

Navigating Through Crisis: The Influence of COVID-19 on Canada's Mental Health Problem*

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This study analyzes the impact of the COVID-19 pandemic on mental health across various demographics in Canada, using data from 2002 to 2023 to assess trends and disparities. Our findings reveal a significant increase in reports of fair or poor mental health, particularly pronounced among young adults and vulnerable groups such as LGBTQ2+ and women. The research highlights the urgent need for improved mental health interventions, especially after the global health crises, which significantly affect certain populations. This paper contributes to our understanding of how pandemics worsen existing mental health vulnerabilities and shows the importance of responsive and inclusive health policy making.

1 Introduction

The COVID-19 pandemic did not only threaten people's physical health but also potentially harm their mental health. In Canada, the impact of the pandemic on mental health has been profound. The Centre for Addiction and Mental Health (CAMH 2022) has identified a significant increase in mental health problems among Canadians, noting that the pandemic has led to unprecedented levels of anxiety and depression . Additionally, P. H. A. of Canada (2022) reports on the elevated symptoms of anxiety and depression during the pandemic, further underscoring the need for comprehensive data analysis on this issue .

This paper aims to provide a detailed analysis of the changing situation of mental health in Canada by using four datasets spanning from 2002 to 2023. The focus is on perceived mental health statuses across various demographic segments, including age, gender, and province. The

*Code and data are available at: https://github.com/FrankMengZJ/canada_mental_health/

primary objective is to understand how perceptions of mental health have evolved over the past two decades and how these perceptions have been impacted by the COVID-19 pandemic.

Through a comparative analysis of mental health indicators before and during the pandemic, this research reveals significant insights into the mental health problems in Canada. The findings highlight a concerning rise in reported mental health concerns across all provinces, genders, and age groups, with a particularly sharp increase observed since the begin of the pandemic. Furthermore, the analysis reveals disparities in mental health experiences among specific populations, including women, youth, older adults, LGBTQ2+ individuals, and Indigenous communities. These findings underscore the need for targeted interventions and support systems that address the unique challenges faced by diverse groups within Canada.

This research contributes valuable evidence to inform mental health policy and practice in Canada. By identifying the demographic factors associated with varying mental health outcomes, the study aids policymakers and healthcare providers in developing tailored strategies and allocating resources effectively. The paper is structured as follows: Section 2 provides a detailed overview of the datasets and methodologies employed; Section 3 presents the key findings and trends; Section 4 delves into a discussion of the implications and connects the findings to broader contexts; and Section 5 concludes by summarizing the key insights and proposing future research directions.

The paper is organized into five main sections. Section 2 elaborates on the datasets and methodologies employed in this study. Section 3 details the statistical findings and examines trends by province, gender, age, and among other affected populations. Section 4 engages in a discussion of the broader implications of these findings, considers the study's limitations, and suggests avenues for future research. Finally, Section 5 concludes the paper, summarizing key insights and emphasizing the necessity for informed policy-making in mental health.

To analyze the data, I worked on R (R Core Team 2023), using tidyverse(Wickham et al. 2019), here (Müller 2020) and arrow (Richardson et al. 2024) packages. Tables in the report were created with kableExtra (Zhu 2024) and figures were created with ggplot2 which was built in tidyverse (Wickham et al. 2019).

The estimand is the difference in the probability of reporting mental health as fair or poor before versus during the COVID-19 pandemic. This analysis focuses on Canadian residents across various provinces and key demographic groups.

2 Data

2.1 Overview of Datasets

This study uses four datasets from Statistics Canada, each providing valuable insights into the mental health perceptions of Canadians. These datasets are important for understanding the

Table 1: First 5 Rows in Mental Health Indicators Dataset

REF_DATE	GEO	Age	Sex	Indicators	VALUE
2002	Canada	Total, 15 years and over	Both sexes	Major depressive episode, life	12.2
2002	Canada	Total, 15 years and over	Both sexes	Major depressive episode, 12 months	4.8
2002	Canada	Total, 15 years and over	Both sexes	Cannabis use, life	41.3
2002	Canada	Total, 15 years and over	Both sexes	Cannabis use, 12 months	12.2
2002	Canada	Total, 15 years and over	Both sexes	Suicidal thoughts, life	13.4

Table 2: First 5 Rows in Perceived Mental Health by Age Group Dataset

REF_DATE	GEO	Age	Sex	Indicators	VALUE
2015	Canada (excluding territories)	Total, 12 years and over	Both sexes	Perceived health, very good or excellent	61.9
2015	Canada (excluding territories)	Total, 12 years and over	Both sexes	Perceived health, fair or poor	10.7
2015	Canada (excluding territories)	Total, 12 years and over	Both sexes	Perceived mental health, very good or excellent	72.4
2015	Canada (excluding territories)	Total, 12 years and over	Both sexes	Perceived mental health, fair or poor	5.9
2015	Canada (excluding territories)	Total, 12 years and over	Both sexes	Perceived life stress, most days quite a bit or extremely stressful	21.4

evolution of mental health across different demographics and geographical regions from 2002 to 2023.

The datasets contain some variables in common, including “REF_DATE” for time, “GEO” for location, “Sex” or “Gender”, alongside “Indicators” and “VALUE” which detail specific mental health metrics and their quantitative assessments. Apart from these, “Age” can be found in the Mental Health Indicators Dataset and The Perceived Mental Health by Age Group Dataset. The Perceived Mental Health by Gender and Sociodemographic Characteristics Dataset has a special variable “Sociodemographic_characteristics”, which includes a range of detailed factors such as age, identities, race etc.

2.1.1 Mental Health Indicators Dataset (2002 and 2012)

The dataset gathered by S. Canada (2018) is important as it provides historical information of mental health status among Canadians. It offers valuable insights into the prevalence of various mental disorders and the utilization of mental health services across different time periods, helping to identify long-term trends in mental health care and outcomes.

2.1.2 Perceived Mental Health by Age Group Dataset (2015-2022)

Focusing on self-reported mental health across different age brackets, this dataset enables an analysis of how mental health perceptions vary with age (S. Canada 2024c). It covers more recent years and is instrumental in understanding the shifts in mental health attitudes and conditions in the context of modern societal changes, including the pre and post periods of the COVID-19 pandemic.

Table 3: First 5 Rows in Perceived Mental Health by Gender and Sociodemographic Characteristics Dataset

REF_DATE	GEO	Gender	Sociodemographic_characteristics	Indicators	VALUE
2021-04	Canada (excluding territories)	Total, all persons	Total, 15 years and over	Excellent or very good perceived mental health	43.4
2021-04	Canada (excluding territories)	Total, all persons	Total, 15 years and over	Good perceived mental health	35.3
2021-04	Canada (excluding territories)	Total, all persons	Total, 15 years and over	Fair or poor perceived mental health	21.3
2021-04	Canada (excluding territories)	Total, all persons	15 to 24 years	Excellent or very good perceived mental health	35.9
2021-04	Canada (excluding territories)	Total, all persons	15 to 24 years	Good perceived mental health	34.9

Table 4: First 5 Rows in Perceived Mental Health by Province Dataset

REF_DATE	GEO	Gender	Indicators	VALUE
2021-04	Canada (excluding territories)	Total, all persons	Excellent or very good perceived mental health	43.4
2021-04	Canada (excluding territories)	Total, all persons	Good perceived mental health	35.3
2021-04	Canada (excluding territories)	Total, all persons	Fair or poor perceived mental health	21.3
2021-04	Canada (excluding territories)	Men	Excellent or very good perceived mental health	48.5
2021-04	Canada (excluding territories)	Men	Good perceived mental health	34.1

2.1.3 Perceived Mental Health by Gender and Sociodemographic Characteristics Dataset (2021-2023)

This dataset (S. Canada 2024d) is essential for exploring how different sociodemographic factors such as gender, identities, and age impact mental health perceptions. Its recent collection provides current data, crucial for assessing the ongoing effects of the COVID-19 pandemic on various demographic groups within Canada.

2.1.4 Perceived Mental Health by Province Dataset (2021-2023)

Also sourced from the same survey as the Perceived Mental Health by Gender and Sociodemographic Characteristics Dataset(S. Canada 2024e), it gathers data on mental health perceptions across different Canadian provinces, examining regional differences and location-specific factors that may influence mental health outcomes.

2.2 Measurement

2.2.1 Measurement Techniques for the Age Dataset

The “Perceived Mental Health by Age Group” dataset, derived from the survey documented at Statistics Canada’s IMDB page (S. Canada 2024a), using a comprehensive methodology to capture how perceptions of mental health vary across different age groups in Canada. This survey involved administering standardized questionnaires to a representative sample of Canadian adults. The process was designed to ensure that the collected data accurately reflect the mental health statuses across varying age demographics, which are critical in identifying

trends and specific age-related challenges in mental health. The survey’s methodology, focusing on age as a key variable, allows researchers to analyze how mental health perceptions change with age, providing insights into the lifecycle dynamics of mental health issues.

2.2.2 Measurement Techniques for the Sociodemographic Characteristics and Province Datasets

The datasets focusing on “Perceived Mental Health by Gender and Sociodemographic Characteristics” and “Perceived Mental Health by Province” were both derived from the survey detailed on Statistics Canada’s IMDB (S. Canada 2024b). This survey collected data across various provinces, incorporating a broad range of sociodemographic characteristics, including gender, income, education, and employment status, among others. The methodology employed in this survey involved both direct questionnaire techniques and sophisticated stratified sampling designs. These methods ensured that the data captured not only reflect the diverse sociodemographic landscape of Canada but also allow for an in-depth analysis of how different factors influence mental health perceptions regionally and across various sociodemographic groups.

2.2.3 Key Differences and Considerations

The key differences between the Canadian Community Health Survey (CCHS) and the Canadian Social Survey (CSS) lie in their focus and methodologies. The CCHS focused on health-specific data, making it suitable for in-depth public health studies and policies. It used traditional personal and telephone interviews to gather detailed health information. In contrast, the CSS covers broader social and economic topics, using both online and traditional methods to capture a wider demographic. This makes the CSS more adaptable to examining the societal factors influencing overall well-being. These distinctions are crucial for choosing the right dataset for specific research needs, with the CCHS offering depth in health topics and the CSS providing a broader view of societal well-being.

3 Results

3.1 Methodological Considerations

Prior to examining the trends, it’s crucial to note that the datasets used for this analysis were collected using different methodologies. To preserve the accuracy of the analysis, the results are presented in separate graphs.

3.2 Overview

The results from the analyzed datasets reveal significant trends in mental health problems across Canada. Initially, the data show a gentle increase in reported mental health concerns from the early 2000s up until 2010. Post-2010, there is a noticeable dip, followed by a steady climb in mental health issues leading up to 2015. However, the most striking feature of this trend is the sharp increase in mental health concerns starting from around 2020, which corresponds with the onset of the COVID-19 pandemic.

Figure 1 plots the percentage of individuals reporting mental health concerns from 2005 to the present. From 2005 to around 2015, there were minor fluctuations with a gradual increase. However, in the years following 2015, there is a distinct upward surge, with the percentages almost doubling by 2020 and continuing to rise steeply. This dramatic increase highlights the impact that the pandemic has had on mental health, as isolation, stress, economic uncertainty, and health-related fears affect the population.

Figure 2 provides a view of the recent period, showing quarterly data from 2021 through to mid-2023. This period captures the ongoing effects of the pandemic. The graph illustrates considerable volatility, with sharp increases and decreases in the percentage of individuals reporting mental health issues. These oscillations suggest that mental health responses are highly sensitive to the evolving circumstances of the pandemic, such as waves of infection, public health measures, and societal changes.

Together, these graphs show that Canadians are experiencing a significant increase in mental health concerns during a global crisis. The data underscore the need for ongoing monitoring and support to address mental health at a community and national level.

3.3 By Province

This part demonstrates the regional variations in mental health across Canadian provinces. In Figure 3, we see a common upward trend among all provinces, with a particularly steep increase following 2020, which aligns with the global onset of the COVID-19 pandemic. Prior to 2020, there were variations in the population among provinces, but the gap between regions with the highest and lowest reported values narrowed as all regions trended upwards significantly in the following years.

Alberta, British Columbia, and Ontario has some of the highest increases, showing an obvious impact of the pandemic and its associated factors on mental health in these regions. However, it is notable that the trend is national, as even provinces like Prince Edward Island and Newfoundland and Labrador, which initially had some of the lowest reported values, also show a sharp rise.

Figure 4 represents data from 2021 to 2023, shows the fluctuations within each province. These variations could be indicative of the changing conditions during the pandemic, such as waves

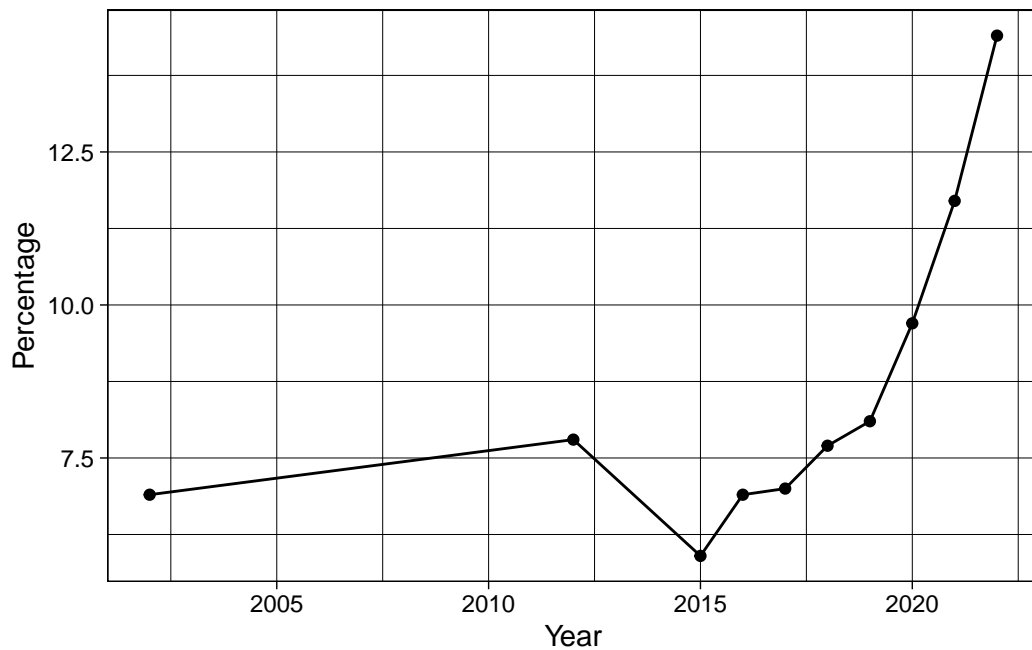


Figure 1: Trends of Reported Fair or Poor Mental Health in Canada (2002-2022)

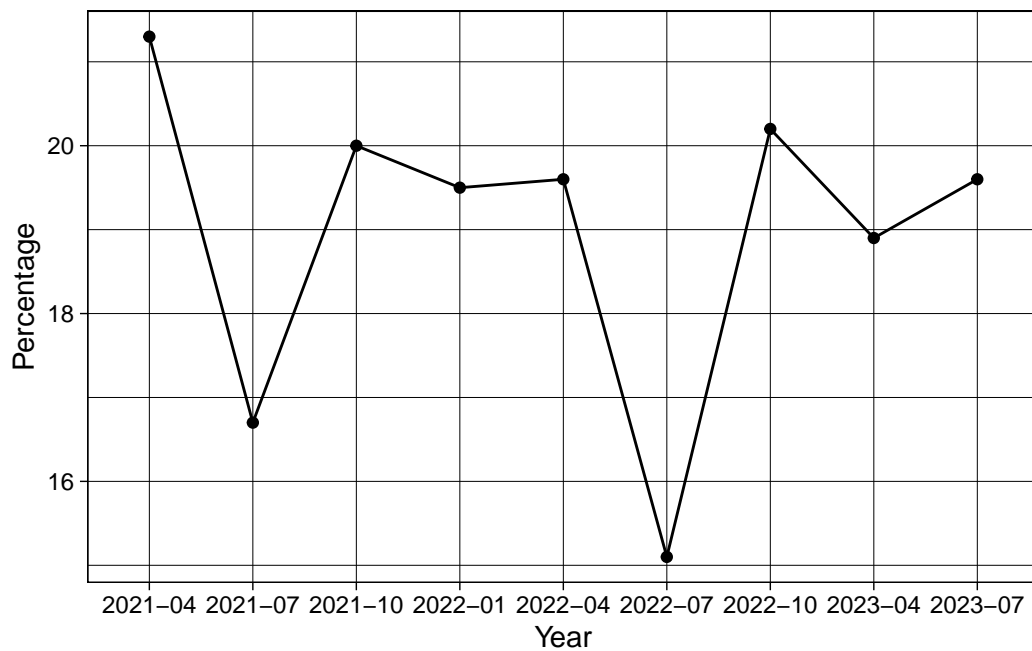


Figure 2: Trends of Reported Fair or Poor Mental Health in Canada (2021-2023)

of COVID-19 cases, differing provincial public health restrictions, and economic instability. While the Atlantic Region and the Prairies show a more volatile pattern, Quebec and Ontario demonstrate a more consistent increase over the observed quarters.

Both graphs indicate that while the trend in mental health concerns is increasing across Canada, there are provincial specificities that suggest the impact of local factors. These could include economic conditions, the accessibility of mental health services, public health policies, and support of communities. The consistent rise across provinces post-2020, however, points to the influence of the pandemic on mental health at a national level.

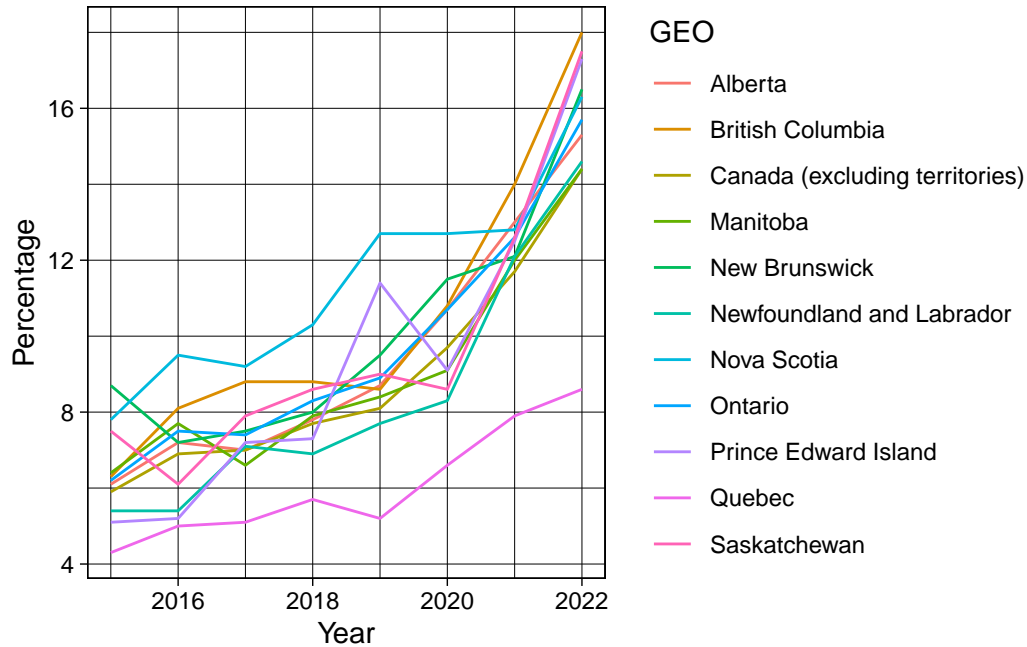


Figure 3: Provincial Comparison of Reported Fair or Poor Mental Health in Canada (2015-2022)

3.4 By Gender

In examining the impact of the COVID-19 pandemic on mental health by gender, our analysis reveals distinct trends that highlight considerable differences between males and females in reporting fair or poor mental health.

From Figure 5, there is a clear rise in mental health concerns for both genders, with females consistently reporting higher levels of fair or poor mental health compared to males. This difference became more significant during the pandemic, suggesting that the crisis may have increased existing gender-related mental health vulnerabilities.

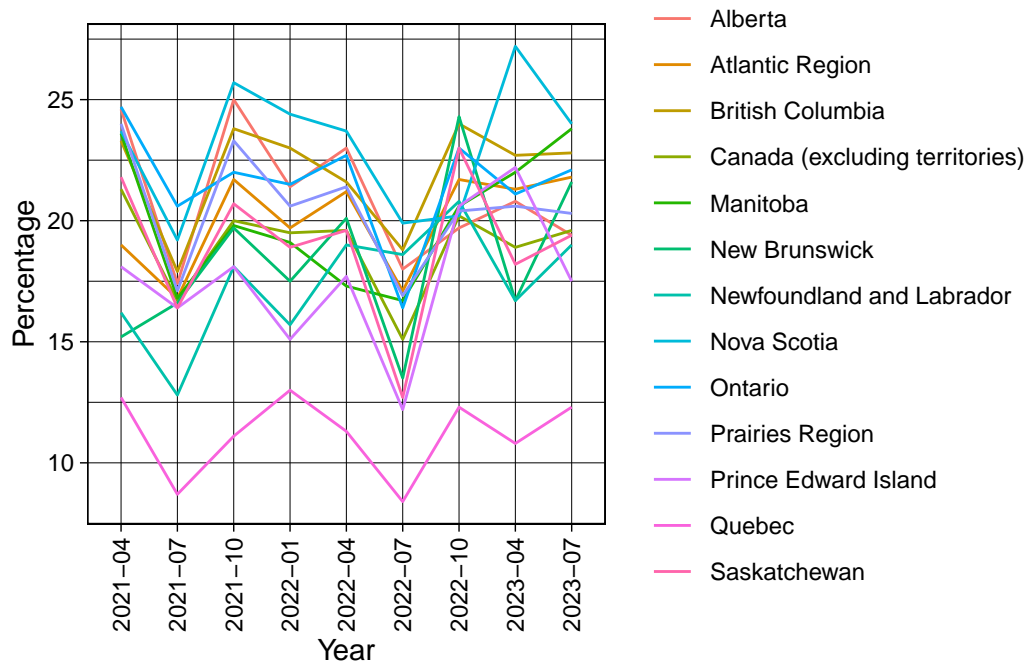


Figure 4: Provincial Comparison of Reported Fair or Poor Mental Health in Canada (2021-2023)

Figure 6 offers a closer look at these trends, showing significant fluctuations that correspond with ongoing pandemic developments and public health measures. These periodic changes are especially notable among females, who show greater peaks and troughs in mental health reporting compared to males. This suggests that women’s mental health may be more sensitive to the immediate impacts of COVID-related stressors.

This gender-specific analysis not only shows the differential impact of the pandemic on mental health between males and females but also highlights the necessity for targeted mental health interventions that address the unique challenges faced by women during such crises.

3.5 By Age

The analysis of mental health trends by age reveals significant variations in how different age groups have perceived their mental health from 2016 to 2022, with notable impacts during the COVID-19 pandemic.

In Figure 7, an increasing trend in reporting fair or poor mental health was observed across all age groups, which became significantly worse due to the breakout of the pandemic. However, the patterns varied markedly between age cohorts. The data show that those aged 18 to 34 years reported the most substantial increases in mental health concerns. This suggests that the

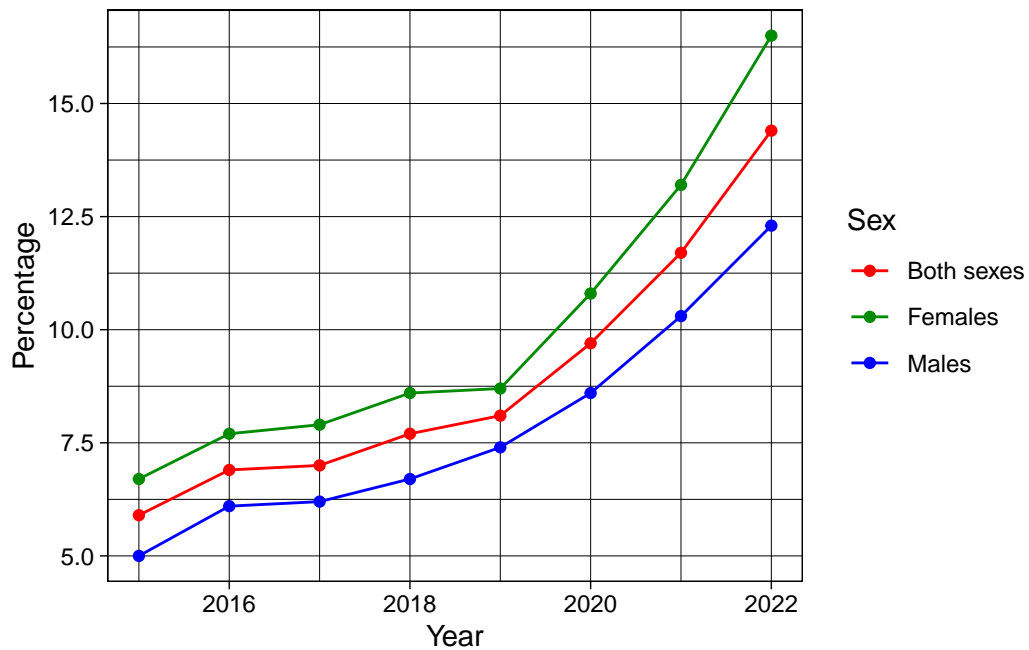


Figure 5: Gender Differences in Reported Fair or Poor Mental Health in Canada (2015-2022)

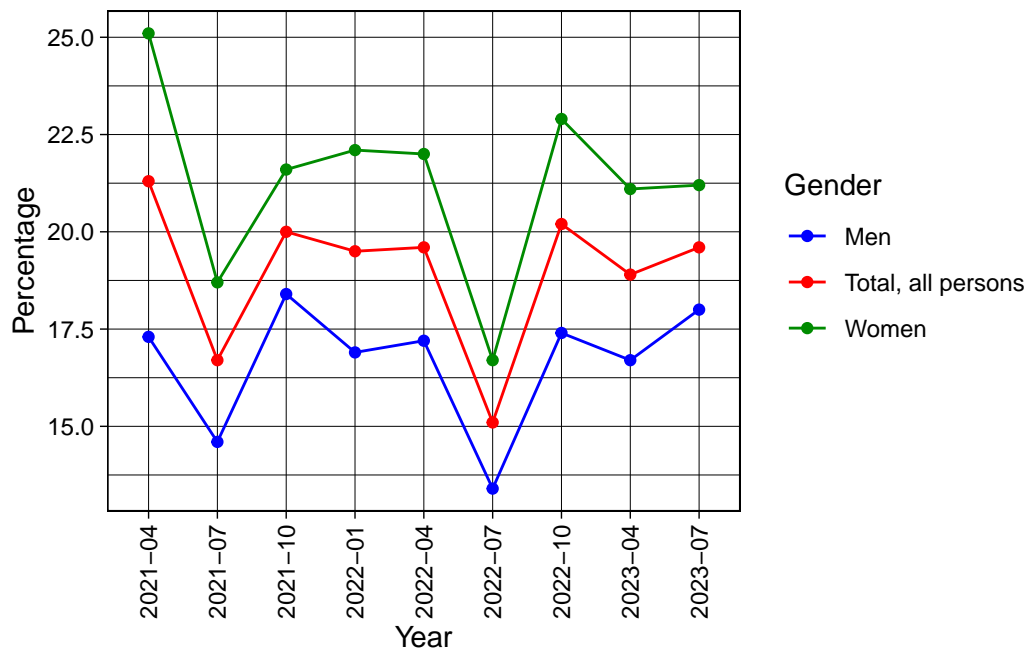


Figure 6: Gender Differences in Reported Fair or Poor Mental Health in Canada (2021-2023)

pandemic’s effects have been particularly profound on the mental health of the young people in society, possibly due to different stressors relevant to their stages in life such as educational disruptions and economic downturns.

Figure 8 provides further insights into these trends, revealing fluctuations that align with pandemic waves and associated public health responses. Young adults demonstrated considerable fluctuations in their reported mental health, with young adults experiencing mental health challenges including social restrictions and periods of uncertainty. These reflect the particular vulnerability of younger individuals to the social and educational disruptions caused by the pandemic.

This age-specific analysis showed the impact of the pandemic on mental health across the different age groups. It emphasizes that young adults need more mental health support. These findings are critical for developing strategic public health responses that effectively address the mental health fallout from the pandemic and support the resilience of all age groups.

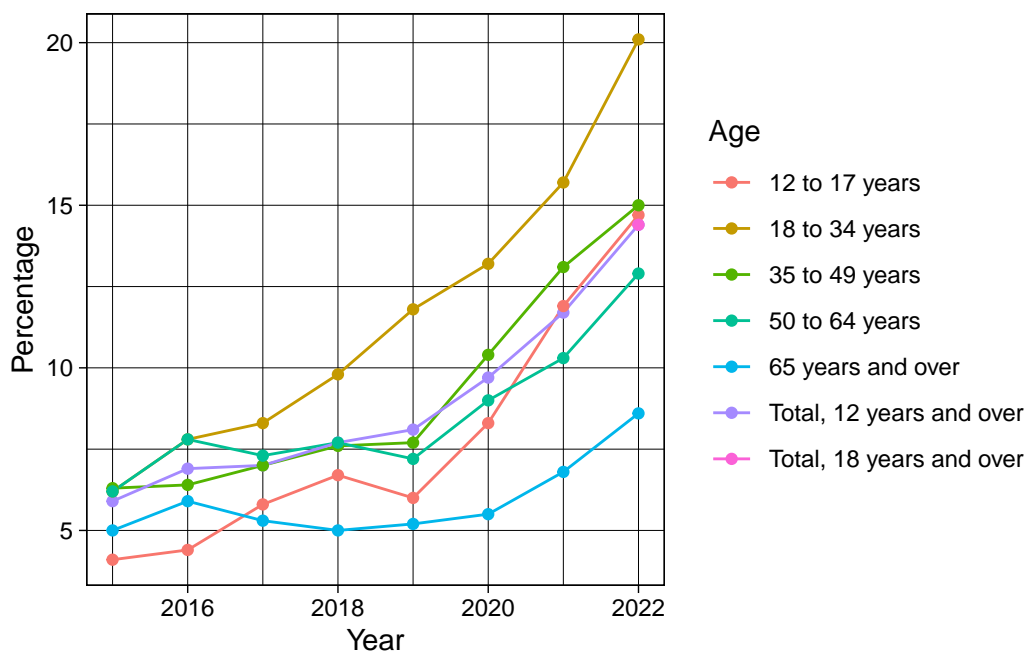


Figure 7: Age-Related Trends in Reported Fair or Poor Mental Health in Canada (2015-2022)

3.6 Others

The examination of mental health within specific demographic segments reveals significant disparities. Table 5 showed that the most affected population, with 48.4% reporting fair or poor mental health, are LGBTQ2+ women, followed by the total population of LGBTQ2+

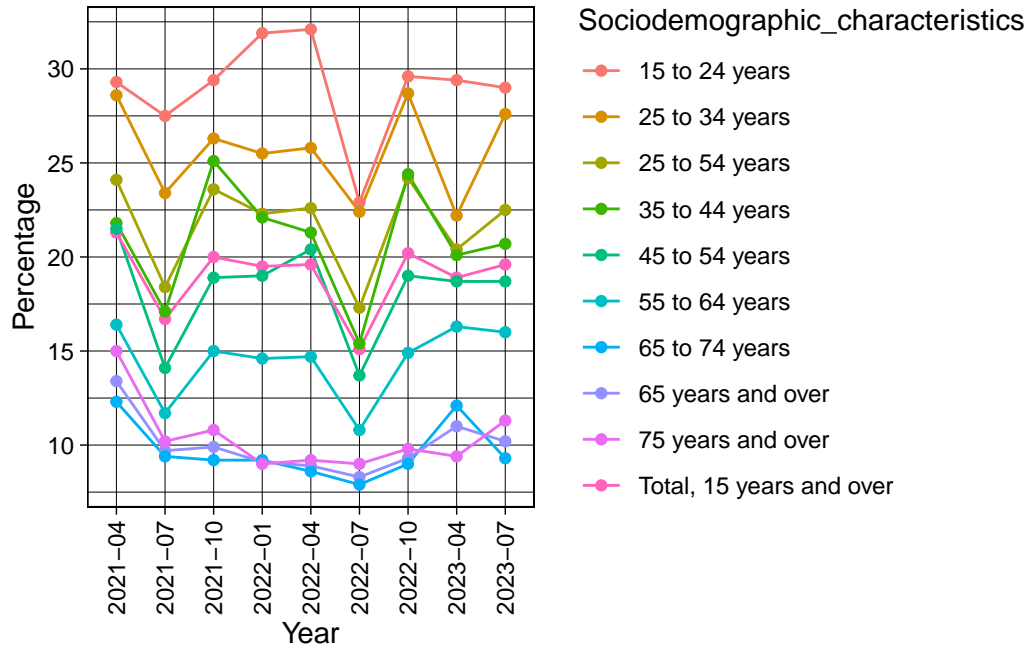


Figure 8: Age-Related Trends in Reported Fair or Poor Mental Health in Canada (2021-2023)

individuals at 44.5%. LGBTQ2+ men report a lower percentage at 39.0%, indicating a gender-related variance within the LGBTQ2+ community. These figures highlight the substantial mental health challenges faced by LGBTQ2+ individuals, which may be attributed to factors such as discrimination, stigma, and lack of targeted support services.

Southeast Asian women report a 39% rate of fair or poor mental health, indicating that cultural and possibly immigration-related factors might contribute to mental health concerns. This suggests the need for culturally sensitive mental health resources that are attuned to the unique experiences of minority groups.

Young women aged 15 to 24 years report a rate of 36.3%, reflecting the particular vulnerabilities of this age group, which may include the pressures of social media, academic stress, and transitions into the workforce or higher education.

Women with disabilities or long-term conditions report a 34.7% rate, with the total population of persons with disabilities reporting 32.4%. These figures underscore the intersectional nature of mental health, where disability and gender can compound the challenges faced by individuals, highlighting the critical need for accessible mental health services that accommodate physical and social barriers.

Métis women, Indigenous women, and First Nations women report similar rates of around 30-31%, indicating the pressing mental health concerns among Indigenous populations. Historical

Table 5: Mental Health Disparities Among Special Populations in Canada

GEO	Gender	Sociodemographic_characteristics	Average
Canada (excluding territories)	Women	LGBTQ2+ people	48.38889
Canada (excluding territories)	Total, all persons	LGBTQ2+ people	44.52222
Canada (excluding territories)	Men	LGBTQ2+ people	39.02222
Canada (excluding territories)	Women	Southeast Asian	39.00000
Canada (excluding territories)	Women	15 to 24 years	36.28889
Canada (excluding territories)	Women	Persons with a disability, difficulty or long-term condition	34.71111
Canada (excluding territories)	Total, all persons	Persons with a disability, difficulty or long-term condition	32.36667
Canada (excluding territories)	Women	Métis	31.36667
Canada (excluding territories)	Women	Indigenous identity	30.31111
Canada (excluding territories)	Women	First Nations	30.30000
Canada (excluding territories)	Women	Single Indigenous identity	30.06667
Canada (excluding territories)	Total, all persons	Multiple visible minorities	29.70000
Canada (excluding territories)	Men	Persons with a disability, difficulty or long-term condition	29.53333
Canada (excluding territories)	Total, all persons	15 to 24 years	29.01111
Canada (excluding territories)	Total, all persons	Métis	28.97778

context, ongoing systemic inequalities, and intergenerational trauma are likely contributing factors and underscore the importance of providing culturally competent care and support.

4 Discussion

4.1 Evaluation of Research Goals

In this paper, we explored the mental health problems in Canada over two critical decades, employing datasets that encapsulate the pre and intra-pandemic eras. Through the analysis, we’ve shown the evolution of the public’s mental health status. The data demonstrated that mental health has become an influential concern, reflecting both the shock of the pandemic and underlying systemic vulnerabilities.

4.2 New Perspectives on Mental Health in Canada

Our findings reviewed the mental health challenges faced by Canadians before and during the COVID-19 pandemic. A significant find is the impact across demographics, with particular strains on LGBTQ2+ communities, women, and the youth. These insights underscore the pandemic’s influence beyond the immediate health implications, permeating social, economic, and personal domains.

4.3 Intersectional Impact and Systemic Factors

The data also discussed the intersectional nature of mental health challenges, revealing how gender, sexuality, age, and ethnicity intersect to influence mental well-being. For instance, the increasing rates of mental health concerns among LGBTQ2+ populations stated the reality of social stressors. This leads to a discussion on systemic issues like discrimination and access to care.

4.4 Limitations and Considerations

Despite these insights, the study has its constraints. The varied data collection methodologies over time introduce complexity in direct comparisons. Additionally, self-reported data on mental health may be influenced by evolving societal attitudes toward mental health, potentially impacting trend analysis.

4.5 Future Research

For future research, to comprehensively assess the lasting impact of the COVID-19 pandemic on mental health, researchers could use longitudinal studies. These studies would track individuals over extended periods, providing insights into the long-term effects of the pandemic on various demographic groups.

Another important area for future research is the evaluation of mental health policies implemented. Analyzing the effectiveness of these policies in real time could provide valuable feedback for policymakers, allowing for adjustments and more targeted interventions.

Finally, doing global comparative studies may make the results more generalized. Understanding global best practices and learning from the successes and challenges faced by other nations could guide future strategies and interventions.

5 Conclusion

In conclusion, this study has provided an examination of the mental health problem in Canada during the period of the COVID-19 pandemic. By analyzing a range of datasets from 2002 to 2023, the results have highlighted significant increases in mental health concerns across all demographics with notable disparities.

The findings underscore the profound impact of the pandemic on mental health, revealing an urgent need for better support systems to address the unique challenges faced by different populations, including young adults and vulnerable groups such as LGBTQ2+ individuals and women. These insights can be helpful for policymakers and healthcare providers, emphasizing

the necessity to adapt and strengthen mental health services to cope with current and future challenges.

Moving forward, the government should continue to monitor mental health trends to respond to emerging needs. Implementing the experiences learned from this research can lead to more helpful health systems that not only manage crises effectively but also support the ongoing well-being of the population. By doing so, we can ensure that mental health care in Canada remains responsive, inclusive, and proactive, reflecting the complexities of human health in a changing world.

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