# Condom use at last sexual intercourse among unmarried, not living common-law 20- to 34-year-old Canadian young adults

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Abstract: This study utilized data from the Canadian Community Health Surveys (CCHS) to examine condom use among unmarried, not living common-law (UMNCL) Canadians aged 20-34 years. Males (59.9%) were more likely than females (49.9%) to report using a condom at last sexual intercourse. Condom use at last intercourse was more likely among younger respondents aged 20-24 (63.7% males; 53.8% females) than those aged 25-29 (56.0% males; 47.1 females) or 30-34 (54.7% males; 42.2% females). Over a third (35.8%) of those who reported having more than one intercourse partner in the previous 12 months and among those who reported three or four or more partners about 30% of males and nearly 40% of females reported not using a condom at last intercourse. Among all males, the percentage that used a condom at last intercourse was significantly greater than the national average in Prince Edward Island, Ontario, and the territories, and significantly lower in Quebec. Among females, condom use was significantly higher in Ontario and significantly lower in New Brunswick and Quebec. Multivariate analysis indicated that UMNCL females aged 20-34 who lived in rural areas were less likely than their urban counterparts to have used a condom at last intercourse. Those who reported having first intercourse at age 13 or younger were significantly less likely to report using a condom at last intercourse than those whose first intercourse occurred at age 14 or older. Overall, the findings indicate that large numbers of single young adult Canadians are at elevated risk for sexually transmitted infection (STI) including human immunodeficiency virus (HIV).

## Introduction

This article presents data on condom use in a large sample of 20- to 34-year-old Canadian young adults who were unmarried and not living common-law (UMNCL). The findings are based on pooled data from the nationally representative Canadian Community Health Surveys conducted in 2003 and 2005. There are a number of reasons for investigating condom use in this group of Canadians. For example, whereas most of the detailed Canadian research on sexual risk behaviour and condom use has focused on youth (e.g., Boyce, Doherty-Poirier, Mackinnon et al., 2006; Rotermann, 2008; Saewyc, Taylor, Homma, & Ogilvie, 2008) and on men who have sex with men (MSM) (Myers, Allman, Maxwell et al., 2004; Strathdee et al., 2000), relatively little is known about the sexual risk and condom use behaviours of the general adult population. The lack of such research is a particular concern in the case of young adults in their twenties and early thirties, many of whom are likely to be at higher risk for sexually transmitted infections (STI) including human immunodeficiency virus (HIV).

In addition, the research that is available on the sexual behaviour and condom use of UMNCL Canadian young adults has limitations. For example, although the *HIV/AIDS Attitudinal Tracking Survey* (EKOS, 2006) collected information on condom use among Canadian adults it did not specifically analyze condom use by marital or cohabitation status. The 2002 *Canadian Contraception Study* (CCS 2002) (Fisher, Boroditsky, & Morris, 2004) did analyze condom use by marital status and age but included along with individuals who were unmarried those who were living with a partner. In addition, the CCS studied only women. The CCS 2002 data indicated that 35% of unmarried 18- to 34-year-old women who had ever had intercourse were currently using

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condoms "as a method of birth control"; the comparable value among women aged 35- 44 was 11%. It should be noted that the percentage of women who responded, "Not applicable, I am not having intercourse" was lower in the 18-34 age group (11%) than in the 35-44 age group (26%) (Fisher, Boroditsky, & Morris, p. 583).

Published population-based research from the United States (U.S.) also provides only limited data on sexual and condom use behaviours measured specifically by marital/cohabitation status. For example, Anderson, Mosher and Chandra (2006) used data from the National Survey of Family Growth to determine the HIV risk of the U.S. population aged 15-44 but did not analyze condom use by marital or cohabitation status. The U.S. National Health and Social Life Survey (Laumann, Gagnon, Michael, & Michaels, 1994) assessed frequency of condom use with non-cohabitating partners among 18- to 59-year-olds and found that less that one-quarter reported "always" using condoms with primary partners whereas 36% reported "always" using condoms with secondary partners (p. 414).

De Visser, Smith, Rissel, Richters, and Grulich (2003) examined condom use among a representative sample of Australian men and women aged 16-59 and assessed frequency of condom use with "regular live-in partner," "regular non-live-in partner," and "casual partner(s)." De Visser et al. found that for all three partner categories, males were more likely to report "always" using condoms compared to women. Less than half of men (44.6%) and about one-third of women (35.4%) reported always using condoms with "casual partners."

Studies of age-related condom use among sexually active teens in Canada suggest an important reason for doing similar studies among unmarried 20- to 34-year-old Canadian young adults. Research on teens has found that condom use tends to decline with increasing age. That is, younger sexually active teens report higher rates of condom use at last sexual intercourse than do older teens. For example, an analysis of Canadian Community Health Survey data found that 81% of sexually active 15- to 17-year-olds reported using a condom at last intercourse compared to 70% for 18- to 19-year-olds (Rotermann, 2008). Data from the *B.C. Adolescent Health* Survey (Saewyc, Taylor, Homma & Ogilvie, 2008) also showed that condom use at last intercourse was higher among 15- to 16-year-olds than among those aged 17 and older. There has been no prior national research in Canada to determine whether young adults show a comparable decline in condom use at last intercourse with increasing age.

The primary objective of the present study was therefore to fill the significant gap in research on condom use in young adults by providing national data on the sexual and condom use behaviour of UMNCL Canadian males and females aged 20-34. A key secondary objective was to determine whether the inverse association between age and condom use at last intercourse seen in Canadian teens also persists among Canadian young adults aged 20-24, 25-29 and 30-34.

## Methods

### *The Canadian Community Health Survey (CCHS)*

The Canadian Community Health Survey (CCHS) began in September 2000 as part of an initiative to provide health information at regional and provincial levels. The CCHS consists of cross-sectional surveys conducted over one and two-year repeating cycles (Béland, 2002; www.statcan.gc.ca). It is designed to provide age and sex-specific representative estimates on the health status of Canadians, the factors associated with their health status, and on their use of health care services. The CCHS targets individuals aged 12 or older who live in private dwellings and covers 98% of the Canadian population (people living on Indian reserves, residents of institutions, and full-time members of the Canadian Armed Forces are not included). The provinces and territories across Canada differ considerably in the percentage of their population sampled in the CCHS. Furthermore, some subpopulations, for example youth and seniors, are over-sampled, to ensure useable numbers for making estimates. The data reported in the present study have thus been weighted. Sampling weights are used to account for the specifics of the survey design and for the fact that people with certain characteristics were over-or under-represented. The use of sampling weights is essential to account for unequal probabilities of selection and to reduce the potential

for bias resulting from differing response rates. However, the weighting of the sample does not mean that the data presented require any form of special interpretation.

### Sample size and response rates

The 2003 CCHS (cycle 2.1) was administered by telephone and in-person interviews from January 2003 to December 2003; the 2005 CCHS (cycle 3.1) was conducted from January 2005 to June 2005. In each cycle, about one third of the interviews were conducted in person and two thirds by telephone; the response rates were 81% for cycle 2.1 and 79% for cycle 3.1. A total of 135,573 individuals aged 12 or older responded to the 2003 survey; there were 132,947 respondents in 2005. More information about the CCHS is available in a published report (Béland 2002) and on Statistics Canada's website (www.statcan.gc.ca). The prevalence of condom use at last intercourse among currently sexually active, UMNCL 20- to 34-year-olds was estimated using combined data from cycles 2.1 and 3.1 of the CCHS.

### Measures

#### *Demographic information*

The CCHS collects wide-ranging demographic information from its respondents as well as measures a number of health-related variables. The common content used in all versions of the survey includes core questions about age, income, physical activity, smoking, and health care utilization. Optional content (selected provincially) varies from cycle to cycle, and may include questions about flu shots, medication use, blood pressure checks, etc. The sexual behaviours module was core content for cycles 2.1 (2003) and 3.1 (2005) but optional in 2007. For the purposes of this study, we restricted the analysis to respondents who identified as UMNCL based on their response to the following question: "What is your marital status? Are you married, living common law, widowed, separated, divorced, or single, never married?" UMNCL respondents included those who were single, never married, widowed, separated, or divorced.

#### *Variables and correlates of condom use*

For UMNCL participants aged 20 to 34, we examined condom use at last intercourse in relation to a number of variables available in the CCHS. Estimates of condom use at last intercourse among sexually active 20- to 34-year-olds were based on responses to the question: "Did you use a condom the last time you had intercourse?" The percentage of 20- to 34-year-olds who had had sexual intercourse at least once in their life and the percentage who were currently sexually active were based on "Yes"/"No" responses to the following questions: "Have you ever had sexual intercourse?" and "In the past 12 months, have you had sexual intercourse?"

A number of correlates of condom use were examined for this research. The respondents' ages were re-coded into three age groups: 20-24, 25-29 and 30-34 years. The percentage that had had sexual intercourse with more than one partner in the past 12 months was based on responses to a question that asked "With how many different partners" they had had intercourse in the 12 months prior to their survey interview. Responses were grouped into one, two, three, and four or more partner categories and a "more than one" category. Respondents were also asked "How old were you the first time" which was used to establish age at first intercourse. Responses were dichotomized into two groups, aged thirteen or younger and fourteen or older.

Another correlate of condom use was place of residence, classified as either urban (population concentration of at least 1,000 and at least 400 people per square kilometer) or rural (all other areas). Eleven dichotomous province/territory variables were created. Residents of the Yukon, Northwest territories and Nunavut were combined into one territory variable. Sexual identity was established from responses to the question "Do you consider yourself to be heterosexual (sexual relations with people of the opposite sex), homosexual, that is lesbian or gay (sexual relations with people of your own sex) or bisexual (sexual relations with people of both sexes)?" It is important to keep in mind that respondents who identified as gay, lesbian, or bisexual in the CCHS represent only those people willing to self-identify in an interview for a national survey. The degree of non-disclosure of sexual-orientation is not known.

Respondents' reports of their highest completed level of education were recoded into three categories: high

school or less, some post-secondary school, and completed post-secondary school. Adjusted household income was based on the number of people in the household and total household income from all sources in the 12 months before the interview. Households were considered low-income if there were 1 or 2 people in the household and their combined income was less than $15,000; for households of 3 or 4 members, incomes had to be below $20,000 and for households of 5 or more, incomes had to be under $30,000. Households with higher incomes were considered to be middle/high. Off-reserve aboriginal respondents were identified using answers to the following two questions: "Are you an Aboriginal person, that is, North American Indian, Métis, or Inuit?" or "People living in Canada come from many different cultural and racial backgrounds. Are you: Aboriginal (North American Indian, Métis, or Inuit?)" Respondents who identified themselves as an Aboriginal person or who indicated they had an Aboriginal background were considered to be an off-reserve Aboriginal person.

*Analysis*

In order to determine the quality of an estimate, the variance must be calculated. Because the CCHS uses a multi-stage survey design, there is no simple formula that can be used to calculate variance. Therefore, an approximation method was used. Coefficient of variation, standard deviation and confidence intervals were then calculated from the variance. The bootstrap re-sampling method used in the CCHS involves the selection of simple random samples known as replicates, and the calculation of the variation between the estimates from replicate to replicate. In each stratum, a simple random sample of (n-1) of the n clusters is selected with replacement to form a replicate. To obtain the bootstrap variance estimator, the point estimate for each of the replicates is calculated. The standard deviation of these estimates is the bootstrap variance estimator. Statistics Canada's Bootmac program was used to calculate the variances. Weighted data were analyzed using SAS Version 9.1 (SAS).

To ensure a sufficient sample size to allow for an analysis of condom use during the most recent sexual intercourse among UMNCL Canadians aged 20-34, by gender, data from the 2003 and 2005 CCHS (cycles 2.1 and 3.1) were combined. The sexual behaviours module was not selected by all provinces in 2007 and therefore the pooled 2003 and 2005 data sets were the most recent national data available. Pooling of the two cycles was feasible because their methodologies were similar, the wording of all questions used in the present analysis was identical, and preliminary analyses of the data suggested that condom use at last intercourse did not differ substantially between survey cycles. For this analysis, therefore, one dataset was created by combining data at the micro-data level and rescaling the sampling weights. More information about combining CCHS cycles is available in another published report (Thomas & Wannell, 2009).

Cross-tabulations were used to examine cross-sectional bivariate associations between condom use and selected covariates. These relationships were also examined using gender-specific multivariate logistic regression models that controlled for variables such as age, education, household income, and place of residence. Selection of control variables was guided by data availability and previous research on correlates of condom use. Only those respondents who reported having had sexual intercourse in the past year were included in the condom use analyses. Most of the analyses in this report were based on samples numbering 9,225 respondents from the 2003 CCHS and 10,230 from the 2005 CCHS all of whom were UMNCL 20 to 34 years old. Married/common-law individuals were not asked the condom use question. The number of UMNCL 20- to 34-year-olds (which includes separated, divorced, single, never married, widowed) who reported having had sexual intercourse in the year proceeding the survey interview was estimated at 2.4 million during the 2003-2005 period, based on the combined and weighted (rescaled) sample of 19,455 respondents. Approximately 50% of the pooled sample came from each cycle. Tests for statistical significance were set at the 0.05 level. To account for survey design effects, standard errors and coefficients of variation were estimated using the bootstrap technique.

Because the sexual behaviours module was optional content for the 2007 CCHS and was selected by only some of the provinces and territories (Nova Scotia, New Brunswick, some health regions of Ontario,

Saskatchewan, Northwest Territories, and Nunavut), the sexual behaviour data for 2007 are not nationally representative. Nevertheless, in order to detect if the basic trends observed from the 2003/2005 pooled CCHS data remained intact going forward, we compared the data on condom use at last intercourse and number of sexual partners from the 2003/2005 and 2007 surveys among those provinces and territories that selected the sexual behaviours module in 2007.

## Results

In the combined 2003 and 2005 CCHS samples, just over half (53.1%) of all 20- to 34-year-olds were UMNCL and therefore eligible for inclusion in this study (data not shown). In this age group, males were more likely than females to be UMNLC (57.9% and 48.3%, respectively). The percentage of people who were UMNCL was lower as age increased going from 82.6% among 20- to 24-year-olds to 45.2% among 25- to 29-year-olds to 27.8% among 30- to 34-year-olds.

### *Sexual activity*

According to the combined 2003/2005 CCHS, 85.4% of UMNCL 20- to 34-year-olds reported having had sexual intercourse at least once. The percentage reporting sexual intercourse was higher at older ages with 81.7% of 20- to 24-year-olds reporting ever having sexual intercourse, compared with 85.6% of 25- to 34-year-olds (data not shown). This pattern was similar for both genders, although a slightly higher percentage of males than females aged 20-29 reported ever having had sexual intercourse in the past (data not shown). Most individuals (88.9%) who reported ever having had sexual intercourse reported also having sex in the 12-month period preceding their CCHS interview. This number did not differ by gender but a higher proportion of 20- to 24-year-olds reported sexual intercourse in the previous 12 months than did those aged 25 or older (91.9% and 85.6% respectively) (data not shown).

Over one-third (35.8%) of sexually active UMNCL Canadians reported more than one sexual intercourse partner in the previous 12 months (Table 1). It is unknown what percentage of these partnerships was concurrent or sequential. Males were significantly more likely than females to report multiple partners in the previous 12 months. Among females, those in the 30- to 34-year-old age group were significantly less likely to report multiple partners than were those in the 20- to 24-year-old age group; the percentage of males reporting multiple partners did not differ by age group.

**Table 1 Proportion of currently sexually active, unmarried/not living common-law 20- to 34-year-olds who reported having one, two, three, four or more sexual partners in past year by gender, Canada 2003 and 2005 (combined).**

| | Total | Males | Females |
|---|---|---|---|
| **Multiple partners** | 35.8 | 41.4 | 29.1 § |
| 20 to 24† | 36.9 | 41.9 | 30.8 § |
| 25 to 29 | 35.5 | 41.4 | 28.3 § |
| 30 to 34 | 33.0 * | 39.9 | 24.8 *§ |
| **Number of partners** | | | |
| One† | 64.2 | 58.6 | 70.9 § |
| Two | 18.2 * | 18.5 * | 17.8 * |
| Three | 8.2 * | 9.9 * | 6.0 *§ |
| Four or more | 9.5 * | 13.0 * | 5.3 *§ |

**Source: Canadian Community Health Survey 2003 and 2005 (pooled)**
*** Significantly different from estimate for reference category (p<0.05)**
**† Reference category**
**§ Significantly different from corresponding estimate for males (p<0.05).**
**Estimates of number of sexual partners among unmarried/non-cohabitating, currently sexually active 20- to 34-year olds were based on the response to the following question: "With how many different partners?" The question was asked only of respondents who indicated that they had had sexual intercourse in the past 12 months.**

### Condom use at last intercourse

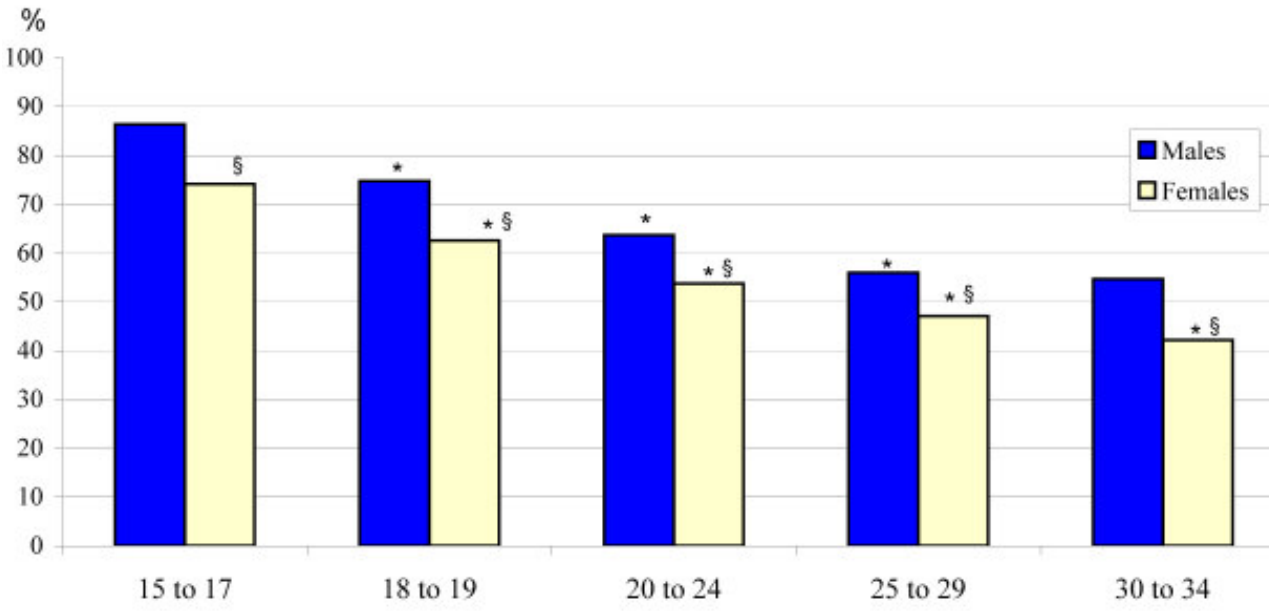
Among sexually active 20- to 34-year-old UMNLC Canadians, males were significantly more likely than females to report using a condom at last intercourse (Table 2). Among females, the percentage that used a condom at last intercourse was significantly lower in the 25- to 29-year-old age group than in the 20- to 24-year-old age group and also lower in the 30-34 than in the 25- to 29-year-old age group. For males, the percentage that used a condom at last intercourse was significantly lower in the 25- to 29-year-old age group than in the 20- to 24-year-old age group but there was no significant difference between the 25-29 and 30- to 34-year-old male groups. In general, the findings among these sexually active, young adult UMNCL Canadians reflect a continuation of the trend

**Table 2 Proportion of currently sexually active, unmarried/not living common-law 20-to- 34-year-olds who used a condom the last time they had intercourse, by selected characteristics, Canada, 2003 and 2005 (combined).**

| | Males | | Females | |
|---|---|---|---|---|
| | % | 95% CI | % | 95% CI |
| **Total** | 59.9 | 58.4 - 61.5 | 49.9 [§] | 48.3 - 51.5 |
| **Age group** | | | | |
| 20 to 24[†] | 63.7 | 61.5 - 65.9 | 53.8 [§] | 51.7 - 56.0 |
| 25 to 29 | 56.0 *[¥] | 53.3 - 58.7 | 47.1 *[§¥] | 44.0 - 50.1 |
| 30 to 34 | 54.7 * | 51.4 - 58.1 | 42.2 *[§¥] | 39.1 - 45.2 |
| **Geography** | | | | |
| Urban[†] | 60.1 | 58.5 - 61.8 | 50.4 [§] | 48.7 - 52.1 |
| Rural | 58.6 | 54.9 - 62.2 | 45.7 * | 41.6 - 49.7 |
| **Education** | | | | |
| High school or less | 61.3 * | 58.6 - 64.0 | 48.9 [§] | 45.6 - 52.1 |
| Some post secondary | 64.6 * | 60.8 - 68.4 | 54.3 *[§] | 50.4 - 58.2 |
| Completed post secondary[†] | 57.3 | 55.2 - 59.5 | 49.0 [§] | 46.9 - 51.0 |
| **Adjusted household income** | | | | |
| Low | 58.3 | 52.0 - 64.6 | 49.0 [§] | 45.2 - 52.7 |
| Middle/High[†] | 59.3 | 60.1 - 68.7 | 48.9 [§] | 47.0 - 50.8 |
| **Self-identified sexual identity** | | | | |
| Heterosexual[†] | 59.9 | 58.3 - 61.4 | 50.2 [§] | 48.6 - 51.9 |
| Homosexual | 62.7 | 52.9 - 72.5 | F | F |
| Bi-sexual | 54.9 | 38.5 - 71.3 | 50.5 | 41.9 - 59.1 |
| Homosexual/bi-sexual | 59.9 | 51.0 - 68.9 | 39.5 *[§] | 32.3 - 46.6 |
| **Off-reserve Aboriginal person** | | | | |
| Yes | 54.8 | 46.0 - 63.6 | 49.4 | 43.3 - 55.6 |
| No[†] | 60.0 | 58.5 - 51.6 | 49.9 [§] | 48.3 - 51.6 |
| **Number of partners** | | | | |
| One[†] | 52.8 | 50.6 - 55.0 | 47.0 | 45.0 - 49.0 |
| More than one | 69.8 * | 67.6 - 72.0 | 57.0 * | 54.3 - 59.6 |
| Two | 69.6 * | 66.3 - 72.9 | 55.7 * | 52.3 - 59.2 |
| Three | 70.2 * | 66.0 - 74.6 | 58.1 * | 52.3 - 63.9 |
| Four or more | 69.8 * | 66.0 - 73.7 | 59.9 * | 53.8 - 66.0 |
| **Age at first sexual intercourse** | | | | |
| 13 or younger | 50.2 * | 43.9 - 56.5 | 38.0 * | 31.5 - 44.5 |
| 14 or older[†] | 60.5 | 58.9 - 62.1 | 50.4 | 48.8 - 52.1 |

**Source: Canadian Community Health Survey 2003 and 2005 (pooled)**
*** Significantly different from estimate for reference category (p<0.05)**
**[†] Reference category**
**[¥] Significantly lower than preceding estimate (p<0.05)**
**[§] Significantly different from corresponding estimate for males (p<0.05).**
**[F] Too unreliable to be published (coefficient of variation greater than 33.3%)**
**Estimates of condom use among unmarried/non-cohabitating, currently sexually active 20- to 34-year-olds were based on the "Yes"/"No" response to the following question: "Did you use a condom the last time you had intercourse?"**

**Figure 1** **Condom use during most recent sexual encounter among unmarried/non-cohabitating, currently sexually active 15- to 34-year-olds, by sex and age group, Canada 2003 and 2005 (combined).**




**Source: Canadian Community Health Survey 2003 and 2005 (pooled)**
*** Significantly lower than preceding estimate (p<0.05)**
**§ Significantly different from corresponding estimate for males (p<0.05)**
**Note: Estimates of condom use among currently unmarried/non-cohabitating sexually active 15- to 34-year-olds based on the response to: "Did you use a condom the last time you had intercourse?"**

seen among teens toward a lower likelihood of condom use at last intercourse with increasing age (see Fig. 1).

For sexually active UMNCL individuals aged 20-24, over a third of males (36.3%) and nearly half of females (46.2%) reported that they did not use a condom at last intercourse. For respondents aged 30-34, a majority (57.8%) of sexually active UMNLC women reported that they did not use a condom at last intercourse while for men in the same age group, nearly half (45.3%) did not use a condom at last intercourse (Table 2). Even when the effects of place of residence, education, household income, sexual identity, aboriginal status, number of partners, and age at first intercourse were taken into account in gender-specific multivariate models, the association between age and condom use at last intercourse remained statistically significant (see Table 4).

In both the bivariate and multivariate analyses of the 2003/2005 CCHS data, condom use at last intercourse was significantly higher for both males and females with more than one sexual intercourse partner in the last 12 months (Table 2, Table 4). Compared to males with one partner, among whom 52.8% used a condom at last intercourse, 69.6-70.2% of males with two, three or four or more partners used a condom at last intercourse. The comparable values for females were 47% for those with one partner and 55.7-59.9% for those with two, three or four or more (Table 2). It is important to note that among those with three or four or more sexual intercourse partners in the previous 12 months, about 30% of the males and close to 40% of the females did not use a condom at last intercourse. This represent a large number of sexually active UMNCL Canadians aged 20- 34 who are at elevated risk for sexually transmitted infection.

Since some provinces and territories included the sexual behaviour module in the 2007 CCHS, we were able to compare the 2007 data on number of partners and condom use at last intercourse with the pooled

**Table 3 Proportion of currently sexually active, unmarried/not living common-law 20-to-34-year- olds who used a condom the last time they had intercourse, by province or territory, Canada, 2003 and 2005 (combined).**

| | Males | | Females | |
|---|---|---|---|---|
| | % | 95% CI | % | 95% CI |
| **Canada** | 59.9 | 58.4 - 61.5 | 49.9 § | 48.3 - 51.5 |
| Newfoundland and Labrador | 67.7 | 58.8 - 76.5 | 49.6 § | 41.6 - 57.6 |
| Prince Edward Island | 72.8 * | 61.8 - 83.9 | 41.3 § | 31.0 - 51.6 |
| Nova Scotia | 61.9 | 54.2 - 69.6 | 46.4 § | 38.4 - 54.4 |
| New Brunswick | 59.2 | 52.0 - 66.5 | 41.1 *§ | 34.9 - 47.4 |
| Quebec | 51.3 * | 48.0 - 54.6 | 44.6 *§ | 41.2 - 48.0 |
| Ontario | 64.2 * | 61.6 - 66.8 | 53.8 *§ | 50.8 - 56.7 |
| Manitoba | 62.7 | 55.4 - 70.1 | 47.7 § | 40.6 - 54.8 |
| Saskatchewan | 60.2 | 53.6 - 66.8 | 44.6 § | 38.6 - 50.5 |
| Alberta | 59.5 | 54.8 - 64.3 | 50.0 § | 45.2 - 54.8 |
| British Columbia | 61.3 | 57.2 - 65.4 | 52.9 § | 48.7 - 57.2 |
| Territories | 69.4 * | 62.2 - 76.7 | 52.0 § | 44.2 - 59.9 |

**Source: Canadian Community Health Survey 2003 and 2005 (pooled)**
*** Significantly different from rest of Canada estimate, for example, Quebec estimate compared to estimate for all of Canada minus Quebec (p<0.05)**
**§ Significantly different from corresponding estimate for males (p<0.05)**
**Note: Estimates of condom use among unmarried/non-cohabitating, currently sexually active 20- to 34-year-olds were based on the "Yes"/"No" response to the following question: "Did you use a condom the last time you had intercourse?"**

data reported here from the 2003/2005 CCHS. No significant differences were found (data not shown) suggesting that the trends observed for this variable in 2003/2005 were still in place in 2007.

## *Condom use at last intercourse and demographic variables*

### *Education and income*

In the bivariate analyses, males and females with some post-secondary education and males with high school or less were significantly more likely to have used a condom at last intercourse than those who had completed post secondary education (Table 2) although the overall percentage differences in levels of condom use at last intercourse were not large and most of these differences were no longer statistically significant when examined in a multivariate model (Table 4). Similarly, individuals designated as "low income" did not differ in condom use at last intercourse from those designated as "middle/high income (Table 2 and Table 4).

### *Urban/rural*

Sexually active UMNCL men aged 20 to 34 who were living in urban areas of Canada were no more likely to have used a condom at last intercourse than men living in more rural areas (Table 2). However, women living in urban areas were significantly more likely (50.4%) than their counterparts in rural areas (45.7%) to have used a condom at last intercourse. Even when socio-demographic variables and number of sexual partners and age of first intercourse were take into account the relationship between living in a rural setting and lower condom use at last intercourse among women remained significant in the multivariate regression analysis (Table 4). The percentages of off-reserve aboriginal men and women reporting condom use at last intercourse did not differ significantly from their non-aboriginal counterparts; however, in general, men were more likely to report using a condom than women (Table 2).

### *Sexual orientation*

With respect to self-identified sexual orientation, there were no significant differences in condom use at last sexual intercourse with the exception of lesbian or lesbian/bisexual women who were significantly less likely to have used a condom than heterosexual women (Table 2 and Table 4). These results should be viewed with caution because it is not known how non-heterosexual respondents interpreted the question "Did you use a condom the last time you had intercourse?"

**Table 4 Adjusted odds ratios relating selected characteristics to condom use, by sex, household population aged 20 to 34, Canada, 2003 and 2005 (combined).**

| | Males | | Females | |
|---|---|---|---|---|
| | Adjusted odds ratio | 95% CI | Adjusted odds ratio | 95% CI |
| **Age group** | | | | |
| 20 to 24† | 1.0 | … | 1.0 | … |
| 25 to 29 | 0.8 * | 0.7 - 0.9 | 0.8 * | 0.7 - 0.9 |
| 30 to 34 | 0.7 * | 0.6 - 0.9 | 0.7 * | 0.6 - 0.8 |
| **Place of residence** | | | | |
| Urban† | 1.0 | … | 1.0 | … |
| Rural | 0.9 | 0.8 - 1.1 | 0.8 * | 0.7 - 1.0 |
| Newfoundland and Labrador | 1.4 | 0.9 - 2.1 | 1.1 | 0.8 - 1.5 |
| Prince Edward Island | 1.9 * | 1.0 - 3.4 | 0.7 | 0.4 - 1.1 |
| Nova Scotia | 1.1 | 0.7 - 1.6 | 0.9 | 0.6 - 1.3 |
| New Brunswick | 1.0 | 0.7 - 1.4 | 0.7 * | 0.6 - 1.0 |
| Quebec | 0.6 * | 0.5 - 0.7 | 0.7 * | 0.6 - 0.9 |
| Ontario | 1.4 * | 1.2 - 1.6 | 1.3 * | 1.1 - 1.5 |
| Manitoba | 1.1 | 0.8 - 1.5 | 1.0 | 0.7 - 1.3 |
| Saskatchewan | 1.0 | 0.7 - 1.4 | 0.8 | 0.6 - 1.0 |
| Alberta | 1.0 | 0.8 - 1.2 | 1.0 | 0.8 - 1.2 |
| British Columbia | 1.0 | 0.9 - 1.3 | 1.1 | 0.9 - 1.4 |
| Territories | 1.6 * | 1.1 - 2.4 | 1.1 | 0.7 - 1.5 |
| **Education** | | | | |
| High school or less | 1.1 | 1.0 - 1.3 | 0.9 | 0.8 - 1.1 |
| Some post secondary | 1.3 * | 1.0 - 1.5 | 1.1 | 0.9 - 1.3 |
| Completed post secondary† | 1.0 | … | 1.0 | … |
| **Adjusted household income** | | | | |
| Low | 1.0 | 0.7 - 1.3 | 1.1 | 0.9 - 1.3 |
| Middle/High† | 1.0 | … | 1.0 | … |
| **Self-identified sexual identity** | | | | |
| Heterosexual† | 1.0 | … | 1.0 | ... |
| Homosexual | 1.1 | 0.7 - 1.7 | 0.1 * | 0.1 - 0.3 |
| Bi-sexual | 0.8 | 0.4 - 1.5 | 0.9 | 0.7 - 1.3 |
| **Off-reserve Aboriginal person** | | | | |
| Yes | 0.8 | 0.5 - 1.1 | 1.1 | 0.8 - 1.4 |
| No† | 1.0 | … | 1.0 | … |
| **Number of partners** | | | | |
| One† | 1.0 | … | 1.0 | … |
| More than one | 2.1 * | 1.8 - 2.5 | 1.5 * | 1.3 - 1.7 |
| **Age at first sexual intercourse** | | | | |
| 13 or younger | 0.6 * | 0.5 - 0.8 | 0.6 * | 0.4 - 0.8 |
| 14 or older† | 1.0 | … | 1.0 | … |

**Source: Canadian Community Health Survey (CCHS) 2003 and 2005 (pooled)**
**† Reference category**
*** Significantly different from reference category (p<0.05); provincial differences against the rest of Canada.**
**Note 1: A missing category for adjusted household income was included in the models to maximize sample size; data not shown.**
**Note 2: Because of rounding, some odds ratios with 1.0 as upper confidence limit are statistically significant.**

*Province/territory*

With respect to provincial/territorial differences (Table 3), the proportion of sexually active UMNCL Canadians aged 20- 34 who reported using a condom at last intercourse varied across the country for both males and females. Among males, condom use at last intercourse was significantly higher than the corresponding estimates for the rest of the country in Prince Edward Island, Ontario and the territories and significantly lower in Quebec. Among females, condom use at last intercourse was significantly higher in Ontario than the rest of the country and

significantly lower in New Brunswick, and Quebec. These findings remained even when other potentially confounding factors, such as age and income were considered simultaneously (Table 4).

*Age at first intercourse*

In both bivariate and multivariate analyses, both male and female 20- to 34-year-olds who reported an age of first intercourse of 13 or younger were significantly less likely to report using a condom at last intercourse than were those who reported first intercourse at age 14 or older (Table 2 and Table 4). In fact, the independent effect of early age at first intercourse on condom use at last intercourse persisted even when the age of respondents was restricted to include only those aged 27 or older (data not shown). This suggests that even among individuals who have been sexually active for at least 14 years, the timing of first sexual intercourse appears to be associated with current condom use.

## Discussion

Based on the forgoing analysis of pooled 2003/2005 data from the CCHS, just over half of Canadians aged 20 to 34 years can be classified as unmarried and not living common law (UMNCL). A majority of them (over 85%) reported having had sexual intercourse in the past 12 months and about 40% of males and 50% of females in this "sexually active" group reported not using a condom at last intercourse. Among all respondents who were sexually active in the past 12 months, about one-third reported having more than one intercourse partner in that time period; of those who reported having three or four or more intercourse partners about 30% of males and nearly 40% of females did not use a condom at last intercourse. Taken together, these data suggest that many single young adults in Canada are at elevated risk for STI/HIV.

UMNCL individuals aged 20-34 residing in three provinces and the Territories reported levels of condom use at last intercourse that differed significantly from Canada's overall national averages of about 60% for males and 50% for females. Males in Prince Edward Island, the Territories, and Ontario were significantly above the male national average for condom use at last intercourse whereas males in Quebec were significantly below it. Females in Ontario were significantly above the female national average whereas females in Quebec and New Brunswick were significantly below it. These findings suggest that sexually active UMNCL aged 20-34 living in Quebec and New Brunswick (females only) may be at elevated risk of STI/HIV infection relative to individuals with the similar characteristics living elsewhere. The relatively low rates of condom use at last intercourse among UMNCL Quebecers and female residents of New Brunswick merit further analysis to more precisely examine potential casual factors.

The findings of the present study also confirmed that the previously observed trend among sexually active Canadian teens for condom use at last intercourse to decline with age also applies to and persists among older sexually active UMNCL Canadian adults aged 20-34. Previous Canadian research found that the decline in condom use with age among teens was associated with an increase in their use of oral contraceptives (e.g., Boyce et al., 2006; Rodrigues, Dedobbeleer, & Turcot, 2005). These studies suggest that as individuals age, be they teens or older adults, they may perceive themselves to be less at risk for STI/HIV. However, it may also be that individuals who initially perceived their risk for STI/HIV to be low might have been using condoms primarily as a method to prevent pregnancy. Their age-related decline in levels of condom use at last intercourse may reflect the shift to oral contraception as a birth control method regardless of their actual risk for STI/HIV infection. Misovich, Fisher and Fisher (1997) have reported on the tendency of heterosexual teens and adults, among others, to be less likely to practice safer sex with close relationship partners, compared to partners they perceive to be casual. If older UMNCL adults in our study were more likely than younger to be in such close relationships, this might be relevant to their lower levels of condom use and to the associated risks of unprotected intercourse.

Analysis of the present findings cannot offer additional insight into the declines in condom use at last intercourse with age among sexually active UMNCL Canadians aged 20-34 or into the possible association of this decline with changes in contraceptive method. Such information is of interest given that about one-third of this age group reported sexual intercourse with multiple partners in the past

12 months. However, the sexual behaviour module of the CCHS includes items on contraceptive use only for individuals aged 15-24 but not for those aged 25-34. There is, however, an optional CCHS module on medication that asks women, "In the past month, did you take birth control pills?" that is available in some provincial versions of the CCHS. This oral contraceptive question was asked of Newfoundland and Labrador and of Nova Scotia respondents in the 2003 CCHS and of some health regions in Ontario and Saskatchewan and all of British Columbia in the 2005 CCHS. These data are not a nationally-representative sample but using responses to this question from the 2003/2005 CCHS, we were able to determine the percentage of sexually active UMNCL females aged 20-34 who reported using birth control pills in the past month; 66.6% of 20- to 24-year-olds, 53.4% of 25- to 29-year-olds, and to 39.7% of 30- to 34-year-olds reported pill use in the past month (data not shown).

Contrary to the trend among teens for condom use to decline with age as birth control pill use increases, our sub-analysis suggests that the age-related decline in condom use at last intercourse among UMNCL 20- to 34-year-olds may be accompanied by a decline in oral contraceptive pill use as well. One possible explanation for this dual decline is that some women may have adopted another form of contraception as they got older.

The current analysis found that females living in rural areas were significantly less likely to have used a condom at last intercourse compared to their urban counterparts. Other studies examining young adults in Ontario (Kasenda, Calzavara, Johnson, & Leblanc, 1998) and African-American high school students in the United States (Milhausen, Crosby, Yarber et al., 2003) have found that sexually active rural residents are less likely to use condoms than those living in urban areas. In the current analysis, less than half (45.7%) of sexually active UMNCL women aged 20-34 reported using a condom at last intercourse compared to 50.4% of urban women and about 50% for all women in the study. Although this difference appears modest, the very large sample size makes the significantly lower level of condom use at last intercourse among rural women of particular interest for further research.

Among UMNCL Canadians aged 20 to 34 who had intercourse in the last 12 months, males and females who reported first intercourse at age 13 or younger were significantly less likely to report using a condom at last intercourse that were those whose first intercourse was at age 14 or older. These findings are consistent with those of Langille and Curtis (2002) who found that among young women aged 15 to 20 in Nova Scotia who had first intercourse before age 15 were less likely to have used a condom at last intercourse than those who were older at first intercourse. Langille and Curtis also found that early first intercourse was associated with differences in family structure, socio-economic status and religion. The current study extends the association of early age of first intercourse with non-condom use at last intercourse into the 20- to 34-year old age group. This apparent link of early age of first intercourse with lower likelihood of condom use many years later has implications for public health and clearly warrants further study.

It is noteworthy that within each age group, males were more likely than females to report condom use at last intercourse. The CCHS does not ask respondents about the age of their sexual partners. However, it has been noted in other research that younger women with older male partners are at increased risk for STI/HIV because condoms are less likely to be used in partnerships in which there are age differences between partners (e.g., Langille, Hughes, Delaney, & Rigby, 2007; Mercer, Copas, Sonnenberg et al., 2009). In a study in Nova Scotia of women aged 15 to 19, Langille et al. (2002) found that two-thirds of sexually active females had male partners at least one year older than themselves. In light of this observation, it is of interest to note, as indicated in Fig. 1, that for the 15-17, 18-19, and 20- to 24-year-old age groups, the level of condom use at last intercourse for females in each of these age groups corresponded closely to the level of condom use for males in the subsequent age category. For example, the level for females in the 15-17 age group was 74.2%, corresponding closely to the 74.8% level among males aged 18-19. Similarly, the level for females aged 18-19 was 62.6% while the level for males 20- to 24-years-old was 63.7% and the level for females aged 20-24 was 53.8% compared to 56.0% for males aged 25-29. The CCHS data do not allow for causal explanations for this observation and

therefore further research is needed to determine if having an older male partner leads to higher STI/HIV risk behaviours among adult Canadian women in general.

### Limitations

One possible limitation of this analysis is that the CCHS asks sexually active adult respondents if they used a condom at last intercourse but does not ask about the consistency of condom use over longer periods. Research studies investigating sexual risk behaviour often inquire about condom use at last intercourse as a basic measure because the question is straightforward, easy for respondents to comprehend, and less likely to be subject to recall bias. In addition, condom use at last intercourse has been shown to provide some indication of the probability of condom use over longer periods of time. Young, Salazar, Crosby et al. (2008) found that adolescents who reported condom use at last intercourse were significantly more likely to have used condoms more frequently and consistently in the preceding 14- and 60-day periods than those who did not. This suggests that a single event recall of condom use at last intercourse can be a valid proxy for measuring condom use over longer periods of time. Nevertheless, the findings on condom use presented in this analysis must be viewed with the assumption that some respondents who reported using condoms the last time they had intercourse did not use condoms consistently during prior encounters. The term "sexual intercourse" was not defined in the CCHS questions, so it is possible that some individuals may have misinterpreted the question. This caveat about definition of sexual intercourse is particularly relevant in terms of our earlier cautionary note concerning the finding that gay and heterosexual men did not differ in their reported condom use at last intercourse. Finally, the CCHS does not offer a relationship status category reflecting individuals who are living together as a couple although they are not married and not living common law. However, the age range studied and the inclusion of only unmarried respondents who were not living common law makes it highly likely that the sample reflects the intended population for this first report on condom use at last intercourse among 20-34 year old UMNCL males and females in Canada.

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