

Original quantitative research

Positive mental health and perceived change in mental health among adults in Canada during the second wave of the COVID-19 pandemic

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Abstract

Introduction: Canadian surveys from spring/summer 2020 suggest the prevalence of some positive mental health (PMH) outcomes has declined compared to pre-pandemic levels. However, less is known about the state of PMH during the second wave of the COVID-19 pandemic.

Methods: We compared adults' self-rated mental health (SRMH), community belonging and life satisfaction in Fall 2020 versus 2019 in the overall population and across sociodemographic characteristics using cross-sectional data from the Survey on COVID-19 and Mental Health (September–December, 2020) and the 2019 Canadian Community Health Survey. We also conducted regression analyses to examine which sociodemographic factors were associated with reporting in Fall 2020 that one's mental health was about the same or better compared to before the pandemic.

Results: Fewer adults reported high SRMH in Fall 2020 (59.95%) than in 2019 (66.71%) and fewer reported high community belonging in Fall 2020 (63.64%) than in 2019 (68.42%). Rated from 0 (very dissatisfied) to 10 (very satisfied), average life satisfaction was lower in Fall 2020 (7.19) than in 2019 (8.08). Females, those aged under 65 years, those living in a population centre, and those absent from work due to COVID-19 had lower odds of reporting that their mental health was about the same or better in Fall 2020.

Conclusion: The PMH of adults was lower during the pandemic's second wave. However, the majority of individuals still reported high SRMH and community belonging. The findings identify certain sociodemographic groups whose mental health appears to have been more negatively impacted by the pandemic. Continued surveillance is important in ensuring mental health builds back better and stronger in Canada after the pandemic.

Keywords: COVID-19, coronavirus, mental health, life satisfaction, community belonging, Canadian adults, public health

Introduction

The COVID-19 pandemic and resultant public health measures have led to major changes in people's lives, presenting a pressing challenge to both the physical and mental health of Canadians. Health concerns, physical and social isolation,

unemployment, uncertainty and the general disruption to people's everyday routines experienced during the pandemic have the potential to affect Canadians' mental health.

According to the Public Health Agency of Canada (PHAC), positive mental health

Highlights

- Fewer adults in Canada reported high self-rated mental health in Fall 2020 (59.95%) than in 2019 (66.71%).
- Fewer adults reported high community belonging in Fall 2020 (63.64%) than in 2019 (68.42%).
- Average life satisfaction was lower in Fall 2020 (7.19) than in 2019 (8.08).
- Being female, being under 65 years old, living in a population centre and being absent from work due to COVID-19 were associated with a lower likelihood of reporting that one's mental health was about the same or better in Fall 2020.

(PMH) is “the capacity of each and all of us to feel, think, and act in ways that enhance our ability to enjoy life and deal with the challenges we face.”^{1,p.1} PMH includes measurable outcomes such as self-rated mental health (SRMH), life satisfaction and sense of community belonging.² By examining PMH outcomes, we can gain a better understanding of the well-being of the Canadian population, and uncover how the quality of life of some subpopulations might have been disproportionately impacted during the pandemic.³

Thus far, research suggests that SRMH in Canada has declined during the pandemic. In its Canadian Perspectives Survey Series (CPSS), Statistics Canada conducted a

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number of cross-sectional surveys during the pandemic with sub-samples of respondents from the Labour Force Survey.⁴ The percentage of Canadians (aged 15+ years) who reported excellent/very good mental health was 68% in the 2018 Canadian Community Health Survey (CCHS) versus 54% from 29 March to 3 April 2020 in the first CPSS.⁵ Subsequent CPSS surveys found similar (55%; 20–26 July 2020) or even lower (48%; 4–10 May 2020) percentages reporting excellent/very good mental health.^{6,7} Frequent Leger surveys have asked Canadian adults how they would rate their mental health since the beginning of the COVID-19 crisis, with the percentage reporting excellent/very good fluctuating between 29% and 46% since April 2020.⁸

More generally, other representative surveys from spring 2020 found that roughly four in ten to one half of Canadian adults reported that their mental health had worsened,^{9–11} while Fall 2020 data from the CCHS found between three and four in ten Canadians (aged 12+ years) reported worse mental health.¹² Similar percentages of individuals in other countries (e.g. Germany, France and the United States), when surveyed in early 2021, reported that their emotional and mental health had gotten worse since the beginning of the pandemic.¹³

Beyond SRMH and perceptions of change in mental health, there is some evidence that life satisfaction has decreased in Canada. Rated from 0 (very dissatisfied) to 10 (very satisfied), average life satisfaction among Canadians (aged 15+ years) was 8.09 in the 2018 CCHS versus 6.71 in the third CPSS (15–21 June 2020).¹⁴ Furthermore, the World Happiness Report showed lower average life evaluation ratings in Canada and fewer Canadians reporting positive emotions in 2020 (vs. 2017–2019).¹⁵ Lower average life evaluation/satisfaction ratings in 2020 have also been observed in other countries (e.g. the United Kingdom, Norway and Denmark).¹⁵

Just as the likelihood of being infected or dying from COVID-19 is unequal across sociodemographic factors,^{3,16} research indicates that there are also disparities in the impact of the pandemic on mental health in Canada. Some of the aforementioned surveys have found larger declines in perceived mental health among women and young adults.^{5,6,9,10} Some findings also

suggest that parents with children under 18 years old and individuals who identify as LGBTQ2+ are more likely to report declines in mental health.^{9,17} Furthermore, larger declines in life satisfaction have been reported among young adults.¹⁴

There remain gaps in what we know about PMH in Canada, however. First, PMH is multifaceted,^{1,2} but most surveys during the pandemic have focussed on SRMH or perceived changes in mental health. It is important to also consider the impact on aspects of PMH such as social well-being (e.g. community belonging),^{2,18} given COVID-19 public health interventions that limit in-person social interaction and community events. Second, many analyses used 2018 data for the pre-pandemic estimate of PMH; more recent pre-pandemic data has become available from the 2019 CCHS. Third, although differences in PMH for men and women have been examined, comprehensive gender-based analyses across sociodemographic characteristics with representative data have been limited. Fourth, data for most of the aforementioned Canadian surveys were collected in the spring or summer of 2020. Given the different context in Fall 2020 (e.g. a second wave of COVID-19 infections, many children returning to school) and that the effect of stressful events on mental health can be delayed or persist for some individuals,^{19–21} it is essential to obtain updated PMH estimates.

This research addressed these gaps by comparing SRMH, community belonging and life satisfaction in the 2019 CCHS to Fall 2020 data from the Survey on COVID-19 and Mental Health (SCMH).²² SRMH, community belonging and life satisfaction are well-established and validated outcomes that are included in PHAC's Positive Mental Health Surveillance Indicator Framework.^{2,23–26} We documented how PMH has changed across numerous sociodemographic characteristics among adults overall and by gender. Beyond documenting differences in the prevalence of PMH outcomes in 2019 versus Fall 2020, we also investigated perceived changes in mental health in Fall 2020. We examined the likelihood of self-reporting in Fall 2020 that one's mental health is about the same or better compared to before the pandemic by various sociodemographic factors assessed in the SCMHS.

Methods

Data

We used cross-sectional data collected from 11 September to 4 December 2020 for the SCMHS to estimate PMH and perceived change in mental health during the pandemic.²² The target population was individuals aged 18 years and older who were living in the 10 provinces and three territorial capitals in Canada. Within each province/territorial capital, a simple random sample of dwellings was selected and then an adult within each dwelling was sampled.²² The Dwelling Universe File was used for the sampling frame. Individuals living on reserves; in institutions; in collective, vacant, inactive or unmailable dwellings; and outside capital cities in the territories were excluded from the sampling frame. Respondents voluntarily completed the 2020 SCMHS by electronic questionnaire or through computer-assisted telephone interviewing. The response rate in the SCMHS was 53.3%, with 14 689 respondents in total; we analyzed the data from the 12 344 respondents who agreed to share their data with PHAC.

We used cross-sectional data collected from 2 January to 24 December for the 2019 CCHS – Annual Component for pre-pandemic PMH estimates.²⁷ The CCHS target population is individuals aged 12 years and older who are living in the 10 provinces and three territories in Canada. Individuals who are full-time Canadian Forces members, institutionalized or living in foster homes, living on reserves and other Indigenous settlements or living in two specific Quebec health regions are excluded from the CCHS, and represent less than 3% of the population. For adults living in the provinces, the 2019 CCHS used the sampling frame from the Labour Force Survey.²⁸ A sample of dwellings was selected and then an adult within each dwelling was selected to participate in the 2019 CCHS.²⁷ The CCHS is voluntary, and is completed by computer-assisted telephone interview or personal interview. To match the 2020 SCMHS, only data from respondents aged 18 and older were analyzed (N = 57 034; response rate: 54.9%). Data from 2019 CCHS respondents in the territories could not be analyzed because territorial data in the CCHS is only representative after two years of data collection. Due to the exclusion of territorial data in the CCHS 2019 dataset, we excluded data from the territorial capitals

in the 2020 SCMH when comparing 2020 versus 2019 estimates.

Measures

Positive mental health outcomes

SRMH was measured with the questions “In general, how is your mental health?” in the 2020 SCMH and “In general, would you say your mental health is ...?” in the 2019 CCHS. Response options were “Excellent”, “Very good”, “Good”, “Fair”, and “Poor”. We coded “Excellent” or “Very good” as high SRMH.²

Across both surveys, community belonging was measured with the question “How would you describe your sense of belonging to your local community?” Response options were “Very strong”, “Somewhat strong”, “Somewhat weak”, and “Very weak”. We coded “Very strong” or “Somewhat strong” as high community belonging.²

The following question assessed life satisfaction in both surveys: “Using a scale of 0 to 10 where 0 means ‘Very dissatisfied’ and 10 means ‘Very satisfied’, how do you feel about your life as a whole right now?” Life satisfaction was treated as a numerical variable.²

Perceived change in mental health

Respondents to the 2020 SCMH were asked “Compared to before the COVID-19 pandemic, how would you say your mental health is now?” Response options were “Much better now”, “Somewhat better now”, “About the same”, “Somewhat worse now”, and “Much worse now”. We coded individuals who responded “Much better now”, “Somewhat better now”, and “About the same” as having perceptions of stable/improved mental health.^{29,30}

Sociodemographic characteristics

There were numerous sociodemographic characteristics measured in both surveys, including gender (female, male), age (18–34, 35–49, 50–64, 65+), racialized group member (yes, no), immigrant status (yes, no), household income (divided into quintiles), place of residence (rural area, population centre), respondent educational attainment (high school or lower, post-secondary certificate/degree/diploma), the presence of children under 18 years at home (yes, no) and province/territorial capital. Visible minorities and individuals who identified as Indigenous were coded as racialized group members, while

individuals who only identified as White were coded as non-racialized. Landed immigrants and non-permanent residents were coded as immigrants, while those born in Canada were coded as non-immigrants. Unique to the 2020 SCMH were questions that asked respondents about their work status, including whether they were a frontline worker, an essential worker or absent from work due to the pandemic (i.e. because of a business closure, a layoff or personal circumstances related to COVID-19). The sociodemographic characteristics of each sample are reported in Table 1.

Analysis

Analyses were conducted in SAS Enterprise Guide version 7.1 (SAS Institute Inc., Cary, NC, USA). To account for the complex survey design and to provide results that are representative at the national level, estimates were weighted using sampling weights provided by Statistics Canada. Standard errors, coefficients of variation and 95% confidence intervals were estimated using bootstrap weights.

The percentage of individuals reporting high SRMH and high community belonging were estimated in both surveys, along with the average level of life satisfaction in each survey. SAS’s SURVEYMEANS procedure was used to calculate difference scores between each of these PMH outcomes across the two surveys. We identified significant differences by *p*-values < 0.05 and when difference scores had 95% confidence intervals that did not include 0. To examine differences in these PMH outcomes from 2019 to Fall 2020 among specific subpopulations, we conducted additional analyses for which results were stratified by sociodemographic characteristics measured in both surveys. We conservatively used nonoverlapping confidence intervals for difference scores to identify differences from 2019 to Fall 2020 that were significantly larger or smaller for one sociodemographic group versus another.

For perceived change in mental health compared to before the pandemic, we estimated the percentage of individuals in 2020 who reported stable/improved mental health in the overall population and across sociodemographic characteristics. To understand who is more likely or less likely to report stable/improved mental

health, we conducted univariate logistic regression analyses with each sociodemographic variable as an explanatory variable (unadjusted models) and a multivariate logistic regression analysis with sociodemographic variables simultaneously included as explanatory variables (adjusted model). Data from the territorial capitals were included in these analyses.

All analyses were also conducted separately for males and females (insufficient cell sizes precluded separate analyses for individuals who specified other gender identities).

Results

Self-rated mental health

SRMH results are reported in Table 2. Overall, 59.95% of adults in Canada reported high SRMH in 2020, which is significantly lower than the 66.71% who reported high SRMH in 2019.

High SRMH was significantly less common for both males and females during the pandemic, with 64.50% of males reporting high SRMH in 2020 (vs. 69.25% in 2019) and 55.68% of females reporting high SRMH in 2020 (vs. 64.33% in 2019). The prevalence of high SRMH was significantly lower in 2020 than in 2019 among females under 65, but not among females aged 65 and older. Among males, the prevalence of high SRMH was significantly lower in 2020 than in 2019 among those under 65, but significantly higher in 2020 than in 2019 for those aged 65 and older.

High SRMH was significantly less prevalent in 2020 versus 2019 among White females and males, and racialized females (but not males). Similarly, high SRMH was significantly less prevalent in 2020 versus 2019 for Canadian-born females and males, and immigrant females (but not males).

The prevalence of high SRMH was significantly lower in 2020 than in 2019 for both females with and without children at home, but the difference was almost double for females with (vs. without) children at home. A significantly lower percentage of high SRMH in 2020 than in 2019 was also found for males with and without children at home.

TABLE 1
Sociodemographic characteristics, 2019 CCHS and 2020 SCMH

Variable	2019 CCHS (N = 57 034)	2020 SCMH (N = 11 324)	Chi-square test p-value
	% (95% CI)	% (95% CI)	
Gender			
Female	50.80 (50.74, 50.86)	50.78 (50.68, 50.87)	0.733
Male	49.20 (49.14, 49.26)	49.22 (49.13, 49.32)	
Age (years)			
18–34	28.36 (28.36, 28.36)	28.21 (28.21, 28.21)	< 0.001
35–49	24.58 (24.58, 24.58)	24.29 (23.80, 24.78)	
50–64	25.57 (25.57, 25.57)	25.31 (24.82, 25.80)	
65+	21.49 (21.49, 21.49)	22.19 (22.19, 22.19)	
Racialized group member			
Yes	27.22 (26.30, 28.13)	26.59 (25.41, 27.76)	0.392
No	72.78 (71.87, 73.70)	73.41 (72.24, 74.59)	
Immigrant status			
Yes	28.73 (27.88, 29.59)	27.03 (25.86, 28.20)	0.023
No	71.27 (70.41, 72.12)	72.97 (71.80, 74.14)	
Place of residence			
Population centre	82.91 (82.32, 83.51)	82.30 (81.51, 83.10)	0.231
Rural area	17.09 (16.49, 17.68)	17.70 (16.90, 18.49)	
Educational attainment			
High school or lower	34.36 (33.67, 35.06)	31.22 (29.96, 32.48)	< 0.001
Post-secondary	65.64 (64.94, 66.33)	68.78 (67.52, 70.04)	
Children < 18 years at home			
Yes	23.00 (22.40, 23.59)	27.58 (26.64, 28.52)	< 0.001
No	77.00 (76.41, 77.60)	72.42 (71.48, 73.36)	
Median household income (CAD)			
	85 483 (83 529, 87 437)	83 320 (80 559, 86 082)	

Abbreviations: CCHS, Canadian Community Health Survey; CI, confidence interval; SCMH, Survey on COVID-19 and Mental Health.

Note: Data from the territorial capitals (N = 1020) are excluded from the 2020 SCMH estimates in this table so that comparisons between 2019 and 2020 are based on data from the same geographical locations.

High SRMH was significantly less prevalent in 2020 than in 2019 across the four highest income quintiles for females and the three highest income quintiles for males. The prevalence of high SRMH was significantly lower in 2020 than in 2019 for both females with and without a post-secondary education, but the difference was more than two times larger among the former. High SRMH was also significantly less prevalent in 2020 than in 2019 among males with a post-secondary education (but not among males with a high school education or lower).

The prevalence of high SRMH was significantly lower in 2020 than in 2019 for males and females living in population centres, and females (but not males) living in rural areas. In the combined analysis, high SRMH was significantly less

common in 2020 than in 2019 in every province except Nova Scotia, Prince Edward Island and Quebec.

Community belonging

Community belonging results are reported in Table 3. The percentage of adults in Canada reporting high community belonging was 63.64% in 2020, which is significantly lower than the 68.42% who reported high community belonging in 2019.

High community belonging was significantly less prevalent for females in 2020 (63.61%) than in 2019 (69.58%) and less prevalent for males in 2020 (63.74%) than in 2019 (67.25%). The prevalence of high community belonging was significantly lower in 2020 than in 2019 among males

under 65, but significantly higher in 2020 than in 2019 among males aged 65 and older. Among females, high community belonging was significantly less common in 2020 than in 2019 for those aged 18 to 34 and 50 to 64 (with the former showing differences more than four times larger than the latter), but was not significantly different in 2020 versus 2019 for those aged 35 to 49 or 65 and older.

High community belonging was significantly less prevalent in 2020 than in 2019 among both racialized and White females (although the difference was almost three times larger among the former), and racialized males (but not among White males).

The prevalence of high community belonging was significantly lower in 2020 than in 2019 among both immigrant and Canadian-born females and males.

High community belonging was significantly less common in 2020 than in 2019 for females and males with children at home, and females (but not males) without children at home.

The prevalence of high community belonging was significantly lower in 2020 than in 2019 for females across all income quintiles. For males, a significantly lower prevalence of high community belonging in 2020 versus 2019 was only observed in the two highest income quintiles. For both males and females, the prevalence of high community belonging was significantly lower in 2020 than in 2019 for those with a post-secondary education, but not for those with a high school education or less.

The prevalence of high community belonging was significantly lower in 2020 than in 2019 among females and males living in population centres, and females (but not males) living in rural areas. In the combined analysis, high community belonging was significantly less common in 2020 than in 2019 in every province except New Brunswick, Prince Edward Island, Quebec and Saskatchewan. In Quebec, the prevalence of high community belonging was significantly higher in 2020 than in 2019.

Life satisfaction

Life satisfaction results are reported in Table 4. Average life satisfaction among adults in Canada was 7.19 in 2020, which

TABLE 2
Prevalence of high self-rated mental health in 2019 and 2020, overall and stratified by gender

Variable	Combined			Female			Male		
	2019 CCHS	2020 SCMH	Difference	2019 CCHS	2020 SCMH	Difference	2019 CCHS	2020 SCMH	Difference
	% (95% CI)	% (95% CI)	2019–2020 (95% CI)	% (95% CI)	% (95% CI)	2019–2020 (95% CI)	% (95% CI)	% (95% CI)	2019–2020 (95% CI)
Overall	66.71 (66.00, 67.41)	59.95 (58.68, 61.22)	6.76* (5.33, 8.19)	64.33 (63.35, 65.31)	55.68 (53.87, 57.49)	8.65* (6.58, 10.71)	69.25 (68.22, 70.27)	64.50 (62.60, 66.39)	4.75* (2.64, 6.85)
Age (years)									
18–34	60.47 (58.85, 62.08)	50.64 (47.60, 53.69)	9.82* (6.49, 13.16)	55.81 (53.68, 57.94)	44.68 (40.48, 48.87)	11.14* (6.44, 15.83)	65.28 (62.94, 67.61)	56.84 (52.33, 61.35)	8.44* (3.50, 13.39)
35–49	66.30 (64.78, 67.82)	57.16 (54.63, 59.70)	9.14* (6.16, 12.12)	63.71 (61.62, 65.79)	51.32 (47.75, 54.89)	12.39* (8.19, 16.59)	68.93 (66.86, 70.99)	63.01 (59.47, 66.55)	5.92* (1.79, 10.04)
50–64	70.44 (69.05, 71.83)	62.00 (59.73, 64.27)	8.44* (5.75, 11.14)	68.86 (66.90, 70.83)	60.04 (56.75, 63.32)	8.83* (5.05, 12.61)	72.05 (69.99, 74.12)	63.97 (60.58, 67.37)	8.08* (4.01, 12.15)
65+	71.17 (70.16, 72.17)	72.49 (70.36, 74.62)	–1.32 (–3.68, 1.03)	70.59 (69.21, 71.96)	68.30 (65.32, 71.28)	2.29 (–1.01, 5.58)	71.85 (70.42, 73.28)	77.35 (74.39, 80.30)	–5.50* (–8.77, –2.22)
Racialized group member									
Yes	64.85 (63.17, 66.53)	60.78 (57.81, 63.76)	4.07* (0.66, 7.47)	60.92 (58.57, 63.26)	54.02 (49.68, 58.36)	6.90* (1.96, 11.83)	69.00 (66.54, 71.46)	67.03 (62.94, 71.12)	1.97 (–2.74, 6.68)
No	67.46 (66.72, 68.21)	59.66 (58.26, 61.06)	7.80* (6.22, 9.39)	65.50 (64.47, 66.53)	56.35 (54.45, 58.25)	9.15* (6.96, 11.34)	69.58 (68.49, 70.66)	63.37 (61.25, 65.49)	6.21* (3.85, 8.57)
Immigrant status									
Yes	68.62 (67.19, 70.05)	64.00 (61.24, 66.77)	4.62* (1.55, 7.68)	65.62 (63.45, 67.79)	58.52 (54.44, 62.60)	7.10* (2.52, 11.69)	71.72 (69.58, 73.86)	68.74 (64.78, 72.70)	2.98 (–1.50, 7.46)
No	65.96 (65.16, 66.75)	58.38 (56.92, 59.84)	7.58* (5.93, 9.22)	63.74 (62.66, 64.82)	54.68 (52.69, 56.67)	9.06* (6.79, 11.32)	68.34 (67.22, 69.47)	62.65 (60.47, 64.82)	5.70* (3.30, 8.09)
Household income									
Q1 (lowest)	57.33 (55.75, 58.92)	58.82 (55.95, 61.69)	–1.49 (–4.77, 1.79)	55.97 (53.95, 57.99)	54.50 (50.74, 58.27)	1.47 (–2.83, 5.76)	59.30 (56.78, 61.82)	63.54 (59.36, 67.72)	–4.24 (–9.09, 0.61)
Q2	65.85 (64.37, 67.32)	60.44 (57.56, 63.32)	5.41* (2.20, 8.61)	63.80 (61.70, 65.90)	55.47 (51.62, 59.32)	8.33* (3.91, 12.74)	68.22 (66.10, 70.35)	65.78 (61.39, 70.18)	2.44 (–2.36, 7.24)
Q3	68.64 (67.03, 70.25)	58.23 (55.24, 61.22)	10.41* (7.08, 13.74)	67.13 (64.78, 69.48)	57.26 (53.19, 61.34)	9.86* (5.21, 14.52)	70.27 (68.16, 72.38)	59.36 (54.81, 63.92)	10.90* (5.87, 15.94)
Q4	70.00 (68.36, 71.63)	60.59 (57.34, 63.85)	9.40* (5.77, 13.04)	67.56 (65.25, 69.88)	53.96 (49.28, 58.65)	13.60* (8.34, 18.86)	72.20 (69.88, 74.51)	67.03 (62.68, 71.39)	5.16* (0.27, 10.05)
Q5 (highest)	71.80 (70.09, 73.51)	61.83 (58.45, 65.22)	9.97* (6.24, 13.70)	68.81 (66.37, 71.26)	54.20 (49.29, 59.11)	14.62* (9.21, 20.02)	74.47 (72.12, 76.81)	68.84 (64.07, 73.60)	5.63* (0.32, 10.94)

Continued on the following page

TABLE 2 (continued)
Prevalence of high self-rated mental health in 2019 and 2020, overall and stratified by gender

Variable	Combined			Female			Male		
	2019 CCHS	2020 SCMH	Difference 2019–2020 (95% CI)	2019 CCHS	2020 SCMH	Difference 2019–2020 (95% CI)	2019 CCHS	2020 SCMH	Difference 2019–2020 (95% CI)
	% (95% CI)	% (95% CI)		% (95% CI)	% (95% CI)		% (95% CI)	% (95% CI)	
Place of residence									
Population centre	66.48 (65.67, 67.28)	58.54 (57.07, 60.02)	7.93* (6.27, 9.60)	63.81 (62.69, 64.93)	54.34 (52.29, 56.39)	9.48* (7.13, 11.83)	69.35 (68.18, 70.52)	62.97 (60.76, 65.18)	6.38* (3.94, 8.82)
Rural area	67.83 (66.63, 69.02)	66.08 (63.45, 68.72)	1.74 (-1.13, 4.61)	66.92 (65.23, 68.61)	61.34 (57.78, 64.89)	5.58* (1.69, 9.48)	68.75 (67.07, 70.44)	71.38 (67.62, 75.14)	-2.63 (-6.80, 1.54)
Educational attainment									
High school or lower	60.53 (59.32, 61.75)	58.11 (55.61, 60.60)	2.43 (-0.35, 5.21)	58.31 (56.61, 60.02)	53.90 (50.53, 57.27)	4.41* (0.60, 8.23)	62.81 (60.96, 64.65)	62.61 (58.95, 66.28)	0.20 (-3.90, 4.29)
Post-secondary	69.88 (69.04, 70.73)	60.74 (59.22, 62.26)	9.14* (7.45, 10.83)	67.27 (66.11, 68.43)	56.37 (54.27, 58.47)	10.91* (8.54, 13.27)	72.72 (71.54, 73.91)	65.38 (63.10, 67.65)	7.35* (4.82, 9.88)
Children < 18 years at home									
Yes	69.52 (68.10, 70.94)	59.19 (56.80, 61.59)	10.33* (7.60, 13.06)	65.78 (63.84, 67.72)	52.28 (48.89, 55.66)	13.50* (9.59, 17.41)	73.88 (71.85, 75.92)	66.59 (63.19, 69.99)	7.29* (3.40, 11.18)
No	65.84 (65.04, 66.65)	60.29 (58.72, 61.86)	5.55* (3.81, 7.29)	63.85 (62.74, 64.96)	57.05 (54.86, 59.24)	6.80* (4.37, 9.24)	67.92 (66.74, 69.10)	63.79 (61.47, 66.11)	4.13* (1.57, 6.69)
Province/territory									
Alberta	66.78 (64.77, 68.79)	53.28 (49.90, 56.66)	13.50* (9.57, 17.44)	64.03 (61.21, 66.85)	47.09 (42.43, 51.75)	16.94* (11.51, 22.37)	69.49 (66.60, 72.39)	59.40 (54.29, 64.52)	10.09* (4.28, 15.90)
British Columbia	64.26 (62.41, 66.11)	55.56 (52.05, 59.06)	8.70* (4.71, 12.70)	60.54 (57.76, 63.32)	51.16 (46.59, 55.74)	9.38* (3.98, 14.78)	68.44 (65.82, 71.06)	60.16 (54.85, 65.46)	8.29* (2.32, 14.25)
Manitoba	63.46 (60.37, 66.56)	54.17 (50.66, 57.68)	9.29* (4.61, 13.97)	63.16 (58.96, 67.36)	49.20 (44.36, 54.03)	13.96* (7.59, 20.34)	63.73 (59.11, 68.35)	60.30 (54.89, 65.72)	3.43 (-3.64, 10.49)
New Brunswick	63.07 (60.13, 66.02)	52.24 (48.47, 56.01)	10.83* (6.09, 15.57)	61.51 (57.42, 65.61)	51.31 (46.31, 56.31)	10.20* (3.78, 16.62)	64.89 (60.23, 69.55)	53.22 (47.42, 59.02)	11.67* (4.11, 19.24)
Newfoundland and Labrador	68.74 (65.49, 71.99)	62.64 (59.04, 66.25)	6.10* (1.16, 11.04)	68.38 (63.82, 72.93)	58.82 (53.89, 63.76)	9.56* (2.66, 16.45)	69.13 (64.64, 73.63)	66.83 (61.55, 72.11)	2.30 (-4.58, 9.19)
Nova Scotia	62.05 (58.88, 65.22)	57.40 (53.64, 61.15)	4.65 (-0.13, 9.43)	60.13 (56.26, 63.99)	48.84 (44.52, 53.17)	11.28* (5.54, 17.02)	64.24 (59.85, 68.64)	66.55 (60.37, 72.73)	-2.31 (-9.62, 5.00)
Ontario	65.59 (64.27, 66.91)	58.90 (56.41, 61.39)	6.69* (3.91, 9.47)	63.63 (61.87, 65.40)	54.19 (50.73, 57.65)	9.45* (5.56, 13.33)	67.69 (65.71, 69.68)	63.96 (60.30, 67.63)	3.73 (-0.35, 7.81)
Prince Edward Island	60.85 (56.81, 64.90)	60.26 (56.16, 64.37)	0.59 (-5.28, 6.45)	59.88 (54.36, 65.41)	57.86 (53.01, 62.70)	2.03 (-5.53, 9.58)	62.21 (55.98, 68.45)	62.67 (56.08, 69.27)	-0.46 (-9.45, 8.53)

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TABLE 2 (continued)
Prevalence of high self-rated mental health in 2019 and 2020, overall and stratified by gender

Variable	Combined			Female			Male		
	2019 CCHS	2020 SCMH	Difference	2019 CCHS	2020 SCMH	Difference	2019 CCHS	2020 SCMH	Difference
	% (95% CI)	% (95% CI)	2019–2020 (95% CI)	% (95% CI)	% (95% CI)	2019–2020 (95% CI)	% (95% CI)	% (95% CI)	2019–2020 (95% CI)
Quebec	71.76 (70.45, 73.06)	70.05 (67.58, 72.52)	1.70 (–1.03, 4.44)	68.96 (67.06, 70.85)	67.72 (64.42, 71.03)	1.23 (–2.55, 5.01)	74.64 (72.87, 76.40)	72.58 (68.87, 76.29)	2.06 (–2.01, 6.13)
Saskatchewan	62.71 (58.98, 66.43)	53.98 (50.05, 57.90)	8.73* (3.31, 14.15)	61.40 (56.66, 66.14)	50.33 (45.40, 55.27)	11.07* (4.16, 17.97)	64.06 (58.84, 69.28)	57.91 (51.71, 64.11)	6.14 (–1.92, 14.21)
Yukon (Whitehorse)	—	53.28 (47.51, 59.05)	—	—	46.36 (39.12, 53.61)	—	—	61.30 (52.50, 70.09)	—
Northwest Territories (Yellowknife)	—	49.20 (43.07, 55.32)	—	—	45.68 (37.66, 53.70)	—	—	52.71 (43.61, 61.81)	—
Nunavut (Iqaluit)	—	49.99 (42.28, 57.70)	—	—	41.62 (31.84, 51.40)	—	—	59.76 (48.92, 70.61)	—

Abbreviations: CCHS, Canadian Community Health Survey; CI, confidence interval; Q, quintile; SCMH, Survey on COVID-19 and Mental Health.

Notes: Data from the territorial capitals (N = 1020) are excluded from the 2020 SCMH estimates in this table (except the last three rows) so that comparisons between 2019 and 2020 are based on data from the same geographical locations. Positive values in the difference columns mean that the percentage of high self-rated mental health was higher in 2019 than 2020; negative values in the difference columns mean that the percentage was lower in 2019 than 2020.

* $p < 0.05$.

TABLE 3
Prevalence of high community belonging in 2019 and 2020, overall and stratified by gender

Variable	Combined			Female			Male		
	2019 CCHS	2020 SCMH	Difference	2019 CCHS	2020 SCMH	Difference	2019 CCHS	2020 SCMH	Difference
	% (95% CI)	% (95% CI)	2019–2020 (95% CI)	% (95% CI)	% (95% CI)	2019–2020 (95% CI)	% (95% CI)	% (95% CI)	2019–2020 (95% CI)
Overall	68.42 (67.72, 69.12)	63.64 (62.36, 64.93)	4.78* (3.34, 6.22)	69.58 (68.63, 70.52)	63.61 (61.90, 65.33)	5.96* (3.99, 7.94)	67.25 (66.22, 68.28)	63.74 (61.83, 65.64)	3.52* (1.35, 5.68)
Age (years)									
18–34	62.58 (61.04, 64.11)	51.39 (48.22, 54.56)	11.19* (7.76, 14.62)	64.71 (62.60, 66.82)	48.74 (44.58, 52.89)	15.97* (11.36, 20.58)	60.55 (58.32, 62.78)	54.02 (49.32, 58.72)	6.53* (1.35, 11.71)
35–49	66.99 (65.52, 68.45)	62.74 (60.20, 65.28)	4.25* (1.34, 7.15)	69.19 (67.25, 71.14)	65.51 (62.13, 68.89)	3.68 (–0.23, 7.60)	64.78 (62.55, 67.01)	59.96 (56.24, 63.69)	4.82* (0.43, 9.21)
50–64	70.37 (69.04, 71.69)	65.89 (63.61, 68.17)	4.48* (1.88, 7.08)	70.75 (68.92, 72.59)	66.90 (63.71, 70.09)	3.85* (0.17, 7.53)	69.96 (67.93, 71.99)	64.82 (61.48, 68.17)	5.14* (1.24, 9.04)
65+	75.90 (74.93, 76.87)	77.70 (75.78, 79.63)	–1.81 (–3.98, 0.36)	74.87 (73.46, 76.28)	75.49 (72.79, 78.20)	–0.62 (–3.72, 2.47)	77.13 (75.74, 78.51)	80.27 (77.53, 83.02)	–3.15* (–6.23, –0.06)

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TABLE 3 (continued)
Prevalence of high community belonging in 2019 and 2020, overall and stratified by gender

Variable	Combined			Female			Male		
	2019 CCHS	2020 SCMH	Difference	2019 CCHS	2020 SCMH	Difference	2019 CCHS	2020 SCMH	Difference
	% (95% CI)	% (95% CI)	2019–2020 (95% CI)	% (95% CI)	% (95% CI)	2019–2020 (95% CI)	% (95% CI)	% (95% CI)	2019–2020 (95% CI)
Racialized group member									
Yes	69.42 (67.84, 70.99)	59.84 (56.71, 62.97)	9.58* (6.08, 13.07)	69.96 (67.86, 72.07)	58.34 (53.89, 62.79)	11.62* (6.71, 16.54)	68.89 (66.44, 71.35)	61.08 (56.74, 65.41)	7.82* (2.77, 12.87)
No	68.14 (67.38, 68.90)	65.03 (63.60, 66.46)	3.10* (1.51, 4.70)	69.43 (68.44, 70.43)	65.38 (63.51, 67.25)	4.05* (1.93, 6.17)	66.81 (65.69, 67.93)	64.79 (62.65, 66.93)	2.02 (-0.36, 4.40)
Immigrant status									
Yes	70.78 (69.30, 72.26)	63.69 (60.89, 66.49)	7.09* (3.98, 10.19)	71.76 (69.74, 73.78)	63.77 (59.76, 67.79)	7.99* (3.58, 12.40)	69.80 (67.65, 71.95)	63.60 (59.67, 67.53)	6.21* (1.71, 10.70)
No	67.57 (66.77, 68.37)	63.67 (62.21, 65.14)	3.90* (2.24, 5.56)	68.72 (67.67, 69.77)	63.66 (61.75, 65.56)	5.07* (2.87, 7.27)	66.41 (65.24, 67.58)	63.79 (61.56, 66.02)	2.61* (0.12, 5.11)
Household income									
Q1 (lowest)	64.86 (63.36, 66.36)	61.54 (58.63, 64.46)	3.32 (-0.01, 6.64)	65.69 (63.68, 67.70)	61.06 (57.11, 65.00)	4.63* (0.17, 9.10)	63.89 (61.53, 66.26)	62.42 (58.08, 66.76)	1.47 (-3.57, 6.51)
Q2	67.89 (66.42, 69.35)	63.50 (60.55, 66.46)	4.38* (1.09, 7.67)	69.08 (67.14, 71.03)	61.61 (57.76, 65.46)	7.47* (3.14, 11.80)	66.59 (64.41, 68.77)	65.33 (60.93, 69.73)	1.26 (-3.80, 6.33)
Q3	68.03 (66.52, 69.53)	63.29 (60.27, 66.30)	4.74* (1.39, 8.09)	69.30 (67.25, 71.36)	63.66 (59.66, 67.66)	5.64* (1.10, 10.19)	66.73 (64.53, 68.93)	63.00 (58.53, 67.46)	3.73 (-1.17, 8.63)
Q4	70.53 (68.90, 72.16)	61.94 (58.75, 65.13)	8.59* (5.01, 12.17)	72.13 (69.90, 74.36)	59.88 (55.21, 64.55)	12.25* (7.02, 17.49)	69.12 (66.81, 71.43)	63.72 (59.37, 68.08)	5.40* (0.35, 10.44)
Q5 (highest)	70.84 (69.04, 72.64)	64.48 (61.09, 67.86)	6.36* (2.63, 10.10)	72.57 (70.17, 74.97)	65.62 (60.75, 70.50)	6.95* (1.58, 12.32)	69.27 (66.71, 71.82)	63.42 (58.49, 68.35)	5.85* (0.42, 11.27)
Place of residence									
Population centre	67.52 (66.71, 68.33)	62.31 (60.81, 63.82)	5.21* (3.52, 6.90)	68.94 (67.86, 70.02)	62.89 (60.90, 64.89)	6.05* (3.76, 8.34)	66.07 (64.88, 67.25)	61.80 (59.60, 64.01)	4.27* (1.74, 6.79)
Rural area	72.80 (71.59, 74.01)	69.91 (67.25, 72.57)	2.89 (-0.02, 5.79)	72.75 (71.08, 74.42)	67.37 (63.90, 70.83)	5.38* (1.56, 9.21)	72.86 (71.18, 74.54)	72.75 (68.78, 76.72)	0.11 (-4.13, 4.35)
Educational attainment									
High school or lower	67.55 (66.32, 68.78)	65.63 (63.15, 68.12)	1.92 (-0.86, 4.69)	69.31 (67.69, 70.93)	65.83 (62.46, 69.20)	3.48 (-0.25, 7.22)	65.89 (64.06, 67.72)	65.44 (61.76, 69.12)	0.45 (-3.76, 4.67)
Post-secondary	68.84 (67.98, 69.71)	62.70 (61.18, 64.23)	6.14* (4.40, 7.87)	69.73 (68.57, 70.90)	62.52 (60.43, 64.62)	7.21* (4.80, 9.63)	67.91 (66.60, 69.21)	62.99 (60.71, 65.27)	4.92* (2.32, 7.52)
Children < 18 years at home									
Yes	71.11 (69.65, 72.57)	64.83 (62.41, 67.25)	6.28* (3.45, 9.11)	72.11 (70.23, 73.99)	66.49 (63.28, 69.69)	5.62* (1.83, 9.42)	69.94 (67.62, 72.26)	63.05 (59.45, 66.66)	6.89* (2.60, 11.18)

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TABLE 3 (continued)
Prevalence of high community belonging in 2019 and 2020, overall and stratified by gender

Variable	Combined			Female			Male		
	2019 CCHS	2020 SCMH	Difference	2019 CCHS	2020 SCMH	Difference	2019 CCHS	2020 SCMH	Difference
	% (95% CI)	% (95% CI)	2019–2020 (95% CI)	% (95% CI)	% (95% CI)	2019–2020 (95% CI)	% (95% CI)	% (95% CI)	2019–2020 (95% CI)
No	67.59 (66.77, 68.41)	63.21 (61.70, 64.72)	4.38* (2.68, 6.07)	68.74 (67.65, 69.82)	62.46 (60.41, 64.51)	6.28* (3.93, 8.63)	66.48 (65.27, 67.70)	64.06 (61.80, 66.33)	2.42 (-0.15, 4.99)
Province/territory									
Alberta	68.36 (66.34, 70.37)	59.83 (56.53, 63.13)	8.52* (4.56, 12.49)	68.18 (65.18, 71.19)	60.54 (56.12, 64.95)	7.65* (2.18, 13.11)	68.54 (65.73, 71.36)	59.18 (54.25, 64.11)	9.36* (3.72, 15.01)
British Columbia	70.57 (68.73, 72.41)	61.85 (58.47, 65.23)	8.71* (4.87, 12.55)	72.45 (70.08, 74.83)	62.97 (58.59, 67.35)	9.49* (4.56, 14.41)	68.73 (65.94, 71.53)	60.46 (55.41, 65.51)	8.27* (2.43, 14.11)
Manitoba	73.09 (70.20, 75.98)	60.08 (56.52, 63.63)	13.01* (8.42, 17.61)	74.56 (70.89, 78.23)	59.81 (54.94, 64.69)	14.75* (8.68, 20.81)	71.73 (67.53, 75.93)	60.96 (55.52, 66.39)	10.77* (3.90, 17.64)
New Brunswick	74.20 (71.42, 76.98)	70.01 (66.41, 73.62)	4.19 (-0.27, 8.64)	75.07 (71.36, 78.78)	68.98 (64.35, 73.61)	6.09* (0.11, 12.07)	73.42 (69.34, 77.51)	71.10 (65.36, 76.84)	2.32 (-4.47, 9.11)
Newfoundland and Labrador	79.25 (76.40, 82.10)	74.18 (70.64, 77.71)	5.07* (0.59, 9.55)	80.08 (75.98, 84.19)	73.33 (68.77, 77.89)	6.76* (0.57, 12.95)	78.38 (73.87, 82.89)	75.30 (69.77, 80.83)	3.07 (-3.87, 10.02)
Nova Scotia	74.72 (72.09, 77.35)	68.30 (64.72, 71.89)	6.41* (1.99, 10.84)	75.64 (72.54, 78.75)	68.18 (63.95, 72.41)	7.46* (2.22, 12.71)	73.75 (69.75, 77.75)	68.49 (62.50, 74.48)	5.25 (-1.93, 12.44)
Ontario	69.81 (68.49, 71.13)	63.26 (60.76, 65.76)	6.55* (3.77, 9.33)	71.29 (69.59, 72.98)	62.52 (59.20, 65.85)	8.76* (5.10, 12.42)	68.26 (66.32, 70.21)	64.11 (60.45, 67.76)	4.16 (-0.03, 8.34)
Prince Edward Island	73.73 (69.87, 77.60)	72.08 (68.36, 75.80)	1.65 (-3.65, 6.96)	72.09 (67.01, 77.17)	68.61 (63.96, 73.25)	3.49 (-3.61, 10.58)	75.88 (69.98, 81.77)	75.80 (70.06, 81.55)	0.07 (-8.04, 8.18)
Quebec	61.44 (60.15, 62.74)	64.96 (62.34, 67.57)	-3.51* (-6.37, -0.65)	62.45 (60.60, 64.30)	65.65 (62.26, 69.03)	-3.20 (-7.12, 0.72)	60.41 (58.50, 62.33)	64.37 (60.27, 68.47)	-3.95 (-8.42, 0.51)
Saskatchewan	74.67 (71.82, 77.52)	70.93 (67.33, 74.53)	3.74 (-0.93, 8.40)	74.26 (70.39, 78.13)	68.51 (64.12, 72.89)	5.75 (-0.15, 11.66)	75.07 (70.79, 79.34)	73.53 (67.96, 79.10)	1.54 (-5.55, 8.63)
Yukon (Whitehorse)	—	72.37 (67.55, 77.19)	—	—	69.05 (62.27, 75.84)	—	—	75.63 (68.71, 82.55)	—
Northwest Territories (Yellowknife)	—	74.78 (69.32, 80.23)	—	—	77.67 (70.62, 84.72)	—	—	71.89 (63.58, 80.21)	—
Nunavut (Iqaluit)	—	76.48 (68.84, 84.12)	—	—	74.81 (62.35, 87.27)	—	—	78.43 (69.57, 87.29)	—

Abbreviations: CCHS, Canadian Community Health Survey; CI, confidence interval; Q, quintile; SCMH, Survey on COVID-19 and Mental Health.

Notes: Data from the territorial capitals (N = 1020) are excluded from the 2020 SCMH estimates in this table (except the last three rows) so that comparisons between 2019 and 2020 are based on data from the same geographical locations. Positive values in the difference columns mean that the percentage of high community belonging was higher in 2019 than 2020; negative values in the difference columns mean that the percentage was lower in 2019 than 2020.

* $p < 0.05$.

is significantly lower than the average of 8.08 in 2019. Average life satisfaction was significantly lower for both females and males during the pandemic, although the difference from 2019 to 2020 was larger for females (8.10 to 7.12) than males (8.05 to 7.28). For both males and females, average life satisfaction was significantly lower in 2020 than in 2019 across all age groups, but the difference among those aged 65 and older was smaller than the difference among those under 65.

Significantly lower average life satisfaction in 2020 versus 2019 was observed among White and racialized males and females, and immigrant and Canadian-born males and females.

Average life satisfaction was significantly lower in 2020 than in 2019 among females with and without children at home. For males, average life satisfaction was also significantly lower in 2020 than in 2019 for those with and without children at home, although the difference was larger for the former group of males.

Average life satisfaction was significantly lower in 2020 than in 2019 across all income quintiles for both males and females. Furthermore, for both males and females, significantly lower average life satisfaction in 2020 than in 2019 was observed among those with a post-secondary education and those with a high school education or lower.

Significantly lower average life satisfaction in 2020 than in 2019 was observed for males and females living in both population centres and rural areas, but the magnitude of the difference was larger for those living in population centres. In the combined analysis, average life satisfaction was significantly lower in 2020 than in 2019 in all provinces, but the difference in Quebec and Prince Edward Island tended to be smaller than many of the other provinces.

Perceived change in mental health

Perceived change in mental health results are reported in Table 5. Overall, 66.51% of adults in Canada reported that their mental health is stable/improved compared to before the pandemic. Females were significantly less likely than males (62.29% vs. 70.96%) to indicate their mental health was stable/improved, even after adjustment.

In unadjusted and adjusted analyses, reporting stable/improved mental health was less likely for males under 65 (vs. older males) and for females under 65 (vs. older females).

The likelihood of reporting stable/improved mental health did not significantly differ for males or females by racialized group membership or for males by immigrant status. Immigrant females were significantly more likely to report stable/improved mental health than Canadian-born females before and after adjustment.

Males in the highest and third-highest income quintiles were significantly less likely to report stable/improved mental health compared to males in the lowest income quintile, as were females in the highest (vs. lowest) income quintile, but these significant differences were absent after adjustment.

Across unadjusted and adjusted analyses, the likelihood of indicating stable/improved mental health was significantly lower among females and males living in population centres versus rural areas.

Although not significant after adjustment, in the unadjusted analyses females and males with a high school education or lower were significantly more likely to report stable/improved mental health than females and males with a post-secondary education. Similarly, in the unadjusted but not the adjusted analyses, males and females with children at home were significantly less likely to report stable/improved mental health than males and females without children at home.

Lastly, in the unadjusted analysis that was not gender stratified, the likelihood of reporting stable/improved mental health was significantly lower among frontline workers and those who were not working due to COVID-19. When controlling for covariates, frontline workers were not significantly less likely to report stable/improved mental health, but the likelihood remained significantly lower for those not working due to COVID-19 and became significantly higher for essential non-frontline workers.

Discussion

This study increases our understanding of the status of mental health in Canada

during the second wave of the COVID-19 pandemic. Overall, fewer adults in Canada reported high SRMH and high community belonging in Fall 2020 than in 2019. The 6.76% overall difference in high SRMH corresponds to more than 2 072 000 adults no longer reporting high SRMH in Fall 2020; the 4.78% overall difference in high community belonging corresponds to more than 1 465 000 adults no longer reporting high community belonging in Fall 2020.³¹ These individuals may be at a greater risk of experiencing depression,³² and be less likely to engage in civic and political activities in their community.³³ Moreover, adults in Canada reported being less satisfied with their life on average in Fall 2020 than in 2019. The difference in average life satisfaction between 2019 and Fall 2020 among adults in Canada was around a third of the size of the difference between OECD countries with the highest versus lowest average life satisfaction.³⁴

Although we found that the prevalence of PMH outcomes was lower in Fall 2020, the majority of individuals during Fall 2020 still reported high SRMH, high community belonging and that their mental health is about the same/better compared to before the pandemic. These results showcase the overall hardiness of the Canadian population in the midst of a global pandemic, while also indicating that more Canadians are not experiencing optimal mental health. A recent literature review also found some signs of resilience during the pandemic for some mental health outcomes internationally.³⁵

This study's findings reinforce that the pandemic has had a disproportionate impact on some sociodemographic groups. For instance, while older adults have been the most likely to be hospitalized or die due to COVID-19,³⁶ we found lower prevalence of PMH in 2020 versus 2019 more consistently among those under 65. Age differences in mental health during the pandemic have been observed in other countries, with adults under 60 more likely to report loneliness than adults 60 and older in a spring 2020 longitudinal study from the United Kingdom,³⁷ and adults under 65 more likely to report symptoms of anxiety and depression and suicide ideation than adults 65 and older in a summer 2020 cross-sectional study from the United States.³⁸ We also observed lower prevalence of PMH in 2020 versus 2019 more consistently among individuals living in population centres than rural

TABLE 4
Life satisfaction in 2019 versus 2020, overall and stratified by gender

Variable	Combined			Female			Male		
	2019 CCHS	2020 SCMH	Difference	2019 CCHS	2020 SCMH	Difference	2019 CCHS	2020 SCMH	Difference
	Mean (95% CI)	Mean (95% CI)	2019–2020 (95% CI)	Mean (95% CI)	Mean (95% CI)	2019–2020 (95% CI)	Mean (95% CI)	Mean (95% CI)	2019–2020 (95% CI)
Overall	8.08 (8.05, 8.10)	7.19 (7.14, 7.25)	0.88* (0.82, 0.94)	8.10 (8.07, 8.14)	7.12 (7.04, 7.19)	0.98* (0.90, 1.07)	8.05 (8.02, 8.08)	7.28 (7.20, 7.37)	0.77* (0.68, 0.86)
Age (years)									
18–34	8.07 (8.02, 8.11)	6.76 (6.63, 6.89)	1.30* (1.17, 1.44)	8.09 (8.03, 8.15)	6.63 (6.45, 6.80)	1.47* (1.28, 1.65)	8.05 (7.99, 8.11)	6.91 (6.72, 7.10)	1.13* (0.94, 1.33)
35–49	8.06 (8.02, 8.11)	7.14 (7.04, 7.24)	0.92* (0.81, 1.03)	8.04 (7.98, 8.10)	7.06 (6.92, 7.20)	0.98* (0.82, 1.14)	8.08 (8.02, 8.15)	7.23 (7.08, 7.37)	0.86* (0.70, 1.01)
50–64	8.04 (7.99, 8.09)	7.21 (7.10, 7.31)	0.83* (0.71, 0.95)	8.12 (8.06, 8.19)	7.17 (7.03, 7.31)	0.95* (0.80, 1.11)	7.95 (7.88, 8.03)	7.24 (7.08, 7.41)	0.71* (0.52, 0.89)
65+	8.15 (8.11, 8.19)	7.79 (7.70, 7.88)	0.36* (0.27, 0.46)	8.16 (8.10, 8.21)	7.69 (7.57, 7.82)	0.46* (0.33, 0.60)	8.15 (8.10, 8.20)	7.90 (7.77, 8.03)	0.25* (0.11, 0.39)
Racialized group member									
Yes	7.97 (7.91, 8.02)	6.92 (6.79, 7.06)	1.04* (0.90, 1.19)	7.95 (7.87, 8.03)	6.80 (6.61, 7.00)	1.14* (0.93, 1.36)	8.00 (7.92, 8.07)	7.04 (6.85, 7.23)	0.96* (0.75, 1.16)
No	8.12 (8.09, 8.14)	7.29 (7.23, 7.35)	0.83* (0.76, 0.89)	8.15 (8.12, 8.19)	7.22 (7.14, 7.30)	0.93* (0.84, 1.02)	8.08 (8.05, 8.12)	7.38 (7.29, 7.47)	0.71* (0.61, 0.80)
Immigrant status									
Yes	8.06 (8.01, 8.11)	7.11 (6.98, 7.24)	0.95* (0.81, 1.09)	8.08 (8.01, 8.16)	7.01 (6.82, 7.21)	1.07* (0.85, 1.28)	8.04 (7.97, 8.11)	7.19 (7.01, 7.37)	0.85* (0.66, 1.04)
No	8.08 (8.06, 8.11)	7.23 (7.17, 7.29)	0.86* (0.79, 0.92)	8.11 (8.07, 8.14)	7.15 (7.07, 7.23)	0.96* (0.87, 1.04)	8.06 (8.03, 8.10)	7.32 (7.23, 7.41)	0.74* (0.64, 0.84)
Household income									
Q1 (lowest)	7.65 (7.59, 7.71)	7.10 (6.98, 7.23)	0.54* (0.40, 0.68)	7.72 (7.64, 7.79)	7.12 (6.97, 7.26)	0.60* (0.43, 0.76)	7.56 (7.47, 7.65)	7.11 (6.89, 7.32)	0.45* (0.23, 0.68)
Q2	8.00 (7.95, 8.05)	7.10 (6.97, 7.24)	0.90* (0.75, 1.04)	8.04 (7.97, 8.10)	6.94 (6.76, 7.11)	1.10* (0.91, 1.29)	7.97 (7.89, 8.04)	7.28 (7.09, 7.48)	0.69* (0.48, 0.90)
Q3	8.18 (8.13, 8.23)	7.11 (6.98, 7.25)	1.06* (0.92, 1.20)	8.19 (8.12, 8.26)	7.13 (6.95, 7.31)	1.06* (0.87, 1.25)	8.16 (8.10, 8.23)	7.11 (6.92, 7.30)	1.05* (0.85, 1.25)
Q4	8.20 (8.15, 8.24)	7.28 (7.14, 7.42)	0.92* (0.77, 1.06)	8.24 (8.17, 8.30)	7.09 (6.88, 7.29)	1.15* (0.93, 1.37)	8.17 (8.10, 8.23)	7.46 (7.27, 7.65)	0.71* (0.51, 0.90)
Q5 (highest)	8.36 (8.31, 8.41)	7.33 (7.20, 7.46)	1.03* (0.89, 1.17)	8.41 (8.35, 8.47)	7.21 (7.02, 7.41)	1.20* (1.00, 1.40)	8.31 (8.24, 8.38)	7.43 (7.24, 7.63)	0.87* (0.67, 1.08)

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TABLE 4 (continued)
Life satisfaction in 2019 versus 2020, overall and stratified by gender

Variable	Combined			Female			Male		
	2019 CCHS	2020 SCMH	Difference 2019–2020 (95% CI)	2019 CCHS	2020 SCMH	Difference 2019–2020 (95% CI)	2019 CCHS	2020 SCMH	Difference 2019–2020 (95% CI)
	Mean (95% CI)	Mean (95% CI)		Mean (95% CI)	Mean (95% CI)		Mean (95% CI)		
Place of residence									
Population centre	8.04 (8.01, 8.07)	7.11 (7.04, 7.17)	0.93* (0.86, 1.01)	8.07 (8.03, 8.10)	7.03 (6.94, 7.12)	1.04* (0.94, 1.13)	8.02 (7.98, 8.05)	7.19 (7.10, 7.29)	0.82* (0.72, 0.93)
Rural area	8.25 (8.21, 8.29)	7.59 (7.48, 7.70)	0.66* (0.55, 0.78)	8.29 (8.23, 8.34)	7.50 (7.36, 7.63)	0.79* (0.64, 0.93)	8.22 (8.17, 8.27)	7.69 (7.51, 7.86)	0.53* (0.35, 0.71)
Educational attainment									
High school or lower	7.93 (7.89, 7.97)	7.17 (7.06, 7.29)	0.76* (0.64, 0.89)	7.96 (7.90, 8.03)	7.13 (6.98, 7.29)	0.83* (0.66, 1.01)	7.90 (7.85, 7.96)	7.23 (7.05, 7.40)	0.68* (0.49, 0.86)
Post-secondary	8.15 (8.13, 8.18)	7.20 (7.14, 7.26)	0.95* (0.88, 1.02)	8.17 (8.13, 8.20)	7.10 (7.02, 7.19)	1.06* (0.97, 1.16)	8.14 (8.10, 8.18)	7.31 (7.22, 7.40)	0.83* (0.73, 0.93)
Children < 18 years at home									
Yes	8.26 (8.22, 8.30)	7.18 (7.08, 7.28)	1.08* (0.97, 1.19)	8.23 (8.18, 8.29)	7.10 (6.95, 7.24)	1.14* (0.98, 1.29)	8.29 (8.23, 8.35)	7.27 (7.13, 7.42)	1.02* (0.86, 1.17)
No	8.02 (7.99, 8.05)	7.20 (7.13, 7.27)	0.82* (0.75, 0.89)	8.06 (8.02, 8.10)	7.13 (7.04, 7.22)	0.93* (0.83, 1.03)	7.98 (7.94, 8.02)	7.29 (7.18, 7.39)	0.70* (0.59, 0.81)
Province/territory									
Alberta	8.04 (7.98, 8.10)	6.86 (6.71, 7.01)	1.18* (1.02, 1.34)	8.12 (8.03, 8.21)	6.79 (6.59, 6.98)	1.33* (1.12, 1.55)	7.96 (7.87, 8.04)	6.95 (6.73, 7.17)	1.01* (0.77, 1.25)
British Columbia	8.01 (7.95, 8.07)	6.94 (6.79, 7.09)	1.07* (0.91, 1.23)	8.05 (7.97, 8.13)	6.95 (6.78, 7.12)	1.10* (0.91, 1.29)	7.98 (7.90, 8.07)	6.94 (6.71, 7.18)	1.04* (0.78, 1.29)
Manitoba	8.04 (7.94, 8.13)	6.91 (6.76, 7.07)	1.12* (0.94, 1.30)	8.01 (7.88, 8.15)	6.89 (6.69, 7.10)	1.12* (0.88, 1.36)	8.06 (7.92, 8.20)	7.01 (6.76, 7.25)	1.06* (0.78, 1.34)
New Brunswick	8.13 (8.00, 8.25)	7.34 (7.17, 7.51)	0.79* (0.58, 1.00)	8.17 (8.02, 8.32)	7.24 (7.03, 7.46)	0.93* (0.66, 1.20)	8.09 (7.91, 8.28)	7.44 (7.17, 7.71)	0.65* (0.32, 0.98)
Newfoundland and Labrador	8.23 (8.11, 8.36)	7.53 (7.37, 7.69)	0.71* (0.50, 0.91)	8.26 (8.10, 8.42)	7.41 (7.19, 7.64)	0.85* (0.56, 1.13)	8.20 (8.02, 8.39)	7.66 (7.43, 7.88)	0.55* (0.26, 0.84)
Nova Scotia	8.09 (7.98, 8.19)	7.21 (7.03, 7.40)	0.87* (0.66, 1.08)	8.03 (7.90, 8.15)	7.11 (6.93, 7.29)	0.92* (0.70, 1.14)	8.15 (8.00, 8.31)	7.32 (6.99, 7.65)	0.83* (0.48, 1.18)
Ontario	8.02 (7.97, 8.07)	7.05 (6.95, 7.16)	0.97* (0.85, 1.08)	8.05 (7.99, 8.11)	6.92 (6.77, 7.08)	1.12* (0.96, 1.29)	7.99 (7.93, 8.05)	7.19 (7.04, 7.35)	0.80* (0.63, 0.97)
Prince Edward Island	8.06 (7.93, 8.19)	7.63 (7.46, 7.80)	0.43* (0.22, 0.64)	8.15 (8.00, 8.30)	7.59 (7.41, 7.77)	0.56* (0.33, 0.80)	7.97 (7.74, 8.19)	7.67 (7.40, 7.94)	0.29 (-0.06, 0.65)

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TABLE 4 (continued)
Life satisfaction in 2019 versus 2020, overall and stratified by gender

Variable	Combined			Female			Male		
	2019 CCHS	2020 SCMH	Difference	2019 CCHS	2020 SCMH	Difference	2019 CCHS	2020 SCMH	Difference
	Mean (95% CI)	Mean (95% CI)	2019–2020 (95% CI)	Mean (95% CI)	Mean (95% CI)	2019–2020 (95% CI)	Mean (95% CI)	Mean (95% CI)	2019–2020 (95% CI)
Quebec	8.21 (8.17, 8.25)	7.75 (7.65, 7.85)	0.46* (0.35, 0.57)	8.20 (8.15, 8.26)	7.71 (7.58, 7.84)	0.49* (0.35, 0.63)	8.22 (8.16, 8.27)	7.80 (7.64, 7.95)	0.42* (0.26, 0.59)
Saskatchewan	8.11 (8.02, 8.20)	7.19 (7.06, 7.32)	0.92* (0.77, 1.08)	8.23 (8.10, 8.35)	7.13 (6.95, 7.31)	1.10* (0.88, 1.32)	8.00 (7.87, 8.13)	7.27 (7.07, 7.46)	0.73* (0.50, 0.96)
Yukon (Whitehorse)	—	7.13 (6.90, 7.35)	—	—	6.89 (6.60, 7.19)	—	—	7.37 (7.04, 7.70)	—
Northwest Territories (Yellowknife)	—	7.25 (7.03, 7.46)	—	—	7.12 (6.82, 7.42)	—	—	7.37 (7.08, 7.67)	—
Nunavut (Iqaluit)	—	7.26 (6.92, 7.60)	—	—	6.91 (6.41, 7.41)	—	—	7.65 (7.29, 8.02)	—

Abbreviations: CCHS, Canadian Community Health Survey; CI, confidence interval; Q, quintile; SCMH, Survey on COVID-19 and Mental Health.

Notes: Life satisfaction was rated on a scale from 0 (very dissatisfied) to 10 (very satisfied). Data from the territorial capitals (N = 1020) are excluded from the 2020 SCMH estimates in this table (except the last three rows) so that comparisons between 2019 and 2020 are based on data from the same geographical locations. Positive values in the difference columns mean that average life satisfaction was higher in 2019 than 2020; negative values in the difference columns mean that average life satisfaction was lower in 2019 than 2020.

* $p < 0.05$.

TABLE 5
Frequency estimates and logistic regression analyses with perceptions of stable/improved mental health as the criterion variable and sociodemographic characteristics as the explanatory variables, overall and stratified by gender, 2020 SCMH

Variable	Combined			Female			Male		
	% (95% CI)	OR (95% CI)	aOR (95% CI)	% (95% CI)	OR (95% CI)	aOR (95% CI)	% (95% CI)	OR (95% CI)	aOR (95% CI)
Overall	66.51 (65.18, 67.84)	—	—	—	—	—	—	—	—
Gender									
Female	62.29 (60.55, 64.04)	0.68 (0.60, 0.76)	0.66 (0.58, 0.75)	—	—	—	—	—	—
Male	70.96 (68.98, 72.93)	(Ref.)	(Ref.)	—	—	—	—	—	—
Age (years)									
18–34	58.65 (55.54, 61.76)	0.36 (0.31, 0.43)	0.33 (0.27, 0.41)	52.27 (48.00, 56.55)	0.38 (0.31, 0.48)	0.36 (0.27, 0.47)	65.03 (60.33, 69.73)	0.31 (0.23, 0.41)	0.29 (0.21, 0.40)
35–49	62.39 (59.81, 64.97)	0.43 (0.36, 0.50)	0.41 (0.33, 0.51)	59.74 (56.22, 63.26)	0.52 (0.42, 0.63)	0.53 (0.39, 0.71)	65.11 (61.44, 68.78)	0.31 (0.24, 0.40)	0.29 (0.21, 0.40)

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TABLE 5 (continued)
Frequency estimates and logistic regression analyses with perceptions of stable/improved mental health as the criterion variable and sociodemographic characteristics as the explanatory variables, overall and stratified by gender, 2020 SCMH

Variable	Combined			Female			Male		
	% (95% CI)	OR (95% CI)	aOR (95% CI)	% (95% CI)	OR (95% CI)	aOR (95% CI)	% (95% CI)	OR (95% CI)	aOR (95% CI)
50–64	67.82 (65.59, 70.05)	0.54 (0.46, 0.63)	0.53 (0.45, 0.64)	64.57 (61.39, 67.76)	0.64 (0.52, 0.78)	0.66 (0.52, 0.83)	71.12 (67.75, 74.48)	0.41 (0.31, 0.53)	0.40 (0.30, 0.54)
65+	79.56 (77.67, 81.45)	(Ref.)	(Ref.)	74.16 (71.49, 76.83)	(Ref.)	(Ref.)	85.82 (83.30, 88.34)	(Ref.)	(Ref.)
Racialized group member									
Yes	68.15 (65.09, 71.20)	1.11 (0.95, 1.30)	1.25 (1.01, 1.56)	64.66 (60.37, 68.96)	1.15 (0.94, 1.42)	1.15 (0.87, 1.53)	71.57 (67.44, 75.71)	1.05 (0.83, 1.31)	1.37 (0.998, 1.89)
No	65.82 (64.33, 67.30)	(Ref.)	(Ref.)	61.37 (59.46, 63.28)	(Ref.)	(Ref.)	70.64 (68.46, 72.82)	(Ref.)	(Ref.)
Immigrant status									
Yes	71.03 (68.34, 73.72)	1.34 (1.16, 1.54)	1.31 (1.07, 1.61)	69.62 (65.81, 73.43)	1.54 (1.27, 1.88)	1.61 (1.24, 2.10)	72.38 (68.51, 76.26)	1.11 (0.89, 1.39)	1.06 (0.78, 1.42)
No	64.71 (63.21, 66.20)	(Ref.)	(Ref.)	59.78 (57.86, 61.69)	(Ref.)	(Ref.)	70.23 (67.96, 72.50)	(Ref.)	(Ref.)
Household income									
Q1 (lowest)	69.67 (66.89, 72.45)	(Ref.)	(Ref.)	64.96 (61.36, 68.55)	(Ref.)	(Ref.)	74.70 (70.63, 78.77)	(Ref.)	(Ref.)
Q2	68.56 (65.77, 71.35)	0.95 (0.79, 1.14)	1.05 (0.86, 1.28)	63.25 (59.59, 66.91)	0.93 (0.74, 1.17)	1.08 (0.85, 1.37)	74.30 (70.37, 78.23)	0.98 (0.73, 1.31)	0.99 (0.72, 1.35)
Q3	63.00 (60.05, 65.95)	0.74 (0.62, 0.89)	0.92 (0.76, 1.12)	59.73 (55.58, 63.88)	0.80 (0.63, 1.01)	1.04 (0.80, 1.35)	66.53 (62.40, 70.65)	0.67 (0.51, 0.89)	0.77 (0.57, 1.04)
Q4	65.79 (62.31, 69.27)	0.84 (0.68, 1.03)	1.11 (0.89, 1.40)	61.09 (56.36, 65.82)	0.85 (0.66, 1.09)	1.23 (0.92, 1.64)	70.05 (65.18, 74.91)	0.79 (0.58, 1.08)	0.96 (0.68, 1.36)
Q5 (highest)	61.53 (58.05, 65.02)	0.70 (0.57, 0.85)	0.93 (0.73, 1.17)	55.96 (50.97, 60.96)	0.69 (0.53, 0.89)	0.96 (0.71, 1.31)	66.63 (61.59, 71.67)	0.68 (0.49, 0.93)	0.85 (0.59, 1.21)
Place of residence									
Population centre	65.35 (63.83, 66.88)	0.74 (0.64, 0.85)	0.74 (0.64, 0.87)	61.35 (59.38, 63.32)	0.80 (0.68, 0.95)	0.81 (0.68, 0.98)	69.52 (67.24, 71.80)	0.65 (0.51, 0.82)	0.66 (0.51, 0.85)
Rural area	71.88 (69.38, 74.38)	(Ref.)	(Ref.)	66.45 (63.10, 69.79)	(Ref.)	(Ref.)	77.95 (74.30, 81.60)	(Ref.)	(Ref.)

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TABLE 5 (continued)
Frequency estimates and logistic regression analyses with perceptions of stable/improved mental health as the criterion variable and sociodemographic characteristics as the explanatory variables, overall and stratified by gender, 2020 SCMH

Variable	Combined			Female			Male		
	% (95% CI)	OR (95% CI)	aOR (95% CI)	% (95% CI)	OR (95% CI)	aOR (95% CI)	% (95% CI)	OR (95% CI)	aOR (95% CI)
Educational attainment									
High school or lower	71.08 (68.60, 73.57)	1.36 (1.19, 1.56)	1.18 (0.999, 1.38)	66.99 (63.76, 70.21)	1.35 (1.14, 1.60)	1.22 (0.995, 1.50)	75.43 (71.77, 79.09)	1.39 (1.11, 1.73)	1.13 (0.88, 1.45)
Post-secondary	64.34 (62.80, 65.88)	(Ref.)	(Ref.)	60.07 (58.00, 62.13)	(Ref.)	(Ref.)	68.83 (66.56, 71.10)	(Ref.)	(Ref.)
Work status									
Frontline worker	61.88 (57.04, 66.73)	0.78 (0.63, 0.98)	1.09 (0.85, 1.38)	58.92 (52.77, 65.07)	0.82 (0.63, 1.07)	1.10 (0.81, 1.48)	66.35 (58.55, 74.14)	0.79 (0.54, 1.13)	1.03 (0.70, 1.50)
Essential non-front-line worker	66.08 (63.04, 69.13)	0.94 (0.81, 1.10)	1.18 (1.001, 1.40)	60.06 (55.83, 64.29)	0.86 (0.71, 1.04)	1.08 (0.87, 1.34)	71.07 (66.77, 75.37)	0.98 (0.77, 1.24)	1.28 (0.99, 1.64)
Not working due to COVID-19	49.77 (38.14, 61.40)	0.48 (0.30, 0.77)	0.51 (0.30, 0.88)	42.32 ^E (26.61, 58.03)	0.42^E (0.21, 0.82)	0.49 ^E (0.23, 1.05)	— ^F	— ^F	— ^F
Other	67.42 (65.85, 68.98)	(Ref.)	(Ref.)	63.67 (61.66, 65.67)	(Ref.)	(Ref.)	71.50 (69.19, 73.81)	(Ref.)	(Ref.)
Children < 18 years at home									
Yes	62.36 (59.93, 64.80)	0.78 (0.69, 0.88)	0.98 (0.83, 1.16)	58.37 (54.98, 61.77)	0.80 (0.68, 0.94)	0.98 (0.78, 1.23)	66.72 (63.21, 70.22)	0.76 (0.63, 0.92)	1.00 (0.79, 1.27)
No	68.04 (66.47, 69.62)	(Ref.)	(Ref.)	63.80 (61.77, 65.83)	(Ref.)	(Ref.)	72.48 (70.15, 74.81)	(Ref.)	(Ref.)

Abbreviations: SCMH, Survey on COVID-19 and Mental Health; OR, odds ratio; aOR, adjusted odds ratio; Ref., reference group.

Notes: Dummy coding was used to create the reference groups. Estimates are based on data from 2020 SCMH respondents living in the provinces and territorial capitals. Statistically significant odds ratios are bolded.

^E Interpret estimate with caution because the data are deemed of marginal quality.

^F Estimate could not be reported because the data do not meet Statistics Canada's quality standards.

areas. Interventions to limit the spread of COVID-19 may have been more disruptive to the lives of younger adults and those living in population centres. Links between place of residence and age with other sociodemographic characteristics might explain why some explanatory variables did not remain significant in the multivariate analysis (e.g. income, education).³⁹

In line with some earlier surveys,^{5,9,10} we found some evidence that the mental health of females has been more negatively impacted by the pandemic, including larger differences in life satisfaction from 2019 to 2020 and lower likelihoods of reporting stable/improved mental health. The gender difference in reporting stable/improved mental health remained after controlling for the presence of children at home, work status and other sociodemographic factors. It is still possible that gender differences in time use, which have been observed in multiple countries during the pandemic, might explain these mental health differences.⁴⁰

Being absent from work due to COVID-19 was negatively associated with stable/improved mental health, which echoes previous analyses of the 2020 SCMH that found that the likelihood of screening positive for a mental disorder was higher among individuals who reported income or job loss due to the pandemic.⁴¹ Economic hardship has also been linked with feelings of depression in spring 2020 labour force survey data from numerous European countries.⁴²

These results could inform public health policy by identifying sociodemographic groups and individuals with specific experiences who may benefit the most from targeted interventions aimed at promoting mental health directly or indirectly by increasing protective factors or reducing risk factors. This is one way in which an equitable recovery from the pandemic could be encouraged.

The importance of taking into account different PMH outcomes to obtain a complete understanding of people's experiences is also highlighted by this study. For instance, immigrant and racialized males did not have a significantly lower prevalence of high SRMH in 2020 than in 2019, but evidence for lower community belonging for these sociodemographic groups was found. As well, while males above

age 64 had a significantly higher prevalence of high SRMH and high community belonging in Fall 2020 than in 2019 and although females above age 64 did not show a significant difference, both reported lower life satisfaction on average during the second wave (albeit to a lesser degree than those who were younger). Similarly, while all provinces had significantly lower life satisfaction on average in Fall 2020, the difference tended to be smaller in Quebec and Prince Edward Island, where the prevalence of high SRMH and community belonging either showed no difference or was even higher in 2020 than in 2019. Based on these results, it is recommended that future surveys examining the impact of the pandemic on mental health measure multiple aspects of PMH.

While some of our results support the idea of the pandemic exacerbating pre-existing health inequalities (e.g. young vs. older adults),³ other findings suggest a levelling of PMH across some sociodemographic characteristics. For instance, in 2019, individuals with a post-secondary education reported higher life satisfaction and more frequently reported high SRMH than those with a high school education or less, but these PMH outcomes were more similar across educational attainment in Fall 2020. Smaller differences in life satisfaction across household income levels and among individuals with versus without children in Fall 2020 compared to 2019 were also observed. These examples suggest that the effect of the pandemic on health inequality is nuanced.

Strengths and limitations

This study's strengths include the representative and large samples in both the 2019 CCHS and the 2020 SCMH, which allowed us to conduct comprehensive gender-stratified analyses. Additionally, we used the most recent pre-pandemic data from 2019 and examined multiple indicators of PMH, including a measure of social well-being.

In terms of limitations, methodological differences between the two data sources could have impacted the results. For instance, the CCHS data was collected across the whole year, while the 2020 SCMH data was only collected during the fall. However, when we compared 2020 SCMH data to 2019 CCHS data collected in the fall, we still observed significantly lower overall prevalence of high SRMH

(difference = 5.67, 95% CI: 3.79, 7.55) and high community belonging (difference = 4.18, 95% CI: 2.30, 6.06) and lower average life satisfaction (difference = 0.85, 95% CI: 0.78, 0.92) in Fall 2020.

The methods of completing the surveys differed between the two data sources, as did the distribution of some sociodemographic characteristics. Furthermore, although the vast majority of dwellings are included in both sampling frames, they are not identical and the sampling strategy for the 2019 CCHS is more complex. Respondents were less likely to share their data with PHAC if they completed the 2020 SCMH online (vs. by telephone interview). PMH estimates in the territorial capitals in 2019 could not be calculated, so estimated differences from 2019 to 2020 only include provincial data. Moreover, this study can only speak to PMH and perceived change in mental health among adults, as the 2020 SCMH excluded those under 18. Exclusion of some subpopulations from the surveys (e.g. individuals living on reserves or in institutions) also limits generalizability. We had to rely on self-reported household income for the 2020 SCMH; data linkages and imputation done for the majority of 2019 CCHS respondents were not done in the 2020 SCMH. The variables used to code the presence of children at home were also not identical. The coding of some sociodemographic characteristics was admittedly broad to keep the reporting and interpretation of results manageable. The response rates of the two surveys were relatively low and, although sampling weights were used for all estimates, nonresponse bias cannot be completely ruled out.⁴³

Our analyses do not explain why differences in PMH from 2019 to 2020 were absent or larger among some groups, and our conservative approach to comparing differences in the magnitude of change between groups could have overlooked some meaningful differences.^{44,45} Caution is especially warranted when interpreting results involving perceived change in mental health, given that we do not know respondents' level of mental health before the pandemic and responses could be subject to recall bias. Future research involving perceived change in mental health could also distinguish between those who reported "about the same" versus "better" mental health. Finally, although declines

in PMH outcomes were observed, we did not examine the consequences of lower PMH at the individual level in the current study.

Conclusion

In general, the COVID-19 pandemic appears to have negatively impacted PMH in Canada. Given subsequent waves and that the effect of stressful events on mental health can be delayed or persist for some individuals,^{19,21} ongoing surveillance of PMH and other mental health outcomes is needed in 2021 and beyond. For example, data from the second SCMH that was collected from February to May 2021 could be analyzed to examine the mental health of adults in Canada during the pandemic's third wave.^{36,46}

In addition, PMH during and after the pandemic could be placed in the context of long-term changes in mental health in Canada (e.g. the lowered prevalence of high SRMH observed before the pandemic from 2015 to 2019; lower average life evaluations in 2017–2019 compared to 2008–2012).^{47,48} Longitudinal research would also be ideal to examine within-person changes in mental health over time.

Furthermore, as some sociodemographic groups showed larger differences in PMH from 2019 to 2020 and were less likely to report stable/improved mental health than others, continued monitoring of mental health across a variety of sociodemographic characteristics is necessary to ensuring mental health builds back better and stronger in Canada post-pandemic.

Conflicts of interest

The authors have no conflicts of interest.

Authors' contributions and statement

CC conceived the project. CC, LL and RD decided on the analytic approach. LL conducted the statistical analyses. CC, LL and RD interpreted the results. CC drafted and revised the manuscript in response to feedback provided from LL and RD.

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