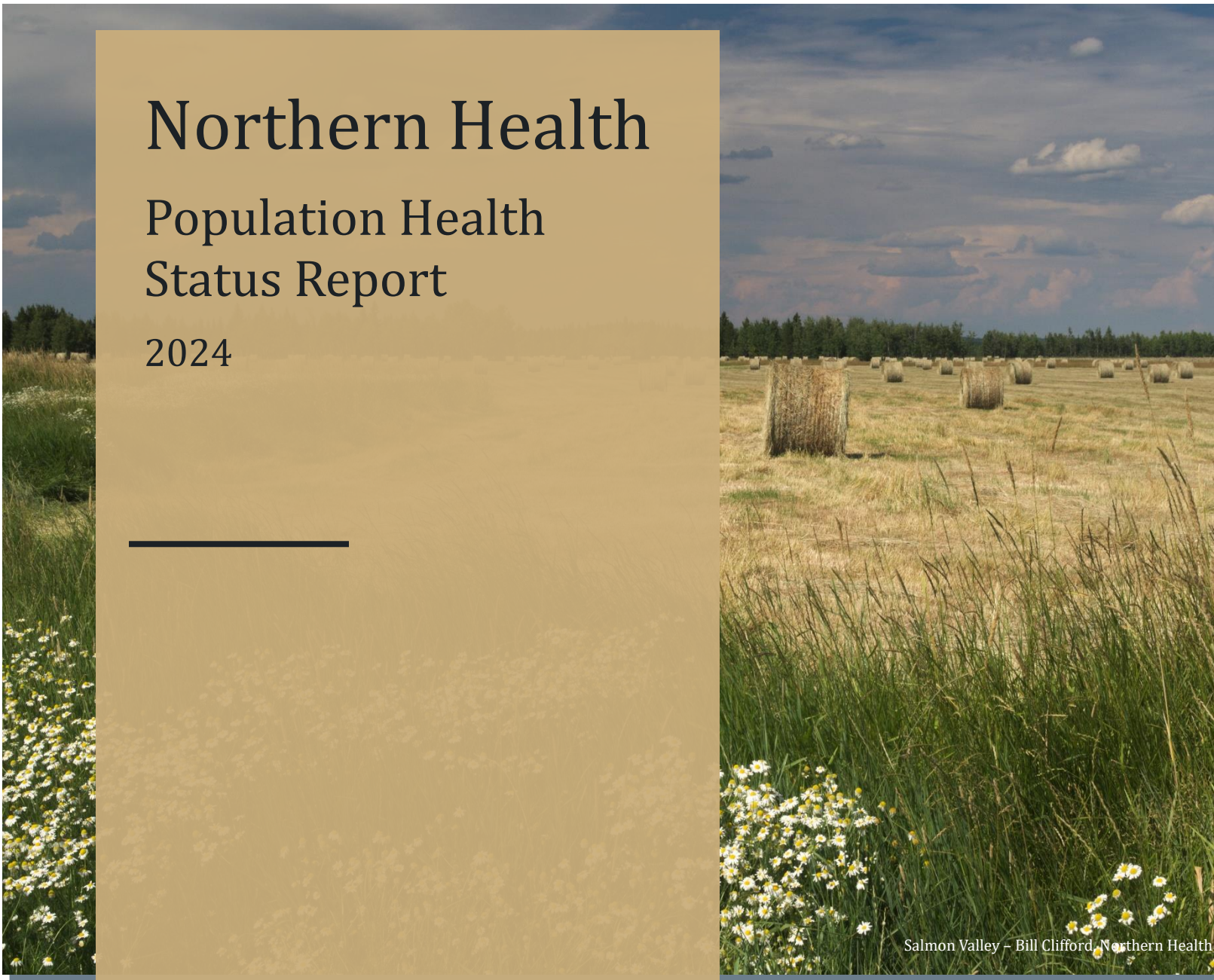
Northern Health

Population Health Status Report

2024



Salmon Valley – Bill Clifford, Northern Health

northern health
the northern way of caring

Acknowledgments

We respectfully acknowledge that Northern Health is collectively located on the traditional and ancestral territories of the 55 First Nations in Northern BC where we live, learn, collaborate, and work together. The regions served by Northern Health are also home to 11 Métis Chartered Communities represented by Métis Nation British Columbia. It is with humility that we continue to strengthen our relationships with First Nation, Métis, and Inuit peoples and communities across the North.

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We would like to thank all the dedicated people who contributed to this report, including those who collected and analyzed the data, reviewed the drafts, and provided input throughout the development of this report.

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Population Health Status Reporting Overview

The World Health Organization defines health as "…a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity. The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition" (WHO, 1946). Good health depends on much more than health services and disease treatment. It includes but is not limited to having opportunities to make healthy choices; strong family and community connection; and living in healthy and safe environments. It is also essential to focus on improving the health of underserved populations such as Indigenous peoples.

According to British Columbia's (BC) Guiding Framework for Public Health, population and public health programs that focus on improving these areas of health include health promotion, disease and injury prevention, health protection and public health emergency management (BC Ministry of Health, 2013). Health promotion refers to "…the process of enabling people to increase control over, and to improve, their health. It moves beyond a focus on individual behaviour towards a wide range of social and environmental interventions" (WHO, 2024). Health protection refers to the development of legislation, regulation, and policy that aims to ensure the population has access to safe food and water, sanitation, and clean air, and is protected from environmental threats, injury, and infectious disease (BC Ministry of Health, 2014). Having a comprehensive health system that focuses on all areas of health not just health services and disease treatment allows for all individuals in the population to be healthy.

Determinants of Health

A population's or individual's health comes from a mix of social, environmental, economic, personal, and biological/genetic factors that work together or independently; these are commonly called the determinants of health (Office of the Provincial Health Officer, 2019). Figure 1 shows the estimated percentages attributed to the various factors that make up the determinants of health. Access to health care accounts for 25% of an individual's health with personal factors such as sex, ethnicity, Indigenous status, access to housing, employment, and community belonging accounting for over 50% of an individual's health. The determinants of health can be addressed by population health and public health approaches. Population Health focuses on improving the health of the population and reducing health disparities between groups by understanding and addressing the causes of the underlying inequities including the determinants of health. Public Health focuses on health promotion and upstream approaches, such as immunizations, drinking water protection, injury prevention, and management of diseases. The Ministry of Health provides direction and sets province-wide goals and standards for the entire health system (Office of the Provincial Health Officer, 2019). This report focuses on determinants about your life and health care.

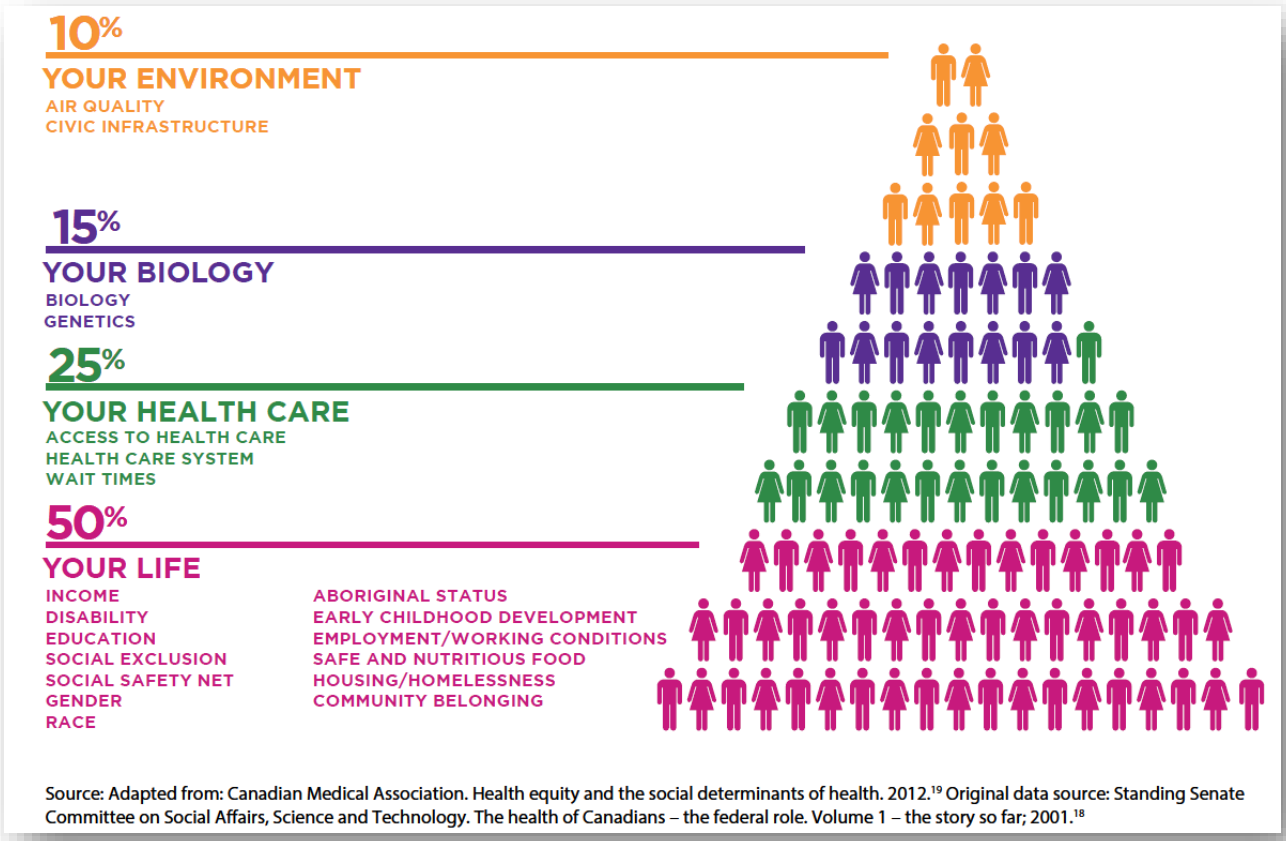


Figure 1. Canada's Social Determinants of Health

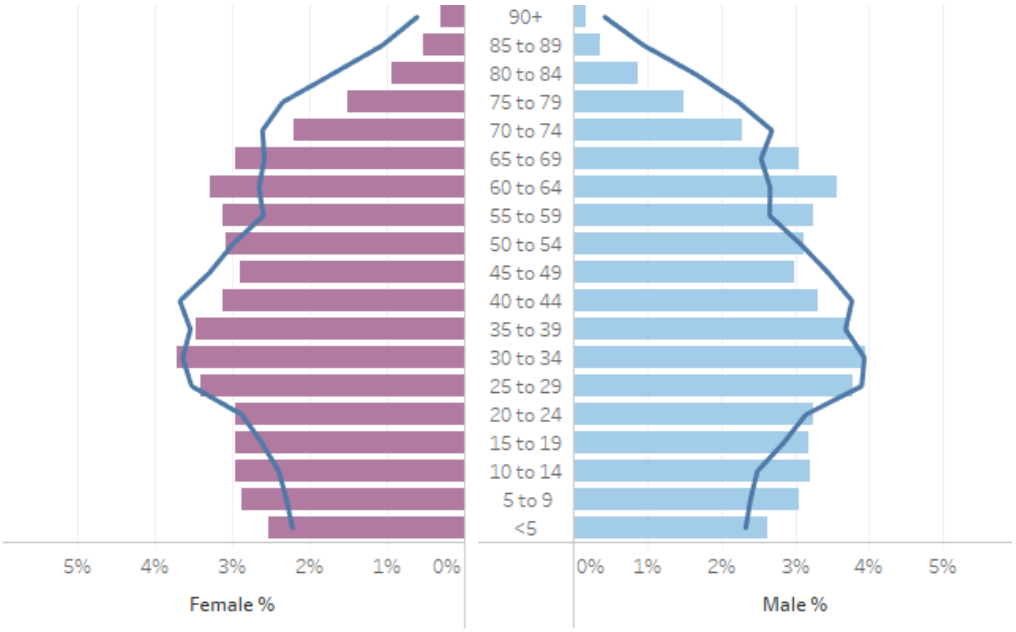
Data Sources

Data sources are listed for each figure and table; all data sources were current at the time of writing the report. See Appendix B for a complete list of data sources.

Demographics

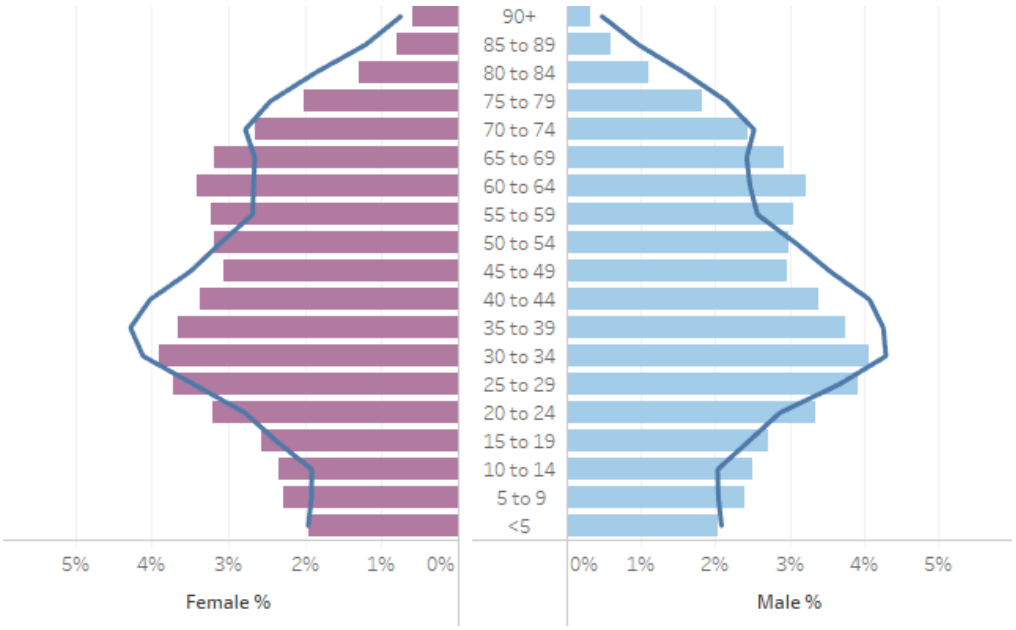
Northern Health Population

Northern Health (NH) serves a population of approximately 300,000 people, spread out over almost two-thirds of BC. Approximately 20 per cent of the population of NH identifies as Indigenous, which is the highest proportion in BC; the majority of those who self-identified as Indigenous are First Nation. Due to the diverse geography and populations in NH, the health status and health needs differ substantially from the province and within NH, this makes health service planning and upstream interventions complex. In 2023, NH has a higher proportion of the population under the age of 40 compared to BC. By 2034, NH is expected to have an 8% increase in the proportion of the population over 40, and the proportion of population over the age of 65 is projected to increase by 38% (Figure 2), whereas BC population distribution will remain relatively stable (Figure 3). Figure 4 shows the projected populations by age group for the NH Health Service Delivery Areas (HSDA). For all HSDAs except the Northeast (NE) the 65+ age group is projected to surpass the <19 age group in the next several years. The same trend is predicted in the NE with the 65+ age group increasing; however, it is not projected to surpass the <19 age group by 2034. NH also has the lowest median age in the province at 39.6 compared to BC at 42.8. The lowest median age is in the Northeast at 35.6, followed by the Northwest at 40.8, and Northern Interior at 41.6 (Statistics Canada, 2022).



Source: BC Stats. Population Estimates & Projections for British Columbia. July 12, 2024.

Figure 2. Northern Health Population Pyramid for 2023 and Projection for 2034 (line)



Source: BC Stats. Population Estimates & Projections for British Columbia. July 12, 2024.

Figure 3. British Columbia Population Pyramid for 2023 and Projection for 2034 (line)

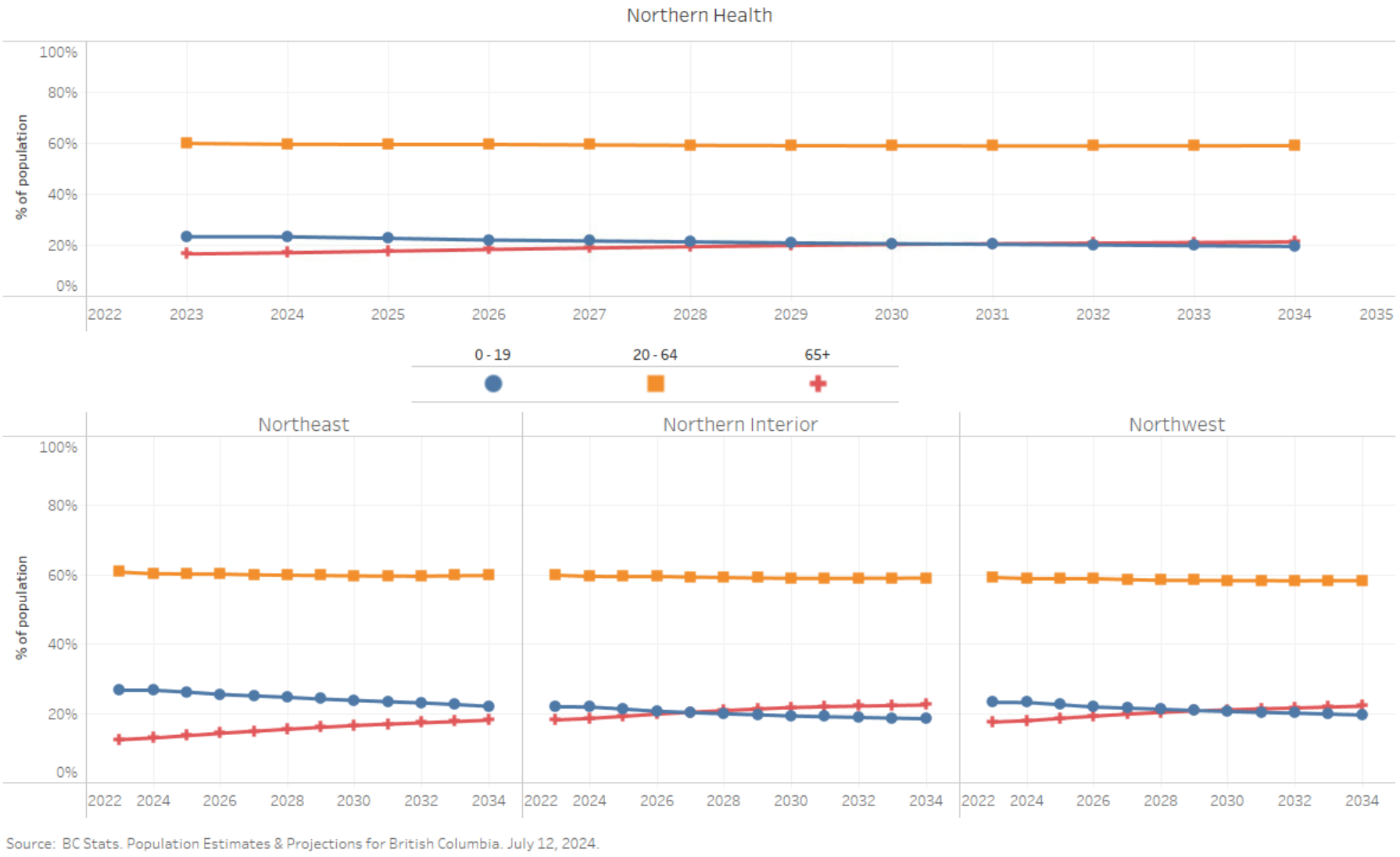


Figure 4. Current and projected population proportions by age group in Northern Health and HSDAs

Ethnicity

Understanding the different ethnic groups within a population is important because different ethnic groups have different barriers and opportunities in maintaining or improving their health. Identifying potential health inequities that result from racism, bias and discrimination, can be used to inform interventions that may increase equity in access to health care and improve outcomes (Canadian Institute for Health Information, 2022).

NH has approximately three times higher proportion of people who identify as Indigenous compared to BC, with the Northwest HSDA (NW) having the highest proportion of individuals identifying as Indigenous (Figure 5). The proportion of people identifying as Indigenous has remained stable between the 2016 and 2021 census.

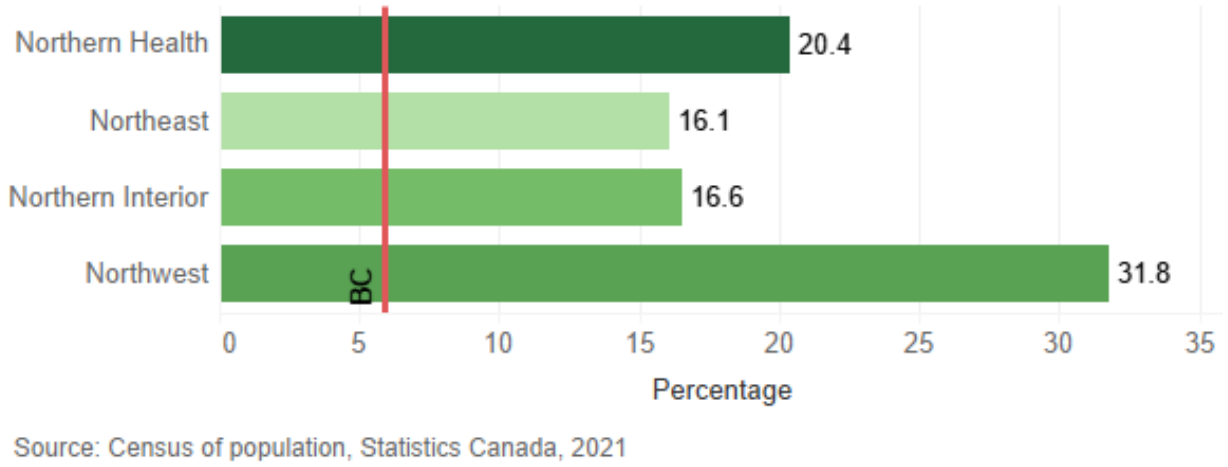


Figure 5. Percentage of population self-identifying as Indigenous, Northern Health, HSDA, 2021 Census

When examining the proportion of the population who identify as a visible minority, BC has four times higher proportion of people who identify as a visible minority (Figure 6) and immigrant population (Figure 7) compared to NH. The proportion of people identifying as a visible minority has remained increased and the immigrant population has remained stable between the 2016 and 2021 census.

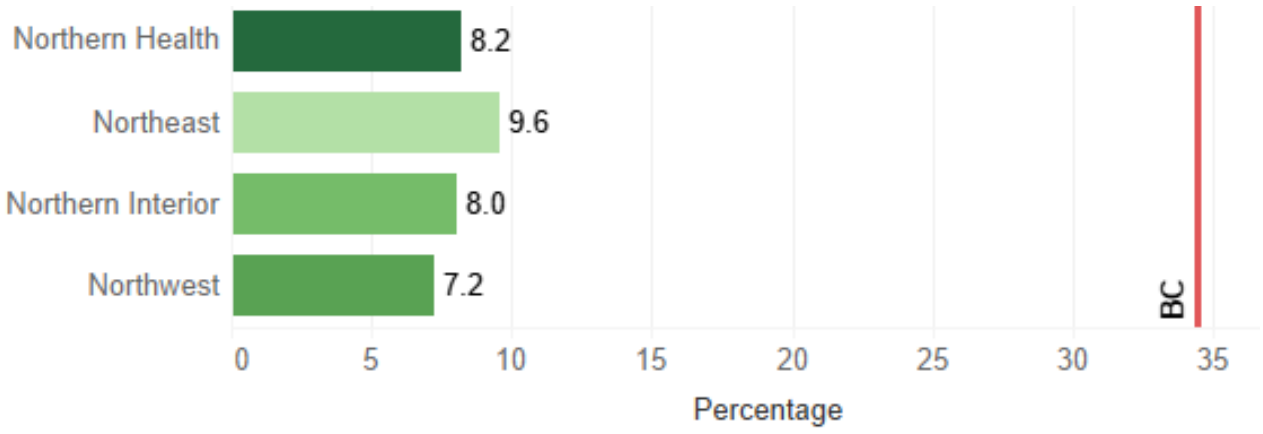


Figure 6. Percentage of population self-identifying as a Visible Minority, Northern Health, HSDA, 2021 Census

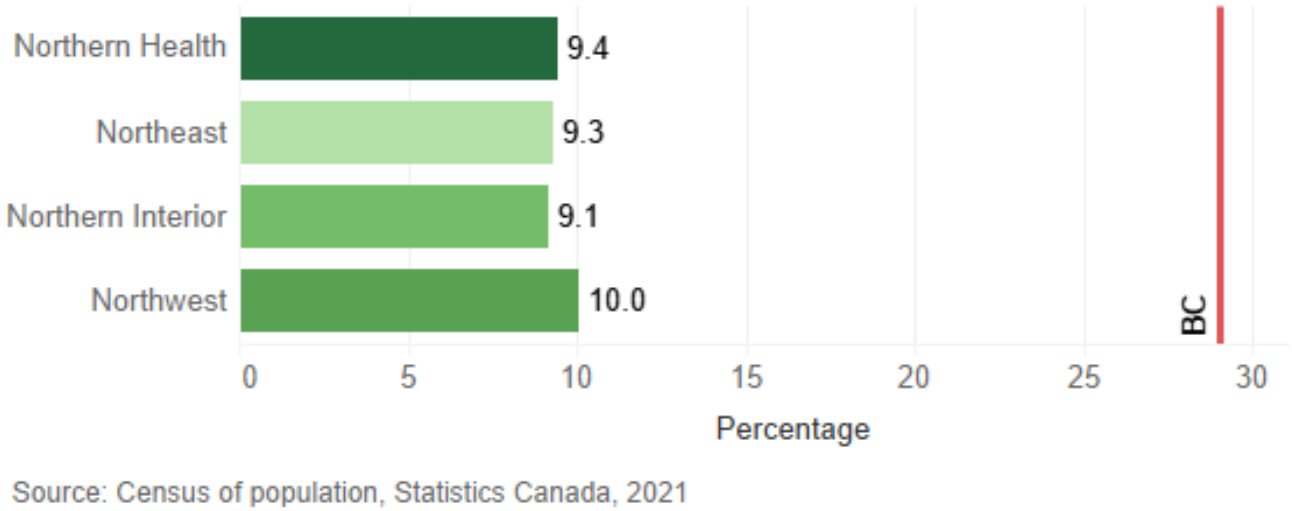


Figure 7. Percentage of population self-identifying as an Immigrant, Northern Health, HSDA, 2021 Census

Social Determinants of Health

Household Composition

Household composition is defined as living alone, with a partner or family, or unrelated co-residents. Household compositions can impact people's health and resilience by increasing economic stability, and access to informal care and support (Herbert et al., 2022). NH has similar proportions to the province of people living alone. NH is also similar to BC when examining couples with and without children. However, NH has a higher proportion of single-parent families, with the NW having the greatest at 18.8% (Table 1). Single parent households and

proportion of families without children have increased between the 2016 and 2021 census. The proportion of people living alone has decreased between the last two census'.

Table 1. Household Composition, British Columbia, Northern Health, HSDA, 2021 Census

	Northern Health	Northeast	Northern Interior	Northwest	BC
% of Persons in private households living alone	12.3	12.4	12.3	12.4	12.2
% of couple families with children	38.1	42.2	36.4	37.9	40.1
% of couple families without children	44.4	41.6	46.2	43.3	45.0
% one-parent families	17.5	16.2	17.3	18.8	14.9
% of one-parent families in which the parent is a woman+	12.7	11.8	12.9	13.4	11.6

Source: Census of population, Statistics Canada, 2021

Housing

Understanding the housing profile within a region can provide an insight into the health needs and status of the population. Having inadequate housing exposes individuals to potential health hazards, injury risks, and psychological stress (Waterston et al., 2015). In addition, high housing costs can lead to food insecurity (Waterston et al., 2015). Additionally, housing instability is associated with lack of access to primary health care provider and an increase in hospital admissions (Kushel et al., 2006; Kyle et al., 2011; Waterston et al., 2008).

British Columbia residents were approximately twice as likely as NH residents to spend 30% or more of their income on housing. NH had nearly twice as many dwellings requiring major repairs (9.8%) compared to British Columbia (5.8%). NH also has a higher proportion of households with five or more persons compared to BC (Table 2). For the housing indicators all have either slightly improved or remained stable between the 2016 2021 census. One exception is in the NE where 5 or more persons per household has increased between the two censuses.

Table 2. Housing Indicators, British Columbia, Northern Health, HSDA, 2021 Census

	Northern Health	Northeast	Northern Interior	Northwest	BC
% Households with acceptable housing	75.6	75.8	76.8	73.0	66.5
% of private households not suitable	3.8	3.6	3.5	4.7	6.0
% dwellings with major repairs needed	9.8	8.4	8.3	14.0	5.8
% Households spending 30% or more of income on shelter costs only	11.4	12.6	11.9	9.4	22.1
% of households with 5 or more persons	8.5	10.7	7.5	8.7	6.4

Source: Census of population, Statistics Canada, 2021

Income

Income is one of the most important social determinants of health. Income determines the quality of other social determinants of health, such as living conditions, food security, physical activity, and psychological functioning (Mikkonen & Raphael, 2013). Individuals and families with the highest levels of deprivation are less likely to afford the basic necessities for health and can lead to social exclusion (Mikkonen & Raphael, 2013).

There were relatively few disparities within NH compared to BC in the proportion of people living with low income according to the LIM-AT[1] at approximately 11% of the total population (Table 3). When examining specific age groups, we see that there are some differences with 12% of children under 17 in NH, and 15% of older adults aged 65 and older in NH being LIM-AT compared to BC. When examining trends from the 2016 census, there was a decrease in the proportion of people in the LIM-AT groups except in the NI HSDA 65+ age group where there was a slight increase in the prevalence of people living in LIM-AT. The median after tax income increased in all regions between the 2016 and 2021 census.

[1] The Low-income measure, after tax, refers to a fixed percentage (50%) of median adjusted after-tax income of private households. The household after-tax income is adjusted by an equivalence scale to take economies of scale into account. This adjustment for different household sizes reflects the fact that a household's needs increase, but at a decreasing rate, as the number of members increases.

Table 3. Income Indicators, British Columbia, Northern Health, HSDA, 2021 Census

	Northern Health	Northeast	Northern Interior	Northwest	BC
Prevalence of low income based on the Low-income measure, after tax (LIM-AT)	10.6	10.0	10.4	11.5	10.8
Prevalence of low income based on the Low-income measure, after tax (LIM-AT) for 0 to 17 years	12.2	12.1	11.5	13.5	11.3
Prevalence of low income based on the Low-income measure, after tax (LIM-AT) for 65 years and over	15.4	16.8	15.1	15.0	13.8
Median after-tax income in 2020 among the population aged 15 years and over ($)	40,000	43,600	39,200	39,200	40,800

Source: Census of population, Statistics Canada, 2021

Education

Education level of individuals has an impact on job opportunities, working conditions, and income level. Education level has also been shown to impact the understanding of factors and resources that affect health. Research has shown that people with higher levels of education tend to be healthier than those with less formal education (Braveman & Gottlieb, 2014).

NH experiences lower high school completion rates compared to the province; the proportion of persons without a certificate, diploma, or degree (i.e.: less than high-school education) was higher in NH, with the Northeast (NE) HSDA having the highest rate at 16.4% compared to 8.0% in BC. Although still higher than BC the proportion of the population with less than high school education decreased in the 2021 census. Approximately half of NH residents aged 15 years and over had received a post-secondary education compared to two thirds of BC residents (Table 4).

Table 4. Education Indicators, British Columbia, Northern Health, HSDA, 2021 Census

	Northern Health	Northeast	Northern Interior	Northwest	BC
% No certificate, diploma, or degree	14.6	16.4	13.4	15.1	8.0
% with high school diploma or equivalency certificate for the population aged 15 years and over	76.1	75.2	77.2	74.8	84.7
% with postsecondary certificate, diploma or degree for the population aged 15 years and over	45.6	44.3	46.1	45.8	57.1

Source: Census of population, Statistics Canada, 2021

Employment

Employment provides income and a sense of security for individuals. Employment has a positive impact on individuals mental health, and a protective effect against depression (Noordt et al., 2014). The employment rate in NH was similar to BC, with the NE having the highest employment rate in NH (Figure 8).

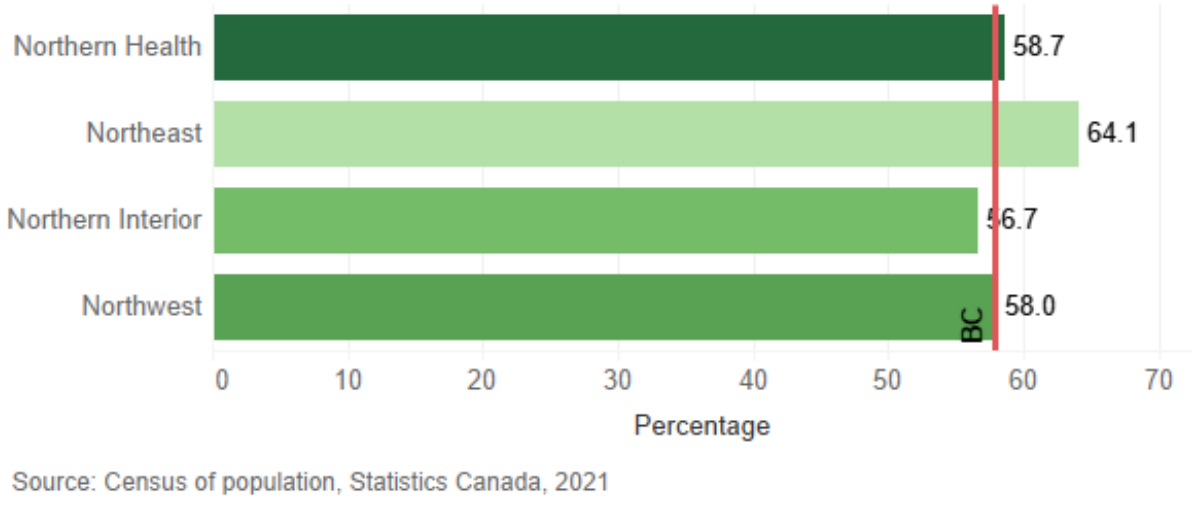


Figure 8. Employment Rate, Northern Health, HSDA, 2021 Census

Access to Health Care

Having access to high quality health care services (primary, secondary, and tertiary) impacts an individual's health. It is seen as a social determinant of health and a basic human right. Canada has a universal health care system that provides every citizen the right to health care services; however not all Canadian citizens have equitable access to health care. When considering what access to health care encompasses, one must look at other characteristics that may impact people's ability to access health care services. One proposed framework considers both the health care service characteristics and the individual's ability to interact with the health care services (Figure 9). This framework takes into consideration not only availability of services but the individual's ability to access them and the process in which the patient needs to go through to access them.

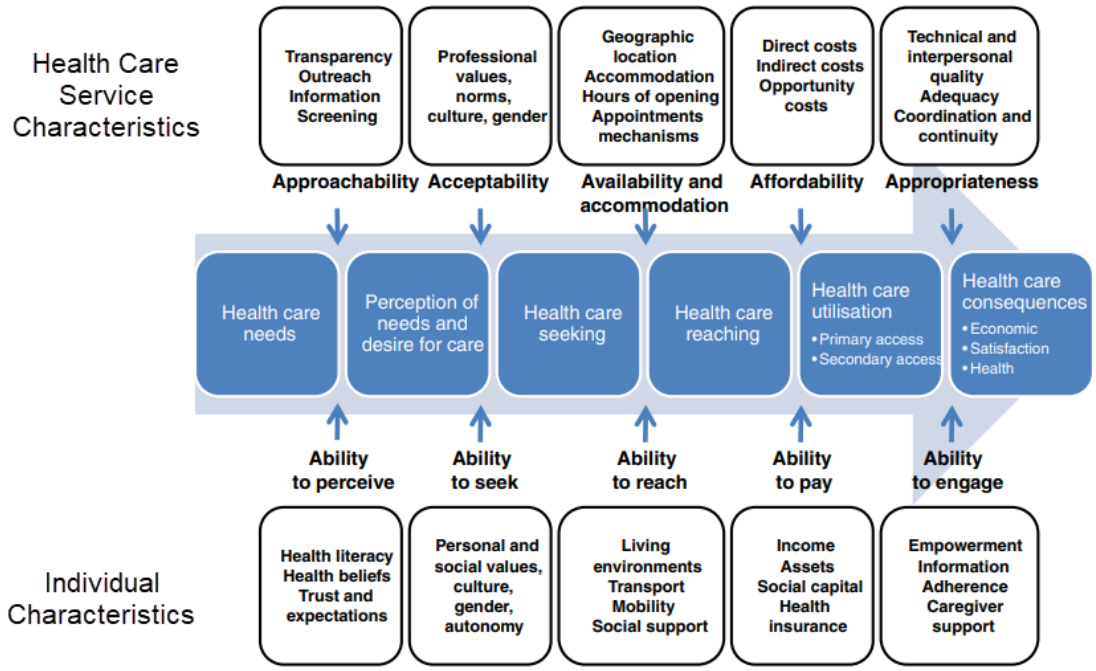
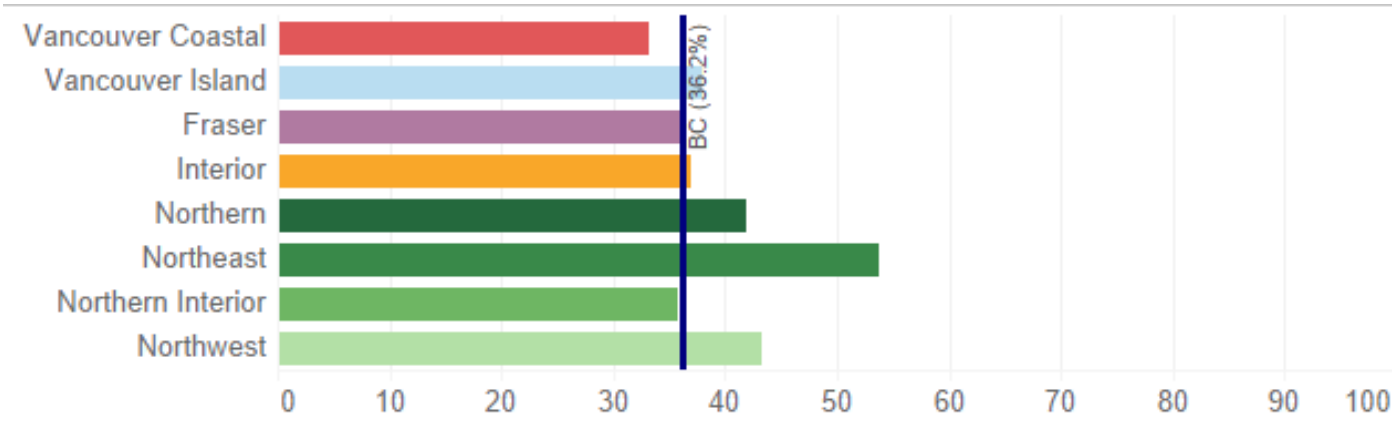


Figure 9. Framework for Accessible Health Care (Levesque et al., 2013)

Although everyone has access to health care services this access is not equitable across NH and BC; with people living in more rural areas of the province and having to travel to gain access to needed health care (Raphael et al., 2020). Currently there is a focus on physician attachment in BC to ensure residents have access to care, as research has shown that being attached/rostered with a physician or primary care clinic increased primary care visits compared to those who are not attached to a physician (Smithman et al., 2022).

Access to a primary care provider is only one aspect of the health care system. All aspects of the health care system should be considered, which includes access to acute and tertiary hospital services including emergency care, and laboratory and diagnostic services. Meaningful indicators around access to care are limited and are primarily self-reported in population-based surveys. In the second round of the SPEAKS survey people were asked if they felt if their access to health care was worsening, and Northern Health has the highest percentage of

residents indicating their access to health care is worsening, with 54% of residents in the Northeast HSDA indicating worsening access to health care (Figure 10).



Data Source: BC COVID-19 Speaks Round 2. (2021) . www.bccdc.ca/health-professionals/data-reports/bc-covid-19-speak-dashboard. Accessed August 30, 2022.

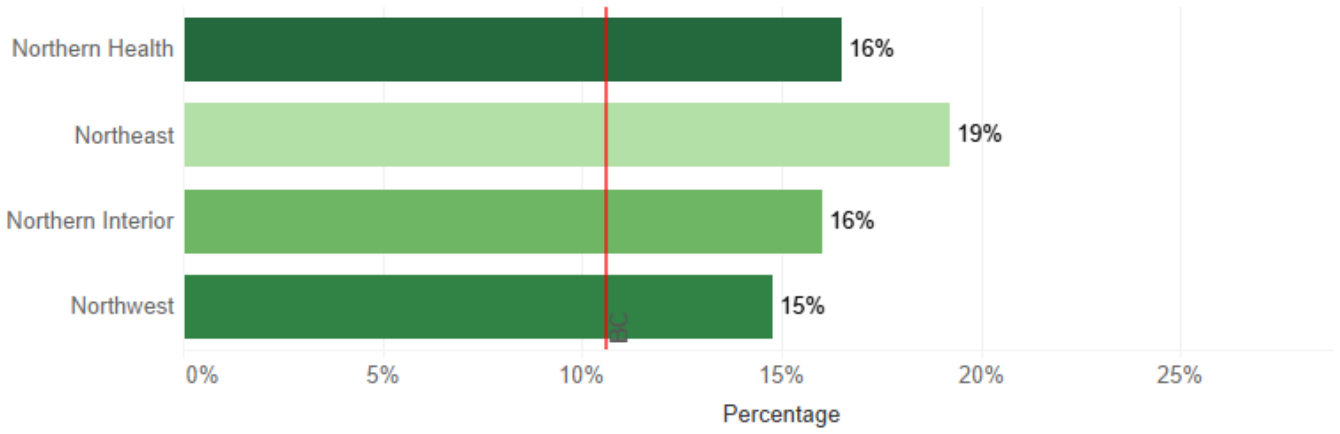
Figure 10. Percentage of BC Residents Who Indicated Worsening Access to Health Care, by BC, HA, NH HSDA for 2021

Health Behaviours

Health behaviours are multi-dimensional and associated with a number of health and well-being outcomes at both an individual and population level. They are influenced by a number of different factors, including biological, psychological, physical and social environment, policies, and the cultural atmosphere in which one lives (Short & Mollborn, 2015). In population and public health, the focus is on personal health practices such as smoking, drinking, and eating healthy. To gain an understanding of these behaviours, population-based surveys are conducted. In BC, the Canadian Community Health Survey (CCHS) conducted by Statistics Canada surveys individuals about these types of health behaviours; however, the CCHS has limited geographic coverage for NH as it only provides HSDA level data and there are instances when that is unavailable. As a response to this limitation there was an effort to conduct a BC-based survey to gather health behaviour information: the BC SPEAKS survey that ran in early 2023. Due to a poor response rate in NH, BC SPEAKS is limited. Therefore, CCHS data from 2019-2020 will be used to review health behaviour data among NH residents.

Smoking

Smoking contributes to a variety of health problems, including cancer and cardiovascular disease. Reductions in smoking rates have been associated with substantial reductions in the prevalence of cardiovascular disease and some cancers over the past two decades with corresponding reductions in the demand for primary care, acute care, and continuing care related to these diseases (Government of British Columbia, n.d.). Northern Health has a higher percentage of people who indicate they smoke daily or occasionally compared to BC, with the NE HSDA having the highest percentage (Figure 11). Although these smoking rates are higher than BC, they are an improvement from previous years.

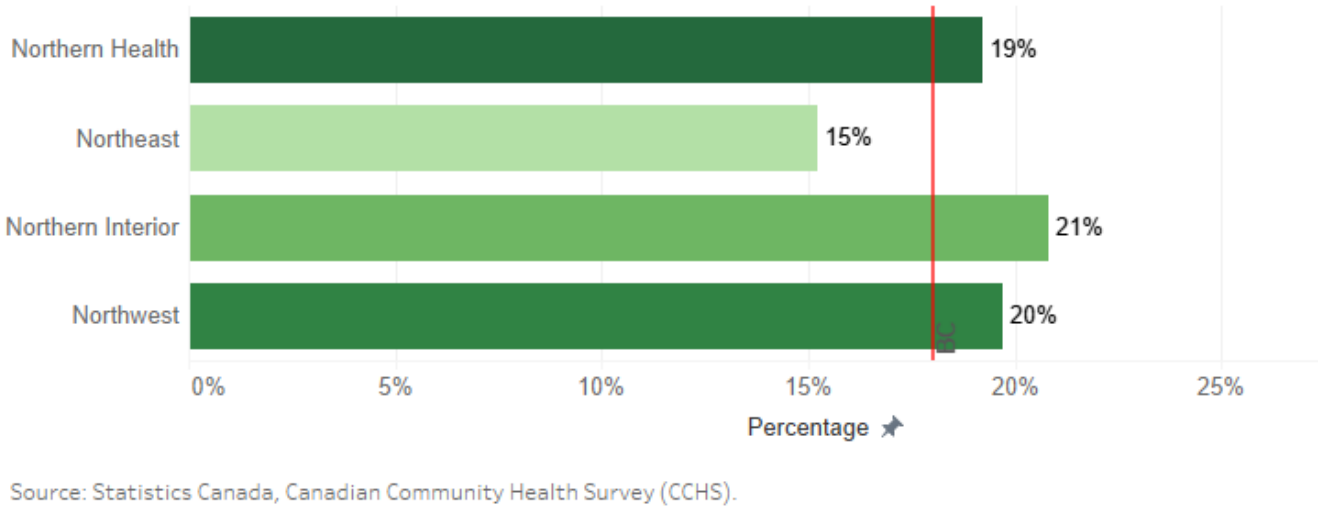


Source: Statistics Canada, Canadian Community Health Survey (CCHS).

Figure 11. Percentage of population indicating Smoking Daily or Occasionally, Northern Health, HSDA, 2019-2020

Heavy Drinking

Heavy drinking increases the risk of health problems including, cancers, liver and cardiovascular disease, high blood pressure, stroke, dementia, and intentional and unintentional injuries (CDC, 2024). Heavy drinking refers to males who reported having 5 or more drinks, or women who reported having 4 or more drinks, on one occasion, at least once a month in the past year (Statistics Canada, 2024). There is a higher proportion of NH residents who report heavy drinking compared to BC, with the NI having the highest percentage (Figure 12). These rates have remained stable from previous years.



Source: Statistics Canada, Canadian Community Health Survey (CCHS).

Figure 12. Percentage of population indicating Heavy Drinking, Northern Health, HSDA, 2019-2020

Mortality Measures

Life Expectancy at Birth

Life expectancy at birth has increased worldwide and that improvement can be attributed to the reduction in infant mortality rates and advances in medicine, public health and living standards; however, the COVID-19 pandemic resulted in decline in life expectancy worldwide (Dattani et al., 2023). Life expectancy is summary measure that used to assess the health of the population. Life expectancy is defined as an estimate of the average number of years which members of the specific population will live from birth. It can vary on a number of different variables such as geography, sex, and socioeconomic status (Ortiz-Ospina & Roser, 2024).

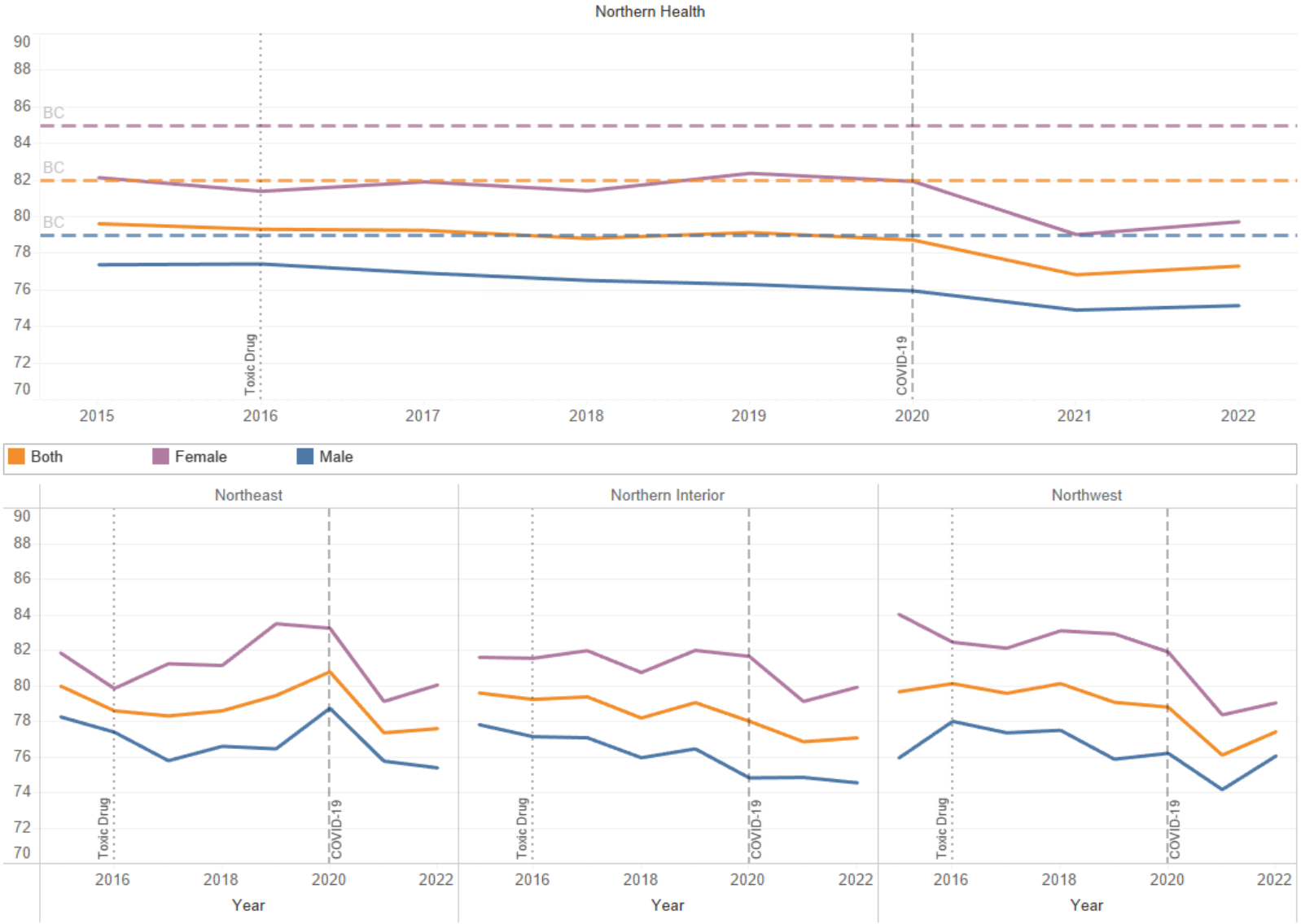
NH has the lowest life expectancy in BC. In 2022, the overall life expectancy at birth in NH was 6.2% lower than BC. When examining differences in sex, females have a higher life expectancy than males. In NH, females have a 6.5% lower life expectancy than BC females, and males have 5.7% lower life expectancy compared to BC males (Table 5).

Between 2019 and 2022 overall life expectancy at birth has dropped in BC and NH. In BC, the life expectancy reduced by approximately 1.4% and in 2.3% in NH (Figure 13). NH females (3.2%) saw a greater drop in life expectancy compared to males (1.5%); whereas BC males (2.0%) saw a greater drop than females (0.7%). The drop in life expectancy was greater for females in the NW (4.7%) and NE (4.1%) HSDAs. The life expectancy for males dropped in the greatest in the NI (2.5%), in the NW male life expectancy remained relatively stable. This decrease in life expectancy was seen in First Nation population in BC; between 2019 and 2021 females saw a decrease in life expectancy of 6.5% and males saw a decrease of 9.2% (First Nation Health Authority, 2024).

Table 5. Life Expectancy at Birth for British Columbia, Northern Health, and First Nations Health Authority

	British Columbia (2022)	Northern Health (2022)	First Nation Health Authority (2021)
Female	84.9	79.7	70.0
Male	79.4	75.1	64.6
Overall	82.1	77.3	67.2

Source: BC Office of the Provincial Health Officer, BC Vital Events Measures, Version 2022, Victoria BC, 2024. FNHA data is from the First Nations Population Health and Wellness Agenda: First Interim Update, 2024.

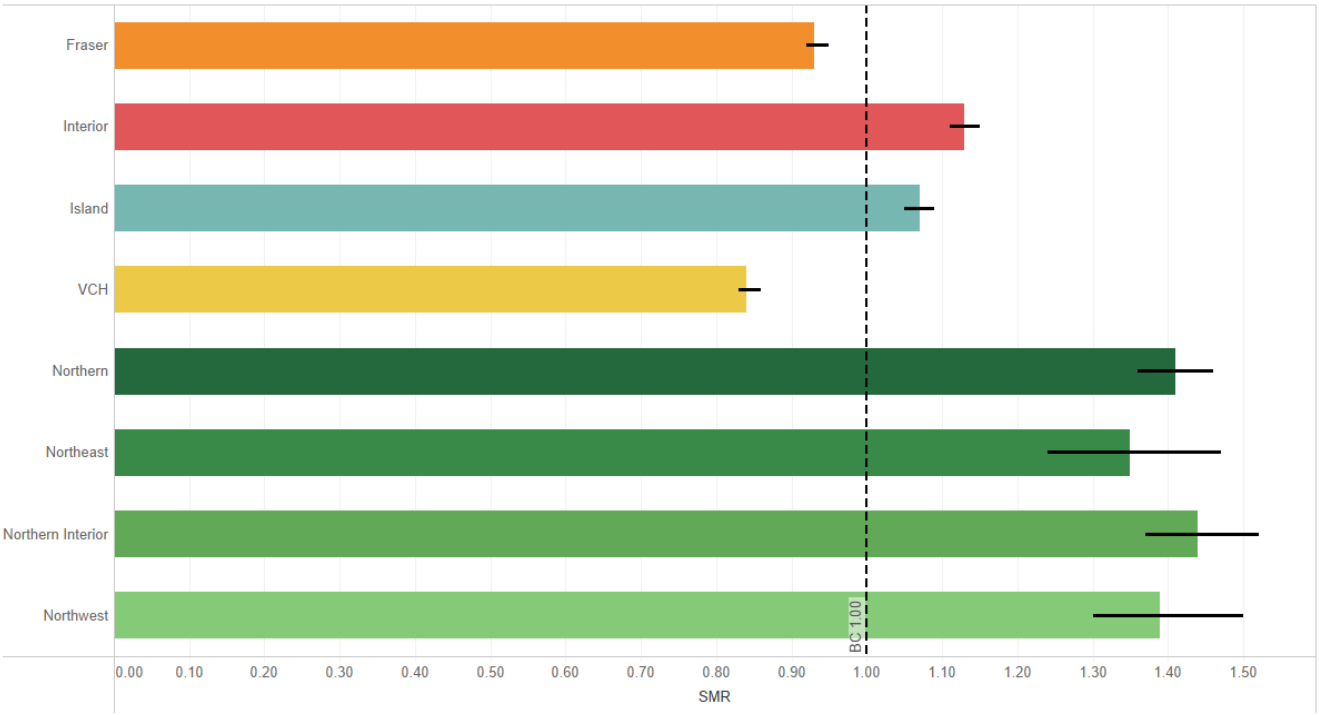


Source: BC Office of the Provincial Health Officer, BC Vital Events Measures, Version 2022. Victoria, BC, 2024.

Figure 13. Life expectancy at birth in Northern Health, 2016 - 2022

Standardized Mortality Ratio

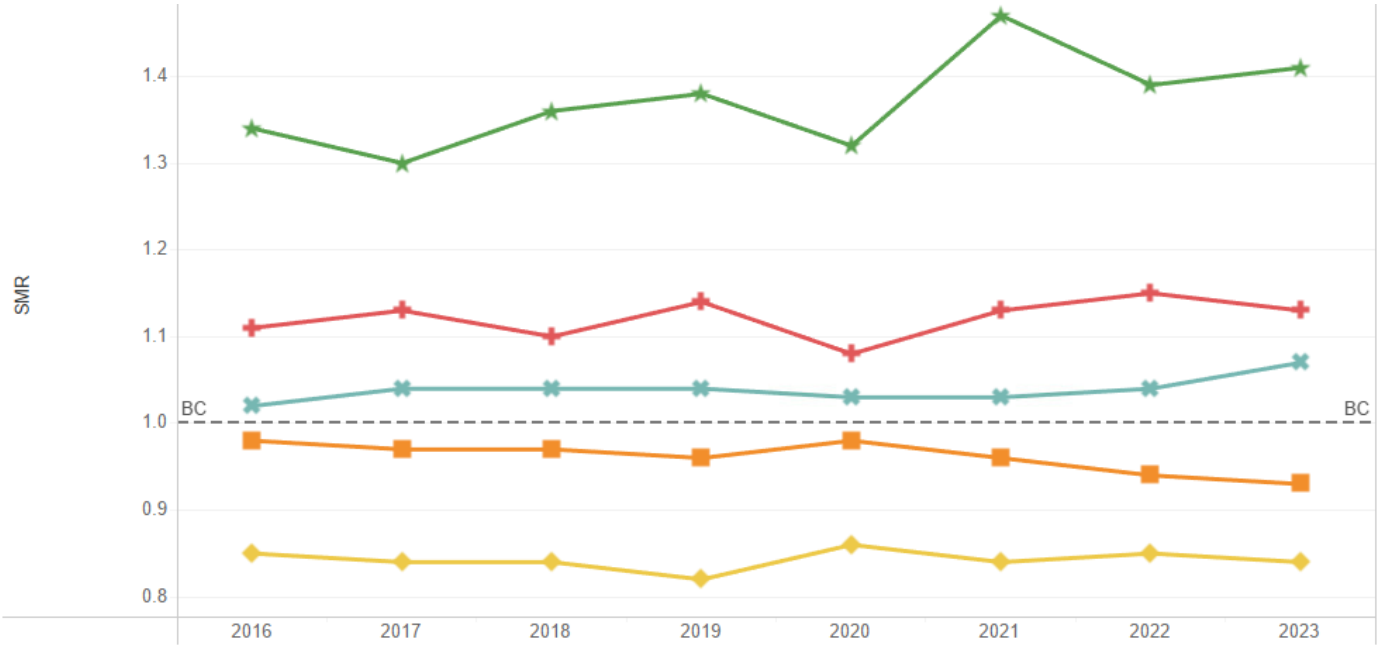
The standardized mortality ratio (SMR) shows whether a specific population is more or less likely to die compared to a standard population. Standardizing the rates accounts for differences in age groups and sex between the population groups that are being compared. Figure 14 displays the five-year SMR by Health Authority with NH HSDAs. NH and all the NH HSDAs are above expected number of deaths. When examining the SMR time trend, NH's SMR continues to show an increasing trend compared to the other Health Authorities (Figure 15). By comparison, when examining the Hospital Standardized Mortality Ratio (HSMR; Figure 16), NH has the lowest HSMR in BC. This suggests the mortality that is increasing the SMR for NH is occurring outside of hospitals and within community. More in depth analysis is required to understand what is impacting the SMR in NH.



Data Source: Microstrategy, VISTA SMR by Region Data Cube.
Date Extracted: May 22, 2024

Data note: Data is accurate on date extracted, data may change with updates to underlying data due to data cleaning.

Figure 14. Standardized Mortality Ratio for 2023 by Health Authority, NH Health Service Delivery Area

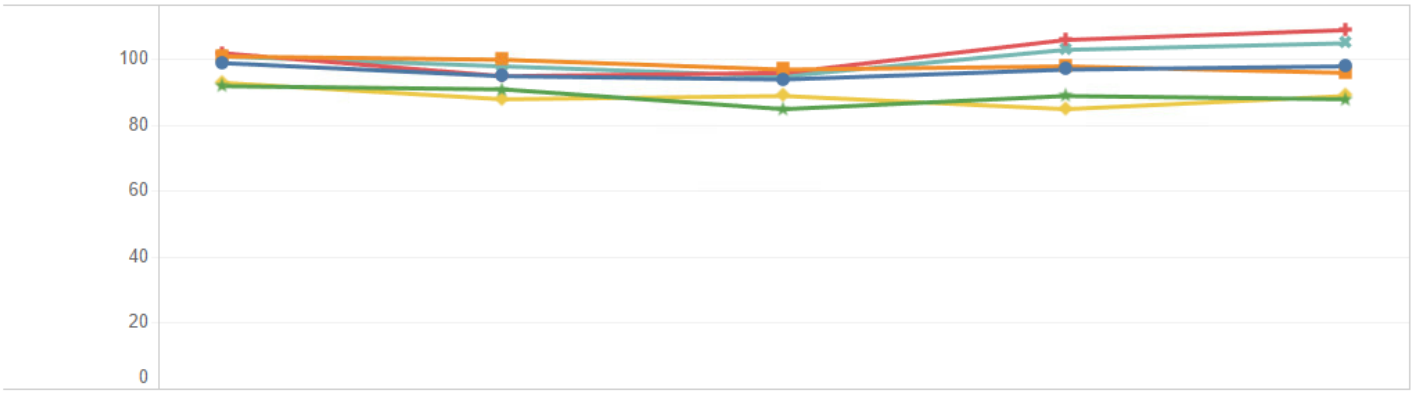


	2016	2017	2018	2019	2020	2021	2022	2023
Northern	1.34	1.30	1.36	1.38	1.32	1.47	1.39	1.41
Fraser	0.98	0.97	0.97	0.96	0.98	0.96	0.94	0.93
Interior	1.11	1.13	1.10	1.14	1.08	1.13	1.15	1.13
Island	1.02	1.04	1.04	1.04	1.03	1.03	1.04	1.07
VCH	0.85	0.84	0.84	0.82	0.86	0.84	0.85	0.84

Data Source: Microstrategy, VISTA SMR by Region Data Cube.
Date Extracted: May 22, 2024

Data note: Data is accurate on date extracted, data may change with updates to underlying data due to data cleaning.

Figure 15. Standardized Mortality Ratio by Health Authority, 2016 to 2023



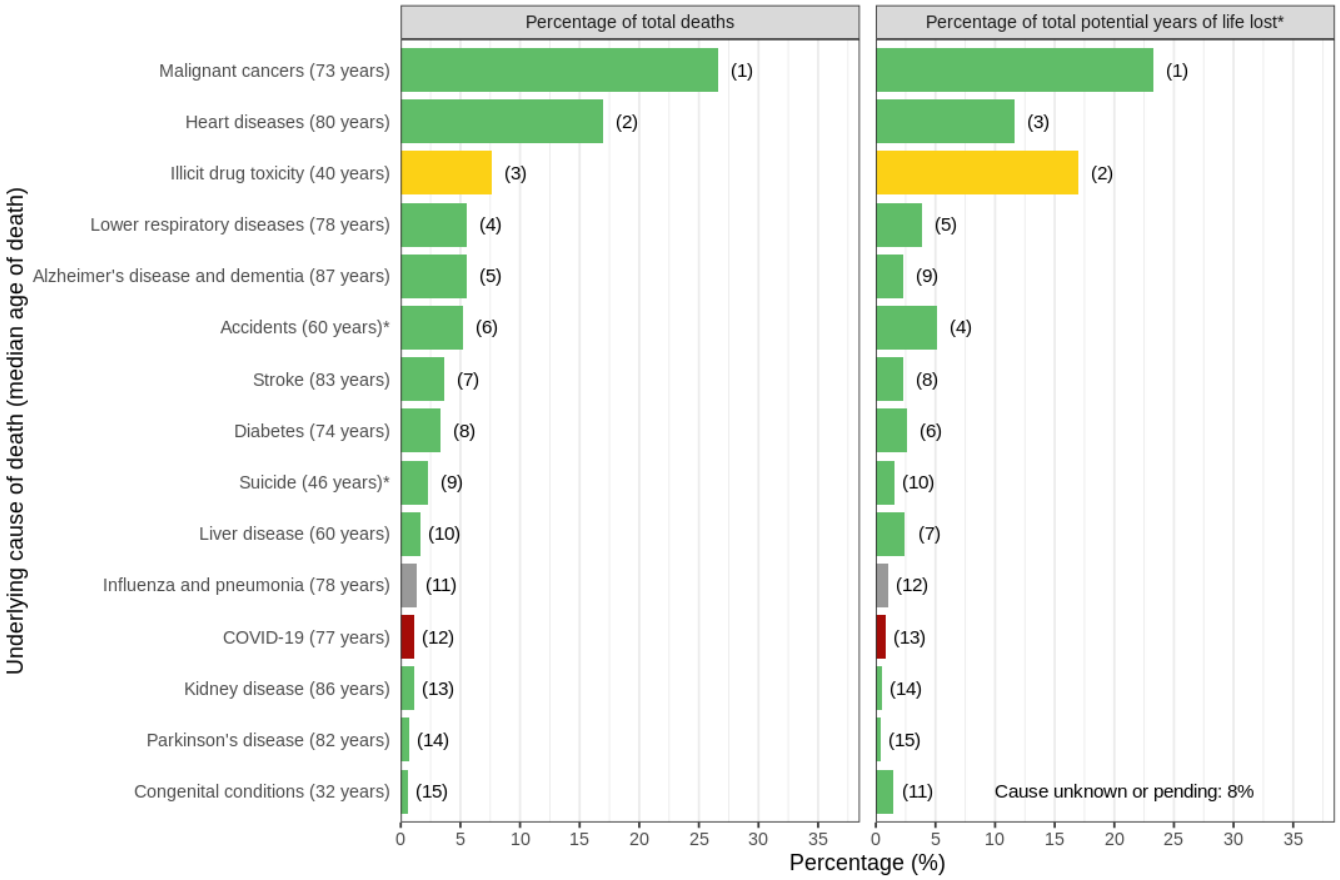
	2018–2019	2019–2020	2020–2021	2021–2022	2022–2023
BC	99	95	94	97	98
Northern	92	91	85	89	88
Fraser	101	100	97	98	96
Interior	102	95	96	106	109
Island	101	98	95	103	105
VCH	93	88	89	85	89

Source: CIHI - Your Health System. https://yourhealthsystem.cihi.ca/

Figure 16. Hospital Standardized Mortality Ratio by Health Authority, 2018/19 – 2022/23

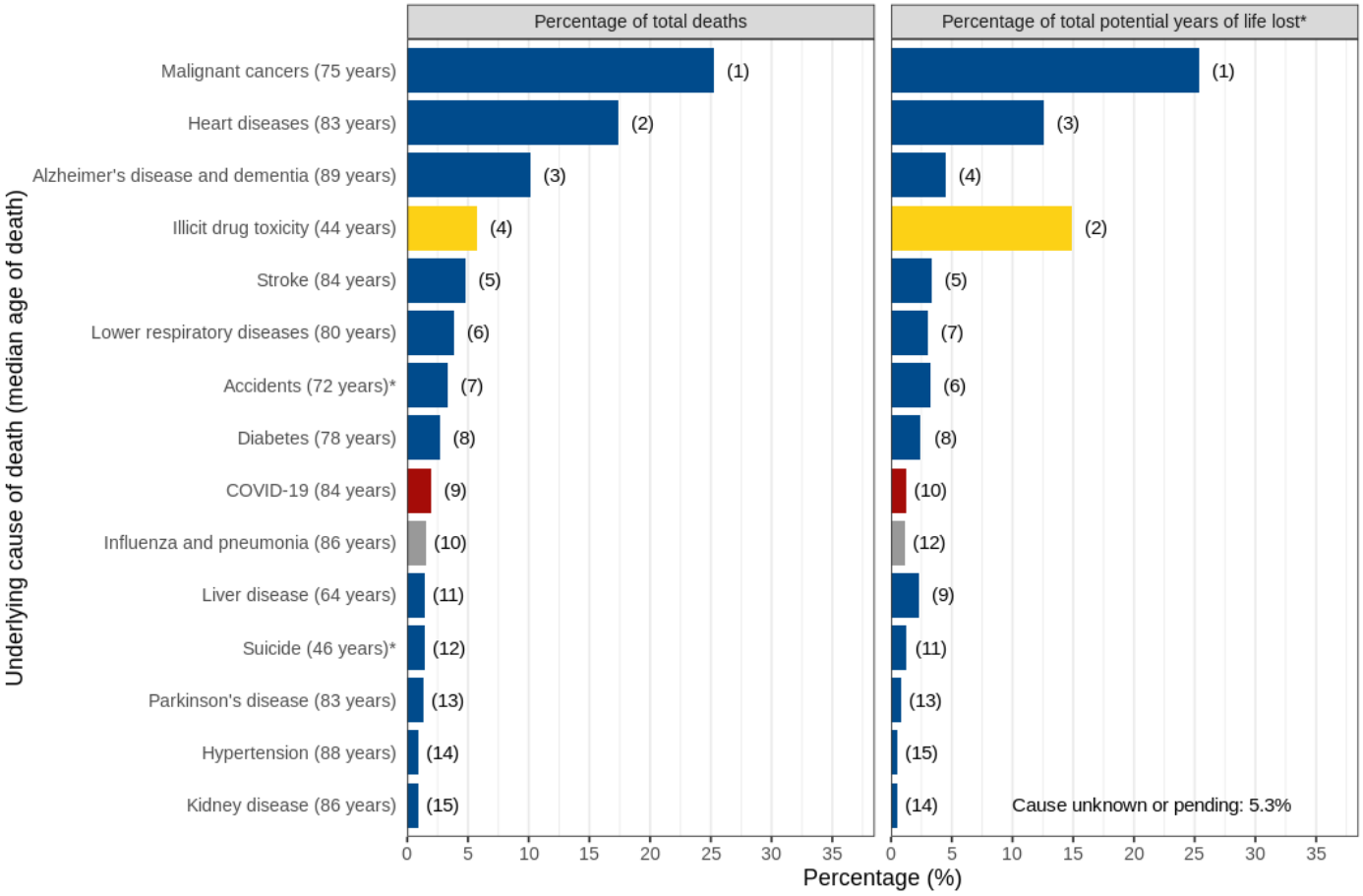
Leading Cause of Death

The top two leading causes of death for NH in 2023 were malignant cancer and heart disease (Figure 17), which are the same as the leading causes of death for BC (Figure 18). The leading causes of death that resulted in the greatest potential years of life lost for NH in 2023 were malignant cancer and illicit drug toxicity. When examining the leading causes of death by age group (Figure 19), deaths from illicit drug toxicity is the top cause of deaths for the 19 to 59 age groups, which is similar to the leading causes of death for BC. The median age of death in NH is lower than BC for most causes of death, with the largest discrepancy being accidents, where the median age of death in NH (60 years) is 1.2 times younger than BC (72 years). The top three causes of death have not changed from 2022; however in 2021 COVID-19 was the third cause of death which has now dropped to 12.



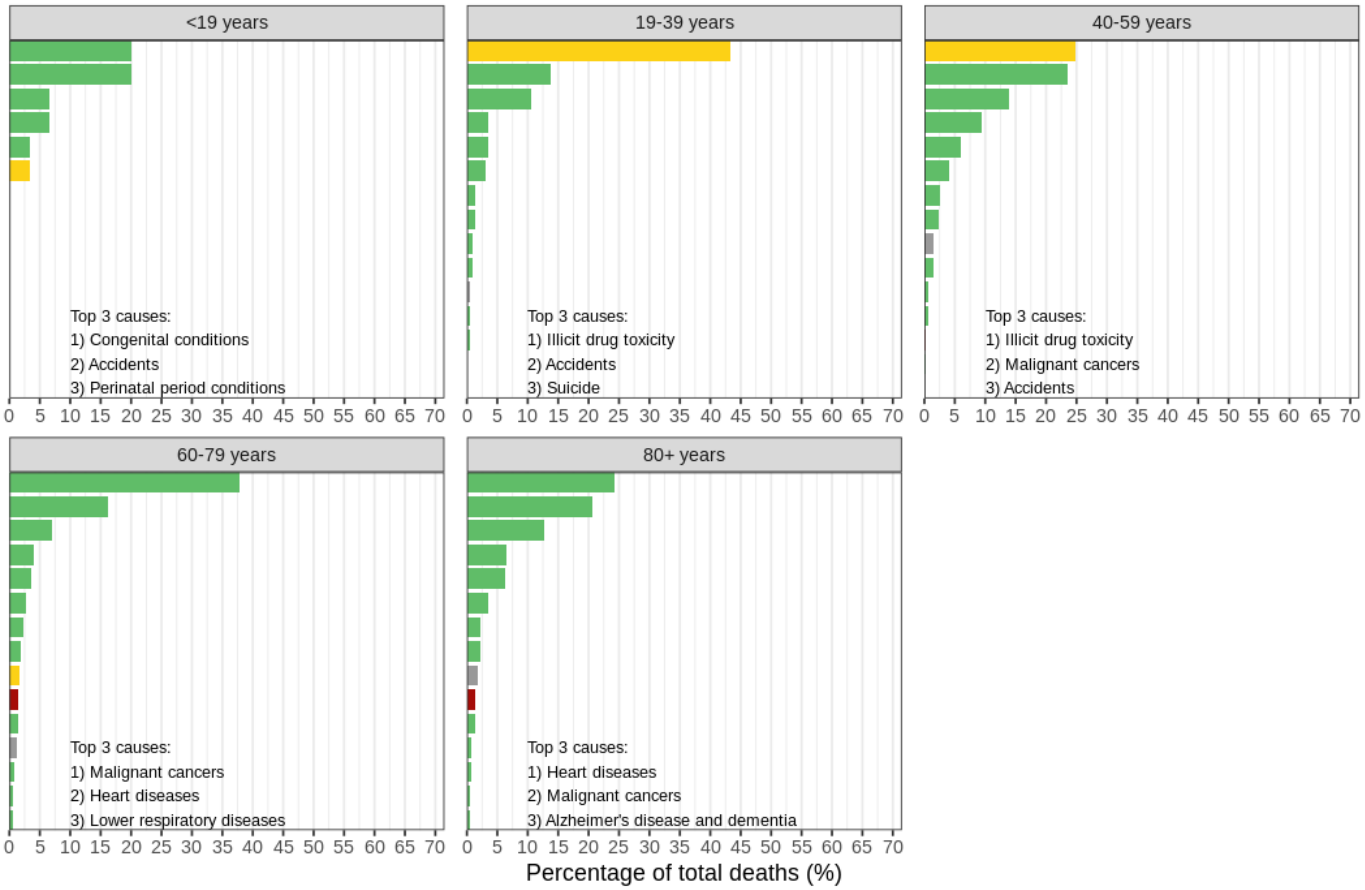
*Potential years of life lost due to accidents and suicide are incomplete due to reporting delay and the ranking by this measure may change as data become complete.
Data sources: 1) BC Vital Statistics; 2) Data on deaths due to illicit drug toxicity, accidents and suicides provided to BCCDC by BC Coroners Service; 3) Statistics Canada Table 13-10-0114-01 Life expectancy and other elements of the life table, Canada, reference period 2017-2019.

Figure 17. Top 15 Causes of Death for Northern Health in 2023



*Potential years of life lost due to accidents and suicide are incomplete due to reporting delay and the ranking by this measure may change as data become complete.
Data sources: 1) BC Vital Statistics; 2) Data on deaths due to illicit drug toxicity, accidents and suicides provided to BCCDC by BC Coroners Service; 3) Statistics Canada Table 13-10-0114-01 Life expectancy and other elements of the life table, Canada, reference period 2017-2019.

Figure 18. Top 15 Causes of Death for BC in 2023

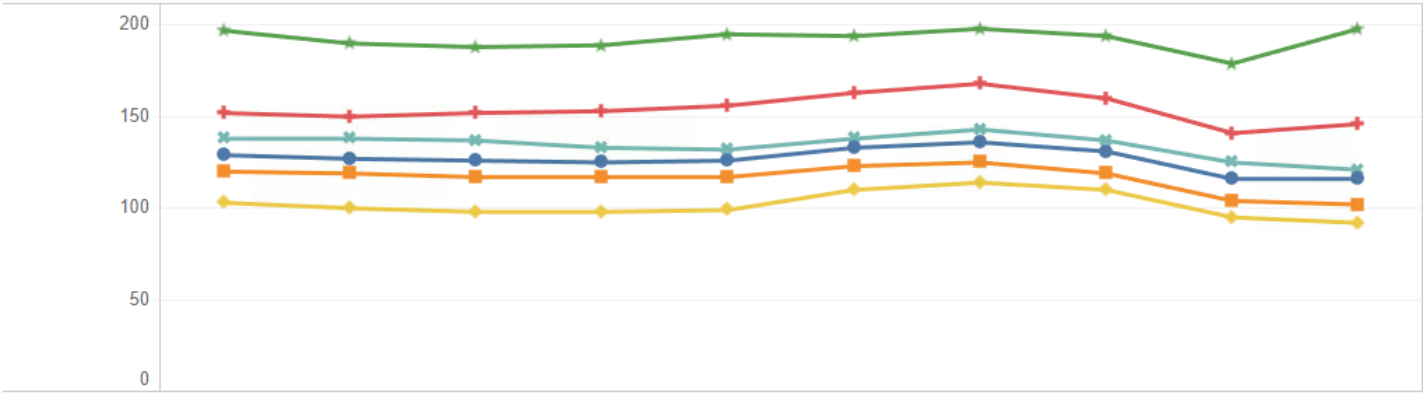


Cause unknown or pending in Vital Statistics data: 8%. This figure may change as cause of death data become more complete.
Data sources: 1) BC Vital Statistics; 2) Data on deaths due to illicit drug toxicity, accidents and suicides provided to BCCDC by BC Coroners Service.

Figure 19. Top 15 Causes of Death by Age Group for Northern Health in 2023

Mortality Due to Preventable Causes

Examining indicators of avoidable mortality provides a starting point to assess the effectiveness of the population and public health and health care system at reducing premature death from diseases and injuries that are considered preventable or treatable. Preventable mortality is death that can be mainly avoided through effective population and public health and/or primary care prevention interventions, such as health promotion and disease prevention policies (OECD/Eurostat, 2019). Figure 20 indicates that NH has the highest rate of mortality from preventable causes in BC. In the most recent reporting period NH showed an increase in the rate from previous reporting periods. Some of the causes of death that are included in preventable mortality are specific cancers such as lung, liver and melanoma, heart disease, alcohol and drug use disorders, and unintentional injuries.



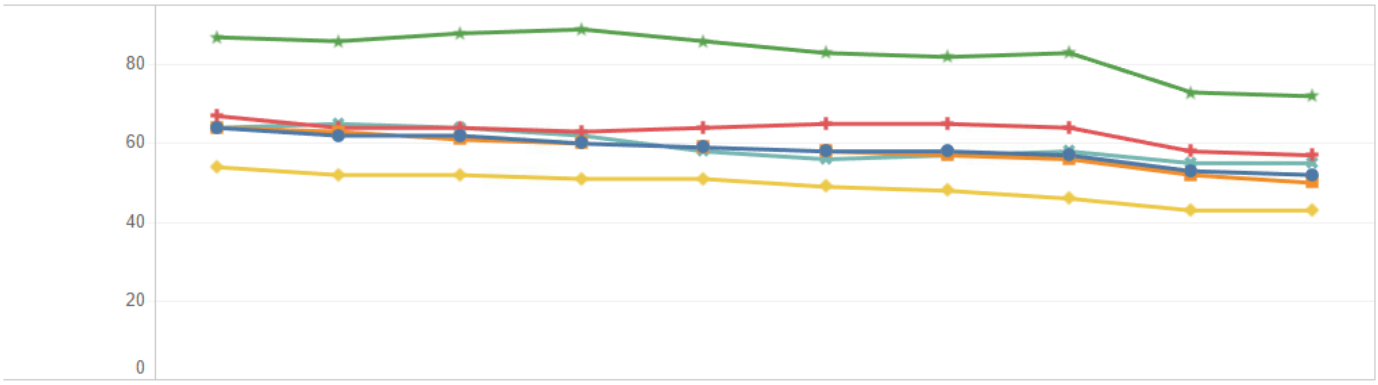
	2010 to 2012	2011 to 2013	2012 to 2014	2013 to 2015	2014 to 2016	2015 to 2017	2016 to 2018	2017 to 2019	2018 to 2020	2019 to 2021
BC	129	127	126	125	126	133	136	131	116	116
Northern	197	190	188	189	195	194	198	194	179	198
Fraser	120	119	117	117	117	123	125	119	104	102
Interior	152	150	152	153	156	163	168	160	141	146
Island	138	138	137	133	132	138	143	137	125	121
VCH	103	100	98	98	99	110	114	110	95	92

Source: CIHI - Your Health System. https://yourhealthsystem.cihi.ca/

Figure 20. Age-Standardized Rate of Avoidable Deaths from Preventable Causes (per 100,000) in British Columbia, by HA

Mortality Due to Treatable Causes

Mortality due to treatable causes are deaths that could have been mainly avoided through timely and effective health care interventions, such as early detection through effective screening and treatment of disease. Figure 21 indicates that NH has the highest rate of mortality from treatable causes in BC. Although the rate has been decreasing in 2018-2020 it is still significantly higher than the province. This decrease may be due to improvement in screening programs or treatment options; however, more work needs to be done to bring NH's rate down to match the provincial rate. Some of the causes of death that are included in treatable mortality are sepsis, pneumonia, breast cancer, respiratory infections, and adverse effects of medical and surgical care.



	2010 to 2012	2011 to 2013	2012 to 2014	2013 to 2015	2014 to 2016	2015 to 2017	2016 to 2018	2017 to 2019	2018 to 2020	2019 to 2021
BC	64	62	62	60	59	58	58	57	53	52
Northern	87	86	88	89	86	83	82	83	73	72
Fraser	64	63	61	60	59	58	57	56	52	50
Interior	67	64	64	63	64	65	65	64	58	57
Island	64	65	64	62	58	56	57	58	55	55
VCH	54	52	52	51	51	49	48	46	43	43

Source: CIHI - Your Health System. https://yourhealthsystem.cihi.ca/

Figure 21. Age-Standardized Rate of Avoidable Deaths from Treatable Causes (per 100,000) in British Columbia, by HA

Mortality Indicators Interpretation

When examining the mortality indicators presented above, it is evident that the NH population is experiencing a higher incidence of mortality impacting females and a younger population compared to BC. When comparing SMR and HSMR, NH is performing poorer compared to other HAs in SMR but are comparable in HSMR. This suggest that the mortality is occurring outside of facilities and in community. A hypothesis to explain why NH is experiencing a greater decline in life expectancy compared to BC is that unregulated drug deaths in NH are impacting a younger female population at a greater rate than the province. Some evidence to support this hypothesis is when examining the causes of deaths between NH and BC, the unregulated drug supply deaths account for a higher percentage of deaths and a lower median age at death in NH compared to BC. For instance, females in NH experience a significantly higher rate of unregulated drug deaths (48.2 per 100,000) compared to BC (20.7 per 100,000) (BC Coroners Service, 2024). In NH, females in the 19-39 age group are experiencing a higher rate of unregulated drug mortality compared to BC; for December 2023: NH rate was 11.9 per 100,000 vs. BC rate was 3.1 per 100,000 (BCCDC, 2024b).

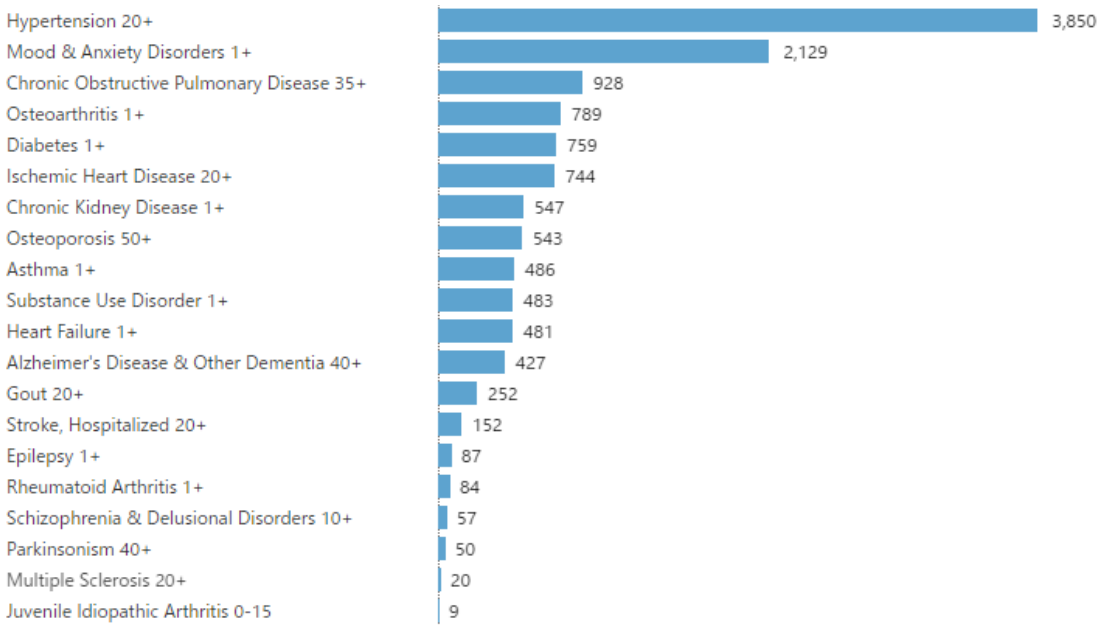
Another piece of evidence that points to the unregulated drug crisis is the work First Nation Health Authority (FNHA) has done on life expectancy among Indigenous persons. They report that life expectancy among Indigenous persons has dropped 7.1 years since 2015 with the average potential years life lost (PYLL) due to the unregulated drug crisis being 32.7 years, which is 10.3 times higher PYLL compared to COVID-19 (First Nation Health Authority, 2024). Given the higher proportion of people who identify as Indigenous in NH, the unregulated drug crisis has a disproportionate impact in NH.

Morbidity Measures

Chronic Disease

Chronic disease is defined as a disease or condition that usually lasts three months or longer and may get worse over time. Chronic diseases typically occur in older adults and can usually controlled but not cured (National Cancer Institute, 2011). Some conditions can transition from a terminal diagnosis to a chronic condition as treatments are improved (Bernell & Howard, 2016). Chronic diseases also account for a large proportion of health care costs (OPHO & MOH, 2024). In BC, there are over 20 chronic diseases that are monitored to determine trends in incidence.

The leading chronic diseases in NH can be found in Figure 22. The top two chronic diseases in NH and BC are hypertension and mood and anxiety disorders in 2022/23 data. When examining the trends of these chronic diseases. hypertension increased significantly in the current year. The increase in hypertension incidence is the result of a change in how hypertension is captured in the hospitalization record (BCCDC, 2024a).



Incidence measures during fiscal years 2020/21, 2021/22, and 2022/23 were influenced by the COVID-19 pandemic and should be interpreted with caution. Additionally, some incidence measures in 2022/23 may have been influenced by implementation of the Longitudinal Family Physician payment model. See Data Notes for more details.

Additional Data Notes

1. The BC Chronic Disease Registry is produced by the Office of the Provincial Health Officer using the following data sources: Registration and Premium Billing (R&PB), HealthIdeas Fiscal Year Client Roster, Medical Service Plan (MSP) Physician Billing Data, PharmaNet Drug Dispensing History, and Hospital Discharge Abstract Database (DAD). Visualization is provided by the BC Observatory for Population and Public Health.
2. Age-standardized rates use Statistics Canada's 2011 postcensal population estimates.
3. Cases where sex is unknown are not presented due to small numbers, but remain in totals.
4. Further details about the geographic boundaries used in this dashboard are available from BC Stats at https://www2.gov.bc.ca/gov/content/data/geographic-data-services/land-use/administrative-boundaries/health-boundaries .
5. Date ranges are based on Ministry of Health fiscal years. For example, the year 2021/22 represents data from April 1, 2021 to March 31, 2022.

Figure 22. Northern Health Age Standardized Incidence Rate of Leading Conditions, 2022/23

The incidence rate for Chronic Obstructive Pulmonary Disease (COPD) is 121% higher in NH compared to the BC rate. The highest incidence rate for COPD in NH was in 2019/20, and was to decline; however, in 2022/23 there was a slight increase in the incidence of COPD. This is in contrast with the other HAs and BC that have been showing a general decrease in the incidence of COPD since 2012/13 (Figure 23). The highest COPD incident rate is found in the NI with 983.1 persons per 100,000 and the NE 988.9 persons per 100,000.

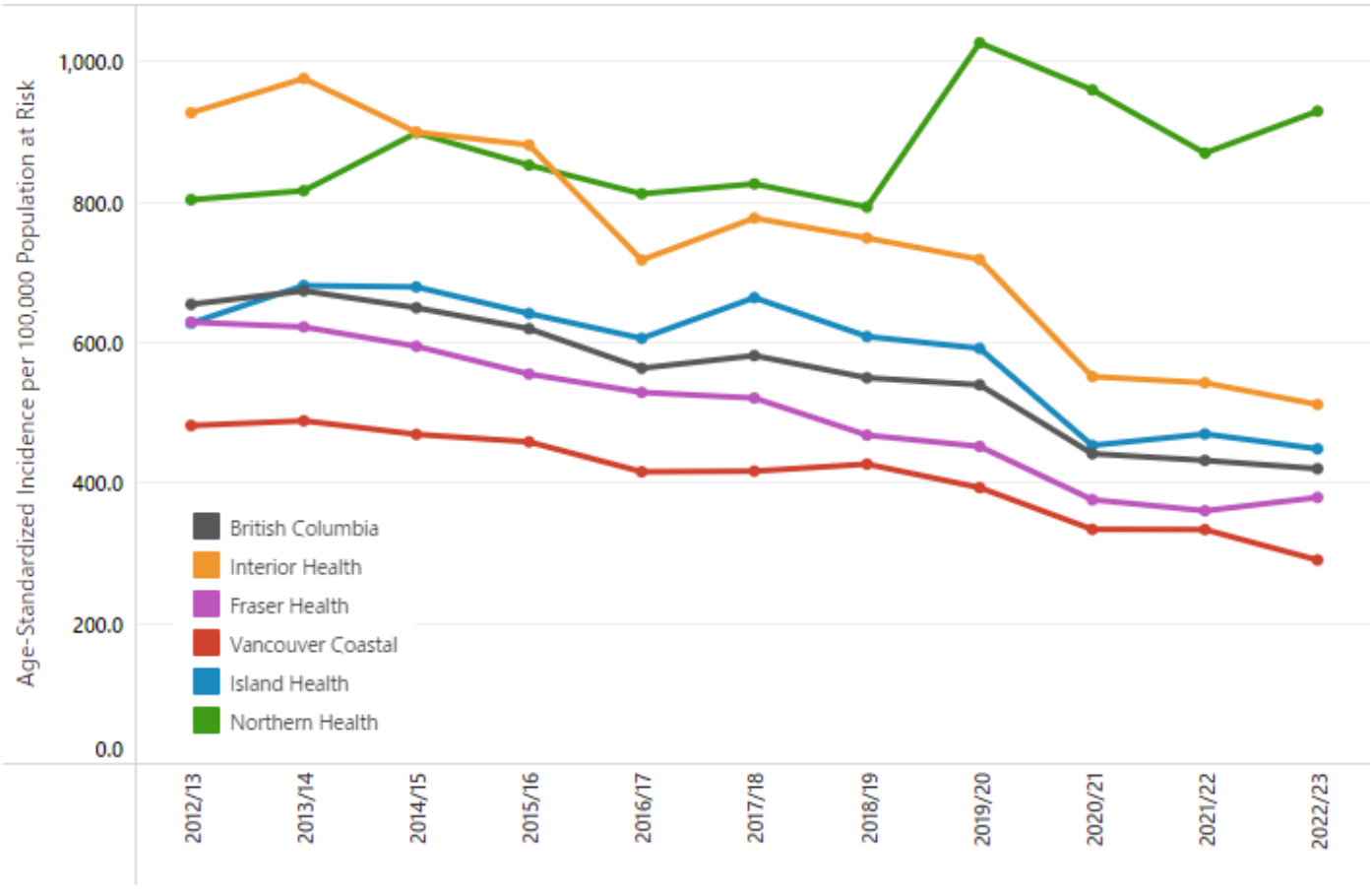


Figure 23. Age Standardized Incidence Rate of Chronic Obstructive Pulmonary Disease (Age 35+) by Health Authority, 2012/13 – 2022/23

Ischemic stroke and substance use disorder also show increasing trends in NH and a decreasing trend in BC. Ischemic stroke incidence in NH has exhibited an increasing trend since 2019/20 and BC has had a decreasing trend since 2018/19 (Figure 24). From 2019/20 to 2022/23 NH rate has increased 13.1% from 113.4 persons per 100,000 in 2019/20 to 128.2 persons per 100,000 in 2022/23. The rate for ischemic stroke in BC has decreased 4.0% from 108.5 persons per 100,000 in 2018/19 to 104.4 persons per 100,000 in 2022/23.

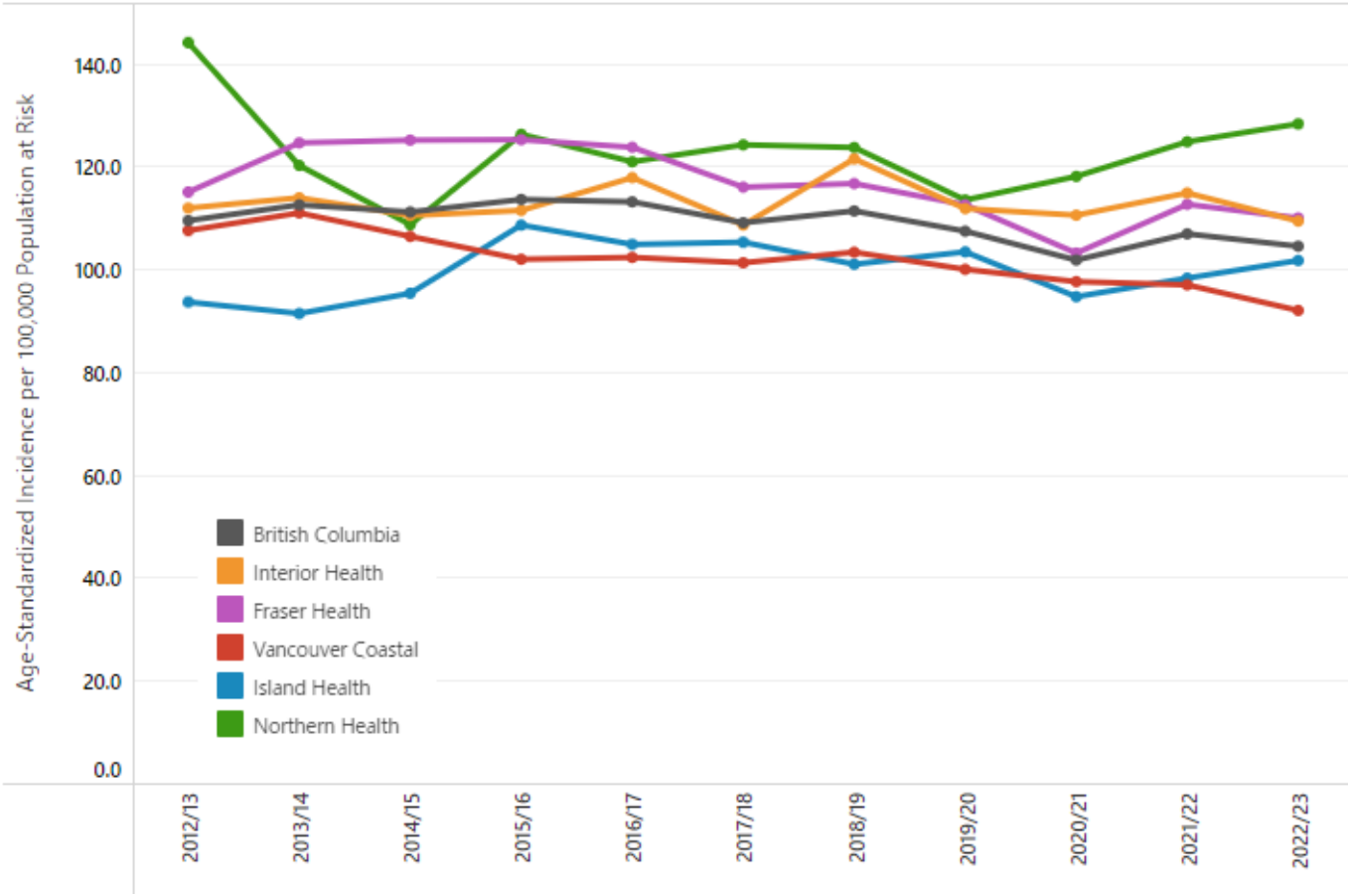


Figure 24. Age Standardized Incidence Rate of Stroke, Hospitalized, Ischemic (Age 20+) by Health Authority, 2012/13 – 2022/23

The trend for substance use disorder for NH has been increasing compared to BC (Figure 25). Substance use disorder incidence in NH has exhibiting an increasing trend since 2015/16 and BC has had a decreasing trend since 2017/18 (Figure 24). From 2015/16 to 2022/23, the NH rate has increased 23.9% from 389.7 persons per 100,000 in 2019/20 to 483.1 persons per 100,000 in 2022/23, while in BC, the rate decreased 14.8% from 386.4 persons per 100,000 in 2018/19 to 329.1 persons per 100,000 in 2022/23.

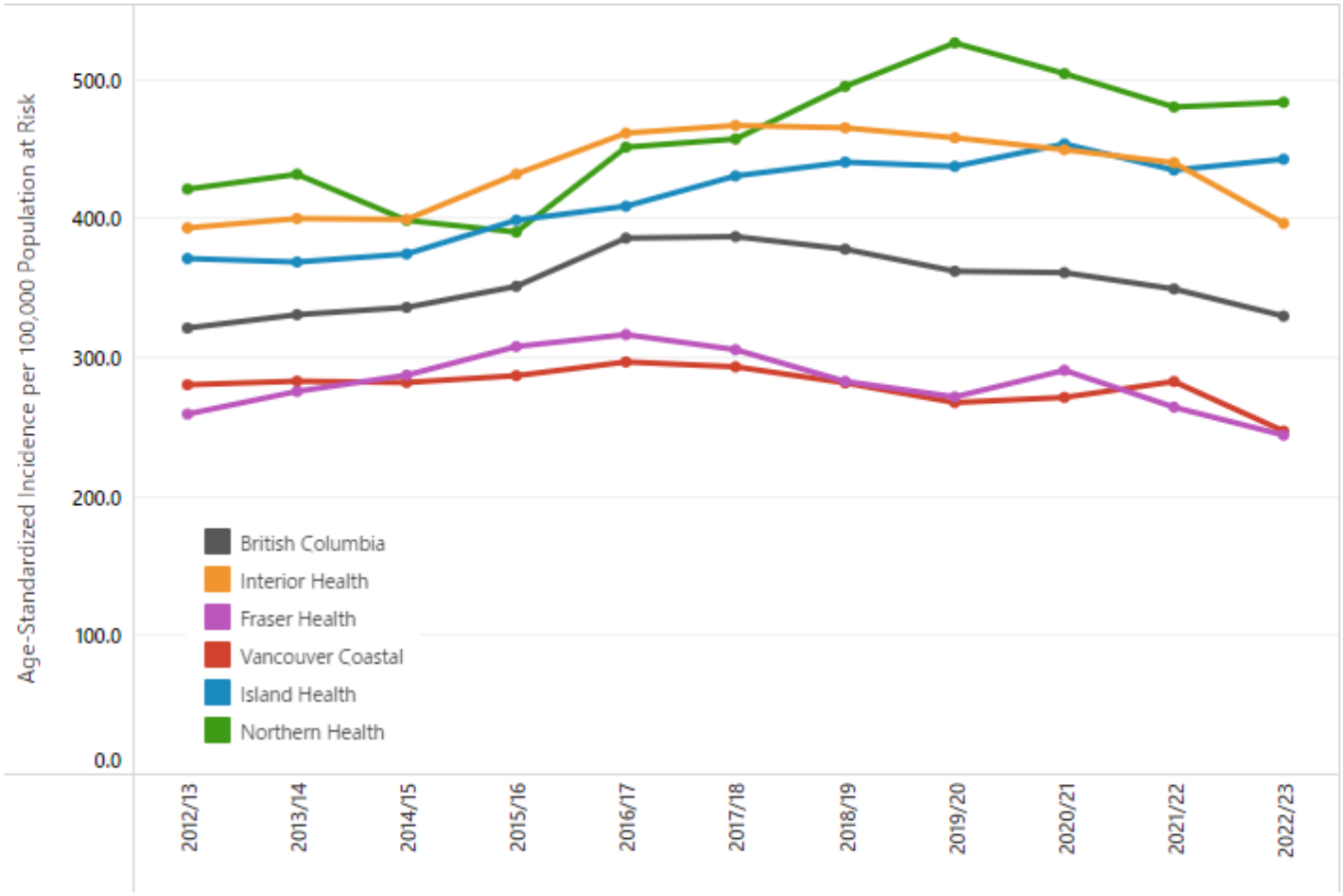


Figure 25. Age Standardized Incidence Rate of Substance Use Disorder (Age 1+) by Health Authority, 2012/13 – 2022/23

Reasons for Hospitalization

The three top reasons residents of NH were admitted to hospital in 2020/21 were COPD, substance abuse with other state[2], viral/unspecified pneumonia; these are reflected in the top 10 reasons for hospitalizations for all NH Local Health Areas (LHA; Figure 26). The top three reasons for admission for all of BC in 2022/23 were unilateral knee replacement, heart failure without coronary angiogram and general symptoms/sign. The highest rates for COPD were observed in Burns Lake (373.7 persons per 100,00), Quesnel (313.6 persons per 100,00), Fort Nelson[3] (293.2 persons per 100,00) and Prince Rupert (281.0 persons per 100,00).

[2] This includes diagnoses related to Mental and behavioural disorders due to use of a variety of substances including but not limited to alcohol, cocaine, cannabis, methamphetamines, and opioids

[3] Interpret with caution as the rate may be unstable to small numbers.

Hospitalizations for substance abuse reflects the current situation in BC with the illicit drug toxicity crisis, however it does include other substances that are part of the illicit drug crisis including alcohol. The highest rates of hospitalizations due to substance abuse were observed in Upper Skeena (907.8 persons per 100,00), Kitimat (535.3 persons per 100,00), Terrace (522.9 persons per 100,00), Haida Gwaii (471.1 persons per 100,00), and Fort Nelson (418.8 persons per 100,00).

CMG Name	Northern Health	Northeast			Northern Interior				Northwest					
		Fort Nelson	Peace River North	Peace River South	Burns Lake	Nechako	Prince George	Quesnel	Haida Gwaii	Kitimat	Prince Rupert	Smithers	Terrace	Upper Skeena
Chronic Obstructive Pulmonary Disease	240.4	293.2*	232.6	239.4	373.7	205.9	227.6	313.6	269.3*	242.4	281.0	142.4	259.2	220.8*
Substance Abuse with Other State	238.0	418.8	175.1	228.2	109.0*	162.2	198.9	121.3	471.3	535.3	147.5	176.6	522.9	907.8
Viral/Unspecified Pneumonia	220.9	314.1*	209.1	164.6	186.9*	218.3	208.5	167.3	269.3*	333.3	217.7	193.7	335.2	466.1*
General Symptom/Sign	211.4	188.5*	167.3	213.2	342.6	180.9	174.0	104.5	291.7*	171.7*	639.2	227.9	219.0	539.7
Heart Failure without Coronary Angiogram	194.3	104.7*	122.8	175.8	373.7	99.8*	212.3	238.3	202.0*	101.0*	273.9	153.8	268.1	171.7*
Myocardial Infarction/Shock/Arrest without Coronary Angiogram	182.4	104.7*	180.3	228.2	77.9*	74.9*	184.6	246.7	224.4*	212.1	154.5	182.3	183.2	122.7*
Unilateral Knee Replacement	154.8	0.0	0.0	101.0	0.0	0.0	322.3	0.0	0.0	494.9	288.0	0.0	0.0	0.0
Depressive Episode	136.4	397.9*	62.7	291.7	93.4*	74.9*	132.9	83.6	112.2*	171.7*	154.5	165.2	76.0*	294.4*
Infectious/Parasitic Disease of Respiratory System	129.6	0.0	81.0	44.9*	109.0*	37.4*	180.7	179.8	157.1*	111.1*	189.6	51.3*	143.0	147.2*
Convalescence	127.2	104.7*	81.0	216.9	109.0*	162.2	53.5	125.4	157.1*	212.1	70.2*	239.2	250.3	588.8

Rate Per 100,000
*** number of cases less than 20 and should be interpreted with caution**

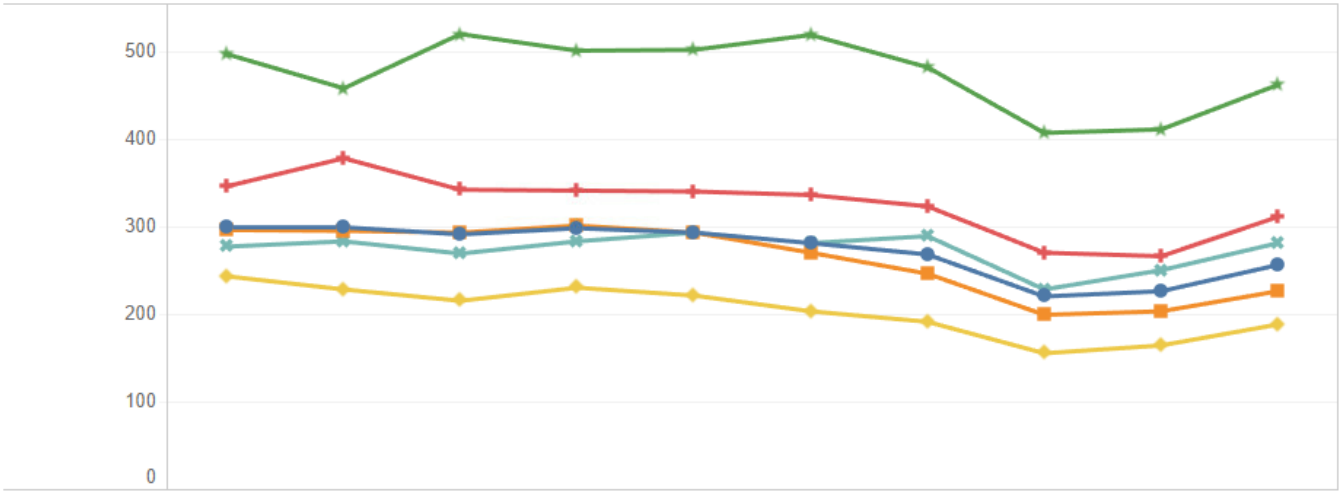
Excludes CMG+ grouping related to vaginal births or caesarian sections.

Data Source: Health*deas*, Hospital Workload by Governance Authority Summary Reports. CMG+, BC Residents and BC Hospitals Only, Acute Care and Rehabilitation.

Figure 26. Top 10 Reasons for Hospitalization by Case Mix Group Plus (CMG+) Rate per 100,000 by Northern Health, LHA 2022/23

Ambulatory care sensitive conditions

Ambulatory care sensitive conditions (ACSC) are considered measures of access to appropriate primary health care. It is assumed that appropriate care could prevent admission to hospital, although not all admissions are avoidable (Canadian Institute for Health Information, 2023). NH has the highest admission rate of ACSC in BC (Figure 27). However, NH is following a similar trend to all the HAs; admissions for ACSC dropped during the COVID-19 pandemic and has started to increase in 2022/23.



	2013–2014	2014–2015	2015–2016	2016–2017	2017–2018	2018–2019	2019–2020	2020–2021	2021–2022	2022–2023
BC	300	300	292	299	294	282	269	221	227	257
Northern	498	459	521	502	503	520	483	408	412	463
Fraser	297	296	294	302	294	271	247	200	204	227
Interior	347	379	343	342	341	337	324	271	267	312
Island	278	284	270	284	294	282	290	229	251	282
VCH	244	229	216	231	222	204	192	156	165	189

Source: CIHI - Your Health System. https://yourhealthsystem.cihi.ca/

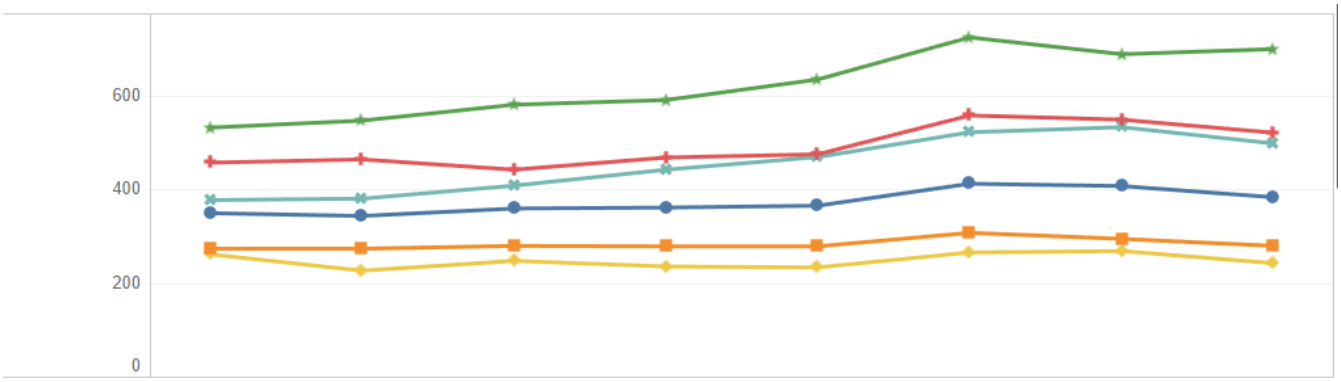
Figure 27. Ambulatory Care Sensitive Conditions Admission Rate Per 100,000 by Health Authority, 2013/2014 to 2022/2023

Hospitalizations entirely caused by Alcohol

Harmful use of alcohol has serious effects not only on the individual, but also on a community as a whole. It also puts unnecessary strain on limited health care resources. Harmful use of alcohol is associated with a wide range of health conditions and is one of the leading factors in death, disease, and disability. Harmful alcohol

consumption can cause harm to other individuals in a manner that is intentional (assault) or unintentional (traffic accidents and fatalities). Comparable prevalence data on harmful alcohol use is not available; however, hospital discharges can be used as a proxy for alcohol harm in the community and of the burden it imposes on health systems (CIHI, 2023).

When examining the rate of hospitalizations entirely caused by alcohol by Health Authority, NH has had the highest rate in BC since 2015/16 (Figure 28). The rate has continued to increase and peaked in 2020/21 (727 hospitalizations per 100,000) and has remained high in the subsequent reporting years.



	2015–2016	2016–2017	2017–2018	2018–2019	2019–2020	2020–2021	2021–2022	2022–2023
BC	351	345	361	363	367	414	409	385
Northern	534	549	583	593	637	727	691	702
Fraser	275	275	281	280	280	309	296	281
Interior	459	466	444	470	477	560	551	523
Island	379	382	410	444	471	524	535	500
VCH	263	228	249	237	235	267	270	244

Source: CIHI - Your Health System. https://yourhealthsystem.cihi.ca/

Figure 28. Hospitalizations entirely caused by Alcohol Rate Per 100,000, by Health Authority 2015/16 – 2022/23

Injury

Injuries are predictable and preventable. Injuries are among the top three causes of death for people under the age of 60 in NH. The economic impact of injuries in NH totalled over $324 million in 2018 (BCIRPU, 2022). The top ten mechanism of injury related hospitalizations can be found in Table 6. NH has higher rates of injury related hospitalizations due to poisoning, motor vehicle -traffic and being struck by/against and object compared to BC. Although, NH does not have a higher overall rate than BC for falls, the NW HSDA has a 31% higher rate compared to BC. Also, when looking at age specific rates people in the age group 20-64 (236.1 per 100,000) and 65+ (1938.1 per 100,000) have higher rates of injuries due to falls compared to BC in those same age groups (171.8 per 100,000 and 1759.4 per 100,000 respectively). These represent severe injuries in the NH region as people were hospitalized due to their injuries; there are a higher proportion of injuries that are not hospitalized as a result of their injury, as they are treated and released in the emergency room. NH is unable to report on emergency room injury visits due to the limited emergency rooms submitting to the National Ambulatory Care

Reporting System (NACRS). Poisoning is the second highest injury in NH and the rate is higher than BC. This category includes all hospitalizations intentional and unintentional, due to accidental poisoning by exposure to legal and illegal substances.

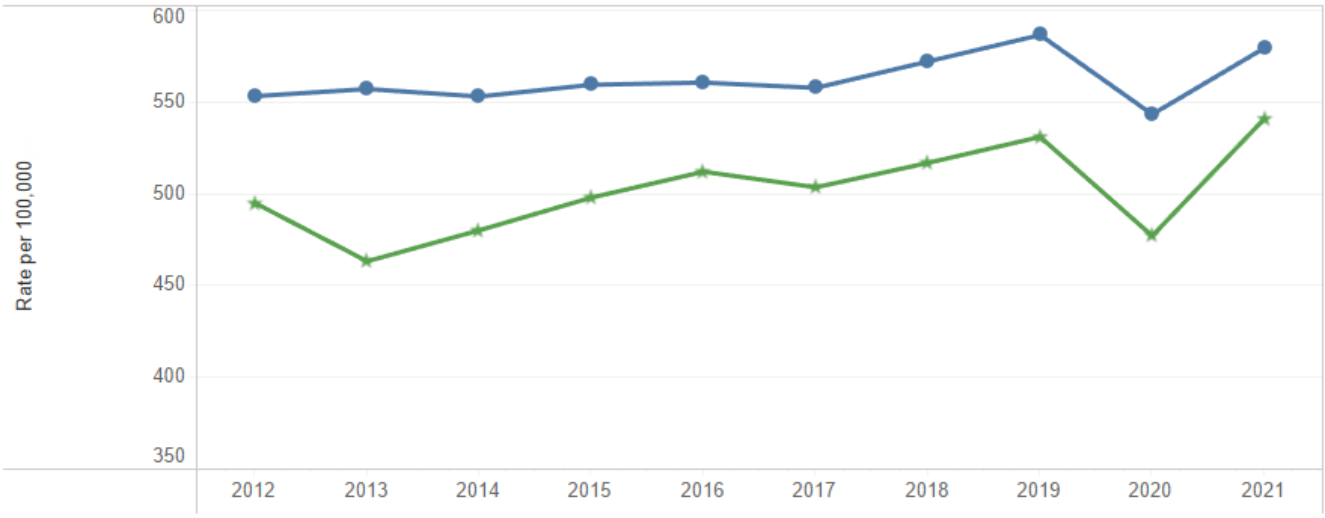
Table 6. Top 10 Causes for Hospitalization by External Cause of Injury, Age Standardized Rate per 100,000, 2019

External Cause of Injury	Rate Per 100,000				
	NH	NE	NI	NW	BC
Fall	394.1	279.5	371.0	539.3	410.9
Poisoning	159.4	113.9	147.4	222.3	96.5
Motor vehicle - traffic	100.3	108.6	95.9	101.3	65.8
Struck by/Against	75.8	70.3	65.2	100.8	40.7
Motor vehicle – nontraffic (off road)	50.2	66.7	46.1	43.5	16.6
Unspecified	37.7	28.4	37.6	46.1	26.7
Cut/Pierce	34.3	20.3	30.7	53.4	18.8
Other specified	26.3	21.5	23.2	36.7	18.6
Pedal cyclist - other	15.1	9.0	14.1	22.3	15.8
Natural/Environmental	14.9	17.1	13.8	15.0	7.1

Source: BCIRPU. *iDOT*, https://www.injuryresearch.bc.ca/idot. Accessed August 13, 2024

Cancer

In NH the incidence rate for all cancers combined 525 cases per 100,000 population. The rate of new cancer diagnoses has shown a slight increase in the previous 10 years, from an incidence rate of 466 cases per 100,000 population in 2011 (Figure 29). This trend is similar to the general trend for the rate of new cancer diagnoses in BC; however, NH rate increased at a faster rate than BC.



●	BC	553.1	557.0	552.9	559.3	560.5	557.6	572.0	586.4	543.2	579.4
★	Northern	495.0	463.2	480.1	497.9	512.0	503.5	516.8	530.9	477.0	541.0

Source: BC Cancer, Cancer Statistics Online Dashboard, http://www.bccancer.bc.ca/health-info/disease-system-statistics/cancer-statistics-online-dashboard

Figure 29. Cancer crude incidence rate (per 100,000 population) for all cancers combined in BC and Northern Health, 2011-2021.

Since 2011, the rate of newly diagnosed cancers has been higher among males than females in both NH and BC. In NH for 2021, the incident rate for males was 543 cases per 100,000 population. For females the incidence rate was 506 cases per 100,000 population. The top five diagnosed cancers in NH for 2021 were lung, breast, colorectal/colon, bladder, and non-Hodgkin Lymphoma (Table 7). When examining sex specific top five types of cancer for males were prostate, lung, colorectal/colon, bladder, and kidney. For females the top five cancers were breast, lung, colorectal/colon, uterus, pancreas, and melanoma.

Table 7. Incidence Rate of New Cancer Diagnoses in Northern Health, British Columbia, 2021

Cancer Type	Rate Per 100,000	
	Northern Health	BC
Lung	77.9	68.3
Breast	72.9	82.5
Colorectal	72.9	60.7
Colon	38.1	40.5
Rectal	18.2	20.2
Bladder (including in-situ)	24.9	31.2
Non-Hodgkin Lymphoma	23.2	25.9
Pancreas	21.5	19.8
Melanoma (Skin)	19.9	27.3
Kidney	19.9	18.1
Leukemia	18.2	15.5
Head and Neck	16.6	19.0
Stomach	11.6	9.4
Esophagus	9.9	8.6
Thyroid	8.3	10.5
Liver	8.3	9.1
Brain	6.6	8.2
Multiple Myeloma	6.6	8.5
Hodgkin Lymphoma	3.3	2.6
All Other Cancers	43.1	53.1

Source: BC Cancer, Cancer Statistics Online Dashboard, http://www.bccancer.bc.ca/health-info/disease-system-statistics/cancer-statistics-online-dashboard

Summary

The above report provides a comprehensive overview of the health status of the population who live within the region of NH. The report provides an overview of social determinants of health and health outcomes and disparities within the population. Some key findings are:

Demographic:

- NH serves a diverse population of approximately 300,000, with a significant proportion identifying as Indigenous.
- NH has a younger population compared to BC; however, the population is expected to age, with an increase in the proportion of individuals over 65 by 2034. This demographic shift will require modifications in health service planning and resource allocation.

Ethnic and Cultural Considerations:

- The higher proportion of Indigenous people in NH compared to the rest of BC: Indigenous population often face unique health challenges and barriers to accessing care.
    - Indigenous populations in BC experience higher rates of chronic diseases, mental health, and injuries. In addition, they have been severely impacted by the illicit drug toxicity crisis and COVID-19 pandemic reducing life expectancy by 6 years (FNHA & OPHO, 2024).
    - Addressing these disparities requires targeted interventions that are culturally sensitive and respectful of Indigenous traditions, beliefs, and practices.
- NH has a lower proportion of non-Indigenous visible minorities and immigrants compared to BC.
    - Care needs to be taken to ensure that non-Indigenous visible minorities and immigrants in our region feel welcomed in accessing NH services by reducing potential language barriers, racism, bias, and discrimination

Household and Housing Conditions:

- NH has higher rates of single-parent families and dwellings requiring major repairs, which can impact health and well-being.

Income, education, and employment:

- NH experiences lower rates of high school completion and higher rates of individuals without post-secondary education compared to BC.
- Employment rates are similar to BC, but there are regional variations that need to be addressed to ensure economic stability and health security.
- Approximately 10% of the total population in NH lives with low income, which is similar to the provincial average.
- About 12% of children under 17 and 15% of older adults aged 65 and older in NH live with low income. These rates are comparable to those in BC.

Access to Health Care:

- Equitable access to health care remains a challenge, particularly in rural areas. Efforts to improve physician attachment and access to primary care are crucial; however, attachment is only one aspect of accessing health care.
- High percentages of NH residents report worsening access to health care, indicating a need for targeted interventions to improve health service delivery.

Morbidity and Mortality:

- Life expectancy in NH is five years lower than the provincial average.
    - Life expectancy decreased at a greater rate for females in Northern Health compared to BC.
    - This decrease may be related to the unregulated drug crisis that has impacted younger females at a higher rate in Northern Health compared to BC.
- The rate of chronic diseases such as hypertension, mood and anxiety disorders, and COPD are prevalent in NH. The incidence rate of COPD is notably higher in NH compared to the rest of BC.
- The top three reasons for hospitalizations in NH are COPD, substance abuse, and pneumonia.
- Injuries are among the top three causes of death for people under the age of 60 in NH.
- NH has higher rates of injury related hospitalizations of poisoning, motor vehicle - traffic and struck by/against compared to BC.
- The rate of new cancer diagnoses in NH has shown 9% increase from 2012 to 2021.
- The top five diagnosed cancer in NH for 2021 were lung, breast, colorectal/colon, bladder, and non-Hodgkin Lymphoma.

Recommendations

To address these findings a comprehensive approach is needed. This includes:

- Enhancing health promotion and protection strategies that focus on promoting healthy lifestyle choices, mental wellness, and injury prevention. This may include public campaigns that promote healthy behaviours, and regular health screening.
- Advocate for legislation, regulations, and policies that support healthy built environment, and health promoting behaviours.
- Work with Indigenous communities to develop culturally sensitive interventions and embed First Nation wellness approaches in policies, programs, and services to ensure equitable health outcomes.
- Further the cultural safety and humility commitment made by NH including the elimination of Indigenous specific racism.
- Improve data collection on ethnicity and Indigenous identity and health outcomes to identify disparities which would allow for targeted interventions effectively.
- Develop data governance policies that include the use of ethnicity data including First Nations and Metis principles around data governance
- Develop partnerships with communities, community organization and other stakeholders to address the health needs of the population
- Additional work is needed to ensure acceptable access to health care services is available to people in the NH region.
    - Development of a robust monitoring system to identify gaps and areas for improvement.

By addressing these areas, Northern Health may increase health equity and improve the health of the population within their region.

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Appendix A: Mechanism of Injury Definitions

The specific IDC Codes for the injury categories can be found on the BC Injury research and prevention Unit, here

Appendix B: Data Sources

Name	Update frequency	Data Provider	Link to Public (if available)
Population Estimates and Projections	Yearly	BC Stats	https://www2.gov.bc.ca/gov/content/data/statistics/people-population-community/population/population-estimates
Canadian Census of the Population	Five Years	Statistics Canada	https://www12.statcan.gc.ca/census-recensement/index-eng
BC COVID19 Speaks Round 2		BCCDC	http://www.bccdc.ca/health-professionals/data-reports/bc-covid-19-speak-dashboard
BC Vital Events Measures	Yearly	Office of the Provincial Health Officer	
Vital Events (VISTA)	Yearly	Ministry of Health	
Your Health System	Varies	CIHI	https://yourhealthsystem.cihi.ca/
BCCDC Mortality Context App	Monthly	BCCDC	https://bccdc.shinyapps.io/Mortality_Context_ShinyApp/
Chronic Disease Dashboard	Yearly	BCCDC	http://www.bccdc.ca/health-professionals/data-reports/chronic-disease-dashboard
Hospitalization Data	Yearly	Ministry of Health	https://public.healthideas.gov.bc.ca/
Injury Data		BCIRPU	https://www.injuryresearch.bc.ca/data
Cancer Data	Yearly	BC Cancer	http://www.bccancer.bc.ca/health-info/disease-system-statistics/cancer-statistics-online-dashboard
Unregulated drug deaths	Approx. Monthly	BCCDC	http://www.bccdc.ca/health-professionals/data-reports/substance-use-harm-reduction-dashboard
Unregulated drug deaths	Approx. Monthly	BC Coroners Service	https://www2.gov.bc.ca/gov/content/life-events/death/coroners-service/statistical-reports