

# Air Quality & Climate Change in Halton

Results from the 2014 Air Quality and Climate Change Survey

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### **Reference:**

Halton Region Health Department (2015). *Air Quality and Climate Change in Halton*. Oakville, Ontario.

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## Table of Contents

<b>Background</b> .....	<b>1</b>
<b>Purpose</b> .....	<b>1</b>
<b>Methodology</b> .....	<b>1</b>
Design .....	1
Data Collection .....	2
Data Analysis .....	2
Sample and Response Rate .....	3
<b>Results</b> .....	<b>4</b>
Knowledge of Climate Change .....	4
Impact of Climate Change on Local Communities .....	7
Impact of Poor Air Quality on Health .....	10
Air Quality Health Index .....	12
Energy Use at Home.....	16
Phantom Power.....	18
Energy Use on the Road.....	19
Active Transportation .....	22
Burning Wood .....	23
<b>Limitations</b> .....	<b>24</b>
Representativeness of sample.....	24
Response bias .....	25
Changes to question wording .....	25
<b>Key Findings</b> .....	<b>26</b>
<b>References</b> .....	<b>28</b>
<b>Appendix: Tables of Demographic Comparisons</b> .....	<b>29</b>

## Table of Figures

Figure 1: Percent of adults aged 18 and over who agree or disagree that the world's climate is changing, Halton Region, 2009 and 2014.....	4
Figure 2: Concern about climate change, adults aged 18 and over, Halton Region, 2009 and 2014.....	5
Figure 3: Knowledge of the causes of climate change, adults aged 18 and over, Halton Region, 2009 and 2014 .....	5
Figure 4: Specific causes of climate change, adults aged 18 and over who think that climate change is caused by human activity, Halton Region, 2009 and 2014.....	6
Figure 5: Home energy use as a cause of climate change, adults aged 18 and over who think that climate change is caused by human activity, by age, income and education, Halton Region, 2014 .....	6
Figure 6: Percent of adults aged 18 and over who think that climate change is likely to cause more smog advisory days, Halton Region, 2009 and 2014.....	7
Figure 7: Percent of adults aged 18 and over who think that climate change is likely to cause more smog advisory days, Halton Region, 2009 and 2014.....	8
Figure 8: Percent of adults aged 18 and over who think that climate change is likely to cause more frequent and severe heat waves, Halton Region, 2009 and 2014.....	8
Figure 9: Percent of adults aged 18 and over who think that climate change is likely to cause more insects carrying disease, Halton Region, 2009 and 2014 .....	9
Figure 10: Perceived effect of climate change on human health, adults aged 18 and over, Halton Region, 2014.....	9
Figure 11: Perceived air quality in Halton, adults aged 18 and over, Halton Region, 2009 and 2014 .....	10
Figure 12: Perceived changes in air quality in Halton over the past five years, adults aged 18 and over, Halton Region, 2009 and 2014 .....	11
Figure 13: Percent of adults aged 18 and over who indicated that poor air quality has affected their health of the health of their family, Halton Region, 2009 and 2014.....	11
Figure 14: Knowledge and use of the Air Quality Health Index, adults aged 18 and over, Halton Region, 2014 .....	12
Figure 15: Familiarity with the Air Quality Health Index, adults aged 18 and over, Halton Region, 2014 .....	13
Figure 16: Familiarity with the Air Quality Health Index, adults aged 18 and over, by age, income and education, Halton Region, 2014.....	13
Figure 17: Percent of adults aged 18 and over who check the Air Quality Health Index in the summer, Halton Region, 2014 .....	14
Figure 18: Percent of adults aged 18 and over who check the Air Quality Health Index in the summer, by age and education, Halton Region, 2014.....	14
Figure 19: Percent of adults aged 18 and over who change their activities based on the Air Quality Health Index, Halton Region, 2014.....	15
Figure 20: Percent of adults aged 18 and over who change their activities based on the AQHI, by sex, age and municipality, Halton Region, 2014 .....	15
Figure 21: Knowledge of alternative energy availability in Halton, adults aged 18 and over, Halton Region, 2009 and 2014 .....	16
Figure 22: Purchase energy from alternative sources, households that pay for their own energy, Halton Region, 2014 .....	16
Figure 23: Frequency of turning off lights when leaving the room for 15 minutes or longer, adults aged 18 and over, Halton Region, 2014 .....	17
Figure 24: Percent of households that dry clothes on a clothesline or rack, Halton Region, 2009 and 2014 .....	17
Figure 25: Actions households are taking to reduce the use of phantom power, Halton Region, 2014 .....	18
Figure 26: Percent of drivers aged 18 and over who reported carpooling within the past month, Halton Region, 2009 and 2014 .....	19
Figure 27: Percent of drivers aged 18 and over who reported carpooling within the past month, by sex, age and income, Halton Region, 2014 .....	19
Figure 28: Percent of drivers who checked their tire pressure or had their tire pressure checked within the past month, Halton Region, 2009 and 2014 .....	20
Figure 29: Frequency of idling, adults aged 18 and over who drove a car within the past month, Halton Region, 2014 .....	20
Figure 30: Awareness of anti-idling bylaws, adults aged 18 and over, by municipality, Halton Region, 2014.....	21
Figure 31: Percent of adults aged 18 and over who used active transportation in the past 12 months, Halton Region, 2009 and 2014 .....	22
Figure 32: Percent of adults aged 18 and over who used active transportation in the past 12 months, by age and municipality, Halton Region, 2014 .....	22
Figure 33: Percent of households that burn wood inside the home during the winter, Halton Region, 2014 .....	23
Figure 34: Percent of households that burn wood outside the home during the summer, Halton Region, 2014 .....	23

## Background

Air Quality and Climate change continue to be important topics for many health units across Ontario. In 2009, Halton conducted the Air Quality and Climate Change Survey using the Rapid Risk Factor Surveillance System (RRFSS). Questions asked as part of this survey were incorporated into the regular RRFSS survey and have been used by several health units since 2009.

Halton used the results from the 2009 survey to inform health promotion, education and outreach for Halton Region's Air Quality and Climate Change Program. Key findings from the survey were used in the development of two [Halton air quality and climate change videos](#) (Joules on Juice and Nick Goes Nowhere), Daily Web T.V. videos, and the children's picture book series [Owls for Climate Change](#).

At the time of the 2009 survey, the Halton Region Health Department recognized the need to collect data in the future for the purpose of making comparisons. Results will once again be used to inform programming and influence policy development.

## Purpose

The primary purpose of the 2014 Air Quality and Climate Change survey was to determine if there had been any changes in public opinion, knowledge, attitudes or behaviors related to air quality and climate change. The survey was also conducted to collect additional information related to air quality and climate change that is currently relevant to public health programming in Halton.

Specifically the objectives were to determine knowledge, opinions, attitudes and/or behaviours related to:

- whether or not the world's climate is changing
- the impact of climate change locally
- the impact of air quality on health
- the Air Quality Health Index (AQHI)
- saving energy at home
- reducing the use of phantom power
- saving energy on the road including: carpooling, checking tire pressure, and idling vehicles
- the use of active forms of transportation
- burning wood inside and outside of the home

## Methodology

### Design

The 2014 Air Quality and Climate Change Survey was conducted using a special survey that was part of the Rapid Risk Factor Surveillance System (RRFSS). RRFSS is an ongoing, monthly survey of adults aged 18 and older who live in private households. Since 2001, Halton Region residents have been surveyed on a monthly basis as part of RRFSS. Random digit dialing is used to select households. Within households, the adult with the most recent birthday is selected to participate in the survey.

## Data Collection

Data were collected using RRFSS from March 18 2014 to August 6 2014.

Questions for the 2014 Air Quality and Climate Change survey were similar to questions asked as part of the 2009 Air Quality and Climate Change Survey. However, slight modifications were made to some questions and new questions were added. Questions were pilot-tested with a sample of RRFSS respondents prior to final inclusion in the survey. For more information about the survey questions please refer to the RRFSS data dictionaries<sup>1</sup> for the following modules:

- Knowledge of Climate Change
- Climate Change and the Local Community
- Poor Air Quality and Health
- Air Quality Health Index (AQHI)
- Saving Energy at Home
- Phantom Power
- Motorized Vehicles
- Active Transportation
- Wood Burning

## Data Analysis

Data for the 2014 Air Quality and Climate Change survey were analyzed using SPSS v.19. Data analysis methods followed the General Guidelines for Analysis in the RRFSS Manual of Operations. Data analysis was descriptive (frequencies and cross tabulations). Where possible, comparisons were made to 2009 data.

For some questions respondents could provide more than one response (i.e. check all that apply). “Don’t know” was an option for all questions. “Don’t know” was excluded from the denominator unless the percent of don’t know was five percent or higher, or if “don’t know” was considered a valid response.

Results presented in this report have been rounded, so questions may not always add up to 100 percent. A 95% confidence interval (CI) refers to the range of values that has a 95% chance of including the estimate. CIs are reported in brackets or presented as “I” shaped bars in the graphs. When percentages approached 0% or 100%, skewed (asymmetric) CIs were calculated and presented as ranges using the method outlined by Fleiss et al. (2003).<sup>2</sup> When CIs do not overlap between 2 or more groups (e.g., when comparing males and females) it means that the differences between the groups are statistically significant and unlikely to be due to chance alone. Rounded CIs were used for the presentation of data; however, non-rounded CIs were used to determine statistically significant differences. Since overlapping confidence intervals were used to determine statistical significance, p-values were not calculated. This is a conservative approach which is more appropriate when multiple comparisons are being made, such as in this report.

Household (HH) weights were used for any questions related to individuals. The HH weight adjusts for the fact that an adult in a larger HH is less likely to be selected than an adult in a smaller HH. 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 and have been marked with double asterisks (\*\*) in the graphs and tables.

For questions that addressed individual opinions or behaviours, demographic comparisons were made for sex, age, municipality, household income and education. For questions that addressed household behaviours, demographic comparisons were only made for municipality and household income. Income groups were calculated by placing the household income of all Halton respondents into 10 equal deciles, and then grouping the respondents into low (decile 1-3), medium (decile 4-7) and high (decile 8-10) income groups. Respondents who did not know or refused to provide household income (about 35% of respondents) were excluded from the income analysis.

## Sample and Response Rate

**Table 1** provides information about the sample for the 2014 Air Quality and Climate Change Survey. From a total sample of 2264 respondents, 1676 were known to be eligible to complete the survey, 500 were not, and 88 were unable to be determined. It was assumed that among households whose eligibility was unable to be determined, there was the same percent of “eligible” and “ineligible” households as among those whose eligibility could be determined. This resulted in an estimated 1744 eligible households (see **Table 1**).

Surveys were completed by a total of 826 respondents, 728 refused to complete the survey and 122 were reached at least once to participate in the survey but it was never completed (call backs).

The response rate for the survey, which considers the number of completions divided by the estimated number of eligible households was 47% (826/1744). The participation rate which looks at only known eligible households was 49% (826/1676).

**Table 1: Response Rates**

	Survey Result	Number
Total Sample		<b>2264</b>
Known Eligible Households	Completions	826
	Refusals	728
	Call backs	122
	<b>Subtotal</b>	<b>1676</b>
Known Ineligible Households	Ill/aged/language/absent	98
	Not in service/non-residential	402
	<b>Subtotal</b>	<b>500</b>
Could Not Determine (Never Answered/Always Busy)		<b>88</b>
Estimated Number of Eligible Households	Known eligible + (percent of eligible HH* x never answered/always busy) [1676 + (0.77 X 88)]	<b>1744</b>

\*proportion of eligible households is calculated as follows: 
$$\frac{\text{eligible households}}{\text{eligible households} + \text{not eligible households}}$$

# Results

This report highlights differences between the 2009 and 2014 Air Quality and Climate Change surveys in Halton, as well as differences by demographic characteristics. The Air Quality Health Index, Phantom Power, and Burning Wood modules, as well as a few questions in various other modules were new to the 2014 Air Quality and Climate Change survey, and therefore no comparison data from 2009 are available.

Demographic comparisons were made for the year 2014 by sex, age, municipality, income and education for questions asked at the individual level, and by municipality and income for questions asked at the household level. **Only demographic differences that are statistically significant are discussed in the report.** Results reported below are either for adults (residents) aged 18 and over or for households, depending on the way that the question was asked. Tables for all demographic comparisons are provided in the [Appendix](#).

## Knowledge of Climate Change

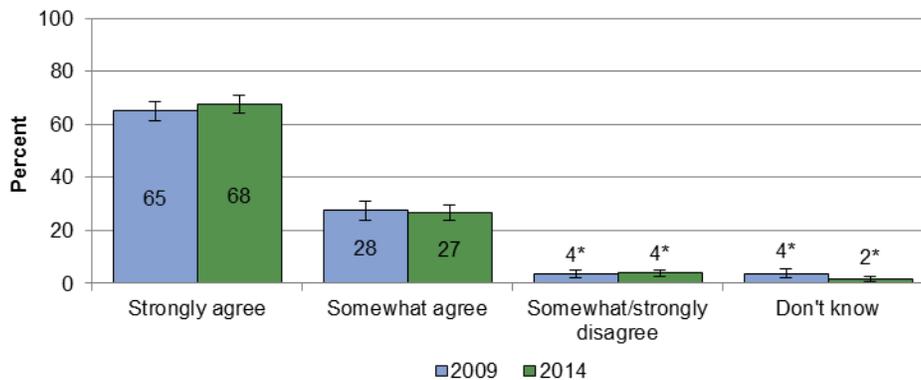
*Climate* refers to the average day-to-day weather that a region experiences, while *climate change* refers to a longer term shift in the climate. Climate change results in greater shifts in temperatures in the winter, more frequent heat waves, longer periods of drought and more intense weather events.<sup>3</sup>

Climate change is caused by both natural factors as well as human activity. Natural factors that influence climate change include variations in ocean currents, volcanic activity and changes in the strength of sunlight reaching the earth's surface. Human activities that contribute to climate change include burning of fossil fuels for transportation, for manufacturing, to heat homes and to produce electricity, as well as land use activities such as farming and clearing forests.<sup>3</sup>

## Attitudes Towards Climate Change

Results from the 2014 Air Quality and Climate Change Survey showed that 95%(±2) of Halton residents strongly or somewhat agree that the world's climate is changing. Attitudes towards climate change did not change significantly between 2009 and 2014 (see **Figure 1**).

Sex and age had a statistically significant effect on attitudes towards climate change in Halton Region in 2014. Females [97%(95-98)] were more likely than males [91%(88-94)] to strongly or somewhat agree that the world's climate is changing. Residents aged 18-24 [100%(88-100)] and 25-44 [99%(96-100)] were more likely than residents aged 45-64 [93%(89-95)] and 65+ [93%(89-96)] to strongly or somewhat agree that the world's climate is changing.

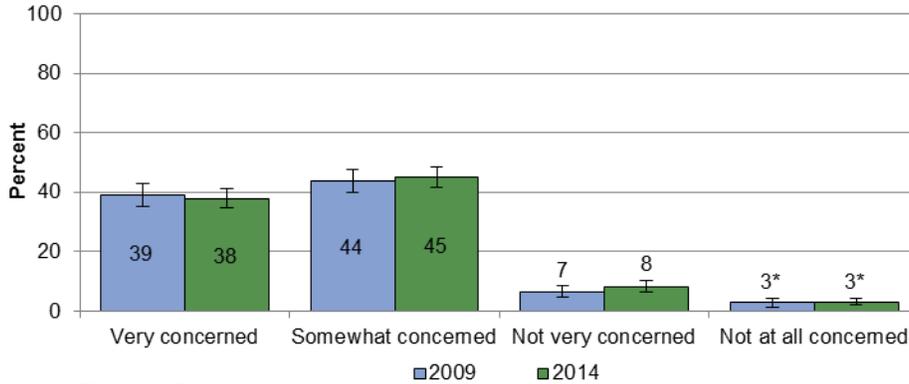


**Figure 1: Percent of adults aged 18 and over who agree or disagree that the world's climate is changing, Halton Region, 2009 and 2014**

## Concern about Climate Change

In both 2009 and 2014, the majority of Halton residents [83%(±3)] were very or somewhat concerned about climate change (see **Figure 2**).

As with knowledge of climate change, sex and age had a statistically significant effect on Halton residents' concern about climate change in 2014. Females [89%(±3)] were more likely than males [76%(±5)] to be very or somewhat concerned about climate change. Residents aged 25-44 [91%(±4)] were more likely than residents aged 45-64 [80%(±4)] and 65+ [79%(±5)] to be very or somewhat concerned about climate change.



**Figure 2: Concern about climate change, adults aged 18 and over, Halton Region, 2009 and 2014**

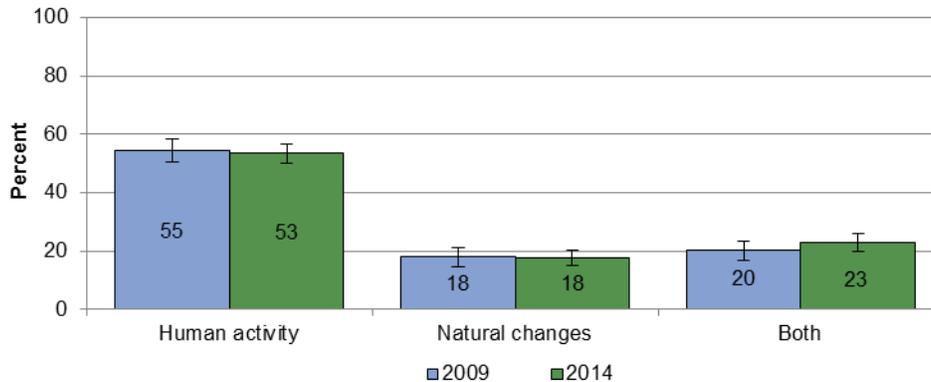
Note: In 2009 4% disagreed and 4% did not know if the climate was changing  
In 2014 4% disagreed and 2% did not know if the climate was changing

## Causes of Climate Change

In 2014, 53%(±3) of Halton residents indicated that climate change is caused mainly by human activity, 18%(±3) indicated that climate change is caused mainly by natural changes and 23%(±3) indicated that climate change is caused by both human activity and natural changes. Knowledge of the causes of climate change did not change significantly between 2009 and 2014 (see **Figure 3**).

In 2014, sex, age and education had a statistically significant relationship with Halton residents' knowledge about the causes of climate change:

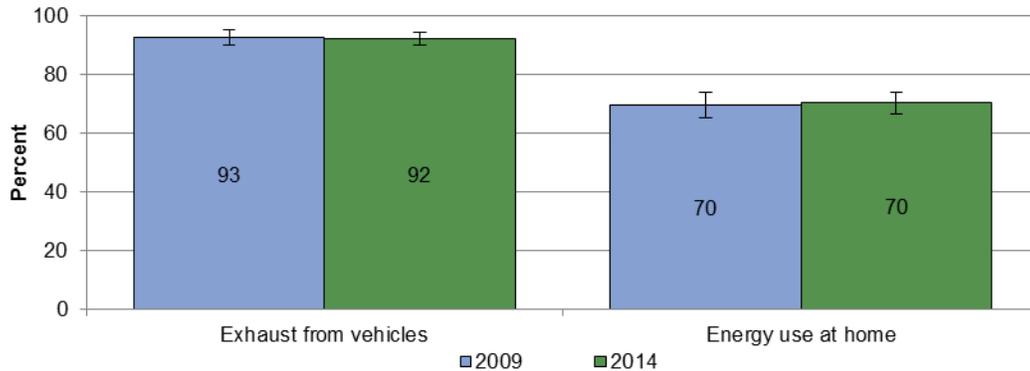
- Females [27%(±4)] were more likely than males [18%(±4)] to indicate that climate change is caused by both human and natural changes.
- Residents aged 25-44 [63%(±7)] were more likely than residents aged 65+ [47%(±6)] to indicate that climate change is caused mainly by human activity.
- Residents without a post-secondary education [26%(±6)] were more likely than residents with a post-secondary education [15%(±3)] to indicate that climate change is caused mainly by natural changes.



**Figure 3: Knowledge of the causes of climate change, adults aged 18 and over, Halton Region, 2009 and 2014**

Note: In 2009 4% disagreed and 4% did not know if the climate was changing  
In 2014 4% disagreed and 2% did not know if the climate was changing

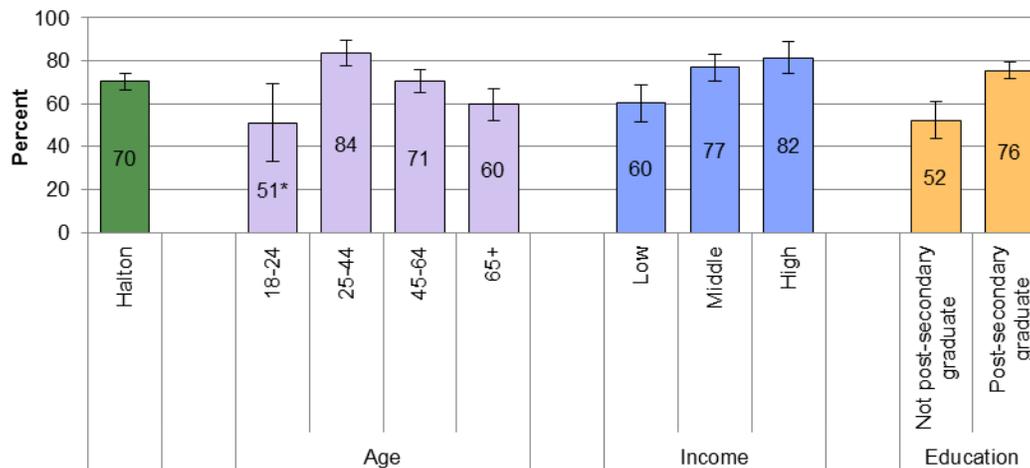
In 2014, when Halton residents who thought that climate change was caused by human activity were asked about the specific ways that human activity contributes to climate change, 92%(±2) identified that exhaust from vehicles contributes to climate change, while 70%(±4) recognized that energy use at home contributes to climate change. There were no significant differences between 2009 and 2014 (see **Figure 4**).



**Figure 4: Specific causes of climate change, adults aged 18 and over who think that climate change is caused by human activity, Halton Region, 2009 and 2014**

In 2014, knowledge about exhaust from vehicles contributing to climate change did not vary by demographic characteristics, however age, income and education all had a statistically significant relationship with knowledge about energy use at home (see **Figure 5**):

- Residents aged 25-44 [84%(±6)] were more likely than all other age groups to know that energy use at home contributes to climate change.
- Identification of energy use at home as a contributor to climate change increased as income increased. This difference was statistically significant when comparing the low income group [60%(±9)] to the middle [77%(±6)] and high [82%(±7)] income groups.
- Post-secondary graduates [76%(±4)] were more likely than non-post-secondary graduates [52%(±9)] to know that energy use at home contributes to climate change.



**Figure 5: Home energy use as a cause of climate change, adults aged 18 and over who think that climate change is caused by human activity, by age, income and education, Halton Region, 2014**

## Impact of Climate Change on Local Communities

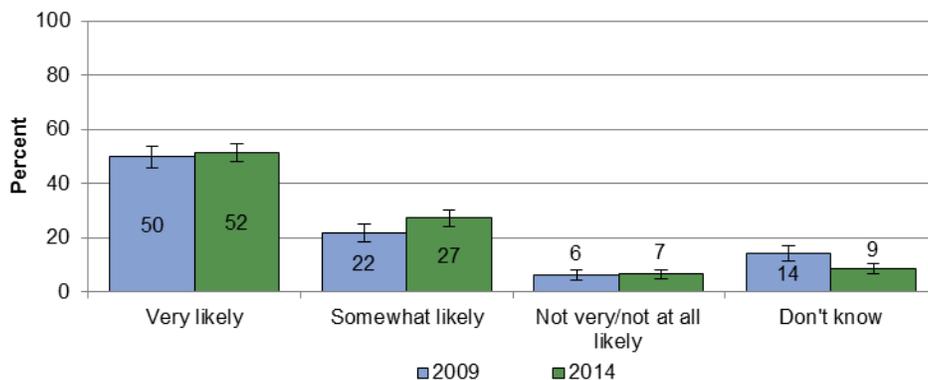
Climate change affects the health and well-being of people in Halton and around the world. In Halton, it is expected that climate change will result in a seasonal shift and warmer temperatures, which will create favourable conditions for invasive plant species and insects carrying diseases such as West Nile virus and Lyme disease. Heat related deaths are expected to increase due to warmer temperatures, as well as increased poor air quality and related health impacts.

Climate change is also expected to increase the frequency and severity of extreme weather events such as thunderstorms, tornadoes and snowstorms.<sup>3</sup> Periods of heavy precipitation could also contribute to erosion around rivers and farmlands, flooding and increase the spread of waterborne diseases.<sup>3</sup> In Halton, a slightly warmer climate may have some benefits such as reduced injuries related to the cold and a longer and warmer growing season; however the negative effects of climate change on health outweigh the benefits.<sup>3</sup>

### More Smog Advisory Days

The percent of Halton residents who knew that climate change was very or somewhat likely to cause more smog advisory days in Halton Region increased from 72%(±4) in 2009 to 79%(±3) in 2014 and this difference was statistically significant. The percent of residents who did not know if climate change would cause more smog advisory days decreased significantly from 14%(±3) in 2009 to 9%(±2) in 2014 (see **Figure 6**).

In 2014, sex and age had a statistically significant effect on whether or not residents knew that climate change was likely to result in more smog advisory days. Females [84%(±3)] were more likely than males [73%(±5)] to know that climate change could result in more smog advisories. Residents aged 25-44 [90%(±5)] were also more likely than residents aged 45-64 [77%(±4)] and 65+ [72%(±6)] to indicate that climate change is likely to cause more smog advisory days.



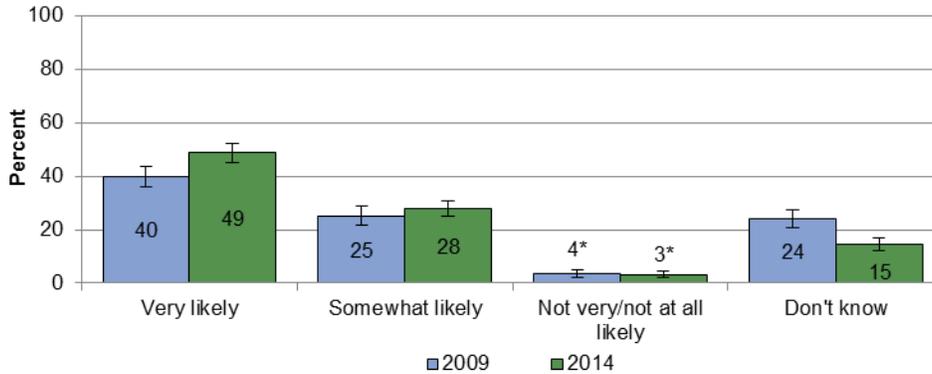
**Figure 6: Percent of adults aged 18 and over who think that climate change is likely to cause more smog advisory days, Halton Region, 2009 and 2014**

Note: In 2009 4% disagreed and 4% did not know if the climate was changing  
 In 2014 4% disagreed and 2% did not know if the climate was changing

### More Extreme Weather Events

The percent of Halton residents who knew that climate change was very or somewhat likely to cause more extreme weather events in Halton Region increased from 65%(±4) in 2009 to 77%(±3) in 2014, and this increase was statistically significant. The percent of residents who did not know if climate change would cause more extreme weather events decreased significantly from 24%(±3) in 2009 to 15%(±2) in 2014 (see **Figure 7**).

In 2014, Halton residents' knowledge about climate change and extreme weather events varied significantly by sex and age. Females [81%(±4)] were more likely than males [71%(±5)], and residents aged 25-44 [83%(±6)] were more likely than residents aged 65+ [71%(±6)] to indicate that climate change is very or somewhat likely to cause more extreme weather events.



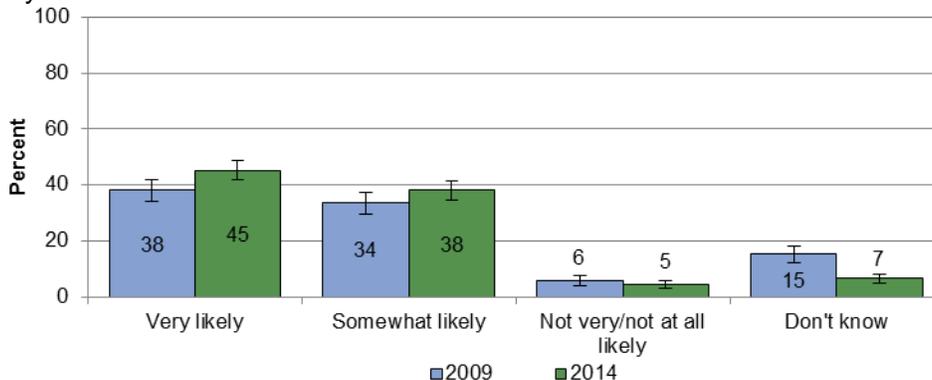
**Figure 7: Percent of adults aged 18 and over who think that climate change is likely to cause more extreme weather events, Halton Region, 2009 and 2014**

Note: In 2009 4% disagreed and 4% did not know if the climate was changing  
 In 2014 4% disagreed and 2% did not know if the climate was changing

### More Frequent and Severe Heat Waves

The percent of Halton residents who indicated that climate change is very or somewhat likely to cause more frequent and severe heat waves in Halton Region increased from 71%(±4) in 2009 to 83%(±3) in 2014, and this increase was statistically significant. The percent of Halton residents who did not know if climate change would cause more frequent and severe heat waves decreased significantly from 15%(±3) in 2009 to 7%(±2) in 2014 (see **Figure 8**).

In 2014, Halton residents' knowledge about climate change and more frequent and severe heat waves varied significantly by sex and age. Females [88%(±3)] were more likely than males [78%(±4)] to indicate that climate change would be very or somewhat likely to cause more heat waves. Residents aged 25-44 [90%(±4)] were more likely than residents aged 65+ [78%(±5)] to indicate that climate change would be very or somewhat likely to cause more heat waves.



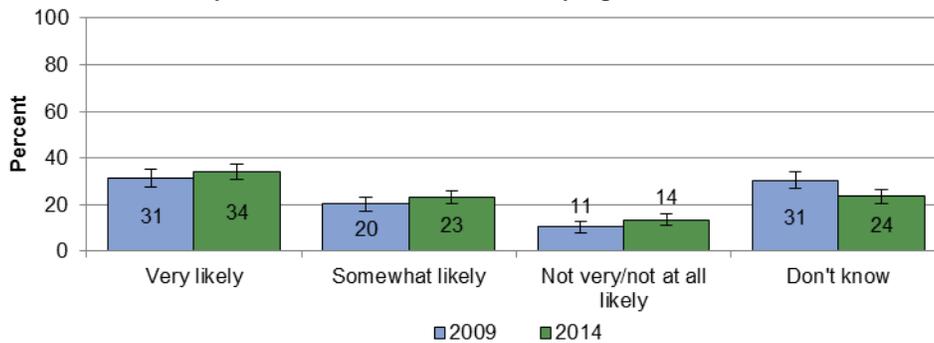
**Figure 8: Percent of adults aged 18 and over who think that climate change is likely to cause more frequent and severe heat waves, Halton Region, 2009 and 2014**

Note: In 2009 4% disagreed and 4% did not know if the climate was changing  
 In 2014 4% disagreed and 2% did not know if the climate was changing

## More Insects Carrying Disease

In 2014, Halton residents were less likely to know that climate change is likely to result in more insects carrying disease in Halton Region when compared to smog advisory days, severe weather events and more frequent and severe heat waves. The percent of Halton residents who indicated that climate change is very or somewhat likely to cause more disease-carrying insects increased from 52%(±4) in 2009 to 57%(±3) in 2014, but this increase was not statistically significant. The percent of Halton residents who indicated that they did not know if climate change would cause more disease carrying insects, however, decreased significantly from 31%(±4) in 2009 to 24%(±3) in 2014 (see **Figure 9**).

In 2014, knowledge about insects carrying diseases varied significantly by sex and income. Females [64%(±4)] were more likely than males [49%(±5)], and residents in the low [61%(±7)] and middle [64%(±6)] income groups were more likely than residents in the high income group [46%(±8)] to indicate that climate change is very or somewhat likely to cause more insects carrying disease.



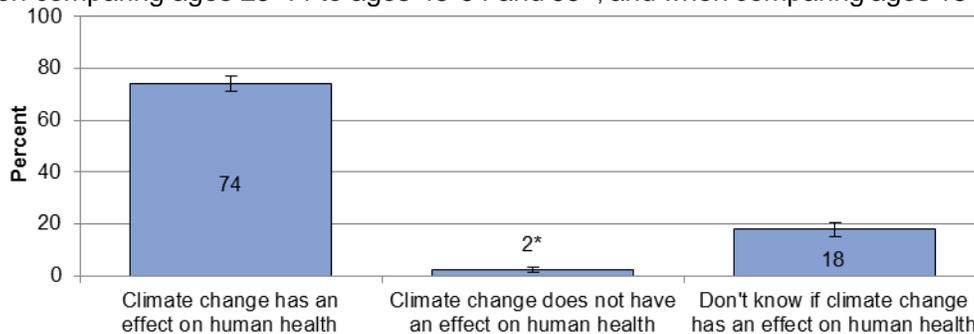
**Figure 9: Percent of adults aged 18 and over who think that climate change is likely to cause more insects carrying disease, Halton Region, 2009 and 2014**

Note: In 2009 4% disagreed and 4% did not know if the climate was changing  
In 2014 4% disagreed and 2% did not know if the climate was changing

## Effect of Climate Change on Human Health

In 2014, 74%(±3) of Halton residents knew that climate change can have an effect on human health, 2%(±1)\* did not, and 18%(±3) did not know if climate change could have an effect on human health (see **Figure 10**). Among residents who knew that climate change can have an effect on health, 8%(±2) thought the effect could be very or somewhat positive, 17%(±3) thought the effect could be positive and negative, 68%(±4) thought the effect could be very or somewhat negative, and 7%(±2) did not know what type of effect climate change could have on human health.

In 2014, knowledge about climate change having an effect on human health varied significantly by sex and age. Halton females [80%(±4)] were more likely than males [67%(±5)] to know that climate change can have an effect on health. Knowledge about the effect of climate change on health decreased as age increased (18-24 [83%(±12)], 25-44 [83%(±6)], 45-64 [73%(±5)], 65+ [66%(±6)]). These differences were statistically significant when comparing ages 25-44 to ages 45-64 and 65+, and when comparing ages 18-24 to ages 65+.



**Figure 10: Effect of climate change on human health, adults aged 18 and over, Halton Region, 2014**

Note: In 2014 4% disagreed and 2% did not know if the climate was changing

## Impact of Poor Air Quality on Health

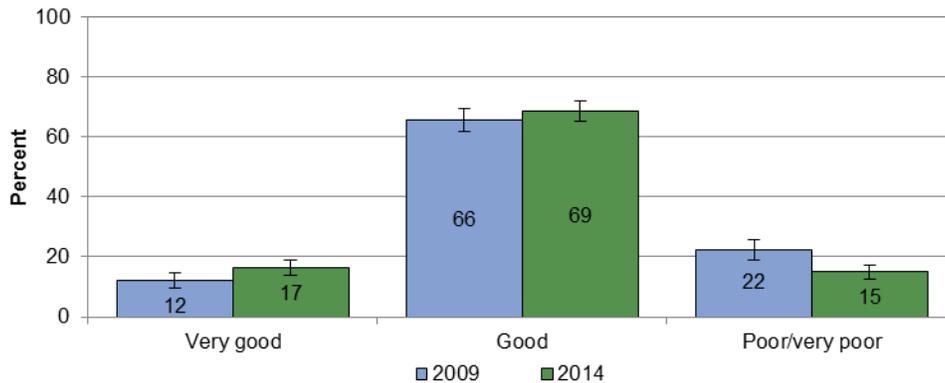
Human activities such as transportation, electricity generation, manufacturing, burning wood and farming can result in the release of greenhouse gases and pollute the air. Important greenhouse gases include carbon dioxide, methane and nitrous oxide. These emissions can change weather patterns and temperature across the world as well as cause health problems related to poor air quality.<sup>3</sup>

Air pollution can have a negative effect on the respiratory and cardiovascular systems by making it difficult to breathe, triggering asthma, Chronic Obstructive Pulmonary Disease (COPD) and other lung diseases, as well as triggering episodes of heart conditions like heart attacks.<sup>4</sup> During periods of high air pollution, emergency department visits, hospital admissions, and deaths tend to increase.<sup>4</sup> People with chronic lung and heart diseases, children, and the elderly are especially at risk of negative health effects due to air pollution.<sup>4</sup>

### Air Quality in Halton

Respondents were asked to rate the quality of the air in Halton. The percent of Halton residents who rated the air quality in the region as very good or good increased from 78% (±3) in 2009 to 85% (±3) in 2014. The percent of Halton residents who rated the air quality as poor or very poor decreased from 22% (±3) in 2009 to 15% (±3) in 2014 (see **Figure 11**).

In 2014, sex had a statistically significant relationship with Halton residents' perception of the air quality in the region. Females [18% (±4)] were more likely than males [11% (±3)] to rate air quality in the region as poor or very poor.

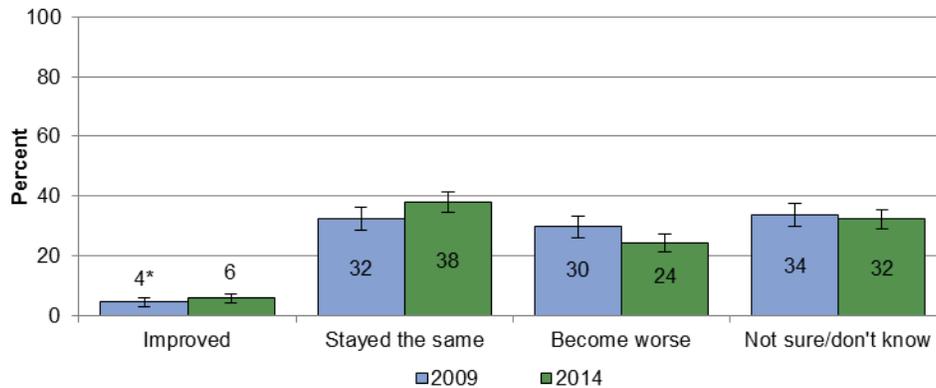


**Figure 11: Perceived air quality in Halton, adults aged 18 and over, Halton Region, 2009 and 2014**

### Improvement in Halton's Air Quality

In 2014, 6%(±2) of Halton residents thought that air quality in Halton had improved in the past five years, 38%(±3) thought that it stayed the same, 24%(±3) that it had become worse, and 32%(±3) did not know. There were no significant differences between 2009 and 2014 (see **Figure 12**).

In 2014, sex and municipality had a statistically significant effect on residents' perception of changes in air quality in Halton over the past five years. Halton females [28%(±4)] were more likely than males [19%(±4)] to indicate that air quality in the region had become worse in the past five years. Milton residents [37%(±10)] were more likely than Burlington residents [22%(±5)] to think air quality had become worse in the past 5 years.



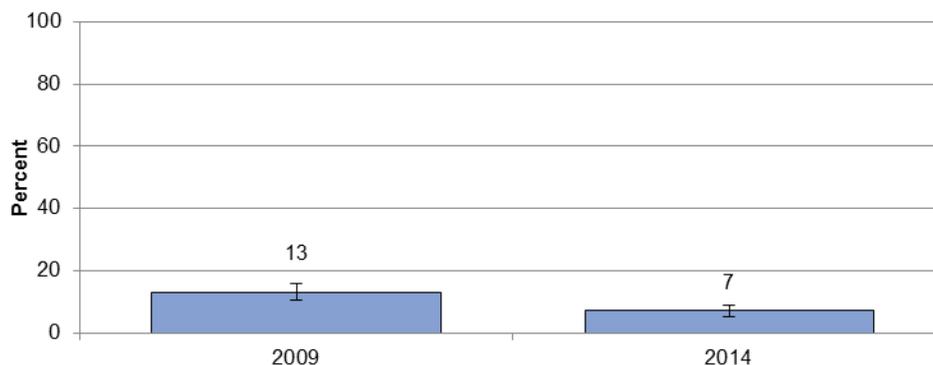
**Figure 12: Perceived changes in air quality in Halton over the past five years, adults aged 18 and over, Halton Region, 2009 and 2014**

### Effect of Poor Air Quality on the Health of Halton Families

Halton residents were also asked if poor air quality had affected their health or the health of any members of their family. The percent of Halton residents who indicated that poor air quality affected their health or the health of their family decreased significantly from 13%(±3) in 2009 to 7%(±2) in 2014 (see **Figure 13**).

In 2014, of those residents who said that air quality had affected their health or the health of their family:

- 36%(±13)\* indicated that they or a family member developed asthma or asthma became worse
- 30%(±12)\* indicated that they or a family member had difficulty breathing
- 25%(±12)\* indicated that they or a family member developed allergies or allergies became worse.

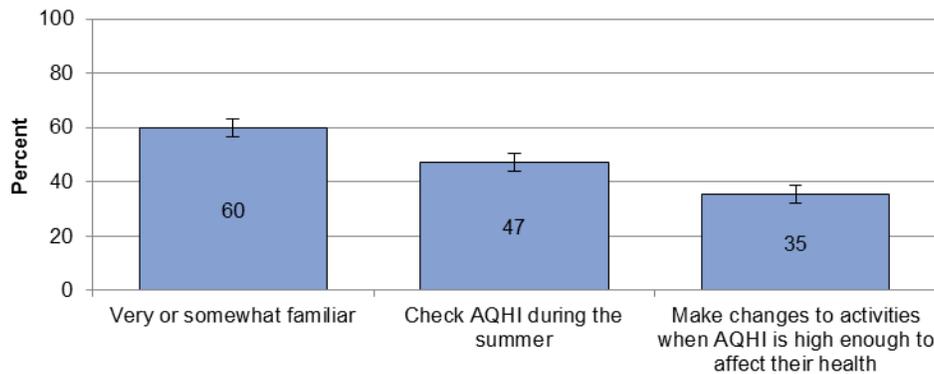


**Figure 13: Percent of adults aged 18 and over who indicated that poor air quality has affected their health or the health of their family, Halton Region, 2009 and 2014**

## Air Quality Health Index

The [Air Quality Health Index](#) (AQHI) is a tool developed by Health Canada and Environment Canada to help Canadians monitor air quality and protect their health from the negative effects of air pollution.<sup>5</sup> The AQHI measures air quality in relation to health on a scale from 1 to 10+ and assigns a category describing the level of health risk (from low to very high) associated with the index reading.<sup>5</sup> The AQHI also provides Canadians with advice on how to protect their health by limiting exposure to air pollution and adjusting their activities during periods of increased air pollution.<sup>5</sup>

In 2014, when asked about the AQHI, 60%(±3) of all Halton residents reported being very or somewhat familiar with the AQHI, 47%(±3) of all Halton residents reported ever checking the AQHI in the summer and 35%(±3) of all Halton residents reported ever making changes to their activities when the AQHI was high enough to effect health (see **Figure 14**).

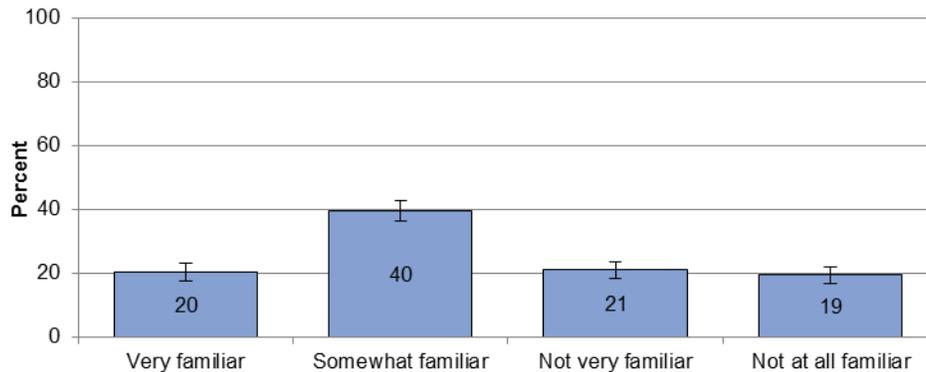


**Figure 14: Knowledge and use of the Air Quality Health Index, adults aged 18 and over, Halton Region, 2014**

What follows is a more specific breakdown of the percent of Halton residents who are familiar with the AQHI, check the AQHI in the summer, and who make changes to their activities when the AQHI is high enough to affect their health.

## Familiarity with the AQHI

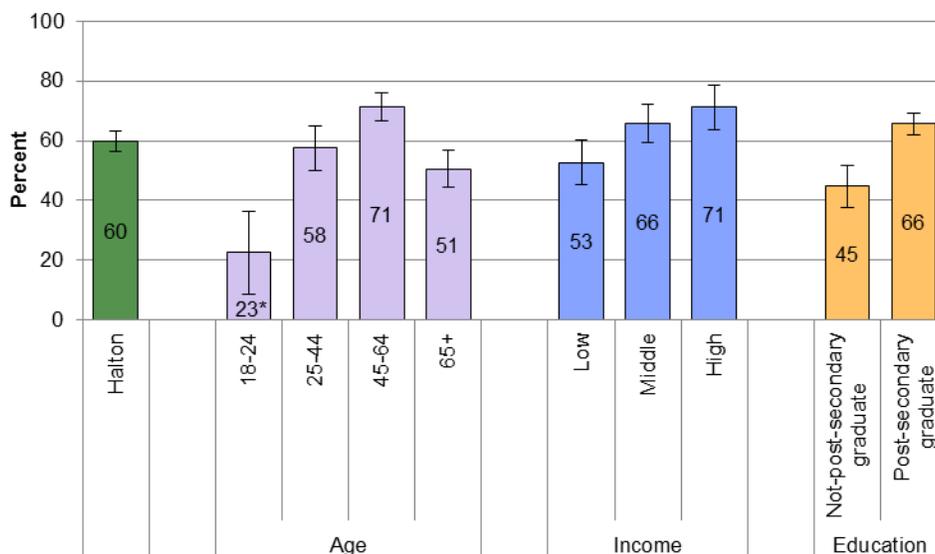
In 2014, 20%(±3) of all Halton residents reported being very familiar, 40%(±3) somewhat familiar, 21%(±3) not very familiar and 19%(±3) not at all familiar with the AQHI (see **Figure 15**).



**Figure 15: Familiarity with the Air Quality Health Index, adults aged 18 and over, Halton Region, 2014**

Age, income and education had a statistically significant association with Halton residents' familiarity (very, somewhat familiar) with the AQHI (see **Figure 16**):

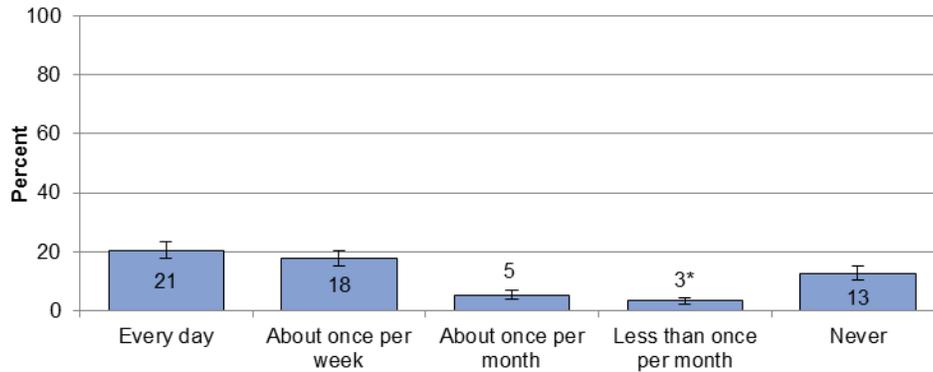
- Halton residents aged 45-64 [71%(±5)] were more likely than all other age groups to be familiar with the AQHI. Halton residents aged 25-44 [58%(±7)] and 65+ [51%(±6)] were also more likely than residents aged 18-24 [23%(±14)]\* to be familiar with the AQHI.
- The percent of Halton residents who were familiar with the AQHI increased as income increased. This difference was statistically significant when comparing residents in the low income group [53%(±7)] to the high income group [71%(±7)].
- Halton residents who were post-secondary graduates [66%(±4)] were more likely to be familiar with the AQHI compared to residents who were not post-secondary graduates [45%(±7)].



**Figure 16: Familiarity with the Air Quality Health Index, adults aged 18 and over, by age, income and education, Halton Region, 2014**

## Checking the AQHI

In 2014, during the summer, 21%(±3) of all Halton residents reported checking the AQHI every day, 18%(±3) about once per week, 5%(±2) about once per month, 3%(±1)\* less than once per month, and 13%(±2) reported never checking the AQHI (see **Figure 17**).

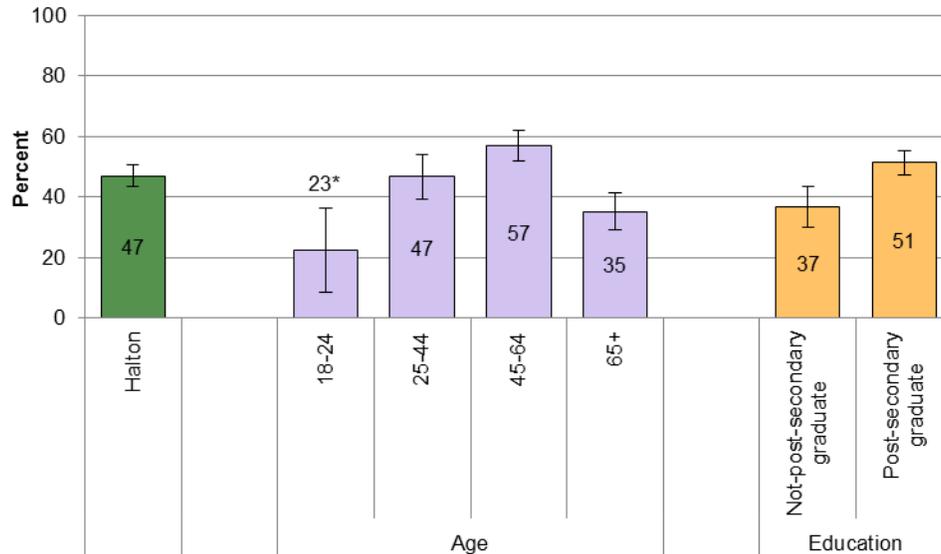


**Figure 17: Percent of adults aged 18 and over who check the Air Quality Health Index in the summer, Halton Region, 2014**

Note: 40% of respondents in 2014 were not very/not at all familiar with the AQHI

The percent of Halton residents that check the AQHI (every day, about once per week, about once per month, less than once per month) in the summer differed by age and education, and these differences were statistically significant (see **Figure 18**):

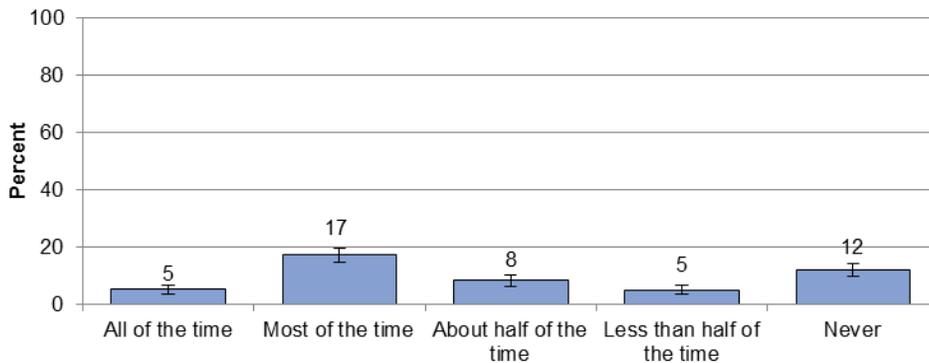
- Residents aged 25-44 [47%(±7)] and 45-64 [57%(±5)] were more likely than ages 18-24 [23%(±14)]\* to check the AQHI, and residents aged 45-64 were more likely than ages 65+ [35%(±6)] to check the AQHI.
- Post-secondary graduates [51%(±4)] were also more likely than residents who were not post-secondary graduates [37%(±7)] to report checking the AQHI.



**Figure 18: Percent of adults aged 18 and over who check the Air Quality Health Index in the summer, by age and education, Halton Region, 2014**

## Changing Activities Based on the AQHI

In 2014, 5%(±2) of all Halton residents reported changing their activities based on the AQHI all of the time, 17%(±3) most of the time, 8%(±2) about half of the time, 5%(±2) less than half the time, and 12%(±2) never changed their activities based on the AQHI (see **Figure 19**).

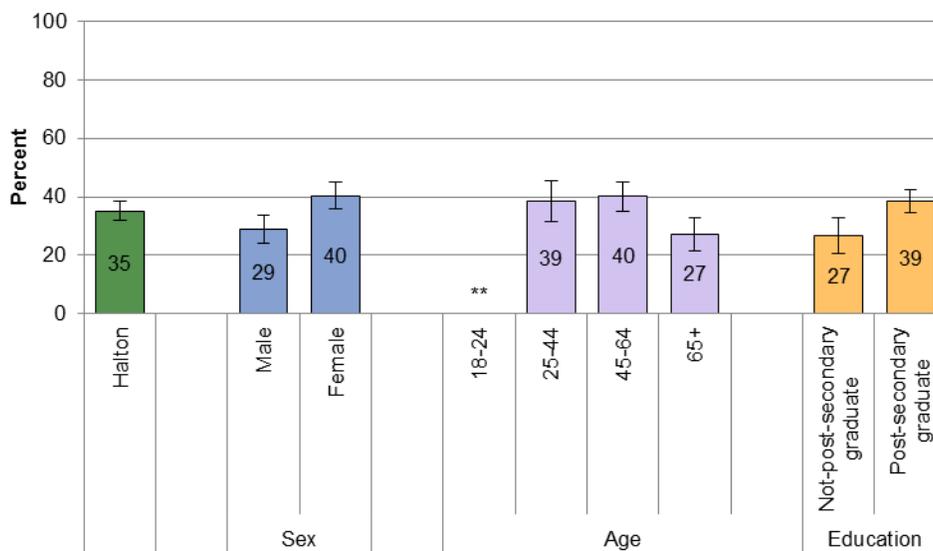


**Figure 19: Percent of adults aged 18 and over who change their activities based on the Air Quality Health Index, Halton Region, 2014**

Note: 40% of respondents in 2014 were not very/not at all familiar with the AQHI  
13% of respondents never check the AQHI

The percent of Halton residents who reported changing their activities (all, most, about half, or less than half of the time) based on the AQHI varied significantly by sex, age and education (see **Figure 20**).

- Halton females [40%(±5)] were more likely than males [29%(±5)] to report changing their activities based on the AQHI.
- Halton residents aged 45-64 [40%(±5)] were more likely than residents aged 65+ [27%(±6)] to report changing their activities based on the AQHI.
- Halton residents who were post-secondary graduates [39%(±4)] were more likely than residents who were not post-secondary graduates [27%(±6)] to report changing their activities based on the AQHI.



**Figure 20: Percent of adults aged 18 and over who change their activities based on the Air Quality Health Index, by sex, age and municipality, Halton Region, 2014**

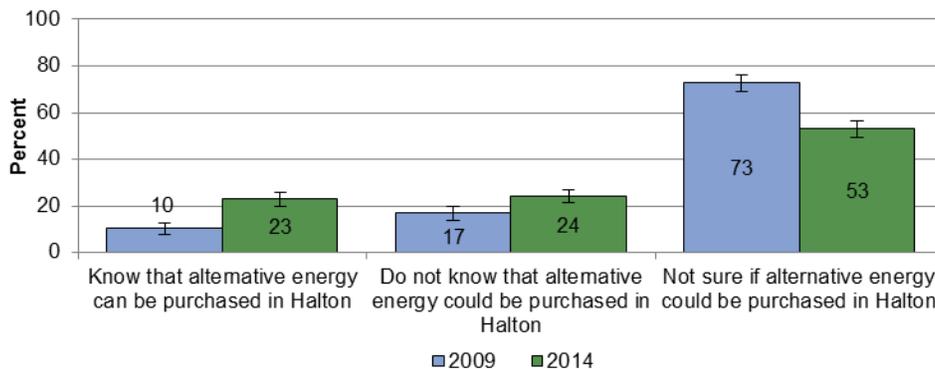
## Energy Use at Home

Using energy in the home more wisely can help reduce fossil fuel consumption and the emission of greenhouse gases that contribute to climate change. A few steps that can be taken to save energy at home include using energy efficient products, turning off lights when leaving a room, purchasing energy from alternative sources, and drying laundry on a clothesline.

### Knowledge of Alternative Energy

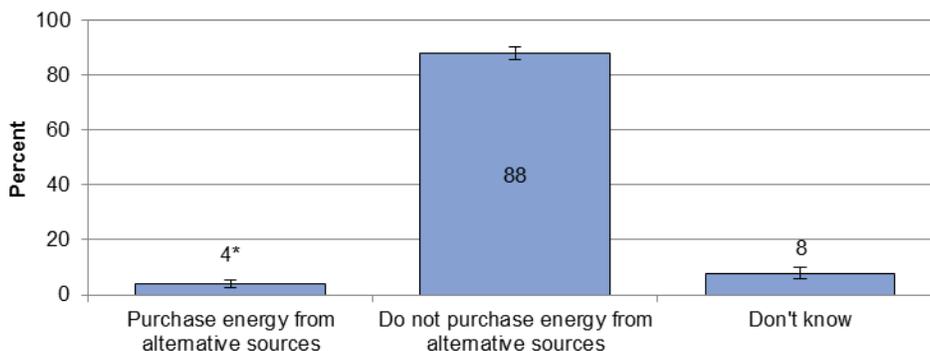
Alternative sources of power such as wind and solar power can be purchased in Halton Region. In 2014 23%(±3) of residents were aware of this, which was a statistically significant increase from 10%(±2) in 2009. The percent of Halton residents who did not know that alternative energy could be purchased also increased from 17%(±3) in 2009 to 24%(±3) in 2014, while the percent of residents who were not sure decreased from 73%(±4) to 53%(±3) (see **Figure 21**).

In 2014, knowledge of alternative energy varied by age and municipality, and the variation was statistically significant. Halton residents aged 25-44 [35%(±7)] were more likely than residents aged 45-64 [21%(±4)] and 65+ [12%(±4)]\* to know that you can buy home energy from an alternative source in Halton. Residents aged 45-64 were also more likely than residents aged 65+ to know that you can buy home energy from an alternative source in Halton. Milton residents [36%(±10)] were more likely than residents of Oakville [19%(±4)] and Halton Hills [17%(±7)]\* to know that you can buy energy from an alternative source.



**Figure 21: Knowledge of alternative energy availability in Halton, adults aged 18 and over, Halton Region, 2009 and 2014**

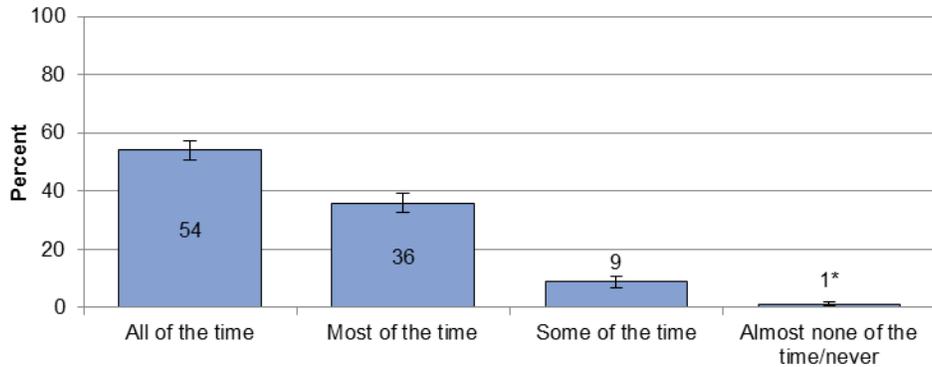
In 2014, 4%(±1)\* of households in Halton reported buying energy from alternative sources, 88%(±2) did not buy energy from alternative sources, and 8%(±2) did not know if their home bought energy from alternative sources (see **Figure 22**). Only households that purchased their own energy were asked about buying energy from alternative sources.



**Figure 22: Percent of households that purchase energy from alternative sources, households that pay for their own energy, Halton Region, 2014**

### Turning off the Lights when Leaving a Room

In 2014, 54%(±3) of Halton residents reported always turning the lights off when they leave a room for 15 minutes or longer all of the time, 36%(±3) did so most of the time, 9%(±2) some of the time and 1%(0.7-2.4)\* never or almost never turned off the lights when leaving a room for 15 minutes or longer (see **Figure 23**).

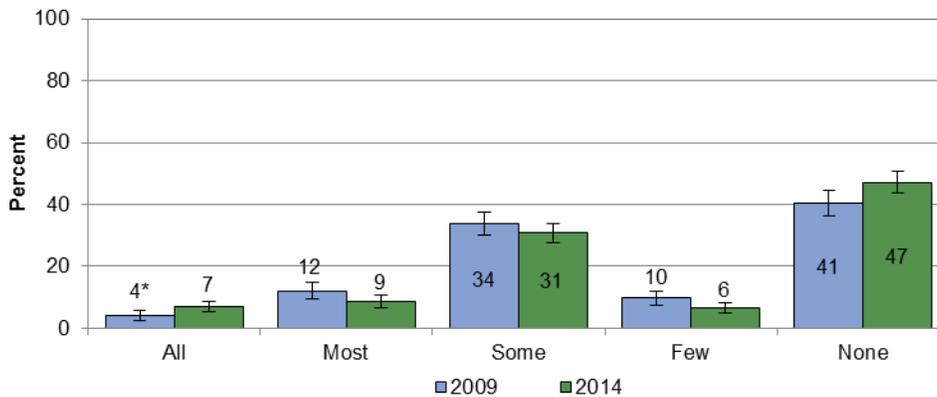


**Figure 23: Frequency of turning off lights when leaving the room for 15 minutes or longer, adults aged 18 and over, Halton Region, 2014**

### Drying Clothes on a Clothesline or Rack

Another way that households can conserve energy is to dry their clothes on a clothesline or clothes rack inside and/or outside the house. In 2014, 7%(±2) of households in Halton reported drying all of their laundry this way, 9%(±2) dry most of their laundry this way, 31%(±3) some of their laundry this way, 6%(±2) dry few of their laundry this way and 47%(±3) never dry their laundry this way. There were no significant differences between 2009 and 2014 in the percent of households that reported drying their clothes on a clothesline or rack (see **Figure 24**).

In 2014, income had a statistically significant relationship with drying clothes on a clothesline or rack. The percent of households in Halton that reported drying all or most of their clothes on a clothesline or rack was higher in the low income group [21%(±6)] compared to the high income group [7%(±4)]\*.

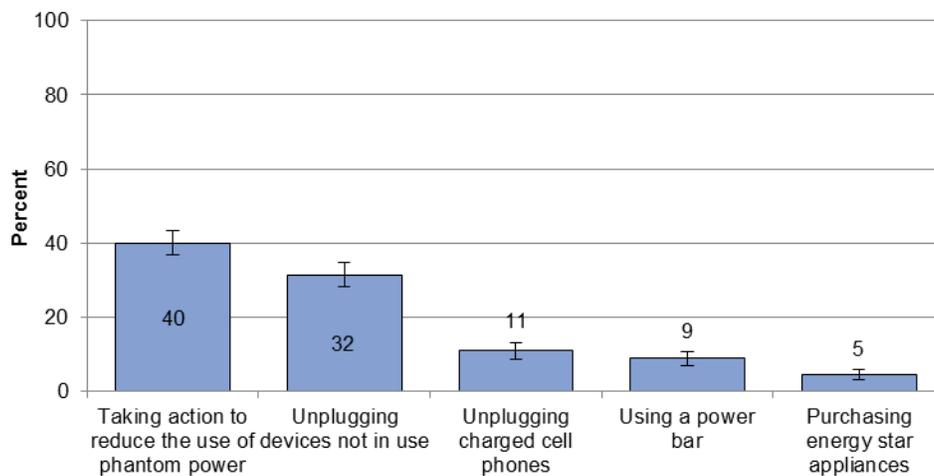


**Figure 24: Percent of households that dry clothes on a clothesline or rack, Halton Region, 2009 and 2014**

## Phantom Power

Phantom power is electricity being used by devices like televisions, cell phone chargers, and computers while they are plugged in but not being used. Other common terms for phantom power include standby power, vampire power and leaking energy. People can reduce the use of phantom power by doing things like unplugging devices from the wall, using a power bar to turn devices on and off, and purchasing energy star appliances.<sup>6</sup>

In 2014, 40%(±3) of households in Halton reported taking action to reduce the use of phantom power. When asked about specific activities that households were doing to reduce the use of phantom power, 32%(±3) reported unplugging devices that are not in use, 11%(±2) reported unplugging cell phones once they have charged, 9%(±2) reported using a power bar, and 5%(±1) reported purchasing energy star appliances (see **Figure 25**).<sup>†</sup>



**Figure 25: Actions households are taking to reduce the use of phantom power, Halton Region, 2014**

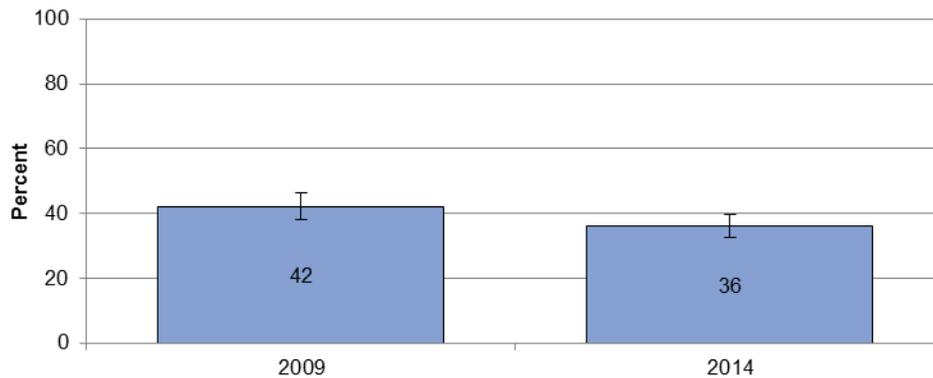
<sup>†</sup>It was not possible to determine from the survey whether or not residents were correctly using these methods to reduce the use of phantom power. For example, it was not possible to determine if residents were using power bars to plug in devices, or actually turning off power bars when devices were not in use. It was also not possible to determine if residents unplugged cell phone chargers from the wall rather than just unplugging the phone from the charger.

## Energy Use on the Road

Taking steps to reduce energy use on the road can help reduce the amount of greenhouse gases released into the air. Reducing the use of vehicles by carpooling (shared use of a car by the driver and one or more passengers, usually for commuting), as well as increasing fuel efficiency through proper tire inflation are two important ways to reduce energy use on the road. Avoiding letting vehicles idle (running a vehicle's engine while the vehicle is parked and not in motion) can also help to reduce greenhouse gas emissions and reduce the amount of harmful pollutants released into the air.

### Carpooling

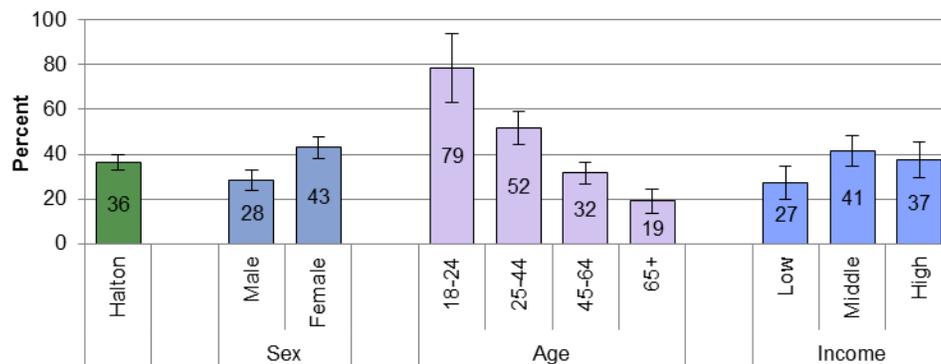
In 2014, 36%(±3) of drivers in Halton indicated that they had carpoolled within the past month. There were no significant differences between 2009 and 2014 in the percent of Halton drivers who reported carpooling within the past month (see **Figure 26**).



**Figure 26: Percent of drivers aged 18 and over who reported carpooling within the past month, Halton Region, 2009 and 2014**

In 2014, the percent of Halton drivers who reported carpooling in the past month differed significantly by sex, age and income (see **Figure 27**):

- Halton females [43%(±5)] were more likely to report carpooling than males [28%(±5)].
- The percent of Halton residents who reported carpooling decreased as age increased.
- Halton residents in the lowest income group were the least likely out of all income groups to report carpooling. These differences were statistically significant when comparing the low income group [27%(±7)] to the middle income group [41%(±7)].

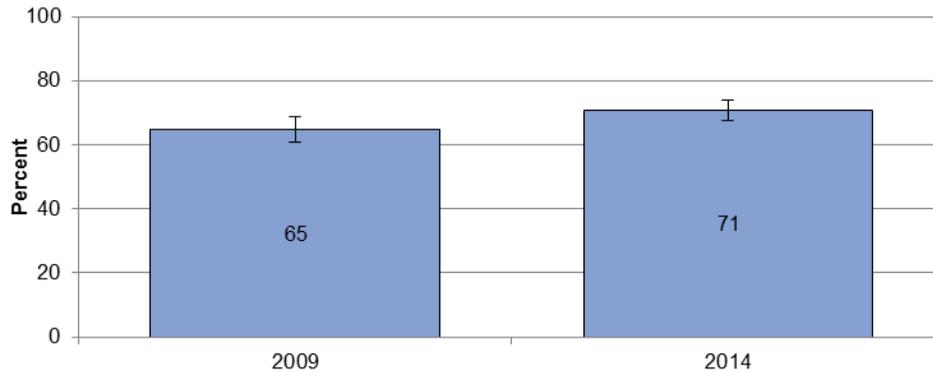


**Figure 27: Percent of drivers aged 18 and over who reported carpooling within the past month, by sex, age and income, Halton Region, 2014**

## Tire Inflation

In 2014, 71%(±3) of Halton drivers reported having checked or had their tire pressure checked within the past month, which was not significantly different from 2009 (see **Figure 28**).

In 2014, the percent of Halton drivers who checked their tire pressure or had their tire pressure checked in the past month differed significantly by sex and municipality. Halton males [76%(±5)] were more likely than females [66%(±5)] to have had their tire pressure checked. Residents of Milton [81%(±8)] were more likely than residents of Halton Hills [61%(±10)] to have had their tire pressure checked in the past month.

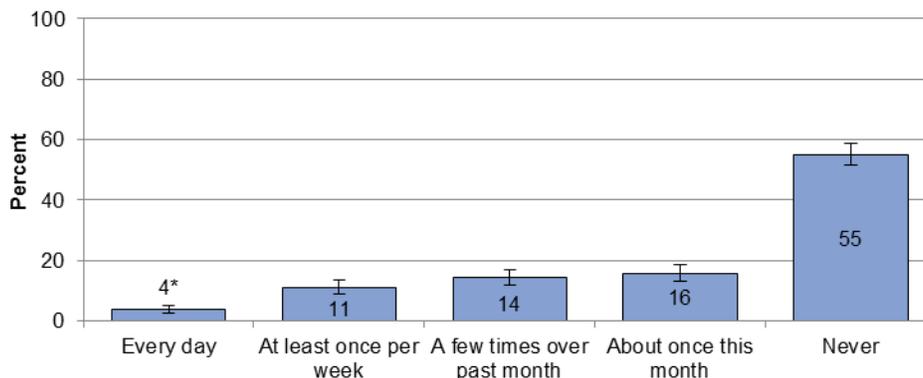


**Figure 28: Percent of drivers who checked their tire pressure or had their tire pressure checked within the past month, Halton Region, 2009 and 2014**

## Idling

In 2014, when Halton drivers were asked about letting their vehicle idle for one minute or longer in the past month, 4%(±1)\* reported that they did this every day, 11%(±2) at least once per week, 14%(±3) a few times per month, 16%(±3) about once per month, and 55%(±4) never did this (see **Figure 29**).

In 2014, age and income had a statistically significant relationship with idling. The percent of Halton drivers who reported never letting their vehicle idle for one minute or longer in the past month increased as age increased (18-24 [29%(±17)], 25-44 [42%(±7)], 45-64 [57%(±5)], 65+ [70%(±6)]) These differences were statistically significant when comparing all groups except 18-24 and 25-44. Halton drivers in the low income group [65%(±8)] were more likely than drivers in the high income group [45%(±8)] to report that they never let their vehicle idle for one minute or longer during the past month.



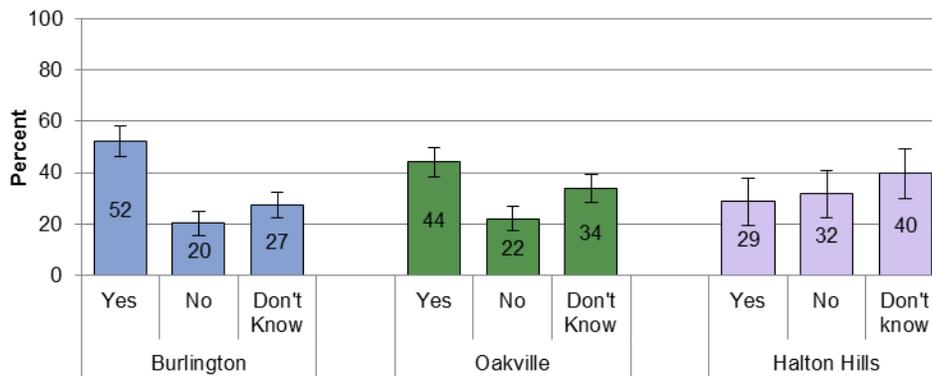
**Figure 29: Percent of drivers by frequency of idling their vehicle in the past month, Halton Region, 2014**

**Table 2: Summary of idling bylaws, by municipality, Halton Region, 2014**

Municipality	Allowable time to idle	Exemptions
Burlington	One minute	None
Oakville	No more than 5 consecutive minutes	Over 27°C, below 5°C
Milton	No bylaw	No bylaw
Halton Hills	3 minutes in a 60 minute period	Over 27°C, below 5°C

Some cities, towns and municipalities have laws to limit idling in order to reduce the emission of greenhouse gases and other pollutants. **Table 2** summarizes idling bylaws in the municipalities in Halton.

When asked about idling laws where they live, 52%(±6) of Burlington drivers knew that Burlington had an idling bylaw, 44%(±6) of Oakville drivers knew that Oakville had an idling bylaw, and 29%(±9) of Halton Hills drivers knew that Halton Hills had an idling bylaw. Drivers who lived in Halton Hills were the least likely to be aware of an idling bylaw in their municipality, and this was statistically significant when compared to Burlington and Oakville (see **Figure 30**).



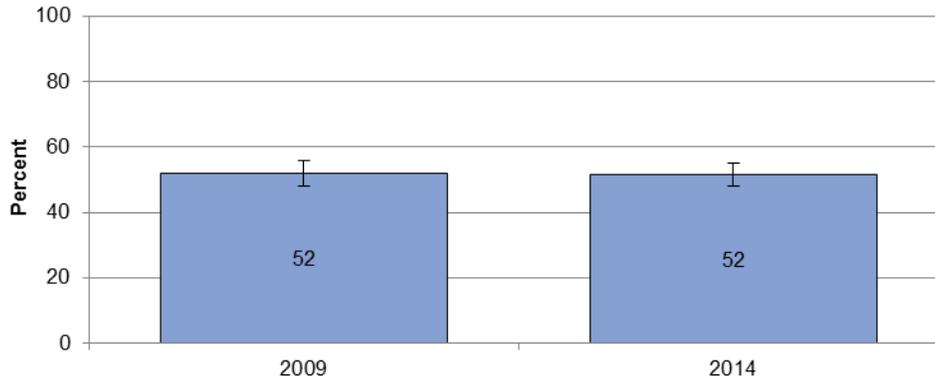
**Figure 30: Percent of drivers who are aware of idling bylaws, by municipality, Halton Region, 2014**

Halton drivers who let their car idle in the past month let the car idle for an average of 3 minutes. Although idling bylaws differ by municipality, there was no significant difference in the average amount of time Halton drivers reported letting their vehicles idle.

## Active Transportation

Active transportation refers to walking or biking for reasons other than recreation or fitness, such as walking to work or running errands. Active transportation not only provides an opportunity to be physically active, but it also helps to improve the environment by reducing greenhouse gas emissions.<sup>7</sup>

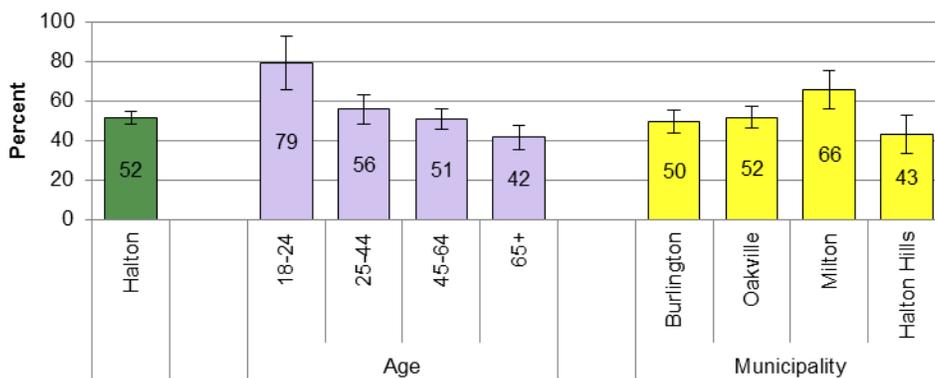
In 2014, 52%(±3) of Halton residents reported using active transportation in the past 12 months, which was not significantly different from 2009 (see **Figure 31**).



**Figure 31: Percent of adults aged 18 and over who used active transportation in the past 12 months, Halton Region, 2009 and 2014**

In 2014, age and municipality had a statistically significant relationship with active transportation (see **Figure 32**):

- Younger residents in Halton were more likely than older residents to report using active transportation in the past 12 months. This difference was statistically significant when comparing ages 18-24 [79%(±13)] to all other age groups, and when comparing ages 25-44 [56%(±7)] to ages 65+ [42%(±6)].
- Residents in Milton were most likely to report using active transportation in the past 12 months. This difference was statistically significant when comparing Milton [66%(±10)] to Burlington [50%(±6)] and Halton Hills [43%(±10)].<sup>†</sup>



**Figure 32: Percent of adults aged 18 and over who used active transportation in the past 12 months, by age and municipality, Halton Region, 2014**

<sup>†</sup>Other surveys that have collected data on active transportation have not found differences by municipality (e.g. the [2011 Transportation Tomorrow Survey](#)<sup>8</sup>).

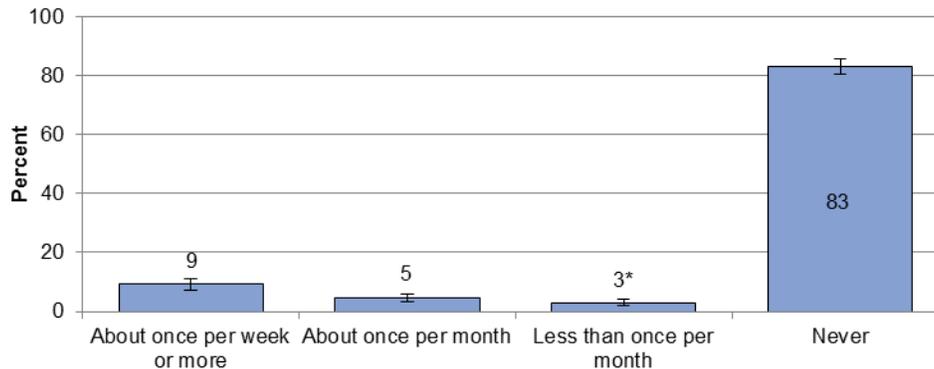
## Burning Wood

Burning wood is a significant source of air pollution and can affect both human health and have negative effects on the environment.<sup>9</sup>

### Burning Wood Inside the Home

In 2014, when asked about burning wood inside the home during the winter in a fireplace or woodburning stove, 17% ( $\pm 3$ ) of households in Halton reported doing this, with 9% ( $\pm 2$ ) burning wood about once per week or more, 5% ( $\pm 1$ ) burning wood about once per month, and 3% ( $\pm 1$ )\* burning wood less than once per month (see **Figure 33**).

Income had a statistically significant association with burning wood inside the home. Households in the high income group [25% ( $\pm 7$ )] were more likely than households in the low income group [12% ( $\pm 5$ )]\* to report burning wood inside the home during the winter.

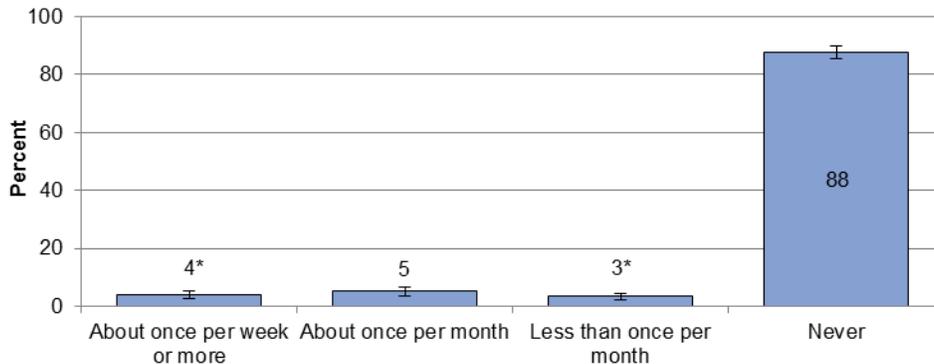


**Figure 33: Percent of households that burn wood inside the home during the winter, Halton Region, 2014**

### Burning Wood Outside the Home

In 2014, 12% ( $\pm 2$ ) of households in Halton reported burning wood outside the home in an outdoor fireplace, fire pit or something similar, with 4% ( $\pm 1$ )\* burning wood about once per week or more, 5% ( $\pm 2$ ) about once per month, and 3% ( $\pm 1$ )\* burning wood less than once per month (see **Figure 34**).

Municipality and income had a statistically significant association with burning wood outside the home. Households in Halton Hills [26% ( $\pm 9$ )]\* were more likely than households in Oakville [11% ( $\pm 3$ )] to report burning wood outside the home. The percent of households that reported burning wood outside the home in the summer also increased as income increased. This difference was statistically significant when comparing the low income group [7% ( $\pm 4$ )]\* to the middle [16% ( $\pm 5$ )] and high [19% ( $\pm 7$ )]\* income groups.



**Figure 34: Percent of households that burn wood outside the home during the summer, Halton Region, 2014**

## Limitations

### Representativeness of sample

Individuals not living in households (such as those in prison, hospitals, or the homeless) were excluded from the survey. Individuals who live in a household without a landline telephone are also not reached through RRFSS (over 12% of all Ontario households, and 49% of Ontario households with only adults aged 18-34 years old<sup>10</sup>). As a result, the percentages may not represent the true estimates for the general population.

The demographic composition for a survey can differ from that of the population from which it has been drawn. To determine this, data for sex, age, municipality, household income and education collected through the Air Quality and Climate Change Survey were compared to 2013 population estimates from IntelliHEALTH and the 2011 National Household Survey (NHS) (**Table 3**). Females were slightly overrepresented in the 2014 AQCC survey. Post-secondary graduates were also overrepresented. When looking at age, younger adults (ages 18-24 and 25-44) were underrepresented, while older adults (45-64 and 65+) were overrepresented in the survey. Milton was also slightly underrepresented, which may be related to the fact that Milton has a younger population. While income groups were comparable to the NHS, this should be interpreted with caution as lower income groups may be underrepresented in the NHS (see note below).

**Table 3: Air Quality and Climate Change Survey demographic comparisons**

Variable	Response Options	2014 Air Quality and Climate Change Survey	Halton Demographics
<b>Sex</b> <sup>†</sup> (ages 18+)	Male	43%	49%
	Female	57%	51%
<b>Age</b> <sup>†</sup> (ages 18+)	18-24	4%	12%
	25-44	22%	35%
	45-64	43%	35%
	65+	31%	18%
<b>Municipality</b> <sup>†</sup> (ages 18+)	Burlington	38%	35%
	Oakville	38%	36%
	Halton Hills	12%	12%
	Milton	12%	17%
<b>Household Income</b> <sup>△Ψ</sup>	Less than \$40,000	15%	17%
	\$40,000-\$59,999	11%	13%
	\$60,000-\$79,999	13%	12%
	\$80,000-99,999	14%	12%
	\$100,000-\$149,000	21%	22%
	\$150,000 or higher	26%	24%
<b>Education</b> <sup>△Ψ</sup> (ages 25-64)	Not post-secondary graduate	14%	26%
	Post-secondary graduate	86%	74%

<sup>†</sup>Population Estimates & Projections, IntelliHEALTH Ontario, Ministry of Health and Long-Term Care [2013], extracted April, 2014.

<sup>△</sup>Statistics Canada. (2011). NHS Profile, Halton, RM, Ontario, 2011. Accessed 26 February 2015 from <http://www12.statcan.gc.ca/nhs-enm/2011/dp-prof/details/page.cfm?Lang=E&Geo1=CD&Code1=3524&Data=Count&SearchText=Halton&SearchType=Begin&SearchPR=01&A1=All&B1=All&GeoLevel=PR&GeoCode=3524&TABID=1>

<sup>Ψ</sup>The global non response rate in Halton for the National Household Survey was 22%. Among Canadians who did respond to the NHS, only about 57.9-60.6% of responses to the income questions contained usable information.<sup>11</sup> For the 2014 Air Quality and Climate Change survey, approximately 35% of respondents did not provide information on household income.

**Note:** The National Household Survey (NHS) is more prone to non-response bias compared to the previous long form census. Residents with low incomes, very high incomes, new immigrants, and Aboriginals were less likely to respond. Caution should be used when interpreting data for household income and education. For more information please go here: [http://www12.statcan.gc.ca/nhs-enm/2011/ref/nhs-enm\\_guide/99-001-x2011001-eng.pdf](http://www12.statcan.gc.ca/nhs-enm/2011/ref/nhs-enm_guide/99-001-x2011001-eng.pdf)



## **Response bias**

RRFSS results are self-reported and may not be recalled accurately. It is also possible that respondents were not providing honest responses to questions, but rather responses that they thought would appear positive or correct (positive response bias).

## **Changes to question wording**

Changes were made to the question wording for some questions between the 2009 and 2014 Air Quality and Climate Change Surveys. For the most part these changes were made to clarify or simplify question wording (For more information please see the [RRFSS data dictionaries](#)). Although attempts were made to minimize any impact on the results, it is possible that changes in wording resulted in differences observed between 2009 and 2014 and/or masked differences that truly existed.

## Key Findings

Public opinion, knowledge, attitudes and behaviours related to air quality and climate change have remained relatively stable in Halton between 2009 and 2014, however there have been some improvements. Knowledge of the impact of climate change on local communities has increased significantly, as has knowledge of alternative sources of power (though this percent remains relatively low). In addition, fewer residents currently believe that the air quality in Halton is poor or very poor compared to what was seen in 2009.

Although several demographics played a role in knowledge, attitudes and behaviours related to air quality and climate change, females and residents aged 25-44 were generally more knowledgeable about air quality and climate change. These groups were also more likely to practice behaviours which could influence air quality and climate change and improve health.

What follows is a summary of key findings for each major section of the report including: any changes observed in between 2009 and 2014, current findings for 2014, and key demographic characteristics that were associated with knowledge, attitudes and behaviours.



### Knowledge of Climate Change

1. 95% of Halton residents strongly or somewhat agreed that the world's climate is changing, and 83% were very or somewhat concerned about climate change. Females and residents aged 25-44 were more likely to agree that the climate is changing and be concerned about climate change.
2. Most residents (76%) in Halton recognized that human activity contributes to climate change with 53% indicating it is caused mainly by human activity, and 23% that it is caused by both human activity and natural changes.
3. 92% of Halton residents who knew that climate change is caused by human activity recognized that exhaust from vehicles contributes to climate change, while only 70% recognized that energy use at home contributes to climate change.
4. Knowledge about energy use at home contributing to climate change varied by age, income and education. Residents aged 25-44, residents in the high and middle income groups and residents with a post-secondary education were more likely to know that energy use at home contributes to climate change.



### Impact of Climate Change on Local Communities

1. Compared to 2009, Halton residents were more likely to know that climate change is somewhat or very likely to cause more smog advisory days, extreme weather events, frequent and severe heat waves, and insects carrying disease.
2. Fewer residents were aware that climate change is likely to result in more insects carrying disease (57%) compared to those who were aware that climate change is likely to result in more extreme weather events (77%), more smog advisory days (79%), and more frequent and severe heat waves (83%).
3. Females and residents aged 25-44 were more likely to be aware of the impact of climate change on the local community.
4. 74% of Halton residents knew that climate change could have an effect on human health. Of those who thought climate change could have an effect on health, 8% thought the effect could be very or somewhat positive, 17% both positive and negative, 68% very or somewhat negative, and 7% did not know what type of effect climate change would have on health.



### Impact of Poor Air Quality on Health

1. The percent of Halton residents who rated the air quality in the Region as poor or very poor decreased from 22% in 2009 to 15% in 2013. Females were more likely than males to rate the air quality in the region as poor or very poor.
2. In 2014, 6% of Halton residents thought that air quality in Halton had improved in the past five years, 38% thought that it had stayed the same, 24% that it became worse, and 32% did not know. Females and Milton residents were more likely to think that air quality had become worse.
3. The percent of Halton residents who indicated that poor air quality affected their health or the health of their family decreased significantly from 13% in 2009 to 7% in 2014.



### Air Quality Health Index

1. 60% of all Halton residents were familiar with the AQHI, 47% check the AQHI in the summer and 35% made changes to their activities based on the AQHI
2. Residents aged 25-44 and 45-64, and post-secondary graduates were more likely to be aware of, check and make changes based on the AQHI. The percent who were familiar with the AQHI increased with income, and females were more likely to change their activities based on the AQHI.



### Energy Use at Home

1. The percent of Halton residents who were aware that alternative sources of power can be purchased in Halton Region increased from 10% in 2009 to 23% in 2014. Only 4%\* of households in Halton reported buying energy from alternative sources.
2. 54% of Halton residents reported always turning off the lights when leaving a room for 15 minutes or longer.
3. 16% of households in Halton reported drying all or most of their clothes on a clothesline or rack. Drying clothes on a clothesline or clothes rack decreased as household income increased.



### Phantom Power

1. In 2014, 40% of households in Halton reported taking action to reduce the use of phantom power, 32% unplugged devices that are not in use, 11% unplugged cell phones once they have charged, 9% reported using a power bar, and 5% reported purchasing energy star appliances.



### Energy Use on the Road

1. 36% of Halton drivers reported carpooling and 71% had their tire pressure checked in the past month. Younger residents were more likely to carpool, as were females and those in the middle and high income groups. Males were more likely to have their tire pressure checked.
2. 55% of Halton drivers reported never letting their vehicle idle for a minute or longer during the past month. Older drivers and drivers in the low income group were most likely to report never letting their vehicle idle for a minute or longer during the past month.
3. 52% of Burlington residents, 44% of Oakville residents and 29% of Halton Hills residents were aware that anti-idling laws existed in their municipalities.



### Active Transportation

1. In 2014, 52% of Halton residents reported using active transportation in the past 12 months. Younger residents were more likely than older residents to report using active transportation.



### Burning Wood

1. In 2014, 17% of households in Halton reported burning wood inside the home, and 12%\* reported burning wood outside the home. Residents in the high income group were more likely to burn wood inside and outside the home, and Halton Hills residents were more likely to report burning wood outside the home.

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# Appendix: Tables of Demographic Comparisons

## Knowledge of Climate Change

Halton	Sex		Age				Municipality				Income Group			Education	
	Male	Female	18-24	25-44	45-64	65+	Burlington	Oakville	Milton	Halton Hills	Low	Middle	High	Post-secondary graduate	Not post-secondary graduate
Percent of Halton adults aged 18 and over who strongly or somewhat agree that the world's climate is changing															
<b>95%</b> (93-96)	91% (88-94)	97% (95-98)	100% (88-100)	99% (96-100)	93% (89-95)	93% (89-96)	95% (92-97)	94% (90-96)	95% (87-98)	97% (91-99)	95% (91-98)	97% (94-99)	94% (88-97)	98% (94-99)	94% (92-96)
Percent of Halton adults aged 18 and over who are very or somewhat concerned about climate change															
<b>83%</b> (80-85)	76% (71-80)	89% (86-92)	91% (81-100)	91% (87-95)	80% (76-84)	79% (74-84)	84% (80-88)	83% (78-87)	88% (82-95)	76% (68-85)	81% (75-87)	85% (81-90)	82% (75-88)	84% (79-89)	83% (80-86)
Percent of Halton adults aged 18 and over who think that climate change is caused mainly by human activity															
<b>53%</b> (50-57)	53% (48-58)	54% (49-58)	59% (42-75)	63% (56-70)	51% (46-56)	47% (41-54)	53% (47-58)	55% (49-60)	53% (43-64)	53% (43-63)	54% (46-61)	57% (50-63)	53% (45-61)	49% (42-55)	55% (51-59)
Percent of Halton adults aged 18 and over who think that climate change is caused mainly by natural changes															
<b>18%</b> (15-20)	20% (15-24)	16% (13-20)	**	13% (8-18)*	18% (14-22)	23% (18-29)	18% (14-23)	18% (13-22)	15% (7-22)*	21% (13-29)*	17% (12-23)*	17% (12-21)	21% (14-27)	26% (20-32)	15% (12-18)
Percent of Halton adults aged 18 and over who think that climate change is caused by both human activity and natural changes															
<b>23%</b> (20-26)	18% (14-22)	27% (24-31)	26% (12-41)*	24% (17-30)	23% (19-28)	21% (16-26)	23% (19-28)	21% (17-26)	27% (17-36)*	23% (15-31)*	24% (17-30)	24% (19-30)	21% (14-28)	22% (16-28)	24% (20-27)
Percent of Halton adults aged 18 and over who think that climate change is caused by human activity and who think that climate change is caused by exhaust from vehicles															
<b>92%</b> (90-94)	93% (89-96)	92% (88-94)	89% (71-97)	96% (91-98)	92% (87-94)	91% (86-95)	92% (88-95)	93% (89-96)	89% (79-95)	96% (88-99)	89% (82-94)	92% (87-95)	97% (91-99)	87% (80-92)	94% (91-96)
Percent of Halton adults aged 18 and over who think that climate change is caused by human activity and who think that climate change is caused by energy use at home															
<b>70%</b> (67-74)	76% (70-81)	66% (62-71)	51% (33-69)*	84% (78-89)	71% (65-76)	60% (52-67)	68% (61-74)	72% (66-77)	72% (61-83)	73% (63-83)	60% (52-69)	77% (71-83)	82% (74-89)	52% (44-61)	76% (72-79)

**Notes:**

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\* Interpret with caution

\*\* Not reportable

NA – Not applicable (household level variable)

## Impact of Climate Change on Local Communities

Halton	Sex		Age				Municipality				Income Group			Education	
	Male	Female	18-24	25-44	45-64	65+	Burlington	Oakville	Milton	Halton Hills	Low	Middle	High	Post-secondary graduate	Not post-secondary graduate
Percent of Halton adults aged 18 and over who think that climate change is very or somewhat likely to cause more smog advisory days															
<b>79%</b> <b>(76-82)</b>	73% (68-78)	84% (80-87)	79% (66-93)	90% (85-94)	77% (73-82)	72% (66-77)	81% (76-85)	77% (72-82)	81% (73-89)	78% (70-86)	80% (74-86)	85% (80-89)	77% (70-84)	77% (71-83)	80% (77-83)
Percent of Halton adults aged 18 and over who think that climate change is very or somewhat likely to cause more extreme weather events															
<b>77%</b> <b>(74-79)</b>	71% (67-76)	81% (78-85)	72% (57-87)	83% (78-89)	77% (73-82)	71% (66-77)	81% (76-85)	74% (69-79)	75% (66-84)	75% (67-84)	80% (74-86)	81% (76-86)	74% (66-81)	75% (69-81)	77% (74-81)
Percent of Halton adults aged 18 and over who think that climate change is very or somewhat likely to cause more frequent and severe heat waves															
<b>83%</b> <b>(81-86)</b>	78% (73-82)	88% (85-90)	83% (71-95)	90% (86-95)	83% (79-87)	78% (73-83)	86% (82-90)	81% (77-85)	84% (76-91)	84% (77-91)	85% (80-90)	90% (86-94)	83% (77-89)	84% (79-89)	84% (81-87)
Percent of Halton adults aged 18 and over who think that climate change is very or somewhat likely to cause more insects carrying disease															
<b>57%</b> <b>(54-61)</b>	49% (43-54)	64% (60-69)	54% (37-70)	59% (51-66)	56% (51-61)	59% (53-65)	56% (50-61)	58% (53-64)	61% (51-71)	55% (46-65)	61% (54-68)	64% (58-70)	46% (38-54)	63% (57-70)	56% (52-60)
Percent of Halton adults aged 18 and over who think that climate change can have an effect on human health															
<b>74%</b> <b>(71-77)</b>	67% (62-71)	80% (77-84)	83% (71-95)	83% (78-89)	73% (68-77)	66% (60-72)	75% (70-79)	75% (70-79)	72% (63-81)	73% (65-82)	71% (65-78)	81% (76-86)	72% (65-80)	74% (68-80)	75% (72-79)

### Notes:

Confidence intervals are presented in brackets. CIs have been presented as ranges in the appendix rather than “±”(%) as was done in the report. Any differences in the CIs between the report and appendix are due to rounding.

\* Interpret with caution

\*\* Not reportable

NA – Not applicable (household level variable)

## Impact of Poor Air Quality on Health

Halton	Sex		Age				Municipality				Income Group			Education		
	Male	Female	18-24	25-44	45-64	65+	Burlington	Oakville	Milton	Halton Hills	Low	Middle	High	Post-secondary graduate	Not post-secondary graduate	
Percent of Halton adults aged 18 and over who think that air quality in Halton is poor or very poor																
<b>15%</b> <b>(12-17)</b>	11% (7-14)	18% (15-22)	**	11% (6-15)*	16% (12-20)	19% (14-24)	15% (11-19)	20% (16-25)	**	**	16% (11-22)*	11% (7-16)*	17% (11-23)*	13% (8-18)*	16% (13-19)	
Percent of Halton adults aged 18 and over who think that air quality has gotten worse in the past 5 years																
<b>24%</b> <b>(21-27)</b>	19% (15-23)	28% (24-32)	26% (12-41)*	25% (18-31)	24% (20-29)	23% (18-29)	22% (17-26)	24% (19-28)	37% (27-47)	20% (12-28)*	27% (20-33)	24% (18-29)	21% (14-28)	23% (17-28)	25% (22-29)	
Percent of Halton adults aged 18 and over who think that poor air quality has affected their health or the health of their family																
<b>7%</b> <b>(5-9)</b>	NA		NA				6% (3-8)*	10% (6-13)*	**	**	8% (3-12)*	6% (3-9)*	8% (3-12)*	NA		

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\* Interpret with caution

\*\* Not reportable

NA – Not applicable (household level variable)

## Air Quality Health Index

Halton	Sex		Age				Municipality				Income Group			Education	
	Male	Female	18-24	25-44	45-64	65+	Burlington	Oakville	Milton	Halton Hills	Low	Middle	High	Post-secondary graduate	Not post-secondary graduate
Percent of Halton adults aged 18 and over who are very or somewhat familiar with the AQHI															
<b>60%</b> <b>(56-63)</b>	58% (53-63)	61% (57-66)	23% (9-36)*	58% (50-65)	71% (66-76)	51% (44-57)	66% (60-71)	56% (51-62)	55% (45-65)	59% (49-68)	53% (45-60)	66% (60-72)	71% (64-79)	45% (38-52)	66% (62-69)
Percent of Halton adults aged 18 and over who check the AQHI in the summer															
<b>47%</b> <b>(44-51)</b>	45% (40-51)	49% (44-53)	23% (9-36)*	47% (39-54)	57% (52-62)	35% (29-41)	52% (46-57)	44% (38-50)	44% (34-54)	46% (36-56)	41% (34-49)	53% (46-59)	55% (47-63)	37% (30-43)	51% (47-55)
Percent of Halton adults aged 18 and over who change their activities based on the AQHI															
<b>35%</b> <b>(32-38)</b>	29% (24-34)	40% (36-45)	**	39% (31-46)	40% (35-45)	27% (22-33)	40% (35-46)	31% (25-36)	39% (29-49)	31% (22-40)	30% (24-37)	39% (33-46)	36% (28-44)	27% (21-33)	39% (35-42)

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\* Interpret with caution

\*\* Not reportable

NA – Not applicable (household level variable)

## Energy Use at Home

Halton	Sex		Age				Municipality				Income Group			Education		
	Male	Female	18-24	25-44	45-64	65+	Burlington	Oakville	Milton	Halton Hills	Low	Middle	High	Post-secondary graduate	Not post-secondary graduate	
Percent of Halton adults aged 18 and over who know that alternative energy can be purchased in Halton																
<b>23%</b> <b>(20-26)</b>	20% (16-24)	25% (21-29)	30% (15-45)*	35% (28-42)	21% (17-25)	12% (8-16)*	25% (20-30)	19% (14-23)	36% (26-46)	17% (10-24)*	16% (11-22)*	25% (19-30)	24% (17-31)	20% (14-25)	24% (20-27)	
Percent of Halton adults aged 18 and over who always turn off the lights when leaving a room for 15 minutes or longer																
<b>54%</b> <b>(51-57)</b>	53% (48-59)	55% (50-59)	57% (40-73)	58% (50-65)	53% (48-58)	51% (44-57)	56% (50-61)	51% (45-56)	56% (46-66)	59% (49-68)	54% (47-62)	59% (52-65)	51% (42-59)	52% (45-59)	55% (50-59)	
Percent of households in Halton that dry clothes on a clothesline or rack																
<b>16%</b> <b>(13-18)</b>	NA		NA				13% (9-17)	19% (14-23)	14% (7-21)*	16% (9-23)*	21% (15-27)	12% (7-16)*	7% (3-11)*	NA		

**Notes:**

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\* Interpret with caution

\*\* Not reportable

NA – Not applicable (household level variable)

## Phantom Power

Halton	Sex		Age				Municipality				Income Group			Education		
	Male	Female	18-24	25-44	45-64	65+	Burlington	Oakville	Milton	Halton Hills	Low	Middle	High	Post-secondary graduate	Not post-secondary graduate	
Percent of households in Halton that are taking action to reduce the use of phantom power																
<b>40%</b> <b>(37-43)</b>	NA		NA				37%	39%	51%	42%	38%	46%	41%	NA		
Percent of households in Halton that unplug devices that are not in use to reduce phantom power																
<b>32%</b> <b>(28-35)</b>	NA		NA				29%	31%	43%	31%	31%	37%	30%	NA		
Percent of households in Halton that unplug cell phones when they have charged to reduce phantom power																
<b>11%</b> <b>(9-13)</b>	NA		NA				11%	9%	18%	11%	10%	13%	14%	NA		
Percent of households in Halton that use a power bar to reduce phantom power																
<b>9%</b> <b>(7-11)</b>	NA		NA				7%	10%	10%	10%	**	12%	10%	NA		
Percent of households in Halton that purchase new energy star appliances to reduce phantom power																
<b>5%</b> <b>(3-6)</b>	NA		NA				6%	5%	**	**	**	5%	**	NA		

### Notes:

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\* Interpret with caution

\*\* Not reportable

NA – Not applicable (household level variable)

## Energy Use on the Road

Halton	Sex		Age				Municipality				Income Group			Education	
	Male	Female	18-24	25-44	45-64	65+	Burlington	Oakville	Milton	Halton Hills	Low	Middle	High	Post-secondary graduate	Not post-secondary graduate
Percent of drivers aged 18 and over who reported carpooling within the past month															
<b>36%</b> <b>(33-40)</b>	28%	43%	79%	52%	32%	19%	34%	37%	36%	40%	27%	41%	37%	34%	37%
	(24-33)	(38-48)	(63-94)	(44-59)	(27-37)	(14-25)	(29-40)	(32-43)	(26-46)	(30-49)	(20-34)	(35-48)	(29-45)	(26-41)	(33-41)
Percent of drivers aged 18 and over who checked their tire pressure or had their tire pressure checked within the past month															
<b>71%</b> <b>(68-74)</b>	76%	66%	56%	72%	75%	67%	72%	70%	81%	61%	66%	77%	71%	68%	72%
	(72-81)	(61-71)	(37-75)*	(65-78)	(70-79)	(60-73)	(67-77)	(65-76)	(73-89)	(51-70)	(58-74)	(71-83)	(63-78)	(60-75)	(69-76)
Percent of drivers aged 18 and over who never let their vehicle idle for one minute longer during the past month															
<b>55%</b> <b>(51-59)</b>	54%	56%	29%	42%	57%	70%	59%	52%	57%	50%	65%	52%	45%	53%	55%
	(49-60)	(51-61)	(12-46)*	(34-49)	(47-68)	(64-77)	(53-65)	(46-58)	(47-68)	(39-60)	(57-73)	(45-59)	(37-53)	(45-61)	(51-59)

### Notes:

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\* Interpret with caution

\*\* Not reportable

NA – Not applicable (household level variable)

## Active Transportation

Halton	Sex		Age				Municipality				Income Group			Education	
	Male	Female	18-24	25-44	45-64	65+	Burlington	Oakville	Milton	Halton Hills	Low	Middle	High	Post-secondary graduate	Not post-secondary graduate
Percent of adults aged 18 and over who used active transportation in the past 12 months															
<b>52%</b> <b>(48-55)</b>	52%	52%	79%	56%	51%	42%	50%	52%	66%	43%	49%	54%	49%	50%	53%
	(46-57)	(47-56)	(66-93)	(49-63)	(46-56)	(36-48)	(44-55)	(46-57)	(56-76)	(34-53)	(42-57)	(47-60)	(40-57)	(43-57)	(49-57)

### Notes:

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\* Interpret with caution

\*\* Not reportable

NA – Not applicable (household level variable)

## Burning Wood

Halton	Sex		Age				Municipality				Income Group			Education		
	Male	Female	18-24	25-44	45-64	65+	Burlington	Oakville	Milton	Halton Hills	Low	Middle	High	Post-secondary graduate	Not post-secondary graduate	
Percent of households in Halton that burn wood inside the home during the winter																
<b>17%</b> <b>(14-20)</b>	NA		NA				16%	18%	17%	17%	12%	20%	25%	NA		
							(12-20)	(14-22)	(9-24)*	(9-24)*	(7-16)*	(15-25)	(18-33)			
Percent of households in Halton that burn wood outside the home during the summer																
<b>12%</b> <b>(10-15)</b>	NA		NA				9%	11%	14%	26%	7%	16%	19%	NA		
							(6-12)*	(7-14)	(7-21)*	(17-34)	(3-11)*	(11-20)	(13-25)*			

**Notes:**

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\* Interpret with caution

\*\* Not reportable

