



# Behavioural Risk Factors

*The following chapter outlines the prevalence of various behavioural risk factors, such as tobacco and alcohol use, nutrition, physical activity and sun safety, in the Huron County population.*

All of the risk factors examined here have established associations with chronic disease. Typical prevention strategies often aim to reduce (or increase) the prevalence of these risk factors; however, we know that social and economic constraints influence health behaviour and dictate which choices are available. To be truly effective in preventing chronic disease caused by behavioural risk factors, the upstream socioeconomic factors which contribute to the adoption of these behaviours need to be understood and addressed.<sup>1</sup>

## Tobacco

The harmful effects of smoking have been well established. In Canada, smoking is the number one preventable cause of death.<sup>2</sup> Active smoking significantly reduces life expectancy, with the majority of excess mortality attributable to lung cancer, chronic obstructive lung disease and ischemic heart disease.<sup>2-3</sup> Active smoking has also been implicated as a cause of many other cancers, including cancers of the oral and nasal cavity, pharynx, larynx, oesophagus, pancreas, stomach, liver, kidney, urinary bladder, renal pelvis and cervix.<sup>4</sup> Also of public health importance is exposure to secondhand smoke, which is associated with sudden infant death syndrome, reduced birth weight, middle ear disease, coughing, breathlessness and lower levels of lung function in children. In adults, secondhand smoke exposure increases the risk of lung cancer and coronary heart disease.<sup>5</sup>

## Smoking Status

The prevalence of smoking has remained constant over the past few years in Huron County. In 2006, 20.3% (95% CI 17.4-23.2) of adults aged

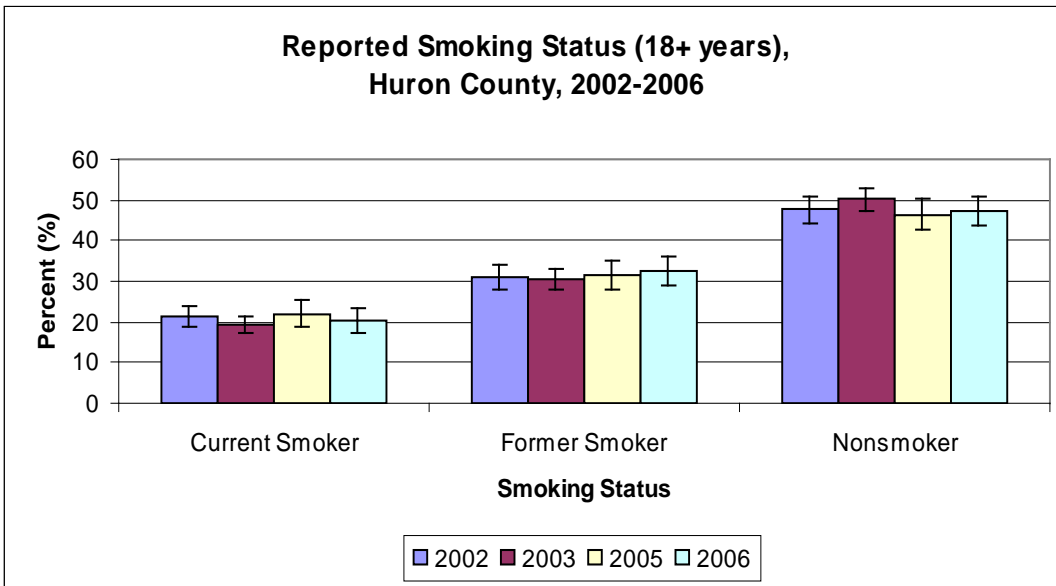
18 years and older reported being a current smoker compared to 21.3% (95% CI 18.6-24.0) in 2002 (**Figure 1**). While prevalence of smoking remained constant, it is encouraging to see that the proportion of former smokers is beginning to increase. Men were significantly more likely to be current smokers than women (24.4%, 95% CI 19.5-29.3 compared to 17.4%, 95% CI 13.8-21.0 in 2006). Smoking status also varied by age and education level, with the proportion of current smokers decreasing with increasing age ( $X^2=36.07$ ,  $p<0.0001$ ) and education level ( $X^2=46.31$ ,  $p<0.0001$ ). In 2006, the percentage of current smokers was more than doubled in individuals with less than a high school diploma when compared to individuals who were college or university graduates (28.5%, 95% CI 21.8-35.3 versus 13.1%, 95% CI 9.2-17.0).

## Smoke-Free Homes

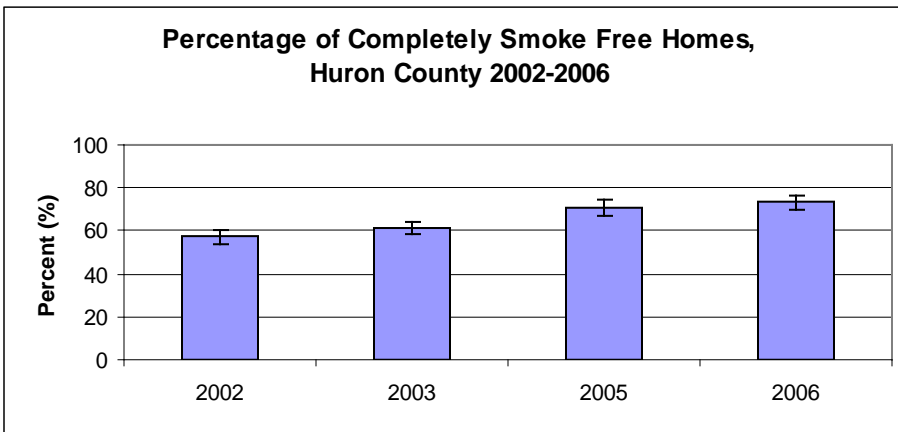
While the prevalence of smoking has remained constant, the proportion of smoke-free homes in Huron County has significantly increased from 2002 to 2006 ( $X^2=59.09$ ,  $p<0.0001$ ) (**Figure 2**). Smoke-free homes are defined as homes where neither household members nor visitors are permitted to smoke in the home. In 2006, 73.5% (95% CI 70.2-76.7) of homes were completely smoke-free, up from 57.3% (95% CI 54.1-60.6) in 2002.

## Secondhand Smoke

Less than 10% of non-smokers in Huron County (9.3%\*, 95% CI 5.7-13.0) reported being exposed to secondhand smoke in the past month in public places, such as bars, restaurants, bowling alleys, etc.<sup>6</sup> This does not differ significantly from Ontario.



**Figure 1.** The smoking status of Huron County residents aged 18+ years from 2002-2006. Current smokers are defined as those who have smoked at least 100 cigarettes in their lifetime and currently smoke cigarettes daily or occasionally; former smokers have smoked at least 100 cigarettes in their life but currently do not smoke at all (RRFSS). Source: Rapid Risk Factor Surveillance System (RRFSS) 2002 (n=888), 2003 (n=1207), 2005 (n=622) and 2006 (n=717).



**Figure 2.** The percentage of completely smoke free homes in Huron County. Source: Rapid Risk Factor Surveillance System (RRFSS) 2002 (n=886), 2003 (n=1193), 2005 (n=614) and 2006 (n=705).

## Alcohol

Like tobacco, alcohol is associated with a number of health problems, which include various cancers, hypertension, liver cirrhosis, congenital abnormalities and fetal alcohol spectrum disorders and depression.<sup>7</sup>

### Alcohol Use

Alcohol consumption has been dichotomized into low risk and high risk consumption patterns by the Centre for Addiction and Mental Health

(CAMH) and the University of Toronto.<sup>8</sup>

Low Risk:

- Women who consume less than 9 drinks/week and no more than 2 per day
- Men who consume less than 14 drinks/week and no more than 2 per day
- Pregnant women who consume 0 drinks/week

High Risk:

- Women and men who consume more alcoholic drinks than outlined in the low risk classification

Over half of Huron County residents aged 20+ years

\* High sampling variability. This estimate should be interpreted with caution.

(52.5%, 95% CI 47.6-57.5) were classified as having high risk alcohol consumption in 2005.<sup>6</sup> This is consistent with the prevalence of high risk alcohol consumption in Ontario.

## Binge Drinking

Binge drinking, also known as heavy drinking episodes, is classified as consuming 5 or more drinks on at least one occasion.<sup>8</sup>

Heavy drinking occasions can increase the risk of coronary heart disease (CHD), sudden cardiac death and injury, particularly traffic injuries related to impaired driving.<sup>9</sup> In addition, because many alcohol-related deaths involve relatively young individuals, alcohol use contributes to significant potential years of life lost (PYLL). Higher volume of alcohol consumption is also associated with increased symptoms of depression.<sup>10</sup>

In 2005, 82.9% (95% CI 79.3-86.5) of Huron County adults aged 20 years or older reported having at least one drink over the past 12 months.<sup>6</sup> Of those, 48.0% (95% CI 42.3-53.8) reported heavy drinking, which was not significantly different from Ontario. Among youth aged 12-19 years, 49.1%\* (95% CI 31.4-66.8) reported having at least one drink over the past 12 months and of those, 78.9% (95% CI 61.4-96.4) had participated in binge drinking over the past 12 months. This is significantly higher than the Ontario average.

## Drinking and Driving

The Rapid Risk Factor Surveillance System defines drinking and driving as driving a motor vehicle (includes cars, vans, trucks and

motorcycles) when two or more drinks have been consumed in the hour before driving.

The largest number of alcohol-related deaths is due to impaired-driving collisions.<sup>11</sup>

In 2003, 4.9% (95% CI 3.6-6.2) of Huron County residents aged 18 years and older reported drinking and driving.<sup>12</sup> Males were significantly more likely to drink and drive than females ( $X^2=25.94$ ,  $p<0.0001$ ).

## Physical Activity

Various methods are used to define and measure physical activity. The Canadian Community Health Survey (CCHS) uses estimated energy expenditures, based on the duration and frequency of various leisure activities within the past 3 months, to categorize individuals as active, moderately active and inactive. The energy expenditure cut-offs are shown below in **Table 1**.

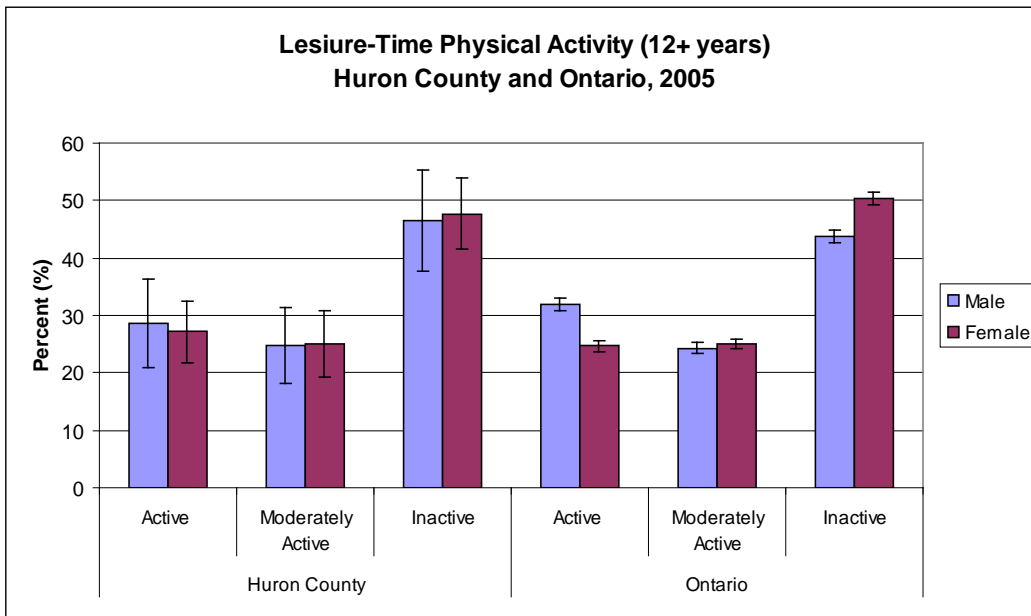
Physical activity reduces the risk of cardiovascular disease, some cancers (particularly breast, colon and rectal cancers) and type 2 diabetes.<sup>13</sup> In addition, participating in physical activity can improve musculoskeletal health (including osteoporosis and arthritis), control body weight and reduce symptoms of depression.<sup>13</sup>

In 2005, 47.1% (95% CI 41.8-52.5) of Huron County residents were classified as inactive in their leisure time, which did not differ from the province as a whole. Just over a quarter were classified as active (27.9%, 95% CI 23.2-32.6). Males typically tend to be more physically active than females; however, in Huron County, physical activity indices did not differ between genders, with 28.6% (95% CI 21.0-36.3) of males being classified as active compared to 27.2% (95% CI 21.8-32.6) of females (**Figure 3**).

**Table 1.** Physical Activity Index derived from leisure-time activities (Source: Canadian Community Health Survey, Statistics Canada).

Activity Index	Energy Expenditure (kcal/kg/day)	Health Outcome
Active	≥ 3.0	Cardiovascular health benefit
Moderately Active	1.5 - 2.9	May experience some health benefits but little cardiovascular benefit
Inactive	< 1.5	At highest risk for obesity and chronic disease

\* High sampling variability. This estimate should be interpreted with caution.



**Figure 3.** Percentage of respondents aged 12 and older who were classified as active, moderately active and inactive in both Huron County (n=562) and Ontario (n=38,759). Source: Canadian Community Health Survey 3.1 (2005), Statistics Canada, Share File, Knowledge Management and Reporting Branch, Ontario MOHLTC.

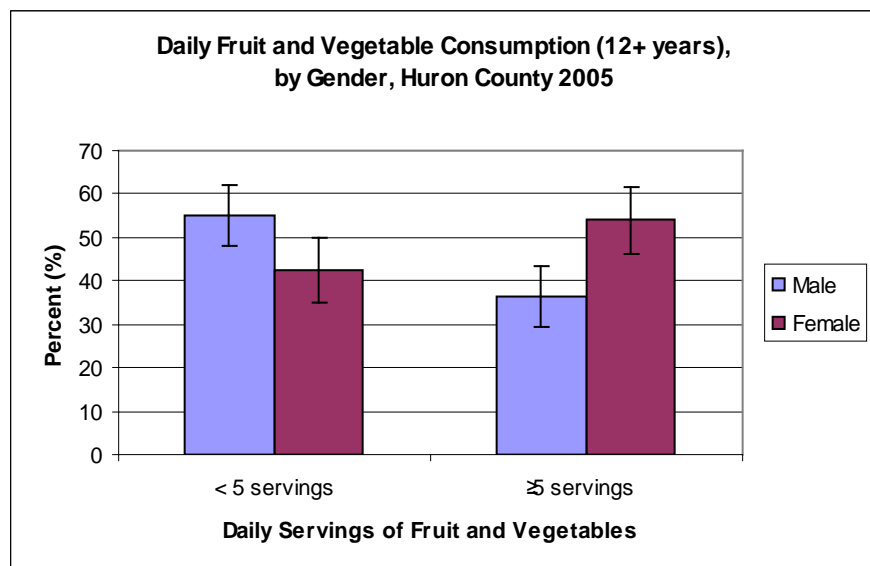
## Fruit and Vegetable Consumption

As part of Canada’s Food Guide to Healthy Eating, it is recommended that people aged 4 years and older eat 5 to 10 servings of fruits and vegetables each day. Fruit and vegetable consumption lowers blood pressure and the risk of cardiovascular disease, as well as some cancers.<sup>14</sup> It is estimated that one in ten cancers in western populations are due to an insufficient intake of fruits and vegetables.<sup>15</sup>

The proportion of Huron County residents consuming 5 or more servings of fruits and vegetables a day does not significantly differ

from Ontario. In 2005, 45.2% (95% CI 39.6-50.7) of the Huron County population aged 12 years and older ate at least the daily recommended amount of fruit and vegetables (**Figure 4**). Youth (age 12-19 years) were less likely to eat at least 5 servings of fruits and vegetables per day compared to adults, although this difference was not significant. Women, however, were significantly more likely to reach the recommended target, with 54.1% (95% CI 46.4-61.8) consuming at least 5 servings of fruit and vegetables per day compared to 36.2% (95% CI 29.3-43.2) of men. This finding is corroborated by prior research.<sup>16</sup>

**Figure 4.** Percentage of respondents aged 12 and older who consumed less than or greater than or equal to 5 daily servings of fruits and vegetables by gender (n=576). Note: As not stated responses were greater than 5%, missing responses were included in the denominator. Source: Canadian Community Health Survey 3.1 (2005), Statistics Canada, Share File, Knowledge Management and Reporting Branch, Ontario MOHLTC.



# Body Mass Index (BMI)

The Body Mass Index (BMI) is an index of body weight (kg) to height (m<sup>2</sup>). Body Mass Index is an indicator of relative health risk associated with underweight, overweight and obesity compared to those classified as normal weight. The classifications and associated risks are shown below in **Table 2**. BMI as an indicator of risk may have limitations for adults aged 65 years and older as some research has shown that the risk of morbidity and mortality in seniors with BMIs in the overweight range is less than that for younger and middle-aged adults.<sup>17</sup> Limitations may also exist for young adults who have not attained full growth, adults with naturally very lean or

Classification	BMI Category (kg/m <sup>2</sup> )	Risk of Developing
Underweight	< 18.5	Increased
Normal Weight	18.5 - 24.9	Least
Overweight	25.0 - 29.9	Increased
Obese	> 30.0	High

**Table 2.** BMI Classification for Adults (18+years). Note: The BMI classification is not for use with pregnant and lactating women. Source: Canadian Guidelines for Body Weight Classification in Adults. Health Canada, 2003.

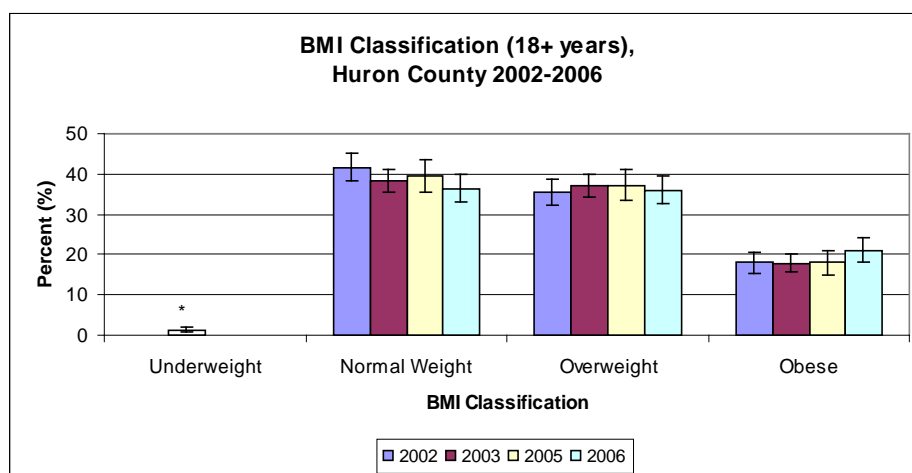
very muscular body builds and certain ethnic or racial groups. In addition, caution should be paid as BMIs are based on self-reported height and weight which tends to underestimate BMI. This is because individuals are likely to underestimate their weight and overestimate their height.<sup>18</sup>

The prevalence of overweight and obesity in Canada has increased over the past 20 years.<sup>17</sup> Underweight is associated with undernutrition, osteoporosis, respiratory disease and eating disorders, while overweight is associated with type II diabetes, hypertension, coronary heart disease, gallbladder disease, and certain cancers (among other health problems).<sup>17</sup>

In Huron County, the prevalence of overweight and obesity has remained stable over the past 5 years (**Figure 5**). In 2006, 36.5% (95% CI 33.0-40.0) of respondents were classified as having a normal weight; 36.0% (95% CI 32.5-39.5) were classified as overweight; and 21.1% (95% CI 18.1-24.1) as obese. Men were significantly more likely to be overweight and obese than women for all years of data collected. In 2006, 46.9% of men were classified as overweight compared to 31.5% of women and 24.0% obese compared to 20.8% ( $X^2=25.11$ ,  $p<0.0001$ ).

Compared to Ontario, Huron County has a significantly higher proportion of individuals classified as obese.<sup>6</sup> In a 2005 Canada-wide survey, 22.5% (95% CI 18.3-26.7) of Huron County residents were categorized as obese, compared to 15.5% of Ontarians (95% CI 14.9-16.1).<sup>6</sup>

**Figure 5.** Percentage of respondents classified as underweight, normal weight, overweight and obese in Huron County according to the Canadian Guidelines for Body Weight Classifications in adults (18+ years). All pregnant women were excluded from analysis. Proportions of individuals underweight could not be released for 2002, 2005



and 2006 due to small numbers or extremely high variability. \* Indicates high sampling variability - estimate should be interpreted with caution. Source: Rapid Risk Factor Surveillance System (RRFSS) 2002 (n=586), 2003 (n=1136), 2005 (n=842) and 2006 (n=711).

## Youth

Obesity in children increases the risk of developing heart disease and other chronic diseases later in life.<sup>19</sup> International cut off points for BMI for overweight and obesity have been developed for children aged 2-18 years, which are currently used by Statistics Canada. In Huron County, 72.0% (95% CI 53.9-90.1) of youth aged 12-17 years report a normal weight.<sup>6</sup>

## Sun Safety

Ultraviolet radiation produced by the sun causes skin cancer.<sup>20</sup> Skin cancer is the most common cancer in Ontario, accounting for approximately a third of all diagnosed cancers.<sup>21</sup>

Severe, repeated sunburns as children, and also as adults, can increase the risk of skin cancer.<sup>22</sup> In Huron County, 34.4% (95% CI 30.1-38.7) of adults (18 years+) reported being sunburned in the past 12 months.<sup>23</sup>

Reducing exposure to harmful ultraviolet radiation by avoiding the sun at peak hours during the summer months, wearing sunscreen and/or wearing protective clothing and sunglasses can reduce the risk of developing skin cancer. In the summer of 2006 (May – September), Huron County residents were asked about protective measures they take when in the sun. Only 33.8% (95% CI 28.4-39.2) of adults responded that they always or often avoid sun during peak hours of the day and 30.6% (95% CI 25.4-35.8) always or often wear sunscreen.<sup>24</sup> Over half of Huron County residents wear sunglasses with UV protection (57.6%, 95% CI 52.0-63.2) and 47.4% (95% CI 41.7-53.1) wear protective clothing when in the sun.

Artificial tanning equipment (or tanning beds) also emits ultraviolet radiation. In 2006, 8.5% (95% CI 6.5-10.6) of Huron County residents reported using artificial tanning equipment over the past 12 months. Women were significantly more likely to use this equipment compared to men ( $X^2=20.79$ ,  $p<0.0001$ ) and those 18-44 years of age compared to all other age groups ( $X^2=18.13$ ,  $p<0.0001$ ).

## Self-Perceived Life Stress

Stress can be caused by acute stressors such as major life events or by chronic stressors which have less obvious beginnings and develop and persist subtly over time.<sup>25</sup> Taking on too many tasks, financial burdens and problems with relationships and children are common causes of stress.<sup>25</sup>

Stress impacts health in a number of ways. Stress has been found to be related to psychological distress and negative changes in health behaviours in the short term and increased risk for developing chronic conditions, such as arthritis, back problems, chronic bronchitis, ulcers and heart disease, in the long term.<sup>25</sup>

In 2005, 18.0% (95% CI 14.3-21.8) of Huron County residents reported that most days were “quite a bit” or “extremely” stressful.<sup>6</sup> This was significantly lower than the provincial average of 22.7% (95% CI 22.1-23.4). There was no significant difference in stress levels between genders, unlike Ontario as a whole, where women reported significantly more stressful days than men. While Huron County men appear to report similar stress levels to Ontario men, Huron County women report significantly lower stress level to Ontario women (17.1%, 95% CI 12.6-21.5 compared to 23.8%, 95% CI 22.9-24.8). This could be due to the strong sense of community and support that is typical of rural communities.

# Conclusions

While the prevalence of current smokers has remained relatively constant over the past five years, the proportion of completely smoke-free homes has increased in Huron County. Consumption patterns (number of cigarettes smoked per day) and changes in attitudes towards smoking and smoking restrictions should continue to be examined to monitor progress in tobacco use prevention. More than half of the Huron County population consumes alcohol in a high risk manner and youth in Huron County are much more likely to binge drink than the average Ontario youth. Alcohol use is an issue that continues to need to be addressed.

Huron County also has a higher proportion of individuals classified as obese when compared to Ontario, with approximately one in five being obese. Despite this, physical activity levels and fruit consumption patterns appear to be similar to the province. Further research into factors which may be contributing to this higher level of obesity, which may include the rural built environment, should be explored.

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