



Tobacco Use Among Young Adults Aged 18-34 in Halton and Ontario

Halton Region Health Department

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Background

Cigarettes and other tobacco products are linked to a number of serious health conditions including, among others, several types of cancer, lung disease, heart disease and osteoporosis¹. Smoking has also been known to increase the chances of having; a stroke, infertility, preterm delivery, stillbirths, and having children that die from sudden infant death syndrome (SIDS)¹. Smoking continues to be the leading cause of preventable death and disease in Ontario, killing over 13 000 Ontarians annually².

The earlier someone starts smoking, the more at risk they are for developing these serious health conditions³. This early addiction is linked to prolonged tobacco use, increasing the length of exposure over a lifetime.

*“The majority of young adult smokers started off as occasional smokers in adolescence and became **regular smokers after the age of 18**, and one fifth of current young adult smokers in Canada tried their **first cigarette after the age of 18 years**.”⁴*

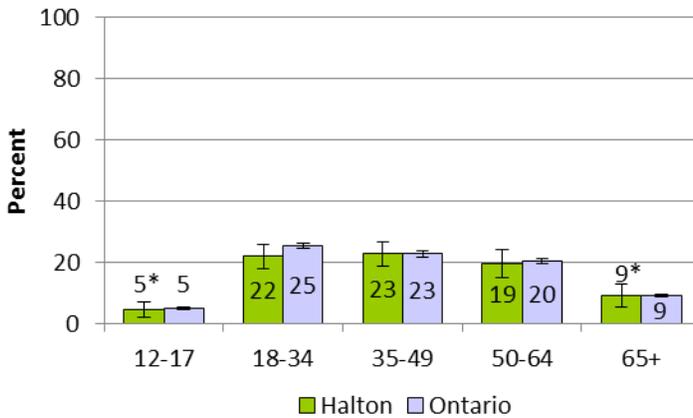
Approach for this Report

This report focuses on smoking trends in young adults aged 18-34 years old in Halton Region and Ontario, using data collected from the Canadian Community Health Survey (CCHS). Historically, prevention efforts have been focused primarily on school-age youth as it was believed that smoking initiation was usually established by age 18⁵. Recent evidence suggests that the age of smoking initiation is increasing^{4,5}, and young adults remain susceptible to begin smoking. The CCHS data shows that the age in which someone becomes a daily smoker has increased at a statistically significant rate between 2001 and 2012 in Ontario (data not shown), indicating prevention and cessation programs need to also include young adults.

Since this report is looking at a small subset of the population, the sample size for young adults in Halton aged 18-34 is limited. For this reason three cycles (2007/8, 2009/10, 2011/12) of the CCHS were combined at the data level for both Halton and Ontario to provide a larger sample size for this report⁶. As a result, tobacco-use trends over time may be lost⁶. Additionally, combining young adults aged 18-34 may hide the effect age may have on outcomes since the individuals within this age group could be at very different stages in their lives (e.g., still a student, starting a family, single, married, etc.). For definitions and data limitations, please see Appendix A.

Although the sample size was large enough for analysis, some true differences may not be statistically significant, as the sample size of 761 young adults is small when broken into subgroups (e.g., sex, education, income etc.). The denominators for each figure are provided in Appendix B to help with interpretation, and confidence intervals are provided in brackets next to the estimates ($\pm\%$). Ontario data is provided as a comparison as many of Halton's smoking trends follow a similar pattern to Ontario's. These similarities can be seen in **Figure 1**.

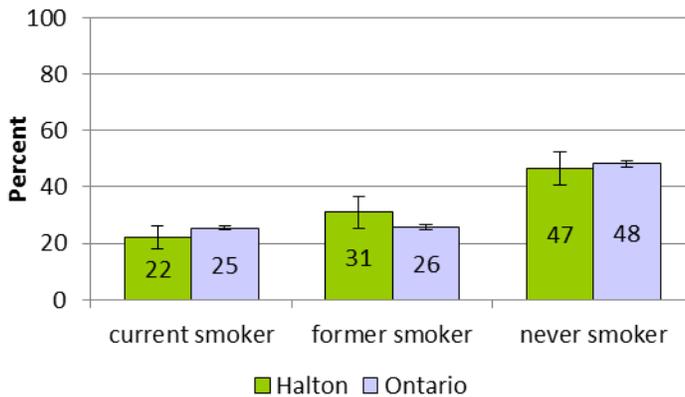
Smoking Trends by Age Group



There were no statistically significant differences in the proportion of current smokers by age group when comparing Halton and Ontario (see **Figure 1**). For 2007-2012 combined, 22% (± 4) of young adults in Halton and 25% (± 1) of young adults in Ontario were current smokers, meaning they smoked cigarettes occasionally or daily.

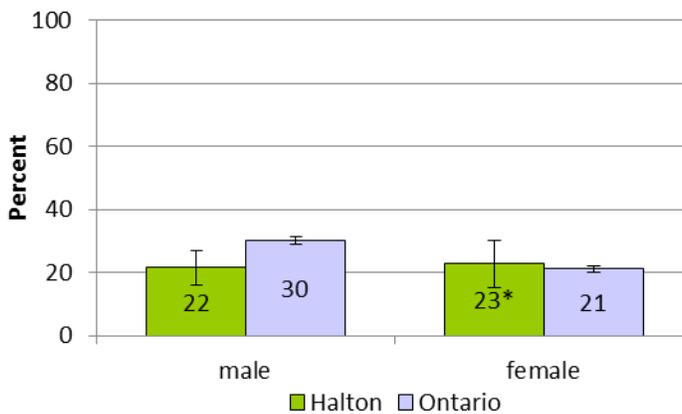
Figure 1: Percent of Current Smokers By Age Group, Halton Region and Ontario, 2007-2012 combined.

Demographics of Current Smokers



In Halton for 2007-2012, 22% (± 4) of young adults were current smokers, 31% (± 6) were former smokers, and 47% (± 6) had never smoked (see **Figure 2**). Similarly, in Ontario 25% (± 1) of young adults were current smokers, 26% (± 1) were former smokers, and 48% (± 1) had never smoked. The percent of young adult current, former and never smokers in Halton did not differ significantly when compared to young adults in Ontario.

Figure 2: Percent of Current, Former and Never Smokers, Halton and Ontario, Adults Aged 18-34, 2007-2012 combined.



In Halton for 2007-2012, there was no difference between the percent of young adult male [23% (± 8)] current smokers compared to female [22% (± 5)] current smokers (see **Figure 3**). However, in Ontario the percent of male [30% (± 1)] current smokers was higher than female [21% (± 1)] current smokers, and this difference was statistically significant. The percent of young adult male current smokers was higher in Ontario when compared to Halton, and this difference was statistically significant.

Figure 3: Percent of Current Smokers, By Sex, Halton Region and Ontario, Adults Aged 18-34, 2007-2012 Combined.

* interpret with caution due to high variability

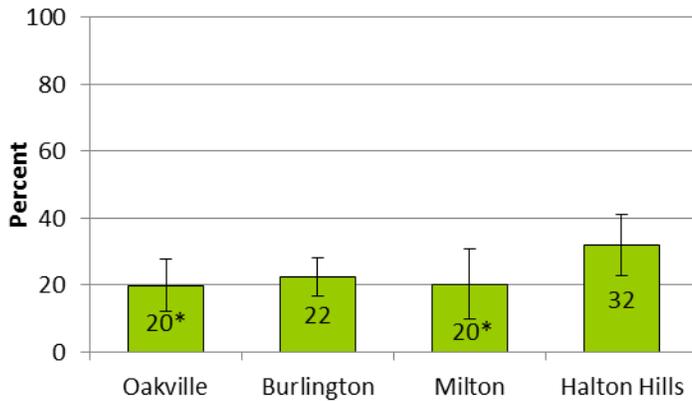


Figure 4: Percent of Current Smokers, By Municipality, Halton Region, Adults Aged 18-34, 2007-2012 Combined.

In Halton for 2007-2012, the percent of young adult current smokers did not differ significantly across municipalities. The percent of current smokers was 20% (± 8)* in Oakville, 22% (± 6) in Burlington, 20% (± 10)* in Milton and 32% (± 9) in Halton Hills (see **Figure 4**).

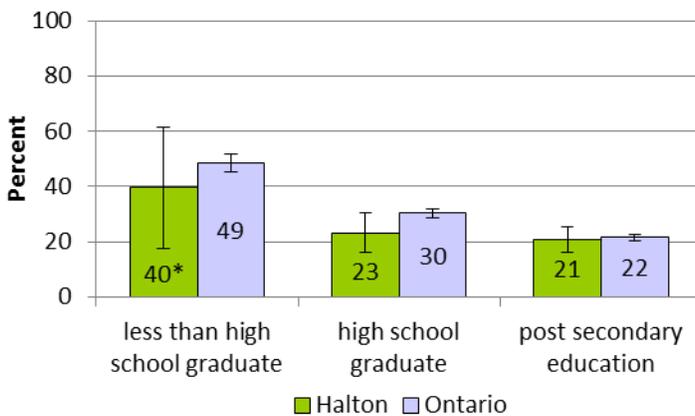


Figure 5: Percent of Current Smokers, by Education Level, Halton Region and Ontario, Adults Aged 18-34, 2007-2012 combined.

In Halton for 2007-2012, the percent of young adult current smokers was lowest among those with post -secondary education [21% (± 5)], followed by those that were high school graduates [23% (± 7)], and highest among those who had not graduated from high school [40% (± 22)] (see **Figure 5**). Although these differences were not statistically significant in Halton, the same trend was found in Ontario young adult current smokers and these differences were statistically significant between all levels of education.

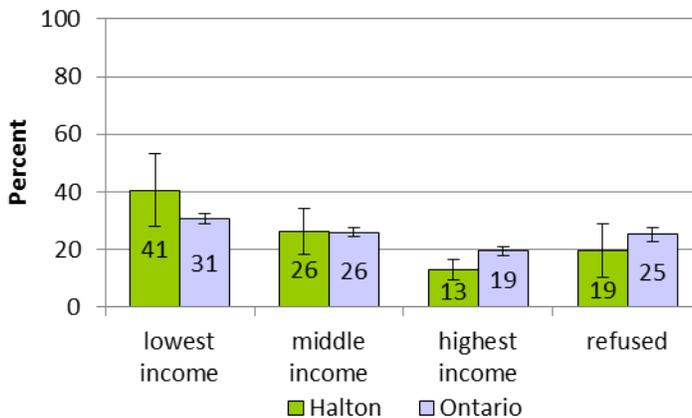


Figure 6: Percent of Current Smokers, By Household Income Group, Halton Region and Ontario, Adults Aged 18-34, 2007-2012 Combined.

In Halton for 2007-2012, the percent of young adult current smokers was highest among those in the lowest income group [41% (± 13)] and lowest among those in the highest income group [13% (± 4)] and this decrease was statistically significant when comparing those in the highest income group to the lowest income group (see **Figure 6**). In Ontario the same trend was observed; the percent of young adult current smokers was highest among those in the lowest income group and lowest among those in the highest income group and this decrease was statistically significant between all adjacent income groups. The percent of respondents aged 18 to 34 who refused to provide their household income was greater than 5% (13% in Halton and 11% in Ontario) and was therefore included in this analysis.

* interpret with caution due to high variability

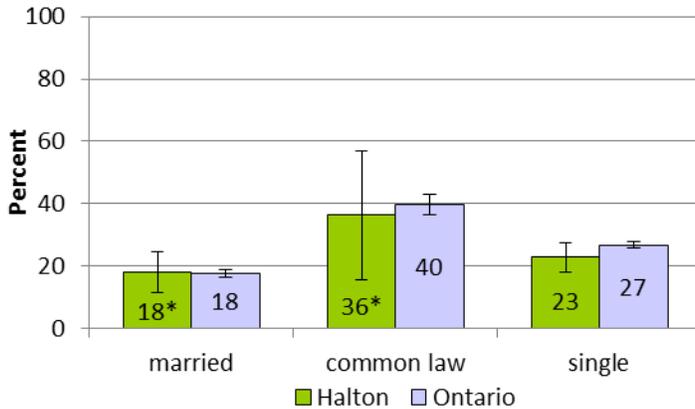


Figure 7: Percent of Current Smokers, By Marital Status, Halton Region and Ontario, Adults Aged 18-34, 2007-2012 Combined.

In Halton for 2007-2012, the percent of young adult current smokers was lowest among those who were married [18% (± 7)]*, followed by those who were single [23% (± 5)] and was highest among residents who were common law or had a live in partner [36% (± 20)]* (see **Figure 7**). Although these differences were not statistically significant in Halton, the same trend was found in Ontario young adult current smokers and these differences were statistically significant.

Other Substance Use

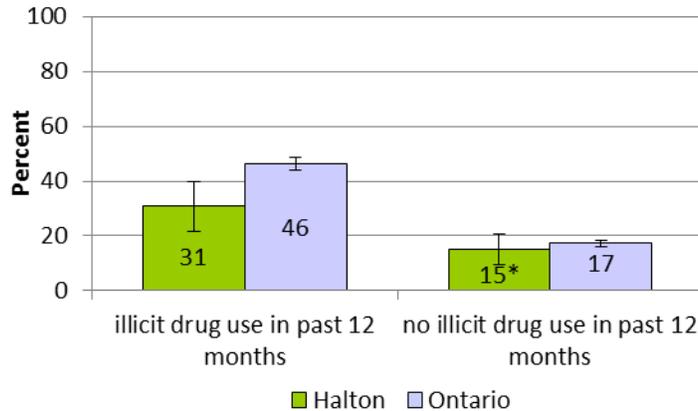


Figure 8: Percent of Current Smokers, by Illicit Drug Use (including one time cannabis use) in Past 12 Months, Halton Region and Ontario, Adults Age 18-34, 2009-2012 Combined.

In Halton for 2009-2012 the percent of young adult current smokers was higher in those who had used illicit drugs in the past 12 months [31% (± 9)] compared to those who had not used illicit drugs in the past 12 months [15% (± 6)] (see **Figure 8**). This difference was statistically significant in both Halton and Ontario.

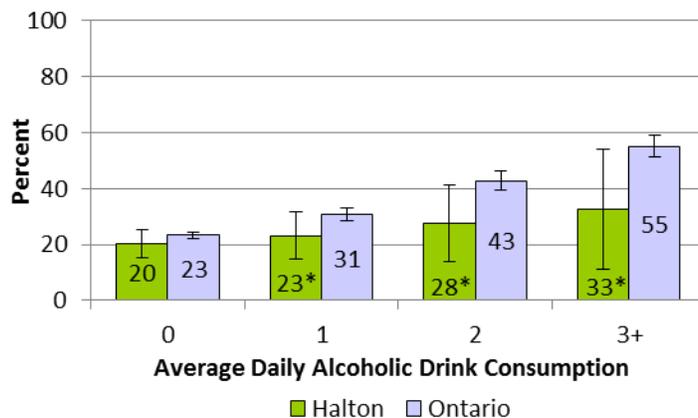


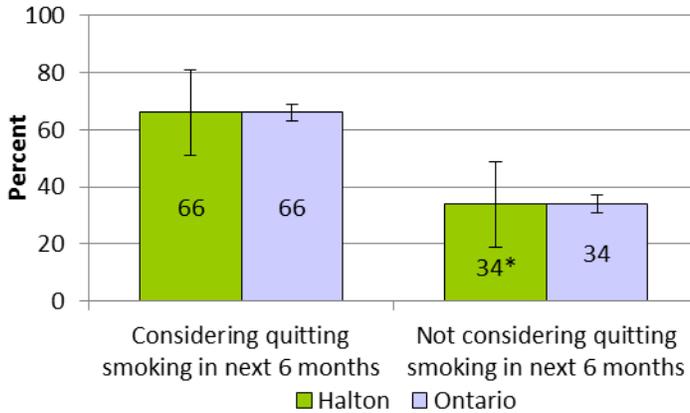
Figure 9: Percent of Current Smokers, By Average Daily Alcohol Consumption, Halton Region and Ontario, Adults Aged 18-34, 2007-2012 Combined.

In Halton for 2007-2012, the percent of young adult current smokers increased as average daily alcohol consumption increased (see **Figure 9**). Those whose average daily alcohol consumption was zero drinks [20% (± 5)] had the lowest percent of current smokers, followed by those whose average daily alcohol consumption was one drink [23% (± 8)]*, then two drinks [28% (± 14)]*, and was highest in those whose average daily alcohol consumption was three or more drinks [33% (± 5)]*. Although these differences were not statistically significant in Halton, the same trend was found in Ontario young adult current smokers and these differences were statistically significant with each drink added.

* interpret with caution due to high variability

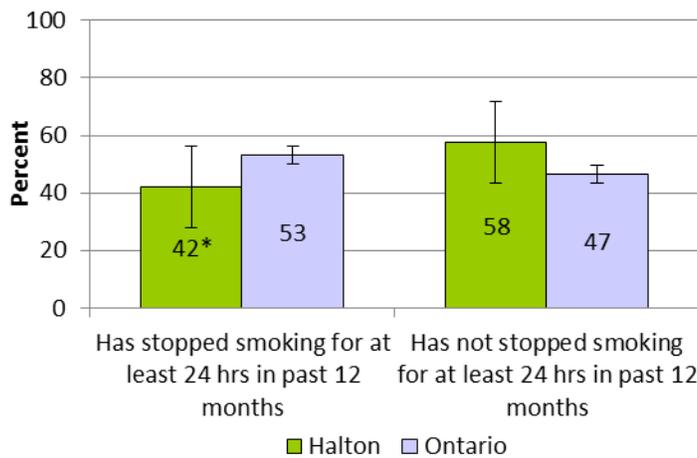
Intent to Quit

This page highlights current young adults smokers intent to quit smoking. This module was only asked for one cycle (two years 2007/2008) of the six years of data used in the rest of this report, and therefore the sample sizes was very small in Halton (N=60).



In 2007-2008, for both Halton and Ontario, 66% of young adult smokers were considering quitting smoking in the next six months and 34% were not considering quitting smoking in the next six months (see **Figure 10**).

Figure 10: Current Smokers Who are Considering Quitting Smoking in the Next 6 Months, Halton Region and Ontario, Adults Aged 18-34, 2007-2008 Combined.



In Halton for 2007-2008, 42% (± 14)* of young adult smokers had stopped smoking for at least 24 hours in the past year, while 53% (± 3) of young adult smokers in Ontario had stopped smoking for at least 24 hours in the past year (see **Figure 11**).

Figure 11: Current Smokers, By Average Daily Alcohol Consumption, Halton Region and Ontario, Adults Aged 18-34, 2007-2008 Combined.

* interpret with caution due to high variability

Summary

This report summarizes the prevalence of smoking in young adults aged 18 to 34 in Halton region, along with the factors found to be associated with tobacco use. It is a first step in identifying who the young adult tobacco-users are in Halton Region, as this population may be considered at risk for tobacco use uptake and is currently under-served in terms of tobacco prevention and cessation programs. For 2007-2012 rates of tobacco use in young adults aged 18-34 were similar between Halton and Ontario (22% and 25%, respectively). In Halton there was no difference in the smoking rate for males and females, whereas smoking rates were found to be higher in males in Ontario compared to females.

The following factors were associated with tobacco use for young adults in Halton and Ontario:

- Adults in the lowest income group were more likely to be smokers than those in the highest income group
- Illicit drug users were more likely to be smokers than non illicit drug users (2009-2012 combined)

Provincially, there were additional significant differences found for young adults aged 18-34 for 2007-2012:

- Smoking decreased as education increased
- Those who were in a common law relationship were the most likely to be a current smoker, followed by singles, and lowest among those who were married
- Smoking increased as average daily alcohol consumption increased

These provincial trends were also seen in Halton, however they were not statistically significant.

The limited sample size and combining multiple years of data may have hidden changes over time, and may have made true differences difficult to detect. For this reason further investigation needs to be done in order to better understand this population. The next step would be to collect data from a much larger sample to gather information on a number of socio-demographic variables to better understand who the tobacco-users are among young adults aged 18-34 living in Halton Region, and how they can be reached. This would be especially important for data that was not analyzed in this report such as employment, ethnicity, and immigrant status. This data would allow better program planning for prevention and cessation efforts tailored to the young adult population in Halton Region.

References

1. CDC. 2013. Health Effects of Cigarette Smoking: Fact Sheet. Accessed from http://www.cdc.gov/tobacco/data_statistics/fact_sheets/health_effects/effects_cig_smoking/ on Oct 29 2013.
2. Ministry of Health and Long Term Care. Smoke-Free Ontario Legislation. October 2013. Accessed from <http://www.mhp.gov.on.ca/en/smoke-free/legislation/> on Dec 12 2013.
3. Preventing tobacco use among youth and young adults : a report of the Surgeon General. 2012. – Atlanta, GA. : Dept. of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; Washington, D.C.
4. Building On Our Gains, Taking Action Now: Ontario's Tobacco Control Strategy for 2011 - 2016. Report from the Tobacco Strategy Advisory Group to the Minister of Health Promotion and Sport. October 2010. Accessed from <http://www.mhp.gov.on.ca/en/smoke-free/TSAG%20Report.pdf> on Dec 18 2013.
5. Freedman KS, Nelson NM, Feldman LL. (2012) Smoking initiation among young adults in the United States and Canada, 1998-2010: a systematic review. *Prev Chronic Dis*.
6. Statistics Canada. 2009. Combining cycles of the Canadian Community Health Survey: Methodological Insights. Accessed from <http://www.statcan.gc.ca/pub/82-003-x/2009001/article/10795-eng.pdf> on Jan 21, 2014.

Appendix A

Definitions:

Young Adult:

Adults between the ages of 18 and 34 living in either Halton Region or Ontario.

Current Smoker:

Currently smoke cigarettes, either daily or occasionally.

Former Smoker:

Smoked at least one whole cigarette, but no longer smokes cigarettes at all.

Never Smoker:

Never smoked a whole cigarette.

Illicit Drug Use:

Use of illicit drugs in the past 12 months, including those who only used cannabis one time. Illicit drugs include cannabis, crack, cocaine, amphetamines (speed), MDMA (ecstasy), hallucinogens, PCP, LSD (acid), heroin, steroids, or have ever sniffed glue, gasoline or other solvents.

Income groups:

Were calculated using the variable INCDRPR from the CCHS dataset. This variable groups respondents into deciles (10 even groups), based on the adjusted ratio of total household income to the low income cut-off corresponding to their household and community size. It provides a relative measure of household income to the household incomes of all other respondents in Ontario. For the purpose of this report, the deciles were recoded into 3 categories, lowest, middle and highest income groups. This was done by grouping the lowest 3 deciles for the lowest group, deciles 4-7 for the middle group, and 8-10 for the highest group.

Data Source: Canadian Community Health Survey (CCHS)

The Canadian Community Health Survey (CCHS) is a cross-sectional survey conducted by Statistics Canada that collects information related to health status, health care utilization, and health determinants for the Canadian population. The target population for the CCHS is all Canadians aged 12 and over, and excludes individuals living on First Nations Reserves and Crown lands, institutions, Canadian Forces bases, and in some remote areas. The response rate of CCHS was 70% in both Halton and Ontario. Households were randomly selected as was the individual within a household. Proxy responses were not accepted for many of the modules in the CCHS, so were coded as “not stated” and removed from the analysis.

The data used for this report was collected between 2007 and 2012. This report only used data for respondents aged 18 to 34, which provided a total sample of 761 for Halton Region and 24 915 for Ontario.

Statistical Methods:

All analyses were performed with STATA software (version 12, 2012, Stata Corporation, College Station, Texas). Analyses of CCHS data utilized the sampling weights for each survey. The sampling weights account for differential probability of selection and response. If a respondent did not respond to a survey question they were excluded from any analysis of that question. Similarly, if less than 5% of respondents replied “Don’t Know” they were removed the analysis.

95% Confidence Intervals:

A 95% confidence interval (CI) refers to the range of values that has a 95% chance of including the 'true' estimate. A large CI means that there is a large amount of variability or imprecision. When CI's do not overlap, estimates are significantly different. CI's are reported in brackets or presented as I in the graphs. Assessment of significant differences between comparisons was based on whether the confidence interval of one group overlapped with the confidence interval of the other group. Because this report analyzed multiple factors, it is more likely that a significant difference would be found by chance alone. This is accounted for by using a more conservative approach for determining statistical significance (overlapping confidence intervals versus a chi square test). The confidence intervals for CCHS prevalence estimates were calculated using bootstrap weights provided by Statistics Canada.

Coefficient of variation (CV) refers to the precision of the estimate. When the CV is between 16.6 and 33.3, the estimate should be interpreted with caution because of high variability and has been marked with an asterisk (*). Estimates with a CV of 33.3 or greater are not reportable.

Limitations of the Data:

The data presented in this report was gathered from the Canadian Community Health Survey (CCHS). CCHS data is self-reported and has a number of limitations. People do not always remember their actions, and may under-report or over-report certain behaviours or characteristics that they think are undesirable such as smoking habits. In addition, surveys do not always provide a proper representation of the whole population. CCHS underrepresents people of low income, people with low education, new immigrants, and will miss people not living in households, such as those in long term care facilities, correctional facilities, the homeless, or those in hospitals. Thus the percentages may not represent the true estimates for the general population as respondents may have different characteristics from non-respondents.

The estimates for the CCHS health indicators are based on three survey cycles (2007-08, 2009-10, 2011-2012) which are combined at the data-level in order to obtain a sample size large enough for analysis by small subgroups. However, by combining years of data we may be hiding changes over time in and between the subgroups⁶. Although combining cycles of data likely produces estimates of higher quality, it cannot be assumed that the sample represents the same population, or that the population characteristics are the same from year to year as populations and people evolve different characteristics over time⁶. Finally, even with six years of data, the Halton sample of young adults was small and may not have been able to detect true significant differences where they actually exist.

Combining ages 18-34 may also be a limitation, as differences due to age may be hidden. Individuals within the 18-34 age range can be at different stages in their life (married, starting families, still a student etc.) which may influence the results. There is no standard of what is considered a "young adult", and many different age ranges were identified in the literature. The range of 18-34 was selected for this report to allow for a large enough sample size.

Appendix B

		Halton (N)	Ontario (N)
Figure 1	12-17	421	10 839
	18-34	761	24 915
	35-49	891	25 103
	50-64	880	30 437
	65+	1040	31 145
Figure 2	Smoking status of young adults aged 18-34	761	24 915
Figure 3	Male	388	11 444
	Female	373	13 471
Figure 4	Oakville	248	N/A
	Burlington	258	
	Milton	155	
	Halton Hills	100	
Figure 5	Less than high school graduate	43	2182
	High school graduate	168	5551
	Post secondary education	537	16 605
Figure 6	Lowest income group	108	6203
	Middle income group	261	9068
	Highest income group	291	6704
	Don't Know/ Refused income	99	2798
Figure 7	Married	237	7139
	Common law	38	2597
	Single	486	15 164
Figure 8	Illicit drug use in past 12 months (2009-12)	142	4022
	No illicit drug use in past 12 months (2009-12)	352	11 780
Figure 9	0: Average Daily Alcohol Consumption	382	12 877
	1: Average Daily Alcohol Consumption	173	4701
	2: Average Daily Alcohol Consumption	64	1627
	3+: Average Daily Alcohol Consumption	40	1411
Figure 10	Current smokers who are or are not considering quitting smoking in next 6 months (2007/8)	60	2372
Figure 11	Current smokers who have or have not quit smoking for at least 24hrs in past 12 months (2007/8)	60	2393

This table provides the denominators (smokers and non-smokers combined) for the figures presented in this report. This information is important because although the percent of current smokers in a certain subcategory may be high, the number of respondents may be low. For example, if you look at Figure 5, respondents with less than a high school education have the highest percent of current smokers, however, that is only 40% of 43 individuals, meaning approximately 17 respondents were current smokers. Whereas those with a post secondary education are much less likely to be a current smoker, 21% of 537 respondents is approximately 113 respondents who were current smokers, meaning that although a respondent did not graduate high school they are more likely to be a smoker, there is still a much higher number of individuals with a post secondary education that are current smokers even though they are less likely to be a smoker. Therefore data marked with an asterisks (*) and those with low denominators should be interpreted with caution.



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