



Region of Waterloo  
PUBLIC HEALTH

# Tobacco Use in Waterloo Region

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A Health Status Report



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## Executive Summary

This report describes trends in tobacco use and the health impacts of tobacco use in Waterloo Region. It also highlights the efforts of Region of Waterloo Public Health and our partners to reduce tobacco use and tobacco-related morbidity and mortality in our community.

Tobacco use is an important public health priority as it is the leading preventable cause of disease and death in Ontario. Tobacco increases a person's risk for several cancers, respiratory diseases, heart disease and stroke. Each year, tobacco claims 13,000 lives in Ontario, and tobacco-related diseases cost the Ontario health care system an estimated \$2.2 billion per year in direct health care costs. In Waterloo Region, approximately one-third of all deaths are attributable to smoking. The burden of smoking attributable mortality disproportionately affects males; men have a larger proportion of deaths attributable to smoking and double the potential years of life lost compared to women.

While youth smoking rates are the lowest reported in years, declines in overall smoking rates have stalled. Approximately 20 per cent of the population aged 12 years and older are current smokers in Waterloo Region, and this has not changed significantly over the last five years. Smoking rates remain even higher in specific sub-populations, including young adults, those living with low income, and Canadian-born residents.

Great strides are also being made in preventing or delaying tobacco use among younger population groups. In Waterloo Region, almost 95 per cent of youth 12 to 18 years and 60 per cent of young adults 19 to 24 years of age have never smoked a whole cigarette, which is an improvement compared to five years prior. However, most smokers begin to experiment with tobacco use between the ages of 10 and 18 years, and the median age that Waterloo Region residents first smoked a whole cigarette was 16 years. Since preventing or delaying smoking can reduce short and long-term health effects, health promotion efforts aimed at deterring youth from smoking remain a priority and there is continued importance in addressing the tactics the tobacco industry uses to attract young people to be new smokers (i.e. flavoured tobacco, attractive packing, etc.). There are also notably higher rates of cigarette smoking during pregnancy among younger women compared to older women, indicating that young adult women under 30 years of age may be of particular importance for prevention and policy interventions.

It is important to note that the majority of smokers do want to quit and are making quit attempts. In Waterloo Region, almost two-thirds of current smokers aged 12 years and older are seriously considering quitting smoking, and over 50 per cent of current smokers have made an attempt to quit smoking in the last year. Ensuring access to smoking cessation programs, such as counselling interventions in combination with pharmacotherapy, is recommended in order to capitalize on smokers' interest in quitting.

While there have been significant reductions in cigarette use over the past decade, there have been increases in the use of other tobacco products and smoking devices. Various products have emerged such as water pipes (shisha), cigarillos (little cigars) and electronic cigarettes (e-liquid/e-juice), many of which contain candy flavourings that make the products more attractive for youth experimentation. Over one-third of the Ontario population 15 years of age and older have reported ever smoking a little cigar or cigarillo, while 10 per cent had ever used a water pipe. Use of cigars, pipes, snuff or chew was slightly lower among Waterloo Region residents as compared to the Province, and more prominent among males compared to females. While data on prevalence of e-cigarette use is limited, it has been estimated that 15 per cent of secondary school-aged youth in Ontario have used an e-cigarette, with or without nicotine, at least once in their lifetime. Advocacy and policy efforts continue to focus on banning flavours in tobacco products and electronic cigarettes which would decrease the appeal to youth and young adults.

Another public health concern is exposure to second-hand smoke, which contains more than 7,000 chemicals, 70 of which are known to cause cancer. Second-hand smoke comes from the burning end of lit tobacco, and from smoke exhaled into the air by tobacco smokers. Exposure to second-hand smoke occurs mainly in the home, cars, workplaces and public places such as outside of bars and restaurants. In Waterloo Region, almost one-fifth of the non-smoking population 12 years of age and older reported exposure to second hand smoke in the home, in a vehicle, or in a public place. While second-hand smoke exposure in the home has significantly decreased over the last several years, exposure in public places has increased from 2007 to 2012. Recent legislative changes related to smoking in public places that has gone into effect since 2012 attempts to address this increasing trend. In addition, exposure to second-hand smoke is higher for young adult males in Waterloo Region compared to other local populations, which may be linked to higher smoking rates in this group, thereby requiring targeted protection and cessation messaging.

In order to address these findings, Region of Waterloo Public Health is mandated by the Ministry of Health and Long-Term Care's Ontario Public Health Standards and the Smoke-Free Ontario Act and Ontario Regulation 48/06 to reduce the burden of tobacco-related morbidity and mortality by focusing on three areas: protection from second and third-hand smoke; prevention of tobacco use uptake among children and youth; and motivating and supporting tobacco users to make quit attempts. Public Health works in partnership to increase the capacity of youth/young adults, health care, and workplace providers to provide tobacco prevention, protection and cessation messaging and supports for residents of Waterloo Region. Findings from this report reinforce the importance of focusing program attention on tactics the tobacco industry uses to attract youth to become new smokers. In addition, it is important to continue to monitor tobacco use trends, especially related to second-hand smoke exposure in public places, to assess whether recent legislative changes have had an impact.

## 1. Introduction

Tobacco use is an important public health priority as it is the leading preventable cause of disease and death in Ontario, killing over 13,000 people every year. Tobacco products include, but are not limited to, cigarettes, cigars, cigarillos (little cigars), pipe tobacco, smokeless (chew), shisha (used in water pipes), bidis and kreteks (1).

Cigarette smoke contains more than 7,000 chemicals which move through the body causing damage. Both the risk of developing a smoking-related disease and disease severity are linked to how long a person has smoked and the amount smoked per day (2). Smoking is associated with many respiratory diseases such as asthma, bronchitis and emphysema. The majority of chronic obstructive pulmonary disease (COPD) diagnoses are also attributable to smoking (2). Smoking is associated with an increased risk for head and neck cancers and more than 90 per cent of lung cancer diagnoses are attributable to smoking (3). Smoking is known to cause heart disease with risk being 60 per cent higher for daily smokers compared to non-smokers (4). The U.S. Surgeon General's Report on the health consequences of smoking (2014) found that "in addition to causing multiple serious diseases, cigarette smoking diminishes overall health status, impairs immune function, and reduces quality of life" (2). Quitting smoking at any age can have health benefits. The risk for developing many smoking related illnesses, and the progression of existing illnesses, can be reduced or improved by quitting smoking (2).

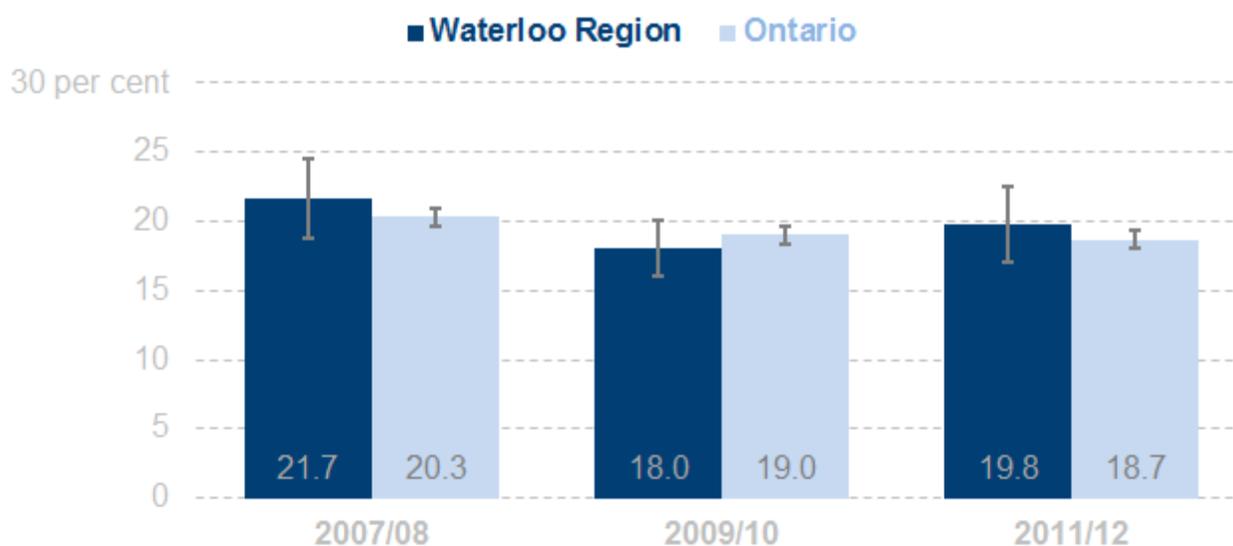
Public Health is mandated by the Ministry of Health and Long-Term Care's Ontario Public Health Standards and the Smoke-Free Ontario Act and Ontario Regulation 48/06 to reduce the burden of tobacco-related morbidity and mortality by focusing on three areas: 1) Protection from second and third-hand smoke; 2) Prevention of tobacco use uptake among children and youth; and 3) Motivating and supporting tobacco users to make quit attempts (5).

This report describes trends in tobacco use and the health impacts of tobacco use in Waterloo Region. It also highlights the efforts of Region of Waterloo Public Health and our partners to reduce tobacco use and tobacco-related morbidity and mortality in our community.

## 2. Smoking Prevalence

From 2007/2008 to 2011/2012, smoking rates in Waterloo Region remained fairly stable. It is hypothesized that the rates of smoking have plateaued over time because those individuals who currently smoke tend to smoke more heavily and have higher levels of nicotine addiction (6). It has also been suggested that access to cheap contraband cigarettes may be contributing to the lack of a meaningful decline in smoking prevalence (7).

**Figure 1: Proportion of population aged 12 years and older who are current smokers, Waterloo Region and Ontario, 2007/2008, 2009/2010, and 2011/2012**



I = 95 per cent confidence interval.

Source: Canadian Community Health Survey (CCHS), 2007/2008, 2009/2010, 2011/2012 Statistics Canada, Share File, Ontario MOHLTC.

About one in five people aged 12 years and older identified themselves as either daily or occasional smokers in Waterloo Region between 2007 and 2012. Smoking rates within Waterloo Region have stayed relatively stable, with 19.8 per cent of people aged 12 years and older identifying as current smokers in 2011/2012, which is similar to the proportion in 2007/2008 and 2009/2010 (Figure 1). These proportions are similar to what is seen for all of Ontario, although provincially there has been a statistically significant decrease in the proportion of smokers since 2007/2008 (20.3 per cent in 2007/2008 to 18.7 per cent in 2011/2012).

**Table 1: Proportion of population aged 12 years and older who are current daily or occasional smokers, by type of smoker, Waterloo Region and Ontario, 2007/2008, 2009/2010, and 2011/2012**

Place of Residence	Type of Smoker	2007/2008	2009/2010	2011/2012
		% (95% CI)	% (95% CI)	% (95% CI)
Waterloo Region	Daily Smoker	17.1 (14.3-20.0)	13.3 (11.2-15.3)	14.4 (11.7-17.1)
	Occasional Smoker	4.6 (3.1-6.1) <sup>E</sup>	4.8 (3.2-6.3) <sup>E</sup>	5.5 (3.3-7.6) <sup>E</sup>
Ontario	Daily Smoker	15.9 (15.3-16.5)	14.4 (13.9-15.0)	14.0 (13.4-14.6)
	Occasional Smoker	4.4 (4.1-4.7)	4.5 (4.2-4.9)	4.7 (4.3-5.1)

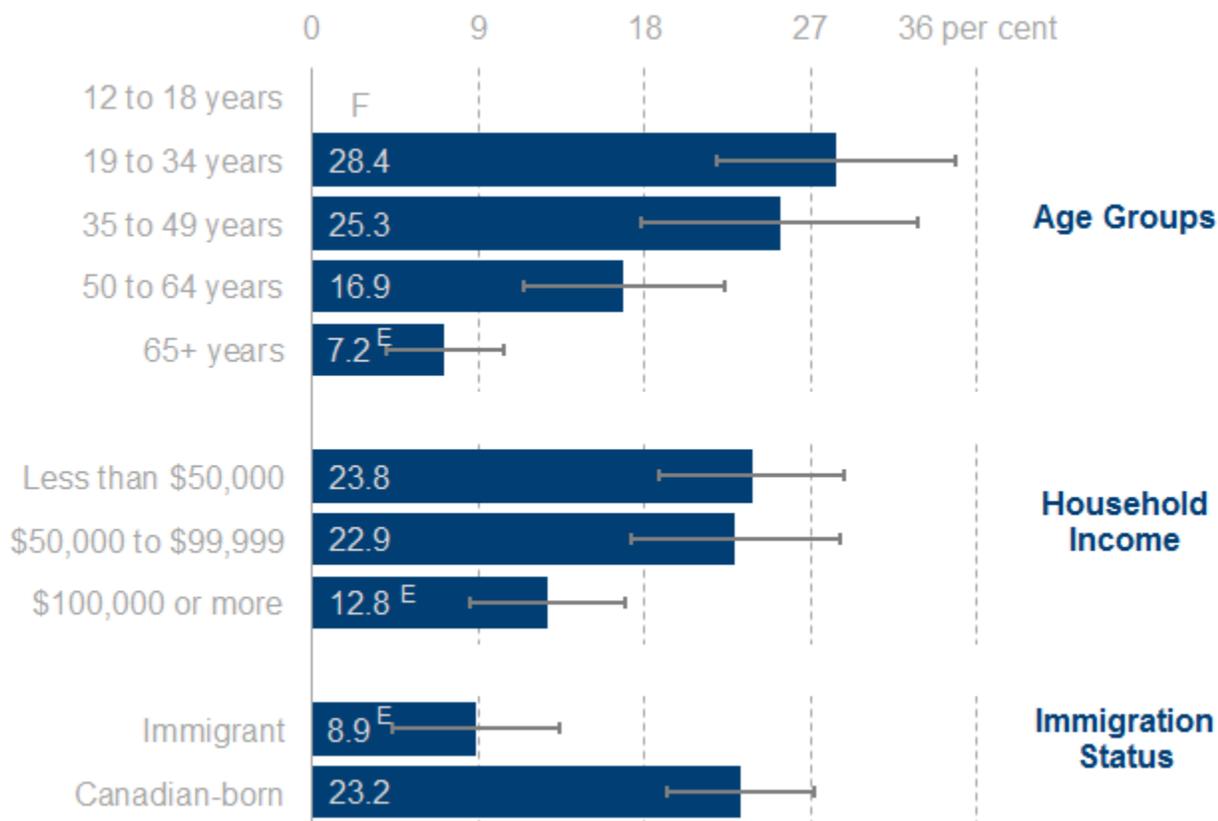
CI = 95 per cent confidence interval.

The superscript "E" denotes high sampling variability, and estimates must be interpreted with caution.

Source: Canadian Community Health Survey (CCHS), 2007/2008, 2009/2010, 2011/2012 Statistics Canada, Share File, Ontario MOHLTC.

Among current smokers in Waterloo Region in 2011/2012, most (14.4 per cent) are daily smokers while only 5.5 per cent are occasional smokers (Table 1). An occasional smoker is a person who has never been a daily smoker or has smoked less than 100 cigarettes in their lifetime. The proportions of daily and occasional smokers in Waterloo Region are similar to what is seen for all of Ontario (Table 1).

**Figure 2: Proportion of population aged 12 years and older who are current smokers, by age group, household income and immigration status, Waterloo Region, 2011-2012**



I = 95 per cent confidence interval.

The superscript "E" denotes high sampling variability, and estimates must be interpreted with caution. An "F" denotes unacceptable sampling variability, and estimates or conclusions based on these data will be unreliable and most likely invalid.

Source: Canadian Community Health Survey (CCHS), 2011/2012 Statistics Canada, Share File, Ontario MOHLTC.

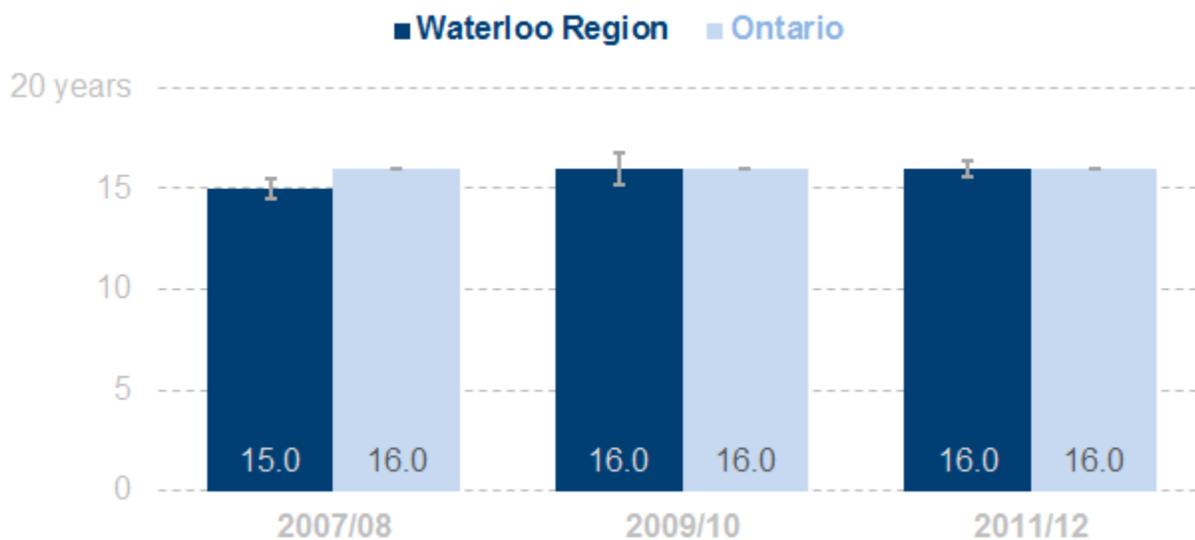
A significantly smaller proportion of the population aged 65 years and older reported being current smokers (7.2 per cent) in comparison to those aged 19 to 34 years (28.4 per cent), 35 to 49 years (25.3 per cent) and 50 to 64 years (16.9 per cent) (Figure 2). There is a greater proportion of current smokers among those with a household income of less than \$50,000 compared to those with a household income of \$100,000 or more (23.8 per cent vs. 12.8%) (Figure 2). As well, fewer immigrants are current smokers in comparison to those who are Canadian-born (8.9 per cent vs. 23.2 per cent) (Figure 2).

The proportion of current smokers aged 12 years and older did not differ significantly by sex, municipality or highest level of education in Waterloo Region.

## Age at smoking initiation

Most smokers begin to experiment with smoking between the ages of 10 and 18 years (8). Many youth believe that they will not become addicted to smoking. For example, in the United States, each day an estimated 2,100 youth and young adults who have been occasional smokers will become daily cigarette smokers (9). About 80 per cent of youth will continue to smoke into adulthood and half of those who continue to smoke will die 13 years earlier than their non-smoking peers (10). Preventing or delaying smoking can reduce the short and long-term health effects of smoking. Starting to smoke at an early age has also been linked to other risk behaviours such as physical inactivity, poor diet, drug and alcohol use, violence and poor academic performance (8).

**Figure 3: Median age of first whole cigarette smoked for population aged 12 years and older who have ever smoked a whole cigarette, Waterloo Region and Ontario, 2007/2008, 2009/2010 and 2011/2012**

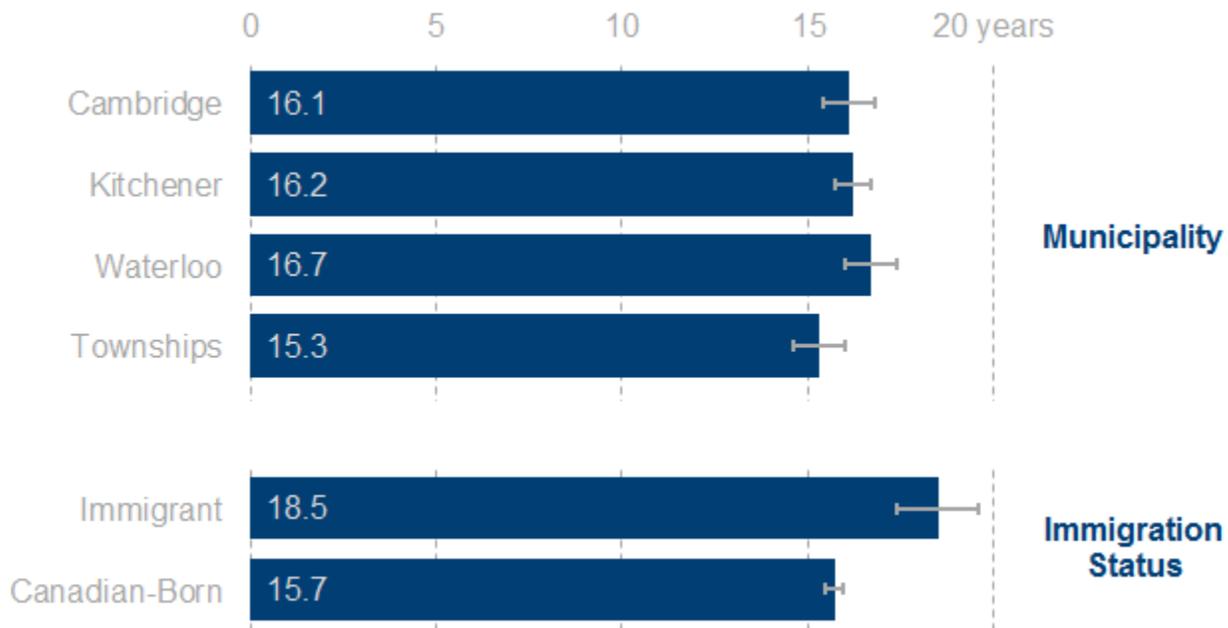


I = 95 per cent confidence interval.

Source: Canadian Community Health Survey (CCHS), 2007/2008, 2009/2010, 2011/2012 Statistics Canada, Share File, Ontario MOHLTC.

Figure 3 shows the median age at which those who have ever smoked a whole cigarette first smoked a whole cigarette. The median age for Waterloo Region was 16.0 years in 2011/2012. This is slightly higher than the median age in 2007/2008 (15.0 years of age), but similar to the median age in 2009/2010 (16.0 years of age). The median age of first smoking a whole cigarette was similar between Waterloo Region and Ontario.

**Figure 4: Median age of first whole cigarette smoked for population aged 12 years and older who have ever smoked a whole cigarette, by municipality and immigration status, Waterloo Region, 2011/2012**



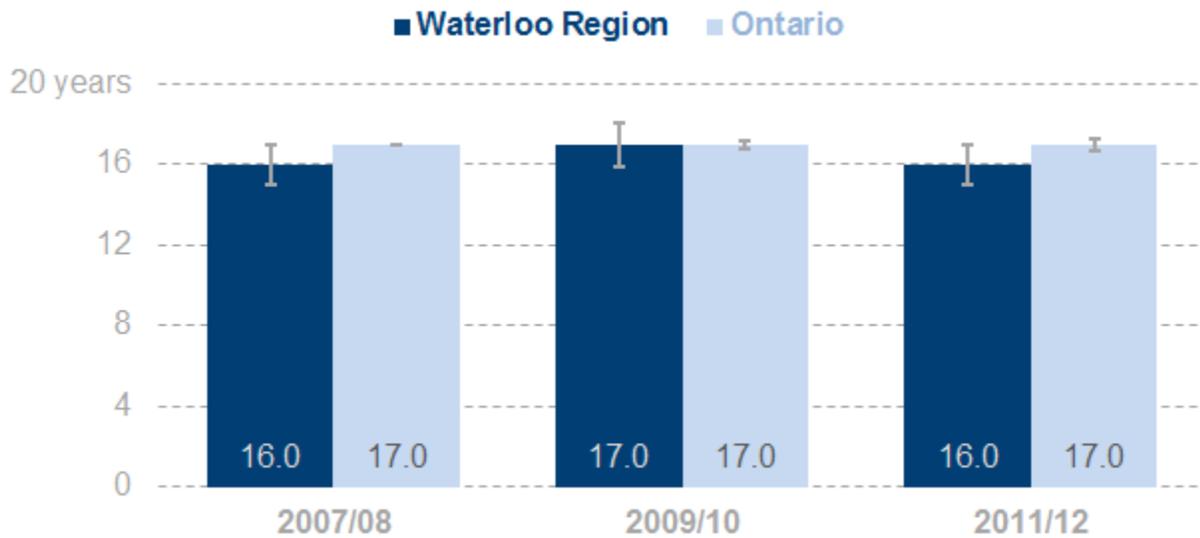
I = 95 per cent confidence interval.

Source: Canadian Community Health Survey (CCHS), 2011/2012 Statistics Canada, Share File, Ontario MOHLTC.

The median age of first whole cigarette smoked was higher in the city of Waterloo in comparison to the rural townships (16.7 years of age vs. 15.3 years of age). As well, the median age of first whole cigarette smoked was higher for immigrants (18.5 years of age) compared to the Canadian-born population (15.7 years of age) in Waterloo Region (Figure 4).

The median age of first whole cigarette smoked by the population aged 12 years and older who have ever smoked a whole cigarette did not differ significantly by sex, age group, household income level or highest level of education in Waterloo Region.

**Figure 5: Median age that current daily smokers aged 12 years and older began to smoke daily, Waterloo Region and Ontario, 2007/2008, 2009/2010, and 2011/2012**

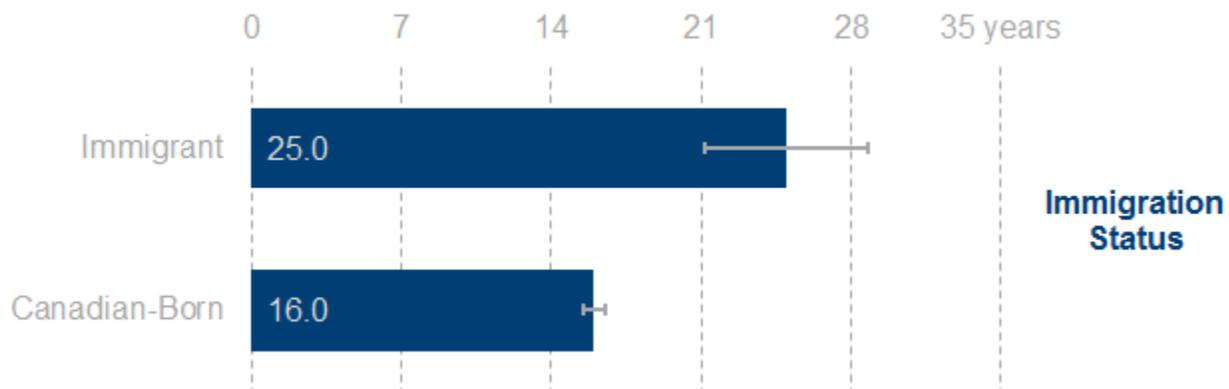


I = 95 per cent confidence interval.

Source: Canadian Community Health Survey (CCHS), 2007/2008, 2009/2010, 2011/2012 Statistics Canada, Share File, Ontario MOHLTC.

Figure 5 shows the median age that current daily smokers became a daily smoker. In Waterloo Region in 2011/2012, the median age that current daily smokers first became daily smokers was 16.0 years. This is similar to the median age that current smokers began to smoke daily in 2007/2008 and 2009/2010. The Ontario median age was slightly higher in 2011/2012, but not significantly higher.

**Figure 6: Median age that current daily smokers aged 12 years and older began to smoke daily, by immigration status, Waterloo Region, 2011/2012**



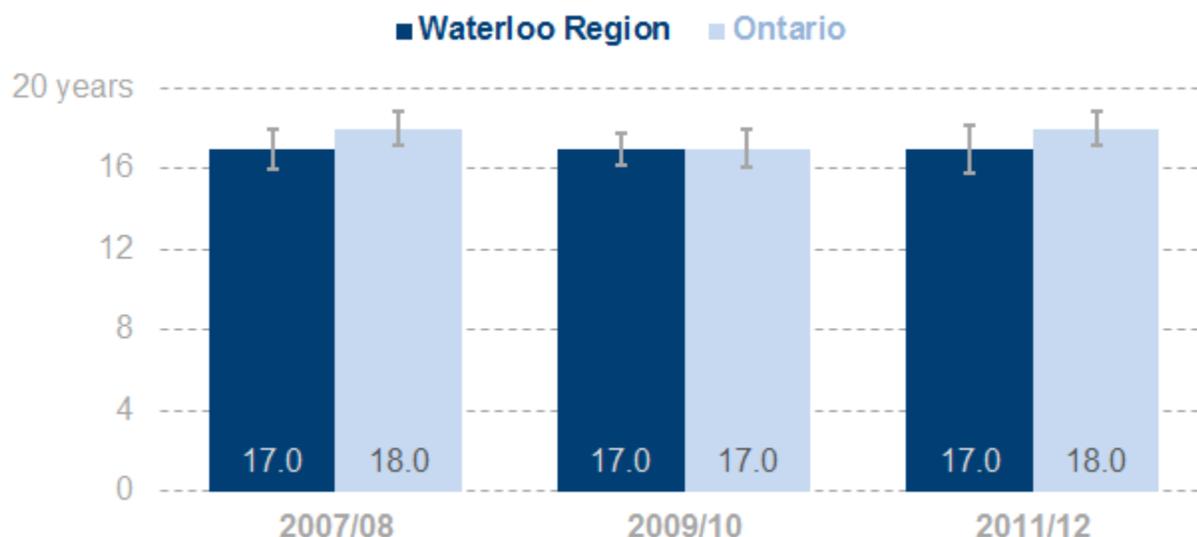
I = 95 per cent confidence interval.

Source: Canadian Community Health Survey (CCHS), 2011/2012 Statistics Canada, Share File, Ontario MOHLTC.

The median age that current daily smokers began to smoke daily was significantly higher for immigrants (25.0 years of age) in comparison to those who were Canadian-born (16.0 years of age) in Waterloo Region (Figure 6).

The median age that current daily smokers started to smoke daily did not differ significantly by sex, age group, municipality, household income level, or highest level of education in Waterloo Region.

**Figure 7: Median age that former smokers aged 12 years and older began to smoke daily, Waterloo Region and Ontario, 2007/2008, 2009/2010, and 2011/2012**

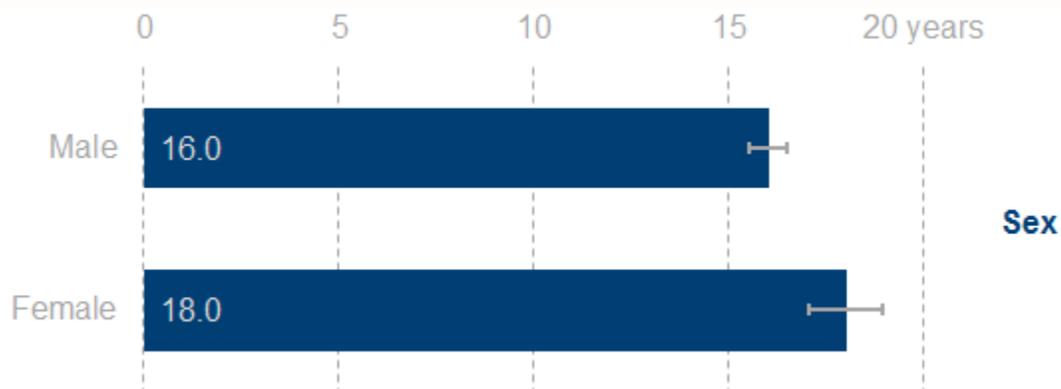


I = 95 per cent confidence interval.

Source: Canadian Community Health Survey (CCHS), 2007/2008, 2009/2010, 2011/2012 Statistics Canada, Share File, Ontario MOHLTC.

Figure 7 shows the median age that former smokers started smoking daily. In 2011/2012, the median age at which former smokers first became daily smokers was 17.0 years. This has remained consistent since 2007/2008 in Waterloo Region. The Ontario median age at which former smokers first began smoking daily was similar to that for Waterloo Region during the same time period.

**Figure 8: Median age that former smokers aged 12 years and older started smoking daily, by sex, Waterloo Region, 2011/2012**



I = 95 per cent confidence interval.

Source: Canadian Community Health Survey (CCHS), 2011/2012 Statistics Canada, Share File, Ontario MOHLTC.

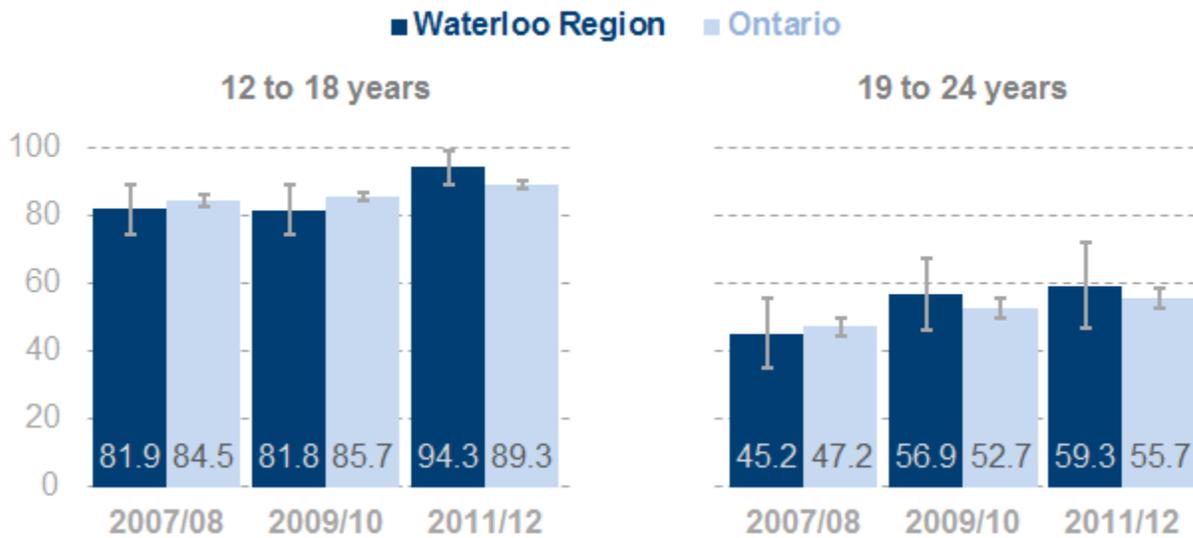
The median age that former smokers became daily smokers was higher for females (18.0 years of age) in comparison to males (16.0 years of age) in Waterloo Region (Figure 8).

The median age that former smokers started to smoke daily did not differ significantly by age group, municipality, household income level, highest level of education, or immigration status.

### **Youth who have never smoked a whole cigarette**

Even just a couple of puffs on a cigarette on a regular basis can lead to symptoms of nicotine dependency such as having cravings. Young people may not recognize these symptoms and can progress from a few puffs, to a few cigarettes, to daily smoking in a short period of time (11). Educating youth about the addictive nature of nicotine in tobacco products is a key strategy in preventing youth tobacco use.

**Figure 9: Proportion of youth 12 to 24 years of age who have never smoked a whole cigarette, Waterloo Region and Ontario, 2007/2008, 2009/2010, and 2011/2012**



I = 95 per cent confidence interval.

Source: Canadian Community Health Survey (CCHS), 2007/2008, 2009/2010, 2011/2012 Statistics Canada, Share File, Ontario MOHLTC.

In Waterloo Region in 2011/2012, 94.3 per cent of youth aged 12 to 18 years reported never having smoked a whole cigarette (Figure 9). This is an improvement in the proportion of non-smoking youth in Waterloo Region compared to previous years (81.9 per cent in 2007/2008 and 81.8 per cent in 2009/2010). Overall in Ontario in 2011/2012, 89.3 per cent of youth 12 to 18 years of age reported never having smoked a whole cigarette, which is slightly lower, but not significantly different than in Waterloo Region. Among older youth aged 19 to 24 years in Waterloo Region, almost two-thirds (59.3 per cent) reported never having smoked a whole cigarette in 2011/2012. This is slightly higher, but statistically similar to the proportion who reported never smoking a cigarette in 2007/2008 and 2009/2010 (45.2 per cent and 56.9 per cent, respectively). This proportion is also statistically similar to that of Ontario with 55.7 per cent of youth aged 19 to 24 years having never smoked a whole cigarette in 2011/2012.

### Smoking during pregnancy

Smoking during pregnancy has multiple health effects for the mother and the fetus, including complications before and during pregnancy (e.g. subfertility, ectopic pregnancy, spontaneous abortion, placental problems, growth restrictions and premature labour); neonatal effects (e.g. low birth weight, sudden infant death syndrome, increased neonatal intensive care unit admissions and increased perinatal mortality); and long-term effects for the child (e.g. respiratory illnesses, other medical problems such as ear infections, learning difficulties, behavioural problems and attention deficit hyperactivity disorder) (12).

**Figure 10: Proportion of pregnant women who smoked cigarettes during pregnancy, Waterloo Region and Ontario, 2011 and 2013**

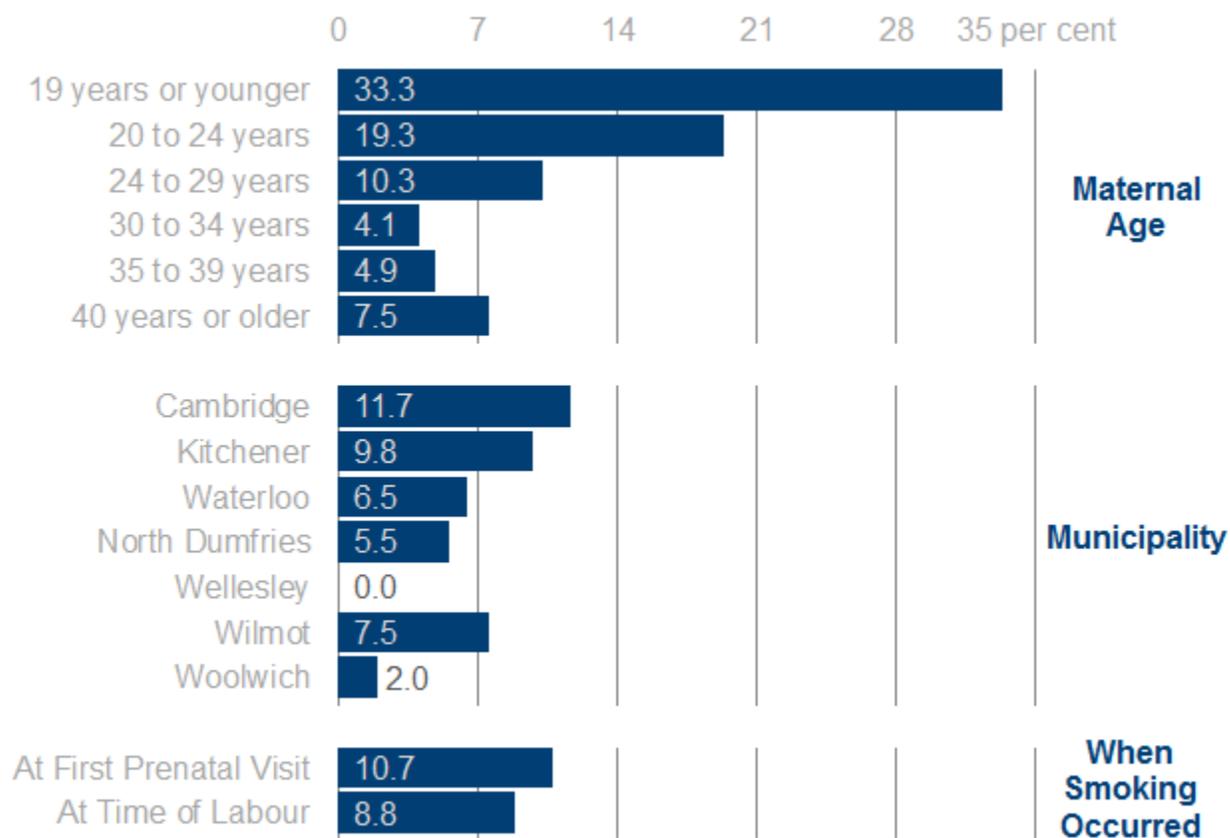


'NA' indicates that the data is currently not available for that year and area.

Source: BORN Information System (2011), Extracted: March 16, 2012 & BORN Information System (2013), Extracted: June 12, 2014

In 2013, 8.8 per cent of Waterloo Region pregnant women smoked during their pregnancy (Figure 10). This proportion has decreased since 2011 when 11.7 per cent of Waterloo Region women reported smoking while pregnant. In Ontario, the proportion of women who smoked cigarettes during pregnancy was slightly lower than for Waterloo Region in 2013 (7.5 versus 8.8 per cent, respectively).

**Figure 11: Proportion of pregnant women who smoked cigarettes during pregnancy, by maternal age, municipality, and time period of pregnancy when smoking occurred, Waterloo Region, 2013**



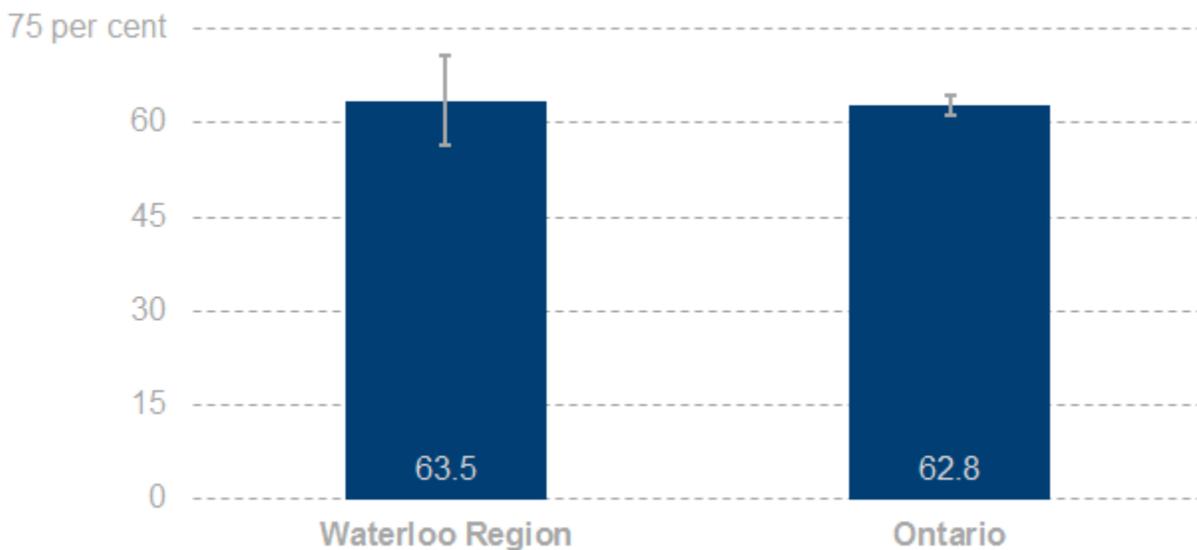
Source: BORN Information System (2013), Extracted: June 12, 2014

In Waterloo Region, 33.3 per cent of women aged 19 years or younger smoked during pregnancy in 2013, while only 4.1 per cent of women aged 30 to 34 years smoked during pregnancy. Overall in 2013, the proportion of women who smoked during their pregnancy decreased with increasing age until after 30 to 34 years. Among women 30 to 39 years of age, less than five per cent smoked cigarettes while pregnant. After 40 years of age, the proportion of women who smoked while pregnant began to increase slightly (Figure 11). More women living in the city of Cambridge (11.7 per cent) smoked cigarettes while pregnant compared to women living in Kitchener (9.8 per cent) or Waterloo (6.5 per cent) in 2013. The proportion of women who smoked during pregnancy was also lower in each of the four townships compared to the cities of Cambridge or Kitchener, while Wellesley township had no women who smoked during pregnancy in 2013. In 2013, 10.7 per cent of Waterloo Region women smoked cigarettes at the time of their first prenatal visit, which decreased to 8.8 per cent at the time of labour.

## Smoking cessation

The majority of tobacco users want to quit smoking and will make multiple quit attempts over the long-term, but most will relapse back to smoking. Using evidence-based smoking cessation supports helps to increase a person's chances of quitting for good (13). Combining counselling (individual or group) with smoking cessation medications (e.g. nicotine replacement therapies, Bupropion or Varenicline) has the best odds for success. Quitting smoking can have positive health outcomes at any age including reductions in the risk for infections, respiratory and cardiovascular diseases, cancers, and improved overall health. Quitting can also have other benefits such as cost savings and reductions in exposure to second and third hand smoke for non-smokers (13).

**Figure 12: Proportion of current smokers 12 years and older who are seriously considering quitting in the next 6 months, Waterloo Region and Ontario, 2007/2008**



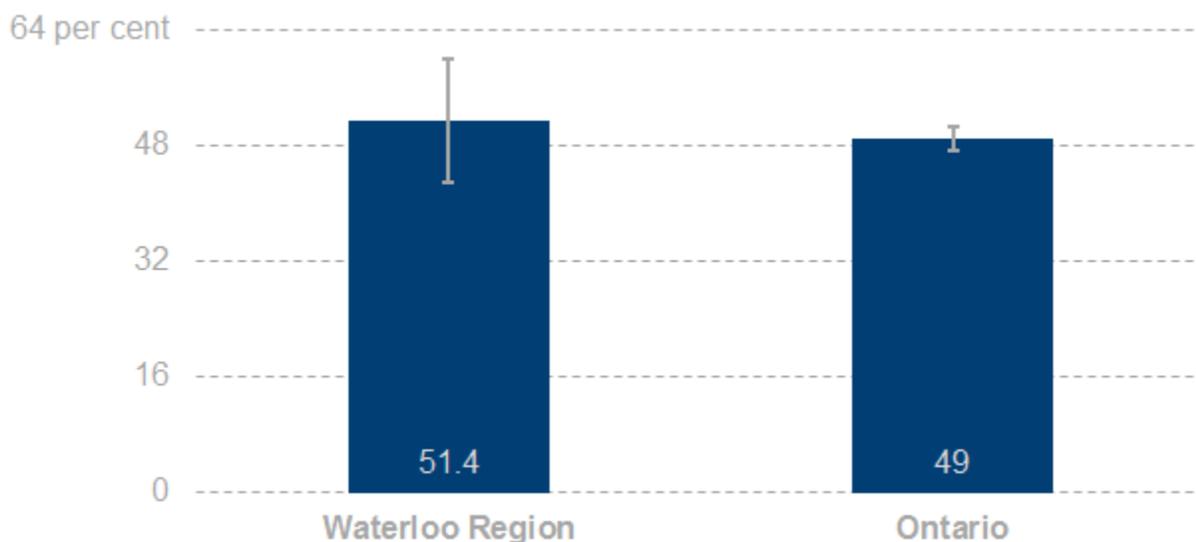
I = 95 per cent confidence interval.

Source: Canadian Community Health Survey (CCHS), 2007/2008, Statistics Canada, Share File, Ontario MOHLTC.

In 2007/2008 in Waterloo Region, 63.5 per cent of current smokers aged 12 years and older were seriously considering quitting smoking in the next 6 months. This proportion was similar to all of Ontario (62.8 per cent) (Figure 12).

There were no significant differences in the proportion of current smokers aged 12 years and older who were seriously considering quitting smoking in the next 6 months by age group, sex, municipality, household income level, highest level of education, or immigration status in Waterloo Region.

**Figure 13: Proportion of current smokers 12 years and older who stopped smoking for 24 hours in the last 12 months in an attempt to quit smoking, Waterloo Region and Ontario, 2007/2008**



I = 95 per cent confidence interval.

Source: Canadian Community Health Survey (CCHS), 2007/2008, Statistics Canada, Share File, Ontario MOHLTC.

In 2007/2008, 51.4 per cent of Waterloo Region current smokers aged 12 years and older had stopped smoking for 24 hours in an attempt to quit smoking in the last year. This proportion was similar to all of Ontario (49.0 per cent) (Figure 13).

There were no significant differences in the proportion of current smokers aged 12 years and older who stopped smoking for 24 hours in an attempt to quit smoking in the last year by age group, sex, municipality, household income level, highest level of education, or immigration status in Waterloo Region.

Tobacco cessation interventions are more cost effective when compared to the costs to treat tobacco-related illnesses. For example, provision of smoking cessation is estimated to cost \$2,000-\$6,000 per life year gained compared to the costs for each life year gained to treat smoking-related conditions such as high blood pressure (\$26,000) and high cholesterol (\$196,000) (13).

The results of a study measuring the cost-effectiveness of four cessation interventions (nicotine replacement therapy, physician advice, individual behavioural counselling and increased taxes) on morbidity, measured by acute care hospital days, showed that implementation of the four interventions combined would result in a savings of 33,307 acute care hospital days and a cost savings of about \$37 million in Canada per year (14).

Research into the return on investment (ROI) of smoking cessation programming in workplaces has shown workplaces to experience a ROI of at least \$3 and up to \$10 (USD) for each \$1 spent. Workplaces have been reported to experience net financial savings (net profit) three to four years after cessation program implementation, with ROI's estimated at 39 per cent to 60 per cent within 10 years of program implementation. Workplace cessation programs are identified by the World Bank as economical interventions, being relatively low cost, and producing financial returns over the long-term that far outweigh their costs (15).

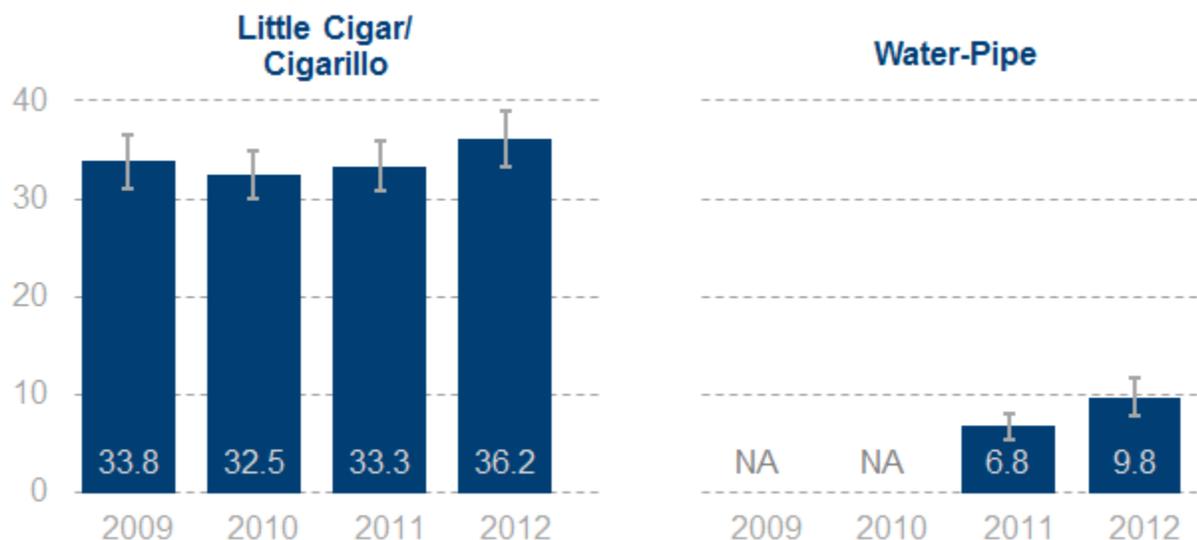
While youth smoking rates are the lowest reported in years, declines in overall smoking rates have stalled, with rates remaining high in specific populations such as those with low incomes, lower education and young adults. It is important to note that the majority of smokers do want to quit and are making quit attempts. Efforts should continue to promote prevention and policy interventions aimed at youth and young adults to deter youth from smoking. Cessation programs targeting populations with higher smoking rates (as identified above) using evidence-based approaches, which include counselling interventions in combination with pharmacotherapy, are recommended. Regular, ongoing quit messages and interventions are encouraged in order to capitalize on smokers' interest in quitting.

### **3. Alternative tobacco use (electronic cigarettes, water pipes, cigarillos, etc.)**

While there have been significant reductions in cigarette use over the past decade, there have been increases in the use of other tobacco products and smoking devices, particularly products containing candy and fruit flavours. Various products have emerged such as water pipes (shisha), cigarillos (little cigars) and electronic cigarettes (e-liquid/e-juice), many of which have contained flavourings making the products more attractive for youth experimentation which can lead to long-term addiction to nicotine (16). In Canada, the tobacco industry has increased the use of flavours in their products and in their marketing strategies (17). There have been previous attempts to regulate flavours in tobacco products in Ontario, but the tobacco industry has found ways around the legislation (17). In May 2015, the Making Healthier Choices Act was announced which will ban the sale of flavoured tobacco products, regulate the promotion, display, sale and supply of e-cigarettes to anyone under the age of 19 years, and increase the maximum fines for those who sell tobacco to youth. Flavoured e-juices/e-liquids used in electronic cigarettes are not considered tobacco products and are not currently regulated in Canada.

The growing popularity of alternative tobacco products and smoking devices raises concerns because users commonly misconceive alternative forms of tobacco as being less harmful than cigarettes (8). Additional information and data sources are required to better understand the impact of these emerging products on tobacco use.

**Figure 14: Proportion of population aged 15 years and older who have ever used a little cigar or cigarillo or have ever used a water pipe (hookah, sheesha), Ontario, 2009-2012**



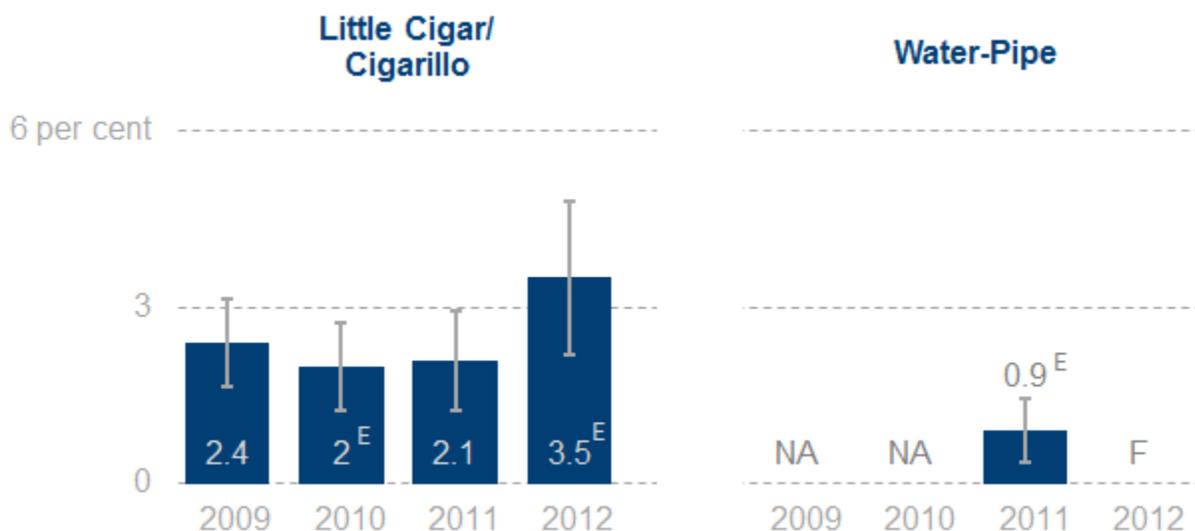
I = 95 per cent confidence interval.

'NA' indicates that the data is not available for that year.

Source: Canadian Tobacco Use Monitoring Survey, 2009, 2010, 2011, 2012. Extracted from Tobacco Informatics Monitoring System (TIMS), January 5, 2015.

In 2012, 9.8 per cent of Ontarians aged 15 years or older had ever used a water pipe. This proportion was slightly higher than the previous year at 6.8 per cent (Figure 14). In addition, approximately one-third (36.2 per cent) of Ontarians had ever smoked a little cigar or cigarillo in 2012, which has not changed significantly since 2009 (Figure 14).

**Figure 15: Proportion of population aged 15 years and older who used a little cigar or cigarillo in the past 30 days or who used a water pipe (hookah, sheesha) in the past 30 days, Ontario, 2009-2012**



I = 95 per cent confidence interval.

'NA' indicates that the data is not available for that year.

The superscript "E" denotes high sampling variability, and estimates must be interpreted with caution. An "F" denotes unacceptable sampling variability, and estimates or conclusions based on these data will be unreliable and most likely invalid.

Source: Canadian Tobacco Use Monitoring Survey, 2009, 2010, 2011, 2012. Extracted from Tobacco Informatics Monitoring System (TIMS), January 5, 2015.

The proportion of the Ontario population who smoked a little cigar or cigarillo in the past 30 days was 3.5 per cent in 2012, which was similar to the previous three years (Figure 15). The proportion of the population that used a water pipe in the past 30 days was not reportable for 2012, but the proportion for 2011 was 0.9 per cent (Figure 15).

**Table 2: Proportion of population aged 15 years and older who used a little cigar or cigarillo in the past 30 days that used a flavoured little cigar or cigarillo, Ontario, 2009-2012**

Year	Use of flavoured little cigars or cigarillos in the past month
	% (95% CI)
2009	65.7 (49.4-82.1)
2010	59.2 (38.1-80.3) <sup>E</sup>
2011	70.7 (51.9-89.6)
2012	47.9 (38.1-80.3) <sup>E</sup>

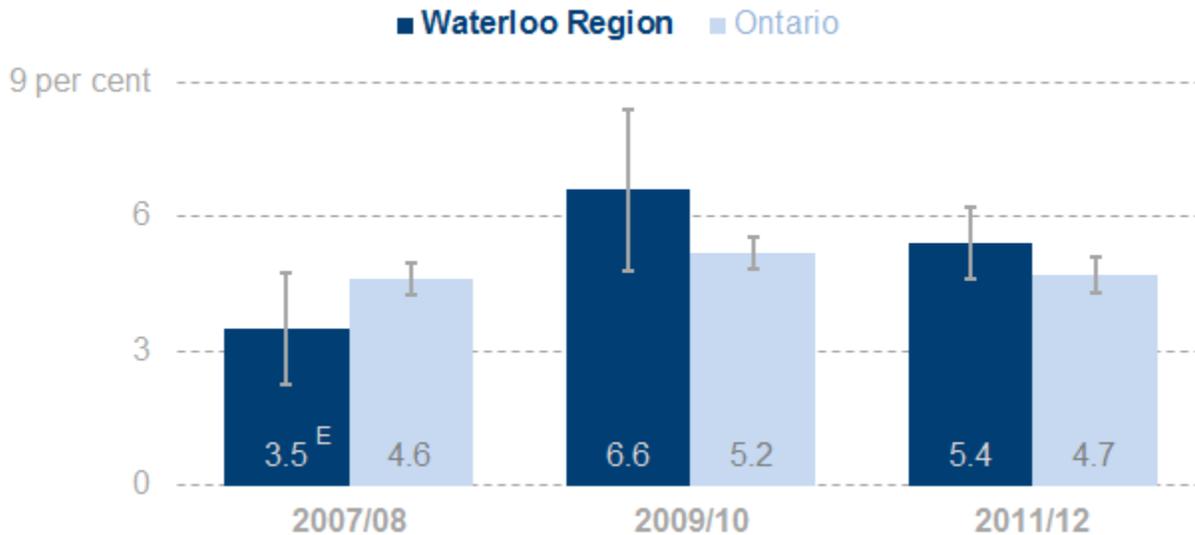
CI = 95 per cent confidence interval.

The superscript "E" denotes high sampling variability, and estimates must be interpreted with caution.

Source: Canadian Tobacco Use Monitoring Survey, 2009, 2010, 2011, 2012. Extracted from Tobacco Informatics Monitoring System (TIMS), October 28, 2014.

In Ontario, of those who had used a little cigar or cigarillo in the past 30 days, 47.9 per cent used a flavoured little cigar or cigarillo. This proportion was lower than the previous three years, although due to high sampling variability this difference was not significant (65.7 per cent in 2009, 59.2 per cent in 2010, and 70.7 per cent in 2011) (Table 2).

**Figure 16: Proportion of population aged 12 years and older who used a cigar, pipe, snuff or chew in the past month, Waterloo Region and Ontario, 2007/2008, 2009/2010, and 2011/2012**



I = 95 per cent confidence interval.

The superscript "E" denotes high sampling variability, and estimates must be interpreted with caution.

Source: Canadian Community Health Survey (CCHS), 2007/2008, 2009/2010, 2011/2012 Statistics Canada, Share File, Ontario MOHLTC.

In 2011/2012, 5.4 per cent of the population aged 12 years and older in Waterloo Region smoked a cigar, smoked a pipe, or used snuff or chew in the past month (Figure 16). These proportions remained relatively stable between 2007/2008 and 2011/2012 and were similar to all of Ontario, where approximately five per cent of people reported use of any of these alternative tobacco products (Figure 16).

**Table 3: Proportion of population aged 12 years and older who used either a cigar, pipe, snuff or chew in the past month, Waterloo Region and Ontario, 2007/2008, 2009/2010, and 2011/2012**

Place of Residence	Use of Tobacco Alternative	2007/2008	2009/2010	2011/2012
		% (95% CI)	% (95% CI)	% (95% CI)
Waterloo Region	Smoked Cigar	3.3 (2.1-4.5) <sup>E</sup>	6.4 (4.5-8.2)	4.9 (3.4-6.5)
	Smoked a Pipe	N/R	N/R	N/R
	Used Snuff	N/R	N/R	N/R
	Used Chew	N/R	N/R	N/R
Ontario	Smoked Cigar	4.3 (4.0-4.6)	5.0 (4.6-5.3)	4.4 (4.1-4.8)
	Smoked a Pipe	0.0 (0.0-0.1) <sup>E</sup>	F	N/R
	Used Snuff	0.2 (0.1-0.2)	0.1 (0.1-0.2) <sup>E</sup>	0.1 (0.0-0.1) <sup>E</sup>
	Used Chew	0.4 (0.3-0.5)	0.5 (0.3-0.6)	0.5 (0.4-0.6)

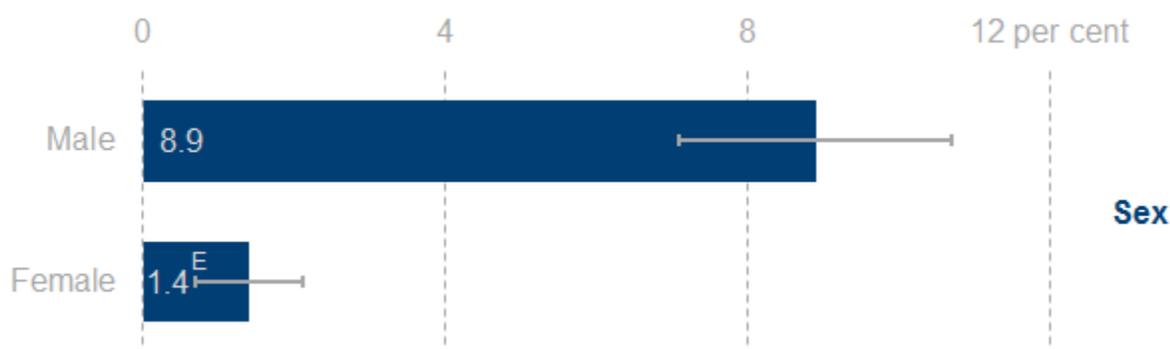
CI = 95 per cent confidence interval.

N/R indicates that the data is not reportable. The superscript “E” denotes high sampling variability, and estimates must be interpreted with caution. An “F” denotes unacceptable sampling variability, and estimates or conclusions based on these data will be unreliable and most likely invalid.

Source: Canadian Community Health Survey (CCHS), 2007/2008, 2009/2010, 2011/2012 Statistics Canada, Share File, Ontario MOHLTC.

Among those who had smoked a cigar, smoked a pipe, or used snuff or chew in the past month in Waterloo Region, the largest proportion of people reported smoking cigars at 4.9 per cent (Table 3). These proportions were similar to all of Ontario, with approximately five per cent of people indicating that they had smoked a cigar in the past month during the same time period (Table 3). Very few people reported smoking a pipe, using snuff or using chew in the past month in either Waterloo Region or Ontario.

**Figure 17: Proportion of population aged 12 years and older who used either a cigar, a pipe, snuff or chew in the past month, by sex, Waterloo Region, 2007-2012 (combined)**



I = 95 per cent confidence interval.

The superscript “E” denotes high sampling variability, and estimates must be interpreted with caution.

Source: Canadian Community Health Survey (CCHS), 2007/2008, 2009/2012, 2011/2012 Statistics Canada, Share File, Ontario MOHLTC.

In Waterloo Region from 2007 to 2012, a larger proportion of males smoked a cigar, smoked a pipe, used snuff or used chew in the past month in comparison to females (8.9 per cent vs. 1.4 per cent) (Figure 2).

There is limited data available on the prevalence of adult use of e-cigarettes due to the fact that the products are somewhat new in Ontario. There is data available for Canada (collected between July 2010 to June 2011) for adult tobacco users aged 18 years and older which shows that (17):

- 39.5 per cent of adults were aware of electronic cigarettes
- Four per cent had ever tried electronic cigarettes and
- One per cent were current e-cigarette users

In 2013, the Ontario Student Drug Use and Health Survey asked students about their use of electronic cigarettes (e-cigarettes) for the first time (18). The survey found:

- 15 per cent of Ontario students in grades 9 to 12 (an estimated 99,800 students) reported using an e-cigarette, with or without nicotine, at least once in their lifetime. Four per cent used an e-cigarette with nicotine, and 11 per cent used an e-cigarette without nicotine.
- Data on e-cigarette use for students in grades 9 to 12 for the Waterloo Wellington Local Health Integration Network (LHIN) area was not reported due to insufficient numbers leading to unreliability.

There is evidence that tobacco companies market these alternative products in ways that will appeal to children and youth. For example, a recent US report on an investigation into the marketing practices of e-cigarette companies found that e-cigarette companies are promoting products at youth-oriented events, advertising during events and programs that are youth-oriented, and adding flavourings that may appeal to youth (19).

Comprehensive tobacco control has made tremendous progress in previous decades and involves the de-normalization of both tobacco use and tobacco industry products and tactics. Advocacy and policy efforts should focus on banning flavours in electronic cigarettes (e.g. e-liquid/e-juice) which would decrease the appeal to youth and young adults. There are currently no manufacturing standards for e-cigarettes or e-liquids/e-juices and e-cigarettes have not yet been approved as smoking cessation aids; as they have not met the efficacy, safety and quality standards required by regulatory authorities. Emerging tobacco products and other smoking devices require ongoing monitoring and research to identify trends in usage and to understand the potential health impacts. Public Health is working to keep Regional Council informed of the emerging evidence on e-cigarettes and the legislative agendas at both the Provincial and Federal governments.

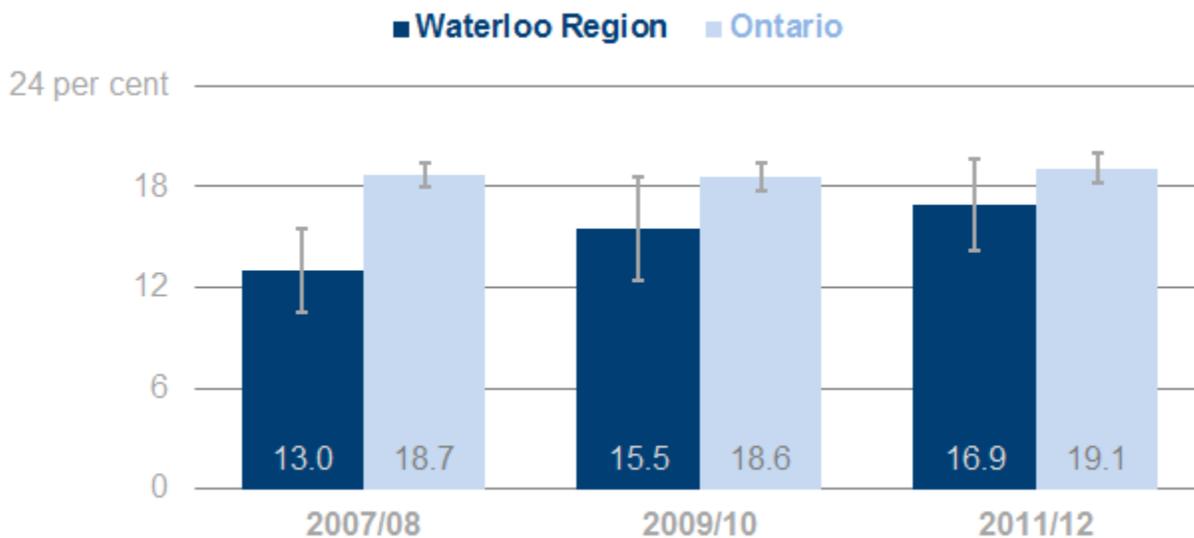
## 4. Second-hand smoke exposure

Second-hand smoke (SHS) comes from the burning end of lit tobacco, and from the smoke exhaled into the air by someone who smokes. SHS contains more than 7,000 chemicals, 70 of which are known to cause cancer. The U.S. Environmental Protection Agency has labelled SHS a “class A carcinogen”, meaning it is known to cause cancer. There is no known safe level of exposure to SHS. Exposure to SHS occurs mainly in the home, cars, workplaces, and public places, such as outside of bars and restaurants (e.g., patios) (20).

Second-hand smoke causes health problems in infants and children, including more frequent and severe asthma attacks, respiratory infections, ear infections, and sudden infant death syndrome. In adults, some of the health conditions caused by second-hand smoke include coronary heart disease, stroke, and lung cancer (21).

### Non-smoker second hand smoke exposure

**Figure 18: Proportion of population aged 12 years and older who are non-smokers exposed to second-hand smoke in the home, in a vehicle, or in a public place, Waterloo Region and Ontario, 2007/2008, 2009/2010, and 2011/2012**



I = 95 per cent confidence interval.

Source: Canadian Community Health Survey (CCHS), 2007/2008, 2009/2010, 2011/2012 Statistics Canada, Share File, Ontario MOHLTC.

In 2011/2012 16.9 per cent of the Waterloo Region population aged 12 years and older who are non-smokers were exposed to second-hand smoke in a home, a vehicle or a public place. This was slightly higher than in 2007/2008 and 2009/2010 but the difference was not statistically significant (Figure 18). The proportion of the population aged 12 years and older who are non-smokers exposed to second-hand smoke in a home, a vehicle or a public place in

Ontario is statistically similar to that of Waterloo Region at 19.1 per cent in 2001/2012 (Figure 18).

**Table 4: Proportion of population aged 12 years and older who are non-smokers exposed to second-hand smoke in the home, in a vehicle, or in a public place, Waterloo Region and Ontario, 2007/2008, 2009/2010, and 2011/2012**

Place of Residence	Second-hand smoke exposure setting	2007/2008	2009/2010	2011/2012
		% (95% CI)	% (95% CI)	% (95% CI)
Waterloo Region	In a home	5.7 (4.1-7.3)	5.4 (3.6-7.2) <sup>E</sup>	2.6 (1.5-3.8) <sup>E</sup>
	In a vehicle	6.7 (4.7-8.6)	6.1 (4.2-8.1)	4.9 (3.3-6.5) <sup>E</sup>
	In public places	6.3 (4.4-8.2)	8.7 (6.2-11.0)	11.7 (9.2-14.2)
Ontario	In a home	5.8 (5.4-6.2)	5.3 (4.9-5.7)	4.5 (4.0-5.0)
	In a vehicle	7.4 (6.9-7.9)	6.5 (6.0-7.0)	5.6 (5.2-6.1)
	In public places	11.4 (10.8-12.1)	12.3 (11.6-13.0)	13.3 (12.6-14.0)

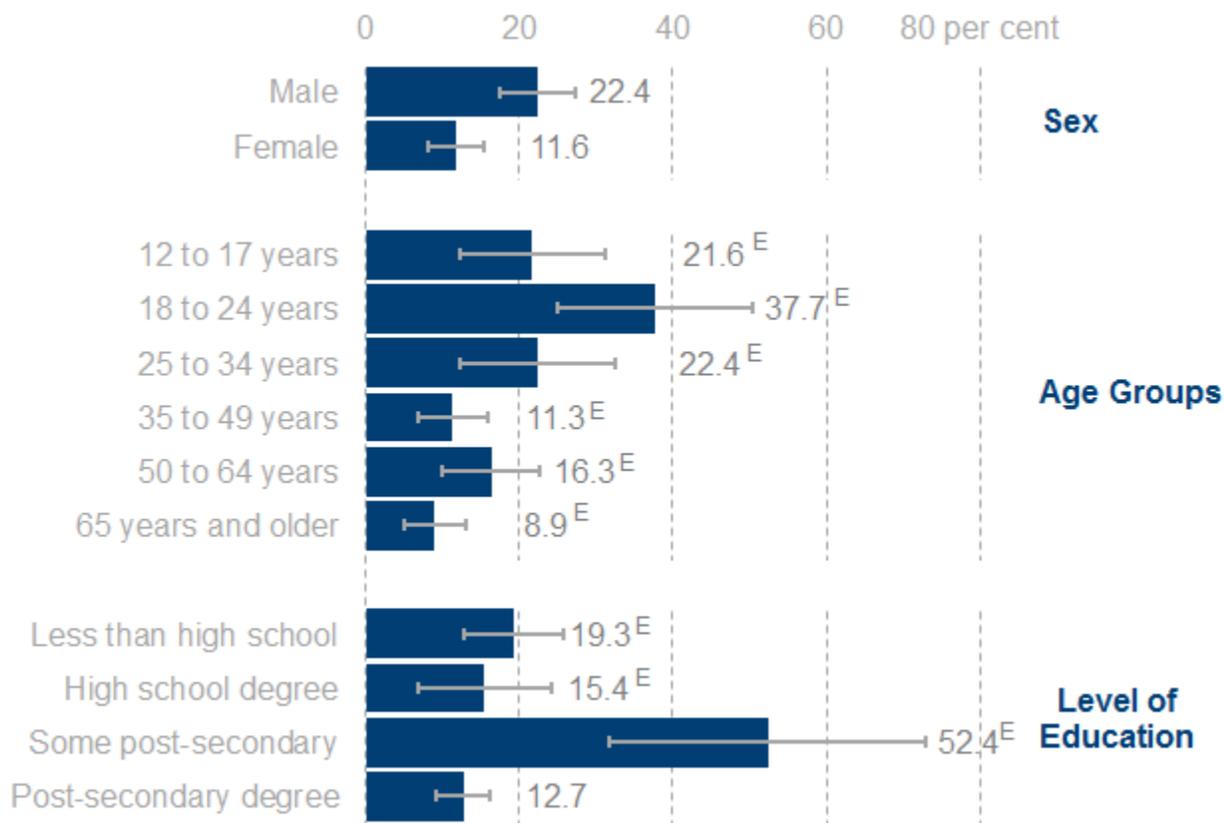
CI = 95 per cent confidence interval.

The superscript "E" denotes high sampling variability, and estimates must be interpreted with caution.

Source: Canadian Community Health Survey (CCHS), 2007/2008, 2009/2010, 2011/2012 Statistics Canada, Share File, Ontario MOHLTC.

The proportion of the non-smoking population aged 12 years and older who are exposed to second-hand smoke in the home has significantly decreased from 5.7 per cent in 2007/2008 to 2.6 per cent in 2011/2012 (Table 4). This trend was also seen for all of Ontario (5.8 per cent in 2007/2008 compared to 4.5 per cent in 2011/2012). Conversely, there has been a significant increase in the proportion of the population who are non-smokers exposed to second-hand smoke in a public place in both Waterloo Region (6.3 per cent in 2007/2008 compared to 11.7 per cent in 2011/2012) and Ontario (11.4 per cent in 2007/2008 compared to 13.3 per cent in 2011/2012) (Table 4).

**Figure 19: Proportion of population aged 12 years and older who are non-smokers exposed to second-hand smoke in the home, in a vehicle, or in a public place, by sex, age group, and level of education, Waterloo Region, 2011/2012**



I = 95 per cent confidence interval.

The superscript "E" denotes high sampling variability, and estimates must be interpreted with caution

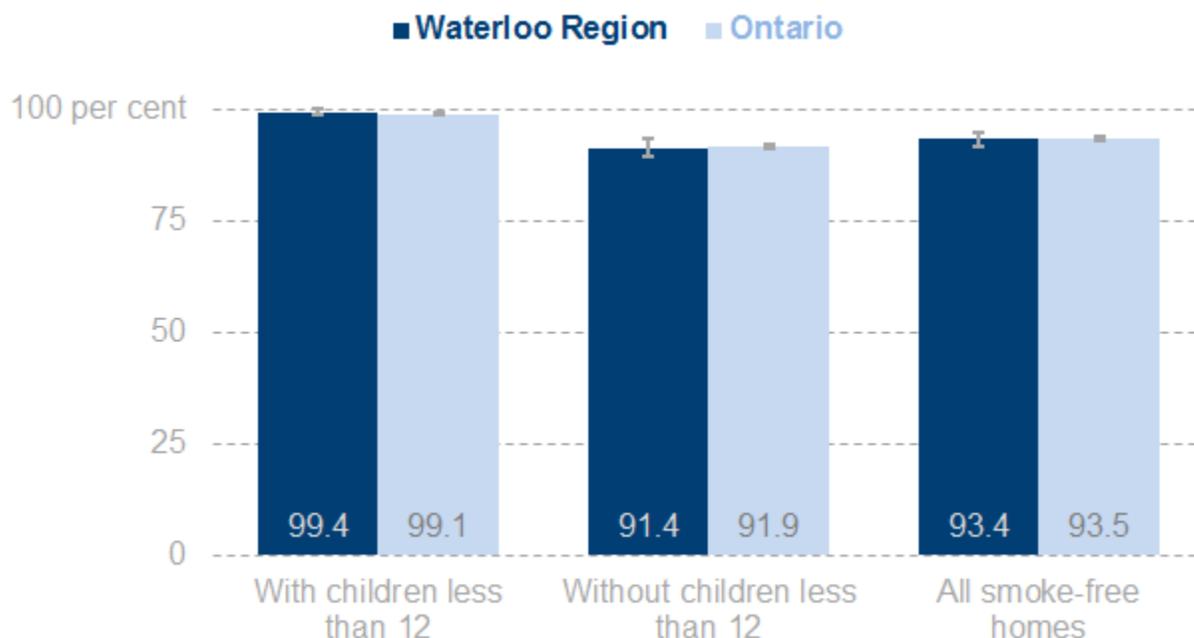
Source: Canadian Community Health Survey (CCHS), 2011/2012 Statistics Canada, Share File, Ontario MOHLTC.

Almost twice as many males aged 12 years and older in Waterloo Region were exposed to second-hand smoke in a home, a vehicle, or a public place compared to females (22.4 per cent vs. 11.6 per cent) (Figure 19). As well, a greater proportion of people aged 18 to 24 years were exposed to second-hand smoke in a home, a vehicle or a public place (37.7 per cent) as compared to adults aged 35 to 49 years (11.3 per cent), adults aged 50 to 64 years (13.6 per cent), and adults aged 65 years or older (8.9 per cent). Also seen in Figure 19, a larger proportion of the population aged 12 years and older with some post-secondary education were exposed to second-hand smoke in a home, a vehicle or a public place compared to those without a high school degree, with a high school degree, and those with a post-secondary degree (52.4 per cent vs. 19.3 per cent, 15.4 per cent, and 12.7 per cent, respectively) (Figure 19).

There were no significant differences in the proportion of the population aged 12 years and older who was exposed to second-hand smoke in a home, a vehicle, or a public place by municipality, household income, or immigration status.

### Smoke-free homes

**Figure 20: Proportion of households that were smoke-free, by presence of children in household, Waterloo Region and Ontario, 2011/2012**

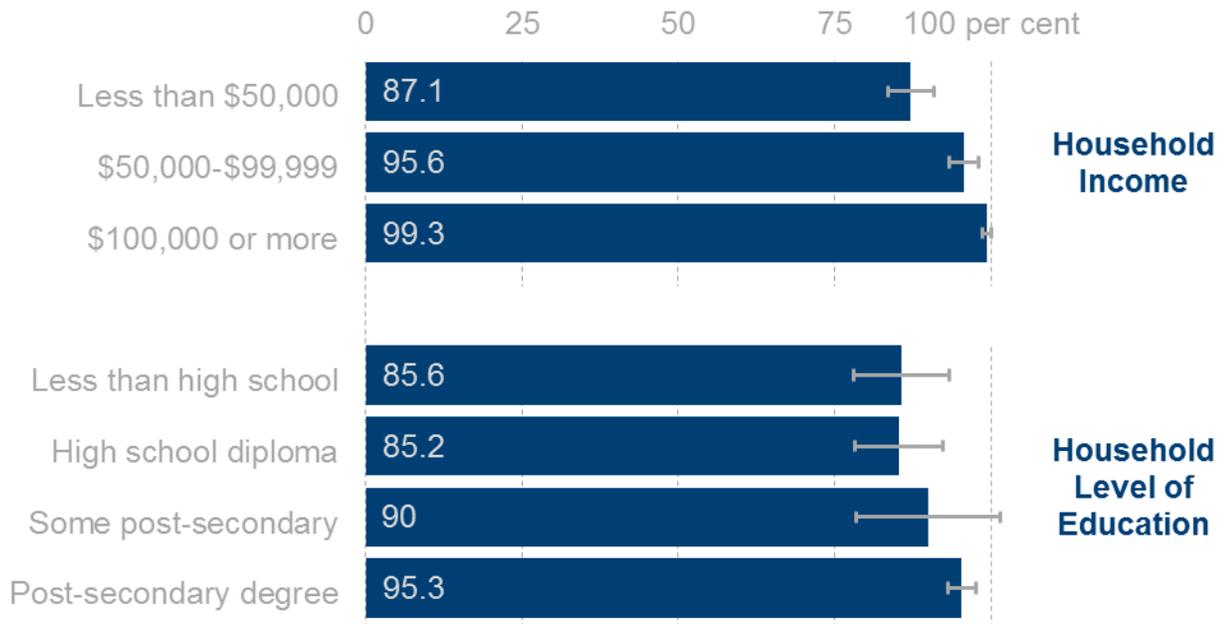


I = 95 per cent confidence interval.

Source: Canadian Community Health Survey (CCHS), 2011/2012 Statistics Canada, Share File, Ontario MOHLTC.

In 2011/2012, 93.4 per cent of Waterloo Region homes were smoke-free (Figure 20). This is similar to all of Ontario with 93.5 per cent of homes being smoke-free. When there are children less than 12 years of age in the home, the proportion of smoke-free homes increases to 99.4 per cent in Waterloo Region. An opposite trend is seen when there are no children in the home less than 12 years of age; the proportion of smoke-free homes declines to 91.4 per cent. These trends are similar across all of Ontario.

**Figure 21: Proportion of households that were smoke free, by household income and household level of education, Waterloo Region, 2011/2012**



I = 95 per cent confidence interval.

Source: Canadian Community Health Survey (CCHS), 2011/2012 Statistics Canada, Share File, Ontario MOHLTC.

In Waterloo Region, the proportion of homes that were smoke-free was significantly lower if the household income was less than \$50,000 compared to homes with a household income of \$50,000 to \$99,999 or \$100,000 or more (87.1 per cent vs. 95.6 per cent and 99.3 per cent, respectively) (Figure 21). As well, the proportion of homes that were smoke-free was significantly higher if the highest level of education for the household was a post-secondary degree (95.3 per cent) when compared to homes with a highest achieved household education of a high school diploma (85.2 per cent).

There were no significant differences in the proportion of households that were smoke-free by municipality or immigration status.

The proportion of the population 12 years of age and older who were non-smokers exposed to second hand smoke in the home has significantly decreased, while exposure in public places has increased. Exposure in the home, vehicle and public places is higher for males; 18-24 year olds; and for households with some post-secondary education. The higher rates of exposure to second hand smoke in the home, vehicle and public places for males and 18-24 year olds may be linked to higher smoking rates in these populations requiring focused protection and cessation messaging for these populations.

## 5. Consequences of tobacco use

Smoking has been confirmed as the single most important modifiable behaviour in terms of impact on health and life expectancy. Non-smokers can expect to gain about 3 years of life expectancy, while heavy smokers stand to lose about 9 years of life expectancy. The earlier a person quits the greater the improvement in their life expectancy and other health benefits. Quitting before the age of 30 can avoid more than 90 per cent of the lung cancer mortality attributed to smoking. For example, quitting smoking at age 60 gains about 3 years of life expectancy, while quitting at age 30 gains about 10 years of life expectancy (22).

### Smoking attributable mortality

Smoking attributable mortality uses information about the amount of smoking and the relative risk of acquiring a disease if you are a current or former smoker. This information is used along with the general mortality rates for an area to determine how many deaths in a region are likely caused by smoking. Table 18 shows the total number of deaths due to a disease, along with the number of deaths attributed to smoking, and the per cent of deaths attributed to smoking. The diseases that were included come from the Centre for Disease Control Smoking Attributable Mortality, Morbidity, and Economic Costs (SAMMEC) tool (<http://apps.nccd.cdc.gov/sammecc/>). These diseases have known relative risks associated with smoking gathered through the Cancer Prevention Studies data through the American Cancer Society.

**Table 5: Number of deaths, smoking-attributable mortality (SAM), and per cent of deaths attributable to smoking, by cause of death and sex, Waterloo Region, 2007-2011**

Disease category	Male			Female			Total		
	Total Deaths (35+)	SAM deaths (35+)	% of deaths (35+)	Total Deaths (35+)	SAM deaths (35+)	% of deaths (35+)	Total Deaths (35+)	SAM deaths (35+)	% of deaths (35+)
<b>Neoplasms - Total</b>	<b>1,129</b>	<b>767</b>	<b>67.9</b>	<b>828</b>	<b>415</b>	<b>50.2</b>	<b>1,957</b>	<b>1,182</b>	<b>60.4</b>
Lip, oral cavity, pharynx	50	38	75.6	14	7	47.6	64	44	69.5
Oesophagus	79	59	74.8	34	19	56.6	113	78	69.4
Stomach	70	21	29.7	48	7	13.7	118	27	23.2
Pancreas	125	26	20.8	125	31	24.8	250	57	22.8
Larynx	19	16	84.1	6	4	73.9	25	20	81.7
Trachea, lung, bronchus	596	528	88.5	452	323	71.5	1,048	851	81.2
Cervix uteri	-	-	-	32	4	11.5	32	4	11.5
Kidney, other urinary	63	26	41.5	35	2	4.7	98	28	28.3
Urinary bladder	89	44	49.3	44	14	31.2	133	58	43.3
Acute myeloid leukemia	38	9	24.8	38	5	13.4	76	15	19.1
<b>Cardiovascular diseases - Total</b>	<b>2,107</b>	<b>437</b>	<b>20.7</b>	<b>2,238</b>	<b>241</b>	<b>10.8</b>	<b>4,345</b>	<b>678</b>	<b>15.6</b>
Ischemic heart disease	1,286	285	22.2	1,077	134	12.4	2,363	419	17.7
Other heart disease	306	57	18.6	431	38	8.7	737	95	12.9
Cerebrovascular disease	391	44	11.2	621	45	7.2	1,012	88	8.7
Atherosclerosis	21	5	25.9	31	2	6.3	52	7	14.2
Aortic aneurysm	62	41	66.3	35	17	48.5	97	58	59.9
Other arterial disease	41	5	11.0	43	6	13.2	84	10	12.2
<b>Respiratory Diseases - Total</b>	<b>391</b>	<b>266</b>	<b>68.1</b>	<b>409</b>	<b>228</b>	<b>55.8</b>	<b>800</b>	<b>494</b>	<b>61.8</b>
Pneumonia, influenza	102	25	24.1	135	16	12.2	237	41	17.3
Bronchitis, emphysema	23	21	91.9	32	27	83.7	55	48	87.1
Chronic airway obstruction	266	220	82.8	242	185	76.5	508	405	79.8
<b>Perinatal conditions - Total</b>	<b>14</b>	<b>1</b>	<b>7.1</b>	<b>9</b>	<b>-</b>	<b>-</b>	<b>23</b>	<b>1</b>	<b>4.3</b>
<b>Sub-total (direct)</b>	<b>3,641</b>	<b>1,471</b>	<b>40.4</b>	<b>3,484</b>	<b>885</b>	<b>25.4</b>	<b>7,125</b>	<b>2,355</b>	<b>33.1</b>
<b>Second-hand smoke deaths</b>		<b>148</b>			<b>66</b>			<b>214</b>	
Lung Cancer		27			11			38	
Ischemic heart disease		121			55			176	
<b>Overall Total (direct &amp; indirect)</b>	<b>3, 641</b>	<b>1, 619</b>	<b>44.5</b>	<b>3,484</b>	<b>950</b>	<b>27.3</b>	<b>7,939</b>	<b>2,569</b>	<b>36.1</b>

Footnotes for Table 5.

Source: Ontario Mortality Data [2007-2011], IntelliHEALTH ONTARIO, Ontario MOHLTC, Extracted: September 9, 2014. Population Estimates [2009], IntelliHEALTH ONTARIO, Ontario MOHLTC, Extracted: September 9, 2014. Life Tables, Canada, Provinces and Territories [2008 to 2010], Table 7a & 7b, Statistics Canada, Demography Division. Canadian Community Health Survey (CCHS), 2007/2008, 2009/2010, 2011/2012 Statistics Canada, Share File, Ontario MOHLTC.

In Waterloo Region from 2007 to 2011, a total of 2,355 deaths were attributable to smoking, which was approximately a third of all deaths (33.1 per cent) in the region. Of those deaths, the leading causes of smoking attributable mortality were lung cancer (851 deaths), ischemic heart disease (419 deaths), and chronic airway obstruction (405 deaths). These were the leading causes of smoking related deaths regardless of sex. However, a larger proportion of deaths were attributable to smoking for men than for women (40.4 per cent vs. 25.4 per cent), indicating that men are more affected by smoking than women.

The values given above did not account for any deaths attributable to second-hand smoke exposure. Exposure to second-hand smoke accounted for an additional 38 deaths from lung cancer and another 176 deaths from ischemic heart disease from 2007 to 2011 in Waterloo Region.

Looking at each type of disease in Table 5, smoking was responsible for over 75 per cent of deaths for each of the following diseases: bronchitis and emphysema (87.1 per cent); cancer of the larynx (81.7 per cent); lung cancer (including trachea and bronchus) (81.2 per cent); and chronic airway obstruction (79.8 per cent).

### **Potential years of life lost**

Potential years of life lost (PYLL) calculates the total number of years of life lost due to people dying prematurely or before normal life expectancy. This includes taking the age at which the person died and the average life expectancy given their sex and calculating the difference between the two. This value is called a residual life expectancy (RLE). The RLE is then summed for all deaths for each disease to give a total potential years of life lost value.

**Table 6: Potential Years of Life Lost (PYLL), by cause of death and sex, Waterloo Region, 2007-2011**

Disease Category	Male	Female	Total
	PYLL (35+)	PYLL (35+)	PYLL (35+)
<b>Neoplasms - Total</b>	<b>12,908</b>	<b>7,005</b>	<b>19,913</b>
Lip, oral cavity, pharynx	796	102	898
Oesophagus	1,052	257	1,309
Stomach	368	105	473
Pancreas	411	431	872
Larynx	318	92	410
Trachea, lung, bronchus	8,691	5,724	14,415
Cervix uteri	-	71	71
Kidney, other urinary	442	-	442
Urinary bladder	638	155	793
Acute myeloid leukemia	162	68	230
<b>Cardiovascular diseases - Total</b>	<b>7,295</b>	<b>3,096</b>	<b>10,391</b>
Ischemic hear disease	5,113	1,645	6,758
Other heart disease	767	385	1,152
Cerebrovascular disease	714	777	1,491
Atherosclerosis	64	13	77
Aortic aneurysm	592	231	823
Other arterial disease	45	45	90
<b>Respiratory Diseases - Total</b>	<b>3,069</b>	<b>2,618</b>	<b>5,687</b>
Pneumonia, influenza	326	171	497
Bronchitis, emphysema	305	380	685
Chronic airway obstruction	2,438	2,067	4,505
<b>Perinatal conditions - Total</b>	<b>79</b>	<b>-</b>	<b>79</b>
<b>Total (direct)</b>	<b>23,351</b>	<b>12,719</b>	<b>36,070</b>

Source: Ontario Mortality Data [2007-2011], IntelliHEALTH ONTARIO, Ontario MOHLTC, Extracted: September 9, 2014. Population Estimates [2009], IntelliHEALTH ONTARIO, Ontario MOHLTC, Extracted: September 9, 2014. Life Tables, Canada, Provinces and Territories [2008 to 2010], Table 7a & 7b, Statistics Canada, Demography Division. Canadian Community Health Survey (CCHS), 2007/2008, 2009/2010, 2011/2012 Statistics Canada, Share File, Ontario MOHLTC.

In total, from 2007 to 2011 there were 36,070 years of potential life lost for Waterloo Region residents due to premature mortality from smoking. The leading causes of potential years of life lost due to premature mortality were lung cancer (14,415 PYLL), ischemic heart disease (6,758 PYLL), and chronic airway obstruction (4,505 PYLL). The potential years of life lost was almost double for men than for women in Waterloo Region (23,351 PYLL for men vs. 12,719 PYLL for women).

The burden of smoking attributable mortality affects more men than women with men having a larger proportion of deaths attributable to smoking and double the potential years of life lost compared to women. The leading causes of death and potential years of life lost attributable to smoking are cancers of the lung and larynx; respiratory diseases including bronchitis, emphysema and chronic obstructive pulmonary disease and ischemic heart disease.

## Financial burden of smoking

The costs of smoking are high as smokers are frequent users of the health care system. Each year, tobacco claims 13,000 lives in Ontario, which accounts for 36 lives lost every day. Tobacco-related diseases cost the Ontario health care system an estimated \$2.2 billion per year in direct health care costs to treat smoking-related illnesses. Smoking also costs an extra \$5.3 billion in indirect costs such as time off work; fire damage and cigarette butt litter clean up (23). Therefore, on average, both direct and indirect tobacco related costs total \$7.5 billion a year in Ontario. In 2011-2012, only \$1.14 billion in tobacco tax revenue was collected in Ontario resulting in a significant shortfall compared to the costs generated by tobacco use (24).

The Conference Board of Canada has estimated that tobacco use costs workplaces an additional \$3,396 per year, per smoking employee, due to increased absenteeism, reduced productivity, increased insurance costs, and additional facilities costs (maintenance and clean-up costs associated with littering and damage caused by discarded cigarettes) (15).

## 6. What is Public Health doing?

Region of Waterloo Public Health works in partnership with youth and young adults, local health care providers (e.g. physicians, nurses, dental professionals, etc.) and workplace intermediaries to increase capacity to implement comprehensive tobacco control programs to contribute to early interventions and reductions in tobacco use and exposure to second hand smoke. Public Health also responds to tobacco related inquiries from the public and maintains up-to-date resources on tobacco related topics (e.g. website, pamphlets and fact sheets).

### Prevention

Youth smoking has decreased significantly over the past decade. Yet, the tobacco industry continues to create new products to target youth using strategies such as candy-flavourings and menthol to mask the harsh taste of tobacco and make tobacco use more appealing to youth. The industry is also expanding their reach into other tobacco and smoking products which are showing some increases in use among youth such as electronic cigarettes and cigarillos (little cigars).

Public Health works with high school aged youth and college/university aged young adults to educate their peers and provide skills training on a variety of health-related issues such as healthy eating, physical activity promotion and preventing the initiation of smoking and use of other tobacco products. These peer youth and young adults plan and implement campaigns and events that raise awareness on policy initiatives to prevent youth tobacco use, such as:

- Freeze the Industry [www.freezetheindustry.com](http://www.freezetheindustry.com)
- Smoke Free Movies [www.smokefreemovies.ca](http://www.smokefreemovies.ca) and,

- The Youth Social Identities project  
<http://www.targetyouth.ca/OntarioTeenFACIReportDecember2013.pdf>

## **Protection**

Region of Waterloo Public Health, through Region of Waterloo Licensing and Enforcement Services, ensures compliance through enforcement of the Smoke Free Ontario Act (SFOA) and Ontario Regulation 48/06. The SFOA prohibits smoking in workplaces, enclosed public spaces and also in motor vehicles when children under 16 are present. The SFOA also bans the public display of tobacco products prior to purchase and prohibits youth-targeted tobacco products such as flavoured cigarillos. Amendments made to the SFOA in January 2015 also prohibit smoking on bar and restaurant patios and within a 20 metre perimeter of children's playgrounds, sporting areas and spectator areas. In addition, the SFOA prohibits the sale of tobacco on university and college campuses. The Making Healthier Choices Act, which was announced in May 2015, will ban the sale of flavoured tobacco products, regulate the promotion, display, sale and supply of e-cigarettes to anyone under the age of 19 and increase the maximum fines for those who sell tobacco to youth. Public Health is working with staff from the Region's Licensing and Enforcement Services to promote the new legislation to local proprietors and the general public.

Tobacco Enforcement Officers in Waterloo Region are appointed by the Minister of Health and Long Term care as inspectors who enforce the SFOA. Routine inspections are completed to ensure tobacco product display and promotion requirements are met and to assess youth access to tobacco products. Tobacco Enforcement Officers use an approach which strikes a balance between education, inspections and progressive enforcement, and maintain a prosecution strategy to support the effective enforcement of the SFOA. Tobacco Enforcement Officers provide consultation and respond to all public inquiries related to the SFOA.

In addition to enforcement responsibilities, Public Health has worked with Waterloo Region Housing to implement, monitor and evaluate a smoke-free policy for all new leases. Effective April 1, 2010, all new leases signed with Waterloo Region Housing require that no one smoke or hold lit tobacco in the leased unit, including the balcony, patio or other areas as specified. Smoking is only permitted outdoors at a distance of five metres away from windows, entrances or exits to the residential complex. Public Health also works with other local, non-profit housing providers to promote and implement smoke-free policies with each new lease signed to reach households with lower household incomes to reduce exposure to second hand smoke in the home.

## **Cessation**

The majority of smokers are thinking about quitting. Increasing the number of quit attempts made and access to supportive measures such as brief/intensive counselling interventions and

nicotine replacement therapy can contribute to further reductions in smoking rates. Targeting populations identified as having higher smoking rates, such as males, young adults (ages 18-24) and those experiencing lower levels of education and lower income is an integral part of what Region of Waterloo Public Health is doing to promote the following tobacco cessation opportunities:

- All clients receiving smoking cessation services from Region of Waterloo Public Health are provided with brief tobacco cessation counselling and referrals for follow-up supports.
- Provision of consultation and support to health care providers and workplace intermediaries in order to increase cessation programs and supports provided at point of care and in the community.
- Region of Waterloo Public Health partners with the Centre for Addiction and Mental Health to provide Stop Smoking for Ontario Patients (STOP) on the Road workshops for smokers interested in quitting smoking using five weeks of the nicotine replacement therapy patch which is provided for free. Public Health partners with local agencies who work with client populations who experience higher smoking rates and /or lower income levels (e.g. mental health/addictions agencies, housing, social services agencies) to ensure those most in need are able to participate.
- Provision of tobacco cessation programs to tenants of Waterloo Region Housing to support the smoke-free housing policy.
- Promotion of quit smoking contests such as Leave the Pack Behind's would rather quit contest for young adults aged 18-29 [www.leavethepackbehind.org](http://www.leavethepackbehind.org) and the Canadian Cancer Society's Driven to Quit contest for adults aged 18+ [http://convio.cancer.ca/site/TR?fr\\_id=16556&pg=entry#.VFt0dth0zcs](http://convio.cancer.ca/site/TR?fr_id=16556&pg=entry#.VFt0dth0zcs)

The Ontario Government has made a commitment to have the lowest smoking rates in Canada. Region of Waterloo Public Health is working in partnership with the Province and its community partners to provide programs and supports to tobacco users to achieve this goal locally.

## 7. Data notes & limitations

### Canadian Community Health Survey (CCHS)

The CCHS is a national, largely telephone-based survey conducted by Statistics Canada that provides estimates of health determinants, health status and health system utilization at the national, provincial, regional, and health unit levels. The survey is conducted over a two-year, repeating cycle.

The CCHS target population includes household residents 12 years and older in all provinces and territories, and excludes those living on Indian Reserves, Canadian Forces Bases, institutions, some remote areas, and individuals or households without a telephone. CCHS data are self-reported and may be subject to recall bias. Self-reported measures are subject to such sources of bias as social desirability bias and recall bias and may result in an under or overestimate of the true prevalence in the population. Proxy responses were also excluded from analysis.

'Don't know', refused and not stated responses were removed from analysis when they represented less than five per cent of the sample. In removing these responses from the denominator, the assumption is that the missing values are random, which is not always the case.

The 'Townships' category combines responses from North Dumfries, Wellesley, Wilmot and Woolwich townships. Estimates provided at the municipal level may not be representative of the given population as the CCHS sampling frame was not designed for analysis below the health region level.

Statistical significance is denoted using non-overlapping 95 per cent confidence intervals (CI). The terms 'significant' or 'significance' indicate a statistically significant difference. The superscript 'E' denotes high sampling variability, and estimates must be interpreted with caution. The 'F' denotes estimates which were suppressed due to unacceptably high sampling variability.

The Smoke-Free Ontario Act prohibits smoking in all enclosed workplaces and enclosed public places in Ontario as of May 31, 2006, and smoking in all vehicles carrying children under the age of 16 years in Ontario as of Jan 21, 2009. This Act may affect responses to the questions on exposure to second-hand smoke in public places and in vehicles. Non-smoker second hand smoke exposure calculations excluded individuals who currently smoke either daily or occasionally. Changes to the questions on the second-hand smoke exposure questionnaire since 2007/2008, and issues with skip patterns in the 2009/2010 questionnaire, means that results are not comparable with the 2011/2012 questionnaire.

For Waterloo Region and Ontario analyses, data from CCHS cycle 4.1 (2007/2008), cycle 5.1 (2009/2010), and cycle 6.1 (2011/2012) were analyzed using SAS™ and the Statistics Canada bootstrap method (BOOTVAR program version 3.2).

### **Better Outcomes Registry Network (BORN) Information System**

The Better Outcomes Registry Network (BORN) Information System is a registry which includes data pertaining to all hospital and midwife attended home births in Ontario. This data is administrative data entered by hospitals and midwives, which includes information about the type of delivery, the mother's age, the date of birth and any related health outcomes for the mother and child.

BORN data prior to 2012 include only those infants born in hospitals (i.e., excludes home births). The historical name of the BORN data source prior to 2012 was called Niday Perinatal Database.

“NA” indicates that the data is not available at this time. As of now, we are hoping to obtain the number of 2012 live births from the BORN system at a later date. Ontario data was not available for analysis prior to 2012.

The Census subdivisions/Municipalities of Cambridge, Kitchener, North Dumfries, Waterloo, Wellesley, Wilmot and Woolwich used are based on postal code and the latest PCCF from Statistics Canada.

Data for the Region of Waterloo Public Health Unit is complete for calendar year 2013, whereas data for Ontario is not yet complete. Approximately 92% of hospitals and 79% of Midwifery Practice Groups in Ontario have acknowledged that their monthly data entry has been verified and is complete for calendar year 2013. As this data is not yet closed, results should be considered preliminary and subject to change.

Rates of smoking during pregnancy may be influenced by cessation of use during pregnancy as well as social desirability bias.

### **Vital Statistics – Mortality Data**

Deaths used to derive smoking-attributable mortality are classified into leading causes based on the primary (i.e., underlying) cause of death, as this is the only type of cause currently available through this data source. The underlying cause of death is (a) the disease or injury which initiated the train of events leading directly to death, or (b) the circumstances of the accident or violence which produced the fatal injury. Co-morbidity contributes uncertainty to classifying the underlying cause of death. Determining true cause of death may be influenced by the social or legal conditions surrounding the death and by the level of medical investigation.

## **CDC – Smoking attributable mortality, morbidity, and economic costs tool**

Smoking-attributable mortality and potential years of life lost calculations are subject to a number of limitations through the CDC SAMMEC tool. First, the reported SAM figures were derived from smoking rates in 2011/2012, whereas actual smoking-attributable deaths were the result of smoking in previous decades, when smoking rates were higher. Second, RRs were adjusted for the effects of age but not for other potential confounders. However, CPS-II data showed that education, alcohol, and other confounders had negligible additional impact on SAM estimates for lung cancer, chronic obstructive pulmonary disease, ischemic heart disease, and cerebrovascular disease. Third, deaths attributable to cigar smoking, pipe smoking, and smokeless tobacco use were not included. Although the CPS-II cohort includes more than 1.2 million men and women, it is not representative of the U.S. population and likely the Canadian population. The CPS-II population contains somewhat more Caucasians in the middle class, and persons with higher education than the U.S. population in general and the same is likely true of the survey's representation of the Canadian population.

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