

Aboriginal Peoples Survey, 2012

Lifetime suicidal thoughts among First Nations living off reserve, Métis and Inuit aged 26 to 59: Prevalence and associated characteristics

by Mohan B. Kumar

Release date: January 19, 2016



How to obtain more information

For information about this product or the wide range of services and data available from Statistics Canada, visit our website, www.statcan.gc.ca.

You can also contact us by

email at STATCAN.infostats-infostats.STATCAN@canada.ca

telephone, from Monday to Friday, 8:30 a.m. to 4:30 p.m., at the following toll-free numbers:

- Statistical Information Service 1-800-263-1136
- National telecommunications device for the hearing impaired 1-800-363-7629
- Fax line 1-877-287-4369

Depository Services Program

- Inquiries line 1-800-635-7943
- Fax line 1-800-565-7757

Standards of service to the public

Statistics Canada is committed to serving its clients in a prompt, reliable and courteous manner. To this end, Statistics Canada has developed standards of service that its employees observe. To obtain a copy of these service standards, please contact Statistics Canada toll-free at 1-800-263-1136. The service standards are also published on www.statcan.gc.ca under “Contact us” > “Standards of service to the public.”

Note of appreciation

Canada owes the success of its statistical system to a long-standing partnership between Statistics Canada, the citizens of Canada, its businesses, governments and other institutions. Accurate and timely statistical information could not be produced without their continued co-operation and goodwill.

Standard table symbols

The following symbols are used in Statistics Canada publications:

- . not available for any reference period
- .. not available for a specific reference period
- ... not applicable
- 0 true zero or a value rounded to zero
- 0^s value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
- ^P preliminary
- ^r revised
- X suppressed to meet the confidentiality requirements of the *Statistics Act*
- ^E use with caution
- F too unreliable to be published
- * significantly different from reference category ($p < 0.05$)

Published by authority of the Minister responsible for Statistics Canada

© Minister of Industry, 2016

All rights reserved. Use of this publication is governed by the Statistics Canada [Open Licence Agreement](#).

An HTML version is also available.

Cette publication est aussi disponible en français.

Abstract

Suicide rates among Aboriginal peoples in Canada are several times higher than rates among the non-Aboriginal population. Based on data from the 2012 Aboriginal Peoples Survey, this article presents prevalence estimates of suicidal thoughts among First Nations living off reserve, Métis and Inuit aged 26 to 59. It examines associations between suicidal thoughts and mental health, socio-demographic and other characteristics, many of which have been shown to be related to suicidal thoughts in other populations.

In 2012, more than one in five off-reserve First Nations, Métis and Inuit adults reported having ever had suicidal thoughts; only among Métis did a difference emerge between men and women, with women more likely to report such thoughts. Women in all three Aboriginal groups were more likely than non-Aboriginal women to report suicidal thoughts. Compared with non-Aboriginal men, off-reserve First Nations and Inuit men were also more likely to have had suicidal thoughts.

Self-reported, physician-diagnosed mood and/or anxiety disorders; drug use; and lack of high self-worth were associated with suicidal thoughts in all three groups and both sexes. Factors such as heavy, frequent drinking; being widowed, divorced, separated or never married; and not being in excellent or very good health were associated with suicidal thoughts among some, but not all Aboriginal groups and sexes. Personal or familial residential school experience was marginally associated with suicidal thoughts among Métis women when each Aboriginal group and sex was examined separately. When all Aboriginal groups and males and females were combined, residential school experience was significantly associated with suicidal thoughts.

These results could inform further research that can be used to guide suicide prevention programs among First Nations, Métis and Inuit.

Introduction

Suicide is a major cause of death among Aboriginal peoples¹ in Canada. In the 1991-to-2001 period, suicide rates were nearly twice as high among Registered Indian,² and Métis men compared with non-Aboriginal men, and Registered Indian women compared with non-Aboriginal women according to analysis using the Canadian Mortality Database (CMDB) linked to the 1991 Census (Tjepkema et al. 2009).³ In Inuit communities, between 1999 and 2003, suicide rates were 10 times higher than rates for the Canadian population overall (Aboriginal Healing Foundation 2007; Public Health Agency of Canada 2011).

Suicidal thoughts are predictors and precursors of suicide (Clarke 2010; Coombs et al. 1992; Crosby and Sacks 1994; De Leo et al. 2005; Robins et al. 1959), almost always preceding attempts and completed suicides. The prevalence of suicidal thoughts has been shown to be relatively high among some Aboriginal populations (Aboriginal Healing Foundation 2007; Kumar et al. 2012). For example, in 2006, 13% of Métis aged 20 to 59 reported having ever had suicidal thoughts, a figure higher than that in the non-Aboriginal population (Kumar et al. 2012). However, little recent information has been published about suicidal thoughts among First Nations, Métis and Inuit or about factors associated with it.

Risk factors for suicidal thoughts

Several factors including mental health factors such as mood and anxiety disorders, personality traits such as low self-esteem and hopelessness, and social or familial factors including marital discord and social support have been shown to be associated with suicidal thoughts in many populations.

Mood and anxiety disorders have been associated with an increased risk of suicidal thoughts. In a study of risk factors for suicidal thoughts in 17 countries, the presence of mood and anxiety disorders increased the odds of suicidal thoughts around three-fold (Nock et al. 2008). A study of Métis men and women found mood disorder (major depressive episode) to be associated with suicidal thoughts (Kumar et al. 2012).

Even when depression and other characteristics were taken into account, self-esteem has been associated with suicidal thoughts in adolescents (de Man et al. 1992) and adults (de Man and Balkou 1987; Jang et al. 2014; Bagalkot et al. 2014), including Métis in Canada (Kumar et al. 2012). Also, hopelessness and childhood trauma (Mann 2003) have been identified as risk factors for suicidal thoughts.

Drug use has been related to suicidal thoughts, with one study suggesting that an increase in the number of types of drugs used increasingly raised the odds of suicidal thoughts (Borges et al. 2000). As well, compared with depression alone, substance use disorder combined with depression was associated with increased odds of suicidal thoughts (Bronisch and Wittchen 1994). Alcohol consumption, particularly intensity or frequency, has also been identified as a factor in suicidal thoughts (Conner et al. 2003). For instance, among Métis women, heavy, frequent drinking was associated with lifetime suicidal thoughts (Kumar et al. 2012). The depressive effects of alcohol use disorder are suggested to be behind this association (Cottler et al. 2003). Current smoking, too, has been shown to be related to increased risk of suicidal thoughts (Clarke et al. 2010; Hintikka 2009). Chronic smoking has been suggested to promote depression alluding to a potential mechanism for its association with suicidal thoughts (Kenny et al. 2001).

Research has shown that marital status, specifically, being never married, widowed, divorced or separated, is associated with suicidal thoughts (Inder et al. 2014). In eight of nine countries surveyed,⁴ being divorced or separated was associated with suicidal thoughts (Weissman et al. 1999). Marriage is suggested to have a protective effect against suicidal thoughts by increasing sense of belonging (McLaren et al. 2015), providing social support, facilitating social participation and increasing self-esteem (Hagedoorn et al. 2006).

1. Data from the National Household Survey (NHS) show that 1,400,685 people reported an Aboriginal identity in 2011, representing 4.3% of the total Canadian population. Of these people, 851,560 identified as First Nations only, 451,795 identified as Métis only and 59,445 identified as Inuit only. An additional 26,475 people reported other Aboriginal identities and 11,415 people reported more than one Aboriginal identity (Statistics Canada 2013a).

2. In the cited study, Registered Indians were any individuals who indicated that they were "Registered Indians as defined by the Indian Act of Canada (Indigenous and Northern Affairs Canada 2012; Statistics Canada 2013c)" in the 1991 Census.

3. The Canadian Mortality Database was linked to the 1991 Census and tax-filer data to identify Registered Indians and Métis, and used to estimate mortality rates.

4. Suicidal thoughts were associated with divorced or separated status in the United States, Canada (Edmonton), France (Savigny), West Germany, Taiwan, Korea and New Zealand (Christchurch), but not in Puerto Rico.

Attending a residential school exposed many Aboriginal children to separation from family; physical and sexual abuse; and suppression of their language and cultural identity (Aboriginal Healing Foundation 2007; Haig-Brown 1988; Indigenous and Northern Affairs Canada 2008; Knockwood 1992). Suicidal thoughts have been reported to be more prevalent among on-reserve First Nations youth with one or more parents who went to a residential school, compared with those whose parents did not have this history (First Nations Information Governance Centre 2005). Residential school experience has been linked to high rates of mental illness, child abuse and family breakdown, all of which are associated with suicidal thoughts (Aboriginal Healing Foundation 2007).

Self-rated health has been associated with suicidal thoughts, even when controlling for mental disorders, common physical illness and socio-demographic characteristics (Goodwin and Olfson 2002). Perception of poor health has been shown to be associated with specific mental disorders including major depression suggesting a potential mechanism for the link between self-rated health and suicidal thoughts.

Social support (Kumar et al. 2012; Park et al. 2010; Wright 2006), have been shown to be protective against suicidal thoughts. The association between availability and use of social support and suicidal thoughts is suggested to be mediated by increased self-esteem (Kleiman and Riskind 2013).

While there is some evidence to indicate that many of these factors are also associated with suicidal thoughts among some Aboriginal populations in Canada (Kumar et al. 2012; Lemstra et al. 2013), it remains to be seen if this is the case in other Aboriginal populations.

This article presents 2012 estimates of the lifetime prevalence of suicidal thoughts among off-reserve First Nations, Métis and Inuit adults, compared with non-Aboriginal people, and examines characteristics associated with such thoughts.

Results

More than one in five Aboriginal people reported suicidal thoughts

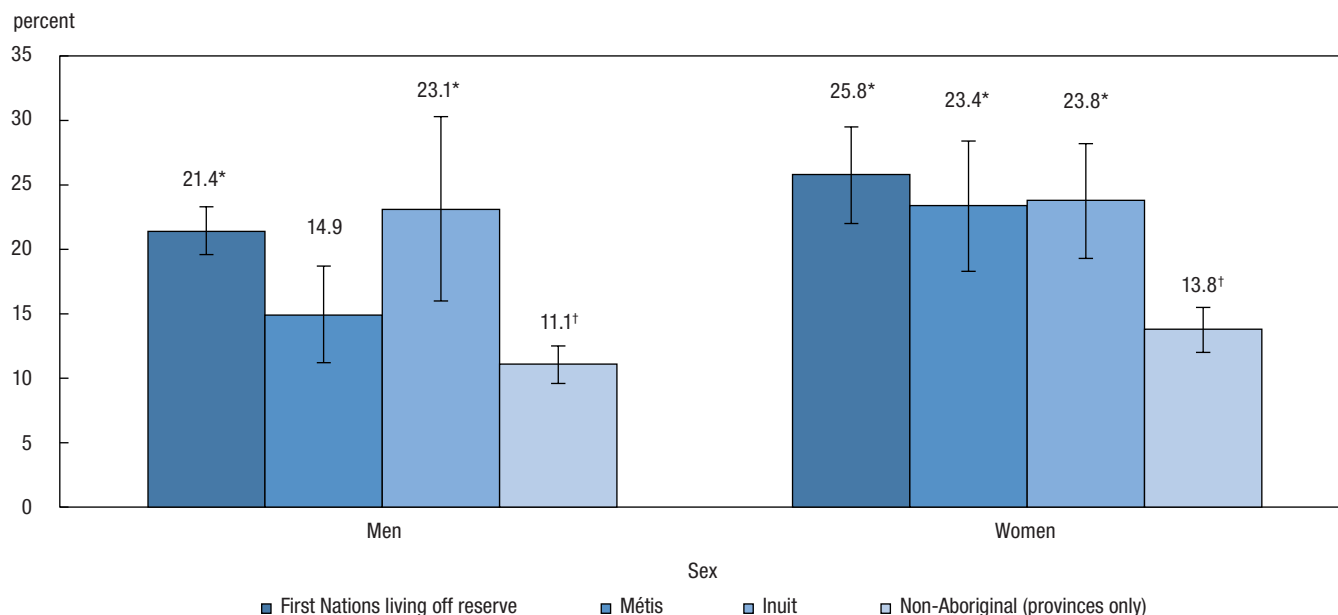
Nearly one-quarter of First Nations living off-reserve (24.0%) and Inuit (23.5%) and one in five Métis (19.6%) reported having ever had suicidal thoughts.

Métis women were more likely than Métis men to have had suicidal thoughts (23.4% versus 14.9%), but no differences between women and men were apparent among off-reserve First Nations (25.8% versus 21.4%) or Inuit (23.8% versus 23.1%) (Chart 1).⁵

Compared with non-Aboriginal men (11.1%), off-reserve First Nations (21.4%) and Inuit men (23.1%) were more likely to have had suicidal thoughts. It wasn't the case for Métis men. Women in all three Aboriginal groups were more likely than non-Aboriginal women to report suicidal thoughts (13.8%).

5. Among women, the prevalence of past-year (previous 12 months) suicidal thoughts was 6.0% for off-reserve First Nations, 5.1% for Métis, and 5.2% for Inuit; among men, the figures were 5.5% for off-reserve First Nations, 4.6% for Inuit, and 3.6% for Métis.

Chart 1
Prevalence of lifetime suicidal thoughts among off-reserve First Nations, Métis, Inuit and non-Aboriginal populations, aged 26 to 59 years, by sex, Canada, 2012



* significantly different compared to reference group at $p < 0.025$

† reference group for within-sex comparisons

Notes: Because the CCHS - MH did not collect data in the territories, non-Aboriginal estimates pertain only to provincial residents.

Vertical lines on each bar represent 97.5% (non-Aboriginal estimate) or 95% (other estimates) confidence intervals. Different confidence intervals were used for non-Aboriginal estimates to account for multiple comparisons.

Sources: Statistics Canada, Aboriginal Peoples Survey, 2012 and the Canadian Community Health Survey – Mental Health, 2012.

Mood and/or anxiety disorders, drug use and lack of self-worth were associated with suicidal thoughts

The prevalence of suicidal thoughts was higher among off-reserve First Nations, Métis and Inuit adults who reported mood and/or anxiety disorders, compared with those who did not (Table 1). It was also the case for individuals in all groups whose self-worth was not high compared with those who reported high self-worth.

Even when other factors were taken into account, these associations persisted among men and women in all Aboriginal groups (Table 2). For example, off-reserve First Nations men with mood/or anxiety disorders were more than three times as likely as those without these conditions to have had suicidal thoughts (47% versus 15%⁶). Inuit who had high self-worth were 60% less likely to have had suicidal thoughts than those who did not have high self-worth (18% versus 43%).

6. Adjusted probability after controlling for other risk factors.

Table 1
Prevalence of suicidal thoughts among off-reserve First Nations, Métis and Inuit, aged 26 to 59, by sex and selected characteristics, Canada, 2012

| Characteristics | Off-reserve First Nations | | Métis | | Inuit | |
|--|---------------------------|-------------------|--------------------|-------------------|--------------------|--------------------|
| | Men | Women | Men | Women | Men | Women |
| | percent | | | | | |
| Self-reported-physician-diagnosed mood and/or anxiety disorders | | | | | | |
| No [†] | 12.7 | 17.4 | 10.8 | 13.7 | 19.4 | 19.2 |
| Yes | 64.6* | 46.8* | 42.8* | 48.1* | 56.4 ^{E*} | 52.9* |
| High self-worth (no feelings of worthlessness in past month) | | | | | | |
| No [†] | 55.9 | 52.0 | 36.3 | 52.5 | 49.6 | 49.5 |
| Yes | 16.0* | 18.4* | 11.7* | 15.7* | 17.3* | 16.5* |
| Drug use (prescription or street drugs for recreation use) | | | | | | |
| No [†] | 12.0 ^E | 20.2 | 10.0 | 18.4 | 17.6 | 21.8 |
| Yes | 42.4* | 47.8* | 29.1* | 46.1* | 44.5* | 37.1 ^E |
| Heavy, frequent drinking (five or more drinks at least once a week) | | | | | | |
| No [†] | 21.9 | 25.3 | 14.6 | 22.8 | 20.4 | 22.3 |
| Yes | 18.8 ^E | 32.8 | 17.5 ^E | 35.1 ^E | 44.0 ^{E*} | 42.0 ^{E*} |
| Daily smoking | | | | | | |
| No [†] | 16.9 | 21.7 | 11.6 | 20.2 | 17.0 ^E | 17.7 ^E |
| Yes | 31.2* | 33.4* | 21.3* | 30.7* | 28.0* | 28.7* |
| Excellent/very good self-reported health | | | | | | |
| No [†] | 31.2 | 33.2 | 18.5 | 34.5 | 26.7 | 29.1 |
| Yes | 12.0* | 16.3* | 11.9* | 12.3* | 18.9 | 15.4* |
| Marital status | | | | | | |
| Married/common-law [†] | 18.8 | 19.3 | 10.9 | 18.5 | 19.4 | 20.3 |
| Widowed/divorced/separated | 27.5 ^E | 38.0* | 22.8 ^{E*} | 36.1* | 42.6 ^E | 31.9 ^E |
| Single (never married) | 25.4 ^E | 29.2* | 23.3* | 26.7* | 26.1 ^E | 28.0 |
| Personal/parent/grandparent history of residential school | | | | | | |
| No [†] | 16.9 ^E | 18.9 | 9.9 | 20.4 | 20.1 ^E | 18.7 |
| Yes | 23.2 | 28.7* | 18.2* | 30.7* | 22.7 | 26.9 |
| Don't know/refusal/not stated | 25.6 ^E | 29.7* | 23.0* | 21.8 | 29.5 ^E | 20.9 ^E |
| Adjusted after-tax household income quintiles[§] | | | | | | |
| First quintile | 33.8 ^E | 31.6 | 29.6 | 35.9 | 35.7 ^E | 33.5 ^E |
| Second quintile | 20.7 ^E | 35.3 | 20.7 ^E | 31.5 | 20.5 ^E | 23.1 ^E |
| Third quintile | 16.9 ^E | 24.0 ^E | 12.6 ^E | 20.5 | 25.8 ^E | 25.5 ^E |
| Fourth quintile | 19.1 ^E | 18.2 | 13.1 ^E | 15.2 | 22.8 ^E | 19.4 ^E |
| Fifth quintile | 16.8 ^E | 16.0 ^E | 9.2 ^E | 16.5 | 13.1 ^E | 16.9 ^E |
| Highest level of schooling | | | | | | |
| Less than high school [†] | 23.1 ^E | 31.9 | 20.6 | 24.7 | 23.3 | 20.7 |
| High school | 23.9 ^E | 24.9 | 14.4 ^E | 27.5 | 29.5 | 28.5 ^E |
| Postsecondary education | 18.4 | 24.2 | 13.2* | 20.9 | 19.0 ^E | 25.0 |
| Remoteness (weak or non-metropolitan influenced zone) | | | | | | |
| No [†] | 21.3 | 26.3 | 15.1 | 23.9 | 18.1 ^E | 26.1 ^E |
| Yes | 22.6 ^E | 21.4 ^E | 13.6 ^E | 20.1 ^E | 24.4 | 23.1 |

^E use with caution

* significantly different from the reference category (p<0.05 for yes/no variables; p<0.025 for residential school experience and marital status; p<0.0167 for highest level of schooling)

[§] trend of decreasing likelihood of suicidal thoughts with increasing household income quintile statistically significant for both sexes and all Aboriginal groups

[†] reference category

Source: Statistics Canada, Aboriginal Peoples Survey, 2012.

Suicidal thoughts were more prevalent among people who had used prescription drugs for recreational purposes or street drugs than among those who didn't.⁷ This was seen in all three Aboriginal groups, and among them, for both men and women. This relationship persisted when other characteristics were taken into account. For off-reserve First Nations and Métis men, those who had used these drugs were about twice as likely to have reported suicidal thoughts compared with those who had not.⁶

Inuit men and women who reported heavy, frequent drinking in the previous year were about twice as likely to have reported suicidal thoughts compared with those who did not (Table 1). When other factors were taken into account, the association was significant only among Inuit women (Table 2). No significant associations remained between those who did and did not report heavy, frequent drinking among off-reserve First Nations and Métis men and women, and Inuit men.

7. The relationship was marginally significant among Inuit women (p=0.05).

Suicidal thoughts were more prevalent among off-reserve First Nations, Métis and Inuit who were daily smokers (Table 1). However, after adjusting for other characteristics, daily smoking was not associated with suicidal thoughts (data not shown).

Except for Inuit men, adults in all Aboriginal groups who reported to be in excellent or very good health were less likely to have had lifetime suicidal thoughts than were those who rated their health less favourably (Table 1). When other factors were taken into account, only off-reserve First Nations men, Métis women and Inuit women who reported excellent or very good health were less likely to have had suicidal thoughts (18% versus 24% among off-reserve First Nations men, and 18% versus 27% for Métis and Inuit women⁶) (Table 2).

Table 2
Change in adjusted likelihood of suicidal thoughts among off-reserve First Nations, Métis and Inuit adults, aged 26 to 59, by sex and selected characteristics, Canada, 2012

| | First Nations | | | | Métis | | | | Inuit | | | |
|--|----------------------|-------------|----------------------|-------------|----------------------|-------------|----------------------|-------------|----------------------|-------------|----------------------|-------------|
| | Men | | Women | | Men | | Women | | Men | | Women | |
| | Adjusted probability | Fold-change | Adjusted probability | Fold-change | Adjusted probability | Fold-change | Adjusted probability | Fold-change | Adjusted probability | Fold-change | Adjusted probability | Fold-change |
| Self-reported-physician-diagnosed mood and/or anxiety disorder(s) | | | | | | | | | | | | |
| No [†] | 0.15 | ... | 0.20 | ... | 0.12 | ... | 0.17 | ... | 0.21 | ... | 0.21 | ... |
| Yes | 0.47 | 3.1* | 0.38 | 1.9* | 0.33 | 2.8* | 0.36 | 2.1* | 0.35 | 1.7* | 0.39 | 1.9* |
| High self-worth (no feelings of worthlessness in past month) | | | | | | | | | | | | |
| No [†] | 0.34 | ... | 0.41 | ... | 0.22 | ... | 0.36 | ... | 0.45 | ... | 0.43 | ... |
| Yes | 0.19 | 0.6* | 0.21 | 0.5* | 0.13 | 0.6* | 0.19 | 0.5* | 0.18 | 0.4* | 0.18 | 0.4* |
| Drug use (prescription/street drugs for recreation use) | | | | | | | | | | | | |
| No [†] | 0.15 | ... | 0.22 | ... | 0.11 | ... | 0.20 | ... | 0.19 | ... | 0.22 | ... |
| Yes | 0.34 | 2.3* | 0.40 | 1.8* | 0.25 | 2.3* | 0.36 | 1.8* | 0.36 | 1.9* | 0.35 | 1.6* |
| Heavy, frequent drinking (five or more drinks at least once a week) | | | | | | | | | | | | |
| No [†] | — | ... | — | ... | — | ... | — | ... | — | ... | 0.22 | ... |
| Yes | — | — | — | — | — | — | — | — | — | — | 0.40 | 1.8* |
| Excellent/very good health | | | | | | | | | | | | |
| No [†] | 0.24 | ... | — | — | — | — | 0.27 | ... | — | — | 0.27 | ... |
| Yes | 0.18 | 0.8* | — | — | — | — | 0.18 | 0.7* | — | — | 0.18 | 0.7* |
| Marital status | | | | | | | | | | | | |
| Married/common-law [†] | 0.21 | ... | 0.23 | ... | 0.12 | ... | 0.23 | ... | 0.22 | ... | 0.24 | ... |
| Widowed/divorced/separated | 0.25 | 1.2 | 0.32 | 1.4* | 0.22 | 1.8* | 0.28 | 1.2 | 0.42 | 1.9* | 0.25 | 1.0 |
| Single (never married) | 0.22 | 1.0 | 0.26 | 1.1 | 0.18 | 1.5* | 0.21 | 0.9 | 0.20 | 0.9 | 0.23 | 1.0 |
| Personal/parent/grandparent history of residential school | | | | | | | | | | | | |
| No [†] | 0.20 | ... | 0.21 | ... | 0.11 | ... | 0.23 | ... | 0.19 | ... | 0.23 | ... |
| Yes | 0.21 | 1.1 | 0.27 | 1.3 | 0.15 | 1.4 | 0.28 | 1.2 | 0.24 | 1.3 | 0.26 | 1.1 |
| Don't know/refusal/not stated | 0.24 | 1.2 | 0.31 | 1.5* | 0.22 | 2.0* | 0.19 | 0.8 | 0.25 | 1.3 | 0.18 | 0.8 |

... not applicable

* significantly different from reference category (p<0.05)

[†] reference category for fold-change

— characteristic not significantly associated with suicidal thoughts when accounting for other characteristics, and not included in the final analysis

Notes: Changes in the likelihood (adjusted probability or marginal prevalence ratio) of suicidal thoughts for those with a characteristic compared with those without the characteristic were calculated while simultaneously including other characteristics in the analysis.

Household income and/or highest level of schooling were also included as control characteristics that may account for other unknown or unmeasured characteristics that may explain suicidal thoughts (not shown). For more details on regression results, see appendix (Tables B.1 to B.3).

The fold-changes were not statistically compared between Aboriginal groups and sexes. For example, fold-change for mood and/or anxiety disorders among First Nations men was not compared with the same in other groups.

Source: Statistics Canada, Aboriginal Peoples Survey, 2012.

Being widowed, divorced, separated or never being married was associated with suicidal thoughts in some Aboriginal groups

Off-reserve First Nations women and Métis men and women who were widowed, divorced or separated as well as those who never married were more likely than those who were married or living in common-law relationships to have reported suicidal thoughts (Table 1). When the influence of other factors was taken into consideration, the likelihood of suicide thoughts remained significantly lower among those who were married or living in common-law relationships compared to those who were widowed, divorced or separated for Métis and Inuit men and for off-reserve First Nations women. This was the case as well when married or common-law Métis men were compared to Métis men who were never married (Table 2).

Off-reserve First Nations women, Métis men and Métis women with personal or familial residential school experience were more likely than those without such experience to have had suicidal thoughts (Table 1). In other groups, while the estimates trended towards higher prevalence among those with personal or familial residential school experience versus those with none, the differences did not reach statistical significance. When other characteristics were considered, suicidal thoughts were **marginally**⁸ associated with residential school experience only among Métis women (Table 2). To see if the non-association may be due to small samples sizes, the analysis was repeated using a combined sample (pooled sample of the three groups and both sexes). In this analysis, residential school experience was significantly associated with occurrence of suicidal thoughts (data not shown).

In the unadjusted analysis, higher after-tax household income was correlated with a lower likelihood of having had suicidal thoughts (Table 1). However, the relationship was no longer significant when other factors were considered. No associations emerged between level of education or remoteness and reporting suicidal thoughts (data not shown).

Conclusion

In 2012, more than one in five First Nations living off reserve, Métis and Inuit aged 26 to 59 reported having ever had thoughts of suicide during their lifetime. Except among Métis men, suicidal thoughts were more common among these Aboriginal groups than among their non-Aboriginal contemporaries.

For men and women in all Aboriginal groups, having mood and/or anxiety disorders and drug use were associated with an increased likelihood of suicidal thoughts, while high self-worth was associated with the opposite, even when other factors were taken into account. Associations with heavy, frequent drinking; self-reported health; and marital status were less consistent, varying with the specific Aboriginal group and the sex of respondent.

Suicidal thoughts were more prevalent among off-reserve First Nations women, Métis men and women with a personal or familial experience of residential schools before controlling for other factors. After adjusting for other factors, residential school experience was marginally associated with suicidal thoughts only among Métis women. The small samples available for analysis when each Aboriginal group was disaggregated by sex may have contributed to the observed lack of association. When data for all three Aboriginal groups and sexes was combined, residential school experience was significantly associated with suicidal thoughts suggesting that the previous findings may be the result of small sample sizes.

Many of the characteristics found to be significant in this study have been associated with suicidal thoughts in other populations. Consistent with this, parallel analyses using the 2012 CCHS-MH data (data not shown) indicated that, similar to the Aboriginal groups, mood and/or anxiety disorders, lack of high self-worth and drug use were associated with higher prevalence of suicidal thoughts among non-Aboriginal adults. However, for non-Aboriginal men and women, being widowed, divorced or separated was not associated with suicidal thoughts, in contrast to the association found for off-reserve First Nations women, and Métis and Inuit men. Furthermore, for non-Aboriginal adults of both sexes, being single was associated with suicidal thoughts,⁹ whereas this was the case only for Métis men. Other studies have yielded mixed results, with some suggesting an association between marital status and suicidal thoughts (Weissman et al. 1999) while others do not (Kessler et al. 2005). Reporting excellent or very good health was associated with lower likelihood of suicidal thoughts among non-Aboriginal men and women, whereas this was true only for off-reserve First Nations men and for Inuit and Métis women.

8. p-value just over the 0.05 threshold ($p=0.08$; data not shown).

9. Marginally significant in women ($p=0.06$; data not shown).

Overall, some risk factors such as mood or anxiety disorders, lack of high self-worth and drug use were associated with suicidal thoughts in all three Aboriginal groups and in the non-Aboriginal population. The higher prevalence of some of the risk factors such as mood disorders in off-reserve First Nations and Métis compared to the non-Aboriginal population (Gionet and Roshanafshar 2013) may suggest a greater importance of this risk factor for suicidal thoughts among these Aboriginal populations. Other characteristics such as marital status and self-rated health were differentially associated among the Aboriginal groups and the non-Aboriginal population.

This study provides the latest prevalence estimates for lifetime suicidal thoughts for three Aboriginal groups, off-reserve First Nations, Métis and Inuit, and for each sex among them. It also identifies characteristics associated with suicidal thoughts among these Aboriginal groups. More research is needed to examine other characteristics such as social support, life stress and feelings of hopelessness. The identification of both common and unique factors associated with suicidal thoughts among different Aboriginal groups adds to existing literature on factors that could inform development of suicide prevention programs.

Limitations

Suicidal thoughts may be under-reported owing to the stigma attached to suicide, and also, to an inability to recall such thoughts, especially if they occurred a long time ago.

The prevalence estimates for Aboriginal and non-Aboriginal people come from separate surveys (APS and CCHS-MH) that use different sampling frames, questions, and sequencing and placement of questions. In addition, “lifetime suicidal thoughts” is a one-item variable in the APS data, but a derived variable in the CCHS-MH data. These differences may affect the comparability of the estimates.

The exclusion of the on-reserve First Nations population from the Aboriginal Peoples Survey prevented the analysis of this population. In Manitoba, suicide rates have been shown to be higher among on-reserve First Nations compared with off-reserve First Nations (Malchy et al. 1997). Nationally, lifetime suicidal thoughts were reported by 22.0% of on-reserve First Nations adults during the 2008-to-2010 period (First Nations Information Governance Centre 2012), somewhat higher than the figure for off-reserve First Nations individuals aged 18 or older in 2012 (19.5%).

As noted above, several characteristics such as social support, life stress and feelings of hopelessness that have been associated with suicidal thoughts in previous research could not be explored here because they or adequate proxies were not available in the Aboriginal Peoples Survey. Also, the reference periods for characteristics such as heavy, frequent drinking and household income are not the same as the reference period for the suicidal thoughts.

Some associations and their strengths may be affected by the validity of the measures in the 2012 APS. For example, self-reports of diagnosed mood and/or anxiety disorders may not produce prevalence estimates comparable to those that would be obtained using a validated instrument such as the World Health Organization World Mental Health Composite International Diagnostic Interview (WHO WMH-CIDI) (World Health Organization 2004). Similarly, the ability of a single question to measure self-worth compared with a validated multi-item scale is unknown, as is the impact of using this variable in the analysis. And, while heavy, frequent drinking is the measure of alcohol consumption employed here, other research has used measures of drinking frequency and intensity as potential predictors of suicidal thoughts (Conner et al. 2003).

Finally, the data are cross-sectional, representing a snapshot in time. Although this analysis shows several characteristics to be associated with suicidal thoughts, cause-and-effect relationships cannot be inferred.

References

- Aboriginal Healing Foundation. *Suicide among Aboriginal People in Canada*. Ottawa, ON: Aboriginal Healing Foundation, 2007. Available at: <http://www.douglas.qc.ca/uploads/File/2007-AHF-suicide.pdf>
- Bagalkot TR, Park J-I, Kim H-T, Kim H-M, Kim MS, Yoon M-S, et al. Lifetime prevalence of and risk factors for suicidal ideation and suicide attempts in a Korean community sample. *Psychiatry*. 2014; 77(4): 360-73.
- Bartlett JG, Iwasaki Y, Gottlieb B, Hall D, Mannell R. Framework for Aboriginal-guided decolonizing research involving Métis and First Nations persons with diabetes. *Soc Sci Med*. 2007; 65(11): 2371-82.
- Bastos LS, Oliveira Rde V, Velasque Lde S. Obtaining adjusted prevalence ratios from logistic regression models in cross-sectional studies. *Cad Saude Publica*. 2015; 31(3): 487-95.
- Borges G, Walters EE, Kessler RC. Associations of substance use, abuse, and dependence with subsequent suicidal behavior. *Am J Epidemiol*. 2000; 151(8): 781-9.
- Bronisch T, Wittchen HU. Suicidal ideation and suicide attempts: comorbidity with depression, anxiety disorders, and substance abuse disorder. *Eur Arch Psychiatry Clin Neurosci*. 1994; 244(2): 93-8.
- Brown JD, Marshall MA. *The three faces of self-esteem*. Self-esteem: Issues and answers. New York: Psychology Press; 2006. p. 4-9.
- Buettner C, Ripberger MJ, Smith JK, Leveille SG, Davis RB, Mittleman MA. Statin use and musculoskeletal pain among adults with and without arthritis. *Am J Med*. 2012; 125(2): 176-82.
- Clarke DE, Eaton WW, Petronis KR, Ko JY, Chatterjee A, Anthony JC. Increased risk of suicidal ideation in smokers and former smokers compared to never smokers: Evidence from the Baltimore ECA follow-up study. *Suicide Life Threat Behav*. 2010; 40(4): 307-18.
- Cloutier E, Langlet É. *Aboriginal Peoples Survey, 2012: Concepts and Methods Guide*. Ottawa, ON: Statistics Canada, 2014. Available at: <http://www.statcan.gc.ca/pub/89-653-x/89-653-x2013002-eng.pdf>
- Conner KR, Li Y, Meldrum S, Duberstein PR, Conwell Y. The role of drinking in suicidal ideation: analyses of Project MATCH data. *J Stud Alcohol*. 2003; 64(3): 402-8.
- Coombs DW, Miller HL, Alarcon R, Herlihy C, Lee JM, Morrison DP. Presuicide attempt communications between parasuicides and consulted caregivers. *Suicide Life Threat Behav*. 1992; 22(3): 289-302.
- Cottler LB, Campbell W, Krishna VaS, Cunningham-Williams RM, Abdallah AB. Predictors of high rates of suicidal ideation among drug users. *J Nerv Ment Dis*. 2005; 193(7): 431-7.
- Crosby AE, Sacks JJ. Exposure to suicide: incidence and association with suicidal ideation and behavior: United States, 1994. *Suicide Life Threat Behav*. 2002; 32(3): 321-8.
- De Leo D, Cerin E, Spathonis K, Burgis S. Lifetime risk of suicide ideation and attempts in an Australian community: prevalence, suicidal process, and help-seeking behaviour. *J Affect Disord*. 2005; 86(2-3): 215-24.
- de Man AF, Leduc CP, Labrèche-Gauthier L. Correlates of suicide ideation in French-Canadian adults and adolescents: a comparison. *J Clin Psychol*. 1992; 48(6): 811-6.
- de Man AF, Balkou S, I R. Social support and suicidal ideation in French-Canadians. *Canadian Journal of Behavioural Science/Revue canadienne des sciences du comportement*. 1987; 19(3): 342-6.
- Dooley D, Datalano R, Rook K, Serxner S. Economic stress and suicide: Multilevel analyses. Part 2: Cross-level analyses of economic stress and suicidal ideation. *Suicide Life Threat Behav*. 1989; 19(4):337-51.
- First Nations Information Governance Centre. *First Nations Regional Longitudinal Health Survey (RHS) 2002/03: Results for Adults, Youth and Children Living in First Nations Communities*. Ottawa, ON: First Nations Information Governance Centre, 2005. Available at: http://fnigc.ca/sites/default/files/ENpdf/RHS_2002/rhs2002-03-technical_report.pdf
- . *First Nations Regional Health Survey (RHS) 2008-10. National Report on Adults, Youth and Children living in First Nations Communities*. Ottawa, ON: First Nations Information Governance Centre, 2012. Available at: [http://fnigc.ca/sites/default/files/First%20Nations%20Regional%20Health%20Survey%20\(RHS\)%202008-10%20-%20National%20Report.pdf](http://fnigc.ca/sites/default/files/First%20Nations%20Regional%20Health%20Survey%20(RHS)%202008-10%20-%20National%20Report.pdf)

Gionet L., Roshanafshar S. *Select health indicators of First Nations people living off reserve, Métis and Inuit*. Health at a Glance. 2013.

Goodwin R, Olfson M. Self-perception of poor health and suicidal ideation in medical patients. *Psychol Med*. 2002; 32(7): 1293-9.

Hagedoorn M, Van Yperen NW, Coyne JC, van Jaarsveld CHM, Ranchor AV, van Sonderen E, et al. Does marriage protect older people from distress? The role of equity and recency of bereavement. *Psychol Aging*. 2006; 21(3): 611-20.

Haig-Brown C. *Resistance and Renewal: Surviving the Indian Residential School*. Vancouver, BC: Arsenal Pulp Press; 1988. Canadian First edition ed.

Harvard Medical School. *K10 and K6 Scales*. 2005. Available at: http://www.hcp.med.harvard.edu/ncs/k6_scales.php.

Health Canada. *Canadian Alcohol and Drug Use Monitoring Survey*. Ottawa: Health Canada, 2010. Available at: http://www.hc-sc.gc.ca/hc-ps/drugs-drogués/stat/_2010/summary-sommaire-eng.php.

Hintikka J, Koivumaa-Honkanen H, Lehto SM, Tolmunen T, Honkalampi K, Haatainen K, et al. Are factors associated with suicidal ideation true risk factors? A 3-year prospective follow-up study in a general population. *Soc Psychiatry Psychiatr Epidemiol*. 2009; 44(1): 29-33.

Inder KJ, Handley TE, Johnston A, Weaver N, Coleman C, Lewin TJ, et al. Determinants of suicidal ideation and suicide attempts: parallel cross-sectional analyses examining geographical location. *BMC Psychiatry*. 2014; 14: 208.

Indigenous and Northern Affairs Canada. *Statement of apology to former students of Indian Residential Schools*. Ottawa, ON: Aboriginal Affairs and Northern Development Canada, 2008. Available at: <https://www.aadnc-aandc.gc.ca/eng/1100100015644/1100100015649>.

---. *Terminology*. Ottawa, ON: Indigenous and Northern Affairs Canada, 2012. Available at: <http://www.aadnc-aandc.gc.ca/eng/1100100014642/1100100014643>.

Isik F. *Statistical consulting report*. Raleigh, NC: College of Natural Resources, NCSU, 2009. Available at: <http://www4.ncsu.edu/~fisik/Statistical%20Consulting%20Report/Survey%20Data%20Analysis%20Example%20-%20Caitlin%20Burke.pdf>

Jang J-M, Park J-I, Oh K-Y, Lee K-H, Kim MS, Yoon M-S, et al. Predictors of suicidal ideation in a community sample: roles of anger, self-esteem, and depression. *Psychiatry Res*. 2014; 216(1): 74-81.

Kenny PJ, File SE, Rattray M. Nicotine regulates 5-HT(1A) receptor gene expression in the cerebral cortex and dorsal hippocampus. *Eur J Neurosci*. 2001; 13(6): 1267-71.

Kessler RC, Berglund P, Borges G, Nock M, Wang PS. Trends in suicide ideation, plans, gestures, and attempts in the United States, 1990-1992 to 2001-2003. *JAMA*. 2005; 293(20): 2487-95.

Kleiman EM, Riskind JH. Utilized social support and self-esteem mediate the relationship between perceived social support and suicide ideation. A test of a multiple mediator model. *Crisis*. 2013; 34(1): 42-9.

Knockwood I. *Out of the depths: The experiences of Mi'kmaw children at the Indian Residential School at Shubenacadie, Nova Scotia*. Lockeport, NS: Roseway; 1992. 2nd ed edition ed.

Kumar MB, Walls M, Janz T, Hutchinson P, Turner T, Graham C. Suicidal ideation among Métis adult men and women--associated risk and protective factors: findings from a nationally representative survey. *Int J Circumpolar Health*. 2012; 71: 18829.

Lemstra M, Rogers M, Moraros J, Grant E. Risk indicators of suicide ideation among on-reserve First Nations youth. *Paediatr Child Health*. 2013; 18(1): 15-20.

Malchy B, Enns MW, Young TK, Cox BJ. Suicide among Manitoba's aboriginal people, 1988 to 1994. *CMAJ*. 1997; 156(8): 1133-8.

Mann JJ. Neurobiology of suicidal behaviour. *Nat Rev Neurosci*. 2003; 4(10): 819-28.

McLaren S, Gomez R, Gill P, Chesler J. Marital status and suicidal ideation among Australian older adults: the mediating role of sense of belonging. *Int Psychogeriatr*. 2015; 27(1): 145-54.

- Miller LC, Rosas SR, Hall K. Using concept mapping to describe sources of information for public health and school nursing practice. *Journal of Research in Nursing*. 2011.
- Nock MK, Borges G, Bromet EJ, Alonso J, Angermeyer M, Beautrais A, et al. Cross-national prevalence and risk factors for suicidal ideation, plans and attempts. *Br J Psychiatry*. 2008; 192(2): 98-105.
- Park S-M, Cho S-I, Moon S-S. Factors associated with suicidal ideation: role of emotional and instrumental support. *J Psychosom Res*. 2010; 69(4): 389-97.
- Peters EJ. *First Nations and Métis People and Diversity in Canadian Cities*. Ottawa, ON: Institute for Research on Public Policy, 2007. Available at: <http://irpp.org/research-studies/peters-2006-11-16/>
- Public Health Agency of Canada. *The Human Face of Mental Health and Mental Illness in Canada 2006*. Ottawa, ON: Public Health Agency of Canada, 2011. Available at: <http://www.phac-aspc.gc.ca/publicat/human-humain06/>
- Robins E, Gassner S, Kayes J, Wilkinson RH, Murphy GE. The communication of suicidal intent: a study of 134 consecutive cases of successful (completed) suicide. *Am J Psychiatry*. 1959; 115(8): 724-33.
- RTI International. DESCRIPT Example 7. Research Triangle Park, NC: RTI International. Available at: http://www.rti.org/sudaan/pdf_files/110Example/DESCRIPT%20Example%207.pdf.
- SAS Institute. *The FREQ Procedure: Cochran-Armitage Trend Test*. Cary, NC: SAS Institute Inc., 2010. Available at: http://support.sas.com/documentation/cdl/en/procstat/63104/HTML/default/viewer.htm#procstat_freq_sect032.htm.
- Statistics Canada. *Canadian Community Health Survey - Mental Health (CCHS)*. Ottawa, ON: Statistics Canada, 2012. Available at: <http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=5015>
- . *Aboriginal Peoples in Canada: First Nations People, Métis and Inuit*. Ottawa, ON: Statistics Canada, 2013a. Available at: <http://www12.statcan.gc.ca/nhs-enm/2011/as-sa/99-011-x/99-011-x2011001-eng.cfm>
- . *Classification of Registered or Treaty Indian Status*. Ottawa, ON: Statistics Canada, 2013b. Available at: <http://www23.statcan.gc.ca/imdb/p3VD.pl?Function=getVD&TVD=61090&CVD=61090&CLV=0&MLV=1&D=1>
- . *Canadian Community Health Survey Cycle 1.2 Mental Health and Well-being: Public Use Microdata File Documentation*. Ottawa, ON: Statistics Canada, 2013c. Available at: http://www23.statcan.gc.ca/imdb-bmdi/document/3226_DLI_D1_T22_V2-eng.pdf.
- Vittinghoff E, Glidden DV, Shiboski SC, McCulloch CE. *Predictor selection*. Regression Methods in Biostatistics. Boston, MA: Springer US; 2012. p. 147.
- Weissman MM, Bland RC, Canino GJ, Greenwald S, Hwu HG, Joyce PR, et al. Prevalence of suicide ideation and suicide attempts in nine countries. *Psychol Med*. 1999; 29(1): 9-17.
- Wiener RC, Wiener MA, McNeil DW. Comorbid depression/anxiety and teeth removed: Behavioral Risk Factor Surveillance System 2010. *Community Dent Oral Epidemiol*. 2015.
- World Health Organization. *The World Mental Health Composite International Diagnostic Interview*. Boston: Dept. of Health Care Policy, Harvard Medical School, 2004. Available at: <http://www.hcp.med.harvard.edu/wmhcid/>.
- Wright R. Social support and health outcomes in a multicultural urban population. *Soc Work Health Care*. 2006; 43(4): 15-28.

Appendix

Data and methods

Data

The data are from the 2012 Aboriginal Peoples Survey (APS) and the 2012 Canadian Community Health Survey-Mental Health (CCHS-MH). The former was used for the analysis of suicidal thoughts among off-reserve First Nations, Métis and Inuit; the latter was used to compare the APS estimates with those for the non-Aboriginal population.

The 2012 APS was a national survey of First Nations people living off reserve, Métis and Inuit aged 6 or older. It was the fourth cycle of the APS and focused on education, employment and health. The survey excluded residents of Indian reserves and settlements and certain First Nations communities in the Yukon and the Northwest Territories. The response rate was 76%, resulting in an Aboriginal sample of 28,410 (Cloutier and Langlet 2014). The study population for this analysis was restricted to 26- to 59-year-olds who responded to questions on suicidal thoughts, yielding a sample of 10,306. This age group was chosen because the characteristics associated with suicidal thoughts among people in this age range are expected to differ from those among young adults (18 to 25) and seniors (60 or older).

The 2012 CCHS-MH was a cross-sectional survey of the mental health status of Canadians and their use of mental health services (Statistics Canada 2012). Data were collected from the household population aged 15 or older in the 10 provinces. The survey excluded residents of Indian reserves and settlements,¹⁰ full-time members of the Canadian Forces, and the institutionalized population. The response rate was 68.9%, yielding a sample of 25,113 (Statistics Canada 2013c). The study population for this analysis was 26- to-59-year-olds who did not identify as an Aboriginal person (“non-Aboriginal”) yielding a sample size of 11,822.

The questions on suicidal thoughts in the two surveys differed. For the APS, respondents were asked a series of questions on suicidal thoughts and attempts, including “Have you ever seriously considered committing suicide or taking your own life?” Those who responded “Yes” to this lifetime question were asked about past-year suicidal thoughts: “Has this happened in the past 12 months?”

In the CCHS-MH, the presence of “lifetime suicidal thoughts” was based on a variable derived using a combination of questions: 1) “Has [this] ever happened to you: **You seriously thought about committing suicide or taking your own life**”; and 2) “Think of the period of two weeks or longer when your feelings of being [depressed] and other problems were most severe and frequent. During that time, did you seriously think **about committing suicide/taking your own life**?” Those who responded “Yes” to this lifetime question were asked about past-year suicidal thoughts: “In the past 12 months, did [this] happen to you: **You seriously thought about committing suicide or taking your own life.**”

Analysis

The data analyzed in this study concern **lifetime** suicidal thoughts: having ever (at any point in a person’s lifetime) seriously thought of taking her/his own life. “Lifetime suicidal thoughts” was chosen instead of **past-year** suicidal thoughts to increase the sample size and because many characteristics potentially related to suicidal thoughts were expected to be relatively consistent over time, including high self-worth (Brown and Marshall 2006),¹¹ or they pertained to lifetime experience/occurrence, such as ever being diagnosed with a mood and/or anxiety disorder. Separate analyses were conducted for men and women, and the three Aboriginal groups because of: 1) a higher prevalence of suicidal thoughts among women in many populations (Crosby and Sacks 1994; Weissman et al. 1999), including Métis (Kumar et al. 2012); 2) the varied historical and contemporary experiences of First Nations, Métis and Inuit (Bartlett et al 2007; Peters 2007); and 3) reported differences in predictors of suicidal thoughts among Métis men and women (Kumar et al. 2012).

10. In the 2012 CCHS-Mental Health, these are called “reserves and other Aboriginal settlements.”

11. In this paper, self-worth is used as a proxy for self-esteem because the APS did not include questions that could be used to assess self-esteem.

Prevalence estimation

The prevalence of lifetime suicidal thoughts was estimated using methods that account for the complex survey designs of the APS and the CCHS (Cloutier and Langlet 2014; Statistics Canada 2013c). Missing values (“don’t know,” “not stated,” “refusal”) were excluded from the denominator when calculating percentages unless they constituted more than 5% of the total (as in the case of residential school experience). Statistically significant differences were determined using tests specific for complex survey data (Isik 2009; Miller et al. 2011; RTI International n.d.; Wiener et al. 2015).

Characteristics or risk factors associated with lifetime suicidal thoughts

The risk factors considered in this analysis are based on the literature and their availability in the Aboriginal Peoples Survey. These include health-related and socio-economic characteristics. The former comprise of mood and/or anxiety disorders, self-worth, drug use, alcohol abuse or misuse, and self-reported health. The socio-economic characteristics include marital status, household income, highest level of schooling, remoteness and personal or familial history of residential school.

In this study, the health-related risk factors were operationalised as follows:

- Mood and/or anxiety disorders:¹² self-reported health-professional-diagnosed mood and/or anxiety disorders
- High self-worth: not having had feelings of worthlessness in the previous month (Harvard Medical School 2005)^{13,14}
- Drug use: having ever used prescription medications for recreational purposes or street drugs
- Heavy, frequent drinking (Health Canada 2010): having consumed five or more drinks on one occasion, once or more than once a week in the prior 12 months
- Current daily smoking: smoking at least one cigarette on a daily basis
- Self-reported health: excellent or very good health versus good/fair/poor health.

The socio-economic characteristics were operationalised as follows:

- Marital status: (i) married or common-law, (ii) widowed, divorced or separated, or (iii) single (never married)
- Household income: adjusted after-tax household income quintiles¹⁵
- Highest level of schooling: less than high school, high school, and postsecondary completion
- Remoteness: living in weak- or non-metropolitan-influenced zone¹⁶
- Personal/parent/grandparent history of residential school experience: defined as having attended or having had one or more parent or grandparent who attended a residential school.

12. Mood and/or anxiety disorders included depression, bipolar disorder, mania, dysthymia, phobia, obsessive-compulsive disorder, or a panic disorder

13. Although respondents were asked about their feelings of self-worth only for the previous month, self-esteem has been shown to be consistent over time.

14. This variable is part of larger, validated scale for measuring non-specific psychological distress, the Kessler scale. The scale consists of 10 items or questions, only one of which is used here to assess high self-worth. Other research on mental distress has used this variable in the context of the full Kessler scale.

15. After-tax household income adjusted to take household size into account is used. Household income quintiles represent 20% of all households or fifths. The quintiles used here are: first or lowest (less than or equal to \$17,975); second (greater than \$17,975 to less than \$27,626); third (\$27,626 to less than \$38,429), fourth quintile (\$38,429 to less than or equal to \$53,287), and top quintile (greater than \$53,287).

16. Municipalities are assigned to a census metropolitan area (CMA), census agglomeration (CA), or metropolitan influenced zone (MIZ). If a municipality is not a CMA or a CA, a MIZ category is assigned based on the percentage of its employed residents who commute to work in the core of a CMA or CA. MIZ categories are strong, moderate, weak or no MIZ.

Other characteristics such as social support (Kumar et al. 2012; Park et al. 2010; Wright 2006), hopelessness, and childhood trauma (Mann 2003), which have been associated with suicidal thoughts in the literature, were not included in the analysis because they or adequate proxies were not available in the Aboriginal Peoples Survey.

Bivariate and multivariate analyses

Bivariate analyses were conducted to determine if individuals with specific characteristics were more or less likely to have had suicidal thoughts. One characteristic at a time was examined without adjusting for other potentially associated factors. Statistically significant differences were identified using tests specific for complex survey data (Isik 2009; Miller et al. 2011; RTI International n.d.; Wiener et al. 2015). For ordinal variables such as household income quintiles, trends in correlation between categories of the variable and suicidal thoughts were tested using Cochran-Armitage Trend Test (SAS Institute 2010).

Logistic regression analyses that considered many variables simultaneously were then performed to identify characteristics significantly associated with having ever had suicidal thoughts while controlling for the other characteristics. The characteristics included in the logistic regressions were those that were correlated with suicidal thoughts in the bivariate analyses or that have been shown to be associated in previous research.

The final analysis usually retained only characteristics that were statistically associated with suicidal thoughts. However, some were kept regardless of significant associations if they had been consistently/strongly associated with suicidal thoughts in previous research (Vittinghoff et al. 2012, p. 147).¹⁷ Adjusted after-tax household income was retained as a proxy for factors such as life stress, especially economic stress (Dooley et al. 1989; Hintikka et al. 2009), that are related to suicidal thoughts but for which no data were collected in the survey.

The marginal prevalence ratio (increase in likelihood with the presence of a characteristic, in the case of yes/no characteristics, when adjusting for other characteristics) of having had suicidal thoughts was estimated for individuals with and without each characteristic. Increase or decrease in likelihood (“fold change” or “marginal prevalence ratio” (Bastos et al. 2015; Buettner et al. 2012)) was calculated by dividing the likelihood estimate for respondents with a characteristic by that for respondents without the characteristic. For example, if the fold change was 2.0 for a particular characteristic, individuals with the characteristic were twice as likely to have had suicidal thoughts compared with those who did not have the characteristic after controlling for other characteristics. By contrast, if the change was 0.5 for a characteristic, individuals with the characteristic were half as likely to have had suicidal thoughts compared with those without the characteristic.

17. Characteristics statistically associated with suicidal thoughts in the final analysis were determined based on the Allen-Cady modified backwards-selection method. Briefly, potential risk factors were divided into two groups. The risk factors in the first group have been shown to be strongly/consistently associated with suicidal thoughts in previous research, and were retained in the analysis regardless of statistical significance. These included mood and/or anxiety disorders; high self-worth; drug use; and marital status. The factors in the second group were ranked based on potential importance as risk factors of suicidal thoughts. In the regression analysis, these are removed in order of ascending importance until the first risk factor with a p-value of 0.05 is reached.

Table A.1
Prevalence of lifetime and past-year suicidal thoughts among off-reserve First Nations, Métis, Inuit and non-Aboriginal population, aged 26 to 59 years, by sex, Canada, 2012

| | Percent | 95% confidence interval | |
|--|---------|-------------------------|-------------------|
| | | from | to |
| Lifetime suicidal thoughts | | | |
| Off-reserve First Nations, Inuit and Métis, and sexes combined | 21.9 | 20.4 | 23.3 |
| Off-reserve First Nations | 24.0 | 21.1 ^a | 26.9 ^a |
| Inuit | 23.5 | 19.7 ^a | 27.3 ^a |
| Métis | 19.6 | 17.2 ^a | 22.1 ^a |
| Off-reserve First Nations, Inuit and Métis combined | | | |
| Men | 18.3 | 16.1 | 20.5 |
| Women | 24.5 | 22.4 | 26.7 |
| Off-reserve First Nations | | | |
| Men | 21.4 | 19.6 ^b | 23.3 ^b |
| Women | 25.8 | 22.0 ^b | 29.5 ^b |
| Inuit | | | |
| Men | 23.1 | 16.0 ^b | 30.3 ^b |
| Women | 23.8 | 18.1 ^b | 29.4 ^b |
| Métis | | | |
| Men | 14.9 | 11.2 ^b | 18.7 ^b |
| Women | 23.4 | 18.3 ^b | 28.4 ^b |
| Non-Aboriginal (provinces only) | | | |
| Men | 11.1 | 9.6 ^a | 12.5 ^a |
| Women | 13.8 | 12.0 ^a | 15.5 ^a |
| Past-year suicidal thoughts | | | |
| Off-reserve First Nations | | | |
| Men | 5.5 | 2.7 | 8.3 |
| Women | 6.0 | 3.9 | 8.2 |
| Inuit | | | |
| Men | 4.6 | 2.1 | 7.1 |
| Women | 5.2 | 3.3 | 7.0 |
| Métis | | | |
| Men | 3.6 | 2.5 | 4.8 |
| Women | 5.1 | 3.7 | 6.5 |

Note: For some estimates, to take into account multiple comparisons, 98.33% and 97.5% confidence intervals were used.

^a 98.33% confidence interval

^b 97.5% confidence interval

Sources: Aboriginal Peoples Survey, 2012; Canadian Community Health Survey – Mental Health, 2012.

Table B.1
Results from logistic regression analyses for lifetime suicidal thoughts among off-reserve First Nations, aged 26 to 59 years, by sex, Canada, 2012

| | Men | | | Women | | |
|---|------------------|----------------|---------|------------------|----------------|---------|
| | beta coefficient | standard error | p-value | beta coefficient | standard error | p-value |
| Intercept | -1.25 | 0.45 | 0.006 | -1.43 | 0.32 | 0.000 |
| Self-reported-physician-diagnosed mood and/or anxiety disorder(s) | 1.93 | 0.27 | 0.000 | 1.02 | 0.25 | 0.000 |
| High self-worth (no feelings of worthlessness in past month) | -1.07 | 0.31 | 0.001 | -1.12 | 0.19 | 0.000 |
| Drug use (prescription/street drugs for recreation use) | 1.44 | 0.22 | 0.000 | 1.04 | 0.19 | 0.000 |
| Excellent/very good health | -0.54 | 0.23 | 0.020 | — | — | — |
| Marital status (reference category: married/common-law) | | | | | | |
| Widowed/divorced/separated | 0.33 | 0.35 | 0.337 | 0.56 | 0.26 | 0.034 |
| Single (never married) | 0.08 | 0.26 | 0.767 | 0.20 | 0.28 | 0.471 |
| Personal/parent/grandparent history of residential school (reference category: no) | | | | | | |
| Yes | 0.13 | 0.28 | 0.633 | 0.36 | 0.25 | 0.146 |
| Don't know/refusal/not stated | 0.33 | 0.37 | 0.362 | 0.60 | 0.27 | 0.030 |

— characteristic not significantly associated with lifetime suicidal thoughts

Notes: Sample sizes: 1,850 (men) and 2,504 (women).

Regression model was adjusted for household income (both sexes).

Source: Statistics Canada, Aboriginal Peoples Survey, 2012.

Table B.2**Results from logistic regression analyses for lifetime suicidal thoughts among Métis, aged 26 to 59 years, by sex, Canada, 2012**

| | Men | | | Women | | |
|---|------------------|----------------|---------|------------------|----------------|---------|
| | beta coefficient | standard error | p-value | beta coefficient | standard error | p-value |
| Intercept | -2.08 | 0.40 | 0.000 | -1.01 | 0.35 | 0.004 |
| Self-reported-physician-diagnosed mood and/or anxiety disorder(s) | 1.50 | 0.25 | 0.000 | 1.18 | 0.20 | 0.000 |
| High self-worth (no feelings of worthlessness in past month) | -0.76 | 0.29 | 0.008 | -1.09 | 0.24 | 0.000 |
| Drug use (prescription/street drugs for recreation use) | 1.18 | 0.22 | 0.000 | 1.06 | 0.21 | 0.000 |
| Excellent/very good health | — | — | — | -0.65 | 0.21 | 0.002 |
| Marital status (reference category: married/comon-law) | | | | | | |
| Widowed/divorced/separated | 0.86 | 0.41 | 0.036 | 0.34 | 0.30 | 0.257 |
| Single (never married) | 0.56 | 0.25 | 0.024 | -0.19 | 0.22 | 0.378 |
| Personal/parent/grandparent history of residential school (reference category: no) | | | | | | |
| Yes | 0.41 | 0.25 | 0.102 | 0.38 | 0.22 | 0.084 |
| Don't know/refusal/not stated | 0.96 | 0.29 | 0.001 | -0.31 | 0.24 | 0.197 |

— characteristic not significantly associated with lifetime suicidal thoughts

Notes: Sample sizes: 1,938 (men) and 2,219 (women).

Regression model was adjusted for household income (both sexes), highest level of schooling (women).

Source: Statistics Canada, Aboriginal Peoples Survey, 2012.

Table B.3**Results from logistic regression analyses for lifetime suicidal thoughts among Inuit, aged 26 to 59 years, by sex, Canada, 2012**

| | Men | | | Women | | |
|---|------------------|----------------|---------|------------------|----------------|---------|
| | beta coefficient | standard error | p-value | beta coefficient | standard error | p-value |
| Intercept | -0.47 | 0.42 | 0.266 | -0.47 | 0.37 | 0.204 |
| Self-reported-physician-diagnosed mood and/or anxiety disorder(s) | 0.84 | 0.38 | 0.029 | 1.04 | 0.32 | 0.001 |
| High self-worth (no feelings of worthlessness in past month) | -1.56 | 0.28 | 0.000 | -1.40 | 0.25 | 0.000 |
| Drug use (prescription/street drugs for recreation use) | 1.10 | 0.28 | 0.000 | 0.78 | 0.40 | 0.051 |
| Heavy, frequent drinking | — | — | — | 1.05 | 0.38 | 0.005 |
| Excellent/very good health | — | — | — | -0.63 | 0.26 | 0.017 |
| Marital status (reference category: married/comon-law) | | | | | | |
| Widowed/divorced/separated | 1.23 | 0.48 | 0.010 | 0.08 | 0.36 | 0.818 |
| Single (never married) | -0.13 | 0.28 | 0.643 | -0.03 | 0.27 | 0.906 |
| Personal/parent/grandparent history of residential school (reference category: no) | | | | | | |
| Yes | 0.33 | 0.28 | 0.248 | 0.19 | 0.26 | 0.469 |
| Don't know/refusal/not stated | 0.38 | 0.38 | 0.315 | -0.39 | 0.40 | 0.332 |

— characteristic not significantly associated with lifetime suicidal thoughts

Notes: Sample sizes: 801 (men) and 918 (women).

Regression model was adjusted for household income and highest level of schooling (both sexes).

Source: Statistics Canada, Aboriginal Peoples Survey, 2012.