

The Burden of Chronic Conditions in Canada: Evidence from the Canadian Community Health Survey (2019–2020)

Table of Contents

1. Introduction
 2. Data and Methods
 3. Overall Burden of Chronic Conditions
 - 3.1. How many Canadians live with at least one chronic condition?
 4. Mental versus Physical Conditions
 5. Gender differences in mental and physical health
 6. Variation by Province
 7. Which Groups Face the Greatest and Smallest Burden?
 8. Discussion
 9. Limitations
 10. Conclusion and Next Steps
 11. References
 12. Authorship & Disclaimer
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Introduction

As someone with a healthcare background and a passion for data, I wanted to answer a simple yet profound question: **who is most affected by chronic conditions in Canada, and why?** Chronic diseases—whether physical like high blood pressure or mental like anxiety—touch nearly every family. Yet the burden is not evenly distributed. Age, income, gender and geography all shape who is most at risk. To explore these patterns, I turned to the Canadian Community Health Survey (CCHS), a nationally representative dataset that collects information from Canadians aged 12 and above. Throughout this report I endeavor to use plain language and avoid jargon so that both professionals and community members can follow the findings.

Data and Methods

CCHS provides individual-level responses on more than 600 variables. I extracted data on ten chronic conditions and four key demographic factors—**age group, income, gender (male or female)** and **province**—from the CCHS 2019–2020 cycle. The chronic conditions included:

- Musculoskeletal problems

- High blood pressure
- High blood cholesterol
- Diabetes
- Chronic fatigue syndrome
- Mood disorder
- Anxiety disorder
- Respiratory conditions
- Cardiovascular conditions
- Sleep apnea

To produce unbiased national estimates, I used the full survey weights. To quantify uncertainty, I applied the 1000 bootstrap weights supplied by Statistics Canada. For each condition and demographic factor, I calculated:

- **Weighted prevalence (%) and 95 % confidence intervals (CIs)** using bootstrap replicates.
- **Absolute differences and relative risks (RRs)** between the highest and lowest prevalence groups. Relative risk expresses how many times more common a condition is in one group compared with another.
- **Cramér's V**, an effect size derived from the chi-square statistic, to summarize association strength. Values ≤ 0.10 indicate negligible association, 0.11–0.30 weak, 0.31–0.50 moderate and > 0.50 strong.

I note that statistical significance alone can be misleading—large samples may produce significant p -values even when differences are trivial. Therefore, I focused on measures of association (absolute differences, relative risks and effect sizes) rather than p -values. Confidence intervals were calculated using the bootstrap method; a 95 % CI provides the range of values most consistent with the data and conveys the precision of the estimate.

I also created derived indicators for *any chronic condition* (at least one of the ten) and grouped the conditions into mental (mood disorder and anxiety disorder) and physical (the other eight) categories. All analyses were done in Python using pandas and NumPy, and results were crosschecked with my Jupyter notebooks and summary tables.

Note: All prevalence estimates presented in this report are weighted to the Canadian population using full survey weights, with 95% confidence intervals derived from 1,000 bootstrap replicates, unless otherwise specified.

Overall Burden of Chronic Conditions

Table 1 summarizes the weighted national prevalence of each condition. Musculoskeletal problems and high blood pressure are the most common, affecting roughly one in five Canadians. Mental health conditions—anxiety and mood disorders—affect almost one in ten respondents, underscoring their importance. Chronic fatigue syndrome is rare but still meaningful for those affected.

Condition	Weighted prevalence (%)	95 % CI
Musculoskeletal condition	19.2	18.9–19.6
High blood pressure	18.1	17.8–18.4
High cholesterol	12.3	11.9–12.6
Anxiety disorder	9.8	9.5–10.2
Mood disorder	9.0	8.8–9.4
Respiratory condition	7.9	7.5–8.2
Sleep apnea	17.2	16.9–17.5
Diabetes	6.5	6.2–6.7
Cardiovascular condition	5.5	5.3–5.7
Chronic fatigue syndrome	1.4	1.3–1.6

How many Canadians live with at least one chronic condition?

By combining all ten diseases into a single indicator (“any chronic condition”), I found that the burden is very high, particularly among older adults. **Figure 1** shows that only about 19 % of adolescents (12–17) report at least one chronic condition, but this rises to roughly 83 % among seniors aged 65 and over. The right panel demonstrates a clear income gradient: lower-income households have higher prevalence, although the differences are less steep than those by age.

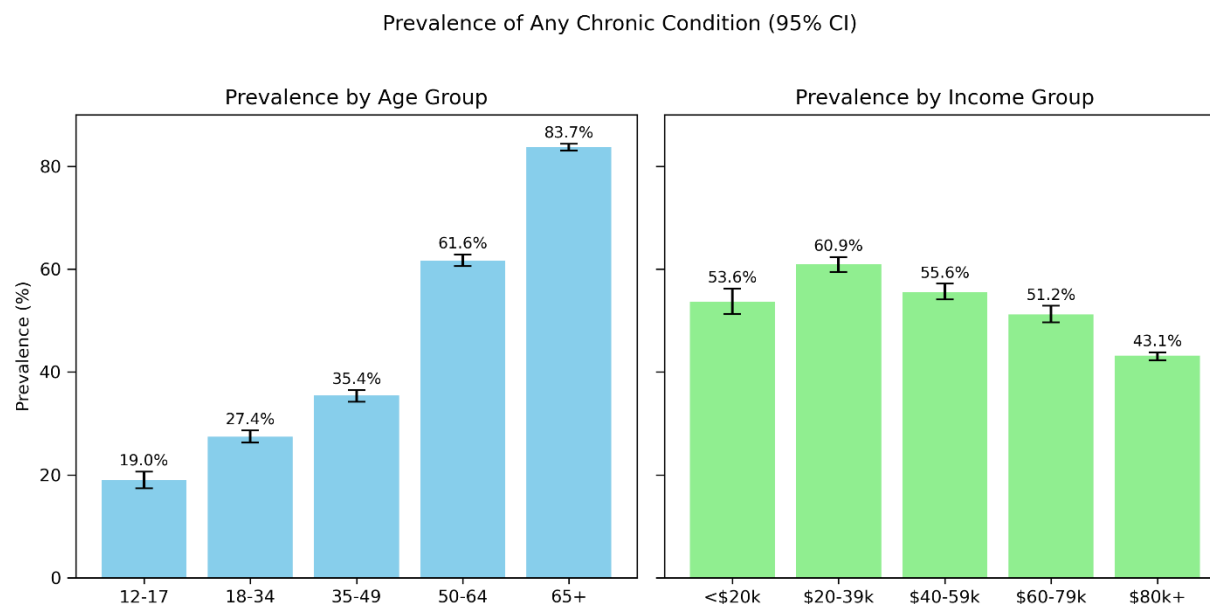


Figure 1 – Prevalence of any chronic condition (95 % CI) by age group (left) and household income (right). Error bars show 95% confidence intervals.

Interpreting the numbers

For age, the pattern is intuitive: chronic diseases accumulate over the life course. Still, the sheer scale—the prevalence increases more than fourfold from adolescence to late adulthood—underscores the health-care needs of seniors (Government of Canada, 2024b). Income differences reveal that financial disadvantage is associated with a greater burden of disease (PHAC, 2023a). For example, about 60.9 % of households earning \$20–39 000 have at least one chronic condition, compared with 43.1 % among households earning \$80 000 or more (Table 2).

Income category	Prevalence of any chronic condition (%)	95 % CI
< \$20 k	53.6	51.3–56.2
\$20–39 k	60.9	59.4–62.4
\$40–59 k	55.6	54.1–57.1
\$60–79 k	51.2	49.7–52.9
≥ \$80 k	43.1	42.3–43.9

Table 2 – Prevalence of at least one chronic condition by household income.

Mental versus Physical Conditions

To explore whether mental health problems emerge earlier than physical diseases, I calculated the prevalence of having at least one mental condition (anxiety or mood disorder)

and at least one physical condition. The results, shown in **Figure 2** and **Table 3**, reveal a striking contrast: mental disorders peak in young adulthood and decline thereafter, whereas physical conditions surge after age 50.

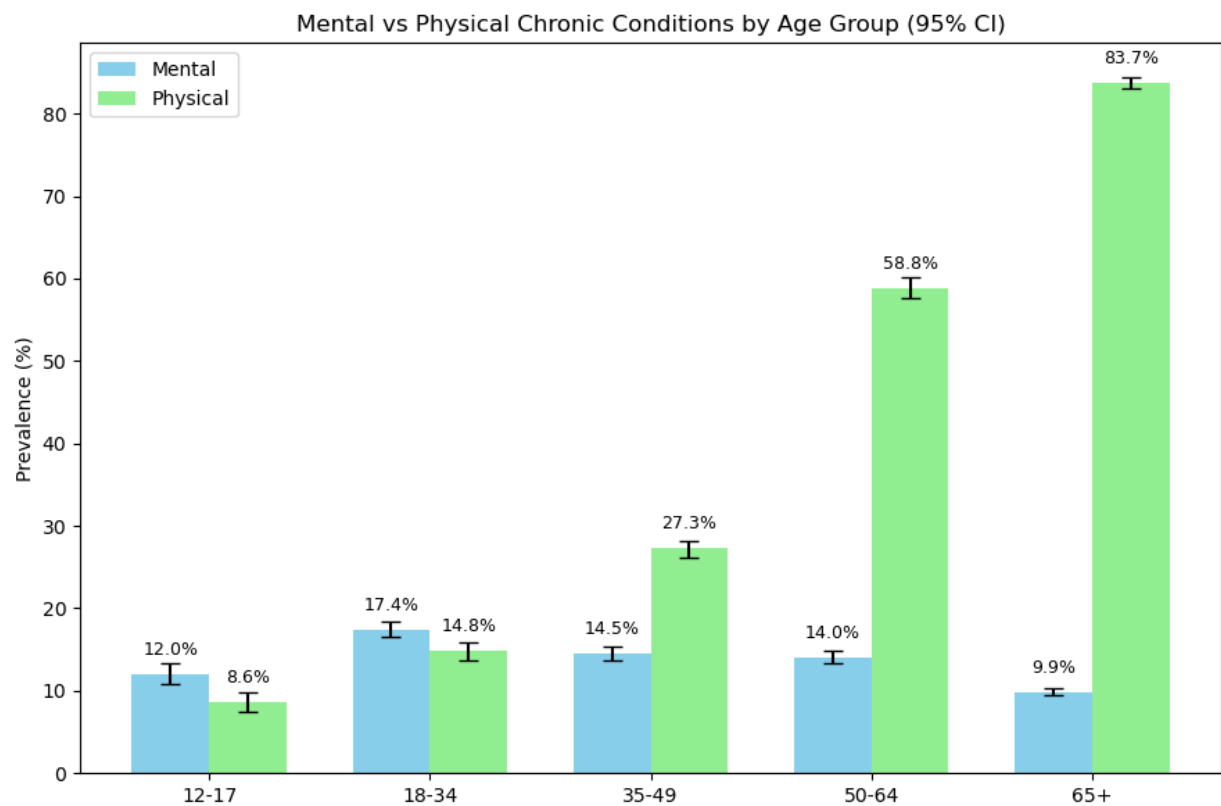


Figure 2 – Prevalence of mental versus physical chronic conditions by age group. Error bars show 95% confidence intervals.

Age group	Mental conditions (%)	95 % CI	Physical conditions (%)	95 % CI
12–17	12.0	10.5–13.7	8.6	7.5–9.7
18–34	17.4	16.1–18.8	14.8	13.8–15.8
35–49	14.5	13.3–15.8	27.3	26.1–28.2
50–64	14.0	12.9–15.1	58.8	57.7–60.1
65+	9.9	9.0–10.8	83.7	83.1–84.3

Table 3 – Prevalence of at least one mental or physical chronic condition by age group.

Mental health conditions peak in young adulthood and decline in older age groups, suggesting that adolescence and early adulthood are critical periods for psychological well-being (Government of Canada, 2024c). The decline among seniors could reflect cohort

differences or under-reporting. Physical conditions, on the other hand, rise steeply after age 50 and affect more than four out of five seniors. This supports the need for early prevention and screening programs targeting cardiovascular and metabolic diseases (PHAC, 2023f).

Gender differences in mental and physical health

Gender disparities emerge when chronic conditions are grouped. **Figure 3** and **Table 4** show that women report a higher prevalence of mental health conditions (17.3 % vs. 10.7 % for men), while physical conditions are common for both genders, with a slightly higher prevalence among women (42.1 % vs. 40.8 %). The mental-health gender gap is notable, with women's risk being about 1.6 times higher than men's (CIHR, 2023).

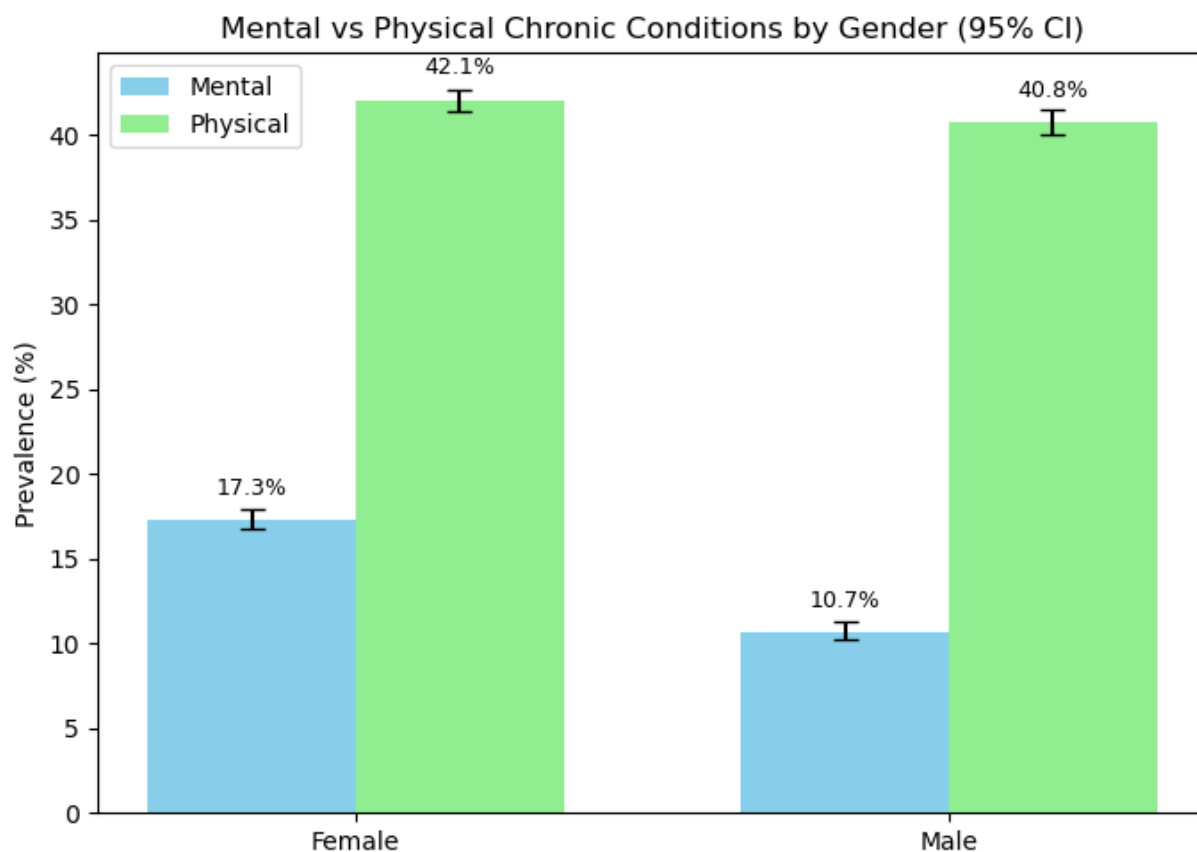


Figure 3 – Prevalence of mental versus physical chronic conditions by gender. Error bars show 95% confidence intervals.

Gender	Mental conditions (%)	95 % CI	Physical conditions (%)	95 % CI
Female	17.3	16.2–18.5	42.1	41.4–42.7
Male	10.7	10.0–11.4	40.8	40.0–41.5

Table 4 – Prevalence of mental and physical chronic conditions by gender.

Variation by Province

Geography influences the burden of disease. Using the combined indicator of “any chronic condition,” I computed the weighted prevalence and 95 % confidence intervals for each province and territory. Table 5 lists the provinces from highest to lowest prevalence, and **Figure 4** presents the same information graphically.

Province or territory	Prevalence of any chronic condition (%)	95 % CI
Newfoundland & Labrador	57.6	54.7–60.5
Nova Scotia	56.7	54.6–59.5
New Brunswick	53.9	51.4–56.1
Prince Edward Island	50.7	47.8–53.8
Quebec	48.1	47.1–49.2
Ontario	47.9	47.0–48.8
Alberta	47.4	45.9–49.0
Saskatchewan	47.0	44.5–49.2
British Columbia	45.8	44.4–47.1
Manitoba	45.8	43.7–47.8
Yukon/Northwest/Nunavut Territories	34.6	32.4–37.0

Table 5 – Prevalence of any chronic condition by province or territory (95 % CI).

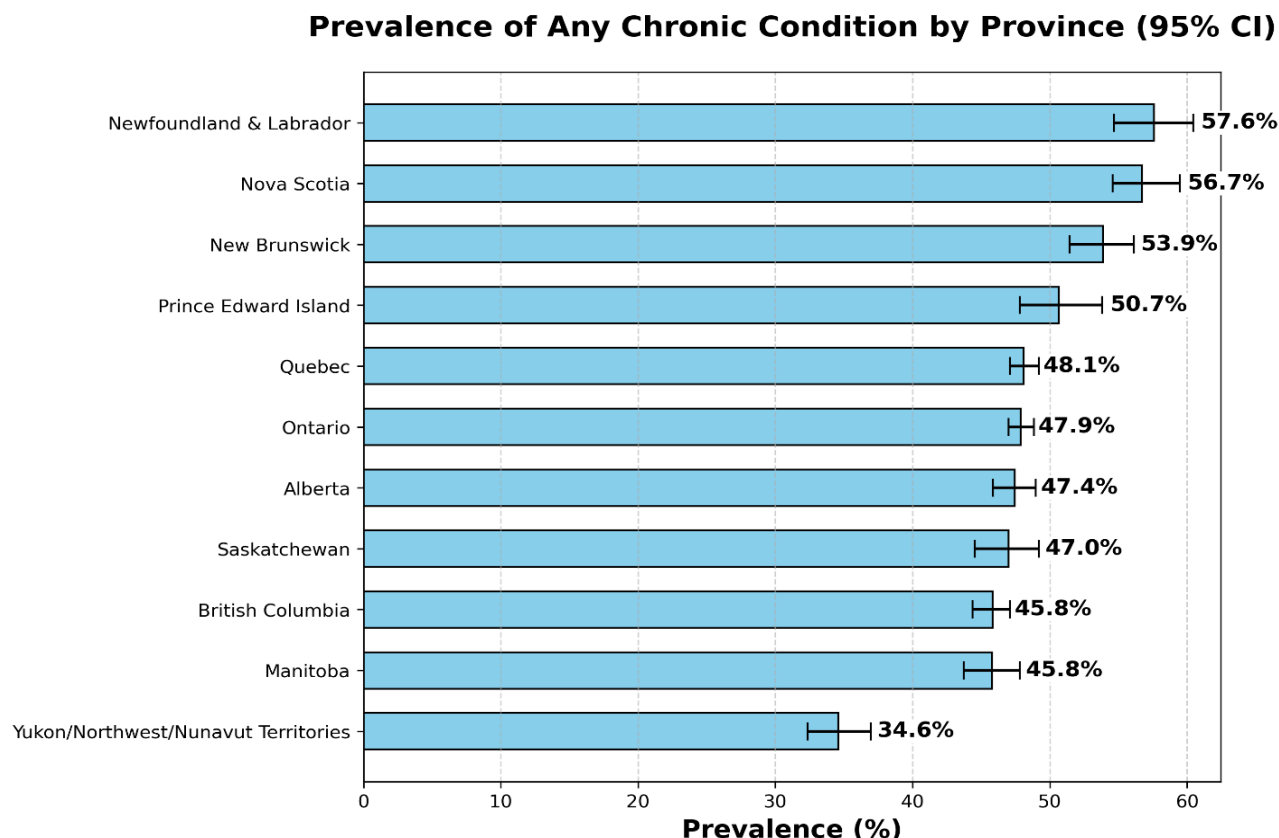


Figure 4 – Prevalence of any chronic condition by province or territory. Error bars show 95% confidence intervals.

The highest prevalence is observed in Newfoundland & Labrador (57.6%) and Nova Scotia (56.7%), with New Brunswick (53.9%) also above 50%. The **Yukon/Northwest/Nunavut Territories** reports the lowest prevalence (34.6%). These differences—about 23 percentage points between the highest and lowest regions—highlight the importance of regional health policies and resource allocation. Provinces in the Atlantic region have higher burdens, suggesting that local socioeconomic or health-service factors may contribute. British Columbia and Manitoba have moderate prevalence (~45.8%), while Ontario and Alberta sit slightly below the national average. Because provincial populations differ in age and socioeconomic composition, these crude comparisons should be interpreted cautiously; more detailed analyses could adjust for these factors (PHAC, 2023b).

Which Groups Face the Greatest and Smallest Burden?

To identify the extremes, I calculated, for each condition and stratifier, the highest and lowest prevalence groups and measured the absolute difference and relative risk. **Table 6** summarizes notable patterns. Larger relative risks occur across age groups because certain diseases are almost non-existent in children. For instance, high blood pressure is roughly

189 times more prevalent among seniors than adolescents. However, relative risk alone can be misleading if baseline prevalence is extremely low. The risk difference (absolute difference) conveys how many additional people are affected, which is why I report both measures alongside the effect size (Cramér's V). Age generally shows moderate associations (Cramér's $V \approx 0.25\text{--}0.48$), whereas income and province typically have negligible associations (Cramér's $V < 0.10$). Gender differences vary by condition: strong for mental health, modest for most physical conditions.

Condition	Stratifier	Highest group (% prev)	Lowest group (% prev)	Absolute difference (pp)	Relative risk	Cramér's V	Comment
<i>High blood pressure</i>	<i>Age</i>	65+ (70.0)	12–17 (0.4)	69.6	188.9	0.48	<i>Prevalence nearly absent in youths; extremely common in seniors</i>
<i>Sleep apnea</i>	<i>Age</i>	65+ (9.9)	12–17 (0.1)	9.8	78.6	0.41	<i>Sharp increase after middle age</i>
<i>Diabetes</i>	<i>Age</i>	65+ (19.5)	12–17 (0.3)	19.2	65.1	0.33	<i>Age is dominant driver</i>
<i>Mood disorder</i>	<i>Income</i>	< \$20k (15.9)	≥ \$80k (7.4)	8.5	2.2	0.10	<i>Mental illness concentrated in low-income groups</i>
<i>Anxiety disorder</i>	<i>Gender</i>	Female (13.8)	Male (8.0)	5.8	1.7	–	<i>Gender gap for mental health</i>

<i>Cardiovascular condition</i>	<i>Age</i>	<i>65+ (12.9)</i>	<i>12–17 (0.2)</i>	<i>12.7</i>	<i>54.3</i>	<i>0.32</i>	<i>Rare in youth; common in seniors</i>
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Table 6 – Examples of highest and lowest prevalence groups for selected chronic conditions. “pp” = percentage points.

Discussion

What do these patterns mean?

1. **Age is the main driver of chronic disease burden.** Most physical conditions increase dramatically after age 50, while mental disorders peak in early adulthood. This pattern suggests that life-course approaches to health promotion are essential: mental-health services should focus on adolescents and young adults, while chronic-disease prevention should intensify in mid-life.
2. **Income matters, especially for mental health.** Lower-income individuals are more likely to report both mental and physical conditions. For mood disorder, the prevalence in the lowest income group is more than twice that of the highest income group. Policies that address socioeconomic determinants—such as access to healthy food, safe housing and mental-health services—could reduce these disparities.
3. **Gender disparities highlight the need for tailored interventions.** Women are significantly more likely to experience anxiety and mood disorders, whereas men have slightly higher rates of some physical conditions. Public-health messaging and clinical screening should be sensitive to these differences.
4. **Regional differences warrant investigation.** Provinces with higher prevalence may benefit from targeted public-health campaigns. Understanding why the Maritimes report more chronic diseases could help provinces share best practices. The low prevalence in the **Yukon/Northwest/Nunavut Territories** is notable and may reflect different demographic structures or health-care access issues.

Limitations

I acknowledge several limitations in this analysis. The CCHS data are based on self-reported diagnoses, which can either underestimate or overestimate true prevalence. Because the survey is cross-sectional, it captures one point in time and does not allow for determining cause-and-effect relationships; for example, age differences may reflect generational (cohort) effects rather than pure aging processes. Some conditions, such as chronic fatigue syndrome, have small sample sizes, resulting in wide confidence intervals. In addition, this

high-level analysis did not adjust for potential confounding factors such as race, education, or lifestyle behaviors, which could influence both health outcomes and their distribution.

Conclusion and Next Steps

In this project, I combined my healthcare knowledge and analytical skills to uncover who is most affected by chronic diseases in Canada. Eight out of ten seniors live with at least one chronic condition, and mental health problems are common in adolescence and early adulthood. Income and gender shape these patterns, though age remains the most dominant factor. By interpreting these findings for practical relevance, I hope to guide health-care planners toward equitable and targeted interventions. For example, investing in early-life mental-health services, supporting mid-life disease prevention, focusing on women's mental health, and policies that reduce socioeconomic inequalities could yield substantial benefits.

Moving forward, my focus is on exploring the barriers that influence access to health and how these barriers correlate with chronic disease outcomes. This work also involves examining underlying factors that contribute to these conditions to gain a deeper understanding of the drivers behind observed patterns. Beyond identifying statistical associations, the aim is to uncover the broader context behind these numbers to better inform prevention and policy strategies. Insights are intended to be presented in formats accessible to both community organizations and decision-makers, supporting meaningful discussions about improving health equity and outcomes.

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Authorship & Disclaimer

Prepared by: Arun Acharya

Date: 2025-08-04

Purpose Statement

This report was created to highlight how data can reveal patterns in chronic disease prevalence across age, gender, income, and geography in Canada. It reflects my commitment to using data analysis to translate complex health information into clear insights that can guide future work exploring barriers to healthcare and the factors driving chronic disease outcomes.

Disclaimer

This report is based on the best available information at the time of analysis. While every effort was made to ensure accuracy, it may not include every possible detail, and future findings may differ. The analysis, findings, and interpretations are solely those of the author and are not endorsed by Statistics Canada or any affiliated organizations.

NOTES & CLARIFICATIONS (APPLIES TO ENTIRE REPORT)

This page consolidates scope, definitions, limitations, and reproducibility details for transparent interpretation.

Population & methods

Data source: Canadian Community Health Survey (CCHS) 2019–2020, household population. Estimates use Statistics Canada survey weights and 1,000 bootstrap replicates to compute 95% confidence intervals. Emphasis is on effect sizes (e.g., risk differences and ratios) and confidence intervals; p-values are de-emphasized.

Definition — “any chronic condition”

Binary indicator equal to 1 if a respondent reported at least one of the ten study conditions listed in Methods/Table 1.

Self-report and measurement

All conditions analyzed here are based on self-reported survey responses (unless otherwise noted). Self-report may be affected by recall, awareness, access to care, and social desirability biases; estimates reflect perceived/known diagnoses rather than clinical verification.

Provincial/territorial comparisons

All provincial/territorial estimates in this report are crude (unadjusted). They do not control for compositional differences (e.g., age, sex, income). The three territories (YT, NT, NU) are combined due to small sample sizes; resulting confidence intervals are wide and should be interpreted with caution.

Condition-specific caveat — sleep apnea

Survey-based (self-reported) sleep-apnea prevalence can exceed figures derived from diagnostic or administrative data because of differences in question wording, ascertainment, and care-seeking. Cross-source comparisons should therefore be interpreted cautiously.

Comparability & timing

Results pertain to the combined 2019–2020 cycle. Pandemic-period responses and operational adjustments may influence level estimates and nonresponse patterns. Comparisons to other years or data sources should account for design and measurement differences.

Interpretation limits

Findings are descriptive and do not imply causality. Some subgroup estimates may be imprecise; wide confidence intervals indicate greater uncertainty. Small counts may be suppressed or aggregated according to disclosure-avoidance practices.

Rounding & totals

Percentages may be rounded; totals may not sum exactly to 100%. Respondents can report multiple conditions; category totals need not be mutually exclusive.

Reproducibility

Analyses were implemented in Python (pandas, numpy) using survey weights with 1,000 bootstrap replicates. A reproducible code package is available on request.

Prepared to accompany the Final Report as a stand-alone clarification page.