



Catalogue no. 82-003-XIE

Health Reports

Vol. 18, No. 3

Smoking bans Physical activity
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Statistics Canada
Health Information and Research Division

Health Reports

Volume 18, Number 3

Published by authority of the Minister responsible for Statistics Canada

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August 2007

Catalogue no. 82-003-XPE, Vol. 18, No. 3
ISSN 0840-6529

Catalogue no. 82-003-XIE, Vol. 18, No. 3
ISSN 1209-1367

Frequency: Quarterly

Ottawa

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Citation recommendation

Health Reports has a unique Statistics Canada catalogue number: 82-003. The English paper version is 82-003-XPE; the electronic version is 82-003-XIE. The catalogue number facilitates storing and retrieving the journal in libraries, either on the shelf or electronically. Thus, we request that, when citing a *Health Reports* article in other published material, authors include our catalogue number.

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An abstract graphic on the left side of the page. It features a dark grey background with a large, stylized white face in the upper left. The face has a vertical line for a nose and a horizontal line for a mouth. Below the face, there are white, wavy lines that resemble a beard or hair. In the lower right of the graphic, there is a large, white, stylized number '9' or a similar symbol. The overall style is modern and minimalist.

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Smoking bans: Influence on smoking prevalence

Margot Shields

Abstract

Objectives

This article reports trends in smoking prevalence and smoking restrictions in Canada since 2000, and examines associations between home and workplace restrictions and smoking cessation.

Data sources

Data are from the Canadian Tobacco Use Monitoring Survey and the longitudinal component of the National Population Health Survey.

Analytical techniques

Trends in smoking prevalence and smoking restrictions were calculated. Associations between home and workplace smoking restrictions and smoking cessation were examined in the context of the Transtheoretical Model, which proposes that smokers go through five distinct stages in attempting to quit. The likelihood of current and former smokers being at specific stages was studied in relation to smoking restrictions at home and at work. Longitudinal data were used to determine if home and workplace smoking restrictions were predictors of quitting over a two-year period.

Main results

Since 2000, Canadian smokers have faced a growing number of restrictions on where they can smoke. Bans at home and at work were associated with a reduced likelihood of being in the initial "stages of change," and an increased likelihood of being in the latter stages. Smokers who reported newly smoke-free homes or workplaces were more likely to quit over the next two years, compared with those who did not encounter such restrictions at home or at work.

Keywords

Smoking prevalence; tobacco use; environmental tobacco smoke (ETS); smoking cessation; stages of change

Author

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The health hazards of exposure to environmental tobacco smoke (ETS) are well documented.¹ As the 21st century began, smoking restrictions were proliferating, with provinces and major cities passing legislation to ban smoking in public places (Appendix Table A). By 2003, such laws were in effect in over 300 municipalities across Canada.²

The increase of smoking restrictions in public places raises an important question: how are legislated bans associated with smoking practices in the home? Citing the "last refuge" model, opponents of such legislation contend that restrictions in public places, particularly recreational venues, result in more smoking at home, and thereby increase the exposure of non-smoking family members to ETS.³ Alternatively, advocates of smoke-free legislation maintain that public bans actually encourage smoking restrictions in the home. This belief is consistent with the "social diffusion model," which suggests that public bans raise smokers' awareness of the harmful effects of ETS, so that they voluntarily impose bans in their homes.³

Several studies have shown that workplace restrictions are associated with a lower prevalence of smoking among workers, and also with smoking cessation.⁴⁻⁹ While the impact of home restrictions has not been studied as extensively,^{3,6,10-12} some evidence indicates that they are even more strongly associated with quitting than are workplace bans.⁶

Typically, studies of associations between smoking bans and cessation have considered only quitting as the outcome. However, according to the Transtheoretical Model (TTM),^{13,14} smokers go through five distinct stages in their attempts to quit. Advocates of the TTM argue that examining bans in relation to the “stages of change” is a more sensitive measure of progress. These five stages are precontemplation, contemplation, preparation, action, and maintenance:

- Smokers in the *precontemplation* stage have no plans to quit in the foreseeable future. They may wish to quit, but are not seriously thinking of doing so.
- At the *contemplation* stage, smokers recognize the problem and are seriously thinking about addressing it, usually within the next 6 months. These smokers will not necessarily quit within 6 months and may remain at the contemplation stage for a long time.
- The *preparation* stage involves a firm commitment to quit. Smokers at this stage have taken some initial steps to alter their behaviour and have immediate plans to quit.
- At the *action* stage, smokers have quit. Typically, the action stage is defined as being abstinent anywhere from one day to 6 months.
- *Maintenance* is the stage where ex-smokers work to prolong abstinence and become successful quitters.

This article describes the extent to which smokers in Canada have faced restrictions in their homes since the year 2000. Factors associated with the likelihood that smokers would live and work in environments where smoking is restricted are explored. A second objective is to examine whether smoking restrictions at home and at work are associated with smokers’ and former smokers’ being at specific phases of the stages of change.

Longitudinal data are used to determine if the imposition of new smoking restrictions is associated with quitting and with lower smoking intensity.

METHODS

Data sources

Cross-sectional

The cross-sectional estimates for smoking prevalence and smoking restrictions are from the Canadian Tobacco Use Monitoring Survey (CTUMS).¹⁵ The survey, which has been conducted annually since 1999, covers the household population aged 15 or older in the 10 provinces; it excludes residents of the territories and full-time residents of institutions. All interviews are by telephone, and proxy responses are not accepted.

Data are collected in two waves: from February to June, and from July to December. In addition to a file for each wave, an annual file is produced. Smoking trends in this article are based on the annual files for 2000 to 2005 and the wave 1 file for 2006. Responding sample sizes were:

Year	Sample size	Smokers
2000	20,415	5,632
2001	21,788	5,612
2002	23,341	5,443
2003	21,300	4,876
2004	20,275	4,438
2005	20,840	4,394
2006 (wave 1)	9,954	2,075

In 2005, the household response rate was 79.2%, and the person response rate was 84.1%, for an overall response rate of 66.6%.

Longitudinal

The analyses of associations between smoking restrictions and quitting are based on longitudinal data from the household component of the National Population Health Survey (NPHS). The NPHS, which began in 1994/1995, collects information about the health of Canadians every two years. The household component covers the population aged 12 or older living in private households in the 10 provinces, excluding people on Indian reserves, in the territories, on Canadian Forces bases, and in some remote areas.

In 1994/1995, 20,095 respondents were selected for the longitudinal panel. The response rate for this panel was 86.0%, yielding 17,276 respondents who were re-interviewed every two years. Based on these 17,276 individuals, the response rates for subsequent cycles were: 92.8% for 1996/1997 (cycle 2); 88.3% for 1998/1999 (cycle 3); 84.8% for 2000/2001 (cycle 4); 80.5% for 2002/2003 (cycle 5); and 77.4% for 2004/2005 (cycle 6). These analyses used the cycle 6 (2004/2005) longitudinal “square” file, which contains records for all responding members of the original panel, regardless of whether information about them was obtained in all subsequent cycles.

More detailed descriptions of the NPHS design, sample and interview procedures can be found in published reports.^{16,17}

Analytical techniques

Estimates of smoking prevalence and smoking restrictions from 2000 to 2006 were based on weighted cross-sectional data from the CTUMS.

With data from the 2005 CTUMS, cross-tabulations and logistic regression were used to study characteristics associated with smokers’ living and working in environments with smoking restrictions. The 2005 CTUMS was also used to examine whether the presence or absence of restrictions at home and at work was associated with smokers’ and former smokers’ being at the earlier or later “stages of change.”

Relationships between restrictions and quitting over a two-year period were examined with data from cycles 1 to 6 (1994/1995 to 2004/2005) of the NPHS. These analyses used “pooling of repeated observations,” combined with logistic regression.

Associations between *workplace* restrictions and quitting were based on four cohorts of pooled observations. Time 1 for these cohorts was 1996/1997, 1998/1999, 2000/2001 and 2002/2003, and time 2 was the respective follow-up interview two years later. For each cohort, all employed smokers aged 15 or older who reported no workplace smoking restrictions at time 1 were selected. (The 1994/95 NPHS did not include the question on smoking restrictions at work.) These smokers were

considered to be quitters if, in the follow-up interview two years later, they reported that they did not smoke. Sample sizes were:

Cohort	Time 1	Time 2	Employed smokers with no workplace restrictions (Time 1)	Employed quitters (Time 2)
1	1996/1997	1998/1999	448	50
2	1998/1999	2000/2001	423	71
3	2000/2001	2002/2003	282	43
4	2002/2003	2004/2005	211	43
Total			1,364	207

With this pooled set of observations, quitting was examined in relation to the imposition of new workplace restrictions. Quit rates among smokers who reported total and partial smoking restrictions at time 2 were compared with quit rates among those who continued to report no restrictions. Since both quitting and new workplace restrictions were considered only at the end of the two-year period, it is not known if quitting occurred before or after the new restrictions were imposed. However, this is not a serious limitation, since workers often quit smoking in anticipation of forthcoming workplace restrictions.⁵

Logistic regression was used to determine if associations between new workplace restrictions and quitting remained when smoking intensity, occupation and socio-economic characteristics were taken into account. These control variables were measured as of time 1.

A slightly different approach was used to examine associations between quitting and the imposition of new smoking restrictions at *home*. Rather than an explicit question about smoking restrictions in the home, the NPHS asks respondents if anyone in the household “smokes regularly inside the home.” In this analysis, a smoker was defined as living in a smoke-free home if the response to this question was “no.” However, the results could easily be confounded, because it would be common for a household to become smoke-free after one of its members had quit. It was necessary, therefore, to consider data from three consecutive NPHS cycles in order to establish that quitting took place after the home had become smoke-free.

This analysis was based on four cohorts of pooled observations. Time 1 for these cohorts was 1994/1995, 1996/1997, 1998/1999 and 2000/2001, and time 2 was the follow-up interview two years later. Each cohort consisted of smokers who reported that they did not live in smoke-free homes at time 1 and continued to smoke at time 2. They were defined as living in a “newly smoke-free home” if, at time 2, they reported they lived in a smoke-free home. Smoking status at time 3 was used to calculate quit rates.

Cohort	Time 1	Time 2	Time 3	Smokers at time 1 and time 2 not living in smoke-free homes at time 1	Quitters (Time 3)
1	1994/1995	1996/1997	1998/1999	2,732	288
2	1996/1997	1998/1999	2000/2001	2,349	294
3	1998/1999	2000/2001	2002/2003	1,913	300
4	2000/2001	2002/2003	2004/2005	1,469	222
Total				8,463	1,104

Quit rates (at time 3) among smokers who reported living in “newly smoke-free home” (at time 2) were compared with those for smokers who continued to live (at time 2) in homes that were not smoke-free. Logistic regression was used to determine if associations between living in a “newly smoke-free home” and quitting remained when smoking intensity and socio-economic characteristics were taken into account. All of these control variables were measured as of time 1.

To account for the survey design effects of the CTUMS and NPHS, standard errors and p-values were estimated, and significance tests were performed using the bootstrap technique.¹⁸⁻²⁰ The level of significance was set at $p < 0.05$. For the longitudinal analysis, use of the design-based bootstrapping technique for repeated observations, which eliminates the problem of dependence among observations derived from the same individuals, ensured that the variance was not underestimated.²¹

Definitions

Smokers were identified based on the question, “At the present time, do you smoke cigarettes every day, occasionally or not at all?” Those who said they

smoked every day or occasionally were defined as *current smokers*.

Former smokers were respondents who reported that they had smoked at least 100 cigarettes in their lives, but currently did not smoke.

For the analyses based on CTUMS data, smoking restrictions in the home were determined with the question: “Is smoking cigarettes allowed inside your home?” Those who responded “yes” were asked, “Is smoking cigarettes inside your home restricted in any way?” Smokers were defined as living in homes with:

- *total smoking restrictions* if they responded “no” to the first question.
- *partial smoking restrictions* if they responded “yes” to the first question and “yes” to the second.
- *no smoking restrictions* if they responded “yes” to the first question and “no” to the second.

The NPHS asks respondents if anyone in the household “smokes regularly inside the home.” Smokers were defined as living in a *smoke-free home* if the response to this question was “no.”

Both the CTUMS and NPHS ask employed smokers: “At your place of work, what are the restrictions on smoking?” The choices (read to respondents) are:

1. Restricted completely.
2. Allowed in designated places.
3. Restricted only in certain places.
4. Not restricted at all.

Smokers who indicated the first choice were classified as having *total smoking restrictions* at work; those who indicated the second or third choice were classified as having *partial smoking restrictions*; and those who indicated the fourth choice were classified as having *no restrictions*. The 1994/1995 NPHS did not include this question, and in 1996/1997, it was asked only of daily smokers.

In the 2005 CTUMS, the following questions were used to classify current smokers into the first three categories of the stages of change:

1. Are you seriously considering quitting smoking within the next 6 months?
2. Are you seriously considering quitting within the next 30 days?

3. In the past year, how many times did you stop smoking for at least 24 hours because you were trying to quit?

Smokers who answered “no” to the first item were defined as being in the *precontemplation* stage. Those who responded “yes” to the first item and either “no” to item 2 or “zero” to item 3 were defined as being in the *contemplation* stage. The *preparation* stage was defined as a positive response to items 1 and 2 and a response greater than zero to item 3. The last two stages of change were based on former smokers who had quit in the past 5 years: those who had quit in the past 6 months were defined as being at the *action* stage; otherwise, they were defined as being in the *maintenance* stage.

The CTUMS determined *smoking intensity* by asking smokers how many cigarettes they had smoked each day the previous week. Based on these responses, average daily cigarette consumption was determined. Occasional smokers who had not smoked in the past 30 days were excluded. The NPHS asked daily smokers how many cigarettes they smoked per day. Four categories of smoking intensity were defined: heavy (25 or more), moderate (10 to 24), light (less than 10), and occasional smoker.

For both the CTUMS and NPHS, respondents were grouped into *education* categories according to the highest level they had attained. The response categories differed somewhat between the two surveys.

For both the CTUMS and NPHS, *occupation* was categorized as white-collar (administrative, professional and clerical), sales or service, and blue-collar, based on the 1991 Standard Occupational Classification.²²

For the analyses using NPHS data, *household income* groups were derived by calculating the ratio between the total household income from all sources in the previous 12 months and Statistics Canada’s low-income cutoff (LICO) specific to the number of people in the household, the size of the community, and the survey year. These adjusted income ratios were then grouped into quintiles (5 groups, each containing one-fifth of the total population).

RESULTS

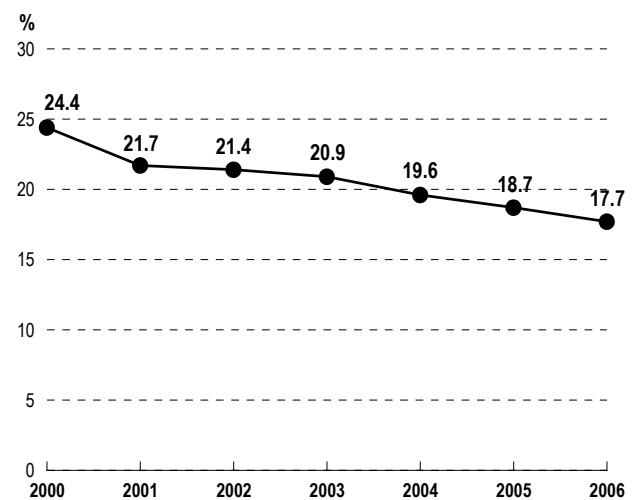
Prevalence of smoking and smoking restrictions

Between 2000 and 2006, the prevalence of smoking (daily and occasional) in Canada declined by almost seven percentage points from 24.4% to 17.7% (Chart 1). During the same period, the percentage of smokers reporting that they lived in homes where smoking was totally banned rose from 27% to 43%, with the sharpest increases occurring between 2001 and 2004 (Chart 2). The upturn was even more pronounced among those in households with a child younger than 15; from 2001 to 2004, this percentage rose from 35% to 55%.

In addition to the 40% of smokers who reported total home bans in 2005 (Chart 2), another 26% reported partial restrictions (Chart 3). When asked how smoking was restricted, the majority (71%) reporting partial restrictions said that smoking was allowed only in certain rooms (data not shown).

As well, the vast majority of employed smokers faced at least some restrictions at work: 42% reported that smoking was totally banned; 37% reported that it was allowed only in designated areas;

Chart 1
Percentage who smoke daily or occasionally, household population aged 15 or older, Canada excluding territories, 2000 to 2006

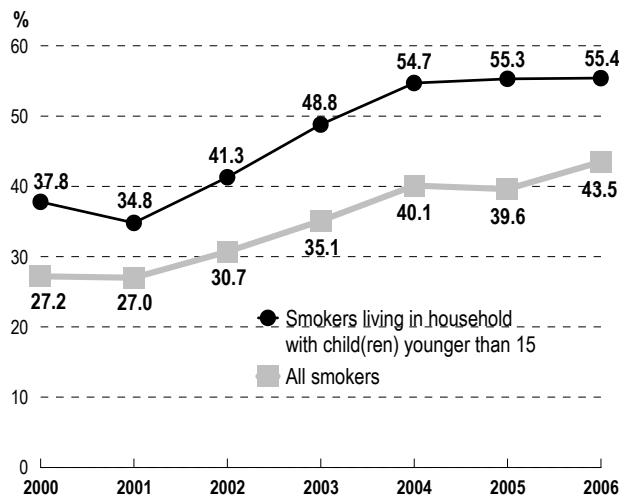


Note: The estimate for 2006 is based only on data collected during the first half of the year.

Source: 2000 to 2006 Canadian Tobacco Use Monitoring Survey

Chart 2

Percentage of smokers living in smoke-free homes, by presence of child(ren) younger than 15, household population aged 15 or older, Canada excluding territories, 2000 to 2006



Note: The estimate for 2006 is based only on data collected during the first half of the year.

Source: 2000 to 2006 Canadian Tobacco Use Monitoring Survey

9% said it was restricted only in certain places; and just 12% reported no restrictions at all (Chart 3). Methodological problems preclude the estimation of meaningful trends in total workplace bans, but it is possible to trace the percentage of employed smokers facing no restrictions. In 1998/1999, when the NPHS had asked the same question, 24% of employed smokers reported no restrictions at work (data not shown), double the 2005 CTUMS estimate.

Characteristics of smokers facing restrictions

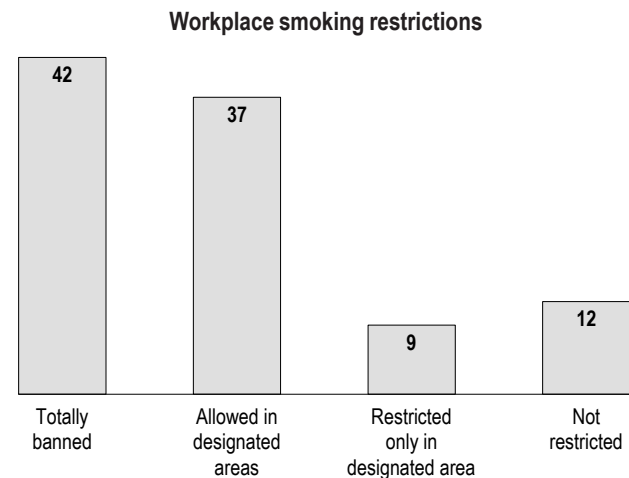
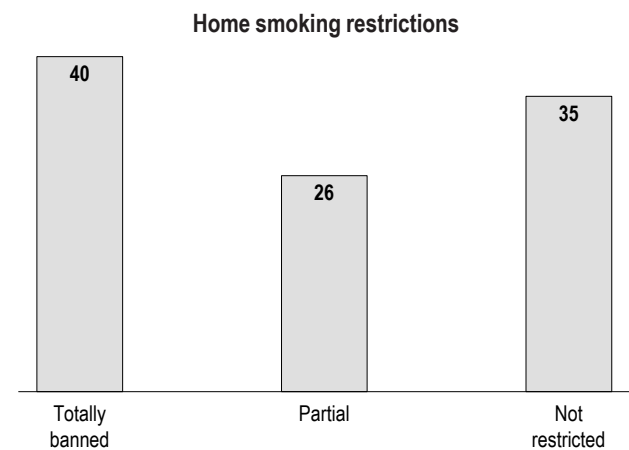
In 2005, male smokers were more likely than their female counterparts to report total bans at home: 43% versus 36% (Table 1).

The likelihood of smokers' reporting total bans at home fell with age from 54% of 15- to 24-year-olds to 22% of seniors (65 or older).

Having smoking restrictions at home was related to education. Fewer than one-quarter (24%) of smokers with less than secondary graduation lived in homes where smoking was totally banned, compared with 42% of those with postsecondary graduation.

Chart 3

Percentage distribution of smokers, by home and workplace smoking restrictions, household population aged 15 or older, Canada excluding territories, 2005



Note: Estimates for workplace smoking restrictions based on smokers employed at anytime in past 12 months.

Source: 2005 Tobacco Use Monitoring Survey

As noted earlier, the presence of children was a particularly strong determinant of a total ban on smoking in the home; 55% of smokers living with a child younger than 15 were in smoke-free homes, compared with 33% of those who did not live with children.

When examined in a multivariate model, associations between these socio-demographic characteristics and total smoking bans in the home generally persisted. An exception was that when these other factors were taken into account, older

Table 1

Percentage of and adjusted odds ratios for smokers' living in smoke-free homes, by selected characteristics, household population aged 15 or older, Canada excluding territories, 2005

	%	Adjusted odds ratio	95% confidence interval
All smokers	39.6	...	...
Sex			
Men	42.1*	1.3*	1.1 to 1.6
Women†	36.2	1.0	...
Age group			
15 to 24	53.6*	3.1*	2.0 to 4.9
25 to 34	52.6*	2.0*	1.9 to 2.1
35 to 44†	38.1	1.0	...
45 to 54	25.7*	0.7	0.2 to 2.5
55 to 64	24.2*	0.9	0.4 to 2.0
65 or older	22.1*	1.2	0.6 to 2.1
Education (age 25 or older)			
Less than secondary graduation†	23.7	1.0	...
Secondary graduation or some postsecondary	36.1*	1.9	0.6 to 5.8
Postsecondary graduation	42.1*	2.4*	1.3 to 4.3
Child(ren) younger than 15 in household			
Yes	55.3*	2.7*	2.2 to 3.3
No†	32.6	1.0	...

† Reference category

* Significantly different from estimate for reference category ($p < 0.05$)

... not applicable

Source: 2005 Canadian Tobacco Use Monitoring Survey

smokers were just as likely as 35- to 44-year-olds to report a total ban.

In the workplace, female smokers were more likely than their male counterparts to report total smoking bans: 49% versus 38% (Table 2). Compared with 35- to 44-year-olds, both younger and older smokers were less likely to report total workplace bans.

As was the case for home restrictions, reporting workplace smoking bans was related to education. The percentage of employed smokers reporting total bans ranged from 30% of those who had not completed secondary school to 53% of those who had postsecondary graduation.

Occupation was associated with workplace smoking restrictions. Smokers in white-collar and sales/service jobs were more likely than those in blue-collar jobs to report total bans at work.

Even when examined in a multivariate model, associations between these socio-demographic

Table 2

Percentage of and adjusted odds ratios for smokers' working in smoke-free workplaces, by selected characteristics, household population aged 15 or older, Canada excluding territories, 2005

	%	Adjusted odds ratio	95% confidence interval
All smokers	42.3	...	...
Sex			
Men	37.8*	0.8*	0.7 to 0.9
Women†	49.4	1.0	...
Age group			
15 to 24	35.8*	0.5*	0.3 to 0.9
25 to 34	36.7*	0.5	0.2 to 1.0
35 to 44†	54.2	1.0	...
45 to 54	42.9*	0.6	0.2 to 2.3
55 or older	39.6*	0.6*	0.3 to 0.9
Education (age 25 or older)			
Less than secondary graduation†	29.5	1.0	...
Secondary graduation or some postsecondary	41.4*	1.3*	1.2 to 1.5
Postsecondary graduation	52.8*	2.0*	1.8 to 2.2
Occupation			
White-collar	48.9*	2.0*	1.8 to 2.2
Sales/Service	48.6*	2.3*	2.1 to 2.6
Blue-collar†	28.3	1.0	...

† Reference category

* Significantly different from estimate for reference category ($p < 0.05$)

... not applicable

Note: Employed at any time in past 12 months

Source: 2005 Canadian Tobacco Use Monitoring Survey

characteristics and workplace smoking restrictions remained.

Smoking restrictions and the stages of change

Questions in the 2005 CTUMS made it possible to classify current and former smokers into the five stages of change proposed by the Transtheoretical Model.^{13,14} Placement at specific stages was examined in relation to smoking restrictions at home and at work (Table 3).

In homes where smoking was totally banned, 44% of the combined group of smokers and former smokers (had quit in the past five years) were at the early stages (precontemplation or contemplation), compared with 70% of those in homes with no restrictions. And in smoke-free homes, 42% were at the late stages (action or maintenance), compared with just 15% of those in homes with no restrictions.

Table 3

Percentage distribution of current and former[†] smokers, by stage of change and home and workplace smoking restrictions, household population aged 15 or older, Canada excluding territories, 2005

	Total	Precontemplation	Contemplation	Preparation	Action	Maintenance
	%	%	%	%	%	%
Smoke-free home						
Total	100.0	22.6*	21.8*	13.5	8.2*	33.9*
Partial	100.0	35.5*	31.3*	16.0*	4.8	12.4*
No [‡]	100.0	40.7	29.4	14.4	4.5	11.0
Smoking banned at work						
Total	100.0	26.2*	26.6*	14.3	8.5*	24.3*
Partial	100.0	32.2	26.7*	15.3	5.3	20.6*
No [‡]	100.0	31.6	30.7	15.3	5.1	17.3

[†] Quit in past 5 years

[‡] Reference category

* Significantly different from estimate for reference category ($p < 0.05$)

Note: Estimates for workplace smoking restrictions based on smokers/former smokers employed at anytime in past 12 months

Source: 2005 Canadian Tobacco Use Monitoring Survey

Workplace smoking restrictions were also associated with smokers' and former smokers' position in the stages of change (Table 3), although the associations were not as strong as for household

restrictions. In workplaces where smoking was totally banned, 53% were at the precontemplation or contemplation stage, compared with 62% of those facing no restrictions. As well, 33% of the

Table 4

Odds ratios relating home smoke-free status and other selected characteristics to being at beginning or final stages of change, current and former[†] smokers, household population aged 15 or older, Canada excluding territories, 2005

	Precontemplation				Action/Maintenance			
	Unadjusted odds ratio	95% confidence interval	Adjusted odds ratio	95% confidence interval	Unadjusted odds ratio	95% confidence interval	Adjusted odds ratio	95% confidence interval
Home smoking restrictions								
Total	0.3*	0.3 to 0.4	0.3*	0.3 to 0.4	3.9*	3.6 to 4.4	4.5*	3.9 to 5.1
Partial	0.9*	0.8 to 0.9	0.9	0.8 to 1.0	1.1	0.9 to 1.4	1.2*	1.0 to 1.4
None [‡]	1.0	...	1.0	...	1.0	...	1.0	...
Sex								
Men	1.2	0.8 to 1.7	1.2	0.8 to 1.9	0.9	0.7 to 1.1	0.8	0.6 to 1.0
Women [‡]	1.0	...	1.0	...	1.0	...	1.0	...
Age group								
15 to 34	0.9	0.7 to 1.2	1.1	0.9 to 1.4	1.1	0.4 to 2.7	0.8	0.5 to 1.3
35 to 54 [‡]	1.0	...	1.0	...	1.0	...	1.0	...
55 or older	0.7	0.4 to 1.2	0.6*	0.5 to 0.9	1.8	0.7 to 4.1	1.9*	1.0 to 3.5
Education								
Less than secondary graduation [‡]	1.0	...	1.0	...	1.0	...	1.0	...
Secondary graduation or some postsecondary [†]	0.9	0.6 to 1.4	1.0	0.6 to 1.5	1.1	0.5 to 2.5	1.1	0.5 to 2.2
Postsecondary graduation	0.6*	0.5 to 0.7	0.6*	0.5 to 0.8	1.9*	1.2 to 2.8	1.7*	1.3 to 2.2
Child(ren) younger than 15 in household								
Yes	0.8*	0.8 to 0.9	0.9	0.7 to 1.1	1.0	0.7 to 1.4	0.9	0.7 to 1.1
No [‡]	1.0	...	1.0	...	1.0	...	1.0	...

[†] Quit in past 5 years

[‡] Reference category

* Significantly different from estimate for reference category ($p < 0.05$)

... not applicable

Source: 2005 Canadian Tobacco Use Monitoring Survey

Table 5

Odds ratios relating workplace smoking restrictions and other selected characteristics to being at beginning or final stages of change, current and former[†] smokers, household population aged 15 or older, Canada excluding territories, 2005

	Precontemplation				Action/Maintenance			
	Unadjusted odds ratio	95% confidence interval	Adjusted odds ratio	95% confidence interval	Unadjusted odds ratio	95% confidence interval	Adjusted odds ratio	95% confidence interval
Workplace smoking restrictions								
Total	0.7*	0.6 to 0.8	0.8*	0.6 to 0.9	1.7*	1.5 to 2.0	1.3*	1.1 to 1.6
Partial	0.9	0.6 to 1.3	0.9	0.5 to 1.6	1.2	0.9 to 1.7	1.1	0.7 to 1.8
None [‡]	1.0	...	1.0	...	1.0	...	1.0	...
Sex								
Men	1.2	0.8 to 1.8	1.0	0.9 to 1.2	0.8*	0.7 to 1.0	1.0	0.8 to 1.3
Women [‡]	1.0	...	1.0	...	1.0	...	1.0	...
Age group								
15 to 34	0.9	0.7 to 1.3	0.9	0.8 to 1.0	1.0	0.5 to 2.2	1.1	0.9 to 1.3
35 to 54 [‡]	1.0	...	1.0	...	1.0	...	1.0	...
55 or older	0.9	0.7 to 1.0	0.8*	0.6 to 0.9	1.4*	1.2 to 1.6	1.6*	1.4 to 1.9
Education								
Less than secondary graduation [‡]	1.0	...	1.0	...	1.0	...	1.0	...
Secondary graduation or some postsecondary	0.9	0.6 to 1.3	0.9	0.7 to 1.0	1.2	0.5 to 2.8	1.2	0.7 to 2.2
Postsecondary graduation	0.6*	0.5 to 0.7	0.6*	0.5 to 0.7	2.1*	1.4 to 3.1	2.1*	1.8 to 2.4
Occupation								
White-collar	0.6*	0.5 to 0.8	0.7*	0.6 to 1.0	2.1*	1.4 to 3.0	1.7	1.0 to 3.0
Sales/Service	0.8	0.4 to 1.5	0.9	0.5 to 1.5	1.4	0.7 to 3.0	1.3	0.6 to 3.0
Blue-collar [‡]	1.0	...	1.0	...	1.0	...	1.0	...

[†] Quit in past 5 years

[‡] Reference category

* Significantly different from estimate for reference category ($p < 0.05$)

... not applicable

Note: Estimates for workplace smoking restrictions based on smokers/former smokers employed at anytime in past 12 months.

Source: 2005 Canadian Tobacco Use Monitoring Survey

combined group of current and former smokers in workplaces where smoking was totally banned were at the action or maintenance stage, compared with 22% of those who reported no restrictions at work.

The relationship between living in a smoke-free home and being at the first two or the final two stages of change was examined in multivariate models controlling for sex, age, education, and the presence of children in the household (Table 4). The associations observed in the bivariate analysis persisted when these variables were taken into account. Similarly, the associations between workplace smoking bans and being at the early and late stages of change remained in the multivariate analysis (Table 5).

Bans precede cessation

Longitudinal data from the first six cycles of the NPHS (1994/1995 to 2004/2005) were used to determine if the imposition of new smoking

restrictions was associated with quitting. Quitters were defined as those who reported that they were smokers in one cycle (time 1), but when they were re-interviewed two years later (time 2), reported that they did not smoke.

The introduction of new workplace smoking bans was associated with quitting. Fully 27% of smokers who reported no workplace restrictions at time 1, but then reported that smoking was totally restricted at work during the follow-up interview two years later, had quit (data not shown). This was more than double the quit rate of 13% among those who continued to face no restrictions at work. Even when other potential confounders were taken into account, the association persisted (Table 6).

The NPHS does not ask an explicit question about smoking restrictions in the home. Rather, respondents are asked if anyone in the household “smokes regularly inside the home.” For this

analysis, a smoker was defined as living in a smoke-free home if the response to this question was “no.” It would, however, be common for a household to become smoke-free after one of its members had quit. Therefore, to clearly establish the temporal ordering of events, it was necessary to consider data from three consecutive NPHS cycles, and thereby ensure that quitting occurred after a home became

Table 6

Odds ratios relating changes in workplace smoking restrictions and other selected characteristics to employed smokers' quitting in a two-year period, household population aged 15 or older, Canada excluding territories, 1996/1997 to 2004/2005

	Unadjusted odds ratio	95% confidence interval	Adjusted odds ratio	95% confidence interval
Smoking restricted at work (at end of two-year period)[†]				
Totally	2.4*	1.5 to 3.7	2.3*	1.4 to 3.9
Partially	1.3	0.8 to 2.1	1.1	0.7 to 1.8
No [‡]	1.0	...	1.0	...
Cigarettes per day				
25 or more (heavy)	0.5*	0.3 to 0.9	0.5*	0.3 to 0.9
10 to 24 (moderate) [‡]	1.0	...	1.0	...
1 to 9 (light)	0.9	0.4 to 1.9	1.0	0.5 to 2.1
Occasional smoker	4.4*	2.6 to 7.5	4.4*	2.4 to 7.9
Sex				
Men	1.5	0.9 to 2.3	1.7*	1.0 to 2.8
Women [‡]	1.0	...	1.0	...
Age group				
15 to 34	1.2	0.8 to 1.8	0.9	0.6 to 1.4
35 to 54 [‡]	1.0	...	1.0	...
55 or older	1.3	0.7 to 2.4	1.0	0.6 to 1.8
Education				
Less than secondary graduation	1.0	...	1.0	...
Secondary graduation [‡]	1.0	0.6 to 1.7	1.1	0.6 to 1.9
Some postsecondary	0.9	0.5 to 1.4	0.9	0.6 to 1.6
Postsecondary graduation	1.0	0.6 to 1.7	0.9	0.5 to 1.6
Household income quintile				
1 Lowest	0.9	0.4 to 1.7	1.2	0.6 to 2.2
2	0.8	0.4 to 1.5	0.9	0.5 to 1.8
3 [‡]	1.0	...	1.0	...
4	1.5	0.8 to 2.7	1.4	0.8 to 2.7
5 Highest	1.0	0.6 to 1.9	1.0	0.6 to 1.8
Occupation				
White-collar	1.0	0.7 to 1.6	0.9	0.6 to 1.5
Sales/Service	0.9	0.5 to 1.5	0.8	0.5 to 1.4
Blue-collar [‡]	1.0	...	1.0	...

[†] Based on employed smokers who faced no restrictions on smoking at work at beginning of two-year period

[‡] Reference category

* Significantly different from estimate for reference category ($p < 0.05$)

Source: 1996/1997 to 2004/2005 National Population Health Survey, longitudinal Health file (square)

smoke-free. The analysis is based on smokers who reported that they did not live in smoke-free homes at the first cycle (time 1) and continued to smoke at the second cycle (time 2). Smokers were defined as living in a “newly smoke-free” home if, at time 2, they reported that their home was smoke-free. Smoking status at the third cycle (time 3) was used to calculate quit rates. Among smokers in “newly smoke-free homes” (at time 2), 20% had quit (by time 3), compared with 13% of those who continued to live in homes that were not smoke-free (at time 2)

Table 7

Odds ratios relating change in home smoke-free status and other selected characteristics to smokers' quitting in a two-year period, household population aged 15 or older, Canada excluding territories, 1994/1995 to 2004/2005

	Unadjusted odds ratio	95% confidence interval	Adjusted odds ratio	95% confidence interval
Home newly smoke-free				
Yes	1.8*	1.4 to 2.3	1.6*	1.3 to 2.1
No [†]	1.0	...	1.0	...
Cigarettes per day				
25 or more (heavy)	0.9	0.8 to 1.1	0.9	0.8 to 1.1
10 to 24 (moderate) [†]	1.0	...	1.0	...
1 to 9 (light)	1.5*	1.2 to 1.9	1.4*	1.1 to 1.8
Occasional smoker	2.0*	1.6 to 2.7	1.9*	1.4 to 2.4
Sex				
Men	1.1	0.9 to 1.3	1.1	0.9 to 1.3
Women [†]	1.0	...	1.0	...
Age group				
15 to 34	1.0	0.8 to 1.2	0.9	0.8 to 1.1
35 to 54 [‡]	1.0	...	1.0	...
55 or older	1.2	1.0 to 1.5	1.3*	1.0 to 1.6
Education				
Less than secondary graduation	1.0	...	1.0	...
Secondary graduation [†]	0.9	0.7 to 1.2	0.9	0.7 to 1.2
Some postsecondary	1.3*	1.0 to 1.6	1.3*	1.0 to 1.6
Postsecondary graduation	1.2	0.9 to 1.5	1.1	0.8 to 1.4
Household income quintile				
1 Lowest	0.8	0.6 to 1.1	0.8	0.6 to 1.1
2	1.1	0.8 to 1.4	1.1	0.9 to 1.4
3 [†]	1.0	...	1.0	...
4	1.3	0.9 to 1.7	1.3	1.0 to 1.7
5 Highest	1.2	0.9 to 1.6	1.1	0.8 to 1.5
Child(ren) under age 12 in household				
Yes	0.9	0.8 to 1.1	1.0	0.8 to 1.2
No [†]	1.0	...	1.0	...

[†] Reference category

* Significantly different from estimate for reference category ($p < 0.05$)

... not applicable

Source: 1994/1995 to 2004/2005 National Population Health Survey, longitudinal Health file (square)

(data not shown). The higher likelihood of quitting for smokers in “newly smoke-free” homes persisted when the effects of other potential confounders were controlled (Table 7).

Smoking restrictions and smoking intensity

Home and workplace smoking restrictions were also associated with lower cigarette consumption. In 2005, smokers living in smoke-free homes averaged 9 cigarettes a day, compared with 15 a day for those facing partial restrictions, and 16 a day for those in homes without restrictions (Chart 4). The relationship was similar for workplace bans. Smokers in workplaces where smoking was totally banned averaged 12 cigarettes a day; those encountering partial bans, 14 a day; and those with no workplace restrictions, 17 a day.

Longitudinal NPHS data revealed that, even if they continued to smoke, daily smokers facing new home restrictions tended to decrease their consumption. Among daily smokers who did not live in a smoke-free home during the first cycle (time 1), those who reported that their home was smoke-free at the follow-up interview (time 2) averaged 2.0 fewer cigarettes a day than they had

two years earlier. This compared with 0.4 fewer cigarettes a day among those who continued to live in homes that were not smoke-free (data not shown).

Among employed daily smokers who reported no workplace restrictions at time 1, those who reported total bans at time 2 averaged 2.1 fewer cigarettes a day. The average daily cigarette consumption of those still facing no restrictions did not change (data not shown).

DISCUSSION

From 2000 to 2006, the prevalence of smoking in Canada fell by close to 7 percentage points from 24.4% to 17.7%. Over the same period, smokers encountered a growing number of restrictions on where they are permitted to smoke. Legislation to ban smoking in public places was enacted by provinces and many communities across the country (Appendix Table A). Public bans may have motivated individuals to restrict smoking in their homes.

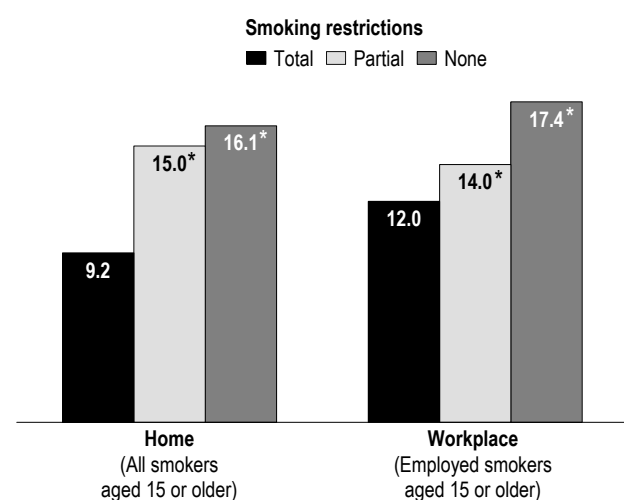
According to Statistics Canada's National Population Health Survey, in 1996/1997, 86% of Canadians aged 15 or older were aware that environmental tobacco smoke can cause health problems in non-smokers; among smokers, 75% reported such awareness. However, at that time, only 17% of smokers reported that their home was smoke-free. By 2006, the figure was 43%, and even higher—55%—for smokers living with children, a finding that has been observed in other studies.^{10,11,23,24}

Public bans may convey a powerful message to smokers and non-smokers alike. Such bans may have raised smokers' sense of personal responsibility and induced them to accept, or even impose, restrictions in their homes to protect non-smoking family members and guests. As well, public bans may have empowered non-smokers, giving them justification for insisting on similar restrictions in their homes, especially if children are present.

Data from the Canadian Tobacco Use Monitoring Survey show that total smoking bans, both at home and at work, were associated with a reduced likelihood of being in the initial “stages of change” proposed by the Transtheoretical Model (TTM), and a greater likelihood of being in the latter stages. A

Chart 4

Average number of cigarettes smoked per day, by home and workplace smoking restrictions, household population aged 15 or older who are smokers, Canada excluding territories, 2005



* Significantly higher than estimate for previous category(ies) ($p < 0.05$)

Note: Excludes occasional smokers who have not smoked in past 30 days.

Source: 2005 Canadian Tobacco Use Monitoring Survey

key premise of the TTM is that at each stage, smokers weigh the pros and cons of moving to the next stage. Smoking restrictions may tip the balance toward the pro side. For example, having to go outside, particularly during the cold Canadian winter, may cause smokers to consider quitting and deter former smokers from relapsing. Home restrictions may be particularly helpful to former smokers. Studies of recidivism have found that former smokers' exposure to smoking can promote relapse.²⁵ This may be especially true during social occasions. However, if a home ban is in place, such exposure is reduced. Finally, smoking restrictions may cause smokers to feel ostracized, and thereby support a decision to change their behaviour.

Consecutive cycles of longitudinal data from the National Population Health Survey show that smokers in "newly smoke-free" homes were more likely to have quit two years later, compared with those in homes that were not smoke-free. Similarly, among employed smokers, the imposition of new workplace restrictions was associated with quitting. And even among people who continued to smoke daily, new restrictions at home and at work were associated with reduced cigarette consumption.

Limitations

Some limitations should be considered when interpreting the results of this study. Estimates of the prevalence of smoking restrictions are based on self-reported data. Social desirability may cause respondents to report restrictions in the home even when they do not exist, particularly if children reside in the household. In 2000, a review of the literature found general concordance between parental reports of exposure to environmental tobacco smoke among children and biological measures.²⁶ However, a more recent American study based on households with two or more adults found inconsistencies in reports of smoking bans in 12% of households.²⁷

The CTUMS and NPHS questions about household smoking restrictions differed. The CTUMS questions made it possible to determine if smoking in the home was totally banned, partially restricted, or not restricted. The NPHS only asked if any household member regularly smoked inside the house. Smokers who responded negatively to

this question were classified as living in smoke-free homes. In the longitudinal analysis, a stronger association with quitting might have been observed if it had been possible to compare smokers in homes with bans to those in homes where smoking was not restricted at all.

The definition of quitting used in the longitudinal analyses required only that people who had initially reported that they were smokers report that they did not smoke two years later. Consequently, this group could include people who had quit the day before the follow-up interview along with those who had not smoked for close to two years. The extent to which such diversity among quitters affected associations with smoking restrictions is not known.

Prevalence rates in this study were based on data from the CTUMS. Smoking prevalence can also be estimated from Statistics Canada's Canadian Community Health Survey (CCHS) and the cross-sectional component of the NPHS. While trends based on CTUMS data are similar to those derived from the other two surveys in that prevalence is declining, CTUMS smoking rates are consistently lower.²⁸ The questions about smoking in the CCHS and the NPHS are asked in the context of a general health survey rather than in a survey specifically about smoking. A study carried out to determine why the rates differ suggested that people are more inclined to talk about smoking when the topic is part of a broader survey.²⁹

Workplace smoking restrictions were measured by asking employed respondents if smoking at their place of work was banned completely, allowed only in designated areas, restricted only in certain places, or not restricted at all. The intent of the question is to measure smoking restrictions inside the workplace. Somewhat unexpectedly, CTUMS data show a sharp decrease since 2004 in the percentage of smokers responding "restricted completely," and a sharp increase in those responding "allowed only in designated areas." However, recent qualitative testing of this question conducted with focus groups revealed that, in some cases, if outdoor areas are designated for smokers, respondents indicate the second category even when smoking is totally banned inside. Starting in 2007, the wording of this question will be changed to avoid confusion.

Conclusion

The debate about whether health-related behaviour is shaped more by individual choice or by structural variables is long-standing.^{30,31} While quitting is, of course, an individual decision, a smoking ban may facilitate decision-making. The enactment of legislation to restrict smoking in public places

coincided with increases in the percentage of smokers reporting restrictions at home. As well, smoking restrictions—both at home and in the workplace—are associated with smoking cessation. Thus, public bans may encourage individuals to adopt similar practices in their homes that ultimately reduce the prevalence of smoking. ●

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Appendix

Table A
Smoking ban legislation in Canadian provinces and municipal bylaws in selected cities†

Province/City	Date implemented/ amended	Scope
Newfoundland and Labrador	July 1, 2005	The <i>Smoke-free Environment Act</i> bans smoking in all workplaces and public places, including bars, bingo halls, bowling alleys and casinos. Smoking is prohibited on bar and restaurant patios. Designated smoking rooms are permitted only in workplaces that are not open to the public.
Prince Edward Island	December 18, 2002	The <i>Smoke-free Places Act</i> bans smoking in all public places and workplaces. Restaurants and bars are permitted to have designated smoking rooms, but food cannot be served in these rooms.
Nova Scotia	December 1, 2006	The <i>Smoke-free Places Act</i> prohibits smoking in all workplaces and public places including outdoor restaurant and patio bars. The only exception is that in nursing homes and residential care facilities, designated smoking rooms are permitted.
	January 1, 2003	As of 2003, smoking prohibited in all provincial government work sites. Smoking also restricted in restaurants, bingo halls and bars until 9 p.m.
	Halifax April 19, 2003	Smoking banned in public places, including restaurants, bars, bingo halls and casinos. Designated smoking rooms permitted in bars and casinos (occupying a maximum of 25% of "drinking area"). Minors not allowed in these rooms, and no food service provided. Tobacco bars exempt.
New Brunswick	October 1, 2004	The <i>Smoke-free Places Act</i> prohibits smoking in enclosed indoor working places and public places including restaurants, bingo halls, bowling alleys, casinos and bars.
	Fredericton July 1, 2003	Smoking banned in all public places including restaurants, bars, billiard halls, bingo halls and bowling alleys. Designated smoking rooms not permitted.
Quebec	May 31, 2006	The <i>Tobacco Act</i> prohibits smoking in all indoor workplaces and public places including restaurants, bars, bingo halls, bowling alleys and casinos. All private designated smoking rooms will be eliminated by 2008.
Ontario	May 31, 2006	The <i>Smoke-free Ontario Act</i> prohibits smoking in all enclosed workplaces and public places including restaurants, bingo halls, bowling alleys, casinos and bars. Designated smoking rooms permitted only in long-term care facilities and other types of residential facilities.
Barrie	December 31, 2006	Smoking ban extended to bingo halls, with no provision for designated smoking rooms.
	June 1, 2003	Smoking banned in public places including restaurants, bars, billiard halls and bowling alleys. No designated smoking rooms permitted. Bingo halls exempt.
Hamilton	June 1, 2004	Smoking ban extended to bars, billiard halls, bingo halls, casinos and slots. Designated smoking rooms permitted in bars and billiard halls (occupying a maximum of 25% of the seating area), and in casinos and slots (occupying a maximum of 50% of the area).
	June 1, 2002	Smoking banned in restaurants and bowling alleys. Designated smoking rooms permitted in restaurants and bowling alleys (occupying a maximum of 25% of the seating area). In bars and billiard halls, smoking restricted to designated smoking areas (occupying a maximum of 25% of seating area). In bingo hall, casinos and slots, smoking restricted to designated smoking areas (occupying a maximum of 50% of seating area).
Kingston	May 1, 2003	Smoking banned in all public places including restaurants, bars, billiard halls, bingo halls and bowling alleys. Designated smoking rooms permitted in bingo halls only (occupying a maximum of 50% of seating area). Smoking banned on outdoor patios.

London	July 1, 2003	Smoking banned in all public places, including restaurants, bars, billiard halls, bingo halls and bowling alleys. Designated smoking rooms not permitted.
Ottawa	August 1, 2001	Smoking banned in all public places including restaurants, bars, billiard halls, bingo halls, bowling alleys and slots. Designated smoking rooms not permitted.
Toronto	June 1, 2004	Smoking banned in all public places. Designated smoking rooms permitted in restaurants, bars, billiard halls, bowling alleys, casinos and slots (occupying a maximum of 25% of floor space) and in bingo halls (occupying a maximum of 50% of floor space).
	June 1, 2001	Smoking banned in restaurants and bowling alleys. Designated smoking rooms permitted in restaurants and bowling alleys (occupying a maximum of 25% of floor space).
	October 8, 1999	Smoking restricted in public places, including restaurants, bars, billiard halls, bingo halls, bowling alleys, casinos and slots to designated smoking areas occupying a maximum of 25% of floor space.
Manitoba	October 1, 2004	The <i>Non-Smokers Health Protection Act</i> prohibits smoking in all indoor enclosed workplaces and in all public places, with the exception of group living facilities and designated hotel rooms. Designated smoking rooms not permitted.
Winnipeg	July 1, 2003	Smoking banned in all public places, including restaurants, bars, billiard halls, bingo halls and bowling alleys. No designated smoking rooms permitted. Smoking also banned in private clubs.
Saskatchewan	January 1, 2005	The <i>Tobacco Control Act</i> bans smoking in all enclosed public places, including restaurants, bingo halls, bowling alleys, casinos and bars. Designated smoking rooms not permitted. Smoking also prohibited at all provincial government work sites. The Occupational Health and Safety Regulations 1996 covers other workplaces, but does not protect workers from second-hand smoke.
Saskatoon	July 1, 2004	Smoking banned in all public places, including restaurants, bars, billiard halls, bingo halls, bowling alleys and outdoor patios. No designated smoking rooms permitted. Smoking also banned in private clubs and outdoor patios.
Alberta	January 1, 2006	<i>Smoke-free Places Act</i> prohibits smoking in all public places and workplaces where minors are permitted. No restrictions in bingo halls, bowling alleys, casinos and bars. Smoking may be permitted in any place where proprietor prohibits minors under 18, including offices and factories.
Calgary	January 1, 2008	Smoking banned in all public places, including bars, bingo halls, billiard halls, bowling alleys and casinos. Designated smoking rooms not permitted. Smoking also banned on outdoor patios. In July 2006, the effective date of this by-law was moved forward by one year to January 1, 2007, with some exceptions. Establishments that installed smoking rooms before July 1, 2006 permitted to continue to operate these rooms until January 1, 2008.
	March 1, 2003	As of March 1, 2003, a transitional phase of by-law was in place. Minors under 18 banned from smoking areas in establishments where smoking permitted.
	July 1, 2005	Smoking ban extended to include total restrictions in all establishments including bars, bingo halls and casinos. No designated smoking rooms permitted.
Edmonton	July 1, 2003	Smoking banned in public places that permit minors, including restaurants, billiard halls and bowling alleys. Bingo halls and casinos may have designated smoking rooms occupying a maximum of 65% of floor space and no minors permitted in these rooms. Bars exempt. Smoking banned on outdoor patios.
British Columbia	January 2008	Legislation for province-wide ban on smoking in public places announced for January 2008. No allowances for designated smoking rooms.
	May 1, 2002	The <i>Occupational Health and Safety Regulation (Environmental Tobacco Smoke Provisions)</i> prohibits smoking at all provincial government work sites. Designated smoking rooms required for all workplaces that choose to permit smoking. Employees of public entertainment facilities can choose not to serve in designated smoking rooms.
Vancouver	July 25, 2000	Smoking banned in all public places, including restaurants, bars, billiard halls, bingo halls, bowling alleys and casinos. Designated smoking rooms permitted (occupying a maximum of 10% of floor space).

[†] For more information on smoke-free legislation of other cities and municipalities, see Canadian Municipal By-laws Banning Smoking in Public Places. Health Canada. **Notes:** A "designated smoking room" is a room where smoking is permitted, and which is separately enclosed from the rest of the establishment and separately vented to the exterior. A "designated smoking area" is a contiguous area of an establishment where smoking is permitted, and which is not physically separate from the non-smoking area.

Sources: Health Canada. Public Smoking Bans by Province and Territory. Available at: http://www.hc-sc.gc.ca/hl-vs/tobac-tabac/res/news-nouvelles/fs-if/ban-interdiction-public_e.html. Accessed May 1, 2006
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Table B

Percentage of smokers living in homes where smoking totally restricted, by province, household population aged 15 or older, Canada excluding territories, 2005

	%	95% confidence interval
Canada	39.6	38.9 to 40.2
Newfoundland and Labrador	48.9*	46.9 to 50.8
Prince Edward Island	42.7*	40.3 to 45.1
Nova Scotia	45.3*	43.3 to 47.3
New Brunswick	38.1	35.8 to 40.3
Quebec	23.2*	21.4 to 25.1
Ontario	45.7*	42.9 to 48.5
Manitoba	39.7	37.6 to 41.8
Saskatchewan	40.5	38.3 to 42.7
Alberta	47.3*	45.8 to 48.7
British Columbia	51.8*	49.2 to 54.4

* Significantly different from estimate for Canada ($p < 0.05$)

Source: 2005 Canadian Tobacco Use Monitoring Survey

Work injuries

Kathryn Wilkins and Susan G. Mackenzie

Abstract

Objectives

This article compares work injury occurrence by occupational category, and examines its relationship with selected factors reflecting work organization and environment. Associations between work injury and socio-demographic and other health-related variables are also considered.

Data sources

Data are from the 2003 Canadian Community Health Survey (cycle 2.1).

Analytical techniques

Cross-sectional estimates of the proportion of workers injured on the job were calculated by occupational category, and by selected work-related, personal and socio-demographic characteristics. Multivariate analyses were used to study associations between work injury and job-related factors, while controlling for other influences.

Main results

In 2003, an estimated 630,000 Canadian workers experienced at least one activity-limiting occupational injury. Of people in trades, transport and equipment operation, 9% sustained an on-the-job injury, compared with 2% of workers in the "white-collar" sector. Work injury was more common in male (5%) than in female workers (2%). In multivariate analysis, some work-related variables were associated with occupational injury for both sexes: employment in trades, transport and equipment operation, primary industries, and processing, manufacturing and utilities; shift work; and heavy labour. Income under \$60,000 and working long hours were associated with injury in men, but not in women. Women reporting their jobs as stressful had higher odds of injury; in men, no association with work stress emerged.

Keywords

occupational health, health surveys, workplace, sprains and strains, hand injuries

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In the years 2002 to 2004, acute injuries occurring on the job resulted in an average of 465 deaths annually, and close to 300,000 compensated time-loss claims.¹ The consequences of occupational injuries can be appreciable: lost work time and income, medical expenses, compensation costs, possible long-term health problems or disability, and a burden on the family of the injured worker.

As with all injuries, a substantial share of those that occur on the job can be prevented. An improved understanding of the circumstances associated with occupational injuries should contribute to more effective preventive strategies.

To date, much of the research on work-related injury in Canada has focused on specific occupational categories—such as farmers—and usually in specific geographic regions. A search of the PubMed data base² for Canadian papers on occupational injury published from 1990 to January 2007 yielded 33 descriptive or analytic studies, 14 of which concerned the agriculture sector; only 6 were based on data for all of Canada.

Methods

Data source

The analysis was based on cycle 2.1 of the Canadian Community Health Survey (CCHS), which was conducted from January to December 2003. The CCHS is a general health survey that collects cross-sectional information about the health of Canadians every two years. It covers the non-institutionalized household population aged 12 or older in all provinces and territories, except regular members of the Canadian Armed Forces and residents of Indian reserves, Canadian Forces bases, and some remote areas. In cycle 2.1, the CCHS collected detailed data on the occupational category of employed respondents, as well as data on the work environment.

The overall response rate to cycle 2.1 was 80.6%; the total sample size was 135,573 respondents. Of these, 75,184 respondents were aged 18 to 75 and had worked at some time during the year; the analysis was based on weighted data from these respondents. Age 75 was chosen as the upper age cut-off because an estimated 15% of the household population aged 65 to 75 was employed at some time during the year (data not shown).

A description of the CCHS methodology is available in a published report.³

Analytical techniques

Based on the 2003 CCHS, frequencies, cross-tabulations and multiple logistic regression models were produced using data weighted to the 2003 Canadian population. To minimize bias due to the “healthy worker effect,” the analysis sample comprised data from respondents who had been employed at some time during the year

leading up to their survey interview, even if they were not employed at the time of their interview. These respondents were included so that those who had been injured and then ceased working—perhaps because of their injury—would not be missed.⁶

The analysis was undertaken in two stages: crude (unadjusted) frequency estimates were produced, and then multivariate models were fitted that controlled for selected variables. In the first stage, weighted cross-tabulations were used to estimate on-the-job injury occurrence by occupational category, as well as by selected work- or health-related variables, and socio-demographic characteristics.

In the second stage of the analysis, multiple logistic regression modeling was used to examine associations between occupational injury and work-related conditions, while controlling for potentially confounding factors. Models were sex-specific. Variables entered into regression models were selected based on findings from the literature and their availability in the survey. Models were fitted in two stages: variables reflecting work-related variables were entered into the first model and regressed on occupational injury; a second model was fitted by adding variables reflecting personal and socio-demographic characteristics. To maximize the sample of respondents included in the analysis, a dummy variable for missing income was included in the models (see *Definitions*).

The bootstrap technique, which accounts for the design effects of the survey, was used to calculate variance.⁷⁻⁹ Statistical significance was established as $p < 0.05$.

Most statistics on occupational injury in Canada are collected by administrative agencies involved in injury compensation, and are thus limited in coverage and the information they provide. For example, self-employed people and some professionals may not be included, and data on socio-economic characteristics and other health-related risk factors are not collected. As well, only compensated injuries are documented, although fewer than half of workers who sustain an injury file a claim.^{4,5} Thus, injury statistics from compensation boards would not be expected to correspond with estimates from survey data.

The availability of data from Statistics Canada’s Canadian Community Health Survey (CCHS) offers several advantages in the study of occupational injury. The dataset is large, permitting more analytical precision than is usually possible. The data are population-based and provide information on a broad range of social and personal factors, as well as work-related variables and injury occurrence, and they do not rely on workplace-based reporting.^{10,11} An additional advantage of the CCHS is that within the questionnaire, items on work-related injury are separated from those on work conditions, thus reducing the bias that may arise in studies based on more focused questionnaires.

Definitions

The Canadian Community Health Survey (CCHS) contains detailed information about a single injury event for each respondent who reported having sustained at least one activity-limiting injury during the year before the interview. If more than one such injury was reported, the focus was on the injury that the respondent identified as most serious. CCHS interviewers instructed respondents to report injuries that were “serious enough to limit your normal activities.” *Occupational injury* was defined as a “yes” response to the question, “(Not counting repetitive strain injuries), were you injured in the past 12 months?” together with the response “working at a job or business” to the question, “Thinking about the most serious injury, what type of activity were you doing when you were injured?” Injuries sustained while commuting were not considered to be work injuries in this analysis. Respondents also provided information about their single, or most serious, injury that occurred during “sports or physical exercise,” “leisure or hobby,” “travel to or from work,” “household chores, other unpaid work,” “sleeping, eating, personal care,” or “other activities.”

Body part injured was indicated in response to the question, “What part of the body was injured? (Multiple sites; Eyes; Head (excluding eyes); Neck; Shoulder/Upper arm; Elbow/Lower arm; Wrist; Hand; Hip; Thigh; Knee/Lower leg; Ankle/Foot; Upper back or upper spine; Lower back or lower spine; Chest (excluding back and spine); Abdomen or pelvis (excluding back and spine).”

Type of injury was indicated in response to the question, “What type of injury did you have? For example, a broken bone or burn. (Multiple injuries; Broken or fractured bones; Burn, scald, chemical burn; Dislocation; Sprain or strain; Cut, puncture, animal or human bite (open wound); Scrape, bruise, blister; Concussion or other brain injury; Poisoning; Injury to internal organs; Other).”

Those types of injuries that are usually more harmful (burn or scald, concussion, fracture, internal injury, multiple injuries) were defined as *serious injuries*.

Information about *treatment* for injury was ascertained in the questions, “Did you receive any medical attention from a health professional in the 48 hours following the injury?” and “Where did you receive treatment? (Doctor’s office; Hospital emergency room; Outpatient clinic; Walk-in clinic; Appointment clinic; Community health centre/CLSC; At work; At school; At home; Telephone consultation only; Other. Were you admitted to a hospital overnight?).”

Job category was defined using the Standard Occupational Classification (SOC) 1991-Canada. The SOC specifies 10 occupational categories:

- management occupations;
- business, finance and administrative occupations;

- natural and applied sciences and related occupations;
- health occupations;
- occupations in social science, education, government service and religion;
- occupations in art, culture, recreation and sport;
- sales and service occupations;
- trades, transport and equipment operators;
- occupations unique to primary industry;
- occupations unique to processing, manufacturing and utilities.

For some of the analysis, the first six categories were combined into a “white-collar” category; the remaining four sectors were combined as a “blue-collar” category. The occurrence of occupational injury within some individual occupations was examined for some categories (for instance, sales and service occupations).

Respondents indicating that they had had a job (including full- or part-time, seasonal or contract work, self-employment, baby-sitting or any other paid work) throughout, or during part of, the year were classified as having been *employed in the past year*.

To determine *self-employment*, respondents who had worked at a job or business at any time in the past 12 months were asked, “Are you an employee or self-employed?”

Hours worked per week was ascertained by asking, “About how many hours a week do you usually work at your job/business? If you usually work extra hours, paid or unpaid, please include these hours.” For people who worked at more than one job during at least 26 weeks of the year, the usual number of hours worked per week was defined as the total hours worked at all jobs. For those who worked at more than one job during fewer than 26 weeks of the year, the number of hours worked was based on their main job only. For the analysis, the following categories of hours per week were used: less than 35; 35 to 44; 45 to 79; 80 or more.

Type of shift was ascertained with the question, “Which of the following best describes the hours you usually work at your job/business? (Regular daytime schedule or shift; Regular evening shift; Regular night shift; Rotating shift; Split shift; On call; Irregular schedule).” Respondents indicating that they worked a regular daytime schedule or shift were defined as working a regular daytime schedule; all others were combined into a category labeled “shift worker.”

Physical work demands was defined using the question, “Thinking back over the past three months, which of the following best describes your usual daily activities or work habits? (Usually sit; Stand or walk quite a lot; Usually lift or carry light loads; Do heavy work or carry very heavy loads).” A response of “Do heavy work or carry very heavy loads,” was defined as “strenuous” activity; the other categories

Definitions - continued

combined were defined as “light” activity.

Income was based on the respondent’s total annual personal income (before taxes and deductions) from all sources, and for the analysis was categorized into the following groups: less than \$20,000; \$20,000 to \$39,999; \$40,000 to \$59,999; \$60,000 or more. Income data were missing for 6,683 (9%) of the 75,184 respondents included in the analysis (data not shown).

Self-perceived work stress was measured by the question, “The next question is about your main job or business in the past 12 months. Would you say that most days were (not at all stressful; not very stressful; a bit stressful; quite a bit stressful; extremely stressful)?” For the regression, “not at all stressful” and “not very stressful” were combined; the other three responses were used as distinct categories.

Age groups were specified as follows: 18 to 24; 25 to 34; 35 to 44; 45 to 54; 55 to 64; and 65 to 75.

Chronic conditions were assessed by asking respondents if they had specific conditions that had been diagnosed by a health professional and had lasted, or were expected to last, six months or more. Data on the following conditions were used for this analysis: diabetes, heart disease, stroke, high blood pressure, migraine, asthma, arthritis, bronchitis, chronic obstructive lung disease, epilepsy, gastric or intestinal ulcers, Crohn’s disease, cataract, glaucoma, thyroid condition, fibromyalgia, chronic fatigue syndrome and multiple chemical sensitivities. Respondents were categorized as having 0 to 2, or 3 or more chronic conditions.

Respondents who indicated that they currently smoke every day were classified as *daily smokers*.

For bivariate analysis, *alcohol consumption* was categorized as: not one drink in past year; one or more drink(s) in past year but heavy drinking never, or at most monthly; heavy drinking not more than three times per month; heavy drinking at least weekly. Heavy drinking was defined as consuming at least five drinks on one occasion. For multivariate analysis, alcohol consumption was categorized into three groups: no alcoholic drinks in past year; at least one alcoholic drink in past year, but less than weekly heavy drinking; weekly heavy drinking in past year.

Educational attainment (household) was defined as “lower” if no

household member reported education beyond secondary graduation, and “higher” if at least one household member’s education exceeded secondary graduation.

Personal stress was measured by the question, “Thinking about the amount of stress in your life, would you say that most days are: not at all stressful; not very stressful; a bit stressful; quite a bit stressful; extremely stressful?” Responses of “quite a bit” and “extremely” stressful were defined as “high personal stress;” the other categories were combined and defined as “low personal stress.”

Race was identified by the question, “People living in Canada come from many different cultural and racial backgrounds. Are you: White? Chinese? South Asian? Black? Filipino? Latin American? Southeast Asian? Arab? West Asian? Japanese? Korean? Aboriginal? Other?” Race was categorized as White or visible minority (applied to all other groups).

Type of residence area was determined using the Statistical Area Classification Type, which classifies each census subdivision as a census metropolitan area (CMA), a census agglomeration (CA), a zone influenced by a CMA or CA, or the territories. For this analysis, “urban or urban-influenced” areas were those that are within a CMA or CA and those that have been determined to be strongly or moderately influenced by a CMA or CA. “Rural or remote” was applied to areas that have been determined to be weakly or not influenced by a CMA or CA, and the territories.

Body mass index (BMI) is a measure of weight adjusted for height, and is calculated by dividing weight in kilograms by height in metres squared. The CCHS collected self-reports of height and weight, from which BMI was calculated for each respondent. Using the body weight classification standards adopted by Health Canada,¹² the following BMI categories were used in the analysis:

- Underweight: less than 18.5
- Normal: 18.5 to 24.9
- Overweight: 25.0 to 29.9
- Obese: 30.0 or more

A typical theoretical model of occupational injury suggests that risk arises from an interplay of tangible conditions in the work environment or tasks directly related to the job (for example, exposure to hazardous materials or equipment), the organization of the work (such as working overtime or shifts), and individual or behavioural characteristics, including socio-demographic and psychological characteristics and chronic disease morbidity.¹³⁻¹⁶ To the extent that variables reflecting these factors were available, the models described by Schuster and Rhodes¹³ and Veazie et al.¹⁴ serve as the basis for this study.

Using data from the 2003 CCHS (cycle 2.1), this article provides estimates of the number of employed Canadians aged 18 to 75 who sustained at least one non-fatal, activity-limiting injury on the job in 2003 (see *Methods* and *Definitions*). The analysis concerns only acute injuries; repetitive strain injuries are not included. The specific objectives were to compare injury occurrence by occupational category, and to examine relationships between on-the-job injuries and selected work-related and personal factors. Results are presented first for unadjusted, weighted estimates, and then for adjusted (multivariate) models.

Substantial share of injuries work-related

In 2003, an estimated 630,000 Canadians experienced at least one activity-limiting occupational injury, representing 5% and 2% of employed men and women, respectively (Table 1). Because the estimates pertain only to the most serious injury, and also because of respondents' memory decay (see *Limitations*), these figures underestimate the actual frequency and proportions of work-related injury.

Occupational injuries comprised a substantial proportion of all injuries. More than a quarter (28%) of employed people aged 18 to 75 who reported an activity-limiting injury in 2003 (one-third of men and one-fifth of women) sustained their most serious injury at work.

Despite methodological differences, these results were strikingly similar to the estimated share of

Table 1
Number and percentage who sustained at least one activity-limiting injury of any origin/at least one work injury in past year, employed household population aged 18 to 75, Canada, 2003

	Any injury		Work injury		% of any that were work-related
	'000	%	'000	%	%
Total	2,249	13.4	630	3.8	28.3
Sex					
Men	1,396	15.6	460	5.1	33.2
Women	853	11.0*	170	2.2*	20.1*
Age group					
18 to 24	469	18.4*	108	4.2	23.1*
25 to 34	532	14.8	157	4.4*	29.9
35 to 44	589	12.9*	174	3.8	29.9
45 to 54	450	11.9*	131	3.5	29.4
55 to 64	180	9.4*	53	2.8*	29.7
65 to 75	29	9.0*	7 ^E	2.0 ^{E*}	23.0 ^E

* In male-female comparisons, estimate differs significantly from that for men; in age group comparisons, estimate differs significantly from that for Total ($p < 0.05$)

^E use with caution (coefficient of variation 16.6% to 33.3%)

Source: 2003 Canadian Community Health Survey

medically treated injuries reported to be work-related in the United States over the 1997-to-1999 period (29%), based on data from the National Health Interview Survey.¹⁰

Blue-collar workers at higher risk

Not surprisingly, injury was more common in "blue-collar" than "white-collar" jobs (see *Definitions* and *Geographic differences*). Close to one worker in ten (9%) in trades, transport and equipment operation sustained an on-the-job injury, more than four times the rate (2%) for those employed in business, finance or administration, or in social science, education, government service or religion (Table 2). People employed in processing or manufacturing, or in primary industries, were also at higher risk of work injury, relative to the total workforce.

Men in trades, transport and equipment operation; processing or manufacturing; and primary industries were significantly more likely to be injured, compared with male workers overall. For women, the likelihood of injury was significantly elevated in the same occupational categories, as well as in sales and service.

Table 2

Number and percentage who sustained at least one activity-limiting work injury in past year, by occupational category and sex, employed household population aged 18 to 75, Canada, 2003

Occupational category	Both sexes		Men		Women	
	'000	%	'000	%	'000	%
Total	630	3.8	460	5.2[†]	170	2.2
Management	33	2.4*	27	3.0* [†]	7 ^E	1.4 ^{E*}
Business, finance, etc.	49	1.6*	28 ^E	2.7 ^{E*†}	21	1.0*
Natural and applied sciences, etc.	28	2.4*	24	2.6*	F	F
Health	28	3.0	8 ^E	4.4 ^E	20	2.7
Social science, education, etc.	18	1.6*	7 ^E	1.6 ^{E*}	12 ^E	1.5 ^{E*}
Art, culture, etc.	11 ^E	1.9 ^{E*}	F	F	F	F
Sales, service	133	3.3	60	3.7*	73	3.0*
Trades, transport, etc.	201	8.5*	194	8.8* [†]	8 ^E	4.4 ^{E*}
Primary industries	43	6.6*	37	7.0*	6 ^E	4.9 ^{E*}
Processing, manufacturing, etc.	81	7.2*	68	8.3* [†]	14 ^E	4.2 ^{E*}

* Significantly different from estimate for both sexes combined or from sex-specific estimate for Total ($p < 0.05$)

[†] Significantly different from corresponding estimate for women ($p < 0.05$)

^E use with caution (coefficient of variation 16.6% to 33.3%)

^F too unreliable to be published (coefficient of variation greater than 33.3%)

Note: Because of rounding, detail may not add to totals.

Source: 2003 Canadian Community Health Survey

In both the white- and blue-collar sectors, men's injury rate significantly exceeded women's. Men in management; business, finance and administration; trades, transport and equipment operation; and processing and manufacturing were about twice as likely as their female counterparts to have been injured.

In white-collar occupations, health care workers were more likely to be injured (3%), compared with all white-collar workers combined (2% - data not shown). Those in business, finance or administration had a significantly lower likelihood of injury.

Cooks, machinists injured more

For blue-collar workers, the higher frequency of injury (relative to white-collar workers), together with the large sample size of the CCHS, permitted comparisons of injury occurrence between occupations within each category.

In the sales and service group, 7% of those employed as chefs or cooks were injured, significantly higher than the proportion (3%) for all workers in that group (Table 3). Also at higher risk were workers in food and beverage services, and those in protective services.

Among workers in trades, transport and equipment operation, a strikingly high share (13%) of machinists, metal formers, shapers and erectors

were injured on the job. The risk was also significantly higher for mechanics, compared with all workers in the category.

Agriculture workers (a group that includes contractors, operators and supervisors, but not labourers) accounted for 55% of workers in primary industries (data not shown), so it was not surprising that the proportion who were injured did not differ significantly from the proportion for the category overall.

Within processing, manufacturing and utilities, machine operators were injured significantly more frequently, compared with all people in this category (Table 3).

Different mechanisms

Two mechanisms—overexertion/strenuous movement and falls—accounted for nearly half (49%) of occupational injuries reported to the CCHS (Table 4). These findings corresponded closely with those from the United States. According to data from the National Health Interview Survey of 1997-1999, 48% of occupational injuries were caused by falls and overexertion or strenuous movement.¹⁰

CCHS results indicated that another 32% of work-related injuries were due to accidental contact with a sharp object, tool or machine, or being accidentally struck or crushed by an object.

Table 3

Percentage in selected occupational categories who sustained at least one activity-limiting work injury in past year, employed household population aged 18 to 75, Canada, 2003

	%
Total employed	3.8
Total sales and service occupations[†]	3.3
Sales and service supervisors	3.3 ^E
Wholesale, technical, insurance, real estate sales specialists and retail, wholesale and grain buyers	1.0 ^{E*}
Retail salespersons and sales clerks	2.9 ^E
Cashiers	1.9 ^{E*}
Chefs and cooks	7.2 ^{E*}
Occupations in food and beverage service	4.9 ^{E*}
Occupations in protective services	5.1 [*]
Occupations in travel and accommodation including attendants in recreation and sport	F
Childcare and home support workers	2.7 ^E
Sales and service occupations, n.e.c.	4.0
Total trades, transport and equipment operators and related occupations[†]	8.5
Contractors and supervisors	5.5 ^{E*}
Construction trades	8.1
Stationary engineers, power station operators and electrical trades and telecommunications occupations	7.3
Machinists, metal forming, shaping and erecting occupations	12.6 [*]
Mechanics	10.9 [*]
Other trades, n.e.c.	6.6 ^E
Heavy equipment and crane operators including drillers	8.2 ^E
Transportation equipment operators and related workers, excluding labourers	7.5
Trades helpers, construction and transportation labourers and related occupations	9.3
Total occupations unique to primary industry[†]	6.7
Occupations unique to agriculture excluding labourers	7.3
Occupations unique to forestry operations, mining, oil and gas extraction, fishing, excluding labourers	5.3 [*]
Primary production labourers	6.6 ^E
Total occupations unique to processing, manufacturing and utilities[†]	7.2
Supervisors in manufacturing	5.2 ^E
Machine operators in manufacturing	8.5 [*]
Assemblers in manufacturing	5.9 ^E
Labourers in processing, manufacturing and utilities	5.2 ^E

[†] Reference category

^{*} Significantly different from estimate for reference category ($p < 0.05$)

^E use with caution (coefficient of variation 16.6% to 33.3%)

^F too unreliable to be published (coefficient of variation greater than 33.3%)

n.e.c. Not elsewhere classified

Source: 2003 Canadian Community Health Survey

The mechanisms underlying work injuries differed from those of non-work injuries. Work injuries were more than twice as likely as those occurring elsewhere to have involved accidental contact with a sharp object, tool or machine or being struck or crushed by (an) object(s). Accidental contact with a hot object, liquid or gas was four times as likely to have resulted in a work injury, compared with a non-work injury.

Geographic differences

With a few exceptions, the rate of occupational injury generally did not vary across the provinces and territories. However, in Saskatchewan, the proportion of workers injured (5%) was significantly high relative to Canada overall (4%), and in Ontario and the Northwest Territories, proportions were low. To some extent, these findings reflect the degree to which workers are exposed to hazardous occupational conditions, which varies with the types of work that predominate in each region.

Compared with Canada as a whole, a significantly higher proportion (56%) of workers in Saskatchewan were in "blue-collar" occupations—in which work injury is relatively frequent (data not shown). In Ontario and the Northwest Territories, the proportions of "white-collar" workers were relatively high, consistent with the lower rates of injury in those jurisdictions.

At the local level, those residing in areas that were weakly or not at all influenced by an urban area were more likely to be injured at work, compared with those living in urban areas or in areas of moderate urban influence. A difference in the risk of work injury by degree of urban influence emerged for men but not women (data not shown).

Percentage who sustained at least one activity-limiting work injury in past year, by province/territory and degree of urban influence on place of residence, employed household population aged 18 to 75, Canada, 2003

	Number	%
	'000	
Total	630	3.8
Province/Territory		
Newfoundland and Labrador	11	3.9
Prince Edward Island	3 ^E	4.4 ^E
Nova Scotia	19	3.9
New Brunswick	19	5.0
Québec	153	4.1
Ontario	217	3.3 [*]
Manitoba	27	4.5
Saskatchewan	24	4.8 [*]
Alberta	70	3.9
British Columbia	85	3.8
Yukon	1 ^E	4.0 ^E
Northwest Territories	1 ^E	2.1 ^{E*}
Nunavut	0.3 ^E	3.7 ^E
Place of residence		
Urban or urban-influenced [†]	572	3.7
Rural or remote	57	5.0 [*]

[†] Reference category

^{*} Significantly different from estimate for Total ($p < 0.05$)

^E use with caution (coefficient of variation 16.6% to 33.3%)

Source: 2003 Canadian Community Health Survey

Table 4

Percentage distribution of mechanisms of work and non-work injury among people who sustained at least one activity-limiting injury in past year, employed household population aged 18 to 75, Canada, 2003

Mechanism	Work injury	Non-work injury
	%	%
Total	100	100
Overexertion or strenuous movement	26.4*	21.3
Fall	22.3*	36.9
Accidental contact with sharp object, etc.	19.3*	7.3
Accidentally struck or crushed by object(s)	12.4*	6.4
Accidental contact with hot object, liquid, gas	6.0*	1.5
Accidentally bumped, pushed, bitten, etc.	3.1*	7.0
Transport accident	1.7*	8.3
Physical assault	1.5 ^E	2.5
Other	7.2*	9.0

* Significantly different from corresponding estimate for "Non-work injury" ($p < 0.05$)

^E use with caution (coefficient of variation 16.6% to 33.3%)

Source: 2003 Canadian Community Health Survey

Hand, lower back injuries most common

The hand was the body part most frequently injured on the job (Table 5). Over one-quarter (28%) of work injuries were to the hand, followed by the lower back (16%). Compared with all workers who sustained an occupational injury, those in sales and service were more likely, and white-collar workers (combined) less likely, to injure a hand. White-collar workers were more likely to injure the lower back: one-fifth of the occupational injuries sustained by white-collar workers affected this part of the body.

The most frequent type of occupational injury was a sprain or strain, followed by cuts, then fractures

(Table 6). Sprains or strains were more common among white-collar workers, compared with workers overall. Fractures accounted for nearly one-fifth (19%) of injuries to primary industry workers, significantly above the share (11%) for all workers. Burns or scalds made up 15% of injuries sustained by sales and service workers—significantly higher than the proportion of all work injuries (6%).

Treatment

To assess the severity of occupational injuries reported to the CCHS, the proportion of people injured at work who sought treatment was compared with the corresponding proportion for people injured in other circumstances. Two-thirds (66%) of people injured at work sought treatment, significantly higher than the proportions for people injured during sports (52%) or while performing household chores or other unpaid work (60%) (Table 7). Although this suggests that occupational injuries were more severe, the requirement that injuries be medically certified for compensation benefits might have influenced treatment-seeking behaviour.

To further examine the gravity of work injuries, those that are usually more harmful (burn or scald, concussion, fracture, internal injury, multiple injuries) were grouped together in a "serious" category. Fully 15% of the people who sustained such injuries were hospitalized, compared with 1% of those who had other types of injuries (data not

Table 5

Percentage distribution of body part injured among people sustaining at least one activity-limiting work injury in past year, by occupational category, employed household population aged 18 to 75, Canada, 2003

Occupational category	Body part injured								
	Total	Hand	Lower back	Ankle/ Foot	Knee	Shoulder	Elbow	Wrist	Other
Total[†]	100.0	27.6	15.7	12.1	9.5	8.4	4.0	3.7	16.7
White collar	100.0	20.8*	19.7*	14.6	11.5 ^E	7.6	2.8 ^E	F	18.8
Sales, service	100.0	33.0*	13.8	13.1 ^E	10.0 ^E	6.2 ^E	F	3.8 ^E	12.8*
Trades, transport, equipment operation	100.0	29.1	14.2	9.5*	9.4	10.6	3.8 ^E	3.2 ^E	16.8
Primary industries	100.0	25.5	12.9 ^E	13.5 ^E	10.6 ^E	4.1 ^{E*}	F	7.5 ^{E*}	17.9 ^E
Processing, manufacturing, utilities	100.0	30.4	15.8 ^E	11.0 ^E	F	10.6 ^E	F	F	17.7 ^E

[†] Reference category

* Significantly different from estimate for Total ($p < 0.05$)

^E use with caution (coefficient of variation 16.6% to 33.3%)

^F too unreliable to be published (coefficient of variation greater than 33.3%)

Source: 2003 Canadian Community Health Survey

Table 6

Percentage distribution of type of injury among people sustaining at least one activity-limiting work injury in past year, by occupational category, employed household population aged 18 to 75, Canada, 2003

Occupational category	Type of injury							
	Total	Sprain/ Strain	Cut	Fracture	Burn/ Scald	Scrape	Dislocation	Other
Total†	100.0	39.8	21.1	10.9	6.2	5.8	3.1	13.2
White collar	100.0	48.4*	18.3	8.3 ^E	F	5.9 ^E	3.0 ^E	13.6
Sales, service	100.0	37.7	20.9	8.9 ^E	14.7 ^{E*}	5.4 ^E	3.2 ^E	9.2 ^{E*}
Trades, transport, equipment operation	100.0	37.2	21.0	10.9	4.4 ^E	6.5 ^E	3.3 ^E	14.8
Primary industries	100.0	38.9	22.4 ^E	18.5 ^{E*}	F	F	3.2 ^E	8.8 ^{E*}
Processing, manufacturing, utilities	100.0	32.7*	21.7	15.2 ^E	5.9 ^E	F	F	17.3 ^E

[†] Reference category

* Significantly different from estimate for Total ($p < 0.05$)

^E use with caution (coefficient of variation 16.6% to 33.3%)

^F too unreliable to be published (coefficient of variation greater than 33.3%)

Source: 2003 Canadian Community Health Survey

shown), a difference that validates the designation of these injuries as serious.

Based on this definition, 20% of work injuries were “serious,” significantly below the corresponding proportions for injuries sustained during other activities (Table 7). For example, 28% of people injured while travelling to or from work had a serious injury, as did 23% of those injured while engaging in sports or exercise. Clearly, these findings do not support the suggestion that

occupational injuries are relatively more serious than those sustained elsewhere.

However, the proportion of work injuries that were serious varied by occupational category—27% of injuries sustained by sales and service workers were serious, more than twice the share among white-collar workers (13%) (data not shown). Serious injuries were also significantly more common among workers in trades and transport, primary industries, and processing and manufacturing.

Most work injuries for which treatment was sought were treated in emergency rooms (51%), followed by doctors’ offices (Table 8). Fewer than one in twenty non-fatal work injuries required hospitalization.

Table 7

Number and percentage who sought treatment for injury, and percentage who sustained serious injury, by activity when injury occurred, employed household population aged 18 to 75 who sustained at least one activity-limiting injury in past year, Canada, 2003

Activity when injury occurred	Number who sought treatment	% who sought treatment	% who sustained serious injury [‡]
	‘000		
Total	1,372	61.6	23.6
Working at job or business [†]	417	66.2	19.8
Sports or physical exercise	314	51.5*	23.4*
Household chores, other unpaid work	219	60.4*	23.6
Leisure or hobby	169	62.9	27.4*
Travel to or from work	91	73.3*	27.8*
Sleeping, eating, personal care	32	70.0	16.1
Other	129	69.9	30.6*

[†] Reference category

[‡] Defined as a burn or scald, concussion, fracture, internal injury or multiple injuries

* Significantly different from estimate for reference category ($p < 0.05$)

Source: 2003 Canadian Community Health Survey

Strenuous jobs risky

Although CCHS respondents were not asked about their specific job tasks or the materials and tools they used, they did provide information about the physical effort their daily activities involved. As reported in previous research, the likelihood of occupational injury was markedly elevated for workers whose jobs required strenuous effort, compared with those without such demands.^{11,15,17-19} The risk of injury for people doing heavy work was twice as high in men, and three times as high for women, compared with those with less physically demanding jobs (Table 9).

Table 8

Percentage treated, by treatment facility, employed household population aged 18 to 75 who sustained at least one activity-limiting work-related injury in past year and sought treatment, Canada, 2003

	Treatment facility					
	Emergency room†	Doctor's office	Clinic	Hospital admission	Outpatient department	Work clinic
	%	%	%	%	%	%
Total	51.1	20.6*	20.3*	4.3^E*	4.2^E*	3.6*
Men	55.3	16.6*	18.8*	5.3 ^E *	4.6 ^E *	4.4 ^E *
Women	39.4	31.4	24.4*	F	3.0 ^E *	F

† Reference category

* Significantly different from corresponding estimate for reference category ($p < 0.05$)

^E use with caution (coefficient of variation 16.6% to 33.3%)

^F too unreliable to be published (coefficient of variation greater than 33.3%)

Note: Because multiple responses for treatment facility were permitted, detail may total more than 100%.

Source: 2003 Canadian Community Health Survey

Long hours linked to injury

In addition to occupational category and the effort involved in a job, several organizational aspects of employment emerged as significant correlates of work injury.

For men, the number of hours worked per week was associated with injury (Table 9). The likelihood of injury was greater for men who worked 35 or more hours, compared with those who typically worked fewer hours. Furthermore, the results suggested a gradient in risk corresponding to hours of work. This was consistent with previous research, showing that jobs routinely requiring overtime increase the risk of occupational injury.²⁰ No significant differences by hours of work emerged for women.

Both men and women with a regular daytime schedule were at significantly lower risk of injury, compared with those who worked other shifts. These results corroborate previous research indicating that shiftwork is associated with a higher risk of occupational injury.^{21,22} As well, men and women who were self-employed were less likely to sustain an occupational injury, compared with those who worked for others.

The amount that workers are paid is another aspect of the organization of work. Among men with annual earnings of \$60,000 or more, 3% were injured on the job, significantly below the proportions for men with income less than \$60,000

Table 9

Percentage who sustained at least one activity-limiting work injury in past year, by sex and selected work-related factors, employed household population aged 18 to 75, Canada, 2003

	Men	Women
	%	%
Total	5.2	2.2
Hours worked per week		
Less than 35†	3.3	2.0
35 to 44	5.2*	2.2
44 to 79	5.4*	2.4
80 or more	8.8*	3.8 ^E
Work shift		
Regular daytime schedule†	4.8	1.8
Shift work	6.0*	3.1*
Employer		
Self-employed	4.1*	1.4 ^E *
Not self-employed†	5.4	2.3
Employment income		
Less than \$20,000	5.6*	2.5*
\$20,000 to \$39,999	6.1*	2.6*
\$40,000 to \$59,999	6.2*	1.4
\$60,000 or more†	3.1	1.6 ^E
Number of jobs		
One†	5.0	2.0
More than one	6.6*	3.5*
Physical demands of job		
Heavy work/Carry very heavy loads	10.5*	6.0*
Do not do heavy work/carry very heavy loads†	4.2	2.0
Work stress		
Not at all	4.5	1.5 ^E *
Not very	5.0	1.7*
A bit	5.0	2.0*
Quite	5.8	2.6*
Extremely†	5.5	4.2

† Reference category

* Significantly different from estimate for reference category ($p < 0.05$)

^E use with caution (coefficient of variation 16.6% to 33.3%)

Source: 2003 Canadian Community Health Survey

(Table 9). Women whose annual income was less than \$40,000 had a significantly higher risk of work injury, compared with women earning \$40,000 or more. Of course, analysis of injury in relation to income is far more informative when occupation is taken into account; this was undertaken in multivariate analysis (see below).

For both sexes, having more than one job was significantly associated with an elevated likelihood of work injury, compared with workers who had only one job.

The results of previous research on the relationship between stress and work injury are inconclusive, perhaps because of the variety of measures that have been used to assess stress as well as injury.²³ A significant association has emerged in some studies,²⁴⁻²⁶ but not in others.²⁷ Analysis of the CCHS data indicated that women's injury risk differed significantly in relation to the perceived stressfulness of their job, but no pattern emerged for men. Just over 4% of women who described their job as "extremely" stressful had sustained a work injury, compared with less than 2% of those who said their job was "not a bit" or "not very" stressful.

Young men at higher risk

Factors such as a disposition to risk-taking have been shown to influence the likelihood of work injury.²⁸ Although the CCHS contained no direct measures of such factors, it did collect data on personal and socio-demographic characteristics that are relevant to the study of occupational injury, including sex, age, race, educational attainment, smoking, alcohol use, body mass index, diagnosed chronic conditions and life stress.

For men, the proportion injured generally decreased with age, which could, in some cases, be related to experience on the job. Compared with male workers aged 18 to 24, those aged 25 to 34 were significantly more likely to be injured at work, and those aged 45 or older were less so (Table 10). To some extent, the low proportion of men aged 18 to 24 who were injured may have reflected a greater likelihood of part-time work among this group, and thus, less exposure to risk. In fact, when

hours of work were taken into account, the percentage of men aged 18 to 24 who were injured was not significantly different from that for those aged 25 to 34 (data not shown). Among women, the likelihood of work injury was similar at all ages. The findings for men support those of previous studies showing a higher risk of occupational injury at younger ages than in middle or older adulthood.²⁹⁻³¹

Table 10

Percentage who sustained at least one activity-limiting work-related injury in past year, by sex and selected characteristics, employed household population aged 18 to 75, Canada, 2003

	Men	Women
	%	%
Total	5.2*	2.2
Age group		
18 to 24†	6.0	2.4
25 to 34	6.5*	2.1
35 to 44	5.4	2.0
45 to 54	4.4*	2.4
55 to 64	3.2*	2.1
65 to 75	2.5 ^E	F
Race		
White†	5.6	2.3
Non-white	3.0*	1.7
Highest level of education in household		
Secondary graduation or less	6.2*	3.3*
More than secondary graduation†	5.0	2.0
Chronic conditions		
0 to 2†	5.1	2.0
3 or more	7.8*	4.0*
Smoking		
Daily smoker	7.5*	3.5*
Non-/Occasional smoker†	4.5	1.9
Alcohol use		
No alcohol in past year	5.0	2.3
One or more drink(s) in past year, but heavy‡		
drinking never or less than monthly	4.8*	2.1
Heavy‡ drinking not more than 3 times per month	5.7	2.0 ^E
Heavy‡ drinking at least weekly†	6.2	3.5 ^E
Body mass index category		
Underweight	6.1 ^E	2.4 ^E
Normal weight†	5.1	1.9
Overweight	4.8	2.1
Obese	6.1	4.0*
Life stress		
Not at all/ Not very†	4.5	2.0
A bit stressful	5.2	2.0
Quite a bit	5.5	2.5
Extremely	7.3*	3.4 ^E *

† Reference category

‡ At least five drinks per occasion

* Significantly different from estimate for reference category ($p < 0.05$)

^E use with caution (coefficient of variation 16.6% to 33.3%)

^F too unreliable to be published (coefficient of variation greater than 33.3%)

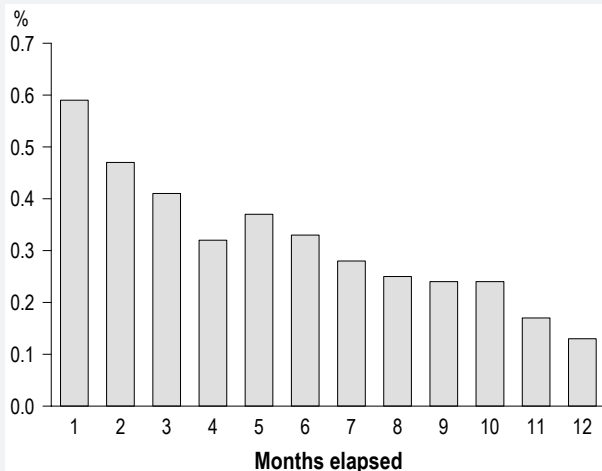
Source: 2003 Canadian Community Health Survey

Limitations

Although the Canadian Community Health Survey (CCHS) asked respondents how many activity-limiting injuries they had sustained during the past year, they were asked to provide details only about “the most serious injury.” As a result, estimates related to injury severity are somewhat exaggerated, and not representative of all injuries that occurred.

Several features of the CCHS data precluded complete estimates of the frequency of occupational injury. First, data on fatal injuries were unavailable. Second, the survey asked about only the most serious injury, so if a person had sustained an occupational injury and another injury perceived to be more serious, the occupational injury would not have been reported. Of those who reported an occupational injury as their most serious injury, 19% reported more than one injury (data not shown); the number of these respondents who experienced two or more occupational injuries is unknown. Third, the analysis does not cover repetitive strain injuries. Fourth, the survey data indicate a decreasing likelihood of reporting occupational injury with the amount of time elapsed between the injury and the date the respondent was interviewed. The decline over time of non-occupational injuries was similar (data not shown). This suggests that injury was under-reported because of diminishing recall over time—a phenomenon that has been noted in previous research.³²⁻³⁷

Percentage who sustained at least one activity-limiting work injury, by number of months elapsed between interview and injury occurrence, employed household population aged 18 to 75, Canada, 2003



Note: Injuries occurring in same month as interview are not included.
Source: 2003 Canadian Community Health Survey

Information about the length of time in the current job was not available. Some respondents who reported an occupational injury in the past year may have been in a different job when they were injured. The extent to which this may have happened is unknown. Any resultant misclassification (of job type or “exposure”) may have led to underestimation or overestimation of the true associations between job type and injury risk.

Not all factors that affect the risk of work injury were included in the analysis, either because the information was unavailable from the survey, or because the association with work injury is unknown. For example, previous research indicates that the risk of occupational injury is related to poor sleep and snoring.^{29,38,39} Other research indicates that “human” factors such as inexperience and a propensity to take risks contribute to injury risk.^{28,40} However, because cycle 2.1 of the CCHS did not collect data on these variables, or on factors directly related to the job, such as work activity, machinery or tools used, or noxious substance exposure, their relationships with injury could not be examined. As a result of the unavailability of information or the failure to include variables that influence injury risk, some associations that emerge from the analysis may result, in part, from factors not considered.

This analysis is based on self-reported data; no independent verification of the information reported by respondents was undertaken. The degree to which the data may be biased because of reporting error is unknown. In particular, the accuracy of information about socially sensitive behaviours such as smoking and alcohol consumption may be affected. A tendency of smokers or heavy drinkers to deny or underreport use would contribute to misclassification, and misrepresent the true associations between injury and smoking and drinking. Similarly, underestimates of body mass index due to inaccuracies in self-reported height and weight⁴¹—especially among people who are truly overweight or obese—would alter the strength of associations involving BMI. Data on employment income were not available; self-reported personal income was used instead.

The severity of the injuries is unknown. Although respondents were asked to report injuries that were “serious enough to limit [their] normal activities,” an examination of treatment sought suggested that the severity of the injuries reported ranged widely.

The data are cross-sectional; therefore, no inference of causality or temporal ordering of variables is possible from the results of the analysis.

Other socio-demographic characteristics—race and level of household education—were also related to the risk of work injury. Non-white men had a lower risk of occupational injury than did white men, a finding consistent with reports from Canada and the United States.^{28,40} Workers living in households in which at least one member had been educated beyond secondary graduation were also at lower risk of injury, compared with those from households in which no one had gone beyond secondary completion. The findings related to education are consistent with those of a study conducted in Israel, showing that workers with less than 12 years of education had elevated odds of injury, compared with those with more years of schooling.¹⁹

Smokers more often injured

Occupational injury was also linked to health-related risk factors. Workers with at least three chronic conditions were more likely to have had a work injury, compared with those reporting two or fewer conditions. Specific conditions that were significantly associated with work injury included migraine, arthritis, stomach ulcer and multiple chemical sensitivities (data not shown).

Consistent with observations reported elsewhere, men and women who smoked daily had a higher likelihood of injury, compared with occasional or non-smokers (Table 10).^{24,42-44} Although the mechanism linking smoking to injury risk is not fully understood, previous research has identified smoking as a precursor to injury.⁴⁵

Heavy alcohol consumption was also related to the likelihood of injury. Of men who reported heavy episodic drinking (that is, over the past year they had consumed at least five drinks per occasion, at least once a week), 6.2% were injured at work, significantly higher than the corresponding percentage (4.8%) for those who had consumed one or more drink(s) in the past year, but whose heavy drinking (if any) had occurred less than once per month. For women, 3.5% of weekly heavy drinkers were injured, compared with 2.1% of those whose heavy drinking occurred less than monthly; because of smaller numbers, this difference fell just short of statistical significance ($p=0.06$). In a number of

previous studies, a positive association has been observed between heavy drinking and occupational injury,^{17,18,28,46-48} although in other research, this relationship failed to emerge.³⁸

Obese women were twice as likely to be injured at work as were those whose weight was in the normal range: 4% compared with 2%. The finding for women is consistent with previous research indicating a positive relationship between obesity and risk of occupational injury.^{19,49} No significant difference emerged for men.

Before the influence of other factors (including work stress) was taken into account, personal life stress was also associated with work injury. Among men and women who reported that on most days their lives were “extremely” stressful, the likelihood of injury was significantly higher than among those reporting lives that were “not at all,” or “not very” stressful. This observation corroborates findings of previous studies on the role of stress, although the variety of measures used makes comparability problematic.²³

Work-related influences persist

To examine the relationship between work-related variables and injury, while controlling for other influences, successive multivariate models were fitted for each sex—the first containing work-related variables, and the second containing socio-demographic and other health-related risk factors as well (Table 11).

In each of the second, fully controlled models, the relationships observed in the first models between work-related factors and occupational injury generally persisted. For men, regardless of age, race, household education, health-related risk factors and level of job stress, those employed in trades, transport or equipment operation; primary industries; and processing, manufacturing or utilities had over twice the odds of work injury as did those in white-collar occupations (Table 11). Aside from occupational category, physical exertion on the job was also significant for men; the odds of injury associated with heavy lifting or strenuous activity were 70% higher than the odds associated with less physically taxing jobs.

Table 11

Adjusted odds ratios relating selected characteristics to activity-limiting work injury in past year, by sex, employed household population aged 18 to 75, Canada, 2003

	Men				Women			
	Model 1		Model 2		Model 1		Model 2	
	Adjusted odds ratio	95% confidence interval	Adjusted odds ratio	95% confidence interval	Adjusted odds ratio	95% confidence interval	Adjusted odds ratio	95% confidence interval
Work-related factors								
Occupational category								
White collar†	1.0	...	1.0	...	1.0	...	1.0	...
Sales, service	1.3	1.0 to 1.6	1.3	1.0 to 1.7	2.1*	1.6 to 2.7	2.0*	1.5 to 2.6
Trades, transport, equipment operation	2.8*	2.3 to 3.5	2.8*	2.3 to 3.5	3.0*	1.7 to 5.4	2.8*	1.4 to 5.4
Primary industries	2.2*	1.7 to 2.9	2.1*	1.5 to 2.8	3.7*	2.1 to 6.5	3.6*	2.0 to 6.5
Processing, manufacturing, utilities	2.5*	1.9 to 3.3	2.6*	2.0 to 3.5	2.8*	1.8 to 4.3	2.4*	1.5 to 3.8
Hours, shift, employer								
Less than 35 hours per week†	1.0	...	1.0	...	1.0	...	1.0	...
35 to 44 hours per week	1.4*	1.0 to 1.9	1.3	0.9 to 1.7	1.2	0.9 to 1.6	1.2	0.9 to 1.7
45 to 79 hours per week	1.6*	1.2 to 2.2	1.4*	1.0 to 1.9	1.3	0.9 to 1.9	1.4	1.0 to 2.1
80 or more hours per week	2.1*	1.5 to 3.1	1.9*	1.3 to 2.9	1.5	0.8 to 3.2	1.4	0.6 to 3.2
Regular daytime schedule†	1.0	...	1.0	...	1.0	...	1.0	...
Shifts	1.3*	1.1 to 1.5	1.2*	1.0 to 1.5	1.6*	1.2 to 2.0	1.5*	1.1 to 1.9
Self-employed‡	0.8*	0.6 to 0.9	0.8	0.6 to 1.0	0.5*	0.4 to 0.8	0.6*	0.4 to 0.9
Employment income, nature of work								
Less than \$20,000	1.9*	1.4 to 2.6	1.8*	1.3 to 2.5	1.3	0.8 to 2.2	1.3	0.8 to 2.3
\$20,000 to \$39,999	1.6*	1.3 to 2.1	1.6*	1.3 to 2.1	1.5	0.9 to 2.4	1.5	0.9 to 2.5
\$40,000 to \$59,999	1.7*	1.4 to 2.2	1.7*	1.3 to 2.2	0.9	0.5 to 1.5	0.9	0.5 to 1.6
\$60,000 or more†	1.0	...	1.0	...	1.0	...	1.0	...
Two or more jobs‡	1.3*	1.1 to 1.6	1.2	1.0 to 1.5	1.7*	1.2 to 2.2	1.5*	1.1 to 2.1
Heavy work/Carry heavy loads‡	1.8*	1.5 to 2.1	1.7*	1.5 to 2.0	2.2*	1.6 to 3.0	2.0*	1.5 to 2.9
Work stress								
Not at all/Not very†	1.0	...	1.0	...	1.0	...	1.0	...
A bit	1.1	0.9 to 1.3	1.0	0.8 to 1.3	1.3	1.0 to 1.8	1.3	1.0 to 1.9
Quite	1.4*	1.1 to 1.7	1.2	0.9 to 1.6	1.9*	1.4 to 2.7	1.7*	1.2 to 2.5
Extremely	1.2	0.9 to 1.7	1.0	0.7 to 1.5	3.1*	2.1 to 4.7	2.8*	1.8 to 4.5
Socio-demographic factors								
Age group								
18 to 24†	...	...	1.0	...	...	...	1.0	...
25 to 34	...	...	1.2	0.9 to 1.5	...	...	1.0	0.7 to 1.4
35 to 44	...	...	1.0	0.8 to 1.3	...	...	0.9	0.6 to 1.4
45 to 54	...	...	0.8	0.6 to 1.1	...	...	1.1	0.8 to 1.7
55 to 64	...	...	0.6*	0.4 to 0.9	...	...	1.0	0.6 to 1.6
65 to 75	...	...	0.6	0.3 to 1.1	...	...	0.8	0.3 to 1.8
Race								
White†	...	...	1.0	...	...	...	1.0	...
Non-white	...	...	0.5*	0.4 to 0.8	...	...	0.8	0.5 to 1.2
Place of residence								
Urban-influenced zone†	...	...	1.0	...	...	...	1.0	...
Rural or remote	...	...	1.1	1.0 to 1.4	...	...	0.8	0.6 to 1.1
Highest level of education in household								
Secondary graduation or less	...	...	0.9	0.8 to 1.1	...	...	1.3	1.0 to 1.8
More than secondary graduation†	...	...	1.0	...	...	...	1.0	...

continued...

Table 11 - continued

Adjusted odds ratios relating selected characteristics to activity-limiting work injury in past year, by sex, employed household population aged 18 to 75, Canada, 2003

	Men				Women			
	Model 1		Model 2		Model 1		Model 2	
	Adjusted odds ratio	95% confidence interval	Adjusted odds ratio	95% confidence interval	Adjusted odds ratio	95% confidence interval	Adjusted odds ratio	95% confidence interval
Health-related risk factors								
Chronic conditions								
0 to 2 [†]	1.0	...	...	...	1.0	...
3 or more	1.8*	1.3 to 2.4	...	...	1.6*	1.1 to 2.3
Smoking								
Daily smoker	1.3*	1.1 to 1.5	...	...	1.5*	1.1 to 1.9
Non-/Occasional smoker [†]	1.0	...	...	...	1.0	...
Body mass index category								
Underweight	1.4	0.7 to 2.8	...	...	1.1	0.6 to 2.0
Normal weight [†]	1.0	...	...	...	1.0	...
Overweight	1.0	0.8 to 1.2	...	...	1.0	0.8 to 1.3
Obese	1.1	0.9 to 1.4	...	...	1.9*	1.4 to 2.6
Alcohol consumption								
No alcohol in past year	1.1	0.9 to 1.4	...	...	1.1	0.8 to 1.5
At least 1 drink in past year, but less than 5 drinks/occasion weekly [†]	1.0	...	...	...	1.0	...
5 drinks per occasion at least weekly	1.0	0.8 to 1.2	...	...	1.4	0.8 to 2.4
Life stress								
Quite a bit/Extremely	1.2	0.9 to 1.4	...	...	1.1	0.8 to 1.4
Not at all/Not very/A bit [†]	1.0	...	...	...	1.0	...

[†] Reference category

[‡] Reference category is absence of condition; for example, reference category for "Self-employed" is Employed by others.

* Significantly different from estimate for reference category ($p < 0.05$)

... Not applicable

Notes: For men, Model 1 was based on 36,271 records; Model 2 was based on 34,239 records. For women, Model 1 was based on 35,541 records; Model 2 was based on 32,011 records. Because of rounding, odds ratios with 1.0 as the lower or upper confidence limit may be statistically significant. A variable for missing data on income was included in the models; the odds ratios are not shown.

Source: 2003 Canadian Community Health Survey

Men whose annual income was below \$60,000 had higher odds of injury, compared with those at \$60,000 or above. The relationship between injury and long hours also persisted; compared with men who worked less than 35 hours per week, the odds of injury were 40% higher for those who worked 45 to 79 hours per week, and nearly twice as high for those who worked 80 hours or more. Male shift workers also had higher odds of on-the-job injury.

Some of the findings for women were similar to those for men (Table 11). As well as in the three occupational categories in which men's odds of injury were elevated, women in sales and services had high odds of injury. Physical exertion on the job also conferred higher odds of injury for women, as did shiftwork and having more than one job.

Being self-employed was protective. However, for women, no significant relationships emerged between injury and level of employment income or number of hours worked.

Link to job stress persists in women

In contrast to the findings for men, women's odds of injury rose in relation to work stress. Compared with women who felt that their job was "not at all" or "not very" stressful, those perceiving more job stress had increasingly higher odds of injury (Table 11). Women in jobs they reported as "extremely" stressful had nearly three times the odds of work injury as did those in jobs identified as not stressful, even when personal life stress was taken into account. This indicates that the association

between work stress and injury risk was unique, over and above any influence from “life” stress in general. Of course, this observation is based on cross-sectional data and may reflect reverse causation: the experience and consequences of having sustained an injury on the job may lead to increased stress.

Independent of work-related factors, some health-related risk factors were significantly related to occupational injury. Those that are modifiable are worth noting. Both men and women who smoked daily had significantly elevated odds of on-the-job injury. For women, obesity was also independently significant; obese women had nearly twice the odds of injury as did those whose weight was in the normal range. The findings of previous research about smoking and obesity in relation to occupational injury are contradictory. Some studies have suggested that individual factors including weight and smoking were not significantly associated with occupational injury when work-related factors were considered,^{38,50,51} while others are more consistent with results from the CCHS.^{44,49}

Concluding remarks

Well over half a million Canadian workers were injured on the job in 2003. The majority (72%) of them were men, and nearly three-quarters were employed in blue-collar occupations. These findings serve as a reminder that despite recent improvements,⁵² large numbers of workers are still being injured, and the risk is unevenly distributed within the workforce.

A better understanding of the circumstances that give rise to injury should contribute to the success

of injury prevention efforts. Analysis of the CCHS data revealed a number of factors that were strongly associated with occupational injury. Some of these factors were intrinsic to the job, while others reflected personal or socio-economic conditions.

A number of factors associated with work injury were similar between the sexes, including shiftwork, physically demanding jobs, chronic health conditions, and smoking. Other factors differed between men and women. Women with more than one job, and those in sales and service, were at higher risk of injury relative to female white-collar workers, but these relationships were not significant in men. Income and long working hours were associated with injury in men, but not in women. Obese women were at higher risk of injury, but this relationship did not emerge in men. Finally, perceived work stress was highly related to occupational injury in women, but not at all in men.

Findings from the CCHS help to identify individual characteristics and work-related conditions that are linked to an increased risk of work injury, and thus to suggest areas where injury prevention strategies might be directed. As well as programs to promote smoking cessation, healthy weight and stress reduction, workplace-based safety programs could be emphasized for workers in occupations at higher risk. The findings also underscore the importance to injury risk of factors that are modifiable by employers, including workplace hazards, equipment design, work schedules and workload distribution. ●

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Physically active Canadians by Heather Gilmour

Keywords: leisure-time physical activity, non-leisure-time physical activity, exercise

The health benefits of physical activity are numerous and well-documented—a reduced risk of cardiovascular disease, some types of cancer, osteoporosis, diabetes, obesity, high blood pressure, depression, stress and anxiety.¹⁻³ In addition, the economic impact of physical *inactivity* can be substantial and has been estimated at \$5.3 billion, or 2.6% of total health care costs in Canada in 2001.⁴ Even so, close to half (48%) of Canadians aged 12 or older, 12.7 million people, were inactive in their leisure time in 2005, meaning that they did the equivalent of less than a half hour of walking per day. As well, 25% (6.6 million) reported that they usually sit most of the day. And during a typical week, 41% (10.8 million) spent less than one hour walking to get to work or school or to do errands.

How much is enough?

How much physical activity is enough—what type? how long? what intensity? how frequently?—is the subject of debate.⁵ Evidence indicates that 30 minutes of moderate intensity exercise on most days provide some health benefits, notably, a decreased risk of chronic diseases, and that increasing benefits come from doing more, especially vigorous activities.¹ Some recent recommendations suggest that 60 minutes of moderate intensity exercise per day is needed to prevent weight gain.^{2,5}

Half at least moderately active

For this study, respondents to the 2005 Canadian Community Health Survey (CCHS) were classified as active, moderately active or inactive, based on their self-reported leisure-time pursuits (see *The data*). They were asked about the frequency, duration and

intensity of their participation in a variety of activities over the previous three months. For each activity reported, average daily energy expenditure was calculated by multiplying the number of times the activity was performed, by the average duration, by the energy cost (kilocalories per kilogram of body weight per hour). The sum of the average daily energy expenditure of all activities was used to classify respondents as:

- *Active* - Using 3 or more kilocalories per kilogram of body weight per day; for example, walking an hour a day or jogging 20 minutes a day.
- *Moderately active* - Using 1.5 to less than 3 kilocalories per kilogram of body weight per day; for example, walking 30 to 60 minutes a day, or taking an hour-long exercise class three times a week.
- *Inactive* - Using less than 1.5 kilocalories per kilogram of body weight per day; for example, walking less than half an hour each day.

Based on these measures, 27% of Canadians were active in their leisure time, and an additional 25% were moderately active (Table 1). Combined, just over half (52%) of people aged 12 or older reported that they were at least moderately active during their leisure time in 2005.

Men, young people more active

Physically active leisure time is more common among men than women. A higher percentage of men than women reported being at least moderately active in their leisure time, particularly at younger (less than 34) and older (65 or older) ages (Table 1). Among both sexes, the proportions who were active declined after ages 12 to 17 (Chart 1). For women, the proportion levelled off at ages 25 to 34, and then fell again after age 65. For men, the drop in

Table 1

Level of leisure-time physical activity, household population aged 12 or older, Canada, 2005

	Active	Moderately active	Active or moderately active	Inactive
Total	27.1	25.1	52.2	47.8
Men	30.2*	24.6*	54.8*	45.2*
Women†	24.1	25.6	49.7	50.3
Age 12 to 17	50.9	22.6	73.5	26.5
Men	57.6*	21.5*	79.1*	20.9*
Women†	43.8	23.7	67.5	32.5
Age 18 to 24	38.3	23.5	61.8	38.2
Men	43.8*	22.2*	66.0*	34.0*
Women†	32.5	24.9	57.4	42.6
Age 25 to 34	26.4	26.1	52.5	47.5
Men	29.0*	25.1*	54.0*	46.0*
Women†	24.0	27.1	51.0	49.0
Age 35 to 44	23.4	25.4	48.8	51.2
Men	24.0	24.9	48.9	51.1
Women†	22.7	26.0	48.8	51.3
Age 45 to 54	22.0	25.6	47.6	52.4
Men	22.5	25.6	48.1	51.9
Women†	21.4	25.6	47.0	53.0
Age 55 to 64	22.6	26.3	48.9	51.1
Men	24.3*	25.0*	49.2	50.8
Women†	21.0	27.7	48.6	51.4
Age 65 or older	18.5	24.5	43.0	57.0
Men	24.2*	26.1*	50.2*	49.8*
Women†	14.1	23.4	37.5	62.5
Household income[§]				
Lowest	22.7*	21.6*	44.3*	55.7*
Low-middle	23.3*	23.8*	47.1*	52.9*
Middle	26.2*	26.7*	52.9*	47.1*
High-middle	29.0*	26.4*	55.4*	44.6*
Highest†	32.9	29.4	62.3	37.7
Ethnic origin				
White	27.2	25.9‡	53.2‡	46.9‡
Black	28.8	18.5‡	47.3‡	52.7‡
Southeast Asian	21.6‡	22.1‡	43.7‡	56.3‡
Off-reserve Aboriginal	34.0‡	21.9‡	56.0‡	44.0‡
Other	27.0	21.8‡	48.8‡	51.2‡
Immigrant, years in Canada				
0 to 4	21.7‡	21.6‡	43.3‡	56.7‡
5 to 9	24.9	19.5‡	44.3‡	55.7‡
10 to 14	25.1	21.0‡	46.2‡	53.8‡
15 to 19	21.2‡	22.0‡	43.2‡	56.8‡
20 or more	23.8‡	24.7	48.4‡	51.6‡

† Reference category

‡ Significantly different from estimate for Canada ($p < 0.05$)

§ Excludes territories

* Significantly different from estimate for reference group ($p < 0.05$)

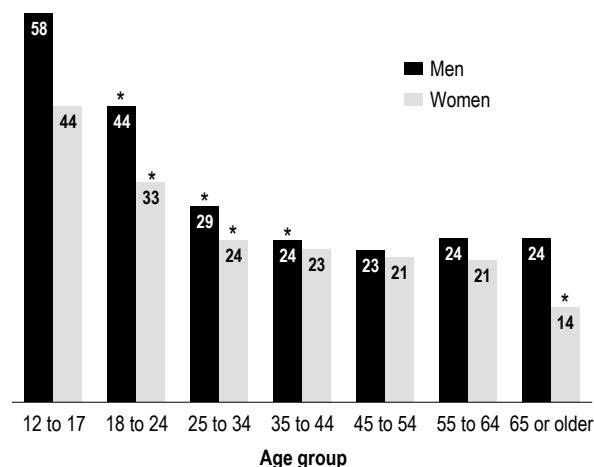
Note: Based on self-reported frequency and duration of participation in leisure-time physical activity in previous 3 months

Source: 2005 Canadian Community Health Survey

the percentage who were active continued until ages 35 to 44, but remained at this level at age 65 or older.

Chart 1

Percentage physically active† in leisure-time, by age group and sex, household population aged 12 and older, Canada, 2005



† Using 3 or more kilocalories per kilogram per day

* Significantly different from estimate for same sex in preceding age group ($p < 0.05$)

Note: Based on self-reported frequency and duration of participation in leisure-time physical activity in previous 3 months

Source: 2005 Canadian Community Health Survey

Income, immigrants, ethnicity

Leisure-time physical activity was less prevalent among people in lower income groups, compared with the highest income group (see *The questions*). This difference persisted when other socio-demographic characteristics, non leisure-time activity and activity restrictions were taken into account (data not shown).

Immigrants, regardless of how long they had been in Canada, were less likely to be at least moderately active in their leisure time than were Canadians overall. This relationship remained even when adjusted for the age distribution of the two groups (data not shown). By contrast, rates of being at least moderately active were above the national rate for off-reserve Aboriginal people and White people.

Type and frequency of activities

In 2005, Canadians' most popular leisure-time physical activity was walking. A majority of men

and women (64% and 76%, respectively) reported walking in their leisure time in the past three months (Table 2). Gardening, home exercises, swimming, bicycling, jogging, dancing and weight training were also among the leading leisure-time physical activities, reported by between 19% and 47% of Canadians.

As well, for people who participated in each activity, walking was the one done most frequently (on average, 14.8 times per month), followed by home exercises (12.6 times) and weight training (9.7 times) (Table 2). Although a substantial share of people reported gardening (47%), it was done less frequently than many other activities (on average, 6.8 times per month). Because these figures reflect year-round averages, activities and frequencies can vary with the season.

People who were active in their leisure time engaged in physical activity an average of 59 times a month. This compared with 31 times a month for those who were moderately active, and 11 times a month for those who were inactive ($p < 0.05$). However, the average number of times reflects neither the duration nor intensity of activities.

Active people also reported participating in more types of leisure-time physical activities in the past three months (an average of 6), than did moderately active (4) or inactive individuals (2) ($p < 0.05$).

Better health, lower weight, less stress

Physically active Canadians fared better on several measures of health than did their inactive counterparts. Those who were active in their leisure

Table 2

Percentage participating in selected leisure-time activities and average number of times per month, household population aged 12 or older, Canada, 2005

	Both sexes		Men		Women	
	At least once in past 3 months	Average times per month in past 3 months [†]	At least once in past 3 months	Average times per month in past 3 months [†]	At least once in past 3 months	Average times per month in past 3 months [†]
	%		%		%	
Walking	70.0	14.8	64.1*	14.4*	75.7	15.2
Gardening	46.8	6.8	51.8*	6.6*	41.9	7.0
Home exercises	34.4	12.6	30.5*	12.9*	38.1	12.4
Swimming	24.5	5.0	24.3	4.7*	24.6	5.3
Bicycling	23.9	6.7	28.7*	7.4*	19.3	5.9
Jogging	20.8	7.9	23.6*	7.8	18.2	7.9
Dancing	19.3	2.8	15.8*	2.3*	22.7	3.2
Weight training	18.6	9.7	23.0*	10.4*	14.3	8.6
At least one other activity [†]	14.1	7.6	17.0*	7.5	11.3	7.7
Golfing	11.4	2.9	17.0*	3.0*	5.9	2.6
Exercise class / Aerobics	10.4	7.4	5.2*	7.8*	15.6	7.2
Bowling	9.9	1.4	10.2*	1.5*	9.6	1.4
Fishing	9.7	2.2	14.4*	2.3*	5.2	1.8
Basketball	9.7	4.9	13.2*	5.2*	6.3	4.3
Soccer	9.1	4.0	12.1*	4.0	6.1	4.2
Volleyball	7.2	3.1	7.5*	2.9*	6.9	3.4
Ice skating	7.1	2.2	8.3*	2.4*	6.0	1.9
In-line skating / Rollerblading	6.3	3.3	7.1*	3.5*	5.4	3.0
Hockey	6.0	5.2	10.8*	5.4*	1.3	4.3
Baseball	6.0	3.2	8.4*	3.2	3.6	3.2
Downhill skiing / Snowboarding	5.6	1.9	7.1*	2.0*	4.2	1.7
Tennis	5.0	3.0	6.3*	3.0	3.7	2.9

[†] Respondents could indicate up to three other physical leisure-time activities.

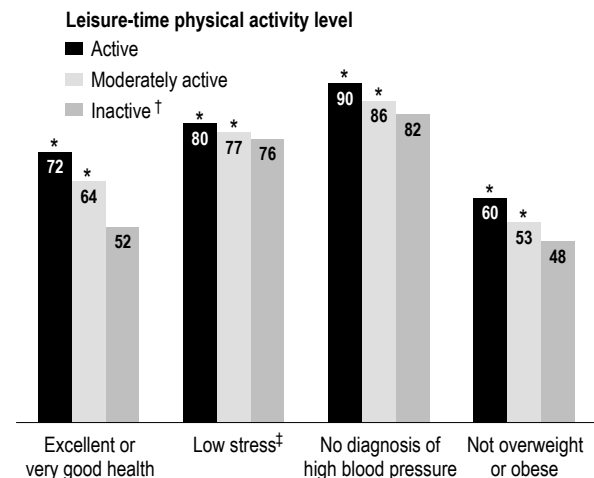
* Among those who participated in activity

* Significantly different from estimate for women ($p < 0.05$)

Source: 2005 Canadian Community Health Survey

Chart 2

Percentage reporting excellent or very good health, low stress, no diagnosis of high blood pressure, and not overweight or obese, by leisure-time physical activity level, household population aged 12 or older, Canada, 2005



† Reference category

‡ Population aged 15 or older

* Significantly different from estimate for reference category ($p < 0.05$)

Note: Based on self-reported frequency and duration of participation in leisure-time physical activity in previous 3 months

Source: 2005 Canadian Community Health Survey

time were more likely to rate their health excellent or very good (rather than good, fair or poor) (Chart 2). They also reported lower levels of stress, were less likely to report high blood pressure, and were less likely to be overweight or obese. These differences between active and inactive people were evident among both men and women (data not shown). Moreover, the relationships persisted when socio-demographic characteristics, non-leisure-time physical activity and activity restrictions were taken into consideration (data not shown).

Not only leisure time

Leisure time accounts for only a portion of an individual's overall physical activity. Respondents to the 2005 CCHS were asked to characterize their daily activities or work as:

- usually sit during the day and don't walk around very much;

The data

Data from the 2005 Canadian Community Health Survey (CCHS) and the 1996/1997 National Population Health Survey (NPHS) were used to estimate physical activity levels. The CCHS and NPHS are general health surveys that cover the household population aged 12 or older. They do not include residents of Indian reserves, institutions and some remote areas; full-time members of the Canadian Forces; and civilian residents of military bases.

Data for cycle 3.1 of the CCHS were collected from January through December, 2005. The overall response rate was 79%; the sample size was 132,947, weighted to represent 27.1 million people.

Cycle 2 of the NPHS was conducted in 1996/1997 and covered the household population in the 10 provinces. The overall response rate was 82.6%; the sample size was 73,402, weighted to represent 24.6 million people.

To account for the multi-stage sample design of the surveys, the bootstrap technique was used to calculate confidence intervals and coefficients of variation, and to test the statistical significance of differences.⁶⁻⁸ A significance level of $p < 0.05$ was applied in all cases.

Participation in physical activity is self-reported, and therefore, may be subject to social desirability and recall biases. Some research has suggested that self-reports overestimate the actual amount of activity in which respondents participate.⁹⁻¹¹

For ease of analysis, the average daily energy expenditure cut-offs that classify respondents as active, moderately active or inactive were applied to both adults and adolescents, although some guidelines recommend higher levels of physical activity for youth.¹²

The questions about participation in different physical activities specify leisure time. However, if respondents also included their usual daily activities or walking or bicycling as a means of transportation, participation in leisure-time walking and bicycling would be overestimated.

The proportion of respondents interviewed by telephone or by personal interview has an effect on some estimates, including physical activity. Most interviews for the 1996/1997 NPHS were conducted by telephone, whereas for the 2005 CCHS, about 40% were personal interviews, and around 60% were by telephone. One study has found that respondents interviewed by telephone tend to report higher levels of leisure-time physical activity than do those interviewed in person.¹³ Thus, the difference between activity levels in 1996/97 and 2005 may be underestimated.

For this analysis, body mass index (BMI) for all respondents to the 2005 CCHS was calculated from self-reported height and weight. However, that survey also collected measured height and weight for a subsample of 4,735 respondents. According to the self-reported data, 52.8% of respondents were neither overweight nor obese, but based on measured height and weight, just 43.5% were neither overweight nor obese. Nonetheless, when the analysis was repeated using the subsample of respondents for whom measured height and weight were available, the relationships between activity level and BMI were the same as with self-reported data.

- stand or walk quite a lot during the day, but don't have to carry or lift things very often;
- usually lift or carry light loads, or have to climb stairs or hills often; or
- do heavy work or carry very heavy loads.

CCHS respondents were also asked how much non-leisure time they had spent in a typical week during the previous three months walking or bicycling to work and to school and doing errands.

In 2005, 8% of Canadians reported that their normal daily activities involve heavy work or carrying very heavy loads. A further 25% reported that they usually lift or often carry light loads or climb stairs or hills, and 42% indicated that they stand or walk quite a lot. As well, nearly one-quarter of people (24%) said that, in the past three months, they had spent at least six hours a week walking or bicycling as a means of transportation.

People who were active in their leisure time were more likely to be active in other aspects of their lives, compared with people whose leisure time was moderately active or inactive (Table 3). Even so, 70% of people with inactive leisure time reported some physical activity during a typical day, and 22% spent at least six hours a week walking or bicycling for transportation. These figures suggest that some people may be active enough during non-leisure hours, alone or in combination with their leisure time, to derive health benefits.

Table 3

Percentage participating in non-leisure physical activity, by level of leisure-time physical activity, household population aged 12 or older, Canada, 2005

Leisure-time physical activity level	Usual daily activities			At least six hours per week walking or bicycling as a means of transportation [†]
	Stand or or walk quite a lot	Lift or carry light loads, often climb stairs or hills	Do heavy work or carry very heavy loads	
Total	41.9	25.0	7.8	24.1
Active [‡]	42.6	29.9	9.1	28.0
Moderately active	43.8*	26.2*	6.5*	24.2*
Inactive	40.5*	21.7*	7.8*	21.8*

[†] Reference category

[‡] In a typical week

* Significantly different from estimate for reference category ($p < 0.05$)

Note: Based on previous 3 months

Source: 2005 Canadian Community Health Survey

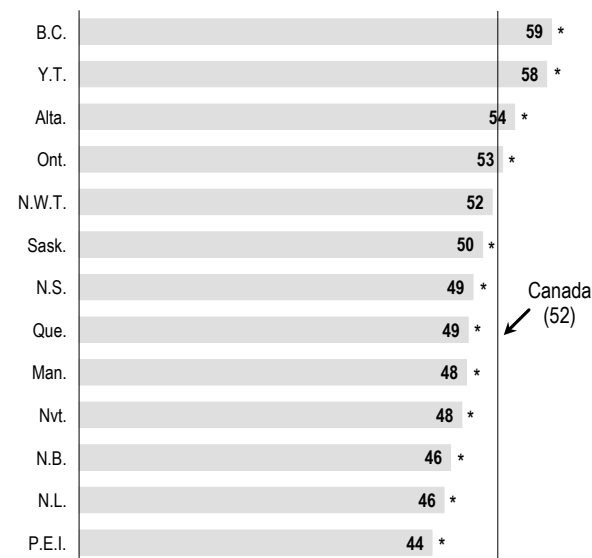
On the other hand, nearly 2 million Canadians (8%) reported no or very little physical activity. That is, they had inactive leisure time, usually sat during the day, and walked or bicycled as a means of transportation less than two hours a week. This was the case for a higher percentage of women than men (8% versus 7%; $p < 0.05$), and for older rather than younger people (14% of seniors aged 65 or older versus 4% of 12- to 17-year-olds; $p < 0.05$). Many who reported low levels of physical activity also reported activity restrictions (46%), which may, in part, account for their inactivity.

Geographic variations

An east-to-west gradient in leisure-time physical activity is evident in Canada. In 2005, residents of Ontario, Alberta, British Columbia and Yukon were more likely to be active or moderately active, compared with the national rate (Chart 3, Appendix Tables A and B). By contrast, rates for residents of

Chart 3

Percentage at least moderately active[†] in leisure-time, by province or territory, household population aged 12 or older, Canada, 2005



[†] Using 1.5 or more kilocalories per kilogram per day

* Significantly different from estimate for Canada ($p < 0.05$)

Note: Based on self-reported frequency and duration of participation in leisure-time physical activity in previous 3 months

Source: 2005 Canadian Community Health Survey

The questions

Household income is based on self-reported total household income from all sources in the previous 12 months. The ratio between total household income and the low income cut-off corresponding to the number of people in the household and community size was calculated. The ratios were then adjusted by dividing them by the highest ratio for all Canadian Community Health Survey (CCHS) respondents. The adjusted ratios were grouped into deciles (10 groups, each containing approximately one-tenth of Canadians) which were then collapsed into five household income categories: *lowest* (deciles 1 and 2), *low-middle* (deciles 3 and 4), *middle* (deciles 5 and 6), *high-middle* (deciles 7 and 8) and *highest* (deciles 9 and 10).

Immigrant, years in Canada reflects the length of time respondents have lived in Canada since they immigrated: 0 to 4 years, 5 to 9 years, 10 to 14 years, 15 to 19 years, and 20 years or more.

Ethnic origin was based on the question, "People living in Canada come from many different cultural and racial backgrounds. Are you:

- 1) White?"
- 2) Black?"
- 3) Korean?"
- 4) Filipino?"
- 5) Japanese?"
- 6) Chinese?"
- 7) Southeast Asian?"
- 8) South Asian?"
- 9) Arab?"
- 10) West Asian?"
- 11) Latin American?"
- 12) Other racial or cultural origin?"
- 13) Multiple racial/cultural origins?"
- 14) Aboriginal (North American Indian, Métis, Inuit)?"

The following *ethnic origin* categories were used: White (1), Black (2), Southeast/East Asian (3, 4, 5, 6, 7), Off-reserve Aboriginal (14), and Other (8, 9, 10, 11, 12, 13).

Self-perceived health was determined by asking respondents, "In general, would you say your health is excellent, very good, good, fair or poor?"

To measure *self-perceived stress*, respondents aged 15 or older were asked, "Thinking about the amount of stress in your life, would you say that most days are not at all stressful, not very stressful, a bit stressful, quite a bit stressful, extremely stressful?" Those who reported not at all stressful, not very stressful or a bit stressful were considered to have low stress.

Respondents were asked about long-term conditions that are expected to last or have already lasted six months or more and that have been

diagnosed by a health professional, including "Do you have *high blood pressure*?"

Body mass index (BMI) is a measure of weight relative to height. For people aged 18 or older, it is calculated by dividing weight in kilograms by height in metres squared. BMI is not calculated for people shorter than 3 feet or 7 feet or taller, or for pregnant women. CCHS respondents aged 18 or older whose BMI was 25.0 or less were categorized as *not overweight or obese*. For respondents aged 12 to 17, the category *not overweight or obese* was derived according to age- and sex-specific BMI cut-off points as defined by Cole et al.¹⁶

To estimate the percentage of people with *activity restrictions*, responses to the following items were considered:

- "Do you have any difficulty hearing, seeing, communicating, walking, climbing stairs, bending, learning or doing similar activities?"
- "Does a long-term physical or mental condition or health problem reduce the amount or the kind of activity you can do:
... at home?"
... at work?"
... at school?"
... in other activities, for example, transportation or leisure?"

Respondents could reply "sometimes," "often" or "never." Those who replied "sometimes" or "often" to at least one item were categorized as having *activity restrictions*.

Census metropolitan areas (CMAs) and *census agglomerations (CAs)* (<http://www12.statcan.ca/english/census01/Products/Reference/dict/geo009.htm>) consist of one or more adjacent municipalities situated around a major urban core. To form a CMA, the urban core must have a population of at least 100,000. To form a CA, the urban core must have a population of at least 10,000.

Census metropolitan area and census agglomeration influenced zones (MIZ) are used to classify municipalities that are not included in a CMA or CA (<http://www12.statcan.ca/english/census01/Products/Reference/dict/geo010.htm>). Municipalities are assigned to one of four categories depending on the percentage of residents who commute to work in the urban core of a CMA or CA:

- Strong MIZ: more than 30% of residents commute to work in a CMA or CA.
- Moderate MIZ: 5% to 30% of residents commute to work in a CMA or CA.
- Weak MIZ: 0% to 5% of residents commute to work in a CMA or CA.
- No MIZ: fewer than 40 or no residents commute to work in a CMA or CA.
- Territories: Yukon, Northwest Territories, and Nunavut.

the Atlantic provinces, Quebec, Nunavut, Manitoba and Saskatchewan were below the national rate. This pattern persists when the differing age composition of the various provinces and territories is taken into account (data not shown). (Information by health region is provided in Appendix Tables A to D.)

The geographic distribution of non-leisure physical activity rates differed from that of leisure-time activity. Rates of being physically active in usual

daily activities were above the national figure in the Atlantic provinces, Prairie provinces and British Columbia, while rates were lower in Quebec, Nunavut and Yukon, and similar to the national rate in Ontario (Appendix Table C).

Quebec had a significantly low rate of walking or bicycling as a means of transportation, while rates were higher in all other provinces and territories except Yukon (Appendix Table D).

Big city residents less active

Physical activity rates reported by residents of the largest (population more than 2 million) census metropolitan areas (CMAs) were below the national figures (Chart 4). Even so, according to CCHS data, big city residents were less likely than people outside the largest cities to be overweight or obese.¹⁴

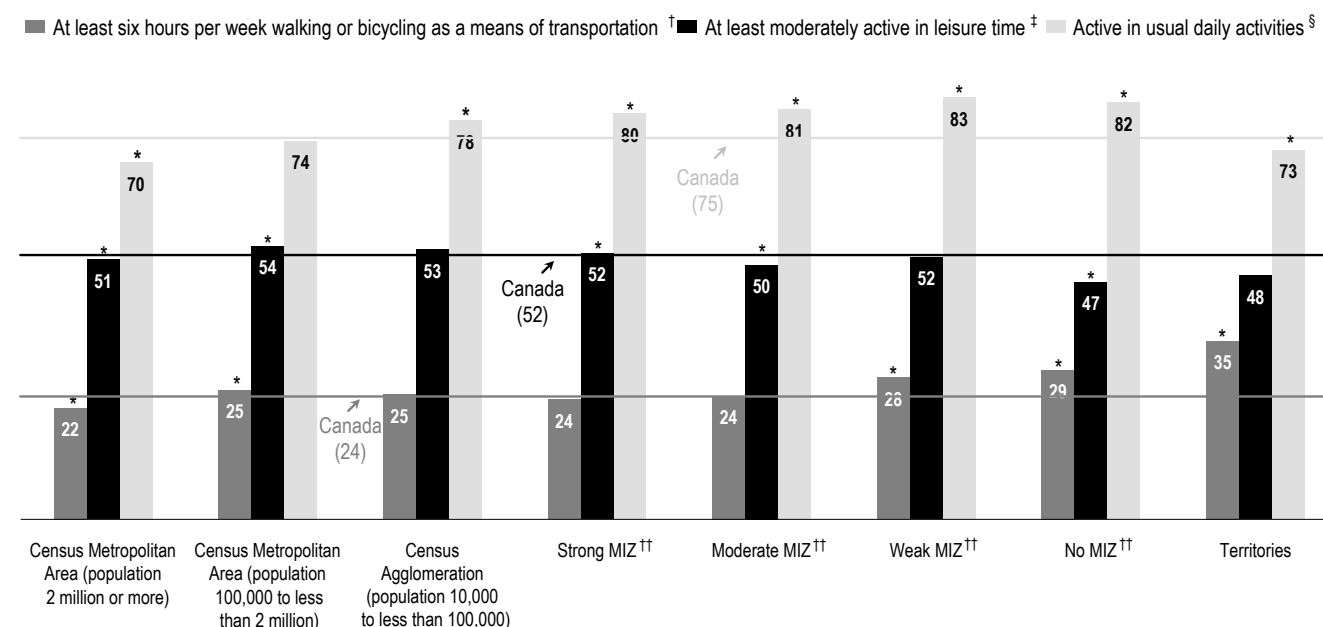
Since a substantial share of the immigrant population resides in the largest CMAs, it is possible that the low rates of physical activity among immigrants could affect the overall activity rates in those CMAs. In fact, when examined separately, leisure-time physical activity rates for immigrants in the largest CMAs were below the national rate, while rates for non-immigrants were above the national rate (data not shown).

Immigrants were also less likely to be physically active in their usual daily activities or to spend at least six hours a week walking or bicycling as a means of transportation (data not shown). However, the low overall rates of these activities in the largest CMAs were not influenced by immigrants—rates were low among both immigrant and non-immigrant residents (data not shown).

People in census agglomerations (CAs) and smaller CMAs (population from 10,000 to less than 2 million) had higher rates of being at least moderately active in leisure time, and of walking or bicycling for transportation, than the national rate. They were no more or less likely to be active in their usual daily activities.

Chart 4

Percentage physically active, by selected situations and metropolitan zone, household population aged 12 or older, Canada, 2005



† Non-leisure activity in typical week in previous 3 months

‡ Using 1.5 or more kilocalories per kilogram per day; based on self-reported frequency and duration of participation in leisure-time physical activity in previous 3 months

§ Do heavy work, carry very heavy loads, lift or carry light loads, often climb stairs or hills, stand or walk quite a lot; based on previous 3 months

†† Metropolitan influenced zone

* Significantly different from estimate for Canada ($p < 0.05$)

Source: 2005 Canadian Community Health Survey

Municipalities outside CMAs and CAs can be classified by the percentage of residents who commute to work in the urban core of a CMA or CA. The higher the percentage, the stronger the metropolitan influence (MIZ). Municipalities fall into one of four categories: a strongly influenced zone, a moderately influenced zone, a weakly influenced zone, or a zone that is not influenced (see *The questions*).

In 2005, leisure-time activity rates reported by people living outside CMAs and CAs generally did not differ from the national rate, except in zones of moderate or no metropolitan influence, where rates were below the national figure (Chart 4). However, usual daily activity rates were above the national rate in all zones of metropolitan influence, except the territories. And rates of walking or bicycling for transportation were higher than the national figure in areas with little or no metropolitan influence and the territories. Even controlling for age, the relationships between physical activity and metropolitan influenced zone remained (data not shown).

Activity increasing

A comparison of results from the 1996/1997 National Population Health Survey with those from the 2005 Canadian Community Health Survey shows that the proportion of Canadians in the 10 provinces

who reported at least moderately active leisure time rose from 43% to 52% (data not shown). The increase persists even when the differing age composition in the two periods is taken into account, and is evident for both sexes and in all provinces (data not shown). This is consistent with other research showing an increase in physical activity levels since 1981.¹⁵

Non-leisure physical activity also increased in the 10 provinces. The proportion of people who spent at least six hours a week walking or bicycling as a means of transportation rose from 19% to 24% (data not shown). As well, the proportion who usually did heavy work or lifted heavy loads grew from 5% to 8%, and those whose daily activities usually involved lifting or carrying light loads, or often climbing stairs or hills increased from 17% to 25% (data not shown). However, the proportion who walk or stand quite a lot during the day declined substantially from 51% to 42% ($p < 0.05$ for all comparisons). Even when adjusted for the differing age composition between the two periods, these trends in physical activity persisted (data not shown).

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Table A

Percentage physically active[†] in leisure time, by province or territory and health region, household population aged 12 or older, Canada, 2005

	Region code	%	95% confidence interval	Significantly higher or lower (p < 0.05) than:	
				Canada	Province or Territory
Canada	...	27.1	26.7 to 27.5	...	...
Newfoundland and Labrador	1000	21.7	20.0 to 23.3	Lower	...
Eastern Regional Integrated Health Authority	1011	21.2	19.0 to 23.5	Lower	Same
Central Regional Integrated Health Authority	1012	21.0	17.6 to 24.4	Lower	Same
Western Regional Integrated Health Authority	1013	24.3	20.2 to 28.4	Same	Same
Labrador-Grenfell Regional Integrated Health Authority	1014	21.3	17.5 to 25.2	Lower	Same
Prince Edward Island	1100	21.7	19.5 to 23.8	Lower	...
West Prince	1101	21.7	16.2 to 27.2	Same	Same
East Prince	1102	21.9	17.5 to 26.3	Lower	Same
Queens	1103	22.0	18.6 to 25.5	Lower	Same
Kings	1104	20.1	15.2 to 25.0	Lower	Same
Nova Scotia	1200	24.1	22.4 to 25.8	Lower	...
Zone 1	1201	21.6	18.2 to 25.0	Lower	Same
Zone 2	1202	25.2	21.0 to 29.5	Same	Same
Zone 3	1203	24.3	20.1 to 28.6	Same	Same
Zone 4	1204	21.7	18.3 to 25.1	Lower	Same
Zone 5	1205	26.5	22.1 to 30.8	Same	Same
Zone 6	1206	24.5	21.3 to 27.7	Same	Same
New Brunswick	1300	22.2	20.7 to 23.7	Lower	...
Region 1	1301	20.7	17.5 to 24.0	Lower	Same
Region 2	1302	24.5	21.2 to 27.8	Same	Same
Region 3	1303	21.5	18.2 to 24.7	Lower	Same
Region 4	1304	21.4	17.5 to 25.3	Lower	Same
Region 5	1305	26.9	21.6 to 32.3	Same	Same
Region 6	1306	22.9	19.2 to 26.7	Lower	Same
Region 7	1307	19.2	13.4 to 24.9	Lower	Same
Quebec	2400	23.8	23.1 to 24.6	Lower	...
Région du Bas-Saint-Laurent	2401	25.5	23.5 to 27.6	Same	Same
Région du Saguenay - Lac-Saint-Jean	2402	23.6	20.4 to 26.8	Lower	Same
Région de la Capitale Nationale	2403	22.8	20.6 to 25.0	Lower	Same
Région de la Mauricie et du Centre-du-Québec	2404	23.6	20.9 to 26.4	Lower	Same
Région de l'Estrie	2405	22.0	18.8 to 25.3	Lower	Same
Région de Montréal	2406	26.1	24.6 to 27.6	Same	Higher
Région de l'Outaouais	2407	26.4	23.5 to 29.3	Same	Same
Région de l'Abitibi-Témiscamingue	2408	20.6	17.6 to 23.6	Lower	Lower
Région de la Côte-Nord	2409	20.0	16.9 to 23.0	Lower	Lower
Région du Nord-du-Québec	2410	25.9	22.2 to 29.7	Same	Same
Région de la Gaspésie - Îles-de-la-Madeleine	2411	20.4	17.6 to 23.3	Lower	Lower
Région de la Chaudière-Appalaches	2412	20.8	18.1 to 23.5	Lower	Lower
Région de Laval	2413	21.6	19.7 to 23.6	Lower	Lower
Région de Lanaudière	2414	20.7	18.1 to 23.3	Lower	Lower
Région des Laurentides	2415	26.1	23.1 to 29.1	Same	Same
Région de la Montérégie	2416	23.1	20.7 to 25.5	Lower	Same
Ontario	3500	28.3	27.6 to 28.9	Higher	...
District of Algoma Health Unit	3526	32.8	28.9 to 36.7	Higher	Higher
Brant County Health Unit	3527	29.7	25.9 to 33.5	Same	Same
Durham Regional Health Unit	3530	32.1	29.0 to 35.2	Higher	Higher
Elgin-St Thomas Health Unit	3531	30.3	26.0 to 34.7	Same	Same
Grey Bruce Health Unit	3533	30.7	26.6 to 34.7	Same	Same
Haldimand-Norfolk Health Unit	3534	28.0	24.0 to 32.0	Same	Same
Haliburton, Kawartha, Pine Ridge District Health Unit	3535	29.4	24.5 to 34.4	Same	Same
Halton Regional Health Unit	3536	28.8	26.0 to 31.6	Same	Same
City of Hamilton Health Unit	3537	27.6	24.6 to 30.6	Same	Same
Hastings and Prince Edward Counties Health Unit	3538	25.9	22.3 to 29.5	Same	Same

	Region code	%	95% confidence interval	Significantly higher or lower (p < 0.05) than:	
				Canada	Province or Territory
Huron County Health Unit	3539	27.7	23.0 to 32.3	Same	Same
Chatham-Kent Health Unit	3540	29.5	25.5 to 33.5	Same	Same
Kingston, Frontenac and Lennox and Addington Health Unit	3541	30.2	26.6 to 33.8	Same	Same
Lambton Health Unit	3542	29.4	26.2 to 32.7	Same	Same
Leeds, Grenville and Lanark District Health Unit	3543	31.6	27.8 to 35.4	Higher	Same
Middlesex-London Health Unit	3544	28.9	25.9 to 32.0	Same	Same
Niagara Regional Area Health Unit	3546	30.0	27.1 to 32.8	Higher	Same
North Bay Parry Sound District Health Unit	3547	30.3	26.0 to 34.5	Same	Same
Northwestern Health Unit	3549	33.2	29.4 to 37.0	Higher	Higher
City of Ottawa Health Unit	3551	31.0	28.4 to 33.5	Higher	Higher
Oxford County Health Unit	3552	23.8	19.2 to 28.3	Same	Same
Peel Regional Health Unit	3553	26.8	24.1 to 29.5	Same	Same
Perth District Health Unit	3554	31.0	25.7 to 36.3	Same	Same
Peterborough County-City Health Unit	3555	32.6	28.3 to 37.0	Higher	Higher
Porcupine Health Unit	3556	25.8	20.9 to 30.7	Same	Same
Renfrew County and District Health Unit	3557	27.8	24.0 to 31.6	Same	Same
Eastern Ontario Health Unit	3558	28.8	25.0 to 32.6	Same	Same
Simcoe Muskoka District Health Unit	3560	34.7	31.8 to 37.6	Higher	Higher
Sudbury and District Health Unit	3561	32.6	29.4 to 35.7	Higher	Higher
Thunder Bay District Health Unit	3562	33.5	29.9 to 37.0	Higher	Higher
Timiskaming Health Unit	3563	27.0	20.8 to 33.1	Same	Same
Waterloo Health Unit	3565	27.9	25.0 to 30.8	Same	Same
Wellington-Dufferin-Guelph Health Unit	3566	30.7	27.2 to 34.1	Higher	Same
Windsor-Essex County Health Unit	3568	28.2	25.1 to 31.2	Same	Same
York Regional Health Unit	3570	27.1	24.3 to 29.8	Same	Same
City of Toronto Health Unit	3595	24.3	22.4 to 26.2	Lower	Lower
Manitoba	4600	24.1	22.5 to 25.7	Lower	...
Winnipeg Regional Health Authority	4610	25.3	22.9 to 27.7	Same	Higher
Brandon Regional Health Authority	4615	25.6	20.5 to 30.7	Same	Same
North Eastman Regional Health Authority	4620	28.4	23.6 to 33.1	Same	Same
South Eastman Regional Health Authority	4625	21.7	18.0 to 25.3	Lower	Same
Interlake Regional Health Authority	4630	21.5	16.4 to 26.6	Lower	Same
Central Regional Health Authority	4640	20.0	15.9 to 24.1	Lower	Lower
Assiniboine Regional Health Authority	4645	19.8	16.1 to 23.5	Lower	Lower
Parkland Regional Health Authority	4660	21.6	16.5 to 26.6	Lower	Same
Norman Regional Health Authority	4670	24.3	19.0 to 29.5	Same	Same
Burntwood/Churchill	4685	27.6	22.5 to 32.8	Same	Same
Saskatchewan	4700	26.2	24.8 to 27.6	Same	...
Sun Country Regional Health Authority	4701	23.3	18.6 to 28.1	Same	Same
Five Hills Regional Health Authority	4702	27.5	22.7 to 32.3	Same	Same
Cypress Regional Health Authority	4703	24.0	19.5 to 28.4	Same	Same
Regina Qu'Appelle Regional Health Authority	4704	28.4	25.1 to 31.7	Same	Same
Sunrise Regional Health Authority	4705	24.1	18.7 to 29.4	Same	Same
Saskatoon Regional Health Authority	4706	25.6	22.6 to 28.6	Same	Same
Heartland Regional Health Authority	4707	24.7	20.4 to 29.0	Same	Same
Kelsey Trail Regional Health Authority	4708	27.3	22.2 to 32.4	Same	Same
Prince Albert Parkland Regional Health Authority	4709	29.2	24.9 to 33.6	Same	Same
Prairie North Regional Health Authority	4710	19.7	14.9 to 24.4	Lower	Lower
Mamawetan/Keewatin/Athabasca	4714	36.5	30.8 to 42.2	Higher	Higher
Alberta	4800	28.7	27.5 to 29.9	Higher	...
Chinook Regional Health Authority	4820	30.2	26.7 to 33.7	Same	Same
Palliser Health Region	4821	22.0	18.1 to 26.0	Lower	Lower
Calgary Health Region	4822	30.8	28.5 to 33.0	Higher	Higher
David Thompson Regional Health Authority	4823	26.2	23.3 to 29.1	Same	Same
East Central Health	4824	23.0	19.2 to 26.8	Lower	Lower
Capital Health	4825	27.5	25.1 to 29.8	Same	Same
Aspen Regional Health Authority	4826	33.1	29.2 to 37.0	Higher	Higher
Peace Country Health	4827	27.1	23.6 to 30.7	Same	Same
Northern Lights Health Region	4828	29.3	24.1 to 34.5	Same	Same

	Region code	%	95% confidence interval	Significantly higher or lower (p < 0.05) than:	
				Canada	Province or Territory
British Columbia	5900	31.7	30.7 to 32.8	Higher	...
East Kootenay Health Service Delivery Area	5911	39.5	35.0 to 43.9	Higher	Higher
Kootenay-Boundary Health Service Delivery Area	5912	40.1	34.9 to 45.3	Higher	Higher
Okanagan Health Service Delivery Area	5913	30.5	26.5 to 34.5	Same	Same
Thompson/Cariboo Health Service Delivery Area	5914	34.3	30.0 to 38.6	Higher	Same
Fraser East Health Service Delivery Area	5921	29.6	26.0 to 33.2	Same	Same
Fraser North Health Service Delivery Area	5922	29.2	26.3 to 32.0	Same	Same
Fraser South Health Service Delivery Area	5923	28.4	25.3 to 31.4	Same	Lower
Richmond Health Service Delivery Area	5931	28.2	23.7 to 32.8	Same	Same
Vancouver Health Service Delivery Area	5932	28.6	25.8 to 31.4	Same	Lower
North Shore/Coast Garibaldi Health Service Delivery Area	5933	35.2	31.1 to 39.2	Higher	Same
South Vancouver Island Health Service Delivery Area	5941	39.6	36.2 to 43.0	Higher	Higher
Central Vancouver Island Health Service Delivery Area	5942	37.1	33.1 to 41.2	Higher	Higher
North Vancouver Island Health Service Delivery Area	5943	36.9	31.3 to 42.4	Higher	Same
Northwest Health Service Delivery Area	5951	34.0	28.7 to 39.4	Higher	Same
Northern Interior Health Service Delivery Area	5952	28.6	24.5 to 32.7	Same	Same
Northeast Health Service Delivery Area	5953	28.1	21.6 to 34.5	Same	Same
Yukon Territory	6001	31.2	26.8 to 35.5	Same	...
Northwest Territories	6101	24.9	20.0 to 29.8	Same	...
Nunavut	6201	27.1	23.1 to 31.1	Same	...

† Using 3 or more kilocalories per kilogram per day

... Not applicable

Note: Based on self-reported frequency, duration and intensity of participation in leisure-time physical activity in previous 3 months**Source:** 2005 Canadian Community Health Survey

Table B

Percentage active[†] or moderately active[‡] in leisure time, by province or territory and health region, household population aged 12 or older, Canada, 2005

	Region code	%	95% confidence interval	Significantly higher or lower (p < 0.05) than:	
				Canada	Province or Territory
Canada		52.2	51.8 to 52.6	...	...
Newfoundland and Labrador	1000	45.6	43.4 to 47.7	Lower	...
Eastern Regional Integrated Health Authority	1011	46.0	43.1 to 48.9	Lower	Same
Central Regional Integrated Health Authority	1012	42.4	37.9 to 46.8	Lower	Same
Western Regional Integrated Health Authority	1013	49.3	44.2 to 54.5	Same	Same
Labrador-Grenfell Regional Integrated Health Authority	1014	42.2	37.3 to 47.2	Lower	Same
Prince Edward Island	1100	44.1	41.2 to 46.9	Lower	...
West Prince	1101	39.4	32.6 to 46.2	Lower	Same
East Prince	1102	43.0	38.0 to 47.9	Lower	Same
Queens	1103	45.7	41.3 to 50.2	Lower	Same
Kings	1104	43.6	37.6 to 49.7	Lower	Same
Nova Scotia	1200	49.2	47.4 to 50.9	Lower	...
Zone 1	1201	45.1	40.8 to 49.3	Lower	Lower
Zone 2	1202	51.4	46.5 to 56.4	Same	Same
Zone 3	1203	44.8	40.5 to 49.2	Lower	Lower
Zone 4	1204	43.7	39.2 to 48.3	Lower	Lower
Zone 5	1205	49.0	44.4 to 53.5	Same	Same
Zone 6	1206	52.5	49.4 to 55.6	Same	Higher
New Brunswick	1300	46.5	44.8 to 48.3	Lower	...
Region 1	1301	46.1	42.3 to 50.0	Lower	Same
Region 2	1302	48.3	44.7 to 51.8	Lower	Same
Region 3	1303	46.0	42.3 to 49.8	Lower	Same
Region 4	1304	47.3	41.4 to 53.3	Same	Same
Region 5	1305	50.8	45.0 to 56.6	Same	Same
Region 6	1306	46.6	41.9 to 51.2	Lower	Same
Region 7	1307	39.8	33.5 to 46.0	Lower	Lower
Quebec	2400	48.6	47.7 to 49.5	Lower	...
Région du Bas-Saint-Laurent	2401	52.2	49.8 to 54.5	Same	Higher
Région du Saguenay - Lac-Saint-Jean	2402	49.2	45.7 to 52.7	Same	Same
Région de la Capitale Nationale	2403	48.6	45.7 to 51.6	Lower	Same
Région de la Mauricie et du Centre-du-Québec	2404	48.8	45.6 to 51.9	Lower	Same
Région de l'Estrie	2405	47.4	43.6 to 51.2	Lower	Same
Région de Montréal	2406	48.7	47.0 to 50.5	Lower	Same
Région de l'Outaouais	2407	53.1	49.9 to 56.4	Same	Higher
Région de l'Abitibi-Témiscamingue	2408	45.0	41.4 to 48.6	Lower	Same
Région de la Côte-Nord	2409	47.0	43.3 to 50.7	Lower	Same
Région du Nord-du-Québec	2410	56.4	51.6 to 61.2	Same	Higher
Région de la Gaspésie - Îles-de-la-Madeleine	2411	48.4	44.8 to 52.0	Lower	Same
Région de la Chaudière-Appalaches	2412	47.9	44.3 to 51.6	Lower	Same
Région de Laval	2413	46.4	44.0 to 48.8	Lower	Same
Région de Lanaudière	2414	47.1	43.7 to 50.5	Lower	Same
Région des Laurentides	2415	49.0	45.2 to 52.8	Same	Same
Région de la Montérégie	2416	48.3	45.5 to 51.1	Lower	Same
Ontario	3500	52.9	52.1 to 53.6	Higher	...
District of Algoma Health Unit	3526	58.4	54.5 to 62.4	Higher	Higher
Brant County Health Unit	3527	56.0	51.5 to 60.5	Same	Same
Durham Regional Health Unit	3530	57.2	53.7 to 60.7	Higher	Higher
Elgin-St Thomas Health Unit	3531	52.9	48.3 to 57.5	Same	Same
Grey Bruce Health Unit	3533	57.1	52.3 to 61.9	Higher	Same
Haldimand-Norfolk Health Unit	3534	52.9	48.1 to 57.7	Same	Same
Haliburton, Kawartha, Pine Ridge District Health Unit	3535	52.6	48.1 to 57.1	Same	Same
Halton Regional Health Unit	3536	54.6	51.3 to 58.0	Same	Same
City of Hamilton Health Unit	3537	50.9	47.8 to 54.1	Same	Same
Hastings and Prince Edward Counties Health Unit	3538	49.3	44.9 to 53.7	Same	Same

	Region code	%	95% confidence interval	Significantly higher or lower (p < 0.05) than:	
				Canada	Province or Territory
Huron County Health Unit	3539	52.6	47.3 to 57.9	Same	Same
Chatham-Kent Health Unit	3540	52.0	47.6 to 56.3	Same	Same
Kingston, Frontenac and Lennox and Addington Health Unit	3541	58.1	54.4 to 61.8	Higher	Higher
Lambton Health Unit	3542	55.9	51.5 to 60.3	Same	Same
Leeds, Grenville and Lanark District Health Unit	3543	58.4	54.2 to 62.6	Higher	Higher
Middlesex-London Health Unit	3544	54.9	51.5 to 58.2	Same	Same
Niagara Regional Area Health Unit	3546	52.3	49.4 to 55.2	Same	Same
North Bay Parry Sound District Health Unit	3547	51.4	47.0 to 55.8	Same	Same
Northwestern Health Unit	3549	58.9	54.0 to 63.8	Higher	Higher
City of Ottawa Health Unit	3551	57.7	54.9 to 60.4	Higher	Higher
Oxford County Health Unit	3552	47.9	42.7 to 53.1	Same	Same
Peel Regional Health Unit	3553	50.0	47.2 to 52.8	Same	Lower
Perth District Health Unit	3554	55.4	50.6 to 60.2	Same	Same
Peterborough County-City Health Unit	3555	58.4	54.0 to 62.7	Higher	Higher
Porcupine Health Unit	3556	47.4	42.5 to 52.4	Same	Lower
Renfrew County and District Health Unit	3557	54.9	50.0 to 59.9	Same	Same
Eastern Ontario Health Unit	3558	53.9	49.7 to 58.1	Same	Same
Simcoe Muskoka District Health Unit	3560	57.6	54.6 to 60.6	Higher	Higher
Sudbury and District Health Unit	3561	57.9	54.2 to 61.5	Higher	Higher
Thunder Bay District Health Unit	3562	58.4	54.4 to 62.4	Higher	Higher
Timiskaming Health Unit	3563	50.6	44.1 to 57.1	Same	Same
Waterloo Health Unit	3565	53.2	50.0 to 56.5	Same	Same
Wellington-Dufferin-Guelph Health Unit	3566	53.8	50.1 to 57.4	Same	Same
Windsor-Essex County Health Unit	3568	51.2	48.0 to 54.5	Same	Same
York Regional Health Unit	3570	52.6	49.7 to 55.5	Same	Same
City of Toronto Health Unit	3595	48.6	46.4 to 50.9	Lower	Lower
Manitoba	4600	48.5	46.6 to 50.4	Lower	...
Winnipeg Regional Health Authority	4610	49.6	46.8 to 52.4	Same	Same
Brandon Regional Health Authority	4615	57.2	51.0 to 63.3	Same	Higher
North Eastman Regional Health Authority	4620	54.0	47.2 to 60.9	Same	Same
South Eastman Regional Health Authority	4625	45.8	40.5 to 51.0	Lower	Same
Interlake Regional Health Authority	4630	49.2	42.8 to 55.5	Same	Same
Central Regional Health Authority	4640	40.5	36.1 to 44.8	Lower	Lower
Assiniboine Regional Health Authority	4645	43.2	38.6 to 47.9	Lower	Lower
Parkland Regional Health Authority	4660	42.2	36.3 to 48.2	Lower	Lower
Norman Regional Health Authority	4670	49.4	42.7 to 56.2	Same	Same
Burntwood/Churchill	4685	52.3	46.9 to 57.6	Same	Same
Saskatchewan	4700	50.4	48.8 to 51.9	Lower	...
Sun Country Regional Health Authority	4701	49.3	44.0 to 54.5	Same	Same
Five Hills Regional Health Authority	4702	48.9	44.0 to 53.8	Same	Same
Cypress Regional Health Authority	4703	46.2	40.4 to 52.0	Lower	Same
Regina Qu'Appelle Regional Health Authority	4704	55.0	51.8 to 58.3	Same	Higher
Sunrise Regional Health Authority	4705	45.0	39.2 to 50.8	Lower	Same
Saskatoon Regional Health Authority	4706	49.5	45.9 to 53.1	Same	Same
Heartland Regional Health Authority	4707	50.0	44.2 to 55.8	Same	Same
Kelsey Trail Regional Health Authority	4708	56.5	51.7 to 61.2	Same	Higher
Prince Albert Parkland Regional Health Authority	4709	49.2	44.3 to 54.1	Same	Same
Prairie North Regional Health Authority	4710	40.8	34.7 to 47.0	Lower	Lower
Mamawetan/Keewatin/Athabasca	4714	57.9	51.9 to 64.0	Same	Higher
Alberta	4800	54.5	53.2 to 55.9	Higher	...
Chinook Regional Health Authority	4820	57.4	53.5 to 61.2	Higher	Same
Palliser Health Region	4821	43.8	39.0 to 48.5	Lower	Lower
Calgary Health Region	4822	57.6	55.1 to 60.2	Higher	Higher
David Thompson Regional Health Authority	4823	53.7	50.3 to 57.1	Same	Same
East Central Health	4824	49.6	45.6 to 53.7	Same	Lower
Capital Health	4825	52.4	49.8 to 55.1	Same	Same
Aspen Regional Health Authority	4826	56.4	52.6 to 60.2	Higher	Same
Peace Country Health	4827	52.0	47.6 to 56.4	Same	Same
Northern Lights Health Region	4828	53.8	47.9 to 59.7	Same	Same

	Region code	%	95% confidence interval	Significantly higher or lower (p < 0.05) than:	
				Canada	Province or Territory
British Columbia	5900	59.0	57.8 to 60.2	Higher	...
East Kootenay Health Service Delivery Area	5911	66.4	61.8 to 70.9	Higher	Higher
Kootenay-Boundary Health Service Delivery Area	5912	66.4	60.9 to 71.9	Higher	Higher
Okanagan Health Service Delivery Area	5913	57.4	53.2 to 61.5	Higher	Same
Thompson/Cariboo Health Service Delivery Area	5914	58.3	54.1 to 62.5	Higher	Same
Fraser East Health Service Delivery Area	5921	54.5	50.5 to 58.5	Same	Lower
Fraser North Health Service Delivery Area	5922	57.9	54.8 to 61.0	Higher	Same
Fraser South Health Service Delivery Area	5923	54.7	51.2 to 58.2	Same	Lower
Richmond Health Service Delivery Area	5931	54.7	49.9 to 59.5	Same	Same
Vancouver Health Service Delivery Area	5932	56.3	53.1 to 59.6	Higher	Same
North Shore/Coast Garibaldi Health Service Delivery Area	5933	65.2	61.6 to 68.9	Higher	Higher
South Vancouver Island Health Service Delivery Area	5941	68.5	65.0 to 72.0	Higher	Higher
Central Vancouver Island Health Service Delivery Area	5942	64.3	60.4 to 68.3	Higher	Higher
North Vancouver Island Health Service Delivery Area	5943	65.1	59.2 to 71.0	Higher	Higher
Northwest Health Service Delivery Area	5951	60.4	55.5 to 65.3	Higher	Same
Northern Interior Health Service Delivery Area	5952	57.0	52.5 to 61.5	Higher	Same
Northeast Health Service Delivery Area	5953	50.3	44.8 to 55.8	Same	Lower
Yukon Territory	6000	58.5	54.5 to 62.6	Higher	...
Northwest Territories	6100	51.6	46.8 to 56.4	Same	...
Nunavut	6200	47.8	43.6 to 52.1	Lower	...

† Using 3 or more kilocalories per kilogram per day

‡ Using 1.5 to less than 3 kilocalories per kilogram per day

... Not applicable

Note: Based on self-reported frequency, duration and intensity of participation in leisure-time physical activity in previous 3 months

Source: 2005 Canadian Community Health Survey

Table C**Percentage active in usual daily activities,[†] by province or territory and health region, household population aged 12 or older, Canada, 2005**

	Region code	%	95% confidence interval	Significantly higher or lower (p < 0.05) than:	
				Canada	Province or Territory
Canada		74.8	74.4 to 75.2	...	...
Newfoundland and Labrador	1000	82.0	80.4 to 83.7	Higher	...
Eastern Regional Integrated Health Authority	1011	80.3	77.9 to 82.7	Higher	Lower
Central Regional Integrated Health Authority	1012	81.8	77.6 to 86.1	Higher	Same
Western Regional Integrated Health Authority	1013	87.0	84.2 to 89.9	Higher	Higher
Labrador-Grenfell Regional Integrated Health Authority	1014	85.4	82.1 to 88.6	Higher	Same
Prince Edward Island	1100	80.4	78.2 to 82.6	Higher	...
West Prince	1101	84.4	78.6 to 90.3	Higher	Same
East Prince	1102	80.7	76.6 to 84.8	Higher	Same
Queens	1103	78.2	74.6 to 81.8	Same	Same
Kings	1104	84.4	80.5 to 88.3	Higher	Same
Nova Scotia	1200	80.9	79.3 to 82.4	Higher	...
Zone 1	1201	84.7	81.7 to 87.7	Higher	Higher
Zone 2	1202	85.4	81.8 to 89.1	Higher	Higher
Zone 3	1203	83.2	79.8 to 86.7	Higher	Same
Zone 4	1204	85.1	81.8 to 88.5	Higher	Higher
Zone 5	1205	77.1	73.4 to 80.9	Same	Lower
Zone 6	1206	78.3	75.3 to 81.3	Higher	Lower
New Brunswick	1300	78.0	76.4 to 79.5	Higher	...
Region 1	1301	76.9	73.5 to 80.3	Same	Same
Region 2	1302	77.2	73.6 to 80.8	Same	Same
Region 3	1303	76.8	73.4 to 80.3	Same	Same
Region 4	1304	76.2	70.9 to 81.4	Same	Same
Region 5	1305	79.7	73.9 to 85.5	Same	Same
Region 6	1306	81.4	77.1 to 85.7	Higher	Same
Region 7	1307	83.9	80.6 to 87.3	Higher	Higher
Quebec	2400	70.7	69.9 to 71.6	Lower	...
Région du Bas-Saint-Laurent	2401	78.0	75.9 to 80.2	Higher	Higher
Région du Saguenay - Lac-Saint-Jean	2402	76.7	73.0 to 80.4	Same	Higher
Région de la Capitale Nationale	2403	66.8	64.0 to 69.6	Lower	Lower
Région de la Mauricie et du Centre-du-Québec	2404	71.8	68.9 to 74.7	Lower	Same
Région de l'Estrie	2405	76.4	73.3 to 79.4	Same	Higher
Région de Montréal	2406	65.7	63.9 to 67.4	Lower	Lower
Région de l'Outaouais	2407	73.6	70.7 to 76.5	Same	Same
Région de l'Abitibi-Témiscamingue	2408	72.2	68.6 to 75.8	Same	Same
Région de la Côte-Nord	2409	77.9	75.0 to 80.7	Higher	Higher
Région du Nord-du-Québec	2410	75.5	71.4 to 79.7	Same	Higher
Région de la Gaspésie - Îles-de-la-Madeleine	2411	72.1	68.5 to 75.7	Same	Same
Région de la Chaudière-Appalaches	2412	75.6	72.5 to 78.7	Same	Higher
Région de Laval	2413	69.1	66.7 to 71.6	Lower	Same
Région de Lanaudière	2414	76.9	74.0 to 79.8	Same	Higher
Région des Laurentides	2415	72.1	69.3 to 74.8	Same	Same
Région de la Montérégie	2416	71.0	68.4 to 73.5	Lower	Same
Ontario	3500	74.2	73.6 to 74.9	Same	...
District of Algoma Health Unit	3526	79.7	76.4 to 83.0	Higher	Higher
Brant County Health Unit	3527	79.1	75.4 to 82.9	Higher	Higher
Durham Regional Health Unit	3530	75.2	72.0 to 78.4	Same	Same
Elgin-St Thomas Health Unit	3531	82.7	79.4 to 86.0	Higher	Higher
Grey Bruce Health Unit	3533	83.2	80.3 to 86.0	Higher	Higher
Haldimand-Norfolk Health Unit	3534	83.1	79.5 to 86.6	Higher	Higher
Haliburton, Kawartha, Pine Ridge District Health Unit	3535	84.6	81.9 to 87.3	Higher	Higher
Halton Regional Health Unit	3536	71.7	68.2 to 75.1	Same	Same
City of Hamilton Health Unit	3537	78.8	76.2 to 81.3	Higher	Higher
Hastings and Prince Edward Counties Health Unit	3538	80.9	77.3 to 84.4	Higher	Higher

	Region code	%	95% confidence interval	Significantly higher or lower (p < 0.05) than:	
				Canada	Province or Territory
Huron County Health Unit	3539	80.5	76.6 to 84.3	Higher	Higher
Chatham-Kent Health Unit	3540	71.9	67.6 to 76.2	Same	Same
Kingston, Frontenac and Lennox and Addington Health Unit	3541	80.9	77.9 to 83.8	Higher	Higher
Lambton Health Unit	3542	79.6	76.2 to 82.9	Higher	Higher
Leeds, Grenville and Lanark District Health Unit	3543	80.6	77.3 to 83.8	Higher	Higher
Middlesex-London Health Unit	3544	76.2	73.4 to 79.0	Same	Same
Niagara Regional Area Health Unit	3546	78.2	75.2 to 81.1	Higher	Higher
North Bay Parry Sound District Health Unit	3547	79.7	75.8 to 83.6	Higher	Higher
Northwestern Health Unit	3549	84.8	81.4 to 88.1	Higher	Higher
City of Ottawa Health Unit	3551	68.4	65.8 to 70.9	Lower	Lower
Oxford County Health Unit	3552	77.1	71.9 to 82.4	Same	Same
Peel Regional Health Unit	3553	71.8	69.5 to 74.2	Lower	Lower
Perth District Health Unit	3554	80.2	76.0 to 84.5	Higher	Higher
Peterborough County-City Health Unit	3555	81.5	78.0 to 85.0	Higher	Higher
Porcupine Health Unit	3556	79.6	76.4 to 82.8	Higher	Higher
Renfrew County and District Health Unit	3557	78.9	74.9 to 83.0	Higher	Higher
Eastern Ontario Health Unit	3558	80.3	76.8 to 83.7	Higher	Higher
Simcoe Muskoka District Health Unit	3560	82.3	80.0 to 84.7	Higher	Higher
Sudbury and District Health Unit	3561	78.6	75.3 to 81.9	Higher	Higher
Thunder Bay District Health Unit	3562	78.8	75.6 to 82.0	Higher	Higher
Timiskaming Health Unit	3563	79.7	74.2 to 85.1	Same	Same
Waterloo Health Unit	3565	71.4	68.2 to 74.7	Lower	Same
Wellington-Dufferin-Guelph Health Unit	3566	80.8	77.7 to 83.9	Higher	Higher
Windsor-Essex County Health Unit	3568	77.3	74.6 to 80.1	Same	Higher
York Regional Health Unit	3570	70.3	67.7 to 72.9	Lower	Lower
City of Toronto Health Unit	3595	68.2	66.0 to 70.3	Lower	Lower
Manitoba	4600	77.9	76.5 to 79.4	Higher	...
Winnipeg Regional Health Authority	4610	75.0	72.7 to 77.3	Same	Lower
Brandon Regional Health Authority	4615	82.7	79.1 to 86.4	Higher	Higher
North Eastman Regional Health Authority	4620	83.7	79.4 to 87.9	Higher	Higher
South Eastman Regional Health Authority	4625	82.4	77.0 to 87.7	Higher	Same
Interlake Regional Health Authority	4630	77.4	73.0 to 81.9	Same	Same
Central Regional Health Authority	4640	82.3	79.0 to 85.7	Higher	Higher
Assiniboine Regional Health Authority	4645	85.8	82.3 to 89.3	Higher	Higher
Parkland Regional Health Authority	4660	82.2	78.0 to 86.4	Higher	Same
Norman Regional Health Authority	4670	82.6	76.8 to 88.3	Higher	Same
Burntwood/Churchill	4685	82.7	78.4 to 87.1	Higher	Higher
Saskatchewan	4700	79.9	78.6 to 81.2	Higher	...
Sun Country Regional Health Authority	4701	83.3	79.5 to 87.1	Higher	Same
Five Hills Regional Health Authority	4702	84.2	80.1 to 88.4	Higher	Higher
Cypress Regional Health Authority	4703	83.6	79.7 to 87.5	Higher	Same
Regina Qu'Appelle Regional Health Authority	4704	76.7	73.7 to 79.7	Same	Lower
Sunrise Regional Health Authority	4705	82.2	77.4 to 87.0	Higher	Same
Saskatoon Regional Health Authority	4706	79.1	76.3 to 81.8	Higher	Same
Heartland Regional Health Authority	4707	82.6	78.5 to 86.6	Higher	Same
Kelsey Trail Regional Health Authority	4708	80.2	76.2 to 84.2	Higher	Same
Prince Albert Parkland Regional Health Authority	4709	80.6	76.8 to 84.4	Higher	Same
Prairie North Regional Health Authority	4710	80.8	76.8 to 84.9	Higher	Same
Mamawetan/Keewatin/Athabasca	4714	84.0	80.0 to 88.0	Higher	Same
Alberta	4800	76.1	74.8 to 77.3	Higher	...
Chinook Regional Health Authority	4820	77.4	73.4 to 81.4	Same	Same
Palliser Health Region	4821	82.9	79.3 to 86.5	Higher	Higher
Calgary Health Region	4822	74.0	71.7 to 76.2	Same	Lower
David Thompson Regional Health Authority	4823	83.1	80.3 to 86.0	Higher	Higher
East Central Health	4824	83.3	80.4 to 86.1	Higher	Higher
Capital Health	4825	73.4	71.0 to 75.9	Same	Lower
Aspen Regional Health Authority	4826	80.3	76.9 to 83.7	Higher	Higher
Peace Country Health	4827	81.3	78.3 to 84.4	Higher	Higher
Northern Lights Health Region	4828	77.4	72.2 to 82.5	Same	Same

	Region code	%	95% confidence interval	Significantly higher or lower (p < 0.05) than:	
				Canada	Province or Territory
British Columbia	5900	77.7	76.8 to 78.6	Higher	...
East Kootenay Health Service Delivery Area	5911	85.0	81.0 to 88.9	Higher	Higher
Kootenay-Boundary Health Service Delivery Area	5912	85.5	81.6 to 89.4	Higher	Higher
Okanagan Health Service Delivery Area	5913	78.3	75.1 to 81.6	Higher	Same
Thompson/Cariboo Health Service Delivery Area	5914	85.7	82.6 to 88.8	Higher	Higher
Fraser East Health Service Delivery Area	5921	81.3	77.8 to 84.8	Higher	Higher
Fraser North Health Service Delivery Area	5922	74.2	71.6 to 76.8	Same	Lower
Fraser South Health Service Delivery Area	5923	77.8	75.2 to 80.5	Higher	Same
Richmond Health Service Delivery Area	5931	70.6	66.8 to 74.5	Lower	Lower
Vancouver Health Service Delivery Area	5932	72.7	69.8 to 75.5	Same	Lower
North Shore/Coast Garibaldi Health Service Delivery Area	5933	74.6	70.9 to 78.3	Same	Same
South Vancouver Island Health Service Delivery Area	5941	79.8	76.8 to 82.8	Higher	Same
Central Vancouver Island Health Service Delivery Area	5942	79.5	76.3 to 82.6	Higher	Same
North Vancouver Island Health Service Delivery Area	5943	87.1	83.7 to 90.6	Higher	Higher
Northwest Health Service Delivery Area	5951	81.7	77.2 to 86.3	Higher	Same
Northern Interior Health Service Delivery Area	5952	78.3	74.3 to 82.3	Same	Same
Northeast Health Service Delivery Area	5953	82.2	77.7 to 86.7	Higher	Same
Yukon Territory	6001	70.2	67.0 to 73.4	Lower	...
Northwest Territories	6101	74.8	71.4 to 78.2	Same	...
Nunavut	6201	64.4	58.1 to 70.6	Lower	...

† Do heavy work, carry very heavy loads, lift or carry light loads, often climb stairs or hills, stand or walk quite a lot; based on previous 3 months

... Not applicable

Source: 2005 Canadian Community Health Survey

Table D

Percentage spending at least six hours per week walking or bicycling as a means of transportation, by province or territory and health region, household population aged 12 or older, Canada, 2005

	Region code	%	95% confidence interval	Significantly higher or lower (p < 0.05) than:	
				Canada	Province or Territory
Canada		24.1	23.7 to 24.5	...	...
Newfoundland and Labrador	1000	27.0	24.9 to 29.1	Higher	...
Eastern Regional Integrated Health Authority	1011	23.9	21.1 to 26.7	Same	Lower
Central Regional Integrated Health Authority	1012	31.8	25.9 to 37.6	Higher	Same
Western Regional Integrated Health Authority	1013	33.3	28.1 to 38.4	Higher	Higher
Labrador-Grenfell Regional Integrated Health Authority	1014	25.2	20.3 to 30.1	Same	Same
Prince Edward Island	1100	30.6	27.5 to 33.7	Higher	...
West Prince	1101	43.9	34.1 to 53.8	Higher	Higher
East Prince	1102	42.3	35.0 to 49.6	Higher	Higher
Queens	1103	25.1	20.0 to 30.2	Same	Lower
Kings	1104	21.0	15.3 to 26.7	Same	Lower
Nova Scotia	1200	29.2	27.2 to 31.3	Higher	...
Zone 1	1201	29.1	25.1 to 33.1	Higher	Same
Zone 2	1202	31.6	26.4 to 36.9	Higher	Same
Zone 3	1203	22.6	18.0 to 27.1	Same	Lower
Zone 4	1204	29.3	23.8 to 34.7	Same	Same
Zone 5	1205	28.7	24.0 to 33.4	Same	Same
Zone 6	1206	30.8	27.0 to 34.5	Higher	Same
New Brunswick	1300	26.3	24.3 to 28.4	Higher	...
Region 1	1301	28.3	23.9 to 32.7	Same	Same
Region 2	1302	31.2	27.0 to 35.4	Higher	Higher
Region 3	1303	28.6	24.4 to 32.8	Higher	Same
Region 4	1304	18.2	13.2 to 23.2	Lower	Lower
Region 5	1305	13.7 ^E	8.5 to 18.9	Lower	Lower
Region 6	1306	18.9	13.5 to 24.3	Same	Lower
Region 7	1307	21.8	15.5 to 28.0	Same	Same
Quebec	2400	14.9	14.2 to 15.5	Lower	...
Région du Bas-Saint-Laurent	2401	14.4	12.7 to 16.0	Lower	Same
Région du Saguenay - Lac-Saint-Jean	2402	13.6	10.2 to 16.9	Lower	Same
Région de la Capitale Nationale	2403	14.0	11.8 to 16.1	Lower	Same
Région de la Mauricie et du Centre-du-Québec	2404	15.5	12.8 to 18.2	Lower	Same
Région de l'Estrie	2405	12.4	9.9 to 14.9	Lower	Same
Région de Montréal	2406	21.4	19.8 to 22.9	Lower	Higher
Région de l'Outaouais	2407	15.7	13.3 to 18.1	Lower	Same
Région de l'Abitibi-Témiscamingue	2408	13.2	9.7 to 16.7	Lower	Same
Région de la Côte-Nord	2409	9.8	7.4 to 12.2	Lower	Lower
Région du Nord-du-Québec	2410	12.6	9.0 to 16.2	Lower	Same
Région de la Gaspésie - Îles-de-la-Madeleine	2411	9.4	7.2 to 11.5	Lower	Lower
Région de la Chaudière-Appalaches	2412	10.8	8.4 to 13.3	Lower	Lower
Région de Laval	2413	14.8	12.7 to 16.9	Lower	Same
Région de Lanaudière	2414	12.1	9.0 to 15.2	Lower	Same
Région des Laurentides	2415	10.7	8.5 to 12.8	Lower	Lower
Région de la Montérégie	2416	11.4	9.7 to 13.1	Lower	Lower
Ontario	3500	25.6	24.8 to 26.3	Higher	...
District of Algoma Health Unit	3526	25.0	21.0 to 29.1	Same	Same
Brant County Health Unit	3527	21.0	16.9 to 25.0	Same	Lower
Durham Regional Health Unit	3530	23.8	20.8 to 26.7	Same	Same
Elgin-St Thomas Health Unit	3531	38.5	31.1 to 45.8	Higher	Higher
Grey Bruce Health Unit	3533	26.3	20.9 to 31.6	Same	Same
Haldimand-Norfolk Health Unit	3534	18.6	14.6 to 22.7	Lower	Lower
Haliburton, Kawartha, Pine Ridge District Health Unit	3535	30.0	24.6 to 35.6	Higher	Same
Halton Regional Health Unit	3536	28.1	24.4 to 31.7	Higher	Same
City of Hamilton Health Unit	3537	28.1	24.8 to 31.5	Higher	Same
Hastings and Prince Edward Counties Health Unit	3538	22.4	17.3 to 27.5	Same	Same

	Region code	%	95% confidence interval	Significantly higher or lower (p < 0.05) than:	
				Canada	Province or Territory
Huron County Health Unit	3539	29.2	23.9 to 34.6	Same	Same
Chatham-Kent Health Unit	3540	18.1	14.0 to 22.3	Lower	Lower
Kingston, Frontenac and Lennox and Addington Health Unit	3541	30.7	26.7 to 34.6	Higher	Higher
Lambton Health Unit	3542	37.8	31.6 to 43.9	Higher	Higher
Leeds, Grenville and Lanark District Health Unit	3543	36.4	30.6 to 42.2	Higher	Higher
Middlesex-London Health Unit	3544	23.3	20.3 to 26.4	Same	Same
Niagara Regional Area Health Unit	3546	31.3	27.5 to 35.2	Higher	Higher
North Bay Parry Sound District Health Unit	3547	22.6	18.5 to 26.8	Same	Same
Northwestern Health Unit	3549	23.9	19.4 to 28.4	Same	Same
City of Ottawa Health Unit	3551	17.6	15.4 to 19.8	Lower	Lower
Oxford County Health Unit	3552	16.4	12.5 to 20.3	Lower	Lower
Peel Regional Health Unit	3553	32.4	29.1 to 35.6	Higher	Higher
Perth District Health Unit	3554	27.2	20.4 to 34.1	Same	Same
Peterborough County-City Health Unit	3555	23.6	19.1 to 28.2	Same	Same
Porcupine Health Unit	3556	24.6	20.2 to 28.9	Same	Same
Renfrew County and District Health Unit	3557	18.7	14.0 to 23.3	Lower	Lower
Eastern Ontario Health Unit	3558	18.3	15.4 to 21.3	Lower	Lower
Simcoe Muskoka District Health Unit	3560	32.4	28.9 to 35.9	Higher	Higher
Sudbury and District Health Unit	3561	36.6	32.6 to 40.5	Higher	Higher
Thunder Bay District Health Unit	3562	19.7	16.3 to 23.1	Lower	Lower
Timiskaming Health Unit	3563	37.1	31.2 to 43.0	Higher	Higher
Waterloo Health Unit	3565	23.1	20.0 to 26.2	Same	Same
Wellington-Dufferin-Guelph Health Unit	3566	24.9	19.3 to 30.5	Same	Same
Windsor-Essex County Health Unit	3568	34.1	30.3 to 37.9	Higher	Higher
York Regional Health Unit	3570	19.2	16.5 to 21.9	Lower	Lower
City of Toronto Health Unit	3595	23.3	21.5 to 25.1	Same	Lower
Manitoba	4600	26.3	24.5 to 28.0	Higher	...
Winnipeg Regional Health Authority	4610	24.8	22.2 to 27.3	Same	Lower
Brandon Regional Health Authority	4615	34.2	28.5 to 39.9	Higher	Higher
North Eastman Regional Health Authority	4620	41.1	33.1 to 49.2	Higher	Higher
South Eastman Regional Health Authority	4625	22.9	17.7 to 28.1	Same	Same
Interlake Regional Health Authority	4630	25.7	20.1 to 31.2	Same	Same
Central Regional Health Authority	4640	20.7	17.1 to 24.3	Same	Lower
Assiniboine Regional Health Authority	4645	40.9	34.7 to 47.1	Higher	Higher
Parkland Regional Health Authority	4660	25.6	18.0 to 33.3	Same	Same
Norman Regional Health Authority	4670	20.7 ^E	12.6 to 28.8	Same	Same
Burntwood/Churchill	4685	25.5	20.2 to 30.8	Same	Same
Saskatchewan	4700	35.6	33.7 to 37.4	Higher	...
Sun Country Regional Health Authority	4701	39.3	31.6 to 47.0	Higher	Same
Five Hills Regional Health Authority	4702	34.2	27.9 to 40.5	Higher	Same
Cypress Regional Health Authority	4703	44.6	37.1 to 52.0	Higher	Higher
Regina Qu'Appelle Regional Health Authority	4704	34.0	30.4 to 37.7	Higher	Same
Sunrise Regional Health Authority	4705	37.0	29.0 to 45.0	Higher	Same
Saskatoon Regional Health Authority	4706	35.3	31.5 to 39.1	Higher	Same
Heartland Regional Health Authority	4707	34.6	26.9 to 42.2	Higher	Same
Kelsey Trail Regional Health Authority	4708	23.2	17.9 to 28.6	Same	Lower
Prince Albert Parkland Regional Health Authority	4709	45.5	35.3 to 55.6	Higher	Higher
Prairie North Regional Health Authority	4710	29.9	24.5 to 35.4	Higher	Lower
Mamawetan/Keewatin/Athabasca	4714	36.5	30.4 to 42.7	Higher	Same
Alberta	4800	29.7	28.2 to 31.1	Higher	...
Chinook Regional Health Authority	4820	27.6	23.5 to 31.7	Same	Same
Palliser Health Region	4821	30.4	22.7 to 38.0	Same	Same
Calgary Health Region	4822	28.2	25.5 to 30.9	Higher	Same
David Thompson Regional Health Authority	4823	33.9	30.4 to 37.4	Higher	Higher
East Central Health	4824	39.2	33.4 to 45.0	Higher	Higher
Capital Health	4825	28.3	25.4 to 31.2	Higher	Same
Aspen Regional Health Authority	4826	37.6	33.1 to 42.2	Higher	Higher
Peace Country Health	4827	29.8	25.1 to 34.6	Higher	Same
Northern Lights Health Region	4828	25.8	20.3 to 31.2	Same	Same

	Region code	%	95% confidence interval	Significantly higher or lower (p < 0.05) than:	
				Canada	Province or Territory
British Columbia	5900	26.8	25.7 to 28.0	Higher	...
East Kootenay Health Service Delivery Area	5911	54.6	43.8 to 65.3	Higher	Higher
Kootenay-Boundary Health Service Delivery Area	5912	34.9	29.3 to 40.5	Higher	Higher
Okanagan Health Service Delivery Area	5913	23.1	19.8 to 26.4	Same	Lower
Thompson/Cariboo Health Service Delivery Area	5914	30.8	26.8 to 34.8	Higher	Higher
Fraser East Health Service Delivery Area	5921	20.5	17.3 to 23.6	Lower	Lower
Fraser North Health Service Delivery Area	5922	27.2	23.7 to 30.7	Same	Same
Fraser South Health Service Delivery Area	5923	21.6	18.3 to 24.9	Same	Lower
Richmond Health Service Delivery Area	5931	19.5	15.0 to 24.1	Lower	Lower
Vancouver Health Service Delivery Area	5932	20.4	17.8 to 23.1	Lower	Lower
North Shore/Coast Garibaldi Health Service Delivery Area	5933	26.9	23.2 to 30.6	Same	Same
South Vancouver Island Health Service Delivery Area	5941	40.2	36.1 to 44.3	Higher	Higher
Central Vancouver Island Health Service Delivery Area	5942	41.3	35.3 to 47.4	Higher	Higher
North Vancouver Island Health Service Delivery Area	5943	20.6	15.2 to 26.0	Same	Lower
Northwest Health Service Delivery Area	5951	25.8	20.7 to 31.0	Same	Same
Northern Interior Health Service Delivery Area	5952	25.7	21.0 to 30.3	Same	Same
Northeast Health Service Delivery Area	5953	26.2	20.9 to 31.4	Same	Same
Yukon Territory	6001	30.6	23.8 to 37.4	Same	...
Northwest Territories	6101	32.8	26.5 to 39.1	Higher	...
Nunavut	6201	35.8	30.4 to 41.2	Higher	...

... Not applicable

Note: Based on non-leisure activity in typical week in previous 3 months

Source: 2005 Canadian Community Health Survey

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Smoking—prevalence, bans and exposure to second-hand smoke

by Margot Shields

Keywords: adolescent behaviour, environmental tobacco smoke (ETS), involuntary smoking, passive smoking, secondary smoking, smoking prevalence, tobacco use

The prevalence of smoking continues to decline in Canada, according to recent results from the Canadian Community Health Survey (CCHS) (see *Data source*). About 2 in 10 Canadians aged 12 or older—21.8% or approximately 5.9 million people—were smokers in 2005 (Chart 1, Table 1). This figure includes both daily and occasional smokers (see *The questions*), and is slightly lower than the 23% estimated using data from the 2003 CCHS. Comparisons with earlier surveys reveal the downward trend in the national smoking rate. In 2000/2001, for example, the CCHS revealed that 26% of the population smoked. And about 10 years ago, 29% of Canadians were smokers, an estimate based on data from the 1994/1995 National Population Health Survey (data not shown).

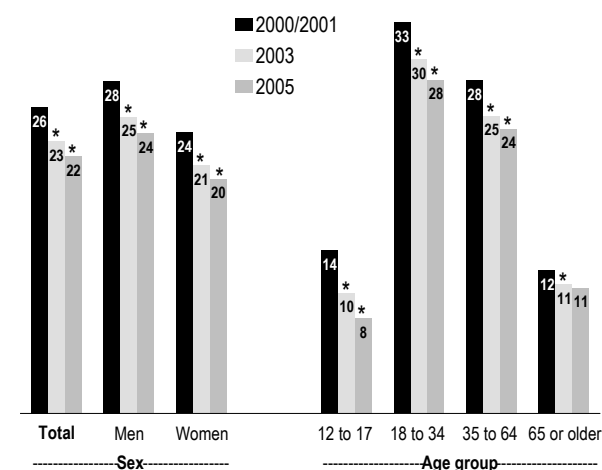
Sharpest declines for youth

The prevalence of smoking has declined for both sexes and across all age groups, but the sharpest drops have been among youth aged 12 to 17 (Chart 1, Table 1). In 2000/2001, the youth smoking rate was 14%; by 2003, it had fallen to 10%, and by 2005, the rate was 8%—the lowest of all age groups. Seniors had the lowest prevalence of smoking in 2001, but the latest estimates reveal that the rates for men and women aged 65 or older are stabilizing.

The youth smoking rate has declined because increasing numbers of young people never even start to smoke. In 2000/2001, 73% of 12- to 17-year-olds said that they had never smoked cigarettes; by 2005, the proportion had increased to 82% (data

Chart 1

Percentage of current smokers, by sex and by age group, household population aged 12 or older, Canada, 2000/2001, 2003 and 2005



* Significantly different from estimate for preceding period ($p < 0.05$)

Source: 2000/2001, 2003 and 2005 Canadian Community Health Survey

not shown). This finding is particularly relevant because people who start smoking usually do so before they turn 18, and it is relatively rare for adults to take up smoking.¹ Thus, smoking rates among older age groups may decrease even more in future as today's youth move through adulthood.

Fewer daily smokers, fewer cigarettes

In 2005, most people who smoked did so every day (76%) (data not shown). This represents a substantial drop from 2000/2001, when 83% of smokers were daily smokers. Cigarette consumption among daily smokers also fell, from an average of 16.7 cigarettes a day in 2000/2001 to 15.6 in 2005

Table 1

Percentage of current smokers, by sex and age group, household population aged 12 or older, Canada, 2000/2001, 2003 and 2005

	2000/2001		2003		2005	
	%	95% confidence interval	%	95% confidence interval	%	95% confidence interval
Total smokers	26.0	25.6 to 26.3	23.0*	22.7 to 23.4	21.8*	21.4 to 22.1
<i>Age group</i>						
12 to 17	13.8	13.0 to 14.6	10.2*	9.4 to 11.0	8.1*	7.4 to 8.7
18 to 34	33.1	32.3 to 34.0	30.0*	29.2 to 30.8	28.3*	27.6 to 29.0
35 to 64	28.2	27.7 to 28.8	25.2*	24.6 to 25.8	24.1*	23.6 to 24.6
65 or older	12.1	11.5 to 12.8	10.9*	10.4 to 11.5	10.6	10.1 to 11.2
Male smokers	28.1	27.6 to 28.7	25.1*	24.6 to 25.6	23.7*	23.2 to 24.2
<i>Age group</i>						
12 to 17	12.5	11.4 to 13.6	9.6*	8.5 to 10.7	7.2*	6.4 to 8.0
18 to 34	36.0	34.8 to 37.3	33.1*	31.9 to 34.4	31.7	30.6 to 32.7
35 to 64	30.5	29.7 to 31.3	27.2*	26.4 to 28.1	26.0*	25.2 to 26.7
65 or older	13.2	12.2 to 14.3	11.5*	10.7 to 12.3	11.2	10.4 to 12.0
Female smokers	23.8	23.3 to 24.3	21.0*	20.5 to 21.5	19.9*	19.4 to 20.3
<i>Age group</i>						
12 to 17	15.2	14.0 to 16.4	10.8*	9.8 to 11.9	9.0*	8.0 to 10.0
18 to 34	30.2	29.1 to 31.2	26.8*	25.8 to 27.8	24.8*	24.0 to 25.7
35 to 64	26.0	25.3 to 26.7	23.2*	22.4 to 23.9	22.3	21.6 to 23.0
65 or older	11.2	10.5 to 12.0	10.5	9.8 to 11.2	10.2	9.5 to 10.9

* Significantly different from estimate for preceding period ($p < 0.05$)

Source: 2000/2001, 2003 and 2005 Canadian Community Health Survey

(data not shown). The prevalence of occasional smoking was very similar between 2000/2001 and 2005, remaining around 5% (data not shown).

Lowest rates in Ontario and British Columbia

Between 2003 and 2005, smoking rates declined significantly in New Brunswick, Quebec, Ontario, Manitoba, and Nunavut (Table 2). Rates in the remaining provinces and territories did not change over the two years.

In 2005, smoking rates were significantly below the national figure of 22% in Ontario (21%) and British Columbia (18%) (Table 2, Appendix Table A). These two provinces also had comparatively low rates in 2003 and 2000/2001. The 2005 rate was also low in Manitoba (20%), but the difference from the national rate only approached statistical significance ($p=0.07$). The prevalence of smoking in the remaining provinces was between 22% and 24% in 2005.

Smoking rates in the territories were fairly high: 30% in Yukon Territory, and 36% in Northwest Territories. Although Nunavut had the country's highest smoking rate (53%), it also underwent the sharpest decline between 2003 and 2005, falling 12

Table 2

Percentage of current smokers, by province and territory, household population aged 12 or older, Canada, 2000/2001, 2003 and 2005

	2000/2001	2003	2005
Canada	26.0	23.0*	21.8*
Newfoundland and Labrador	29.0 [†]	24.1*	23.1
Prince Edward Island	27.9	23.7*	22.2
Nova Scotia	28.2 [†]	23.6*	22.7
New Brunswick	26.4	25.4*	22.5*
Quebec	29.5 [†]	26.0*	24.4*
Ontario	24.5 [†]	22.3*	20.9*
Manitoba	25.1	22.8*	20.5*
Saskatchewan	27.7 [†]	24.0*	23.9 [†]
Alberta	27.7 [†]	23.0*	22.8 [†]
British Columbia	20.6 [†]	18.8*	17.8 [†]
Yukon Territories	33.7 [†]	27.6*	30.4 [†]
Northwest Territories	46.6 [†]	36.5*	36.1 [†]
Nunavut	56.8 [†]	64.9*	53.1*

* Significantly different from estimate for preceding period ($p < 0.05$)

[†] Significantly different from estimate for Canada ($p < 0.05$)

Source: 2000/2001, 2003 and 2005 Canadian Community Health Survey

percentage points. Among the health regions, as in previous years, British Columbia's Richmond had the country's lowest smoking rate: 12.6% (Appendix Table A).

Household bans on the rise

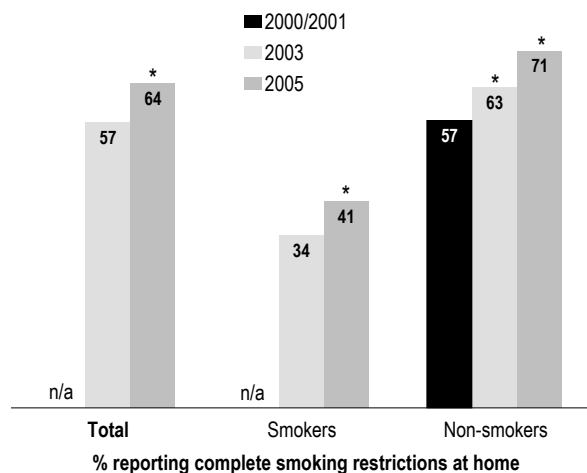
In 2005, close to two-thirds (64%) of Canadians aged 12 or older lived in households where smoking was completely restricted, meaning that smokers were asked to refrain from smoking anywhere in the house (see *The questions*). This was up 7 percentage points from 2003 (Chart 2).

Not surprisingly, living in a household with a smoking ban was more common among non-smokers: the percentage rose from 57% in 2000/2001 to 63% in 2003, and by 2005, it had reached 71%. Even smokers became more likely to face a smoking ban at home (34% in 2003 versus 41% in 2005).

Between 2003 and 2005, the percentage of the population living with smoking bans at home rose significantly in all 10 provinces, as well as in

Chart 2

Percentage reporting complete smoking restrictions at home, by smoking status, household population aged 12 or older, Canada, 2000/2001, 2003 and 2005



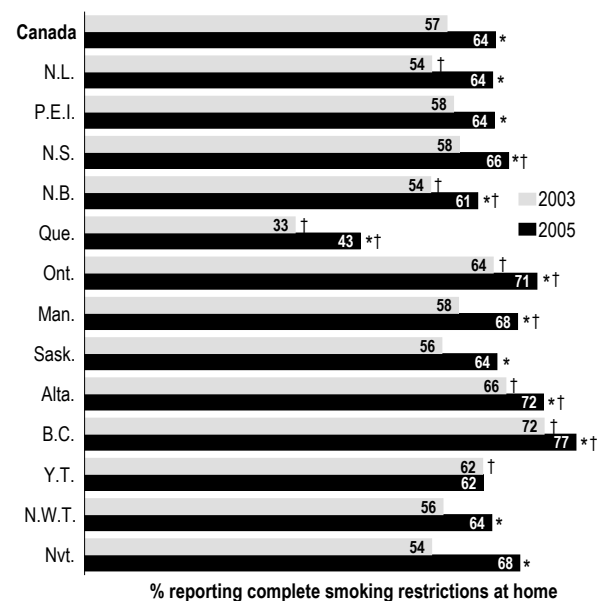
* Significantly different from estimate for preceding period ($p < 0.05$)

n/a Figures not available

Source: 2000/2001, 2003 and 2005 Canadian Community Health Survey

Chart 3

Percentage reporting complete smoking restrictions at home, by province and territory, household population aged 12 or older, Canada excluding territories, 2003 and 2005



* Significantly higher than estimate for preceding period ($p < 0.05$)

† Significantly different from estimate for Canada ($p < 0.05$)

Source: 2003 and 2005 Canadian Community Health Survey

Northwest Territories and Nunavut (Chart 3). In Yukon Territory, the rate remained stable at 62%. In 2005, compared with the national rate of 64%, estimates were higher in Nova Scotia (66%), Ontario (71%), Manitoba (68%), Alberta (72%) and British Columbia (77%). By contrast, the rate was particularly low in Quebec (43%).

By health region, household smoking bans were most common in South Vancouver Island, British Columbia (82%); in fact, estimates in 14 of British Columbia's 16 health regions were above the Canadian average (Appendix Table B). The relatively low overall rate observed for Quebec also characterized the province's 16 health regions, where rates ranged from a low of 28% in Région Nord-du-Québec to a high of 52% in Région de l'Outaouais.

Workplace bans also more common

Between 2000/2001 and 2003, the percentage of the employed population who reported a total ban on smoking at their place of work rose from 62% to 67% (Chart 4). A modest increase of 1 percentage point was observed between 2003 and 2005.

In 2005, 73% of non-smokers and 54% of smokers worked at locations where smoking was prohibited. Since 2000/2001, the percentage of the employed population reporting workplace smoking bans has risen in all provinces and territories; however, in many cases, a significant increase occurred in only one of the two periods (2000/2001 to 2003, or 2003 to 2005) (data not shown). This likely reflects the varying dates when legislation restricting smoking in workplaces and public places was introduced across the country.^{2,3}

In 2005, 71% of the employed population in Ontario and 76% in Manitoba reported workplace smoking bans; both figures are significantly higher than the national average (68%) (Appendix Table C). Percentages were even higher in the three territories:

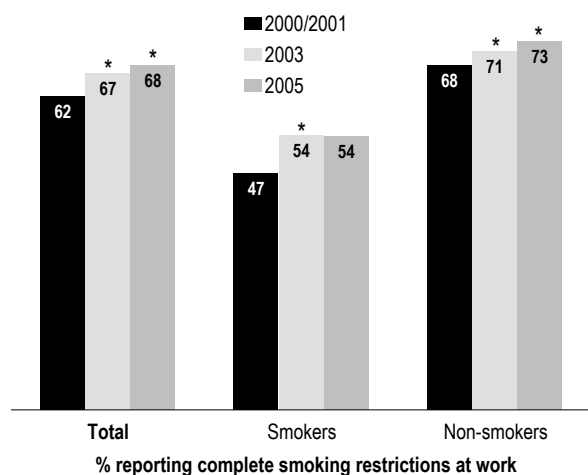
Yukon Territory, 79%; Northwest Territories, 83%; and Nunavut, 92%—the highest rate in the country. Workplace bans were less common in Nova Scotia (64%), Quebec (67%), Saskatchewan (65%) and Alberta (61%). (For figures by health region, see Appendix Table C.)

Bans and declines in cigarettes smoked

Both household and workplace smoking restrictions were associated with reduced tobacco consumption. In 2005, smokers aged 12 or older who lived in households where smoking was completely banned smoked an average of 9 cigarettes per day, 6 fewer than those living in homes where smoking was allowed (data not shown). Employed smokers aged 15 to 75 who faced workplace smoking bans averaged 11 cigarettes daily, while those who were allowed to smoke at work had an average of 14 (data not shown).

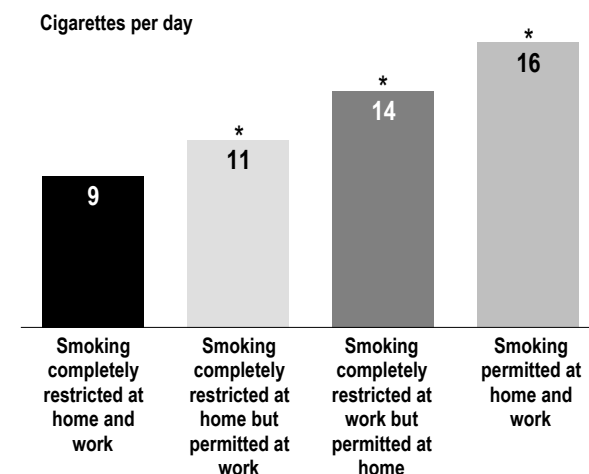
The combination of bans at home and at work yielded even lower levels of daily tobacco consumption among employed smokers. In 2005,

Chart 4
Percentage reporting complete smoking restrictions at work, by smoking status, employed population aged 15 to 75, Canada, 2000/2001, 2003 and 2005



Source: 2000/2001, 2003 and 2005 Canadian Community Health Survey

Chart 5
Average number of cigarettes smoked per day, by workplace and household smoking restrictions, employed smokers aged 15 to 75, Canada, 2005



Source: 2005 Canadian Community Health Survey

employed smokers facing these two restrictions smoked 9 cigarettes per day, on average, compared with 16 for those who could smoke at home and at work (Chart 5). These findings are particularly relevant given that reduced cigarette consumption is associated with a higher probability of quitting, and higher cigarette consumption is associated with increased health risks.⁴

Reduced exposure to second-hand smoke

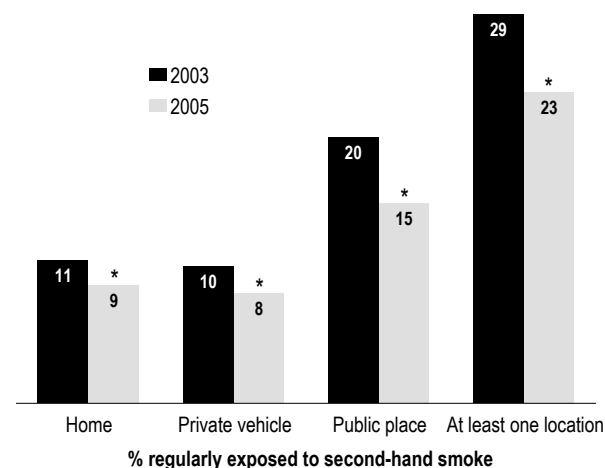
As smoking bans became more widespread, non-smokers' exposure to second-hand smoke declined (see *The questions*). In 2005, 9% of non-smokers reported that they were exposed to second-hand smoke at home every day or almost every day, down from 11% in 2003 (Chart 6). Over the same period, such regular exposure to second-hand smoke in private vehicles fell from 10% to 8%. In 2005, exposure to second-hand smoke was most common in public places, reported by 15% of non-smokers (Appendix Table D). But this was also the setting in which exposure declined the most, down from

20% in 2003 (Chart 6). When the three venues—home, vehicles and public places—are considered together for 2005, 23% of the non-smokers reported regular exposure to second-hand smoke in at least one location, down from 29% in 2003.

Youth face higher risk from second-hand smoke

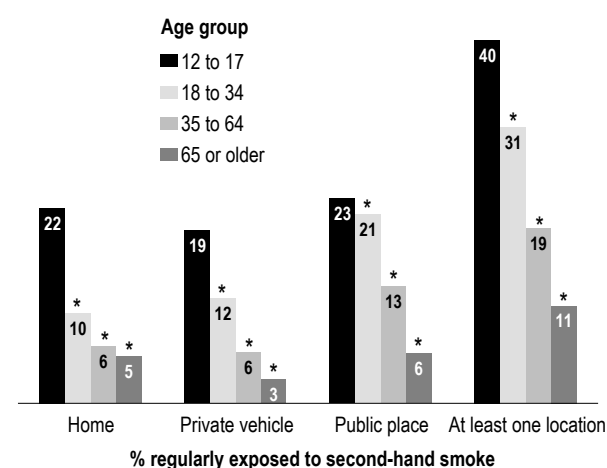
For all three locations considered, the likelihood of being exposed to second-hand smoke diminished as age rose. In 2005, 40% of non-smokers aged 12 to 17 reported being regularly exposed to second-hand smoke in at least one location. This compares with 31% for those aged 18 to 34, 19% for those aged 35 to 64, and 11% among seniors aged 65 or older (Chart 7). This pattern may partially reflect the higher percentage of seniors who live alone and thus have a decreased likelihood of being around a smoker, as well as changes in activities across the lifespan. In some cases, exposure to second-hand smoke may be a choice; in other cases, it may be unavoidable.⁵ Although exposure declined for all age groups between 2003 and 2005 (data not shown),

Chart 6
Percentage of non-smokers regularly exposed to second-hand smoke, by setting, household population aged 12 or older, Canada, 2003 and 2005



Source: 2003 and 2005 Canadian Community Health Survey

Chart 7
Percentage of non-smokers regularly exposed to second-hand smoke, by setting and age group, household population aged 12 or older, Canada, 2005



Source: 2005 Canadian Community Health Survey

The questions

In the 2005, 2003 and 2000/2001 Canadian Community Health Survey, respondents were asked, "At the present time, do you smoke cigarettes daily, occasionally or not at all?" Those who said they smoked daily or occasionally were defined as *current smokers*.

Household smoking bans were measured with two questions: "Are there any restrictions against smoking cigarettes in your home?" Those who answered "yes" were asked, "How is smoking restricted in your home?" The following choices were read to respondents:

1. Smokers are asked to refrain from smoking in the house.
2. Smoking is allowed in certain rooms only.
3. Smoking is restricted in the presence of young children.
4. Other restriction.

Respondents who said that smokers were asked to refrain from smoking in the house were defined as having *complete smoking restrictions at home*. In 2000/2001, only non-smokers were asked these questions.

CCHS respondents aged 15 to 75 who were employed were asked, "At your place of work, what are the restrictions on smoking?" They could choose from the following responses:

1. Restricted completely.
2. Allowed in designated areas.
3. Restricted only in certain places.
4. Not restricted at all.

Respondents who indicated the first choice were considered to have *complete smoking restrictions at work*.

The questions on exposure to second-hand smoke differed somewhat between cycle 1.1 and cycles 2.1 and 2.3; therefore, only information from CCHS cycles 2.1 (2003) and 3.1 (2005) were used in this report. For these cycles, non-smokers were asked the following questions in order to measure *regular exposure to second-hand smoke*:

1. "Including both household members and regular visitors, does anyone smoke inside your home every day or almost every day?" (Yes/No)
2. "In the past month, were you exposed to second-hand smoke every day or almost every day in a car or other private vehicle?" (Yes/No)
3. "In the past month, were you exposed to second-hand smoke every day or almost every day in public places (such as bars, restaurants, shopping malls, arenas, bingo halls, bowling alleys)?" (Yes/No)

Data source

Estimates in this article are based on data from the 2005, 2003 and 2000/2001 Canadian Community Health Survey (CCHS), conducted by Statistics Canada. The CCHS covers the population aged 12 or older living in private households. It does not include residents of Indian reserves, institutions, and some remote areas; full-time members of the Canadian Forces; and civilian residents of military bases.

The first cycle (1.1) of the CCHS began in September 2000 and continued over 14 months. The response rate was 84.7%, yielding a sample of 131,535 respondents. Cycle 2.1 began in January 2003 and ended in December that year. The response rate was 80.6%, which yielded a sample of 135,573 respondents. Cycle 3.1 was conducted between January and December 2005. The response rate was 79%; sample size, 132,947 respondents. A description of the CCHS methodology is available in a published report.⁶

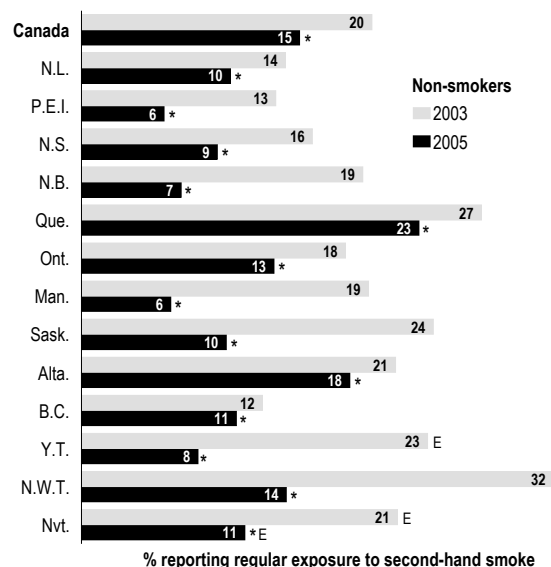
All estimates in this article were weighted to represent the household population aged 12 or older in 2005, 2003, or 2000/2001. Differences between estimates were tested to ensure statistical significance, which was established at the 0.05 level. To account for the survey design effect, standard errors and coefficients of variation were estimated using the bootstrap technique.^{7,8}

the high rate among youth is of particular concern since they likely have the least amount of control over their exposure to second-hand smoke.

Exposure rates to second-hand smoke in public places varied considerably by province and territory in 2003 and 2005, reflecting the different dates when legislation was introduced to restrict smoking in these venues.^{2,3} Between 2003 and 2005, rates fell by at least 10 percentage points in New Brunswick, Manitoba and Saskatchewan, and in all three territories (Chart 8). In 2005, exposure rates were highest in Quebec (23%) and Alberta (18%) (Appendix Table D). It is likely, however, that these rates will continue to drop, given that legislation restricting smoking in public places will become effective in both provinces in 2006. (See Appendix Table D for the percentage of non-smokers regularly

Chart 8

Percentage of non-smokers regularly exposed to second-hand smoke in public places, by province and territory, household population aged 12 or older, Canada, 2003 and 2005



* Significantly different from estimate for preceding period ($p < 0.05$)

^E Use with caution (coefficient of variation 16.6% to 33.3%)

Source: 2003 and 2005 Canadian Community Health Survey

exposed to second-hand smoke in public places at the health region level.)

Exposure to second-hand smoke will likely continue to decline, given that new restrictions on smoking in public places will become effective in several provinces in 2006. These trends are encouraging in light of the serious health effects of smoking and exposure to second-hand smoke.⁹⁻¹¹ Nonetheless, high exposure to second-hand smoke among 12- to 17-year-olds—at home, in private vehicles and in public places—remains an area of concern.

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An electronic version of this article, "An update on smoking from the 2005 Canadian Community Health Survey," was released on June 13, 2006 in the online publication, Smoking and Diabetes Care: Results from the CCHS Cycle 3.1, 2005, part of the Your Community, Your Health: Findings from the Canadian Community Health Survey (CCHS) series. The free publication (Catalogue no. 82-621-XWE2006002) is available at <http://www.statcan.ca/bsolc/english/bsolc?catno=82-621-X20060029226>.

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Table A

Percentage of current smokers, by province/territory and health region, household population aged 12 or older, Canada, 2005

	Region code	%	95% confidence interval	Significantly higher or lower (p < 0.05) than:	
				Canada	Province/Territory
Canada		21.8	21.4 to 22.1	...	...
Newfoundland and Labrador	1000	23.1	21.3 to 24.9	Same	...
Eastern Regional Integrated Health Authority	1011	22.1	19.6 to 24.6	Same	Same
Central Regional Integrated Health Authority	1012	23.8	19.8 to 27.8	Same	Same
Western Regional Integrated Health Authority	1013	24.5	20.6 to 28.4	Same	Same
Labrador-Grenfell Regional Integrated Health Authority	1014	26.7	22.5 to 30.9	Higher	Same
Prince Edward Island	1100	22.2	19.7 to 24.6	Same	...
West Prince	1101	23.0	17.0 to 29.0	Same	Same
East Prince	1102	21.9	17.5 to 26.4	Same	Same
Queens	1103	21.7	17.7 to 25.6	Same	Same
Kings	1104	23.8	18.4 to 29.2	Same	Same
Nova Scotia	1200	22.7	21.0 to 24.3	Same	...
Zone 1	1201	21.4	17.9 to 24.9	Same	Same
Zone 2	1202	23.9	19.0 to 28.8	Same	Same
Zone 3	1203	25.0	21.0 to 29.0	Same	Same
Zone 4	1204	22.6	18.3 to 26.9	Same	Same
Zone 5	1205	25.2	21.8 to 28.7	Higher	Same
Zone 6	1206	21.4	18.6 to 24.2	Same	Same
New Brunswick	1300	22.5	21.1 to 24.0	Same	...
Region 1	1301	21.6	18.7 to 24.6	Same	Same
Region 2	1302	22.1	18.8 to 25.3	Same	Same
Region 3	1303	22.9	19.4 to 26.3	Same	Same
Region 4	1304	25.8	21.2 to 30.5	Same	Same
Region 5	1305	20.9	15.5 to 26.2	Same	Same
Region 6	1306	24.0	20.1 to 27.9	Same	Same
Region 7	1307	21.7	16.0 to 27.4	Same	Same
Quebec	2400	24.4	23.7 to 25.1	Higher	...
Région du Bas-Saint-Laurent	2401	22.1	20.2 to 24.1	Same	Lower
Région du Saguenay - Lac-Saint-Jean	2402	24.9	21.9 to 27.9	Higher	Same
Région de la Capitale Nationale	2403	20.7	18.4 to 23.1	Same	Lower
Région de la Mauricie et du Centre-du-Québec	2404	24.3	21.6 to 27.0	Same	Same
Région de l'Estrie	2405	25.9	22.9 to 28.8	Higher	Same
Région de Montréal	2406	24.9	23.5 to 26.4	Higher	Same
Région de l'Outaouais	2407	29.8	26.6 to 33.0	Higher	Higher
Région de l'Abitibi-Témiscamingue	2408	25.6	22.3 to 28.9	Higher	Same
Région de la Côte-Nord	2409	28.6	25.5 to 31.7	Higher	Higher
Région du Nord-du-Québec	2410	29.4	24.9 to 34.0	Higher	Higher
Région de la Gaspésie - Îles-de-la-Madeleine	2411	26.2	22.4 to 30.0	Higher	Same
Région de la Chaudière-Appalaches	2412	23.6	20.6 to 26.7	Same	Same
Région de Laval	2413	25.7	23.4 to 28.0	Higher	Same
Région de Lanaudière	2414	28.3	25.3 to 31.4	Higher	Higher
Région des Laurentides	2415	25.5	22.5 to 28.5	Higher	Same
Région de la Montérégie	2416	21.8	19.6 to 24.0	Same	Lower
Ontario	3500	20.9	20.3 to 21.5	Lower	...
District of Algoma Health Unit	3526	24.0	20.1 to 27.9	Same	Same
Brant County Health Unit	3527	27.0	22.9 to 31.1	Higher	Higher
Durham Regional Health Unit	3530	24.9	21.9 to 27.8	Higher	Higher
Elgin-St Thomas Health Unit	3531	27.0	23.4 to 30.5	Higher	Higher
Grey Bruce Health Unit	3533	20.9	17.4 to 24.5	Same	Same
Haldimand-Norfolk Health Unit	3534	29.9	25.3 to 34.6	Higher	Higher
Haliburton, Kawartha, Pine Ridge District Health Unit	3535	22.0	18.5 to 25.5	Same	Same
Halton Regional Health Unit	3536	18.5	16.0 to 20.9	Lower	Same
City of Hamilton Health Unit	3537	23.0	20.7 to 25.2	Same	Same
Hastings and Prince Edward Counties Health Unit	3538	26.7	22.6 to 30.8	Higher	Higher

	Region code	%	95% confidence interval	Significantly higher or lower (p < 0.05) than:	
				Canada	Province/Territory
Huron County Health Unit	3539	23.7	19.3 to 28.1	Same	Same
Chatham-Kent Health Unit	3540	24.7	20.5 to 28.9	Same	Same
Kingston, Frontenac and Lennox and Addington Health Unit	3541	22.6	19.2 to 26.1	Same	Same
Lambton Health Unit	3542	24.7	21.0 to 28.3	Same	Higher
Leeds, Grenville and Lanark District Health Unit	3543	24.7	21.7 to 27.7	Same	Higher
Middlesex-London Health Unit	3544	17.9	15.2 to 20.5	Lower	Lower
Niagara Regional Area Health Unit	3546	22.7	20.2 to 25.3	Same	Same
North Bay Parry Sound District Health Unit	3547	26.7	23.0 to 30.4	Higher	Higher
Northwestern Health Unit	3549	22.5	18.8 to 26.2	Same	Same
City of Ottawa Health Unit	3551	18.6	16.3 to 21.0	Lower	Lower
Oxford County Health Unit	3552	24.1	20.3 to 28.0	Same	Same
Peel Regional Health Unit	3553	19.1	16.9 to 21.2	Lower	Same
Perth District Health Unit	3554	19.6	15.5 to 23.6	Same	Same
Peterborough County-City Health Unit	3555	21.0	17.2 to 24.8	Same	Same
Porcupine Health Unit	3556	30.8	27.0 to 34.6	Higher	Higher
Renfrew County and District Health Unit	3557	27.7	23.5 to 31.8	Higher	Higher
Eastern Ontario Health Unit	3558	27.2	23.9 to 30.6	Higher	Higher
Simcoe Muskoka District Health Unit	3560	23.3	20.7 to 25.9	Same	Same
Sudbury and District Health Unit	3561	24.3	21.0 to 27.6	Same	Higher
Thunder Bay District Health Unit	3562	26.6	23.2 to 30.1	Higher	Higher
Timiskaming Health Unit	3563	26.5	20.1 to 33.0	Same	Same
Waterloo Health Unit	3565	19.3	16.9 to 21.7	Lower	Same
Wellington-Dufferin-Guelph Health Unit	3566	21.5	18.6 to 24.5	Same	Same
Windsor-Essex County Health Unit	3568	23.9	20.9 to 26.9	Same	Higher
York Regional Health Unit	3570	16.2	14.0 to 18.4	Lower	Lower
City of Toronto Health Unit	3595	18.4	16.8 to 20.1	Lower	Lower
Manitoba	4600	20.5	19.0 to 21.9	Same	...
Winnipeg Regional Health Authority	4610	20.2	17.9 to 22.5	Same	Same
Brandon Regional Health Authority	4615	24.2	20.0 to 28.4	Same	Same
North Eastman Regional Health Authority	4620	20.2	16.5 to 24.0	Same	Same
South Eastman Regional Health Authority	4625	19.3	15.2 to 23.4	Same	Same
Interlake Regional Health Authority	4630	18.9	14.5 to 23.3	Same	Same
Central Regional Health Authority	4640	19.6	16.2 to 23.0	Same	Same
Assiniboine Regional Health Authority	4645	15.8	12.3 to 19.2	Lower	Lower
Parkland Regional Health Authority	4660	24.8	19.5 to 30.0	Same	Same
Norman Regional Health Authority	4670	28.9	21.4 to 36.4	Same	Higher
Burntwood/Churchill	4685	35.4	30.2 to 40.5	Higher	Higher
Saskatchewan	4700	23.9	22.6 to 25.3	Higher	...
Sun Country Regional Health Authority	4701	24.0	19.9 to 28.1	Same	Same
Five Hills Regional Health Authority	4702	22.3	17.4 to 27.1	Same	Same
Cypress Regional Health Authority	4703	24.8	19.6 to 29.9	Same	Same
Regina Qu'Appelle Regional Health Authority	4704	21.7	19.0 to 24.4	Same	Same
Sunrise Regional Health Authority	4705	24.4	19.2 to 29.5	Same	Same
Saskatoon Regional Health Authority	4706	23.4	20.5 to 26.3	Same	Same
Heartland Regional Health Authority	4707	18.4	13.4 to 23.4	Same	Lower
Kelsey Trail Regional Health Authority	4708	25.5	18.8 to 32.2	Same	Same
Prince Albert Parkland Regional Health Authority	4709	31.6	26.4 to 36.9	Higher	Higher
Prairie North Regional Health Authority	4710	27.4	22.5 to 32.2	Higher	Same
Mamawetan/Keewatin/Athabasca	4714	35.4	30.2 to 40.6	Higher	Higher
Alberta	4800	22.8	21.7 to 23.9	Higher	...
Chinook Regional Health Authority	4820	20.1	16.9 to 23.2	Same	Same
Palliser Health Region	4821	29.0	24.6 to 33.5	Higher	Higher
Calgary Health Region	4822	19.9	18.1 to 21.8	Lower	Lower
David Thompson Regional Health Authority	4823	25.5	22.5 to 28.5	Higher	Same
East Central Health	4824	24.8	21.1 to 28.5	Same	Same
Capital Health	4825	23.5	21.1 to 25.8	Same	Same
Aspen Regional Health Authority	4826	25.4	21.6 to 29.2	Same	Same
Peace Country Health	4827	28.2	24.0 to 32.4	Higher	Higher
Northern Lights Health Region	4828	30.5	26.3 to 34.7	Higher	Higher

	Region code	%	95% confidence interval	Significantly higher or lower (p < 0.05) than:	
				Canada	Province/Territory
British Columbia	5900	17.8	17.0 to 18.6	Lower	...
East Kootenay Health Service Delivery Area	5911	20.8	16.3 to 25.3	Same	Same
Kootenay-Boundary Health Service Delivery Area	5912	22.1	17.3 to 26.9	Same	Same
Okanagan Health Service Delivery Area	5913	18.4	15.2 to 21.6	Lower	Same
Thompson/Cariboo Health Service Delivery Area	5914	23.3	19.5 to 27.1	Same	Higher
Fraser East Health Service Delivery Area	5921	17.8	14.7 to 20.9	Lower	Same
Fraser North Health Service Delivery Area	5922	14.5	12.1 to 16.8	Lower	Lower
Fraser South Health Service Delivery Area	5923	17.6	15.2 to 20.0	Lower	Same
Richmond Health Service Delivery Area	5931	12.6	9.9 to 15.4	Lower	Lower
Vancouver Health Service Delivery Area	5932	17.5	15.1 to 20.0	Lower	Same
North Shore/Coast Garibaldi Health Service Delivery Area	5933	15.3	12.2 to 18.4	Lower	Same
South Vancouver Island Health Service Delivery Area	5941	15.9	13.6 to 18.3	Lower	Same
Central Vancouver Island Health Service Delivery Area	5942	18.6	15.9 to 21.2	Lower	Same
North Vancouver Island Health Service Delivery Area	5943	21.0	16.0 to 26.0	Same	Same
Northwest Health Service Delivery Area	5951	20.9	16.7 to 25.1	Same	Same
Northern Interior Health Service Delivery Area	5952	24.4	20.2 to 28.5	Same	Higher
Northeast Health Service Delivery Area	5953	28.0	22.1 to 34.0	Higher	Higher
Yukon Territory	6000	30.4	25.9 to 34.9	Higher	...
Northwest Territories	6100	36.1	32.2 to 40.0	Higher	...
Nunavut	6200	53.1	48.7 to 57.5	Higher	...

... Not applicable

Source: 2005 Canadian Community Health Survey

Table B

Percentage reporting complete smoking restrictions at home, by province/territory and health region, household population aged 12 or older, Canada, 2005

	Region code	%	95% confidence interval	Significantly higher or lower (p < 0.05) than:	
				Canada	Province/Territory
Canada		64.1	63.7 to 64.5	...	...
Newfoundland and Labrador	1000	63.7	61.6 to 65.7	Same	...
Eastern Regional Integrated Health Authority	1011	65.2	62.4 to 68.0	Same	Same
Central Regional Integrated Health Authority	1012	63.6	59.5 to 67.8	Same	Same
Western Regional Integrated Health Authority	1013	60.9	55.5 to 66.3	Same	Same
Labrador-Grenfell Regional Integrated Health Authority	1014	57.3	52.0 to 62.6	Lower	Lower
Prince Edward Island	1100	63.9	61.0 to 66.9	Same	...
West Prince	1101	61.0	54.1 to 67.9	Same	Same
East Prince	1102	60.6	54.7 to 66.5	Same	Same
Queens	1103	67.7	63.2 to 72.1	Same	Higher
Kings	1104	59.1	52.3 to 65.8	Same	Same
Nova Scotia	1200	66.1	64.4 to 67.9	Higher	...
Zone 1	1201	60.6	56.0 to 65.1	Same	Lower
Zone 2	1202	65.5	60.2 to 70.7	Same	Same
Zone 3	1203	62.0	57.4 to 66.6	Same	Same
Zone 4	1204	61.6	57.3 to 65.9	Same	Lower
Zone 5	1205	59.7	55.5 to 63.9	Lower	Lower
Zone 6	1206	72.3	69.2 to 75.5	Higher	Higher
New Brunswick	1300	61.3	59.5 to 63.1	Lower	...
Region 1	1301	62.7	58.7 to 66.7	Same	Same
Region 2	1302	60.5	56.6 to 64.5	Same	Same
Region 3	1303	61.9	58.0 to 65.8	Same	Same
Region 4	1304	52.1	46.7 to 57.5	Lower	Lower
Region 5	1305	57.3	50.7 to 63.9	Lower	Same
Region 6	1306	68.2	64.0 to 72.4	Same	Higher
Region 7	1307	56.9	50.7 to 63.1	Lower	Same
Quebec	2400	43.0	42.1 to 43.9	Lower	...
Région du Bas-Saint-Laurent	2401	36.4	34.1 to 38.8	Lower	Lower
Région du Saguenay - Lac-Saint-Jean	2402	39.0	35.1 to 42.9	Lower	Lower
Région de la Capitale Nationale	2403	46.9	44.2 to 49.5	Lower	Higher
Région de la Mauricie et du Centre-du-Québec	2404	33.9	30.9 to 37.0	Lower	Lower
Région de l'Estrie	2405	41.4	37.8 to 44.9	Lower	Same
Région de Montréal	2406	49.7	48.0 to 51.4	Lower	Higher
Région de l'Outaouais	2407	52.3	49.0 to 55.6	Lower	Higher
Région de l'Abitibi-Témiscamingue	2408	32.2	28.7 to 35.7	Lower	Lower
Région de la Côte-Nord	2409	31.8	28.6 to 35.0	Lower	Lower
Région du Nord-du-Québec	2410	27.9	23.6 to 32.3	Lower	Lower
Région de la Gaspésie - Îles-de-la-Madeleine	2411	33.7	29.9 to 37.4	Lower	Lower
Région de la Chaudière-Appalaches	2412	40.0	36.7 to 43.2	Lower	Same
Région de Laval	2413	46.4	43.9 to 48.9	Lower	Higher
Région de Lanaudière	2414	33.5	29.8 to 37.2	Lower	Lower
Région des Laurentides	2415	39.1	36.2 to 42.0	Lower	Lower
Région de la Montérégie	2416	41.9	39.1 to 44.6	Lower	Same
Ontario	3500	70.6	69.9 to 71.2	Higher	...
District of Algoma Health Unit	3526	65.7	61.3 to 70.1	Same	Lower
Brant County Health Unit	3527	68.3	64.0 to 72.5	Same	Same
Durham Regional Health Unit	3530	74.1	71.2 to 77.1	Higher	Higher
Elgin-St Thomas Health Unit	3531	60.7	55.3 to 66.2	Same	Lower
Grey Bruce Health Unit	3533	69.5	65.4 to 73.6	Higher	Same
Haldimand-Norfolk Health Unit	3534	60.7	55.8 to 65.7	Same	Lower
Haliburton, Kawartha, Pine Ridge District Health Unit	3535	65.9	61.7 to 70.1	Same	Lower
Halton Regional Health Unit	3536	75.1	72.0 to 78.3	Higher	Higher
City of Hamilton Health Unit	3537	67.2	64.7 to 69.7	Higher	Lower
Hastings and Prince Edward Counties Health Unit	3538	65.5	61.0 to 70.1	Same	Lower

	Region code	%	95% confidence interval	Significantly higher or lower (p < 0.05) than:	
				Canada	Province/Territory
Huron County Health Unit	3539	67.0	61.9 to 72.1	Same	Same
Chatham-Kent Health Unit	3540	66.7	62.8 to 70.7	Same	Same
Kingston, Frontenac and Lennox and Addington Health Unit	3541	68.6	65.0 to 72.2	Higher	Same
Lambton Health Unit	3542	65.1	60.7 to 69.5	Same	Lower
Leeds, Grenville and Lanark District Health Unit	3543	62.8	59.1 to 66.6	Same	Lower
Middlesex-London Health Unit	3544	74.8	72.0 to 77.5	Higher	Higher
Niagara Regional Area Health Unit	3546	69.2	66.1 to 72.4	Higher	Same
North Bay Parry Sound District Health Unit	3547	62.8	58.6 to 67.0	Same	Lower
Northwestern Health Unit	3549	64.6	58.6 to 70.6	Same	Same
City of Ottawa Health Unit	3551	71.6	69.1 to 74.0	Higher	Same
Oxford County Health Unit	3552	67.2	63.2 to 71.3	Same	Same
Peel Regional Health Unit	3553	75.3	72.8 to 77.7	Higher	Higher
Perth District Health Unit	3554	71.7	66.9 to 76.5	Higher	Same
Peterborough County-City Health Unit	3555	65.5	60.9 to 70.0	Same	Lower
Porcupine Health Unit	3556	56.8	51.8 to 61.7	Lower	Lower
Renfrew County and District Health Unit	3557	63.1	58.3 to 67.9	Same	Lower
Eastern Ontario Health Unit	3558	56.8	52.8 to 60.9	Lower	Lower
Simcoe Muskoka District Health Unit	3560	73.7	70.7 to 76.7	Higher	Higher
Sudbury and District Health Unit	3561	63.4	59.5 to 67.2	Same	Lower
Thunder Bay District Health Unit	3562	63.2	59.4 to 67.1	Same	Lower
Timiskaming Health Unit	3563	51.2	46.2 to 56.1	Lower	Lower
Waterloo Health Unit	3565	73.1	70.3 to 76.0	Higher	Same
Wellington-Dufferin-Guelph Health Unit	3566	74.4	70.9 to 77.8	Higher	Higher
Windsor-Essex County Health Unit	3568	72.7	69.7 to 75.6	Higher	Same
York Regional Health Unit	3570	74.9	72.3 to 77.5	Higher	Higher
City of Toronto Health Unit	3595	70.4	68.3 to 72.4	Higher	Same
Manitoba	4600	67.5	65.8 to 69.2	Higher	...
Winnipeg Regional Health Authority	4610	69.5	67.0 to 72.1	Higher	Higher
Brandon Regional Health Authority	4615	67.7	62.8 to 72.6	Same	Same
North Eastman Regional Health Authority	4620	64.6	59.2 to 70.1	Same	Same
South Eastman Regional Health Authority	4625	70.3	65.8 to 74.9	Higher	Same
Interlake Regional Health Authority	4630	64.5	59.0 to 70.0	Same	Same
Central Regional Health Authority	4640	67.5	62.6 to 72.5	Same	Same
Assiniboine Regional Health Authority	4645	59.9	54.6 to 65.2	Same	Lower
Parkland Regional Health Authority	4660	58.4	51.8 to 65.0	Same	Lower
Norman Regional Health Authority	4670	58.1	52.6 to 63.7	Lower	Lower
Burntwood/Churchill	4685	57.2	51.3 to 63.0	Lower	Lower
Saskatchewan	4700	64.3	62.8 to 65.9	Same	...
Sun Country Regional Health Authority	4701	56.1	51.0 to 61.2	Lower	Lower
Five Hills Regional Health Authority	4702	61.7	56.9 to 66.5	Same	Same
Cypress Regional Health Authority	4703	58.1	52.9 to 63.3	Lower	Lower
Regina Qu'Appelle Regional Health Authority	4704	68.3	64.8 to 71.8	Higher	Higher
Sunrise Regional Health Authority	4705	55.2	50.3 to 60.0	Lower	Lower
Saskatoon Regional Health Authority	4706	70.0	66.8 to 73.2	Higher	Higher
Heartland Regional Health Authority	4707	54.7	49.4 to 59.9	Lower	Lower
Kelsey Trail Regional Health Authority	4708	62.1	56.4 to 67.7	Same	Same
Prince Albert Parkland Regional Health Authority	4709	62.8	56.8 to 68.8	Same	Same
Prairie North Regional Health Authority	4710	54.5	48.7 to 60.2	Lower	Lower
Mamawetan/Keewatin/Athabasca	4714	59.9	54.0 to 65.8	Same	Same
Alberta	4800	71.6	70.4 to 72.7	Higher	...
Chinook Regional Health Authority	4820	78.0	74.5 to 81.5	Higher	Higher
Palliser Health Region	4821	64.8	60.1 to 69.5	Same	Lower
Calgary Health Region	4822	76.1	74.1 to 78.2	Higher	Higher
David Thompson Regional Health Authority	4823	64.5	61.1 to 68.0	Same	Lower
East Central Health	4824	61.5	57.1 to 65.9	Same	Lower
Capital Health	4825	72.7	70.4 to 74.9	Higher	Same
Aspen Regional Health Authority	4826	60.1	55.7 to 64.6	Same	Lower
Peace Country Health	4827	62.0	57.8 to 66.3	Same	Lower
Northern Lights Health Region	4828	63.4	58.6 to 68.2	Same	Lower

	Region code	%	95% confidence interval	Significantly higher or lower (p < 0.05) than:	
				Canada	Province/Territory
British Columbia	5900	76.6	75.7 to 77.6	Higher	...
East Kootenay Health Service Delivery Area	5911	72.7	67.5 to 77.9	Higher	Same
Kootenay-Boundary Health Service Delivery Area	5912	72.9	67.3 to 78.5	Higher	Same
Okanagan Health Service Delivery Area	5913	79.7	76.5 to 82.9	Higher	Higher
Thompson/Cariboo Health Service Delivery Area	5914	74.7	70.8 to 78.7	Higher	Same
Fraser East Health Service Delivery Area	5921	80.9	77.2 to 84.5	Higher	Higher
Fraser North Health Service Delivery Area	5922	75.0	72.0 to 78.0	Higher	Same
Fraser South Health Service Delivery Area	5923	79.6	76.8 to 82.4	Higher	Higher
Richmond Health Service Delivery Area	5931	77.8	74.2 to 81.3	Higher	Same
Vancouver Health Service Delivery Area	5932	71.0	67.7 to 74.3	Higher	Lower
North Shore/Coast Garibaldi Health Service Delivery Area	5933	78.9	75.8 to 82.1	Higher	Same
South Vancouver Island Health Service Delivery Area	5941	81.7	79.4 to 84.0	Higher	Higher
Central Vancouver Island Health Service Delivery Area	5942	79.8	76.4 to 83.1	Higher	Same
North Vancouver Island Health Service Delivery Area	5943	79.2	73.8 to 84.6	Higher	Same
Northwest Health Service Delivery Area	5951	74.2	69.7 to 78.8	Higher	Same
Northern Interior Health Service Delivery Area	5952	68.1	63.1 to 73.0	Same	Lower
Northeast Health Service Delivery Area	5953	65.4	59.6 to 71.2	Same	Lower
Yukon Territory	6000	62.2	57.4 to 67.0	Same	...
Northwest Territories	6100	63.5	59.5 to 67.5	Same	...
Nunavut	6200	67.9	61.6 to 74.2	Same	...

... Not applicable

Source: 2005 Canadian Community Health Survey

Table C

Percentage reporting complete smoking restrictions at work, by province/territory and health region, employed population aged 15 to 75, Canada, 2005

	Region code	%	95% confidence interval	Significantly higher or lower (p < 0.05) than:	
				Canada	Province/Territory
Canada		68.2	67.7 to 68.7	...	...
Newfoundland and Labrador	1000	69.1	66.2 to 72.0	Same	...
Eastern Regional Integrated Health Authority	1011	71.7	67.9 to 75.4	Same	Higher
Central Regional Integrated Health Authority	1012	62.1	54.5 to 69.8	Same	Same
Western Regional Integrated Health Authority	1013	65.0	58.4 to 71.6	Same	Same
Labrador-Grenfell Regional Integrated Health Authority	1014	70.7	64.6 to 76.8	Same	Same
Prince Edward Island	1100	66.7	62.9 to 70.6	Same	...
West Prince	1101	50.7	40.6 to 60.7	Lower	Lower
East Prince	1102	66.0	58.4 to 73.7	Same	Same
Queens	1103	70.3	64.2 to 76.5	Same	Same
Kings	1104	64.8	57.1 to 72.4	Same	Same
Nova Scotia	1200	63.7	61.2 to 66.1	Lower	...
Zone 1	1201	48.6	43.5 to 53.6	Lower	Lower
Zone 2	1202	57.5	50.0 to 65.1	Lower	Same
Zone 3	1203	57.4	51.5 to 63.2	Lower	Lower
Zone 4	1204	64.2	58.0 to 70.4	Same	Same
Zone 5	1205	66.5	60.1 to 72.9	Same	Same
Zone 6	1206	69.6	65.6 to 73.7	Same	Higher
New Brunswick	1300	67.4	64.9 to 69.8	Same	...
Region 1	1301	60.2	54.6 to 65.8	Lower	Lower
Region 2	1302	70.3	65.4 to 75.1	Same	Same
Region 3	1303	64.5	59.5 to 69.5	Same	Same
Region 4	1304	74.1	67.0 to 81.2	Same	Same
Region 5	1305	74.4	64.7 to 84.1	Same	Same
Region 6	1306	75.4	69.6 to 81.3	Higher	Higher
Region 7	1307	75.2	67.4 to 82.9	Same	Higher
Quebec	2400	66.5	65.4 to 67.6	Lower	...
Région du Bas-Saint-Laurent	2401	61.9	58.6 to 65.3	Lower	Lower
Région du Saguenay - Lac-Saint-Jean	2402	64.3	59.2 to 69.4	Same	Same
Région de la Capitale Nationale	2403	70.7	67.2 to 74.2	Same	Higher
Région de la Mauricie et du Centre-du-Québec	2404	57.8	53.2 to 62.3	Lower	Lower
Région de l'Estrie	2405	56.0	50.6 to 61.4	Lower	Lower
Région de Montréal	2406	68.8	66.6 to 71.0	Same	Higher
Région de l'Outaouais	2407	69.5	65.3 to 73.6	Same	Same
Région de l'Abitibi-Témiscamingue	2408	59.5	54.7 to 64.3	Lower	Lower
Région de la Côte-Nord	2409	65.0	60.0 to 70.1	Same	Same
Région du Nord-du-Québec	2410	52.0	45.5 to 58.4	Lower	Lower
Région de la Gaspésie - Îles-de-la-Madeleine	2411	70.9	65.4 to 76.5	Same	Same
Région de la Chaudière-Appalaches	2412	64.1	59.9 to 68.2	Same	Same
Région de Laval	2413	70.1	67.1 to 73.2	Same	Higher
Région de Lanaudière	2414	62.5	57.6 to 67.3	Lower	Same
Région des Laurentides	2415	65.4	61.0 to 69.9	Same	Same
Région de la Montérégie	2416	68.8	65.4 to 72.1	Same	Same
Ontario	3500	70.5	69.7 to 71.3	Higher	...
District of Algoma Health Unit	3526	64.6	58.1 to 71.0	Same	Same
Brant County Health Unit	3527	61.8	55.8 to 67.8	Lower	Lower
Durham Regional Health Unit	3530	69.2	65.2 to 73.2	Same	Same
Elgin-St Thomas Health Unit	3531	55.9	50.0 to 61.8	Lower	Lower
Grey Bruce Health Unit	3533	66.3	60.3 to 72.3	Same	Same
Haldimand-Norfolk Health Unit	3534	54.0	47.5 to 60.5	Lower	Lower
Haliburton, Kawartha, Pine Ridge District Health Unit	3535	59.0	53.1 to 64.9	Lower	Lower
Halton Regional Health Unit	3536	74.5	70.1 to 79.0	Higher	Same
City of Hamilton Health Unit	3537	63.4	59.6 to 67.2	Lower	Lower
Hastings and Prince Edward Counties Health Unit	3538	55.5	49.6 to 61.5	Lower	Lower

	Region code	%	95% confidence interval	Significantly higher or lower (p < 0.05) than:	
				Canada	Province/Territory
Huron County Health Unit	3539	67.0	60.4 to 73.5	Same	Same
Chatham-Kent Health Unit	3540	64.1	57.8 to 70.4	Same	Lower
Kingston, Frontenac and Lennox and Addington Health Unit	3541	64.4	59.7 to 69.1	Same	Lower
Lambton Health Unit	3542	56.6	49.5 to 63.7	Lower	Lower
Leeds, Grenville and Lanark District Health Unit	3543	61.6	56.1 to 67.2	Lower	Lower
Middlesex-London Health Unit	3544	72.3	68.3 to 76.3	Higher	Same
Niagara Regional Area Health Unit	3546	59.4	54.8 to 64.1	Lower	Lower
North Bay Parry Sound District Health Unit	3547	72.0	66.5 to 77.4	Same	Same
Northwestern Health Unit	3549	62.2	56.4 to 67.9	Lower	Lower
City of Ottawa Health Unit	3551	78.8	75.9 to 81.7	Higher	Higher
Oxford County Health Unit	3552	61.4	55.1 to 67.7	Lower	Lower
Peel Regional Health Unit	3553	73.0	69.8 to 76.1	Higher	Same
Perth District Health Unit	3554	62.8	57.3 to 68.3	Same	Lower
Peterborough County-City Health Unit	3555	65.0	60.0 to 70.0	Same	Lower
Porcupine Health Unit	3556	68.7	62.6 to 74.9	Same	Same
Renfrew County and District Health Unit	3557	61.1	54.9 to 67.3	Lower	Lower
Eastern Ontario Health Unit	3558	65.4	59.4 to 71.4	Same	Same
Simcoe Muskoka District Health Unit	3560	62.2	58.0 to 66.3	Lower	Lower
Sudbury and District Health Unit	3561	69.7	64.8 to 74.6	Same	Same
Thunder Bay District Health Unit	3562	72.8	68.1 to 77.5	Same	Same
Timiskaming Health Unit	3563	61.3	51.5 to 71.1	Same	Same
Waterloo Health Unit	3565	65.8	61.7 to 69.9	Same	Lower
Wellington-Dufferin-Guelph Health Unit	3566	66.2	61.6 to 70.7	Same	Same
Windsor-Essex County Health Unit	3568	65.3	61.0 to 69.7	Same	Lower
York Regional Health Unit	3570	77.9	74.8 to 81.1	Higher	Higher
City of Toronto Health Unit	3595	77.5	75.1 to 79.9	Higher	Higher
Manitoba	4600	76.5	74.5 to 78.5	Higher	...
Winnipeg Regional Health Authority	4610	81.1	78.0 to 84.2	Higher	Higher
Brandon Regional Health Authority	4615	73.5	67.6 to 79.4	Same	Same
North Eastman Regional Health Authority	4620	70.0	61.1 to 78.9	Same	Same
South Eastman Regional Health Authority	4625	70.4	64.1 to 76.8	Same	Same
Interlake Regional Health Authority	4630	71.5	64.7 to 78.2	Same	Same
Central Regional Health Authority	4640	68.0	62.8 to 73.1	Same	Lower
Assiniboine Regional Health Authority	4645	63.7	55.1 to 72.4	Same	Lower
Parkland Regional Health Authority	4660	65.1	57.1 to 73.0	Same	Lower
Norman Regional Health Authority	4670	73.2	66.5 to 79.8	Same	Same
Burntwood/Churchill	4685	76.8	70.3 to 83.3	Higher	Same
Saskatchewan	4700	65.2	63.2 to 67.1	Lower	...
Sun Country Regional Health Authority	4701	58.3	52.4 to 64.2	Lower	Lower
Five Hills Regional Health Authority	4702	56.1	47.9 to 64.4	Lower	Lower
Cypress Regional Health Authority	4703	58.1	51.3 to 64.8	Lower	Lower
Regina Qu'Appelle Regional Health Authority	4704	76.7	73.0 to 80.4	Higher	Higher
Sunrise Regional Health Authority	4705	54.4	46.6 to 62.3	Lower	Lower
Saskatoon Regional Health Authority	4706	65.9	61.8 to 69.9	Same	Same
Heartland Regional Health Authority	4707	47.8	40.4 to 55.2	Lower	Lower
Kelsey Trail Regional Health Authority	4708	59.0	50.7 to 67.3	Lower	Same
Prince Albert Parkland Regional Health Authority	4709	64.8	58.6 to 71.1	Same	Same
Prairie North Regional Health Authority	4710	55.7	48.0 to 63.5	Lower	Lower
Mamawetan/Keewatin/Athabasca	4714	68.9	61.1 to 76.7	Same	Same
Alberta	4800	61.3	59.7 to 63.0	Lower	...
Chinook Regional Health Authority	4820	62.1	56.7 to 67.4	Lower	Same
Palliser Health Region	4821	47.0	41.5 to 52.5	Lower	Lower
Calgary Health Region	4822	67.2	64.3 to 70.1	Same	Higher
David Thompson Regional Health Authority	4823	51.4	47.1 to 55.8	Lower	Lower
East Central Health	4824	48.6	42.8 to 54.4	Lower	Lower
Capital Health	4825	65.8	62.3 to 69.3	Same	Higher
Aspen Regional Health Authority	4826	45.4	39.8 to 50.9	Lower	Lower
Peace Country Health	4827	46.6	41.7 to 51.4	Lower	Lower
Northern Lights Health Region	4828	41.2	35.1 to 47.3	Lower	Lower

	Region code	%	95% confidence interval	Significantly higher or lower (p < 0.05) than:	
				Canada	Province/Territory
British Columbia	5900	68.9	67.5 to 70.3	Same	...
East Kootenay Health Service Delivery Area	5911	50.5	41.7 to 59.4	Lower	Lower
Kootenay-Boundary Health Service Delivery Area	5912	62.6	53.8 to 71.5	Same	Same
Okanagan Health Service Delivery Area	5913	63.3	57.7 to 68.8	Same	Lower
Thompson/Cariboo Health Service Delivery Area	5914	58.6	52.0 to 65.2	Lower	Lower
Fraser East Health Service Delivery Area	5921	61.6	56.1 to 67.2	Lower	Lower
Fraser North Health Service Delivery Area	5922	71.4	67.6 to 75.1	Same	Same
Fraser South Health Service Delivery Area	5923	67.9	63.7 to 72.0	Same	Same
Richmond Health Service Delivery Area	5931	79.3	74.4 to 84.1	Higher	Higher
Vancouver Health Service Delivery Area	5932	80.5	77.1 to 83.9	Higher	Higher
North Shore/Coast Garibaldi Health Service Delivery Area	5933	76.0	71.6 to 80.4	Higher	Higher
South Vancouver Island Health Service Delivery Area	5941	74.2	70.2 to 78.2	Higher	Higher
Central Vancouver Island Health Service Delivery Area	5942	56.6	51.3 to 62.0	Lower	Lower
North Vancouver Island Health Service Delivery Area	5943	66.3	58.0 to 74.6	Same	Same
Northwest Health Service Delivery Area	5951	66.5	58.8 to 74.2	Same	Same
Northern Interior Health Service Delivery Area	5952	59.6	53.2 to 66.1	Lower	Lower
Northeast Health Service Delivery Area	5953	54.0	46.8 to 61.2	Lower	Lower
Yukon Territory	6000	79.3	73.9 to 84.7	Higher	...
Northwest Territories	6100	82.9	78.5 to 87.3	Higher	...
Nunavut	6200	91.6	88.9 to 94.4	Higher	...

... Not applicable

Source: 2005 Canadian Community Health Survey

Table D

Percentage of non-smokers regularly exposed to second-hand smoke in public places, by province/territory and health region, household population aged 12 or older, Canada, 2005

	Region code	%	95% confidence interval	Significantly higher or lower (p < 0.05) than:	
				Canada	Province/Territory
Canada		14.8	14.4 to 15.2	...	...
Newfoundland and Labrador	1000	10.1	8.5 to 11.7	Lower	...
Eastern Regional Integrated Health Authority	1011	9.8	7.6 to 12.1	Lower	Same
Central Regional Integrated Health Authority	1012	10.3	7.0 to 13.5	Lower	Same
Western Regional Integrated Health Authority	1013	11.1	7.8 to 14.4	Lower	Same
Labrador-Grenfell Regional Integrated Health Authority	1014	9.8	6.7 to 13.0	Lower	Same
Prince Edward Island	1100	5.6	4.1 to 7.2	Lower	...
West Prince	1101	6.6 ^E	2.6 to 10.5	Lower	Same
East Prince	1102	4.5 ^E	2.2 to 6.8	Lower	Same
Queens	1103	5.9 ^E	3.3 to 8.4	Lower	Same
Kings	1104	5.9 ^E	2.5 to 9.4	Lower	Same
Nova Scotia	1200	9.2	8.0 to 10.4	Lower	...
Zone 1	1201	9.9	6.8 to 12.9	Lower	Same
Zone 2	1202	8.9	6.4 to 11.4	Lower	Same
Zone 3	1203	12.1	8.5 to 15.7	Same	Same
Zone 4	1204	6.0 ^E	3.3 to 8.7	Lower	Lower
Zone 5	1205	5.5 ^E	3.4 to 7.6	Lower	Lower
Zone 6	1206	10.2	8.0 to 12.5	Lower	Same
New Brunswick	1300	6.8	5.6 to 8.0	Lower	...
Region 1	1301	7.1 ^E	4.3 to 9.9	Lower	Same
Region 2	1302	6.0 ^E	3.6 to 8.3	Lower	Same
Region 3	1303	7.9 ^E	5.1 to 10.7	Lower	Same
Region 4	1304	7.6 ^E	4.4 to 10.8	Lower	Same
Region 5	1305	9.8 ^E	6.0 to 13.6	Lower	Same
Region 6	1306	6.3 ^E	3.7 to 9.0	Lower	Same
Region 7	1307	F	F	Lower	Lower
Quebec	2400	22.9	22.1 to 23.7	Higher	...
Région du Bas-Saint-Laurent	2401	26.3	24.0 to 28.6	Higher	Higher
Région du Saguenay - Lac-Saint-Jean	2402	23.4	19.7 to 27.1	Higher	Same
Région de la Capitale Nationale	2403	21.2	18.2 to 24.1	Higher	Same
Région de la Mauricie et du Centre-du-Québec	2404	24.5	21.3 to 27.8	Higher	Same
Région de l'Estrie	2405	19.4	16.1 to 22.7	Higher	Lower
Région de Montréal	2406	24.6	22.8 to 26.5	Higher	Higher
Région de l'Outaouais	2407	28.9	25.0 to 32.7	Higher	Higher
Région de l'Abitibi-Témiscamingue	2408	31.4	27.1 to 35.7	Higher	Higher
Région de la Côte-Nord	2409	20.0	16.3 to 23.7	Higher	Same
Région du Nord-du-Québec	2410	29.8	25.1 to 34.5	Higher	Higher
Région de la Gaspésie - Îles-de-la-Madeleine	2411	20.1	16.0 to 24.2	Higher	Same
Région de la Chaudière-Appalaches	2412	19.8	16.6 to 22.9	Higher	Lower
Région de Laval	2413	24.8	22.3 to 27.4	Higher	Same
Région de Lanaudière	2414	23.5	19.7 to 27.3	Higher	Same
Région des Laurentides	2415	21.3	18.3 to 24.3	Higher	Same
Région de la Montérégie	2416	19.9	17.6 to 22.3	Higher	Lower
Ontario	3500	13.1	12.5 to 13.6	Lower	...
District of Algoma Health Unit	3526	13.7	10.2 to 17.1	Same	Same
Brant County Health Unit	3527	12.4	8.8 to 16.0	Same	Same
Durham Regional Health Unit	3530	11.6	9.0 to 14.1	Lower	Same
Elgin-St Thomas Health Unit	3531	17.0	12.3 to 21.7	Same	Same
Grey Bruce Health Unit	3533	9.9	7.1 to 12.7	Lower	Lower
Haldimand-Norfolk Health Unit	3534	16.0	12.1 to 19.9	Same	Same
Haliburton, Kawartha, Pine Ridge District Health Unit	3535	13.2	9.5 to 16.8	Same	Same
Halton Regional Health Unit	3536	13.8	11.0 to 16.7	Same	Same
City of Hamilton Health Unit	3537	11.9	9.5 to 14.4	Lower	Same
Hastings and Prince Edward Counties Health Unit	3538	11.0	7.5 to 14.4	Lower	Same
Huron County Health Unit	3539	9.4 ^E	5.8 to 13.1	Lower	Same

	Region code	%	95% confidence interval	Significantly higher or lower (p < 0.05) than:	
				Canada	Province/Territory
Chatham-Kent Health Unit	3540	6.6 ^E	4.3 to 9.0	Lower	Lower
Kingston, Frontenac and Lennox and Addington Health Unit	3541	11.6	8.5 to 14.8	Same	Same
Lambton Health Unit	3542	6.5 ^E	3.9 to 9.0	Lower	Lower
Leeds, Grenville and Lanark District Health Unit	3543	14.3	11.2 to 17.4	Same	Same
Middlesex-London Health Unit	3544	13.1	10 to 16.2	Same	Same
Niagara Regional Area Health Unit	3546	12.8	10.3 to 15.3	Same	Same
North Bay Parry Sound District Health Unit	3547	14.6	11.0 to 18.2	Same	Same
Northwestern Health Unit	3549	16.4	12.1 to 20.7	Same	Same
City of Ottawa Health Unit	3551	13.9	11.7 to 16.1	Same	Same
Oxford County Health Unit	3552	10.7	7.2 to 14.1	Lower	Same
Peel Regional Health Unit	3553	17.5	15.2 to 19.7	Higher	Higher
Perth District Health Unit	3554	8.5 ^E	4.1 to 12.8	Lower	Lower
Peterborough County-City Health Unit	3555	14.1	10.5 to 17.7	Same	Same
Porcupine Health Unit	3556	15.6	11.9 to 19.4	Same	Same
Renfrew County and District Health Unit	3557	13.8	10.3 to 17.3	Same	Same
Eastern Ontario Health Unit	3558	14.3	10.6 to 18.0	Same	Same
Simcoe Muskoka District Health Unit	3560	14.0	11.4 to 16.7	Same	Same
Sudbury and District Health Unit	3561	10.4	7.6 to 13.3	Lower	Same
Thunder Bay District Health Unit	3562	10.5	7.2 to 13.8	Lower	Same
Timiskaming Health Unit	3563	19.3 ^E	10.2 to 28.4	Same	Same
Waterloo Health Unit	3565	9.2	7.1 to 11.3	Lower	Lower
Wellington-Dufferin-Guelph Health Unit	3566	14.1	10.9 to 17.3	Same	Same
Windsor-Essex County Health Unit	3568	19.8	16.7 to 22.8	Higher	Higher
York Regional Health Unit	3570	14.3	11.8 to 16.9	Same	Same
City of Toronto Health Unit	3595	11.1	9.5 to 12.7	Lower	Lower
Manitoba	4600	6.1	4.9 to 7.2	Lower	...
Winnipeg Regional Health Authority	4610	6.6	4.9 to 8.3	Lower	Same
Brandon Regional Health Authority	4615	5.6 ^E	2.9 to 8.4	Lower	Same
North Eastman Regional Health Authority	4620	4.0 ^E	1.5 to 6.5	Lower	Same
South Eastman Regional Health Authority	4625	3.4 ^E	1.5 to 5.2	Lower	Lower
Interlake Regional Health Authority	4630	5.2 ^E	2.6 to 7.9	Lower	Same
Central Regional Health Authority	4640	5.0 ^E	2.6 to 7.3	Lower	Same
Assiniboine Regional Health Authority	4645	5.9 ^E	3.2 to 8.7	Lower	Same
Parkland Regional Health Authority	4660	F	F	Lower	Same
Norman Regional Health Authority	4670	F	F	Lower	Same
Burntwood/Churchill	4685	9.5 ^E	4.2 to 14.7	Lower	Same
Saskatchewan	4700	9.8	8.5 to 11.1	Lower	...
Sun Country Regional Health Authority	4701	10.9	7.4 to 14.4	Lower	Same
Five Hills Regional Health Authority	4702	8.7 ^E	5.2 to 12.2	Lower	Same
Cypress Regional Health Authority	4703	7.6 ^E	4.4 to 10.8	Lower	Same
Regina Qu'Appelle Regional Health Authority	4704	10.5	7.9 to 13.1	Lower	Same
Sunrise Regional Health Authority	4705	9.7 ^E	6.0 to 13.5	Lower	Same
Saskatoon Regional Health Authority	4706	7.9 ^E	5.2 to 10.6	Lower	Same
Heartland Regional Health Authority	4707	10.2 ^E	5.3 to 15.1	Same	Same
Kelsey Trail Regional Health Authority	4708	4.8 ^E	1.7 to 7.9	Lower	Lower
Prince Albert Parkland Regional Health Authority	4709	15.9 ^E	9.2 to 22.6	Same	Same
Prairie North Regional Health Authority	4710	12.4 ^E	7.4 to 17.4	Same	Same
Mamawetan/Keewatin/Athabasca	4714	22.9	16.5 to 29.4	Higher	Higher
Alberta	4800	18.2	16.9 to 19.5	Higher	...
Chinook Regional Health Authority	4820	16.0	12.2 to 19.7	Same	Same
Palliser Health Region	4821	18.4	13.2 to 23.5	Same	Same
Calgary Health Region	4822	20.3	17.9 to 22.7	Higher	Higher
David Thompson Regional Health Authority	4823	16.9	13.8 to 20.1	Same	Same
East Central Health	4824	20.2	15.8 to 24.5	Higher	Same
Capital Health	4825	15.1	12.6 to 17.6	Same	Lower
Aspen Regional Health Authority	4826	21.4	17.1 to 25.6	Higher	Same
Peace Country Health	4827	19.6	15.4 to 23.8	Higher	Same
Northern Lights Health Region	4828	24.6	18.8 to 30.3	Higher	Higher

	Region code	%	95% confidence interval	Significantly higher or lower (p < 0.05) than:	
				Canada	Province/Territory
British Columbia	5900	10.5	9.7 to 11.3	Lower	...
East Kootenay Health Service Delivery Area	5911	13.5 ^E	8.5 to 18.6	Same	Same
Kootenay-Boundary Health Service Delivery Area	5912	9.8	6.8 to 12.8	Lower	Same
Okanagan Health Service Delivery Area	5913	10.5	8.0 to 13.0	Lower	Same
Thompson/Cariboo Health Service Delivery Area	5914	11.0	7.5 to 14.6	Lower	Same
Fraser East Health Service Delivery Area	5921	10.3	7.7 to 12.9	Lower	Same
Fraser North Health Service Delivery Area	5922	10.9	8.6 to 13.2	Lower	Same
Fraser South Health Service Delivery Area	5923	13.8	11.3 to 16.3	Same	Higher
Richmond Health Service Delivery Area	5931	7.6 ^E	4.8 to 10.4	Lower	Lower
Vancouver Health Service Delivery Area	5932	11.2	9.0 to 13.4	Lower	Same
North Shore/Coast Garibaldi Health Service Delivery Area	5933	9.8	7.4 to 12.2	Lower	Same
South Vancouver Island Health Service Delivery Area	5941	7.2	5.1 to 9.4	Lower	Lower
Central Vancouver Island Health Service Delivery Area	5942	7.7 ^E	5.1 to 10.3	Lower	Lower
North Vancouver Island Health Service Delivery Area	5943	9.3 ^E	4.3 to 14.2	Same	Same
Northwest Health Service Delivery Area	5951	7.5 ^E	4.3 to 10.7	Lower	Same
Northern Interior Health Service Delivery Area	5952	9.1 ^E	6.0 to 12.1	Lower	Same
Northeast Health Service Delivery Area	5953	13.7 ^E	8.4 to 19.0	Same	Same
Yukon Territory	6000	7.9^E	4.7 to 11.1	Lower	...
Northwest Territories	6100	13.9	10.7 to 17.1	Same	...
Nunavut	6200	11.1^E	5.0 to 17.2	Same	...

^E Coefficient of variation 16.6% to 33.3% (interpret with caution)

^F Coefficient of variation greater than 33.3% (suppressed because of extreme sampling variability)

... Not applicable

Source: 2005 Canadian Community Health Survey