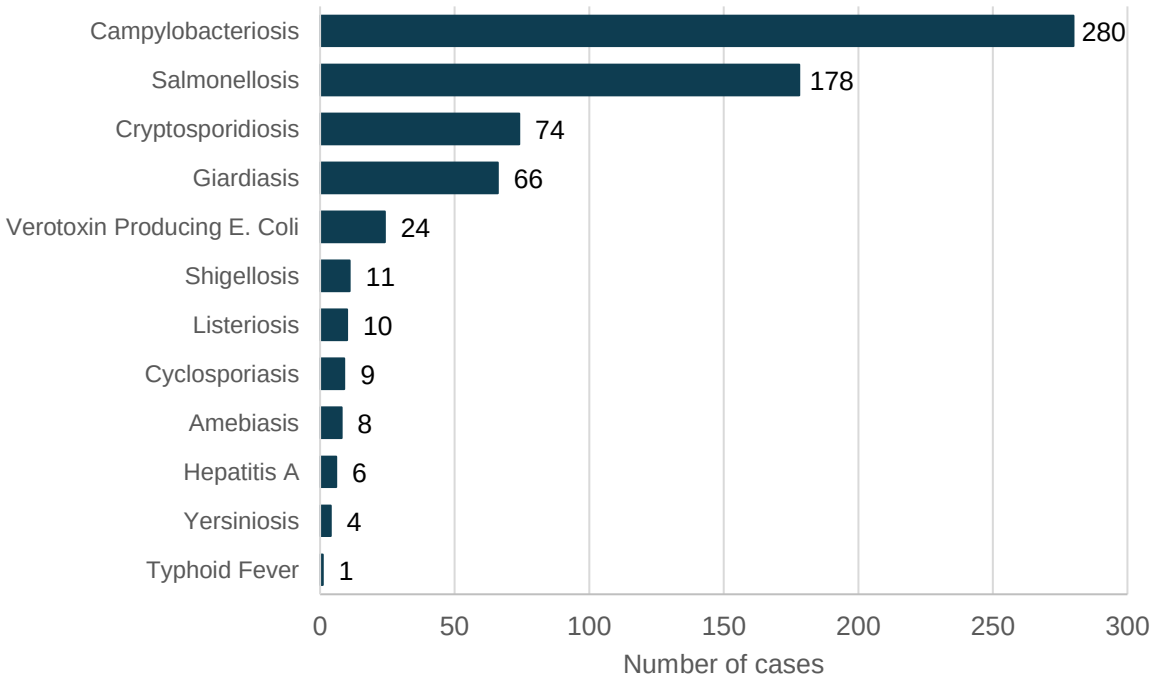
Enteric Diseases

Enteric diseases are a class of communicable diseases caused by consuming food or water that is contaminated by bacteria, parasites or viruses.[1] Therefore, they can be an indicator of unsafe food handling practices and drinking water system issues such as susceptibility to surface run-off during heavy rains.[1] Once infected, cases usually present with symptoms affecting to the digestive tract which are often mild such as nausea, vomiting, stomach cramps and diarrhea.[1]

In the SWPH region, campylobacteriosis was the most commonly reported enteric illness, representing 41.7% of all enteric disease cases in SWPH region between 2013 and 2017 combined (Figure 1). This was followed by salmonellosis (26.5%), cryptosporidiosis (11.0%) and giardiasis (9.8%). However, its important to note that cases of enteric disease are likely underreported as not all cases will seek care and get tested.

Data source: The enteric diseases data is the from the Integrated Public Health Information System (iPHIS)

Figure 1. Most common reportable enteric diseases, Southwestern Public Health, 2013-2017 (combined)[2]



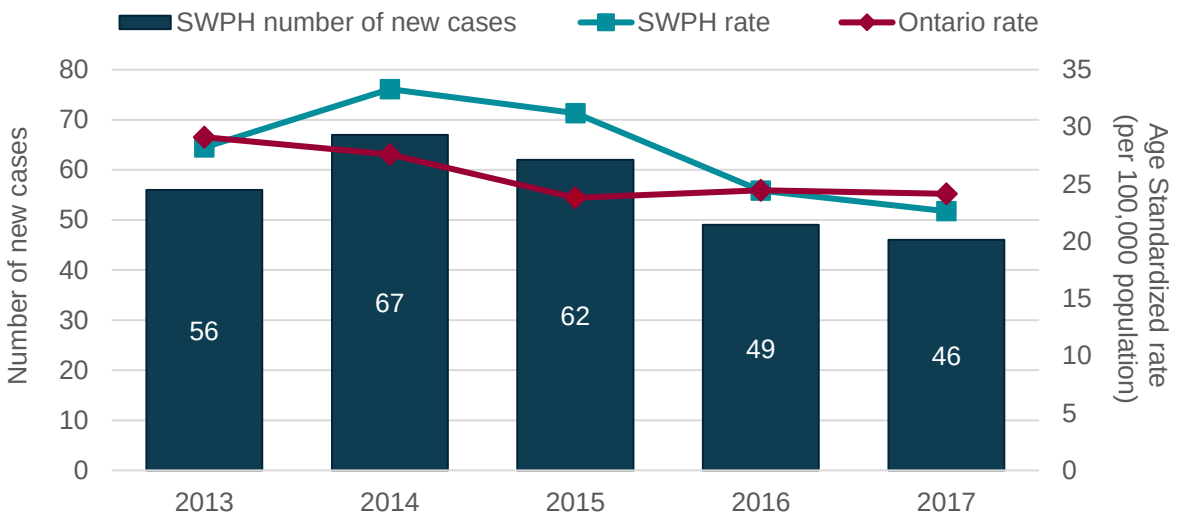
Note: There were no reported confirmed cases of brucellosis, paratyphoid fever, trichinosis, paralytic shellfish poisoning, food poisoning (all causes), cholera, and botulism in the SWPH region from 2013-2017.

Campylobacteriosis

Campylobacteriosis is an illness caused by the campylobacter bacteria and is the most common reportable enteric disease in Ontario.[3,4] It can be caused by consuming undercooked meats, unpasteurized milk and untreated drinking water but can also be spread through contact with infected animals and individuals as well as improper food handling practices (e.g. not washing hands, not refrigerating or cooking to the right temperature).[4] Symptoms include diarrhea, nausea, stomach pain, fever and vomiting that can last for up to 10 days.[5]

Campylobacteriosis was the most common enteric disease in the SWPH region with 46 confirmed cases reported in 2017. The rate of new campylobacteriosis infections in the SWPH region was similar to Ontario between 2013 and 2017; both followed a slight downward trend during this time (Figure 2).

Figure 2. Incidence of campylobacteriosis, Southwestern Public Health and Ontario, 2013-2017[3]



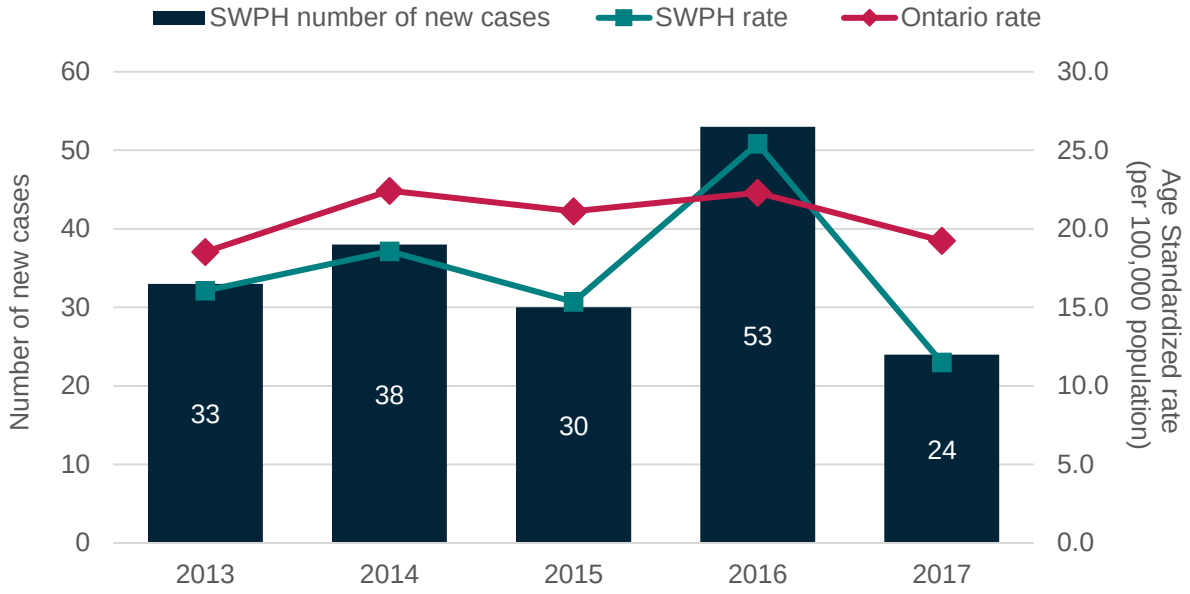
Note: The rates in 2014 and 2015 are similar due to overlapping 95% confidence intervals, which does not indicate a true difference between SWPH and Ontario.

Salmonellosis

Salmonellosis is an enteric disease caused by the salmonella bacteria and can be spread by eating contaminated food or beverages (such as raw or undercooked meats, egg products, unpasteurized dairy products and raw fruits and vegetables) as well as by contact with infected animals, persons and contaminated surfaces.[6] Symptoms include chills, fever, nausea, diarrhea and vomiting which usually begin 6 - 72 hours after exposure and subside within 4 - 7 days.[7]

Salmonellosis was the second most common enteric disease in SWPH region with 24 confirmed cases reported in 2017. The rate of new salmonellosis cases in the SWPH region and Ontario remained similar between 2013 and 2017 (Figure 3).

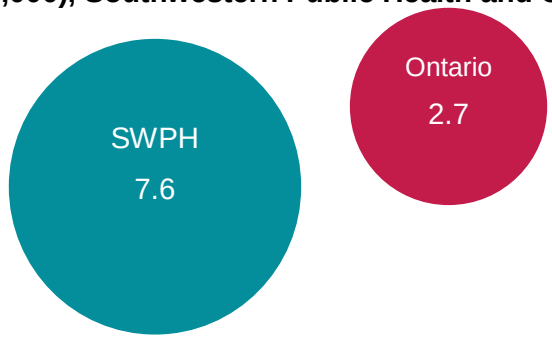
Figure 3. Incidence of salmonellosis, Southwestern Public Health and Ontario, 2013-2017[2]



Cryptosporidiosis

Cryptosporidiosis is an illness caused by the parasite cryptosporidium and is spread by exposure to contaminated soil, eating or drinking contaminated food or water as well as touching surfaces that have been in contact with feces of infected humans or animals.[8] Cryptosporidiosis typically results in fever, nausea, vomiting, dehydration and stomach pain. Symptoms begin within 2-10 days of exposure and can last for 1-2 weeks.

Figure 4. Five-year average age-standardized incidence rate of cryptosporidiosis (per 100,000), Southwestern Public Health and Ontario, 2013-2017 (combined)[2]

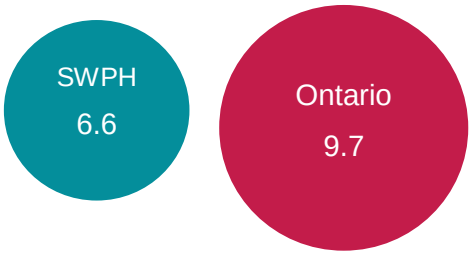


In the SWPH region, there were 15 cases of cryptosporidiosis in the SWPH region in 2017 and 74 cases between 2013 and 2017. Overall, the five-year age standardized rate (2013-2017) of cryptosporidiosis in SWPH was higher than Ontario (Figure 4).

Giardiasis

Giardiasis is an enteric disease caused by the parasite *Giardia lamblia*. It is caused by ingestion of drinking or recreational water as well as food contaminated by the feces of infected individuals or animals.[9] Although many cases are asymptomatic, symptoms are generally associated with the digestive tract and include nausea, abdominal pain and watery diarrhea.

Figure 5. Five-year average age-standardized incidence rate of giardiasis (per 100,000), Southwestern Public Health and Ontario, 2013-2017 (combined)[2]



There were 66 cases of giardiasis reported to SWPH between 2013 and 2017, of which 12 were reported in 2017. The five-year average age-standardized incidence rate (2013-2017) was similar to Ontario (Figure 5).

Verotoxin-producing E. coli

Verotoxin-producing E. coli (VTEC) is a strain of the bacteria *Escherichia coli*, which creates toxins that can cause severe illness in humans.[10] Consumption of undercooked ground beef is a common source of infection, but other sources include fresh produce and unpasteurized milk and beverages (e.g., orange juice and apple cider).[10] Infection can also occur through consumption of contaminated water as well as through contact with infected animals.

Figure 6. Five-year average age-standardized incidence rate of verotoxin-producing E. coli (per 100,000), Southwestern Public Health and Ontario, 2013-2017 (combined)[2]

There were 24 cases of VTEC reported to SWPH between 2013 and 2017, of which 4 cases were reported in 2017. The five-year average age-standardized rate of VTEC in the SWPH region was similar to Ontario from 2013 to 2017 (Figure 6).

Shigellosis

Shigellosis is a disease cause by bacteria called shigella. Because the illness is spread through the fecal-oral route, transmission can occur by eating food or drinking water contaminated with shigella bacteria.[11] This results in fever, bloody diarrhea, stomach cramps, nausea and vomiting which can last for 4-7 days. Although some individuals may not be symptomatic, they can still be infectious and can spread the illness to others.[11] In 2017, there were two cases of shigellosis in the SWPH region (Table 1).

Listeriosis

Listeriosis is caused by an infection with the listeria bacteria, which naturally exists in soil, plants and untreated water but can also be found in fish, meat, seafood, fruits and vegetables and dairy products.[12,13] Consuming food or water contaminated with listeria can result in fever, nausea, diarrhea, vomiting, headache, constipation and muscle aches.[13] In 2017, there was one case of listeriosis in SWPH (Table 1).

Cyclosporiasis

Cyclosporiasis is an intestinal illness that is caused by the parasite *Cyclospora cayetanensis*. It is spread by ingesting food or water contaminated with the feces of an infected person and results in watery diarrhea, loss of appetite, weight loss and stomach cramps.[14,15] This illness is typically associated with imported foods and travel, particularly to tropical and sub-tropical areas, as it is not common in food and water sources in Canada.[14] There were three cases of cyclosporiasis reported to SWPH in 2017 (Table 1).

Amebiasis

Amebiasis is a disease that is caused by the parasite *Entamoeba histolytica*.[16] Infection can occur by ingesting food or water contaminated by the feces of an infected individual and transmission is also possible through anal-oral sexual practices.[16,17] Individuals most at risk of becoming infected are those who travelled to or immigrated from tropical countries with poor sanitary conditions.[16] There was one case of amebiasis reported to SWPH in 2017 (Table 1).

Typhoid Fever

Typhoid fever is an infection that is caused by the bacteria *Salmonella typhi* and results in fever, headache, constipation or diarrhea and fatigue.[18] It is caused by ingesting food or water that has been handled by or contaminated with the feces of an infected person. Typhoid fever is more common in developing countries with poor sanitation practices. Therefore, individuals at higher risk are those who travel to South Asia, but other high-risk areas include Africa, the Caribbean and South America.[18] There was one case of typhoid fever reported to SWPH in 2017 (Table 1).

Table 1. Number of confirmed cases and crude incidence rates (per 100,000 population) for other enteric diseases, Southwestern Public Health and Ontario, 2017 and 2013-2017 (combined)[2]

	Southwestern Public Health				Ontario	
Disease	Number of Cases, 2017	Number of Cases, 2013-2017	Crude rate, 2017	Five-year average crude rate, 2013-2017	Crude rate, 2017	Five-year average crude rate, 2013-2017
Shigellosis	2	11	0.98	1.09	2.16	2.11
Listeriosis	1	10	0.49	0.99	0.39	0.45
Cyclosporiasis	3	9	1.46	0.89	2.05	1.53
Amebiasis	1	8	0.49	0.79	0.74	0.81
Hepatitis A	0	6	0	0.59	0.89	0.70
Yersiniosis	0	4	0	0.39	1.97	1.58
Typhoid fever	1	4	0.49	0.10	0.73	0.53
Brucellosis	0	0	0	0	0.01	0.03
Paratyphoid fever	0	0	0	0	0.23	0.26
Botulism	0	0	0	0	0	0.01
Cholera	0	0	0	0	0.04	0.01
Food poisoning, all causes	0	0	0	0	0.40	0.48
Trichinosis	0	0	0	0	0.01	0.01
Paralytic shellfish poisoning	0	0	0	0	0	0

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Infectious Disease Prevention and Control

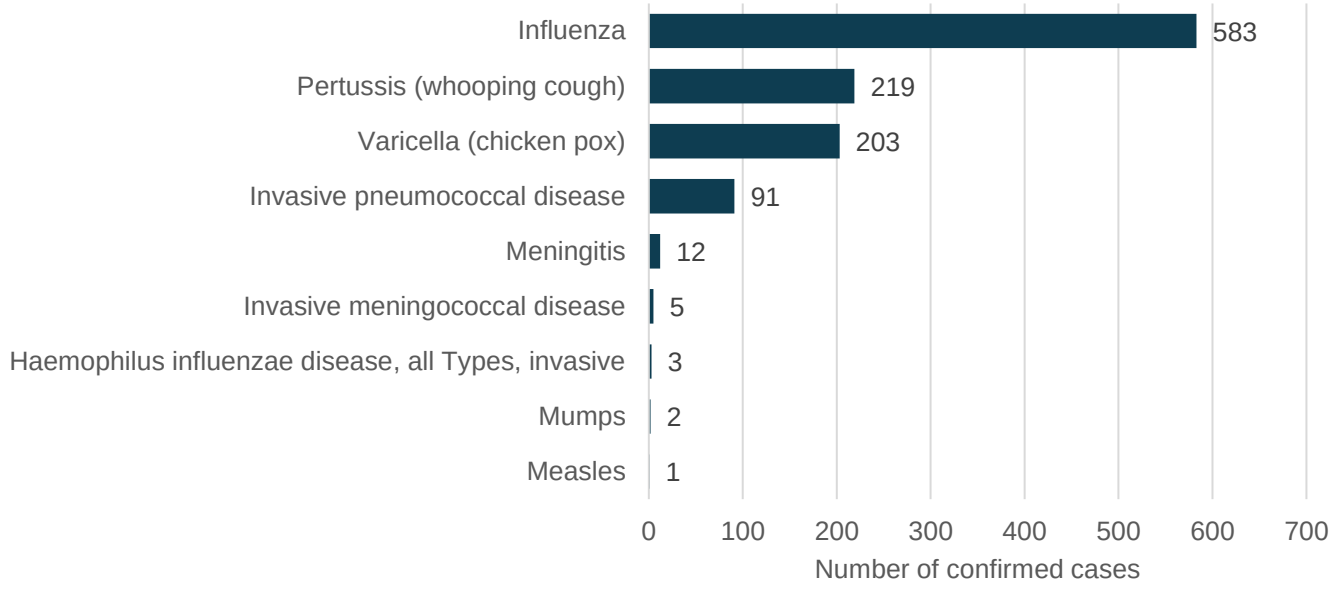
Vaccine Preventable Diseases

Communicable diseases for which a vaccine exists are classified as vaccine preventable diseases. Immunization against these diseases not only protects individuals from infection but can reduce transmission within a community.[1] Therefore, it is important to immunize a large proportion of the population to reduce the incidence of disease.

Data source: The vaccine preventable disease data is from the integrated Public Health Information System (iPHIS)

In the SWPH region, vaccine preventable diseases represented 11% of all infectious diseases reported between 2013 and 2017. Influenza was the most commonly reported vaccine preventable disease, representing approximately 65% of all vaccine preventable diseases during that time (Figure 1). This was followed by pertussis (24%), varicella (22.5%) and *Streptococcus pneumoniae* (10%).

Figure 1. Most common vaccine preventable diseases (number of confirmed cases), Southwestern Public Health, 2013-2017 (combined)[2]

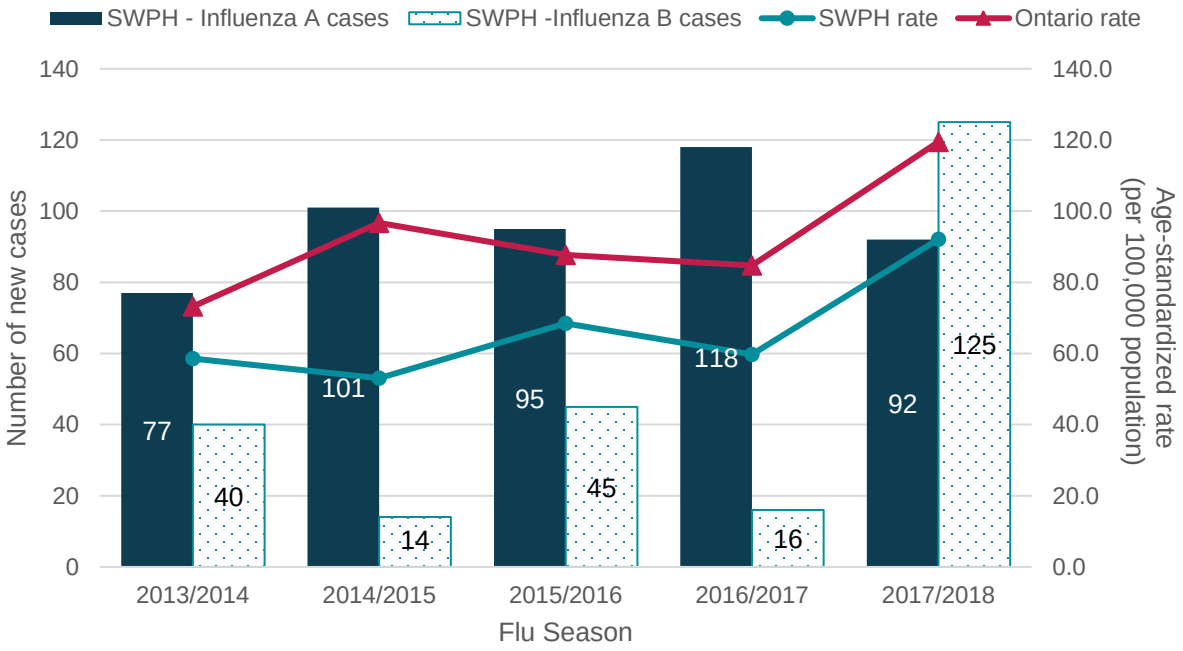


Influenza

Influenza is a respiratory infection that is caused by two types of viruses: influenza A and influenza B. Circulation of the influenza viruses typically follows seasonal fluctuations each year with most infections occurring between November and April. Influenza is spread from person to person through the inhalation of droplets released into the air when an infected individual coughs or sneezes.[3]

There were 220 cases of influenza in the SWPH region during the 2017/2018 influenza season, with influenza B as the most common circulating strain, which was different from previous years. The age-standardized rate of influenza in the SWPH region was similar to Ontario in 2013/2014 and 2015/2016 but was lower than Ontario in the 2014/2015, 2016/2017 and 2017/2018 seasons (Figure 2).

Figure 2. Case count and age-standardized incidence rate (per 100,000 population) of influenza, Southwestern Public Health, 2013-2017[2]



Data source: The influenza immunization data is from the Canadian Community Health Survey (CCHS)

Ontario's Universal Influenza Immunization Program offers free influenza vaccines annually to all individuals 6 months or older who live, work or go to school in Ontario.[4] Although the flu shot is recommended for everyone, it is particularly recommended for those at high risk for complications and hospitalizations. These groups include pregnant women, children under 5 years of age, adults 65 and over and those with chronic conditions.[4,5] Ensuring sufficient uptake of the flu vaccine in the general population, with a focus on high-risk groups, serves to protect vulnerable groups and reduces the burden of disease overall. Of note, other immunization coverage data is located in the school health chapter.

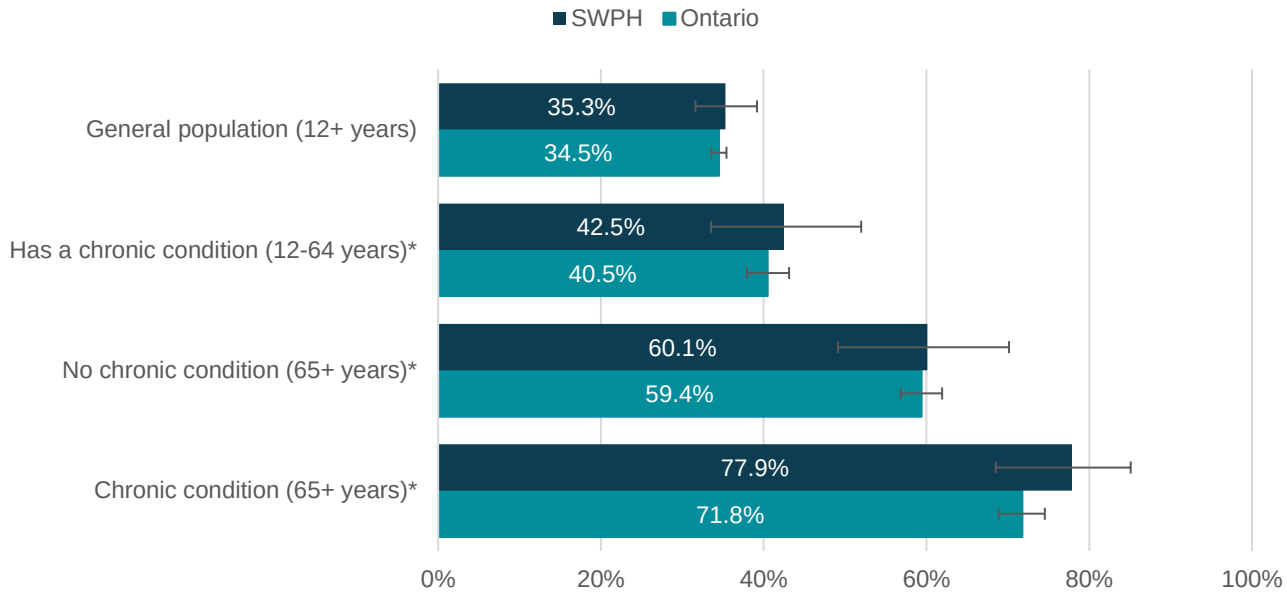
A little over one-third (35.3%) of the general population aged 12 years and over in the SWPH region reported receiving a flu shot less than one year ago[m], which was similar to Ontario (34.5%) (Figure 8). Among individuals aged 12 to 64 years with a chronic condition(s)[n], a similar proportion in the SWPH region (42.5%) and Ontario (40.5%) reported receiving the flu shot less than one year ago.

Among individuals aged 65 years and older with no chronic conditions, 60.1% of people living in the SWPH region reported getting the flu shot less than one year ago; which was similar to Ontario (59.4%) (Figure 3). Those over 65 years of age with a chronic condition(s) reported the highest proportion of flu vaccine uptake. In the SWPH region, 77.9% of individuals 65 years and older with a chronic condition(s) reported getting the flu shot less than one year ago, which was similar to Ontario (71.8%).

[m] Data is based on 2015-2016. Therefore, responses refer to influenza seasons in the past year relative to the participant, who responded in the 2015-2016 CCHS cycles, and not the reader.

[n] Chronic health conditions include: cardiac or pulmonary disorders (including bronchopulmonary dysplasia, cystic fibrosis and asthma), diabetes mellitus and other metabolic diseases, cancer, immune compromising conditions (due to underlying disease and/or therapy), renal disease, anemia and hemoglobinopathy, neurologic or neurodevelopmental conditions (excluding migraines), body mass index (BMI) of 40 or higher, and people 6 months to 18 years treated for long periods with acetylsalicylic acid.[6]

Figure 3. Proportion of residents who reported getting the seasonal flu shot less than one year ago, Southwestern Public Health and Ontario, 2015-2016[7]



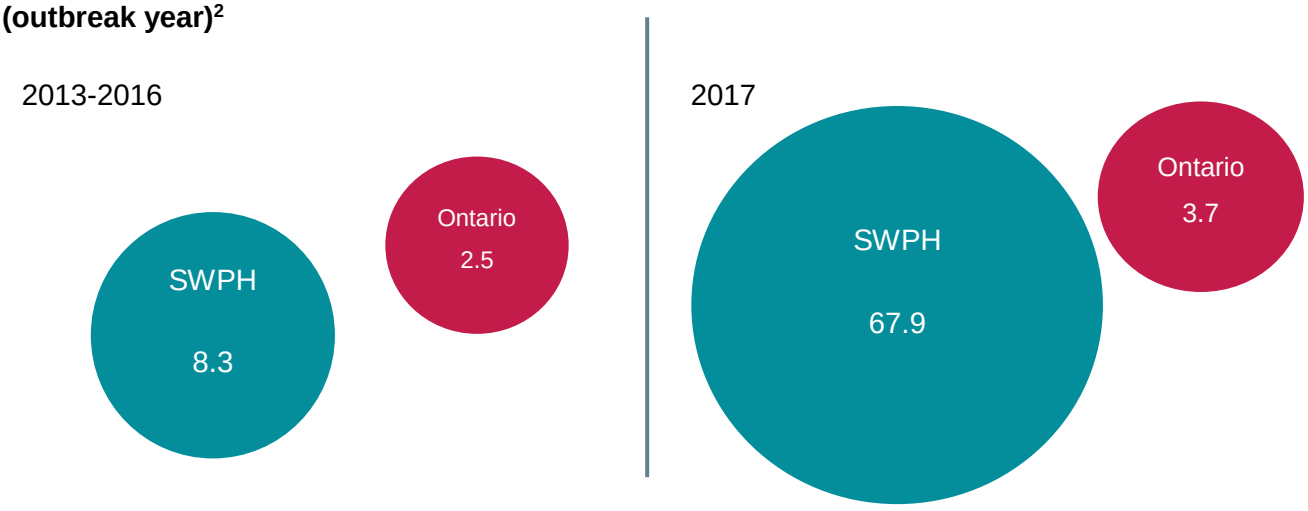
*The NIS coverage goals state that by 2025, seasonal influenza immunization coverage for adults aged 65 and older and adults aged 18-64 with chronic medical conditions should be 80%.[8]

Pertussis (whooping cough)

Pertussis, also known as whooping cough, is an infectious respiratory disease caused by the bacteria *Bordetella pertussis* and can result in severe coughing that may lead to choking or vomiting.[9] Pertussis is very contagious and can be spread through droplets released when an infected person coughs or sneezes.[10] Children less than two months old are more at risk of infection because immunization programs for pertussis start at two months, and infections are more severe among young children under one year of age.[11]

In 2017, there were 149 cases of pertussis reported in the SWPH region, which was a stark increase compared to 22 cases in 2016. The increase in cases was due to an outbreak of pertussis. However, the four-year average age-standardized incidence rate (from 2013 to 2016) of pertussis in SWPH was also higher compared to Ontario (Figure 4).

Figure 4. Five-year average age-standardized incidence rate of pertussis (per 100,000 population), Southwestern Public Health and Ontario, 2013-2016 (combined) and 2017 (outbreak year)[2]



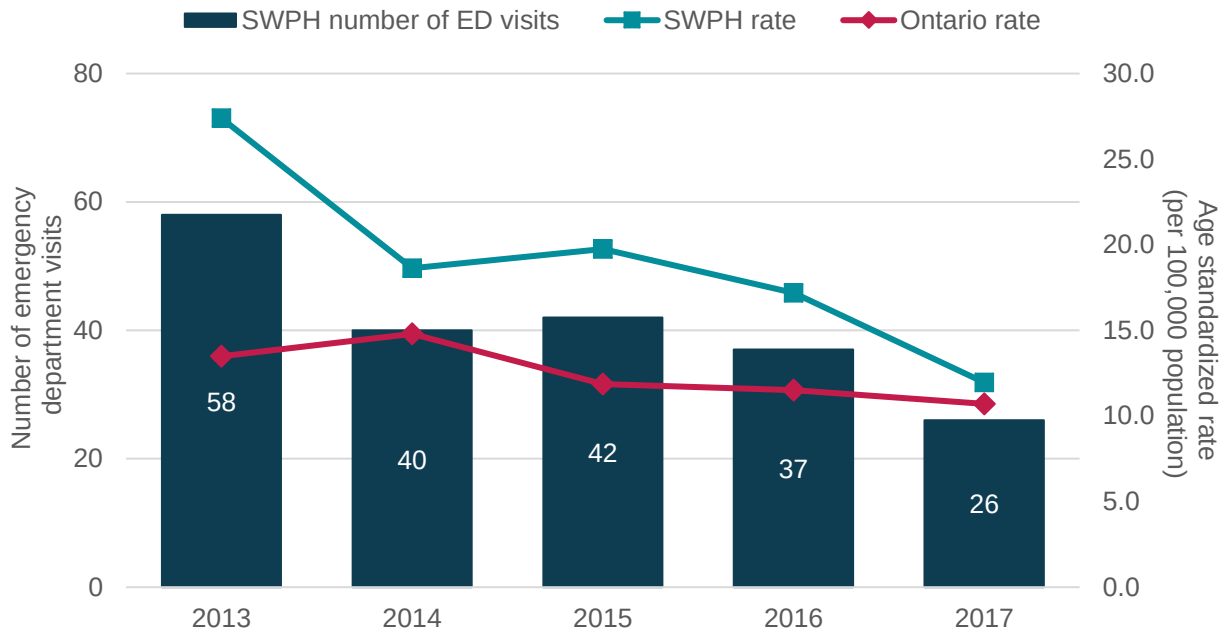
Varicella (chicken pox)

Varicella, also known as chicken pox, is an infectious disease caused by the varicella-zoster virus that results in a blister-like rash on the body.[12] It is spread through direct contact with fluid in the blisters or by inhalation of respiratory droplets released in the air by infected individuals. Chicken pox is usually a mild infection and is most common in children, but it can be a more serious infection in adults.[12] Since varicella is not a reportable disease, the incidence rates are likely an underestimate of the true number of cases.

Data source:
The varicella data is from the National Ambulatory Care Reporting System (NACRS), obtained via IntelliHEALTH Ontario

In the SWPH region, there were 26 emergency department visits for varicella in 2017 and 203 emergency department visits between 2013 and 2017. The age-standardized rate of emergency department visits for varicella in the SWPH region was higher than Ontario in 2013 and was similar to Ontario after 2013, with both displaying a downward trend (Figure 5). This rate decline may be due to the introduction of two doses of varicella-containing vaccine since August 2011. More information about varicella immunization coverage is available in the school health chapter.

Figure 5. Age-standardized incidence rate of emergency department (ED) visits for varicella (per 100,000 population), Southwestern Public Health and Ontario, 2013-2017[2]



Invasive pneumococcal disease

Invasive pneumococcal disease (IPD) is an infection of the ears, sinuses or lungs that is caused by the bacteria *Streptococcus pneumoniae*. It can be spread from person to person through contact with infected mucus or saliva (e.g., through close contact with infected persons or by touching objects that were handled by infected persons).[13] Those at increased risk for IPD include children under 5 years of age, adults over 65 years, those with a cochlear implant, those with chronic conditions and/or with a weakened immune system.[14]

In the SWPH region, there were 19 cases of IPD in 2017 and 91 cases reported between 2013 and 2017. The five-year age-standardized incidence rate of IPD was similar to that of Ontario (Figure 6).

Figure 6. Five-year average age-standardized incidence rate of invasive pneumococcal disease (per 100,000 population), Southwestern Public Health and Ontario, 2013-2017 (combined)[2]

Invasive meningococcal disease

Invasive meningococcal disease (IMD) is a serious and possibly life-threatening infection caused by the bacteria *Neisseria meningitidis,* which can lead to meningitis or septicemia (severe infection of the blood). It can be spread from person to person through close, direct contact (e.g., coughing or sneezing, sharing drinks, sharing toothbrushes or living in close quarters).[15] There was one case of invasive meningococcal disease reported in the SWPH region in 2017 and five cases reported between 2013 and 2017 (Table 1).

Invasive haemophilus influenza disease

Invasive haemophilus influenza disease is a severe infection that can occur when the bacteria, Haemophilus influenzae, invades sterile areas of the body (e.g. bloodstream, spinal fluid).[16] This can result in pneumonia, septicemia, meningitis and other complications. In the SWPH region, there was one case of invasive haemophilus influenza disease reported in 2017 and three cases reported between 2013 and 2017 (Table 1).

Mumps

Mumps is an infection caused by the mumps virus and results in swollen salivary glands, fever, headache and muscle aches.[17,18] Transmission can occur through direct contact or exposure to infected mucus or saliva as well as through the inhalation of droplets when an infected person coughs or sneezes.[17] In 2017, there were two cases of mumps reported in the SWPH region and no cases prior to this (2013-2016).

Measles

Measles is a highly contagious viral infection that causes fever, cough, runny nose and a red blotchy rash on the face and body.[19] It can spread from person to person through direct contact, air droplets or through objects exposed to the saliva of an infected person.[20] There were no cases of measles reported in 2017 and only one case reported in the past 5 years (2013-2017).

Table 1. Number of confirmed cases and crude incidence rates (per 100,000 population) for other vaccine preventable diseases, Southwestern Public Health and Ontario, 2017 and 2013-2017 (combined)[2]

	Southwestern Public Health				Ontario	
Disease	Number of Cases, 2017	Number of Cases, 2013-2017	Crude rate, 2017	Five-year average crude rate, 2013-2017	Crude rate, 2017	Five-year average crude rate, 2013-2017
Invasive Meningococcal Disease	1	5	0.49	0.49	0.21	0.20
Mumps	2	2	0.98	0.20	1.68	0.44
Haemophilus Influenzae Disease, All Types, Invasive	1	3	0.49	0.30	0.04	0.04
Measles	0	1	0	0.10	0.06	0.11
Poliomyelitis, Acute	0	0	0	0	0	0
Rubella	0	0	0	0	0	0.003
Rubella, Congenital Syndrome	0	0	0	0	0	0.001
Tetanus	0	0	0	0	0	0
Diphtheria	0	0	0	0	0	0

Other Infectious Diseases

The following section refers to infectious disease not categorized or mentioned in other chapters (i.e. enteric disease data is found in the food safety chapter, vector-borne diseases in the healthy environments chapter and STI/BBIs in the sexual health chapter).

Invasive group A streptococcal disease (iGAS)

Group A streptococcal disease is caused by the bacteria *Streptococcus pyogenes* and often results in mild infections such as strep throat or skin infections.[21] These bacteria are found in the throat or on skin of healthy individuals and can be spread from person to person through direct contact (e.g., breathing air contaminated with infected droplets, sharing utensils and contact with nose/mouth secretions of an infected individual).[21] Sometimes the bacteria can invade other parts of the body such as the blood or the lining of the brain. This results in invasive group A streptococcal disease, which can cause serious infections such as necrotizing fasciitis (flesh-eating disease) or complications such as toxic shock syndrome (rapid drop in blood pressure resulting in organ failure).[21,22]

In the SWPH region, there were 17 cases of iGAS reported in 2017 and a total of 51 cases reported between 2013 and 2017. The five-year average age-standardized incidence rate of iGAS in the SWPH region was similar to that of Ontario (Figure 7).

Figure 7. Five-year average age-standardized incidence rate of invasive group A streptococcal disease (per 100,000), Southwestern Public Health and Ontario, 2013-2017 (combined)[2]

Tuberculosis

Tuberculosis (TB) is a bacterial infection caused by *Mycobacterium tuberculosis* which primarily affects the lungs but can also affect other parts of the body such as bones, kidneys and lymph nodes. It is spread through the release of droplets in the air from infected individuals.[23] Symptoms include severe coughing, chest pain, fever and weight loss.[24] In the SWPH region, there were four cases of tuberculosis reported in 2017 and a total of 10 cases reported between 2013 and 2017 (Table 2).

Legionellosis

Legionellosis is a respiratory disease that results in pneumonia, fever, cough, muscle pain and headache. It is caused by the legionella bacteria, which can be found in natural water sources but poses a risk to humans in conditions where water is stagnant under warm temperatures (e.g. cooling towers used to air condition buildings, hot tubs and spas, plumbing systems). Infection can occur through the inhalation of droplets when contaminated water from these sources is released into the air.[25] In the SWPH region, there were 5 cases of legionellosis in 2017 and 12 cases reported between 2013 and 2017. The five-year average crude incidence rate was similar for SWPH and Ontario (Table 2).

Table 2. Number of confirmed cases and crude incidence rates (per 100,000 population) for other infectious diseases, Southwestern Public Health and Ontario, 2017 and 2013-2017 (combined)[2]

	Southwestern Public Health				Ontario	
Disease	Number of Cases, 2017	Number of Cases, 2013-2017	Crude rate, 2017	Five-year average crude rate, 2013-2017	Crude rate, 2017	Five-year average crude rate, 2013-2017
Legionellosis	5	12	2.44	1.18	1.43	1.25
Tuberculosis	4	10	1.95	0.99	4.76	4.53
Blastomycosis	1	1	0.49	0.10	0.02	0.00
Creutzfeldt-Jakob Disease, All Type	0	2	0	0.20	0.06	0.06
Group B Streptococcal Disease, Neonatal	0	1	0	0.10	0.36	0.37
Leprosy	0	1	0	0.10	0.01	0.02
Acute Flaccid Paralysis	0	0	0	0	0.03	0.04
Anthrax	0	0	0	0	0	0
Severe Acute Respiratory Syndrome (SARS)	0	0	0	0	0	0
Smallpox	0	0	0	0	0	0

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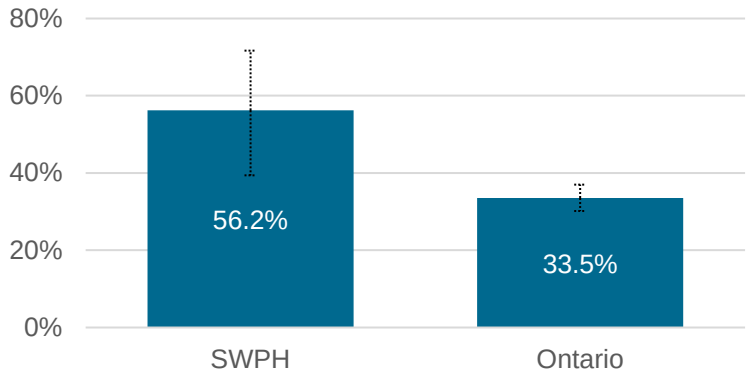
Sexual Health

Sexual Behaviours

From 2015 to 2016, a higher proportion of youth (15 to 19 years) in the SWPH region reported that they had had sexual intercourse in their lifetime compared to Ontario (56.2% versus 33.5%) (Figure 1).[1] Youth that have sex at an early age may increase their risk of unplanned pregnancy and sexually transmitted infections (STIs) if they do not have access to adequate protection, knowledge and support to engage in safer sex.[2]

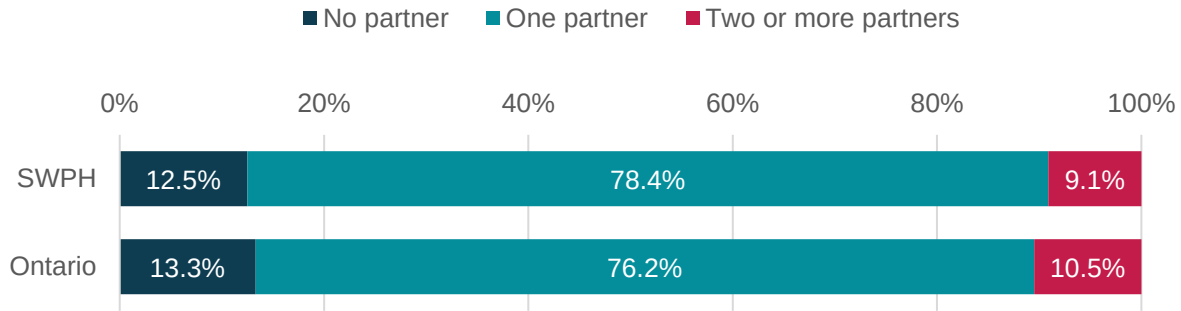
Figure 1. Youth (15 to 19 years) who ever had sexual intercourse, Southwestern Public Health and Ontario, 2015-2016[1]



Data source: The sexual behaviour data is from the Canadian Community Health Survey (CCHS)

Similarly, a higher proportion of people aged 15 to 64 years residing in the SWPH region reported that they first had sexual intercourse before they were 20 years old compared to Ontario (77.9% versus 72.1%).[1] Among residents (15 to 64 years) who had ever had sex, over three-quarters reported having one sexual partner in the past 12 months in both the SWPH region and Ontario (Figure 2).[1]

Figure 2. Number of sexual partners in the past 12 months, residents 15 to 64 years old who ever had sex, Southwestern Public Health and Ontario, 2015-2016[1]



Among people living in the SWPH region with two or more sexual partners in the past 12 months, about half (51.1%) reported that they or their partner used a condom the last time they had sex, which was not different from Ontario at 63.0%.[1]

The proportion of residents using some form of birth control the last time they had sex was lower in the SWPH region than in Ontario (36.6% versus 44.8%)[1]

More generally, 36.6% of SWPH residents (15 to 64 years) used a condom or another form of birth control the last time they had sex.[o,1] This excludes partners who were pregnant or trying to get pregnant.

Sexually Transmitted and Blood-borne Infections

From 2015 to 2016, about one-third (34.7%) of sexually active people (15 to 64 years) living in the SWPH region reported that they had ever been tested for human immunodeficiency virus (HIV) or another STI (Figure 3), which was lower than in Ontario (43.8%).[1] This does not include testing that was done when donating blood but does includes routine HIV testing as part of prenatal screening.

Figure 3. Self-reported STI testing, Southwestern Public Health, 2015-2016

As testing for STIs increases, we expect incidence rates to increase too, reflecting greater detection of these infections rather than a true increase in how many new infections occur. For example, Public Health Ontario cautions that gonorrhea incidence rates over time may be impacted by changes in screening guidelines and testing practices as well as increasing resistance to antibiotic treatments.[3] The number of STI cases reported to public health units are likely an underestimate of the true burden of the disease, especially for infections that may be asymptomatic such as chlamydia and gonorrhea.

[o] This includes the birth control pill, contraceptive patch, vaginal contraceptive ring, injection, hormonal implant, intrauterine device, vasectomy or tubal sterilization, spermicide, the rhythm method (tracking the ovulation cycle) or withdrawal/pulling out.[1]

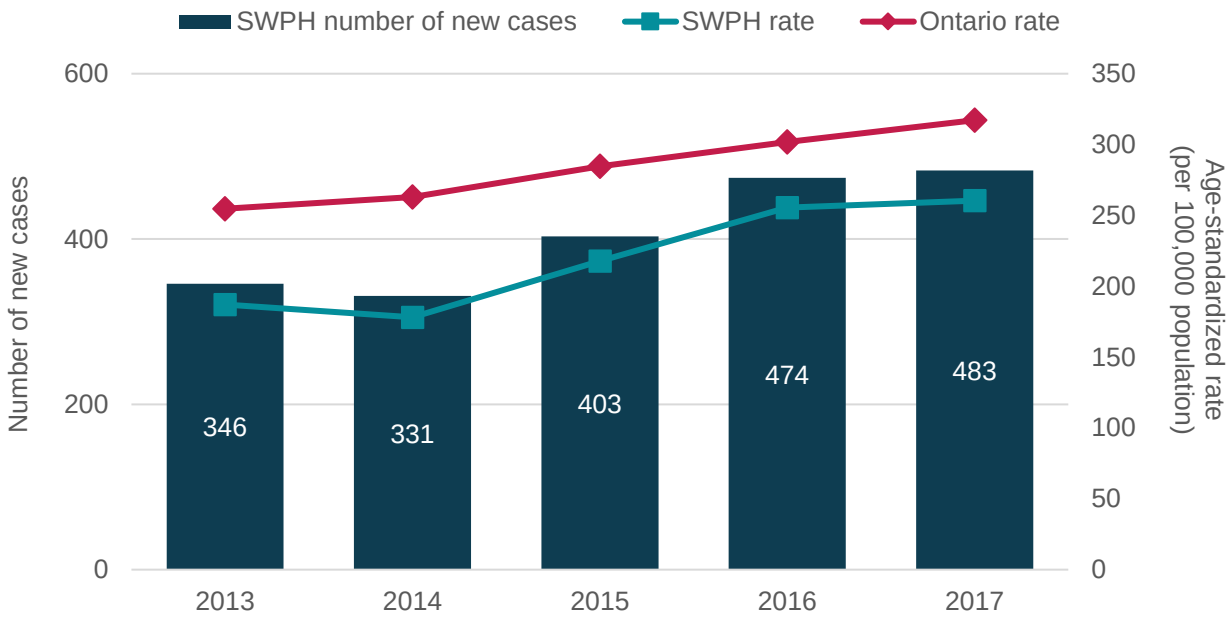
Chlamydia

Chlamydia is a preventable and curable STI caused by the bacteria *Chlamydia trachomatis*. It is spread through unprotected vaginal, anal and oral sex with an infected person. If left untreated, chlamydia can cause pelvic inflammatory disease and epididymitis (inflammation of the tubes of the testicles) which can permanently damage the reproductive system. It can also increase the risk of acquiring and transmitting HIV during sexual intercourse.[4]

Chlamydia is the most common STI in the SWPH region with 483 new cases reported among people residing in the SWPH region in 2017. The rate of new chlamydial infections has increased over the last five years for both SWPH and Ontario (Figure 4). However, the incidence rate of chlamydia in the SWPH region has remained lower than Ontario over time, except for 2016 when the rates were similar.[3]

Data source:
The STI/BBI data is from the Integrated Public Health Information System (iPHIS)

Figure 4. Incidence of chlamydia, Southwestern Public Health and Ontario, 2013-2017[3]

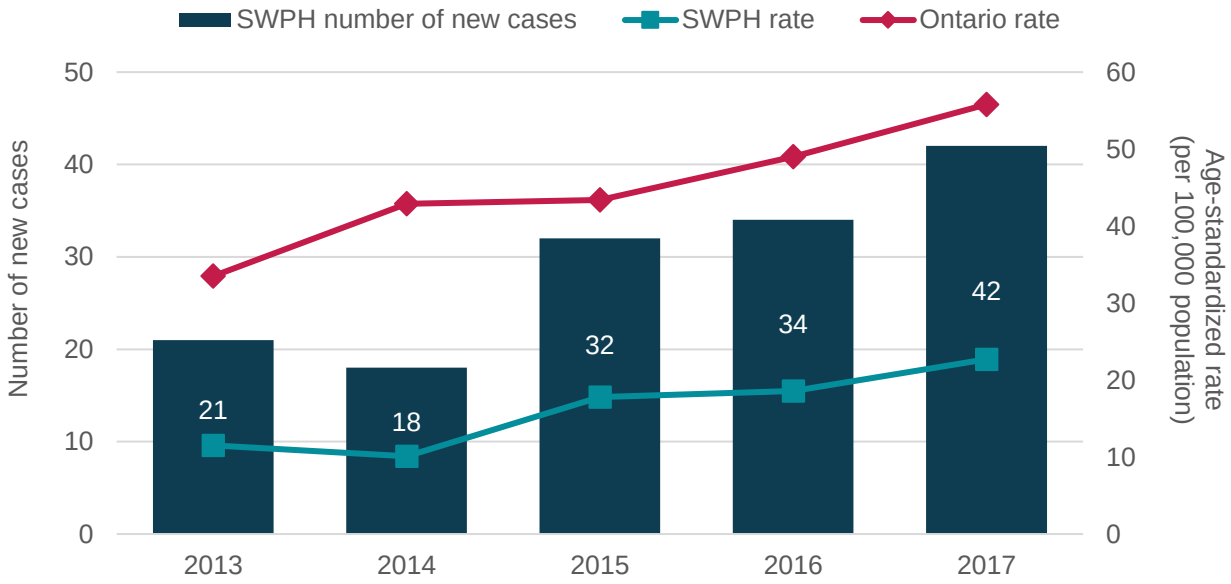


Gonorrhea

Gonorrhea is a preventable and curable STI caused by the bacteria *Neisseria gonorrhoeae*. It is spread through unprotected vaginal, anal and oral sex with an infected person and can be passed from an infected mother to her baby during delivery. If left untreated, gonorrhea can cause pelvic inflammatory disease and epididymitis (inflammation of the tubes of the testicles) which can permanently damage the reproductive system. It can also spread to the blood and joints and increase the risk of acquiring or transmitting HIV.[5]

Gonorrhea is much less common than chlamydia, with 42 new cases reported among people residing in the SWPH region in 2017. The incidence rate of gonorrhea has increased over time for both SWPH and Ontario; however, the incidence rate in the SWPH region has remained lower than in Ontario (Figure 5).[3]

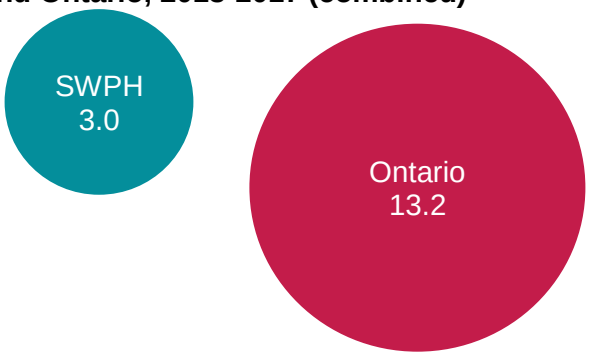
Figure 5. Incidence of gonorrhea, Southwestern Public Health and Ontario, 2013-2017[3]



Syphilis

Syphilis is a preventable and curable STI caused by the bacteria *Treponema pallidum*. Syphilis can be spread through contact with syphilis sores during vaginal, anal or oral sex and it can be spread from a mother to her unborn baby, which may cause fetal deformities or stillbirth. There are different stages of infection: primary, secondary, latent and tertiary. Syphilis is generally considered to be infectious in the primary, secondary or early latent stages. The tertiary stage may occur 10 to 30 years after initial infection and can include irreversible damage to the brain and spinal cord, heart, eyes and bones.[6]

Figure 6. Five-year average age-standardized incidence rate of syphilis (per 100,000), Southwestern Public Health and Ontario, 2013-2017 (combined)[3]



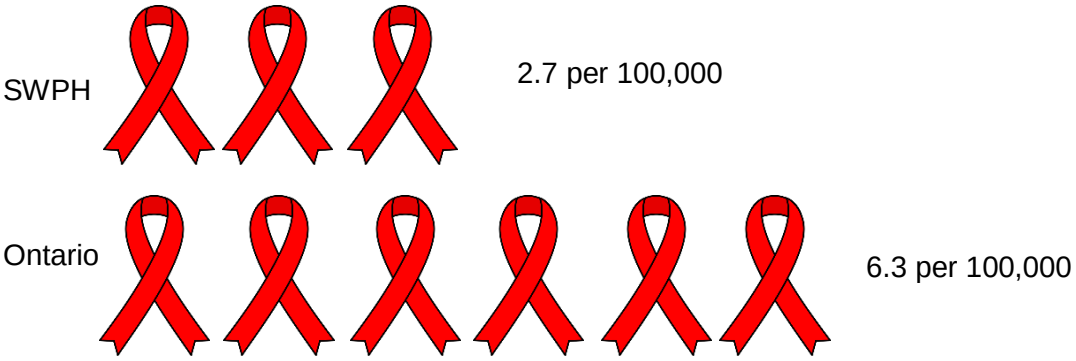
Over the last five years, there were 29 new cases of syphilis (infectious and other) in the SWPH region.[3] The five-year average incidence rate of syphilis was lower in the SWPH region than Ontario (Figure 6).

HIV/AIDS

HIV is a viral infection that attacks the immune system and can lead to acquired immunodeficiency syndrome (AIDS), a disease that increases the risk of acquiring other infections and diseases. HIV is spread through contact with infected blood and body fluids, including semen, vaginal and rectal (fluids), such as through sexual transmission, transmission at birth and shared injection and inhalation equipment contaminated with blood. There is no cure for HIV but antiretroviral therapy (ART) can help control the symptoms and prolong life.[7]

Over the last five years (2013 to 2017), there were 25 newly reported cases of HIV/AIDS in the SWPH region.[3] However, it is possible that some cases were counted more than once due to anonymous testing. A person may also be counted twice if they were confirmed to have HIV and were diagnosed with AIDS in the same year. Using combined data from the last five years, the average incidence rate of HIV/AIDS was lower in the SWPH region than in Ontario (Figure 7).

Figure 7. Five-year average age-standardized incidence rate of HIV/AIDS (per 100,000), Southwestern Public Health and Ontario, 2013-2017 (combined)[3]



Hepatitis B

Hepatitis B is a vaccine preventable liver infection that is caused by the hepatitis B virus. Hepatitis B is spread through infected blood and is more infectious than HIV.[8] If left untreated, it can cause cirrhosis of the liver, liver failure, liver cancer and premature death.[8] Over a five-year period (from 2013 to 2017), there were seven new cases of hepatitis B in the SWPH region for a five-year average crude incidence rate of 0.7 per 100,000 population. The SWPH rate was the same rate as Ontario over the same time period (Figure 8).[3]

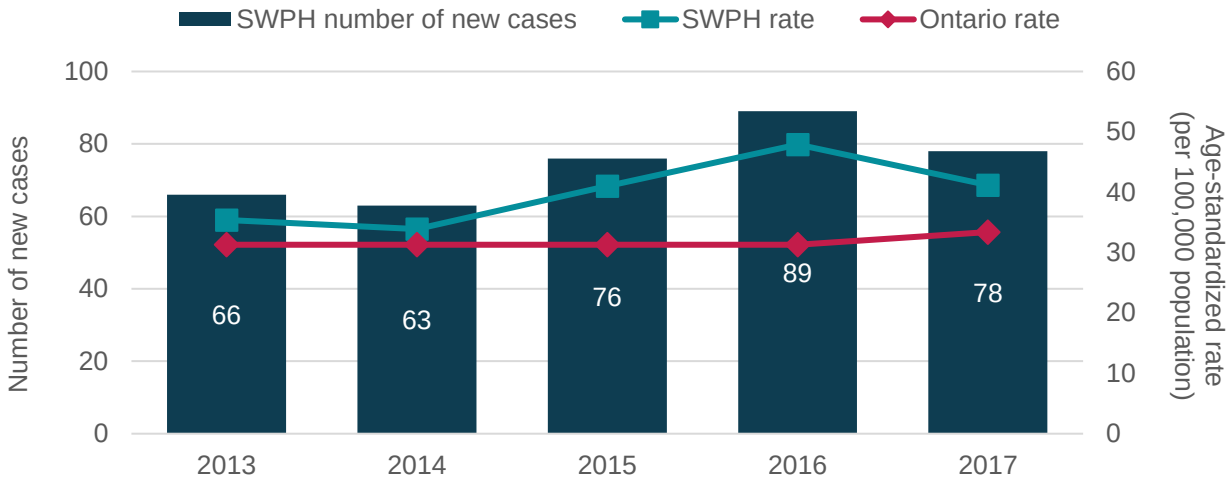
Figure 8. Five-year average crude incidence rate of hepatitis B (per 100,000), Southwestern Public Health and Ontario, 2013-2017 (combined)[3]

Hepatitis C

Hepatitis C is a liver infection that is caused by the hepatitis C virus. This virus can be spread through infected blood and is most commonly transmitted through shared injection and inhalation equipment contaminated with blood. Hepatitis C can also be transmitted through unprotected sex, although the risk is low. Additional risk factors include receiving a blood transfusion before 1992 and exposure to inadequate infection control practices when receiving medical care or invasive personal services. If left untreated, hepatitis C can cause cirrhosis of the liver, liver cancer and premature death. There is currently no vaccine to prevent hepatitis C; however, hepatitis C can be cured with treatment.[9]

In 2017, there were 78 newly reported cases of hepatitis C in the SWPH region.[3] This may include acute infections, spontaneously resolved acute infections, chronic infections and people who have been cured but still test positive for the virus. The incidence rate of hepatitis C in the SWPH region was similar to Ontario over the last five years (Figure 9). In 2016, the incidence rate in the SWPH region came close to surpassing that in Ontario but the difference was not statistically significantly different.

Figure 9. Incidence of hepatitis C, Southwestern Public Health and Ontario, 2013-2017[3]



In 2014, the incidence rate of hepatitis C differed between Elgin St. Thomas and Oxford County (not shown in Figure 9). In Elgin St. Thomas, the age-standardized incidence rate was 17.7, which was lower than Ontario.[10] In Oxford County, the age-standardized incidence rate was 51.5, which was higher than both Elgin St. Thomas and Ontario.[10] Otherwise, the incidence rate was similar between Elgin St. Thomas and Oxford County from 2013 to 2017.[3]

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