Evidence to Inform Smoking Cessation Policymaking in Ontario

A Special Report by the Ontario Tobacco Research Unit

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Acronyms and Abbreviations

BMI	Body Mass Index
CAMH	Centre for Addiction and Mental Health
CAWG	Community Action Working Group
CBTI	Campus-Based Brief Tobacco Intervention
CCHS	Canadian Community Health Survey
CCS	Canadian Cancer Society
CO	Carbon Monoxide
CTCP	California Tobacco Control Program
CTG	Cessation Task Group
DTQ	Driven to Quit
EE	Energy Expenditure
IVR	Interactive Voice Response
LHIN	Local Health Integration Network
LTPB	Leave the Pack Behind
MET	Metabolic Equivalent
NHS SSS	(U.K.) National Health Service Stop Smoking Services
NICE	(U.K.) National Institute of Clinical Excellence
NRT	Nicotine Replacement Therapy
OMSC	Ottawa Model for Smoking Cessation
OTRU	Ontario Tobacco Research Unit
OTS	Ontario Tobacco Survey
PCT	(U.K.) Primary Care Trust
PHA	Public Health Agency
PHU	Public Health Unit
PIMS	Performance Indicators Monitoring System
SES	Socioeconomic Status
SFOS	Smoke-Free Ontario Strategy
SHL	Smokers' Helpline
SHLO	Smokers' Helpline Online
SHS	Secondhand Smoke
STOP	Stop Smoking Treatment for Ontario Patients
TCAN	Tobacco Control Area Network
USPHS	U.S. Public Health Service

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Executive Summary

This report provides evidence to inform the development of Ontario's smoking cessation strategy. It was developed in response to a request from a team commissioned by the Ministry of Health Promotion to develop a Cessation Action Plan. Sources include scientific literature, population surveys, evaluation reports and the Performance Indicators Monitoring System (PIMS). Chapter One states the general case for smoking cessation, including the benefits of a comprehensive cessation system. Chapter Two presents a segmentation analysis of Ontario smokers, showing smoking-related behaviour by sub-population. Chapter Three describes the scope, reach and effects of smoking cessation interventions. The concluding chapter presents international findings.

General Case for Smoking Cessation

- In addition to causing cardiovascular disease and 80% to 90% of lung cancer deaths, tobacco use causes a range of other cancers, respiratory disease, poor wound healing, cataracts and infertility.
- Sustained cessation reduces the risk of mortality from smoking-related disease.
- Implementation of four effective cessation interventions (nicotine replacement therapy, physician's advice, individual behavioural counseling and increasing taxes by 10%) would save the Canadian healthcare system 33,307 acute care hospital days (monetary value $37 million).

Segmentation Analysis of Ontario Smokers

- Among public health units (PHUs), current smoking rates range from 14% (York Region) to 28% (Porcupine and Oxford County).
- The highest prevalence of current smoking occurs among moderate or problem gamblers (45%), Aboriginals (40%), 25 to 29 year old males (37%) and trades occupations (34%).

Scope, Reach and Effects of Smoking Cessation Interventions

- Ontario has offered five main cessation interventions: Smokers' Helpline (SHL), Smokers' Helpline Online (SHLO), Driven to Quit (DTQ), Stop Smoking Treatment for Ontario Patients (STOP) (free nicotine replacement therapy), and the Ottawa Heart Cessation Model (in-patient cessation).
- Leave the Pack Behind is offered on university and college campuses.
- In 2008-2009, all provincial cessation programs combined reached about 4% of smokers.

Cessation Systems in Other Jurisdictions

- Successful cessation systems in England, New York State, Minnesota and California show the importance of sustained investment, local infrastructure and health insurance coverage for cessation treatment.

Chapter One: General Case for Smoking Cessation

Impact of Smoking

The consequences of smoking have been documented for more than half a century.[1] In addition to causing cardiovascular disease and 80% to 90% of lung cancer deaths, tobacco use causes a range of other cancers, respiratory disease, poor wound healing, cataracts and infertility.[2] Babies born to mothers who smoke during pregnancy are at an increased risk of premature birth, sudden infant death syndrome and respiratory problems, such as asthma.

Secondhand smoke (SHS) causes heart disease, lung cancer, nasal sinus cancer, middle ear infection, asthma and other respiratory illnesses.[3] An expert panel found the available evidence sufficient to infer a causal link between SHS and breast cancer in pre-menopausal women (in addition to a causal link between active smoking and breast cancer in pre- and post-menopausal women).[4]

In 2002, about 13,000 Ontarians died from tobacco use (184,304 potential years of life lost).[5] Smoking-related cardiovascular disease and trachea, lung and bronchus cancers were responsible for 3961 and 4579 deaths, respectively, in Ontario.[6] SHS contributes to anywhere from 1100 to 7800 deaths in Canada annually (one-third of these in Ontario).[7] In 2002, SHS exposure was responsible for about 315 adult deaths and 17,104 acute hospital stays in Ontario.[8] These estimates are conservative since they do not take into account numerous other adverse health effects linked to SHS[9,10] or the impact of exposure to SHS outside the home.

The economic consequences of tobacco use are substantial. The World Bank estimates that tobacco use consumes 6% to 15% of annual healthcare costs in high income countries.[11] In 2002, cigarette smoking cost Canada and Ontario $17 billion and $6.1 billion, respectively. In Ontario, healthcare costs and productivity losses ($1.5 and $4.4 billion, respectively) are the largest direct and indirect costs associated with tobacco use.[12]

In high-income countries, smoking is a socioeconomically stratified behaviour that perpetuates inequities in health and mortality.[13] This is evident in Ontario where smoking prevalence decreases as educational achievement increases.[14]

Benefits of Cessation

Both long- and short-term health benefits are associated with smoking cessation. Sustained cessation reduces the risk of mortality from smoking-related disease.[15] The earlier cessation is achieved the greater the benefits, yet quitting at any time is advantageous. For example, a smoker who quits smoking before middle age avoids almost all the excess risk of mortality due to smoking. Even if cessation occurs after middle age, the former smoker experiences a significantly lower risk of

mortality than someone who continues to smoke.[16] The excess risk of cardiovascular disease is cut in half within one year of quitting and reduced to that of the nonsmoker after 15 years of cessation.[17] Although sustained cessation does not reduce the risk of lung cancer to the same level as that of a lifelong nonsmoker, risk is substantially less than for those continuing to smoke.[18] After ten years of cessation, the risk of lung cancer is 30% to 50% lower for former smokers than for continuing smokers.[19] However, health benefits occur only with complete cessation, and are not associated with even a substantial reduction in the quantity of cigarettes smoked.[20]

Even short-term cessation is beneficial to the smoker. For example, a pregnant woman who quits within the first trimester decreases her risk of delivering preterm and having a low birth weight newborn to that of the pregnant nonsmoker.[21] Smokers undergoing surgery significantly reduce their risk of complications and improve post-surgical healing if they quit smoking four to six weeks before surgery.[22] Within one to two months of cessation, a general improvement in lung function occurs in abstaining smokers.[23] Within six to eight weeks, a smoker with asthma who quits smoking experiences an improvement in asthma symptoms and general lung function.[24]

Cost Savings

The economic burden of smoking is substantial. On an individual level, cessation brings financial benefits to the ex-smoker due to decreased expenditure on cigarettes. On a societal level, the short- and long-term benefits of higher cessation rates are a path towards significant savings through reduced healthcare costs and increased productivity. [25]

Healthcare System

Research shows the cost-effectiveness of cessation programs that target pregnant and pre-surgical smokers.[26] In the long term, former smokers make significantly less use of the healthcare system than those who continue to smoke.[27] A recent study suggests that the implementation of four effective cessation interventions could save the Canadian healthcare system 33,307 acute care hospital days (monetary equivalent $37 million).[28] This estimate is conservative because the study does not take into account the benefits of other effective cessation interventions.

Productivity

Health Canada estimates that a smoker costs his or her employer $3,396 annually through increased absenteeism, decreased productivity and the cost of maintaining outdoor smoking areas.[29] Smoking cessation therapies offered through the workplace have shown a significant return on investment to the employer through improved attendance, increased productivity and decreased health insurance costs.[30] Employees who quit smoking for at least one year miss fewer days of work and have fewer admissions to hospital than those who continue to smoke.[31]

Chapter Two: Segmentation Analysis of Ontario Smokers

Highlights

- This chapter presents the results of a segmentation analysis of current smoking across 23 Ontario sub-populations.
- Sub-population analyses were conducted using data from Ontario respondents in the 2007-2008 Canadian Community Health Survey (CCHS).
- In 2007-2008, the prevalence of all tobacco use (past 30 days) among Ontarians aged 12 years or more was 22% (2.3 million persons). The prevalence of smoking cigarettes (past 30 days) was 19% (2.1 million persons).

Current smoking rates in Ontario range as follows:

- Tobacco Control Area Networks (TCANs): 16% (Toronto) to 25% (North)
- Public health units (PHUs): 14% (York Region) to 28% (Porcupine and Oxford County)
- Local Health Integration Networks (LHINs): 15% (Central) to 25% (North West)

Among the 23 sub-populations analysed, the prevalence of current smoking ranged from a high of 45% (moderate or problem gamblers) to a low of 6% (15 to 17 year old males and females). The five sub-populations that ranked highest in prevalence of current smoking were (Table 1):

- Moderate or problem gamblers (45%)
- Aboriginals (40%)
- 25 to 29 year old males (37%)
- Trades occupations (34%)

Among current smokers, the prevalence of reporting past-year quit attempts ranged from a high of 75% to a low of 34% among the sub-populations examined. The five sub-populations of current smokers with the highest prevalence of past-year quit attempts were (Table 2):

- Pregnant women (75%)
- 15 to 19 year old males (66%)
- 15 to 19 year old females (65%)
- Identified as being black (63%)
- Immigrated to Canada within past 5 years (61%)

Among current smokers, the percentage of respondents reporting past-year quit attempts as well as next 30-day quit intentions ranged from a high of 27% to a low of 11%. The five sub-populations of current smokers with the highest prevalence of past-year quit attempts and 30-day quit intentions were (Table 3):

- 20 to 24 year old females (27%)
- Social science occupations (26%)
- 30 to 34 year old females (24%)
- 30 to 34 year old males (22%)
- Business occupations (22%)

Methods

Data Analysis

Analyses were conducted on the combined 2007–2008 Canadian Community Health Survey (CCHS) master data file, which has a target population of all Canadians aged 12 years and over. Excluded are individuals living on Indian Reserves or Crown Lands, institutional residents, full-time members of the Canadian Forces and residents of certain remote regions.

Data were weighted to be representative of the targeted population. To determine the quality of the reported estimates, variances were calculated using a bootstrap re-sampling method.

Prevalence data for over 20 sub-populations were analyzed by public health unit (PHU), Local Health Integration Network (LHIN), Tobacco Control Area Network (TCAN), rural–urban, age, sex, education, occupation, unemployment status, income, country of origin, immigration history, ethnic background, language, pregnancy status, sexual orientation and chronic disease risk factors (overweight, inactive, unhealthy eating, alcohol use exceeding low-risk drinking guidelines, mood disorder, moderate or problem gambler).

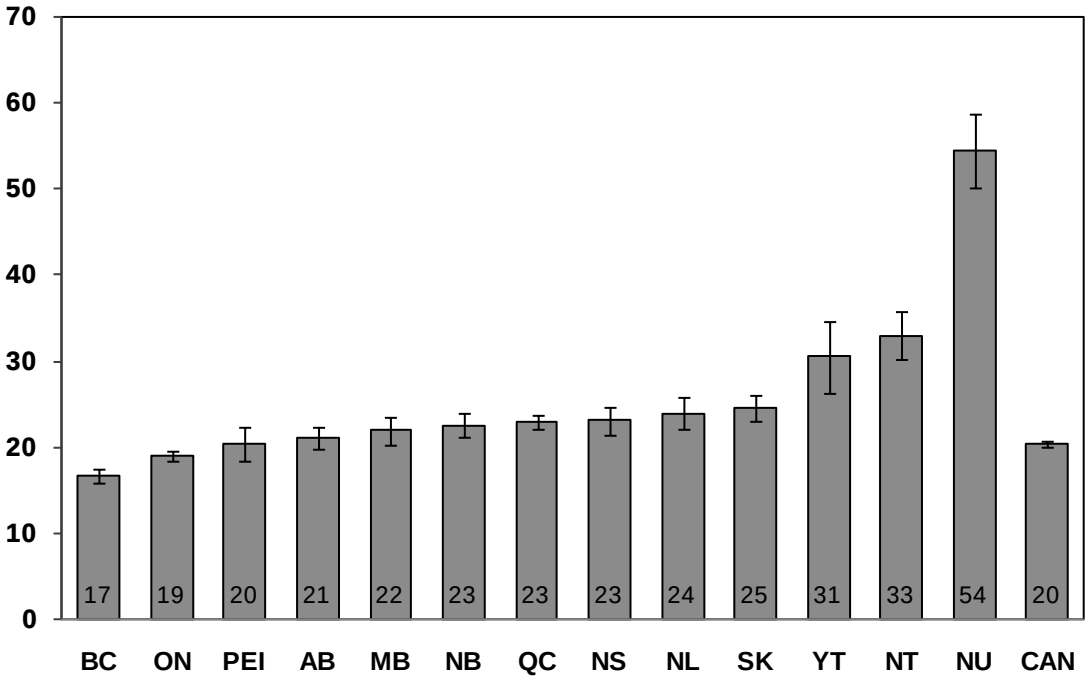
All but two of the variables used in this report were previously derived CCHS variables. The two exceptions are the low-risk drinking variable, which was derived by OTRU based on CAMH guidelines, and the mood disorder variable, which was based on a single item in the CCHS questionnaire. The variables are described in the Appendix at the end of this report.

Tobacco Use

Overall

- Twenty-two percent (22%) of Ontario residents aged 12 years or over were current tobacco users in 2007–2008 (i.e., currently smoked cigarettes, cigars, pipe, or used snuff or chewing tobacco in past 30 days), representing 2.3 million Ontarians.
- One-fifth (19%) of Ontario residents aged 12 years or over were current smokers in 2007–2008, representing 2.1 million Ontarians (Figure 1).
- Twenty percent (20%) of Canadians aged 12 years or over were current smokers in 2007–2008, representing about 5.7 million Canadians (Figure 1).

Figure 1: Current Smoking Prevalence, by Province, Ages 12+, Canada, 2007–2008, %



Note: Vertical lines represent 95% confidence intervals.
Source: CCHS 2007–2008

Table 1: Top 20 Sub-populations Ranked for Current Smoking, by Prevalence (%) and Population Estimate, Ontario, 2007–2008

Ranked by %	%	95% CI	Population Estimate
Moderate/problem gambler	45.0	37.0 – 53.0	52,200
Aboriginal	40.5[a]	36.1 – 44.9	106,500
25–29 year-old male	37.1	33.2 – 41.0	148,700
First learnt/understood English/French	35.1	24.2 – 45.9	19,000
Works in trades	34.0	31.7 – 36.3	312,100
Diagnosed with mood disorder	33.5	31.1 – 36.0	260,800
$5,000 – $9,999 household income	33.5	27.4 – 39.6	28,700
Homosexual or bisexual	33.0	26.5 – 39.5	44,100
$10,000 – $14,999 household income	32.1	28.4 – 35.9	78,800
Works in 'other' occupation	30.6	25.3 – 36.0	40,200
45–49 year-old male	30.2	26.4 – 33.9	146,100
40–44 year-old male	29.7	26.4 – 33.1	173,300
Born in Poland	29.1	21.0 – 37.3	31,100
Works in manufacturing	28.9	25.0 – 32.9	106,600
30–34 year-old male	27.4	24.3 – 30.4	109,800
Less than high school education	26.9	25.2 – 28.6	365,200
Non low-risk drinking	26.8	25.9 – 27.8	1,232,600
20–24 year-old male	26.6	22.6 – 30.6	123,800
Unemployed	26.3	22.9 – 29.6	104,400
Speaks English and French at home	26.2	19.6 – 32.7	14,200

Ranked by Population Estimate	Population Estimate	%	95% CI
Speaks English at home	1,773,000	20.6	19.9 – 21.3
White	1,639,800	20.9	20.3 – 21.6
Born in Canada	1,574,500	22.0	21.3 – 22.7
First learnt/understood English/French	1,509,800	21.3	20.6 – 22.0
Unhealthy eating	1,394,200	23.0	22.1 – 23.8
Non low-risk drinking	1,232,600	26.8	25.9 – 27.8
Inactive	1,156,300	21.5	20.6 – 22.4
Completed post-secondary school	986,100	17.4	16.6 – 18.2
Overweight	949,100	18.9	18.1 – 19.7
Completed high school	444,400	25.3	23.6 – 26.9
$100,000 or more household income	408,300	15.9	14.7 – 17.2
First learned to speak another language other than English or French	399,100	13.3	12.1 – 14.5
Less than high school education	365,200	26.9	25.2 – 28.6
Works in sales	356,600	23.6	21.9 – 25.3
Works in trades	312,100	34.0	31.7 – 36.3
$60,000 – $79,999 household income	305,700	22.0	20.2 – 23.7
Immigrated 16+ years ago	278,500	14.1	12.6 – 15.5
Works in business	268,500	20.3	18.6 – 22.0
Did not state household income	264,700	17.9	16.3 – 19.5
Diagnosed with a mood disorder	260,800	33.5	31.1 – 36.0

[a] Weighted percentage to three decimal places 40.453%, not rounded up and therefore reported as 40% in the rest of this document

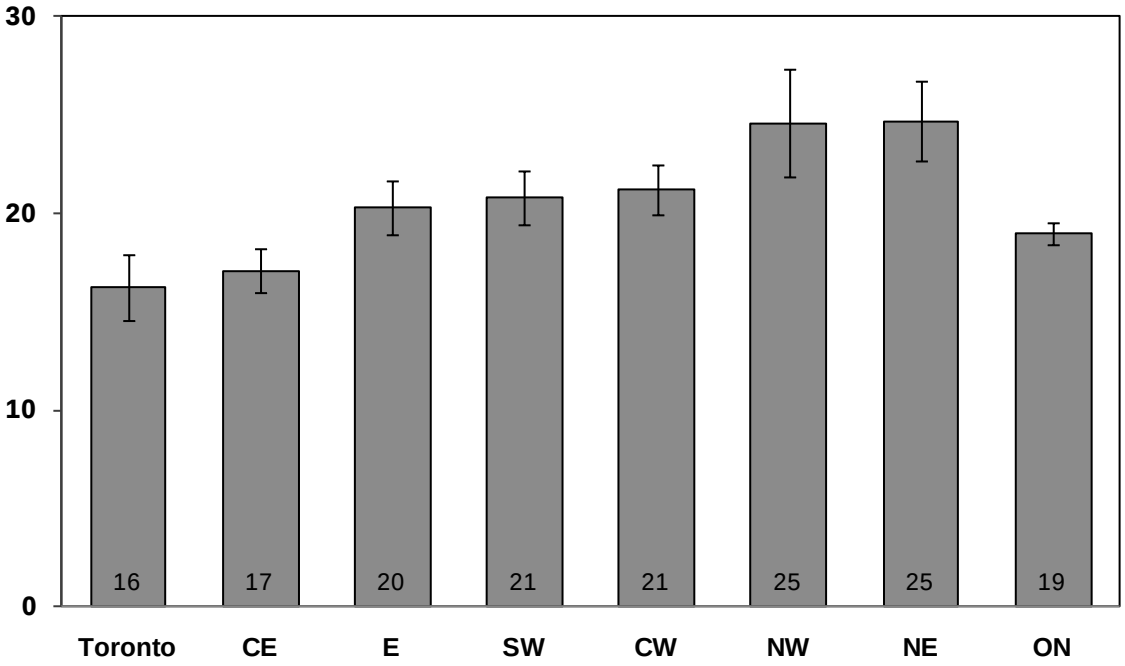
Source: CCHS 2007–2008.

Location

Tobacco Control Area Networks

- The prevalence of current smoking was higher than the provincial average (21%) in TCANs in the North East (25%), North West (25%) and Central West (21%) (Figure 2).
- Toronto and Central East TCAN residents had a lower prevalence of current smoking (16% and 17%, respectively) compared to the provincial average (19%).

Figure 2: Current Smoking Prevalence, by Tobacco Control Area Network, Ages 12+, Ontario, 2007–2008, %



Note: Vertical lines represent 95% confidence intervals.
Source: CCHS 2007–2008

Public Health Units

Across Ontario public health units, the prevalence of current smoking ranged from a low of 14% (York Region) to a high of 28% (Porcupine and Oxford County) (Table 2).

Table 2: Public Health Units Ranked by Current Smoking Prevalence (%), Ages 12+, Ontario, 2007–2008

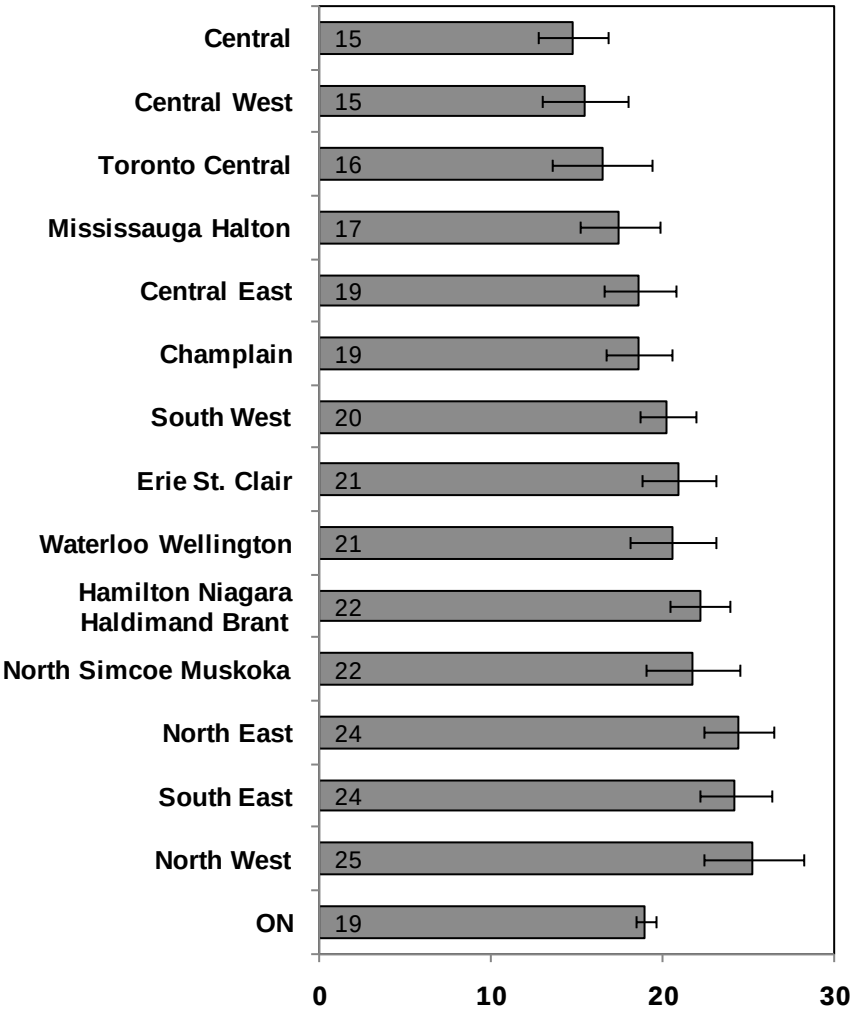
	Current Smoking	
PHU	**%**	**Population Estimate**
York Region	13.6	115,200
Peel	15.3	168,900
Perth District	16.0	10,400
Toronto	16.2	371,600
City of Ottawa	16.3	117,200
Halton Region	17.7	71,100
Windsor-Essex County	18.3	62,700
Middlesex-London	18.9	71,300
Durham Region	19.7	100,500
Grey Bruce	19.9	27,700
Region of Waterloo	20.4	86,100
City of Hamilton	21.6	96,600
Peterborough County-City	21.7	24,900
Algoma	21.7	21,900
Huron County	22.0	11,500
Brant County	22.0	25,200
Simcoe Muskoka District	22.0	92,800
Wellington-Dufferin-Guelph	22.1	49,700
Leeds, Granville and Lanark District	22.6	33,200
Timiskaming	22.7	6,800
Kingston, Frontenac and Lennox & Addington	23.2	36,600
Northwestern	23.2	12,300
Haliburton, Kawartha, Pine Ridge District	23.3	35,900
Renfrew County and District	23.8	19,400
Lambton	23.8	26,400
Niagara Region	23.8	89,500
Haldimand-Norfolk	24.1	23,300
Sudbury and District	24.5	41,100
Elgin-St. Thomas	24.7	18,900
Thunder Bay and District	25.2	31,100
Chatham-Kent	25.8	23,900
North Bay Parry Sound District	25.9	27,500
Eastern Ontario	26.0	44,200
Hastings and Prince Edward Counties	26.2	36,500
Porcupine	27.7	19,200
Oxford County	27.7	24,900
ONTARIO	**19.0**	**2,075,600**

Source: CCHS 2007–2008

Local Health Integration Networks

- The prevalence of current smoking ranged from a low of 15% in Central and Central West LHINs to a high of 25% in North West LHIN (Figure 3).

Figure 3: Current Smoking Prevalence, by Local Health Integration Network, Ages 12+, Ontario, 2007–2008, %



Note: Horizontal lines represent 95% confidence intervals.
Source: CCHS 2007–2008

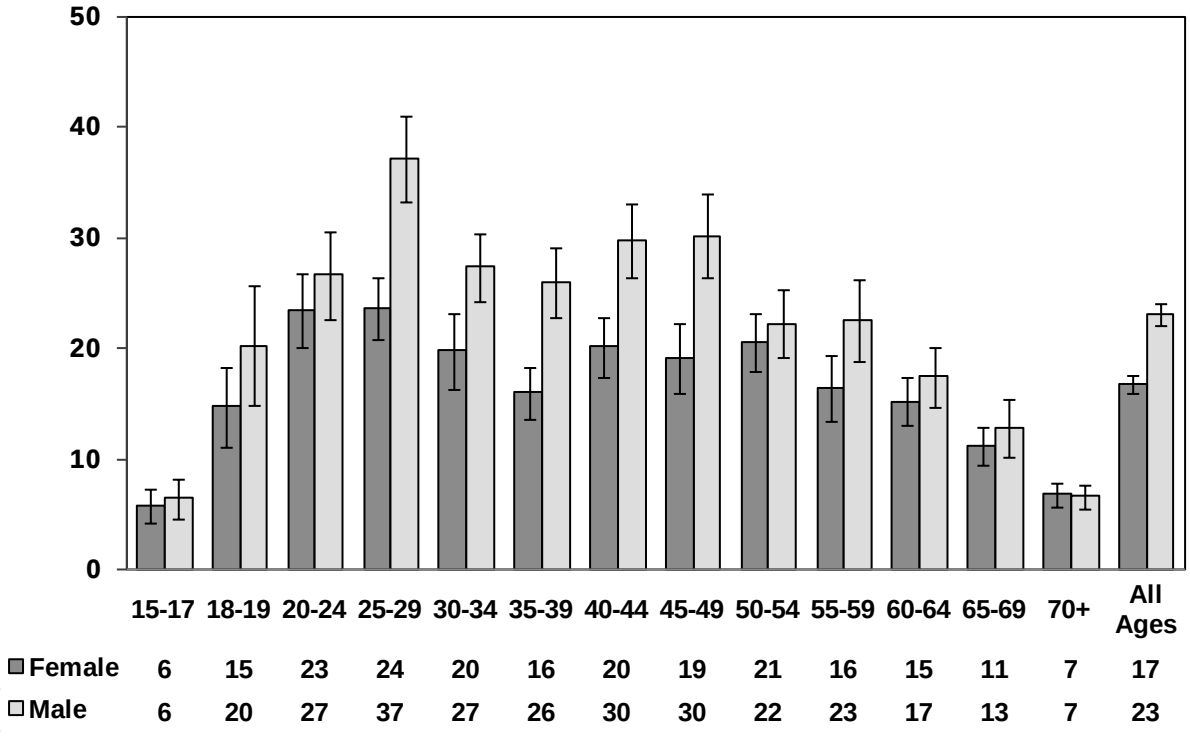
Rural-Urban

- Ontario residents living in rural areas had a slightly higher prevalence of current smoking (21%) than residents living in urban areas (19%).

Age and Sex

- In 2007–2008, the prevalence of current smoking among Ontarians varied substantially by age and sex (Figure 4).
- The prevalence of current smoking was highest among males aged 25 to 29 years (37%), representing 148,700 of the 1.2 million male smokers aged 15 years or over in Ontario (13% of all smokers).
- Males between the ages of 25 to 49 years had a significantly higher smoking prevalence than their female counterparts.

Figure 4: Current Smoking Prevalence, by Age and Sex, Ages 15+, Ontario, 2007–2008, %

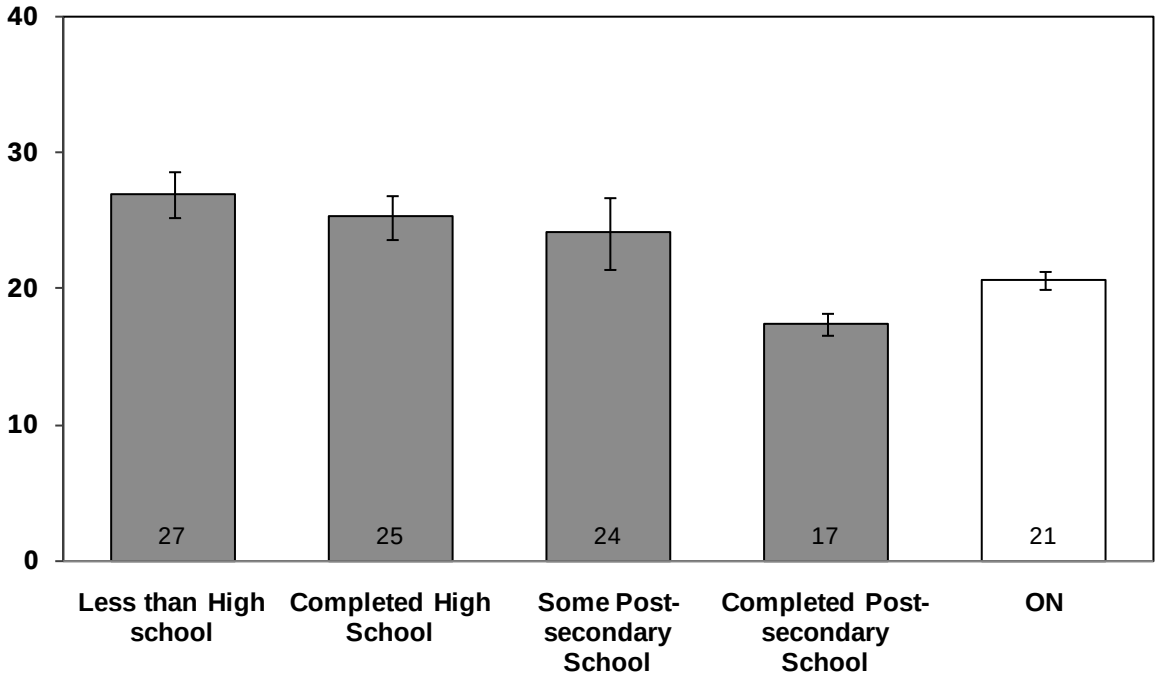


Note: Horizontal lines represent 95% confidence intervals.
Source: CCHS 2007–2008

Education

- Ontario residents aged 18 years or over who had less than a high school education, had completed high school, or had completed some post secondary school reported a higher prevalence of current smoking (27%, 25% and 24%, respectively) compared to the provincial average (21%), whereas those who had completed post secondary school reported a lower prevalence (17%) than the provincial average (21%) (Figure 5).

Figure 5: Current Smoking Prevalence, by Education, Ages 18+, Ontario, 2007–2008, %

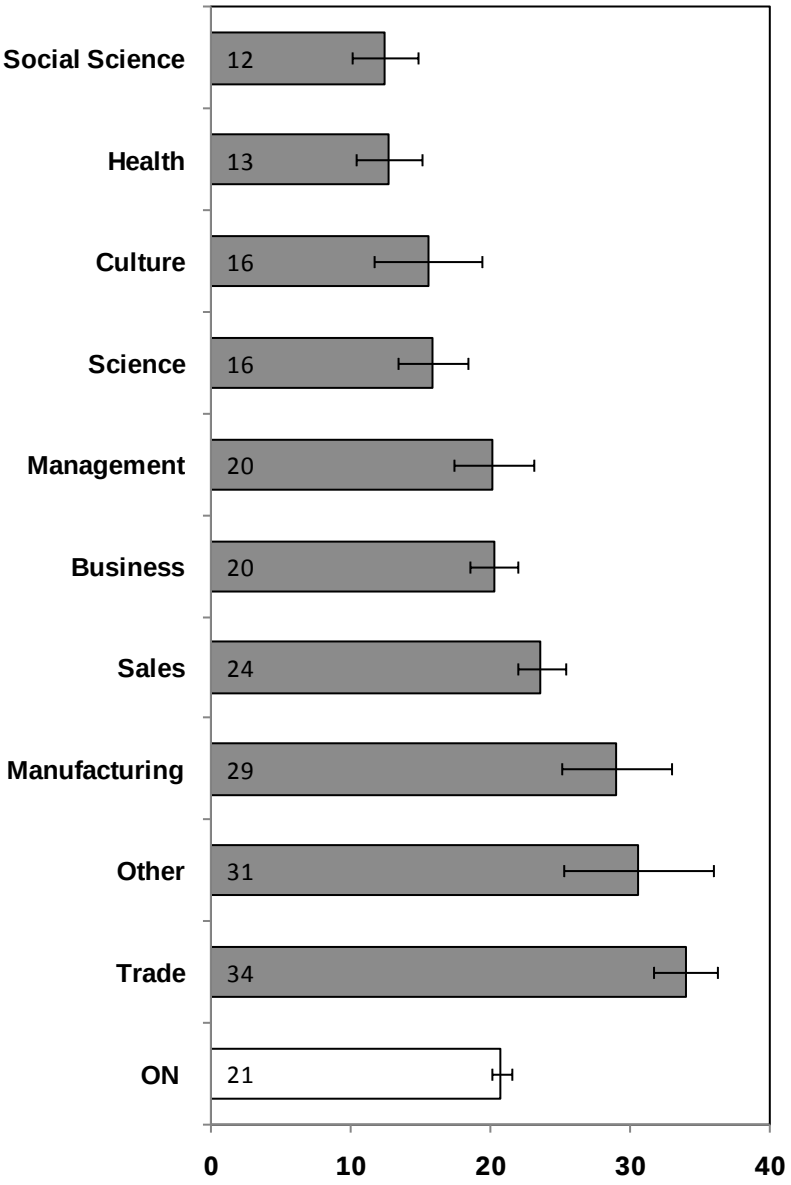


Note: Horizontal lines represent 95% confidence intervals.
Source: CCHS 2007–2008

Occupation and Unemployment Status

- The prevalence of current smoking was highest among workers in manufacturing (29%) and trades occupations (34%) (Figure 6).
- Among unemployed Ontarians aged 15 to 75 years, the prevalence of current smoking was 26%.

Figure 6: Current Smoking Prevalence, by Occupation, Ages 15-75, Ontario, 2007–2008, %

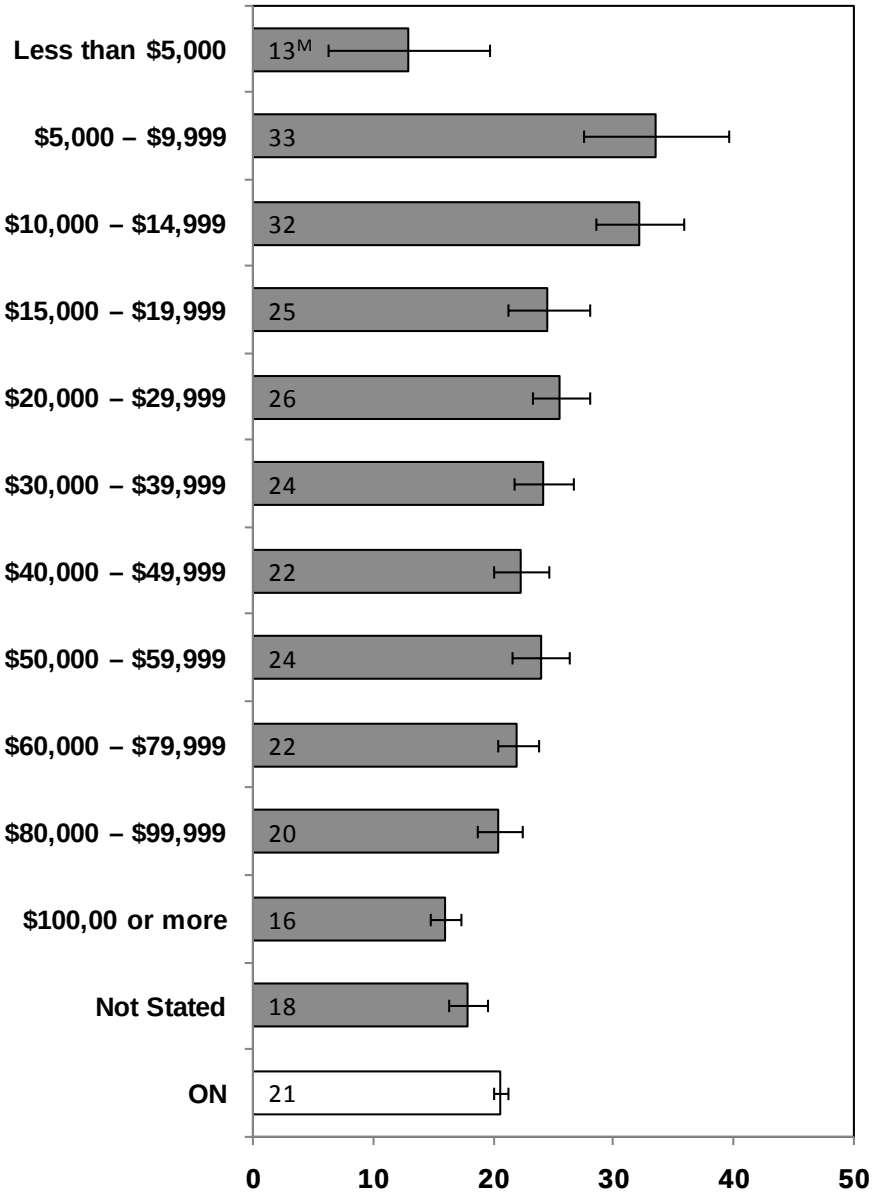


Note: Horizontal lines represent 95% confidence intervals.
Source: CCHS 2007–2008

Income

- Reported smoking prevalence was higher among Ontarians with household incomes ranging from $5000-$9999 (33%) and $10,000-$14,999 (32%) compared to the overall smoking prevalence of adults in Ontario (21%) (Figure 7).
- Ontario residents with a household income of $100,000 or more reported a lower prevalence of current smoking (16%) than the overall smoking prevalence of adults in Ontario (21%) (Figure 7).

Figure 7: Current Smoking Prevalence, by Household Income, Ages 18+, Ontario, 2007–2008, %

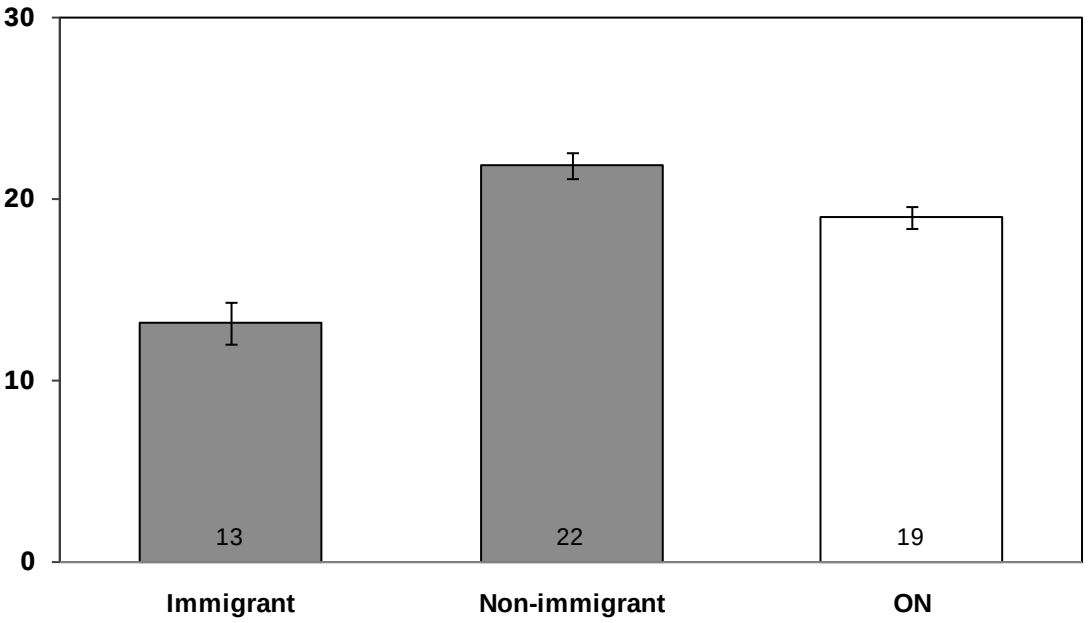


Note: M = Interpret with caution, moderate levels of error associated with estimate—Coefficient of Variation (CV) between 16.5% and 33.3%. Horizontal lines represent 95% confidence intervals.
Source: CCHS 2007–2008

Immigration Status and Country of Origin

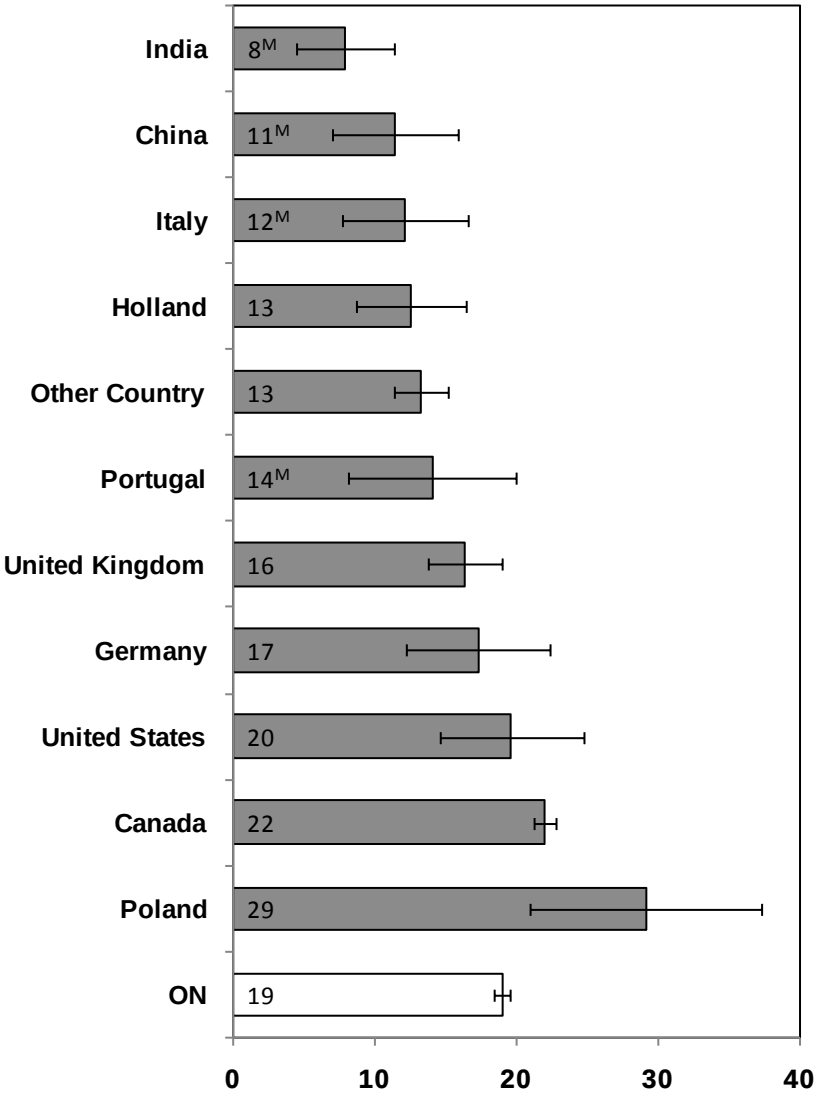
- Immigrants to Canada living in Ontario aged 12 years and over reported a lower prevalence of current smoking (13%) than Ontario residents born in Canada aged 12 years and over (22%) (Figure 8; see also Figure 9).
- The prevalence of current smoking among immigrants did not vary by the number of years of Canadian residency.

Figure 8: Current Smoking Prevalence, by Immigration History and Status, Ages 12+, Ontario, 2007–2008, %



Note: Vertical lines represent 95% confidence intervals.
Source: CCHS 2007–2008

Figure 9: Current Smoking Prevalence, by Country of Origin, Ages 12+, Ontario, 2007–2008, %

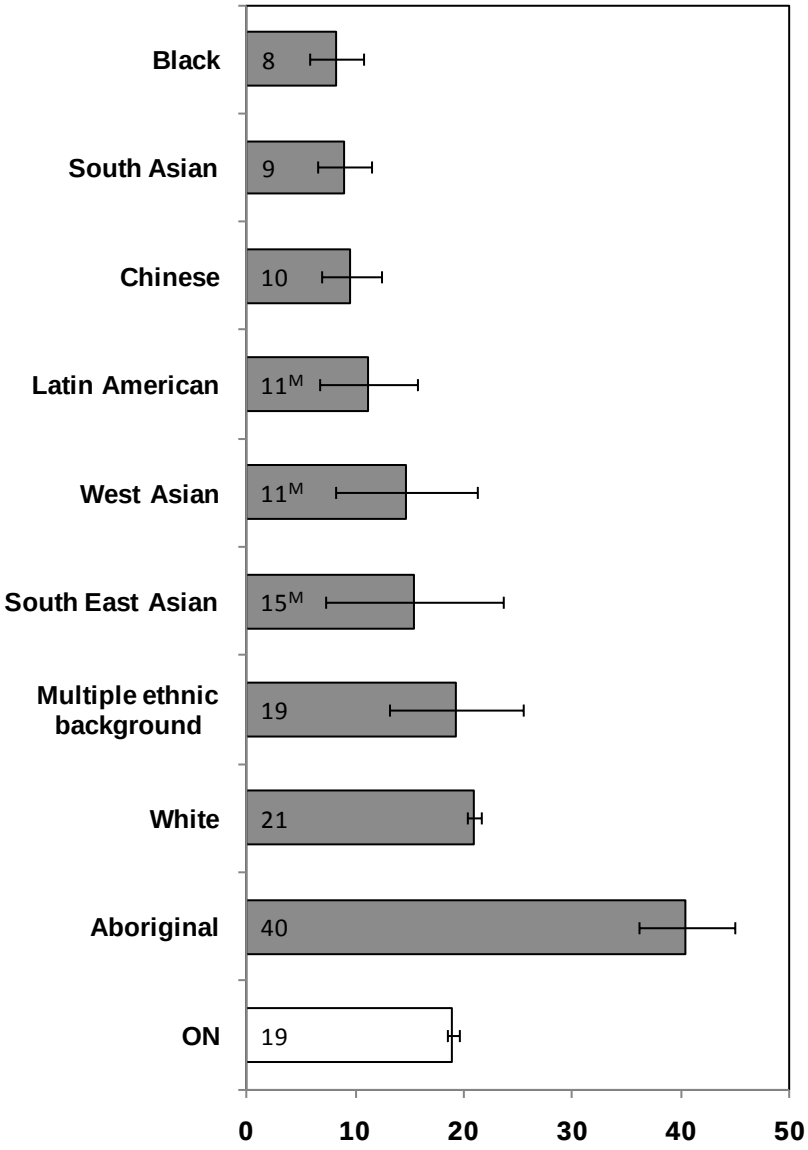


Note: M = Interpret with caution, moderate levels of error associated with estimate—Coefficient of Variation (CV) between 16.5% and 33.3%. Horizontal lines represent 95% confidence intervals.
Source: CCHS 2007–2008

Ethnic Background

- The prevalence of current smoking among those aged 12 years and over was highest among residents who identified as Aboriginal (40%) (Figure 10).
- Ontario residents who identified as white reported a higher prevalence of current smoking (21%) compared to the provincial average of smokers aged 12 and over (19%) (Figure 10).

Figure 10: Current Smoking Prevalence, by Ethnic Background, Ages 12+, Ontario, 2007–2008, %

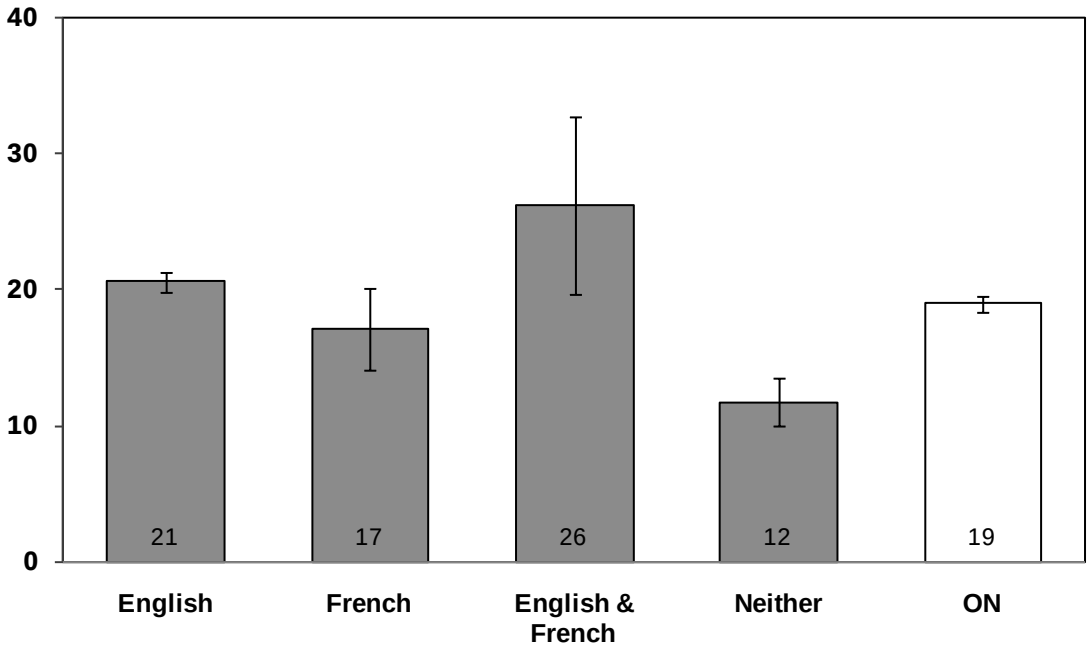


Note: M = Interpret with caution, moderate levels of error associated with estimate—Coefficient of Variation (CV) between 16.5% and 33.3%. Horizontal lines represent 95% confidence intervals.
Source: CCHS 2007–2008

Official First Language Spoken at Home

- Ontario residents who spoke English at home (or English and another language other than French) reported a slightly higher prevalence of current smoking (21%) compared to the provincial average for persons aged 12 and over (19%) (Figure 11).
- Ontario residents who spoke French at home reported a prevalence of current smoking of 17%. Those few who spoke both English and French at home (population estimate 14,200 people) reported a prevalence of current smoking of 26% (Figure 11).
- Ontario residents who spoke neither English nor French at home reported a lower prevalence of current smoking (12%) than the provincial average for persons aged 12 and over (19%) (Figure 11).

Figure 11: Current Smoking Prevalence, by Official Language Spoken at Home, Ages 12+, Ontario, 2007–2008, %



Note: Vertical lines represent 95% confidence intervals.
Source: CCHS 2007–2008

Other

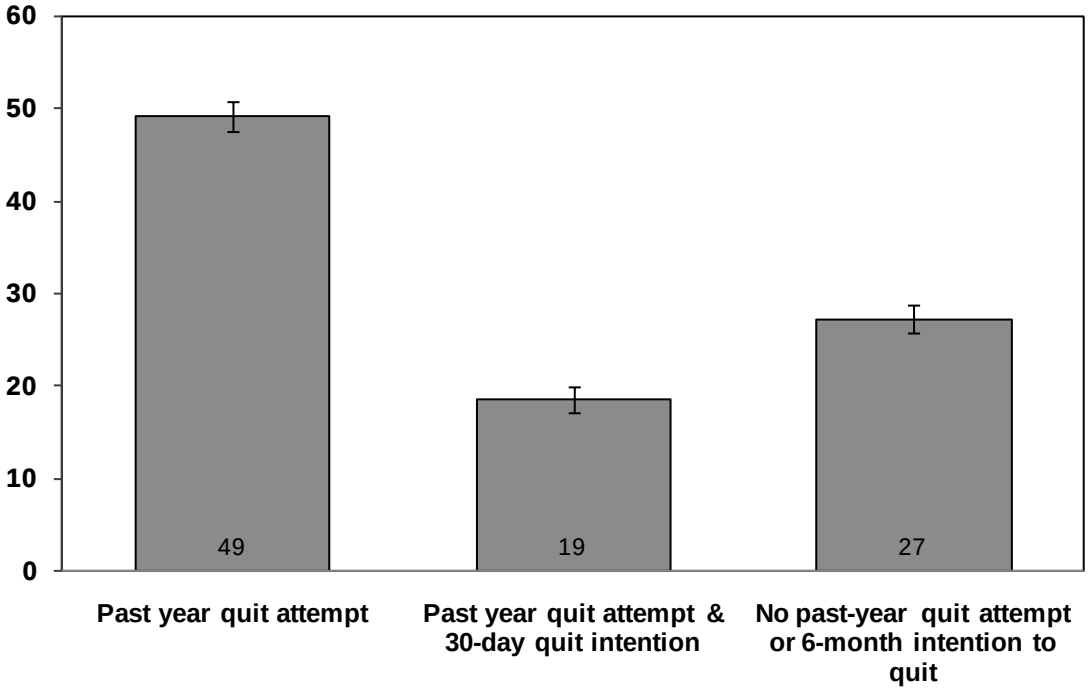
- In Ontario, 15% of pregnant women aged 15-49 years were current smokers.
- One-third (33%) of Ontario residents aged 18-59 years who identified as being homosexual or bisexual were current smokers.

Quitting Behaviour

Half (49%) of all current smokers in Ontario made a quit attempt in the past year (Figure 12).

- Nineteen percent (19%) of current smokers in Ontario aged 12 years and over made a quit attempt in the past year and intended to quit in the next 30 days.
- The prevalence of both measures of quitting behaviours did not vary across TCANs or LHINs.
- About one-quarter (27%) of current smokers in Ontario had not made a quit attempt in the past year and did not intend to quit in the next 6 months.

Figure 12: Quitting Behaviour Prevalence, Current Smokers, Ages 12+, Ontario, 2007–2008, %



Note: Vertical lines represent 95% confidence intervals.
Source: CCHS 2007–2008

- Among current smokers, the prevalence of past-year quit attempts ranged from a high of 75% to a low of 34% among the sub-populations examined.
- The five sub-populations of current smokers with the highest prevalence of past-year quit attempts were: pregnant women (75%), 15 to 19 year old males (66%), 15 to 19 year old females (65%), individuals who identified as being black (63%) and individuals who immigrated to Canada within the past 5 years (61%) (Table 3).
- Among current smokers, the prevalence of past-year quit attempts combined with next 30-day quit intentions ranged from a high of 27% to a low of 11%.

Table 3: Top 20 Ranked Sub-populations for Past-Year Quit Attempts, by % and Population Estimate, Current Smokers, Ontario, 2007–2008

Ranked by %	%	95% CI	Population Estimate
Pregnant Women	74.8	90.3 – 59.3	10,800
15–19 year-old male	65.9	75.1 – 56.7	33,100
15–19 year-old female	65.4	74.3 – 56.5	24,800
Black	62.7	77.6 – 47.7	21,100
Immigrated less than 5 years ago	61.4	75.2 – 47.6	32,500
20–24 year-old male	60.5	68.9 – 52.1	74,200
20–24 year-old female	59.8	67.3 – 52.3	55,400
Works in management	58.0	64.8 – 51.3	75,100
South Asian	55.2	67.7 – 42.7	32,700
Unemployed	54.9	62.6 – 47.1	55,700
35–39 year-old female	54.7	63.0 – 46.3	43,700
Moderate/problem gambler	54.0	64.5 – 43.6	28,200
Some post-secondary school education	54.0	59.7 – 48.4	104,100
30–34 year-old female	53.9	62.9 – 44.9	44,300
30–34 year-old male	53.8	60.8 – 46.7	57,600
Works in business	53.2	58.1 – 48.4	142,700
Aboriginal	52.8	59.9 – 45.6	55,200
55–59 year-old male	52.5	61.1 – 44.0	49,100
$50,000 – $59,999 household income	52.4	58.5 – 46.4	91,300
Works in health	52.4	61.4 – 43.4	25,600

Ranked by Population Estimate	Population Estimate	%	95% CI
Spoke English at home	858,900	49.0	50.7 – 47.3
White	764,500	47.2	49.0 – 45.5
Born in Canada	759,000	48.8	50.6 – 47.1
First learned to speak English	737,400	49.4	51.2 – 47.6
Unhealthy eating	663,400	47.6	49.7 – 45.5
Non low-risk drinking	601,400	49.4	51.5 – 47.2
Inactive	529,000	45.8	48.1 – 43.5
Completed post-secondary school	494,500	50.6	53.2 – 48.0
Overweight	451,000	47.6	49.9 – 45.3
$100,000 or more household income	205,400	50.8	54.8 – 46.8
Completed high school	200,700	46.0	49.7 – 42.3
First learned another language other than English or French	192,700	49.6	54.7 – 44.5
Works in sales	180,000	50.7	54.8 – 46.7
Less than high school education	157,300	44.1	47.9 – 40.4
Works in trades	145,000	47.0	51.2 – 42.8
$60,000 – $79,999 household income	143,400	47.4	52.0 – 42.8
Works in business	142,700	53.2	58.1 – 48.4
Immigrated 16+ years ago	137,800	50.3	55.5 – 45.0
Did not state household income	127,100	48.7	53.4 – 44.0
Diagnosed with a mood disorder	120,000	47.3	51.8 – 42.8

Source: CCHS 2007–2008

Table 4: Top 20 Ranked Sub-populations for Past-Year Quit Attempts and 30-day Quit Intentions, by % and Population Estimate, Current Smokers, Ontario, 2007–2008

Ranked by %	%	95% CI	Population Estimate
20–24 year-old female	26.7	19.2 – 34.1	24,500
Works in social science	25.7[M]	16.4 – 34.9	18,500
30–34 year-old female	24.0[M]	14.9 – 33.1	19,300
30–34 year-old male	21.5	15.5 – 27.5	22,100
Works in business	21.5	17.0 – 25.9	57,100
Some post-secondary school education	21.4	16.6 – 26.2	40,700
Moderate/problem gambler	21.4[M]	12.7 – 30.1	11,000
Spoke neither English or French at home	21.3	15.0 – 27.6	40,400
25–29 year-old male	21.3	15.9 – 26.7	31,200
15–19 year-old female	21.0[M]	13.3 – 28.7	7,900
$10,000 – $14,999 household income	20.9	15.7 – 26.1	15,900
Born in the United Kingdom	20.8[M]	12.2 – 29.3	10,500
25–29 year-old female	20.6	14.2 – 27.0	22,300
Works in management	20.5[M]	13.8 – 27.2	26,100
Aboriginal	20.5	14.1 – 26.8	21,200
$50,000 – $59,999 household income	20.4	15.3 – 25.6	35,200
Trades occupation	20.4	17.0 – 23.8	62,000
40–44 year-old female	20.1	15.3 – 25.0	20,600
Unemployed	20.1	14.5 – 25.8	20,300
$100,000 or more household income	20.1	16.9 – 23.2	80,500

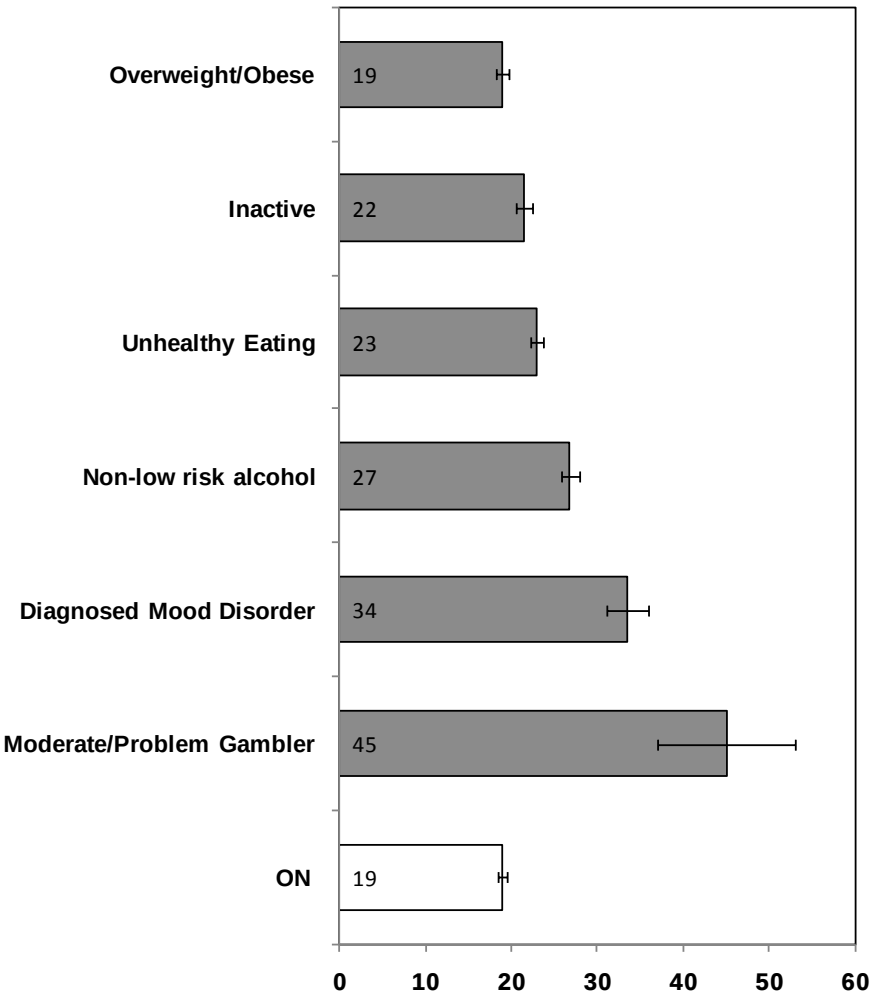
Ranked by Population Estimate	Population Estimate	%	95% CI
Spoke English at home	318,400	18.4	17.0 – 19.8
White	291,200	18.3	16.9 – 19.7
Born in Canada	284,200	18.5	17.1 – 20.0
First learned to speak English	277,700	18.8	17.3 – 20.3
Unhealthy eating	232,600	16.9	15.4 – 18.4
Non-low risk drinking	222,500	18.5	16.8 – 20.2
Completed post-secondary school	190,500	19.8	17.6 – 21.9
Inactive	173,500	15.3	13.6 – 16.9
Overweight	168,900	18.1	16.4 – 19.9
$100,000 or more household income	80,500	20.1	16.9 – 23.2
Completed high school	72,100	16.8	14.2 – 19.5
First learned a language other than English or French	68,500	18.2	14.4 – 21.9
Works in trades	62,000	20.4	17.0 – 23.8
Works in sales	60,100	17.4	14.5 – 20.3
Works in business	57,100	21.5	17.0 – 25.9
Less than high school education	54,000	15.4	12.7 – 18.1
$60,000 – $79,999 household income	50,600	16.9	14.0 – 19.8
Immigrated 16+ years ago	49,500	18.5	14.6 – 22.4
Diagnosed with a mood disorder	48,600	19.3	15.9 – 22.8
Did not state household income	44,800	17.8	14.1 – 21.5

Note: M = Interpret with caution, moderate levels of error associated with estimate—Coefficient of Variation (CV) between 16.5% and 33.3%. Horizontal lines represent 95% confidence intervals.
Source: CCHS 2007–2008

Smoking and Other Chronic Disease Risk Factors

- In Ontario, moderate or problem gamblers had the highest prevalence of current smoking (45%) (Figure 13).

Figure 13: Current Smoking Prevalence, among those with other Chronic Disease Risk Factors, Ages 12+, Ontario, 2007–2008, %



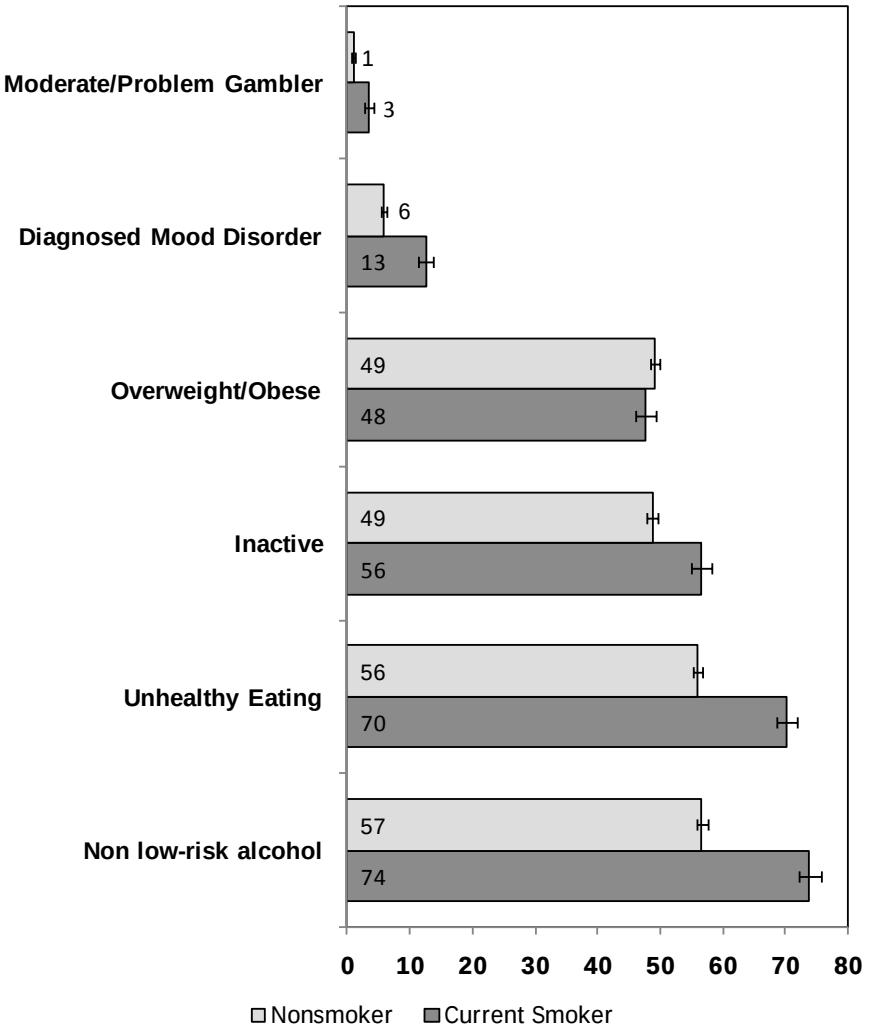
Note: Horizontal lines represent 95% confidence intervals.
Source: CCHS 2007–2008

- The prevalence of current smoking for overweight people did not differ from the provincial average for those aged 12 and over (19%).
- Ontario residents who reported being inactive or who ate less than 5 fruits or vegetables a day had a higher prevalence of current smoking (22% and 23%, respectively) than the provincial average (19%).
- Ontario residents who reported drinking in excess of the low-risk drinking guidelines or were clinically diagnosed with a mood disorder had a higher prevalence of current smoking (27%

and 34%, respectively) than the provincial average (19%).

- Among current smokers in Ontario, 74% drank in excess of the low-risk drinking guidelines compared to 57% of nonsmokers.
- Current smokers compared to nonsmokers reported a higher prevalence of: being a moderate or problem gambler (3% vs.1%), being clinically diagnosed with a mood disorder (13% vs. 6%), being inactive (56% vs. 49%), eating less than 5 servings of fruits or vegetables (70% vs. 56%), and drinking in excess of low-risk drinking guidelines (74% vs. 57%). Yet more nonsmokers than smokers have each of these chronic diseases risk factors (Figure 14 and Table 5).
- The prevalence of being overweight is similar for smokers (48%) and nonsmokers (49%).

Figure 14: Chronic Disease Risk Factor Prevalence, by Smoking Status, Ages 12+, Ontario, 2007–2008, %



Note: NR = Estimate does not meet Statistics Canada release criteria guidelines—Coefficient of Variation (CV) exceeds 33.3%. Vertical lines represent 95% confidence intervals.
Source: CCHS 2007–2008

Table 5: Chronic Disease Risk Factor Prevalence, by Smoking Status, Ages 12+, Ontario, 2007–2008

	Diagnosed with Mood Disorder		Inactive		Moderate or Problem Gambler		Non-Low Risk Alcohol		Unhealthy Eating		Overweight	
	%	Population Estimate	%	Population Estimate	%	Population Estimate	%	Population Estimate	%	Population Estimate	%	Population Estimate
Current Smoker	12.6	260,800	56.5	1,156,300	3.4	52,200	74.1	1,232,600	70.2	1,394,200	47.7	949,100
Nonsmoker	5.8	517,400	48.8	4,220,300	0.9	63,700	60.0	3,359,000	55.9	4,675,300	49.1	4,076,400

Source: CCHS 2007–2008

Chapter Three: Scope, Reach and Effects of the Existing Cessation System

Provincial Smoking Cessation Services

Ontario has several smoking cessation services, including Smokers' Helpline (SHL), Smokers' Helpline Online (SHLO), Driven to Quit (DTQ), Leave the Pack Behind (LTPB), the Ottawa Model for Smoking Cessation (OMSC) and Stop Smoking Treatment for Ontario Patients (STOP). Each program is described below.

Smokers' Helpline (SHL): This telephone service provided by the Canadian Cancer Society (CCS) is free and confidential, supporting smokers who:

- want to quit or are thinking about quitting
- have quit but want support
- continue to smoke and do not want to quit.

Trained quit specialists provide clients with information, advice, support, printed materials and referrals to local programs and services. They assist family and friends who want to help a smoker quit.

In 2008-2009, SHL reached 4,898 new callers and conducted at total of 16,833 calls.

Smokers' Helpline Online (SHLO): As part of the CCS Smokers' Helpline, SHLO provides web-based, interactive assistance 24 hours a day, 7 days a week. Features include:

- online and email support
- instant messenger service
- personal feedback about financial and health gains from quitting.

In 2008-2009, 6,851 Ontario smokers registered for SHLO.

Driven to Quit (DTQ): DTQ motivates smokers (19 years and older) to quit smoking, disseminates information about cessation resources and encourages smokers to seek help through SHLO.

In 2008-2009, about 22,365 smokers registered for DTQ.

Leave the Pack Behind (LTPB):

- assists post-secondary school student smokers to quit smoking
- protects nonsmokers from secondhand smoke
- prevents students from starting to smoke
- exposes tobacco industry tactics.

LTPB uses a peer-to-peer approach. A team of students from each campus runs the initiative under the supervision of a staff member. To date, 86% of Ontario post-secondary institutions are serviced by LTPB.

In 2008 to 2009, LTPB reached approximately 32,950 student smokers on Ontario campuses.

Ottawa Model for Smoking Cessation (OMSC): The Ottawa Heart Institute has developed a network of hospital-based smoking cessation programs. At admission, smoking status is documented in the patient record. Current smokers are advised to quit by the attending physician or nurse. After being discharged from the hospital, patients are contacted every month for six months to check their smoking status. If patients are having trouble remaining smoke-free or have started smoking again, a nurse calls to offer help.

In 2008-2009, OMSC reached 6,500 smokers who had been hospitalized in Ontario.

Stop Smoking Treatment for Ontario Patients (STOP): STOP distributes free nicotine replacement therapy (NRT) products to smokers across Ontario who would like to quit. Its purpose is to evaluate the effectiveness of providing NRT to Ontario smokers.

In 2008-2009, STOP reached 15,338 smokers.

Local Smoking Cessation Services in Public Health Units

In 2009, OTRU conducted an environmental scan of smoking cessation services in each of the 36 Ontario public health units (PHUs). All were sent an email requesting information on services available and target populations (e.g., pregnant women).

Main Findings

1. Of 36 Public Health Agencies (PHAs), 31 provided information.
2. Most offered a range of smoking cessation services, such as self-help resource material, group counseling and individual counseling (Table 6).

Table 6: PHU Programs and Services Offered in 2008-2009

Service	Number of PHUs Offering the Service (n=35)
Self-help resource material	35
Group counseling	27
Individual counseling	24
Free or subsidized NRT to at least some clients	13
Telephone helpline	11
Information sessions/workshops	8
Specialized clinics	4
Quit kits	3
Online support	2

3. The mean number of services offered in each PHU was 4 (range: 1-8)
4. Twelve PHUs had smoking cessation services for pregnant women, 11 for youth, 7 for people living with mental illness, 5 for Aboriginal communities, 4 for parents, 4 for people of low socioeconomic status (SES), 3 for young adults, 2 for francophone smokers, 1 for Chinese smokers, 1 for seniors and 1 for single mothers.

Use of Existing Services

To find out how many smokers had used a smoking cessation service or product in their lifetime, we analyzed questions from the Ontario Tobacco Survey (OTS) (Table 7).

The main findings were:

- Most smokers (79%) had received advice from a healthcare professional on quitting or reducing smoking (Table 7).
- Almost one-third had used nicotine gum (32%) or the patch (30%).
- Very few (less than 2%) had called Smokers' Helpline.

Table 7: Smoking Cessation Services and Supports Ontario Smokers Have Ever Used, Ontario Tobacco Survey, July 2005–December 2008

Demographic Characteristics	Health Professional Advice	Nicotine Gum	Nicotine Patch	Nicotine Inhaler	Zyban/ Bupropin/ Wellbutrin	Self-help Materials	Hypnosis Acupuncture Laser	Group Counseling	Ontario Smokers' Helpline	Smokers' Helpline Online*
All Smokers	79.0 (77.1, 80.9)	32.2 (30.3, 34.2)	29.9 (28.0, 31.8)	2.5 (1.9, 3.1)	19.8 (18.1, 21.4)	13.8 (12.5, 15.2)	10.8 (9.6, 11.9)	3.9 (3.1, 4.6)	1.4 (1.0, 1.7)	1.6 (1.1, 2.2)
Sex										
Female	83.1 (80.8, 85.4)	32.5 (29.8, 35.1)	31.5 (28.9, 34.1)	2.6 (1.8, 3.4)	22.4 (20.0, 24.7)	17.3 (15.3, 19.3)	13.8 (12.0, 15.7)	4.6 (3.5, 5.8)	2.3 (1.5, 3.1)	1.4 (0.9, 2.0)
Male	75.5 (72.6, 78.4)	32.0 (29.1, 34.9)	28.5 (25.7, 31.3)	2.4 (1.5, 3.3)	17.4 (15.2, 19.7)	10.8 (9.0, 12.6)	8.1 (6.5, 9.6)	3.2 (2.2, 4.2)	0.5 (0.2, 0.8)	1.8 (0.8, 2.7)
Age (years)										
18-29	71.2 (66.8, 75.7)	22.9 (19.3, 26.6)	18.3 (14.8, 21.9)	1.1 (0.5, 1.6)	9.2 (6.4, 11.9)	11.3 (8.8, 13.9)	2.9 (1.3, 4.4)	2.0 (0.7, 3.3)	F	2.1 (0.8, 3.3)
30-49	81.4 (78.9, 83.9)	32.6 (29.7, 35.5)	32.5 (29.6, 35.3)	2.7 (1.6, 3.7)	23.8 (21.3, 26.3)	14.2 (12.1, 16.2)	10.0 (8.3, 11.6)	3.6 (2.4, 4.7)	1.2 (0.7, 1.8)	1.9 (1.0, 2.8)
50-69	83.9 (80.8, 87.2)	44.3 (40.3, 48.2)	40.0 (36.2, 43.9)	4.5 (3.0, 6.0)	24.4 (21.2, 27.6)	17.2 (14.4, 20.0)	22.6 (19.2, 26.0)	6.7 (5.0, 8.4)	2.0 (1.1, 3.0)	F
70+	79.0 (70.1, 87.9)	25.6 (17.0, 34.2)	19.6 (12. 9, 26.4)	F	17.4 (8.1, 26.7)	8.6 (4.3, 12.8)	12.4 (7.1, 17.6)	5.1 (2.1, 8.1)	F	F
Education										
Secondary Education or less	80.6 (78.0, 83.1)	27.04 (13.5, 40.6)	29.5 (26.7, 32.2)	2.3 (1.6, 3.1)	18.0 (15.7, 20.3)	11.2 (9.4, 13.0)	8.3 (6.8, 9.8)	3.5 (2.4, 4.6)	1.7 (0.9, 2.4)	1.1 (0.4, 1.8)
More than Secondary Education	77.7 (75.0, 80.5)	33.5 (30.6, 36.4)	30.0 (27.3, 32.6)	2.7 (1.8, 3.6)	21.4 (19.1, 23.8)	15.8 (13.9, 17.7)	13.1 (11.3, 15.0)	4.2 (3.0, 5.3)	1.1 (0.7, 1.5)	2.1 (1.2, 3.0)
Region										
Urban	79.3 (77.1, 81.5)	32.4 (30.1, 34.7)	30.3 (28.0, 32.6)	2.4 (1.8, 3.1)	20.0 (18.0, 21.9)	13.9 (12.3, 15.5)	11.2 (9.7, 12.6)	4.2 (3.2, 5.2)	1.0 (0, 2.6)	1.6 (1.1, 2.2)
Rural	77.9 (74.1, 81.8)	32.9 (28.8, 37.0)	29.2 (25.4, 33.0)	2.7 (1.1, 4.2)	19.3 (16.1, 22.5)	13.9 (11.0, 16.8)	9.6 (7.3, 11.9)	2.8 (1.7, 4.0)	1.5 (1.0, 2.0)	F

* Wave 5-6

Marginal Reportability

Unacceptable Reportability

Reach of Interventions

The Smoke-Free Ontario Strategy provides a range of cessation services for adult smokers. However, the reach of these services is quite low. Table 8 shows the reach of interventions already in place. There were approximately 2.1 million current smokers in Ontario aged 12 and over.

Table 8: Reach of Programs Offered in Ontario in 2008/2009

Program	Reach in 2008/2009	% of Smokers
Smokers' Helpline	4,898[a]	0.2
Smokers' Helpline Online	6,851[b]	0.3
Driven to Quit	22,365	1.0
Leave the Pack Behind	13,573[c]	na
Ottawa Model for Smoking Cessation	6,500	na
STOP	15,338	0.7

[a] new callers; total call volume was 16,833
[b] registered users
[c] users of smoking cessation services

Gaps in the Cessation System

In 2007, the Cessation Task Group (CTG), part of the Ontario Ministry of Health Promotion Community Action Working Group (CAWG), proposed an evidence-based approach for developing a system of cessation to improve quit rates in Ontario. In 2007, OTRU developed a method for assessing gaps in cessation systems and implemented it in the Simcoe-Muskoka Public Health Unit. Results showed the current system lacked integration and did not offer sufficient services. Services needed or considered inadequate included a smokers' registry, a program to subsidize or provide free pharmacotherapy, group or individual counseling and worksite programs. The current strategy has few interventions that target populations with a heavier burden of tobacco-related disease, such as Aboriginal communities.

Population-level Indicators of Cessation System Effects

- In 2007, 31% of Ontario smokers had a serious intention to quit within 30 days (Table 9).
- Between 2003 and 2007, there was no significant change in the proportion of current smokers who made a serious quit attempt in the past 12 months.
- In 2007, 55% of Ontarians who had ever smoked had quit for at least one year.

Table 9: Key Indicators of Progress in Cessation, Ontario Smokers, 2003–2007

Indicators	2003	2005	2007
Intention to quit in the next 30 days	22%	25%	31%
Current smokers who made a serious attempt to quit smoking at least once over the last 12 months (CAMH-M)	50%	47%	44%
Percentage of ever smokers who are former smokers (quit ratio) (CAMH-M)	54%	58%	55%
Percentage of daily smokers who have high dependence (OTS)	12%	12%	12%
Number of cigarettes smoked per day (daily smokers) (CAMH-M)	16.4	16.3	15.2
Percentage of women (20–44) and pregnant in the past 5 years who smoked during most recent pregnancy (CCHS)	12%	10%	NA

Source: OTS, CCHS, CAMH Monitor, 2003, 2005, 2007

Contributions of Existing Interventions to Cessation Objectives

Using a logic model-based approach (Figure 15), we assess the contribution of SFOS programs to successful cessation. Paths towards cessation include smoking restrictions, reduced availability of tobacco products, increased availability of pharmacotherapy, social climate, social support and knowledge of tobacco harm. We examine the contribution of programs to paths (Figures 16, 17, 18, 19).

Figure 15: Intervention Path Logic Model: Interventions, Paths and Outcomes

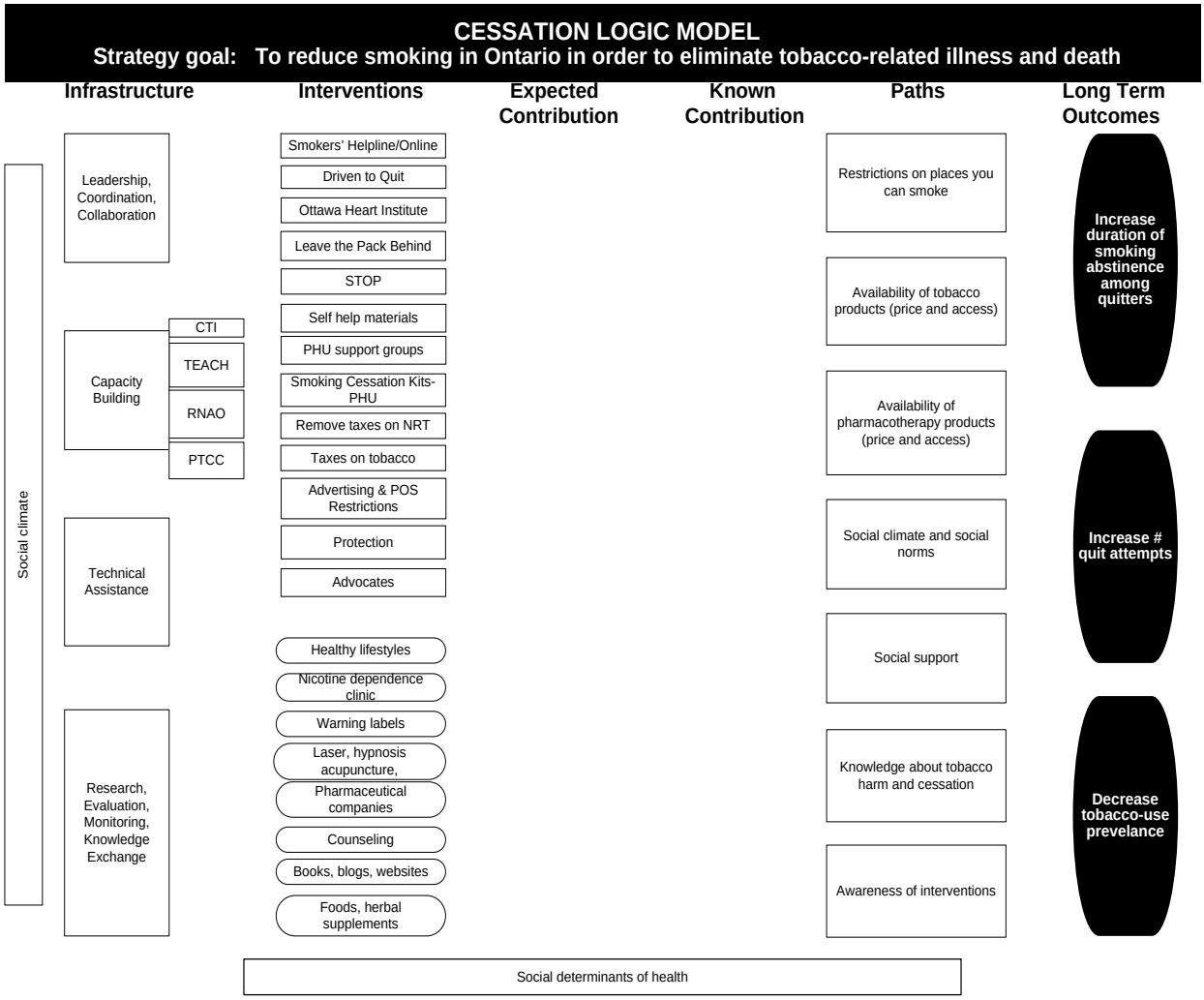
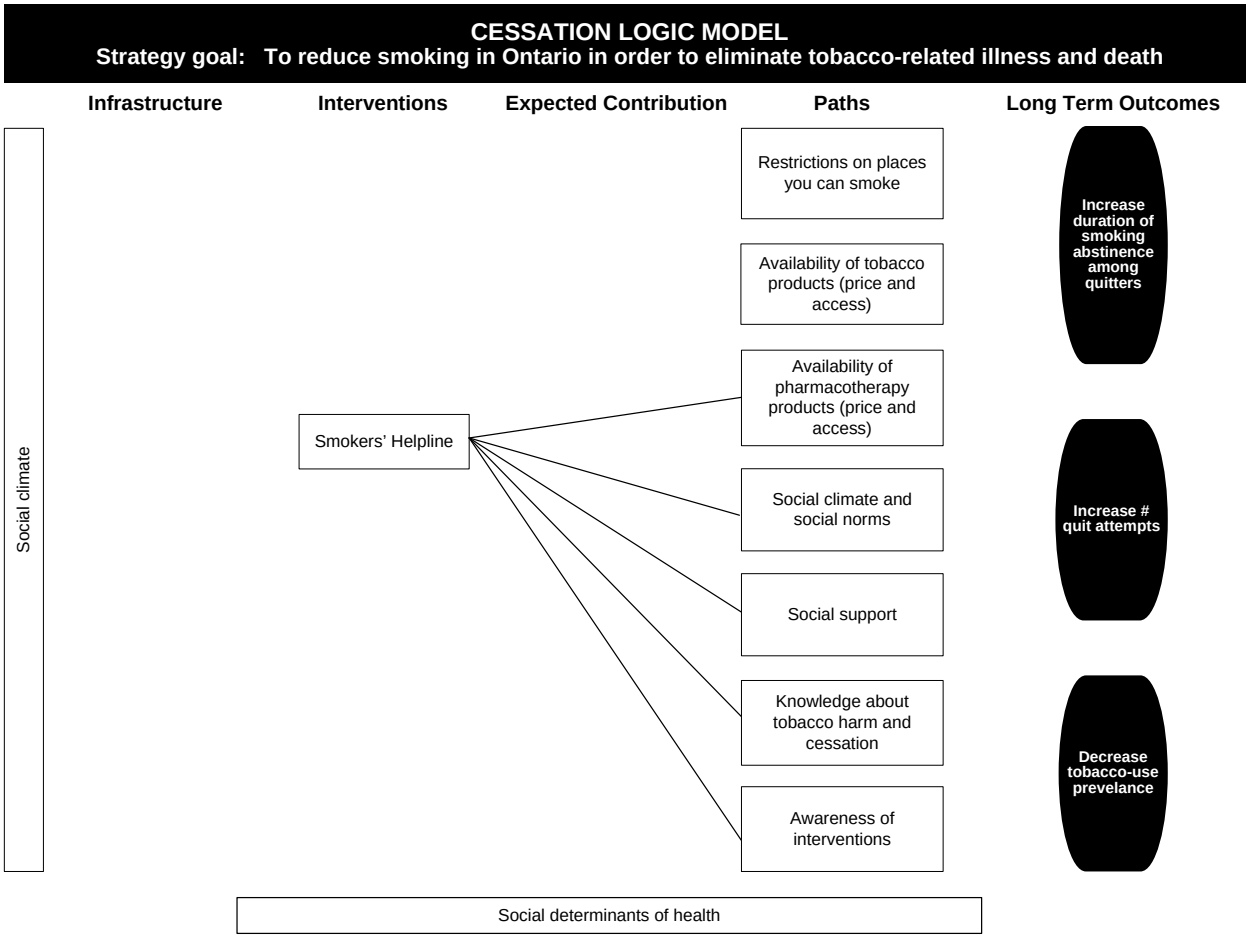


Figure 16: Contributions of Smokers' Helpline to Cessation Outcome Paths



Smokers' Helpline

The Canadian Cancer Society's Smokers' Helpline is a free, confidential, interactive telephone service for all smokers. The Helpline supports smokers who want to quit, are thinking about quitting but want support, or continue to smoke and do not want to quit. In addition to providing information, trained specialists assist family and friends who want to help a smoker quit.

SHL Reach

In 2008-2009 there were 4,898 new callers to SHL which is slightly lower than in 2007-2008; the total number of calls was 16,833.[32] Reach is highest in the northern, central and southwestern parts of Ontario. It is lowest in Central East and Toronto TCANs (which also have lower smoking rates). In addition, Smokers Helpline Online registered 6,861 smokers.

Social Climate

Strong media coverage in the last quarter of the 2005-2006 fiscal year was correlated with increased numbers of people hearing about SHL from friends and family.

Social Support
Over three-quarters of callers to SHL contacted in a six-month follow-up evaluation had a source of social support to help them quit. In 2009, 13% of callers had helped others quit smoking.[33]

Attitudes towards Tobacco and Cessation
In 2005-2006, smokers in pre-contemplation and contemplation stages had 30-day point prevalence quit rates of 11.2%, suggesting a positive impact on some who were not initially ready to quit.

Knowledge about Tobacco Harm and Cessation Benefits
No information has been provided regarding the effects of SHL and SHOL on knowledge of tobacco harm and cessation benefits.

Knowledge about Other Programs
SHL gives users electronic access and provides information over the phone about local and provincial services.

Availability of Pharmacotherapy
SHL informs clients about STOP, which supplies free NRT.

Quit Attempts
Over 90% of participants from the 2008-2009 evaluation had taken some action towards quitting at follow-up (7months after receiving help from SHL). The most frequent action taken was cutting down the number of cigarettes smoked (75%). Over 70% of participants stopped smoking for 24 hours. Almost 62% of participants set a quit date.[34]

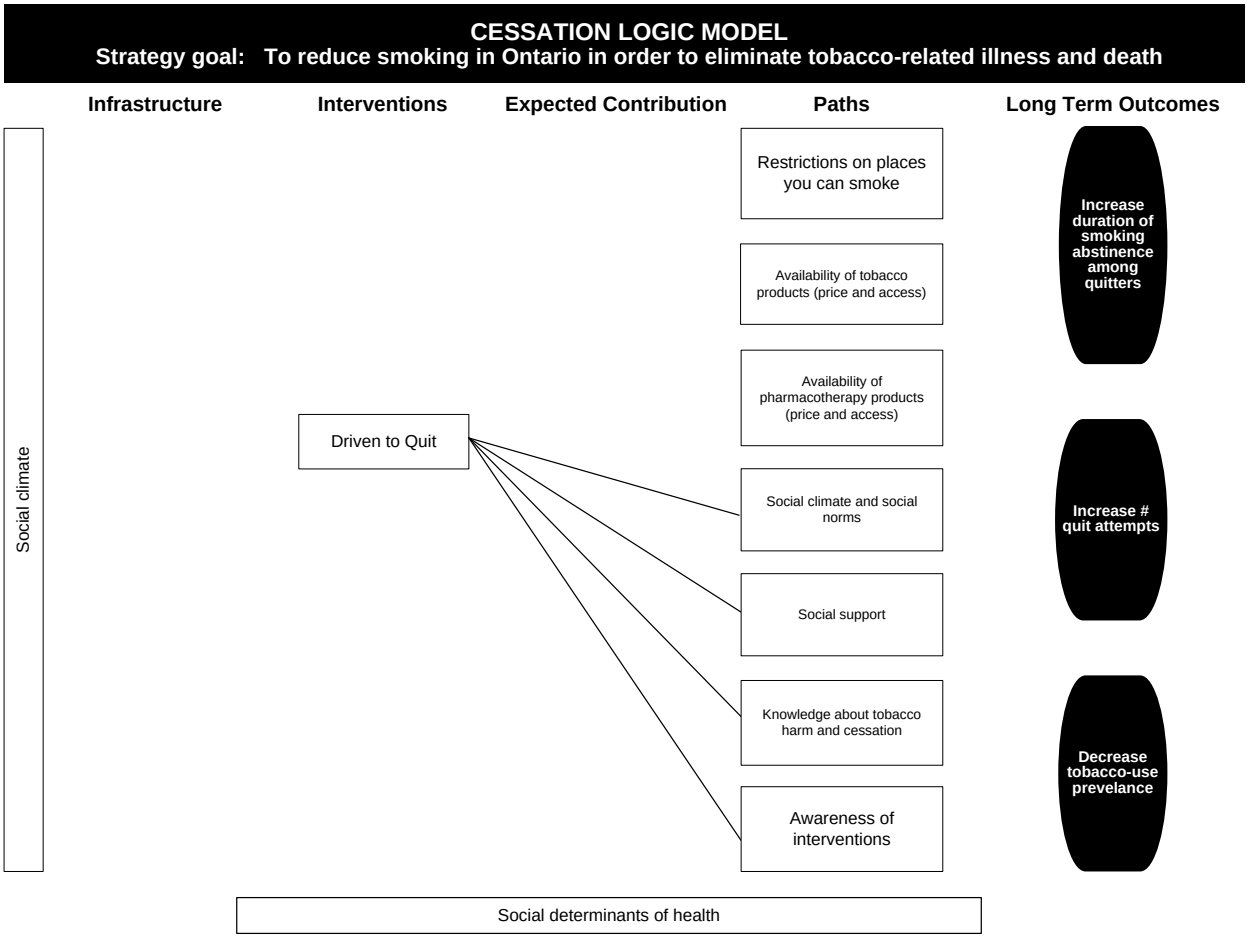
Successful Quits
In 2008-2009, 7.6% of smokers using SHL remained abstinent for 7 months.

Summary
The reach of SHL is low. The reach of similar services in other jurisdictions has been increased substantially by the offer of free Nicotine Replacement Therapy (NRT) and by heavy investment in promotion. The Online service is gaining popularity and, together with other SHL innovations, holds promise for future success.

Driven to Quit (DTQ)

DTQ motivates adult smokers to quit smoking, disseminates information about cessation resources and encourages smokers to seek help. The program is open to all Ontario residents over the age of 19 who have used tobacco on a daily basis for at least one year. Contestants register by fax, telephone or mail with a buddy who supports their pledge to remain smoke-free during quit month in order to be eligible for a prize. DTQ registrants are offered the opportunity to receive follow-up contact from Smokers' Helpline (SHL). The program lasts four months.

Figure 17: Contributions of Driven to Quit to Cessation Outcome Paths



Reach

In 2009, 2008 and in 2006, around 1% of all Ontario smokers enrolled in DTQ. An estimated 20 million media impressions were made during the 2008 campaign and 92,784 visits to the website were reported between April 2007 and March 2008.

Social Climate

DTQ makes smokers aware that quitting produces enough of a health benefit to merit public spending. Fifty-five percent (55%) of smokers have heard of DTQ and 39% of those have talked about DTQ with a friend or family member. A survey of health unit employees found that 34.2% very much agreed and 34.2% somewhat agreed that DTQ changed social norms about quitting smoking.[35]

Social Support

Encouragement of social support is integral to DTQ in that registrants are required to have a buddy to support the quit attempt. The 2008 evaluation of DTQ found that 82% of quitters who

participated in the evaluation found their support buddies to be helpful or very helpful. Successful quitters were more likely to find their buddies helpful than unsuccessful quitters.

Attitudes towards Tobacco and Cessation
A recent population-based survey showed that 100% of DTQ participants agree it is a good means for informing smokers that quitting is good for their health.

Knowledge about Tobacco Harm
The summary of the 2008 final DTQ report for the Ontario Ministry of Health Promotion states that the campaign raised awareness about the dangers of smoking, but no data are provided.

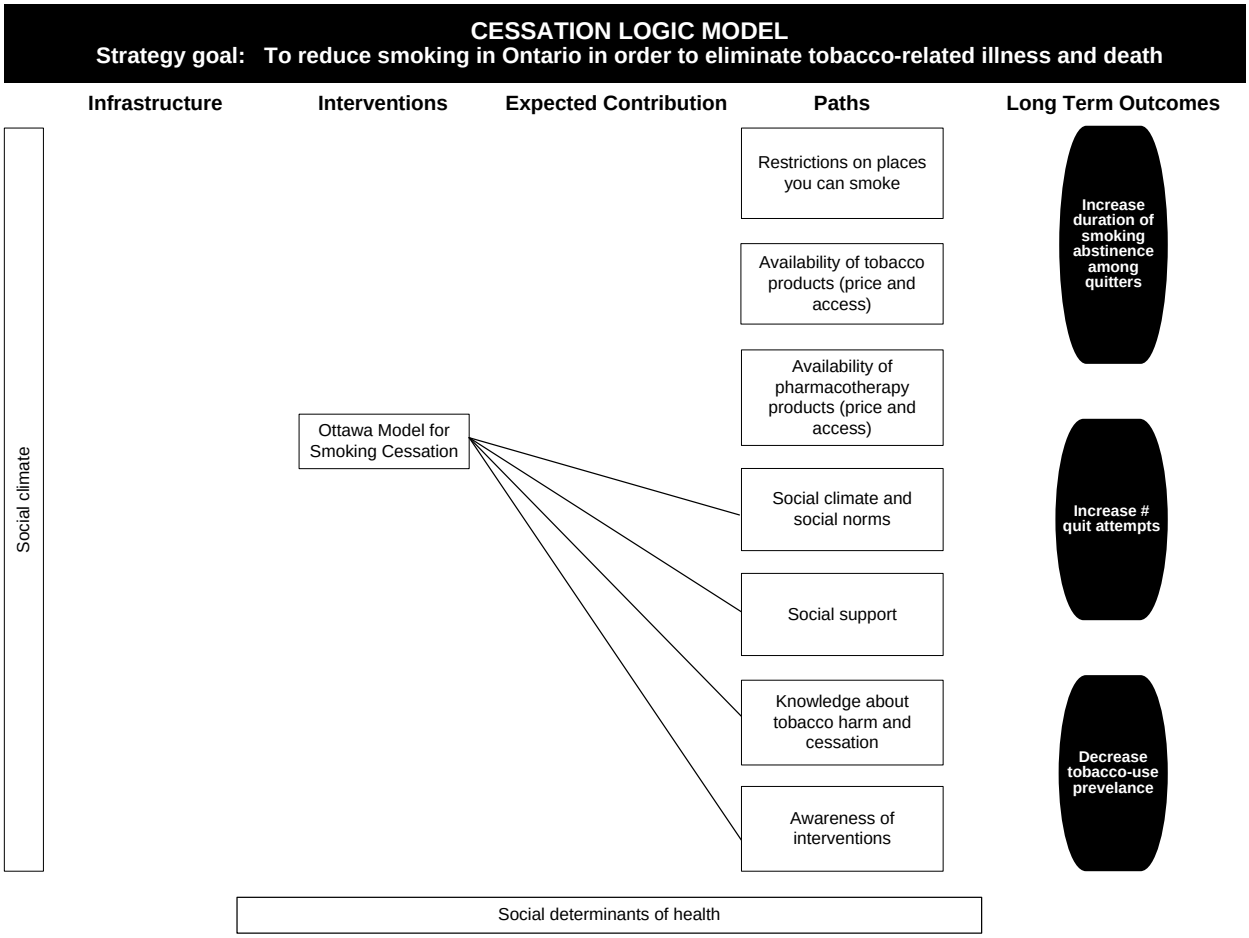
Knowledge about Cessation Programs
A recent population-based survey showed that 100% of smokers who have participated in DTQ agree it is a good means of informing smokers of the supports available to them. Awareness of different supports (e.g. SHL, SHLO) was higher for those who were aware of DTQ and even higher for those who had participated in it.

Quit Attempts and Successful Quits
Data collected to evaluate the success of DTQ in generating quit attempts and successful quits appear to suffer from the self-selection bias of respondents to surveys. In 2008, 60% of evaluation participants reported staying smoke-free 3 months post-DTQ. In 2009, 83% of participants rated DTQ as important in encouraging cessation and 56% said they would be less likely to quit if they had not participated in DTQ.

Summary
DTQ motivates quit attempts and increases awareness of smoking cessation and the profile of existing services.

Ottawa Model for Smoking Cessation (OMSC)

Figure 18: Contributions of the Ottawa Model for Smoking Cessation to Cessation Outcome Paths



The Ottawa Model for Smoking Cessation (OMSC) targets hospitalized patients, documenting smoking status at admission. Current smokers are advised to quit and receive counseling from the attending nurse in accordance with best practice guidelines. Patients are encouraged to use NRT during hospitalization to reduce withdrawal symptoms. They are provided with a self-help booklet and list of contacts for smoking cessation assistance. For patients who are ready, a quit plan is developed. NRT is recommended for most smokers and a standard order for NRT is authorized by the attending physician. Follow-up instructions are sent to the family physician. Upon being discharged, patients are entered into an interactive voice response (IVR) telephone program that provides tracking and counseling services.[36]

Inpatient Programs and Reach

OMSC is partnered with 37 Ontario hospitals. As of March 31, 2009, 29 had launched the program.

Social Climate
We have no information concerning the impact of OMSC on social climate.

Social Support
OMSC involves minimal or intensive counseling for participants, a source of social support for smoking cessation. The follow-up IVR service includes transfer to counseling support.

Attitudes towards Tobacco and Cessation
We have no information on the effect of OMSC on attitudes to tobacco and cessation.

Knowledge about Tobacco Harm and Cessation
In 2008, OMSC provided training for nearly 1000 health professionals on the clinical aspects of tobacco dependence treatment.

Knowledge about Cessation Programs
OMSC provides participants with a list of contacts for cessation resources, including community cessation programs, quitlines and public health cessation groups.

Quit Attempts
No information has been provided on the effect of OMSC on quit attempts.

Successful Quits
In 2008, partner hospitals treated a combined 6500 patients, of whom nearly 2200 are now smoke-free.[37]

Summary
OMSC provides a valuable service for hospitalized smokers. Reach of smokers in participating hospitals is high. The program improves cessation rates for participating smokers.[38]

STOP

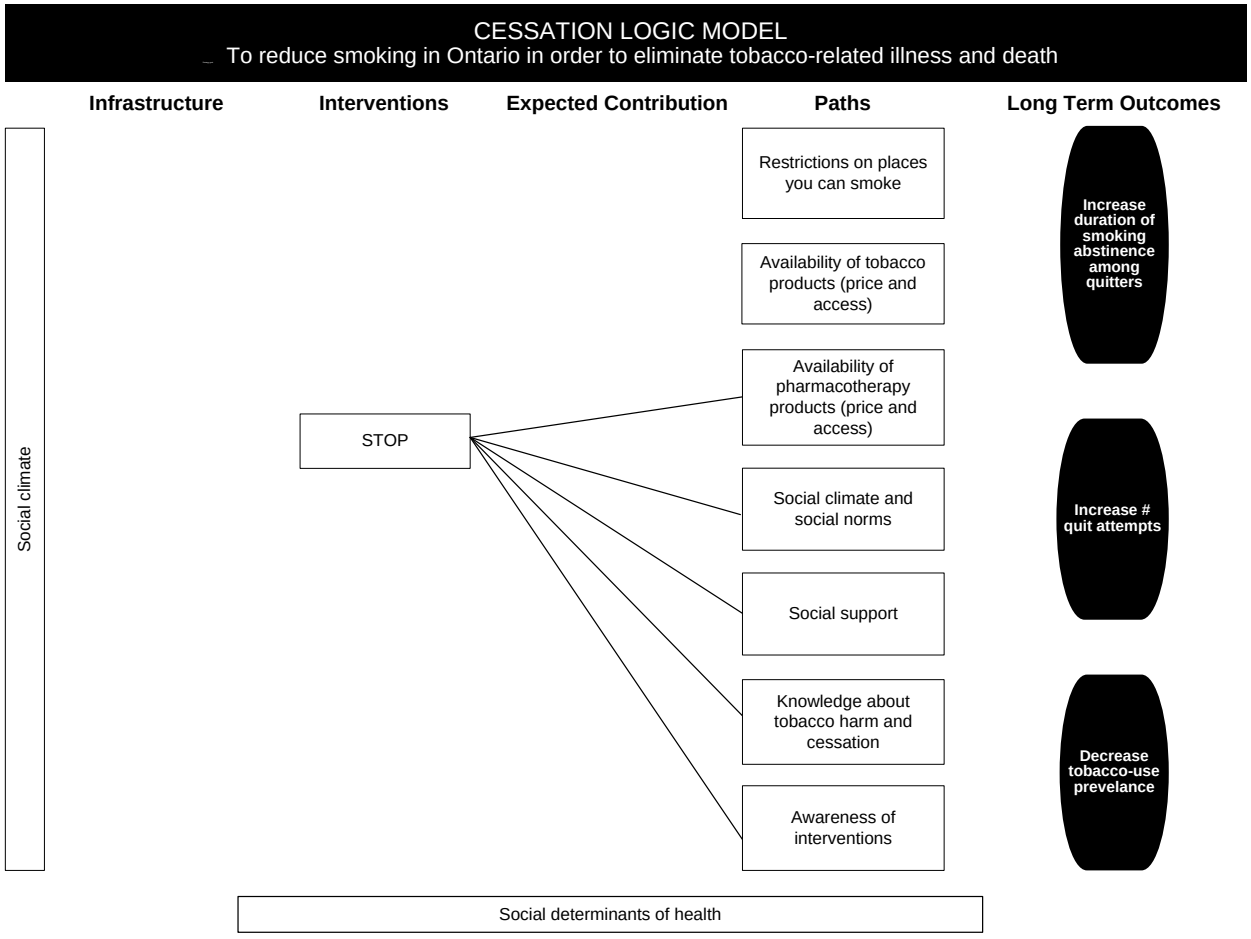
Description

STOP is a comprehensive program of distributing free NRT with varying degrees of counseling support to smokers across Ontario. Five distribution methods have been used and are being evaluated. Distribution occurs through:

1. institutions, such as CAMH, the Ottawa Heart Institute and the Thunder Bay Regional Health Sciences Centre
2. a call centre whereby over 33,000 smokers enrolled in the study. Ontario residents to receive a five-week supply of free NRT by calling a toll-free number using a mass distribution strategy
3. 12 public health units as well as 12 Community Health Centers and 2 Aboriginal Health Access Centers
4. 98 community pharmacies
5. Half-day long cessation workshops in communities across Ontario - STOP on the Road workshops.

STOP was designed to achieve an evidence-based protocol for providing free NRT, faculty training on combining pharmacotherapy with behavioral interventions and an evaluation framework for future coverage models.

Figure 19: Contributions of STOP to Cessation Outcome Paths



Reach

As of September 2008, STOP had reached over 45,000 out of 175,000 eligible Ontario smokers, or close to 25% of all eligible smokers in the province. The first mass distribution reached participants from 508 communities across Ontario, while the second mass distribution reached participants from 649 communities. STOP has a component called STOP on the Road, which targets individuals in underserved, rural and small communities. In 18 months, 210 STOP on the Road workshops were conducted. [39]

Social Climate

The mass distribution phase of STOP was promoted in print and television advertisements across Ontario, highlighting the importance of smoking cessation.

Social Support

38% of STOP participants chose to receive counseling. Those who did had higher rates of 7-day point prevalence abstinence. Counseling was offered as part of the PHU intervention and STOP on the Road workshops as well as Community Health Centres and community pharmacies.

Knowledge about Tobacco Harm and Cessation
During the STOP on the Road workshops, participants view a presentation on cessation strategies, myths and facts. Pharmacists have the opportunity to learn about brief counseling intervention strategies. Out of the 113 pharmacists who participated in the community pharmacy phase of the study, 87% agreed that the training had affected their intervention delivery skills.

Knowledge about Other Cessation Resources
As part of the mass distribution phase, STOP sent participants a package about other cessation aids, including self-help materials, websites, Smokers' Helpline and books.

Availability of NRT
STOP increases the availability of NRT for a large number of participants.

Quit Attempts
As many as 9 out of 10 smokers in STOP report having made a quit attempt.

Successful Quits
At the tertiary care centres where NRT was delivered in person, 35.9% of STOP participants had quit at 6-month follow up and 37.7% at 12-month follow up. At the tertiary care centers where NRT was mailed out, 18.3% had quit at 6-month follow up. Participants who received NRT through community pharmacies had 6-month quit rates of 23.6%.

Summary
STOP demonstrates the effectiveness of free NRT distribution to large numbers of smokers interested in quitting.

Chapter Four: International Cessation Systems

This chapter reviews the experience of four international jurisdictions – England, New York State, Minnesota and California – identifying lessons for the cessation system in Ontario. These international jurisdictions have achieved considerable decreases in adult smoking prevalence in the last ten years or so. They employ a mix of cessation strategies, such as widely available cessation medication, adoption of screening systems within healthcare organizations, enhancement of health insurance coverage of cessation aids and reduction of the social acceptability of smoking.

United Kingdom

Tobacco Control Strategy

In 1998, the U.K. government introduced a comprehensive tobacco control strategy, including smoking cessation services, increased tobacco taxation, mass media campaigns and legislation to minimize exposure to secondhand smoke and restrict tobacco advertising and promotion. Prevalence targets were set for certain sub-populations, such as children, pregnant women and routine and manual workers.[i] In 2004, a target was set to reduce the rate of adult smoking to 21% or less by 2010.[40]

In England, overall adult smoking prevalence declined from 28% in 1998 to 21% in 2007. In 2007, a survey of 30 European countries ranked the U.K. as most effective in implementing key tobacco control policies.[41]

Cessation System

In 1999, a national smoking cessation program was introduced through the National Health Service (NHS), the publicly funded U.K. healthcare system. In England, this program, known as National Health Service Stop Smoking Services (NHS SSS), was launched in 26 Health Action Zones, specific geographic areas with health inequality problems. Currently 152 Primary Care Trusts (PCTs) have responsibility for running smoking cessation services. PCTs provide cessation services or fund general practices, hospitals and other health professionals or agencies to deliver them. In 2005, there were 170 local cessation services operating under PCTs.[42]

[i] The United Kingdom defines routine and manual workers as those who are engaged primarily in physical rather than intellectual labour. (http://www.eurofound.europa.eu/emire/UNITED%20KINGDOM/MANUALWORKER-EN.htm).

All health professionals take NHS cessation training and must offer support to clients for four weeks after the designated quit date, carry out the four-week follow-up and confirm the smoking status of clients who say they have quit at four weeks by use of a carbon monoxide monitor.[43] Local NHS SSS advertise at primary and secondary care venues as well as non-healthcare settings. They train volunteers as smoking cessation advisers.

A recent NHS SSS monitoring report[44] shows that from April 2007 to March 2008:

- there was a 13% increase in smokers setting a quit date since 2006-2007
- 52% of those setting a quit date had successfully quit (10% increase since 2006-2007)
- 88% of those who set a quit date received pharmacotherapy.

In 2000, the Department of Health, England, commissioned a national evaluation of smoking cessation services. Key results are presented below.

Reach
Roughly 46% of smokers try to quit each year, but only 3% of smokers use NHS SSS to support their quit attempts.[45] A 2002 study showed that NHS SSS was successful in reaching[ii] smokers living in disadvantaged areas.[46]

Quitting
In 2003, 53% of those setting a quit date through NHS SSS were abstinent at four weeks. Group counseling was more effective than one-to-one counseling. Severely addicted smokers and low SES smokers had lower cessation rates.

Cost-effectiveness
Expenditure on NHS SSS was £61 million (≈ CAD$120 million[iii]) in 2007-2008, nearly 20% more than in 2006-2007. The national stop smoking program was cost-effective, operating below the benchmark of £20,000 (≈CAD$44,580) per quality adjusted life-year saved (QALY).[47]

Summary

A network of local cessation services staffed by trained health professionals, free access to cessation medications and targeting of low SES smokers are key characteristics of NHS SSS. However, the program still has challenges to overcome, such as limited reach and limited impact on low SES smokers.

[ii] Smokers were defined as reached if they had attended smoking cessation services and set a quit date.
[iii] This and all subsequent cost estimates reported in foreign currencies were converted to Canadian dollars using the average exchange rate for the year a given study was conducted.

New York State

Tobacco Control Strategy

New York State began implementing a comprehensive tobacco control program in 2000 with funds from the Master Settlement Agreement and revenue from cigarette tax. New York State aims for one million fewer smokers as a result of reducing adult smoking prevalence to 14% and youth prevalence to 10% by the year 2010. To achieve these goals, the New York State Tobacco Control Program (NYSTCP) employs a comprehensive approach. Per capita tobacco control funding has grown, e.g., from $0.67 in 2000 to $2.50 in 2005.[48]

Cessation System

The NYSTCP focuses on increasing the reach of the New York State Quitline, expanding cessation support to Medicaid recipients and increasing the use of tobacco screening and assessment within healthcare organizations.

New York State Quitline (Quitline)
Quitline offers pharmacological treatment along with behavioral counseling. A free two-week NRT starter kit is provided to clients to help them to quit smoking. More than 140,000 clients received NRT starter kits in 2008. Provision of free medication resulted in dramatic increases in both Quitline call volume and quit rates. The cost of free NRT was estimated at approximately $420 (≈CAD$662) per additional quitter. Although the number of smokers enrolling in Quitline is increasing each year, it still reaches only 3% of smokers in the state.[49]

NYSTCP – Medicaid Partnership
Medicaid is jointly funded by the federal and state governments, which provide healthcare coverage to low-income Americans. New York, along with other states, has extended coverage for over-the-counter nicotine patches and gum, nasal sprays, inhalers, bupropion and varenicline. In 2008, 18% of the 425,049 Medicaid clients in New York State who were current smokers received a cessation benefit.[50]

Cessation Centers
Since 2004, nineteen Cessation Centers have been in operation in New York State. They are housed in healthcare, educational and research facilities. Using outreach strategies, Cessation Centers approach healthcare organizations and encourage them to implement tobacco use screening and treatment and to provide training and technical assistance in connection with these practices. In 2006-2007, the Cessation Centers increased their total number of activities by 37% compared to 2005-2006. The percentage of healthcare organizations with written guidelines for screening and treating tobacco dependence increased from 38% in 2004-2005 to 56% in 2007.

Summary

The NYSTCP undertakes a wide range of measures to promote cessation. The Quitline is a key resource, which utilizes paid and earned media and referral tools and offers free medication. The number of Quitline enrollees is increasing each year, but its reach is still relatively low. The Cessation Centers continue to extend their reach with medical practices to achieve a significant statewide impact and make smoking cessation intervention an integral part of the healthcare system.

Minnesota

Tobacco Control Strategy

In 1975, Minnesota passed the first comprehensive clean indoor air act, which created nonsmoking sections in public places, including workplaces and restaurants. The act provided model legislation for other states. Early initiatives included implementation of state-funded antismoking programs, testing the effectiveness of public policy interventions and lawsuits against U.S. tobacco companies. A settlement with the tobacco industry in 1998 marked the beginning of a new multi-partner tobacco control strategy.[51]

The prevalence of smoking in Minnesota declined from 22% in 1999 to 17% in 2007, which is one of the lowest rates in the United States. This progress has been largely due to adoption of smoke-free policies, increased price of tobacco products and maintenance of smoking cessation services statewide, with involvement of the health insurance sector.

Cessation System

Blue Cross and Blue Shield of Minnesota (Blue Cross) is a health insurance organization that covers 2.9 million members and has been successful in launching population-based tobacco control programs. Blue Cross benefited from a 1998 settlement that the state and the insurance carrier reached with the tobacco industry from the Master Settlement Agreement.

Cover Effective Treatments
Since 2000, Blue Cross has provided nicotine gum, patch, inhaler, nasal spray and buproprion. Following the USPHS Guideline for inclusion of behavioral counseling as part of the basic benefit package, Blue Cross changed its medical reimbursement policy and made counseling available through healthcare settings.

Counsel Members Who Smoke
In 2000, Blue Cross began offering a stop-smoking program called BluePrint for Health. All members who are smokers can receive counseling, supported by a computerized system that analyzes

progress. Since 2000, the program has provided counseling to more than 32,000 members and achieved a quit rate of 18%.

Summary

Minnesota's Comprehensive Tobacco Control Program and smoking cessation strategy are a unique collaboration of public and private sectors in addressing tobacco problem. Through the combined efforts of major health plans, smokers in Minnesota have insurance coverage for or free access to cessation medications and counseling. In this collaborative model, health insurance organizations engage in other tobacco control activities to support the reduction of tobacco use.

California

Tobacco Control Strategy

California was the first U.S. state to implement a comprehensive tobacco control program using excise taxes as a designated source of funding. In the 1990s, California spent an average of $3.67 per capita per year on its comprehensive program. Under the California Tobacco Control Program (CTCP), adult smoking prevalence in California decreased from 23% in 1988 to 14% in 2007.[52]

The CTCP focuses on changing social norms about smoking. The social norm change approach creates a social and legal climate in which tobacco becomes less desirable, acceptable and accessible. Cessation is not considered a separate intervention area but an outcome or effect of the three CTCP key strategies, such as countering pro-tobacco influences, reducing exposure to environmental tobacco smoke and reducing access to tobacco products. Within the social norm change approach, efforts are focused on changing the overall environment to encourage cessation rather than providing direct cessation services.

Cessation System

Social Change and Smoking Cessation
In 2007, over 50% of smokers reported making at least one quit attempt in the past year. The majority (75%) making a quit attempt do not avail themselves of outside assistance.

The California Smokers' Helpline
The California Smokers' Helpline was the first U.S. helpline for smokers and is promoted through media campaigns, local tobacco control programs and the school system.

Community-based Cessation Efforts
The CTCP funds local lead agencies, which are mandated to adopt tobacco screening and treatment as an integral activity of healthcare providers. Healthcare professionals are trained to establish patient education and treatment programs.

Media Campaigns

The California Tobacco Control Media Campaign teaches that the tobacco industry is dishonest, nicotine is addictive and secondhand smoke kills. It is associated with increased knowledge about health and smoking, reducing aggregate cigarettes sales and greater use of the Helpline. Smokers who are exposed to the media campaign have a 3.6% higher likelihood of trying to quit smoking or consider quitting in the future.[53]

Summary

California was the first U.S. state to have a comprehensive tobacco control program. The California program emphasizes social norms and considers cessation to be dependent on multiple policies acting synergistically. Cigarette price increases, smoke-free laws, mass media campaigns and other interventions have decreased smoking prevalence in California.

Discussion

Key characteristics of cessation strategies in England, New York State, Minnesota and California are summarized in Table 10.

Table 10: Key Characteristics of Smoking Cessation Strategies in England, New York, Minnesota and California

	England	New York	Minnesota	California
Status of smoking cessation in overall tobacco control strategy	Primary strategy	Primary strategy	Primary strategy	Not a primary strategy
Key strategies to promote cessation	• Wider availability of smoking cessation services, including pharmacotherapy • Media campaigns	• Free NRT through Quitline • Media campaigns • Referral services • Healthcare systems change	• Greater insurance for smoking cessation treatments • Cessation support to uninsured population	• Smoke-free laws and other legislative provisions • Long-running mass media campaigns • Taxation • Healthcare systems change
Key cessation resources	• Local NHS cessation services • NHS Helpline	• State-wide Quitline • Local Cessation Centers	• Services covered by private health insurance plans • State smoking cessation programs	• State-wide Quitline • Local lead agencies
Investment in cessation activities	Sustained funding	Sustained funding	Fluctuating funding for state programs; Sustained for insurance-based programs	Fluctuating funding

Drawing upon lessons learned from England, New York State, Minnesota and California, cessation initiatives to consider for Ontario include:

1. ***Sustained investment***
   Increases in tobacco control expenditures are independently associated with declines in adult smoking prevalence.

2. ***Comprehensive interventions***
   Successful strategies utilize economic, regulatory, educational and clinical programs.

3. ***Expansion of health insurance***
   Insurance coverage for smoking cessation interventions increases quit rates.

4. ***Delivery of free medications through a quitline***
   Free medication through a quitline is an effective means of increasing quit rates.

5. ***Cessation infrastructure***
   Cessation infrastructure is required for the effective promotion of cessation activities.

6. ***Utilization of the healthcare system***
   Healthcare professionals have an important role to play in promoting successful quits.

7. ***Comprehensive cessation system***
   Better quit rates are achieved through a comprehensive cessation strategy, including quitlines, free pharmacotherapy, counseling, tobacco screening, brief interventions and referral mechanisms.

Appendix

CCHS and CAMH Variables Used in Segmentation Analysis (Chapter 2)

Current smoker
Individual who has smoked a cigarette in past 30 days and at least 100 cigarettes in lifetime

All tobacco use
Individual who has smoked a cigarette, cigar, or pipe in past 30 days or has used snuff or smokeless tobacco in past 30 days

Past-year quit attempt
Current smoker who has made at least one quit attempt in past year

Past-year quit attempt and 30-day quit intention
Current smoker who has made at least one quit attempt in past year and intends to quit smoking in next 30 days

No intention to quit
Current smoker who did not make a quit attempt in past year and did not intend to quit smoking in next 6 months

Unemployed
Individual not employed at time of survey but available to work and looked for work in past 4 weeks

Alcohol use exceeding low-risk drinking guidelines
Individual 19 years or older who drank in excess of the CAMH 2004 low-risk drinking guidelines, i.e., total weekly consumption of 15 drinks or more for males and 10 drinks or more for females, or consumption of two drinks or more every day in the past 7 days for either males or females. (The guidelines advise no drinking of alcoholic beverages for certain groups, e.g., pregnant or lactating women, persons with heart disease or family history of drinking problems or cancer, persons taking certain medications or anyone who is planning to drive a vehicle or operate machinery.)

Unhealthy eating
Eating less than 5 servings of fruit or vegetables a day

Mood disorder
Individual (non-institutionalized at time of survey) with a mood disorder, such as depression, bipolar disorder, mania or dysthymia, diagnosed by a health professional

Moderate or problem gambler
Individual whose gambling activity in past year was classified as moderate risk or problem gambling, according to the problem gambling severity score used by CCHS

Inactive
Individuals inactive in leisure time in past three months based on total daily Energy Expenditure values (kcal/kg/day) calculated using frequency and duration per session of physical activity as well as MET value of the activity. MET (metabolic equivalent) is a value of metabolic energy cost expressed as a multiple of the resting metabolic rate.

Overweight/obese
Individuals classified as overweight or obese according to Body Mass Index (BMI), excluding pregnant women

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