



## Report 4: Sun Safety

June 2017

### Summary

- The 2016 Oxford Health Matters Survey (OHMS) was conducted for Oxford County Public Health (Public Health) to inform public health program development in new and emerging areas based on the needs and concerns of the community.
- The sun naturally produces ultraviolet (UV) radiation. Unprotected exposure to too much UV radiation can lead to health problems such as skin cancer and death.<sup>1</sup> People that work outdoors, including farmers, are at higher risk of developing skin cancer.<sup>2</sup> From 2010 to 2012, the rates of new cases of malignant melanoma (a type of skin cancer) were higher in Oxford County than Ontario.<sup>3</sup> These health effects may also be caused by overexposure to artificial sources of UV radiation such as tanning beds and sun lamps.
- Over one-third (43.6%) of residents reported that they had a sunburn in the last 12 months. Sunburns can greatly increase the risk of developing skin cancer. For example, having five blistering sunburns in childhood can increase the risk of developing melanoma by 80%.<sup>4</sup> Some sub-groups of residents were more likely to than others to report that they had a sunburn. This included younger (18 to 34 years) and middle-aged (35 to 64 years) residents, residents with post-secondary education, residents with a household income of \$40,000 or more and residents who were employed or self-employed.
- Over half (64.0%) of residents sometimes, rarely or never used sunscreen in the last 12 months. Sunscreen use is important because it protects the skin against the health effects of UV radiation. Males, older adults (65 years and older), residents with a household income of less than \$40,000 and residents with less than post-secondary education were less likely to use sunscreen regularly.

## Background

The sun is a natural source of ultraviolet (UV) radiation, which is an invisible type of energy that can pass through the ozone layer and penetrate the skin. UV radiation can also be found in artificial sources such as tanning beds, sunlamps, black lights, welding equipment and lasers.<sup>1</sup> While some UV exposure can be helpful, too much exposure to UV radiation can lead to cell damage including sunburns and premature skin aging which can lead to serious health problems such as eye damage and skin cancer. In 2011, there were two deaths from malignant melanoma (a type of skin cancer) in Oxford County.<sup>5</sup> People that work outdoors, including farmers, and people with fair skin are at higher risk of developing skin cancer.<sup>2</sup> Public Health has a responsibility to promote healthy behaviours, including sun safety, in order to reduce preventable diseases.

There are a number of ways to protect the skin and eyes against the health effects of UV radiation. Skin protection is recommended between the hours of 11 a.m. and 3 p.m (peak hours) from April to September and if the UV index is 3 or higher (i.e., moderate risk or higher).<sup>6</sup> Based on Cancer Care Ontario's recommendations, protective measures should include finding shade, covering up, using sunscreen to prevent sunburns and avoiding deliberate tanning and tanning beds.<sup>6</sup> It is also important to protect the eyes by wearing sunglasses or glasses with UV-protective lenses and wearing a wide-brimmed hat. Checking the UV index before spending time outdoors and planning outdoor activities outside of peak hours are another way to avoid the negative health effects of UV radiation while enjoy the sun safely.

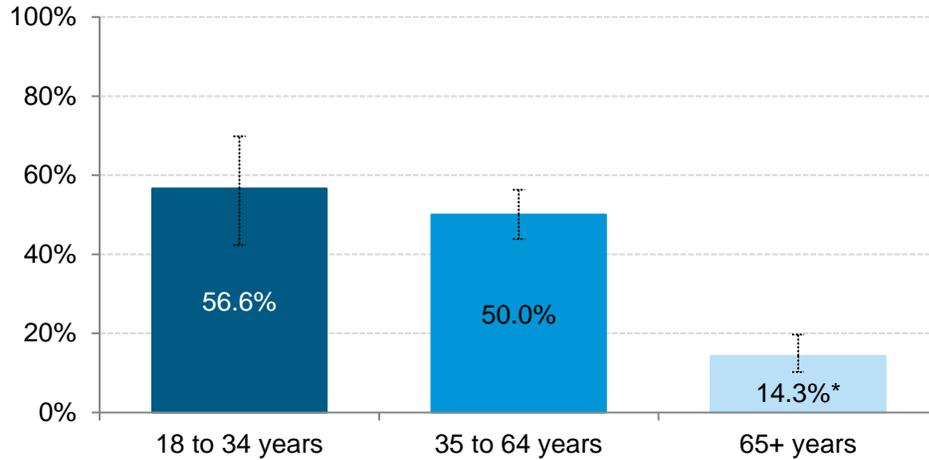
Please see methods in the Data Notes for more information about the survey, sample, and how the numbers are calculated and displayed.

## Results

### Sunburns

Over one-third (43.6%) of residents reported that they had a sunburn in the last 12 months (Appendix, Table 1). Some sub-groups of residents were more likely to report that they had a sunburn than others. Residents 18 to 34 years (56.6%) and residents 35 to 64 years of age (50.0%) were more likely to report that they had a sunburn than residents aged 65 years and older (14.3%) (Figure 1; Appendix, Table 2).

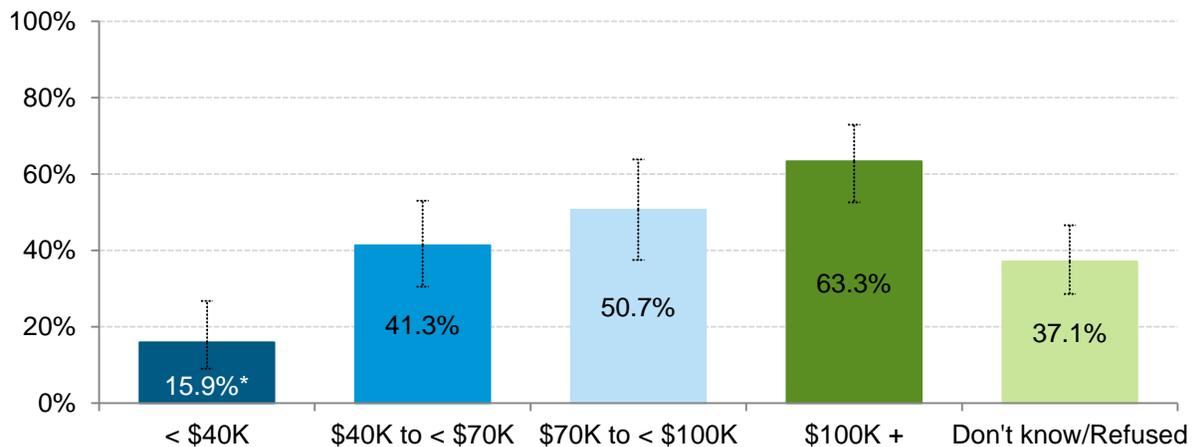
**Figure 1. Had a sunburn in the last 12 months by age group, Oxford County, 2016**



\* This per cent should be used with caution due to its variability.

Higher household incomes were associated with a higher proportion of residents reporting that they had a sunburn in the last 12 months. Residents with household incomes of \$40,000 to \$100,000 or more were more likely to report that they had a sunburn than residents with a household income of less than \$40,000 (15.9%) (Figure 2; Appendix, Table 3).

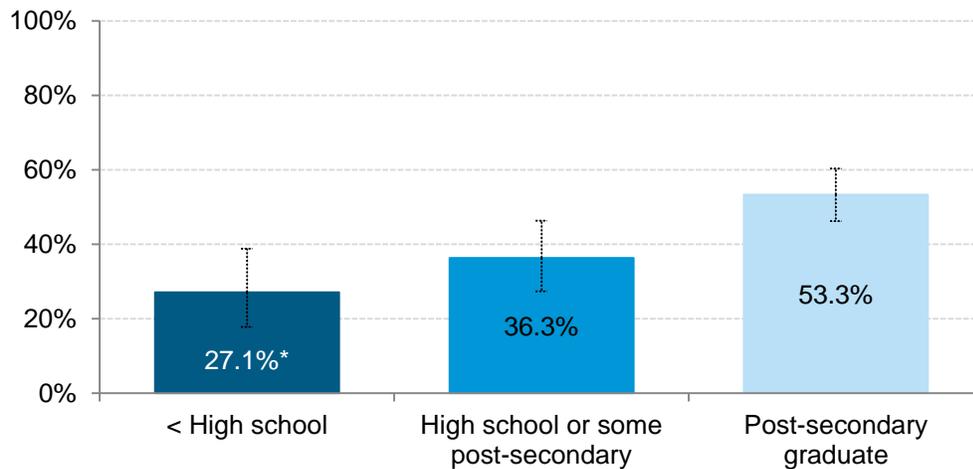
**Figure 2. Had a sunburn in the last 12 months by household income, Oxford County, 2016**



\* This per cent should be used with caution due to its variability.

Residents with post-secondary education (53.3%) were more likely to report that they had a sunburn than residents with less than high school education (27.1%) (Figure 3; Appendix, Table 4).

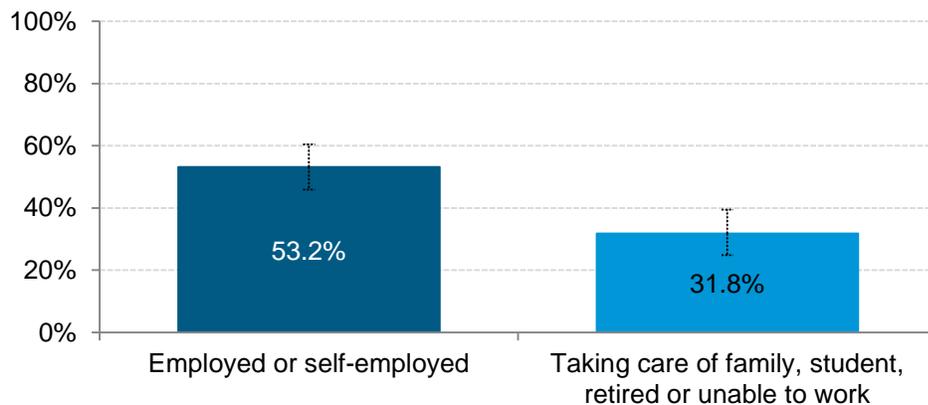
**Figure 3. Had a sunburn in the last 12 months by education level, Oxford County, 2016**



\* This per cent should be used with caution due to its variability.

Residents who were employed or self-employed (53.2%) were more likely to report that they had a sunburn than residents who were taking care of family, students, retired or unable to work (31.8%) (Figure 4; Appendix, Table 5).

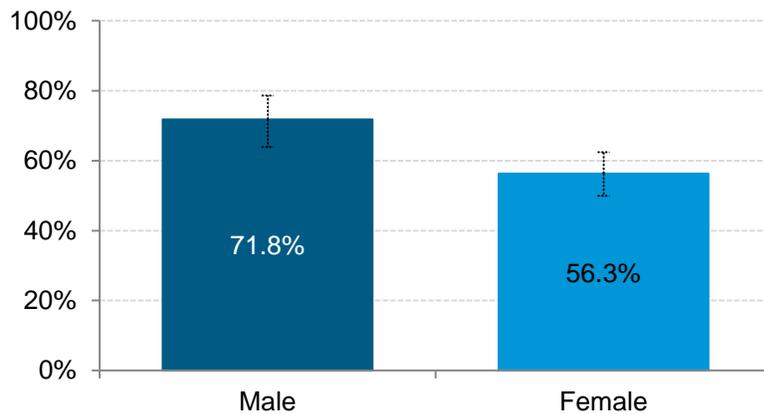
**Figure 4. Had a sunburn in the last 12 months by employment status, Oxford County, 2016**



## Sunscreen use

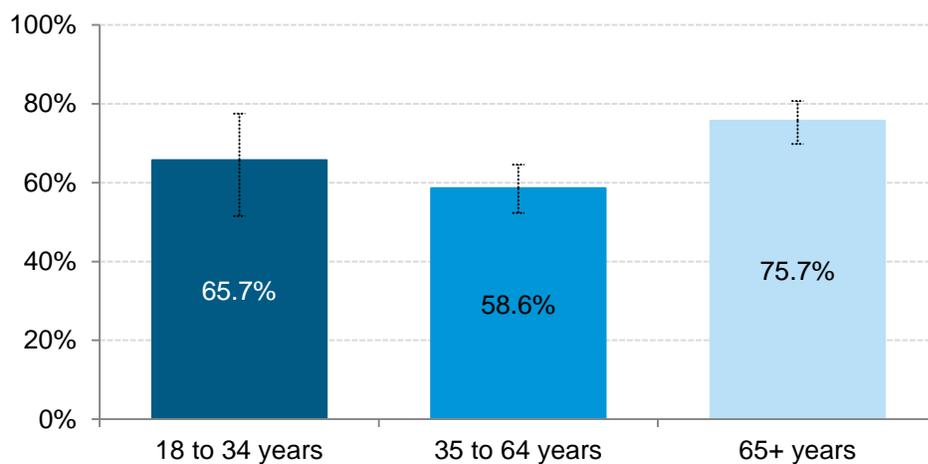
Over half (64.0%) of residents sometimes, rarely or never used sunscreen in the last 12 months (Appendix, Table 1). Males (71.8%) were more likely than females (56.3%) to not use sunscreen regularly (Figure 5; Appendix, Table 1).

**Figure 5. Sometimes, rarely or never used sunscreen in the last 12 months by sex, Oxford County, 2016**



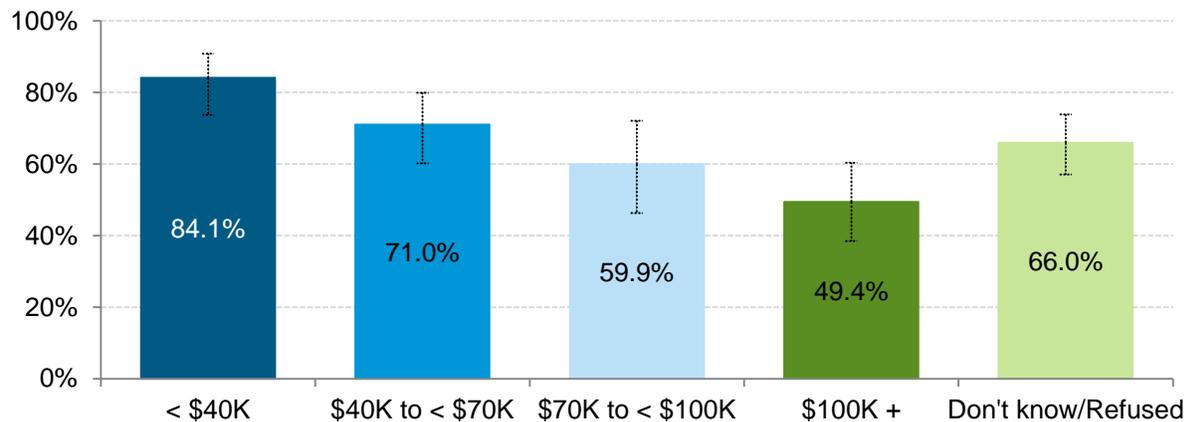
Residents aged 65 years and older were more likely than residents aged 35 to 64 years to not use sunscreen regularly (75.7% versus 58.6%) (Figure 6; Appendix, Table 2).

**Figure 6. Sometimes, rarely or never used sunscreen in the last 12 months by age group, Oxford County, 2016**



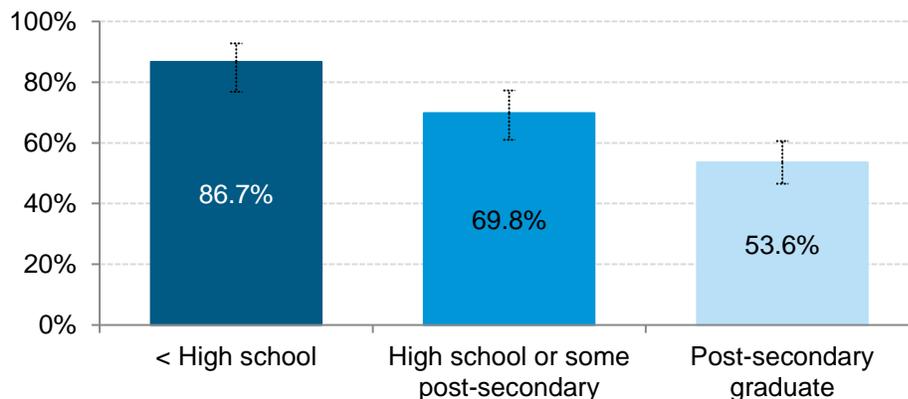
Residents with a household income of less than \$40,000 (84.1%) were more likely to not use sunscreen regularly than residents with a household income of \$70,000 to less than \$100,000 (59.9%) and residents with a household income of \$100,000 or more (49.4%) (Figure 7; Appendix, Table 3).

**Figure 7. Sometimes, rarely or never used sunscreen in the last 12 months by household income, Oxford County, 2016**



Residents with less than high school education (86.7%) and residents with high school or some post-secondary education (69.8%) were more likely to not use sunscreen regularly than residents with post-secondary education (53.6%) (Figure 8; Appendix, Table 4).

**Figure 8. Sometimes, rarely or never used sunscreen in the last 12 months by education level, Oxford County, 2016**



## Considerations

Many residents (43.6%) reported that they had been sunburned in the last 12 months. One way to prevent a sunburn and other damage to the skin from UV radiation is to use sunscreen; however, 64.0% of residents in Oxford County did not regularly use sunscreen in the last 12 months. Residents may benefit from initiatives that promote the use of sunscreen and sun-safe behaviours in order to prevent negative health outcomes such as sunburns. In terms of messaging that promotes the use of sunscreen specifically, the sub-groups of residents that may benefit from targeted initiatives include males, older adults (65 years and older), residents with lower household income and residents with lower education.

Interestingly, residents with higher household incomes were more likely to report using sunscreen, but were also more likely to report that they had been sunburned. This may be due to differences in leisure time available to residents with higher household incomes (e.g., have more time to spend outdoors) or frequency of travel and the travel destinations (e.g., vacations to places with higher UV radiation). This may also be related to fashion trends over time. Sun tanning became popular among the upper-class in 1923 after it was popularized by the designer and fashion icon, Coco Chanel. Sun tanning continues to be associated with luxury among many high income people in North America, which unnecessarily increases the risk of developing skin cancer and death.

## Appendix: Tables

**Table 1. Reported sunburns and sunscreen use, by sex, Oxford County, 2016**

Indicator	Responses	Per cent of residents (95% CI)		
		Overall	Male	Female
Had a sunburn in the last 12 months	Yes	43.6% (38.5%-48.9%)	46.0% (38.0%-54.3%)	41.2% (35.1%-47.7%)
	No	56.4% (51.1%-61.5%)	54.0% (45.7%-62.0%)	58.8% (52.3%-64.9%)
Sometimes, rarely or never used sunscreen in the last 12 months	Yes	64.0% (58.9%-68.7%)	71.8%‡ (63.9%-78.6%)	56.3%‡ (50.0%-62.4%)
	No	36.0% (31.3%-41.1%)	28.2%‡ (21.4%-36.1%)	43.7%‡ (37.6%-50.0%)

‡ Statistically significant difference between groups based on a 95% confidence interval.

**Table 2. Reported sunburns and sunscreen use, by age group, Oxford County, 2016**

Indicator	Responses	Per cent of residents (95% CI)			
		Overall	18 to 34 years	35 to 64 years	65+ years
Had a sunburn in the last 12 months	Yes	43.7% (38.6%-49.0%)	56.6%‡ (42.3%-69.8%)	50.0%† (43.8%-56.3%)	14.3%*‡† (10.2%-19.7%)
	No	56.3% (51.0%-61.4%)	43.4%‡ (30.2%-57.7%)	50.0%† (43.7%-56.2%)	85.7%‡† (80.3%-89.8%)
Sometimes, rarely or never used sunscreen in the last 12 months	Yes	64.4% (59.3%-69.1%)	65.7% (51.5%-77.5%)	58.6%‡ (52.3%-64.6%)	75.7%‡ (69.8%-80.7%)
	No	35.6% (30.9%-40.7%)	34.3%* (22.5%-48.5%)	41.4%‡ (35.4%-47.7%)	24.3%‡ (19.3%-30.2%)

\* High variability results, interpret with caution. ‡, † Statistically significant difference between groups based on a 95% confidence interval.

**Table 3. Reported sunburns and sunscreen use, by household income, Oxford County, 2016**

Indicator	Responses	Per cent of residents (95% CI)					
		Overall	<\$40K	\$40K to < \$70K	\$70K to < \$100K	\$100K +	Don't know/ Refused
Had a sunburn in the last 12 months	Yes	43.6% (38.5%-48.9%)	15.9%*†‡§ (9.0%-26.7%)	41.3%‡ (30.5%-53.0%)	50.7%† (37.5%-63.8%)	63.3%§¶ (52.6%-72.9%)	37.1%¶ (28.6%-46.6%)
	No	56.4% (51.1%-61.5%)	84.1%†‡§ (73.3%-91.0%)	58.7%‡ (47.0%-69.5%)	49.3%† (36.2%-62.5%)	36.7%§¶ (27.1%-47.4%)	62.9%¶ (53.4%-71.4%)
Sometimes, rarely or never used sunscreen in the last 12 months	Yes	64.0% (58.9%-68.7%)	84.1%†† (73.7%-90.9%)	71.0% (60.2%-79.9%)	59.9%‡ (46.3%-72.1%)	49.4%† (38.5%-60.4%)	66.0% (57.1%-73.9%)
	No	36.0% (31.3%-41.1%)	15.9%*†† (9.1%-26.3%)	29.0%* (20.1%-39.8%)	40.1%*‡ (27.9%-53.7%)	50.6%† (39.6%-61.5%)	34.0% (26.1%-42.9%)

\* High variability results, interpret with caution. ‡, †, §, ¶ Statistically significant difference between groups based on a 95% confidence interval.

**Table 4. Reported sunburns and sunscreen use, by education level, Oxford County, 2016**

Indicator	Responses	Per cent of residents (95% CI)			
		Overall	< High school	High school or some post- secondary	Post-secondary graduate
Had a sunburn in the last 12 months	Yes	43.7% (38.6%-49.0%)	27.1%*‡ (17.8%-38.8%)	36.3% (27.4%-46.3%)	53.3%‡ (46.2%-60.3%)
	No	56.3% (51.0%-61.4%)	72.9%‡ (61.2%-82.2%)	63.7% (53.7%-72.6%)	46.7%‡ (39.7%-53.8%)
Sometimes, rarely or never used sunscreen in the last 12 months	Yes	63.8% (58.7%-68.5%)	86.7%‡ (76.8%-92.8%)	69.8%† (61.0%-77.3%)	53.6%†† (46.5%-60.6%)
	No	36.2% (31.5%-41.3%)	13.3%*‡ (7.2%-23.2%)	30.2%† (22.7%-39.0%)	46.4%†† (39.4%-53.5%)

\* High variability results, interpret with caution. ‡, † Statistically significant difference between groups based on a 95% confidence interval.

**Table 5. Reported sunburns and sunscreen use, by employment status, Oxford County, 2016**

Indicator	Responses	Per cent of residents (95% CI)		
		Overall	Employed or self-employed	Taking care of family, student, retired or unable to work
Had a sunburn in the last 12 months	Yes	43.7% (38.6%-49.0%)	53.2%‡ (45.9%-60.4%)	31.8%‡ (24.9%-39.5%)
	No	56.3% (51.0%-61.4%)	46.8%‡ (39.6%-54.1%)	68.2%‡ (60.5%-75.1%)
Sometimes, rarely or never used sunscreen in the last 12 months	Yes	63.9% (58.9%-68.7%)	58.9% (51.6%-65.7%)	70.5% (63.3%-76.9%)
	No	36.1% (31.3%-41.1%)	41.1% (34.3%-48.4%)	29.5% (23.1%-36.7%)

‡ Statistically significant difference between groups based on a 95% confidence interval.

**Table 6. Reported sunburns and sunscreen use, by rural or urban residence, Oxford County, 2016**

Indicator	Responses	Per cent of residents (95% CI)		
		Overall	Rural	Urban
Had a sunburn in the last 12 months	Yes	43.6% (38.5%-48.9%)	48.5% (39.2%-57.9%)	41.0% (35.1%-47.3%)
	No	56.4% (51.1%-61.5%)	51.5% (42.1%-60.8%)	59.0% (52.7%-64.9%)
Sometimes, rarely or never used sunscreen in the last 12 months	Yes	64.0% (58.9%-68.7%)	63.3% (53.9%-71.8%)	64.3% (58.4%-69.9%)
	No	36.0% (31.3%-41.1%)	36.7% (28.2%-46.1%)	35.7% (30.1%-41.6%)

**Table 7. Reported sunburns and sunscreen use, by marital status, Oxford County, 2016**

Indicator	Responses	Per cent of residents (95% CI)			
		Overall	Married or living with a partner	Never married	Widowed, divorced or separated
<b>Had a sunburn in the last 12 months</b>	Yes	43.8% (38.7%-49.1%)	43.4% (37.6%-49.5%)	53.0% (38.0%-67.5%)	33.2% (24.0%-43.8%)
	No	56.2% (50.9%-61.3%)	56.6% (50.5%-62.4%)	47.0% (32.5%-62.0%)	66.8% (56.2%-76.0%)
<b>Sometimes, rarely or never used sunscreen in the last 12 months</b>	Yes	63.9% (58.8%-68.7%)	64.0% (58.3%-69.4%)	59.7% (44.3%-73.3%)	68.9% (58.6%-77.7%)
	No	36.1% (31.3%-41.2%)	36.0% (30.6%-41.7%)	40.3%* (26.7%-55.7%)	31.1% (22.3%-41.4%)

\* High variability results, interpret with caution.

## Data Notes

### Definitions

**Sunburn** was described to participants as any reddening or discomfort of the skin that lasted longer than 12 hours after exposure to the sun or other ultraviolet (UV) sources, such as tanning beds or sunlamps.

**Rural versus Urban Comparisons:** Results are presented for Oxford County as a whole, and where possible, reported by whether the resident lives in a 'rural' or 'urban' area within the County. Although there are a mixture of rural and (sub)urban areas even within the municipalities, for the purposes of this report, they were subdivided as follows:

1. **Rural:** Zorra, East Zorra-Tavistock, Blandford-Blenheim, Norwich and South-West Oxford.
2. **Urban:** Woodstock, Ingersoll and Tillsonburg.

### Methods

The 2016 Oxford Health Matters Survey (OHMS) was conducted for Oxford County Public Health by the Institute for Social Research (ISR) at York University. The purpose of the survey was to collect data to help shape public health programs in new and emerging areas based on the needs and concerns of the community. The survey interviewed by telephone a total of 550 randomly selected households from September to December 2016 with Oxford County residents aged 18 years or older. This resulted in an overall response rate of 44%, which is comparable to other recent Canadian health surveys. If the household included a person aged 18-30 years old, they were selected to answer the survey to increase the number of young people in the sample, as they are typically harder to reach with this type of survey. Otherwise, the person with the first birthday in the household was asked to complete the survey. The number of responses for various questions may not total 550 due to survey skip patterns and differing amounts of non-response to each question. Responses to questions relevant to individuals are weighted by age and sex to adjust for fewer males and younger individuals completing the survey. This weighting allows the sample to more closely represent the population of Oxford County.

## **Confidence Intervals**

The per cents in brackets that follow each per cent estimate in the tables are the confidence intervals (CIs). Each estimate is based on the survey sample, and a CI is a range of values that describes the uncertainty surrounding an estimate.<sup>7</sup> The 95% CI shows a range of values that have a 95% chance of including the true estimate in the population if the survey was repeated. The larger a 95% CI, the more caution should be used when using the estimate. In graphs, the 95% CI is shown by an error bar. Error bars and CIs that don't overlap show statistically significant differences between groups (e.g., when comparing males and females). Statistically significant results indicate the finding is unlikely to be due to chance alone.

## **Variability**

Throughout the report, some numbers may be suppressed because they are unstable due to high variability, as measured by the coefficient of variation (CV). The CV indicates how precise an estimate is. Higher CVs indicate more variability, which often occurs when there is a small sample size. When the CV is between 16.6 and 33.3, the estimate should be interpreted with caution because of high variability. In tables, this is shown with an asterisk (\*). Estimates with a CV of 33.3 or more are not reportable and the estimates are replaced with double asterisks (\*\*). Estimates may also not be reportable if they are based on an unweighted denominator of less than 30 or a numerator of less than 5.

## **Missing Responses**

“Don't know” and “Refused” responses are usually removed from the analysis, unless they account for over 5% of the responses. Then they are included as a separate category. Responses are self-reported and may be subject to recall bias (trouble remembering) and social desirability bias (answering in the “expected” or socially acceptable way).

## References

1. Government of Canada. Health effects of ultraviolet radiation [Internet]. 2012 [cited 2017 May 5]. Available from: <https://www.canada.ca/en/health-canada/services/sun-safety/health-effects-ultraviolet-radiation.html>
2. Trakatelli M, Barkitzi K, Apap C, Majewski S, De Vries E, EPIDERM Group. Skin cancer risk in outdoor workers: a European multicenter case-control study. *J Eur Acad Dermatol Venereol*. 2016;30(Suppl 3):5–11.
3. Public Health Ontario. Snapshots: Oxford County Public Health: Incidence of malignant melanoma – age-standardized rate (both sexes) 2008-2012. Toronto, ON: Ontario Agency for Health Protection and Promotion; 2016 Jun 21 [cited 2017 Apr 5]. Available from: <https://www.publichealthontario.ca/en/DataAndAnalytics/Snapshots/Pages/Cancer-Incidence-.aspx>.
4. Wu S, Han J, Laden F, Qureshi AA. Long-term ultraviolet flux, other potential risk factors, and skin cancer risk: a cohort study. *Cancer Epidemiol Biomarkers Prev*. 2014;23(6):OF1-OF10.
5. Public Health Ontario. Snapshots: Oxford County Public Health: Mortality from malignant melanoma – age-standardized rate (both sexes combined) 2011. Toronto, ON: Ontario Agency for Health Protection and Promotion; 2015 Jan 5 [cited 2017 Jun 5]. Available from: <https://www.publichealthontario.ca/en/DataAndAnalytics/Snapshots/Pages/Cancer-Mortality.aspx>.
6. Marrett L, Chu M. An update to the recommended core content for sun safety messages in Canada. Presented at: Public Health Ontario: 2016 May 30; Toronto, ON.
7. United States Census Bureau. A basic explanation of confidence intervals. [Internet]. Washington DC, USA: United States Census Bureau; 2013. [cited April 18, 2017]. Available from: <https://www.census.gov/did/www/saipe/methods/statecounty/ci.html>.



**OXFORD COUNTY PUBLIC HEALTH**

410 Buller Street  
Woodstock, Ontario  
N4S 4N2  
519.539.9800 | 1-800-755-0394  
[www.oxfordcounty.ca/health](http://www.oxfordcounty.ca/health)

Email: [healthevidence@oxfordcounty.ca](mailto:healthevidence@oxfordcounty.ca)

**Author**

**Melissa MacLeod, B.H.Sc. (Hon), M.Sc.**  
Epidemiologist  
Foundational Standards  
Oxford County Public Health

**Reviewers**

**Hilary Caldarelli, B.Sc., MPH**  
Epidemiologist  
Foundational Standards  
Oxford County Public Health

**Ruth Sanderson, M.Sc.**  
Manager  
Foundational Standards  
Oxford County Public Health

**Michael Gorgey, B.Sc.N., RN**  
Supervisor  
Health Promotion  
Oxford County Public Health

**Susan MacIsaac, RD, M.Sc.**  
Manager  
Health Promotion  
Oxford County Public Health

**Lynn Beath, B.Sc.N., RN, MPA**  
Director/CEO  
Oxford County Public Health & Emergency  
Services