2022 UPDATE

Aging Populations and Health Services in the West Kootenay Boundary Regional Hospital District

Selkirk College | SELKIRK INNOVATES

This report is funded through the Regional District of Central Kootenay at the request of the West Kootenay Boundary Regional Hospital District Board.

Project Team: Jayme Jones (Researcher), Tracey Harvey (Researcher), Robert Macquarrie (Researcher), Leeza Perehudoff (Research Intern), Beatriz Barddal Fantini (Research Intern), Faith O'Neill (Research Intern), James Shaw (Research Intern)

Publication Date: August 2022

Selkirk College | SELKIRK INNOVATES

REGIONAL DISTRICT CENTRAL KOOTENAY

On behalf of Selkirk College, I (we) acknowledge that we operate and serve learners on the unceded traditional territories of the Sinixt (Lakes), the Syilx (Okanagan), the Ktunaxa, and the Secwépemc (Shuswap) peoples.

Contents

Executive Summary 2
Introduction 3
Background 3
Objective 3
Study Area 3
Methods 5
Results 5
Demographics 5
Current Demographics 5
Population Projections 7
Health Facilities 9
Service Areas 12
Ambulance 12
Emergency Room 12
Diagnostic and Specialized Treatment Facilities 13
Care Beds 18
Hospital Care Beds 18
Long-Term Care Beds 20
Transportation 23
West Boundary to Grand Forks 25
Arrow Lakes and Slocan Valley to Nelson 25
North Kootenay Lake and East Shore to Nelson 26
Salmo to Nelson 27
Castlegar to Nelson 27
Multiple Communities to Trail 28
Conclusion 29
References 30

Executive Summary

The demographics in the West Kootenay Boundary Regional Hospital District (WKBRHD) have an influence on the need for a variety of health service infrastructure. As of the 2021 Census, there are approximately 89,000 residents living in the WKBRHD. Of those, the age cohorts of 60- to 64-year-olds and 65- to 69-year-olds have the largest percent of the population. However, the age cohort of 70- to 74-year-olds grew the most between the 2016 and 2021 Census years, with an increase of 34.1%. The population in the WKBRHD is projected to grow 6.7% between 2021 and 2041. The percent of the population 65 years old and older has been and continues to increase across the Local Health Areas (LHA) within the WKBRHD. In 2040, the percent of the population 65 years old and older is projected to reach 51% in the Kootenay Lake LHA and 54% in the Kettle Valley LHA.

There are various types of health facilities throughout the WKBRHD. These range from the regional hospital in Trail to laboratory outpatient services in the small communities. The availability of a selection of health services throughout the region is examined. While laboratory services are most commonly available throughout the region, specialized services such as dialysis are only available in limited locations (Kootenay Boundary Regional Hospital, Boundary District Hospital, and Creston Valley Hospital & Health Centre). The drive time to a selection of health services is also mapped. Up to 95% of houses in the Regional District of Central Kootenay are within a one-hour drive of a 24-hour emergency room.

The number of fully staffed hospital care beds and long-term care beds is explored. The number of hospital beds, not including long-term care beds located in hospitals, is 1.4 per 1000 people within the WKBRHD. This is fewer beds per 1000 people than found in the Interior Health Authority, Okanagan, BC, and Canada. Of the hospitals within the WKBRHD, when not counting long-term care beds, the Kootenay Boundary Regional Hospital has the most hospital beds at 2 beds per 1000 people, and the Boundary Hospital has the least at 0.9 beds per 1000 people.

The number of long-term care beds in the WKBRHD has decreased 21% since 2002. As of 2021, there are 730 long-term care beds in the WKBRHD, with an additional 75 announced for Nelson and scheduled to be completed by September 2024. The number of long-term care beds varies across the region, with no long-term care beds available in the Kettle Valley LHA and the most located in the Trail LHA. When examining the number of people over 85 years old who may require care against the number of long-term care beds available, most LHA have enough beds. However, this does not take into consideration those under 85-years old who may require care.

Public transportation options within the region are explored to understand accessibility of health services for those without a personal vehicle or ability to drive. While there are BC Transit routes available throughout the region, there are some areas that are disconnected from the regional hospital in Trail (i.e., Boundary and Creston Valley). There are also limited days and times where residents from certain locations could feasibly attend a health appointment when using public transportation.

Introduction

Background

In January 2022, the West Kootenay Regional Hospital District (WKBRHD) Board, through the Regional District of Central Kootenay (RDCK), requested Selkirk Innovates to update the 2015 report: *Aging Populations and Health Services in the West Kootenay Boundary Regional Hospital District*.[1] The scope of this update is to share updated demographic data and health services data, as available, and improve data visualization. Some additional data points are shared based on identified interest by the WKBRHD Board, such as including information about service areas to Magnetic Resonance Imagery (MRI) diagnostic services and dialysis services.

Objective

The objective of this research is to analyze the population demographics and health services within the WKBRHD to help evaluate the infrastructure in place to accommodate the changing population demographics.

Study Area

This research is focused on the WKBRHD, located in the southern-interior of BC. It encompasses 78,000 km^2 and has a population of approximately 89,000 residents.[2] The WKBRHD includes the entirety of the Regional District of Kootenay Boundary (RDKB) and most of the RDCK.[i] The WKBRHD is in the Interior Health Authority (IHA) region and encompasses all or part of eight Local Health Areas (LHA): Arrow Lakes, Castlegar, Creston, Grand Forks, Kettle Valley, Kootenay Lake, Nelson, and Trail.

For much of the analysis in this report, data is available and organized by LHA. The aggregation of LHAs within the WKBRHD produce a study area boundary that differs slightly from the true WKBRHD boundary (**Figure 1**). For the purposes of this report and simplicity, this aggregation of LHAs is also referred to as the WKBRHD throughout the report. A summary of the municipalities and unincorporated communities within each LHA are shown in **Table 1**.

[i] Only RDCK Electoral Areas B and C are not part of the WKBRHD.

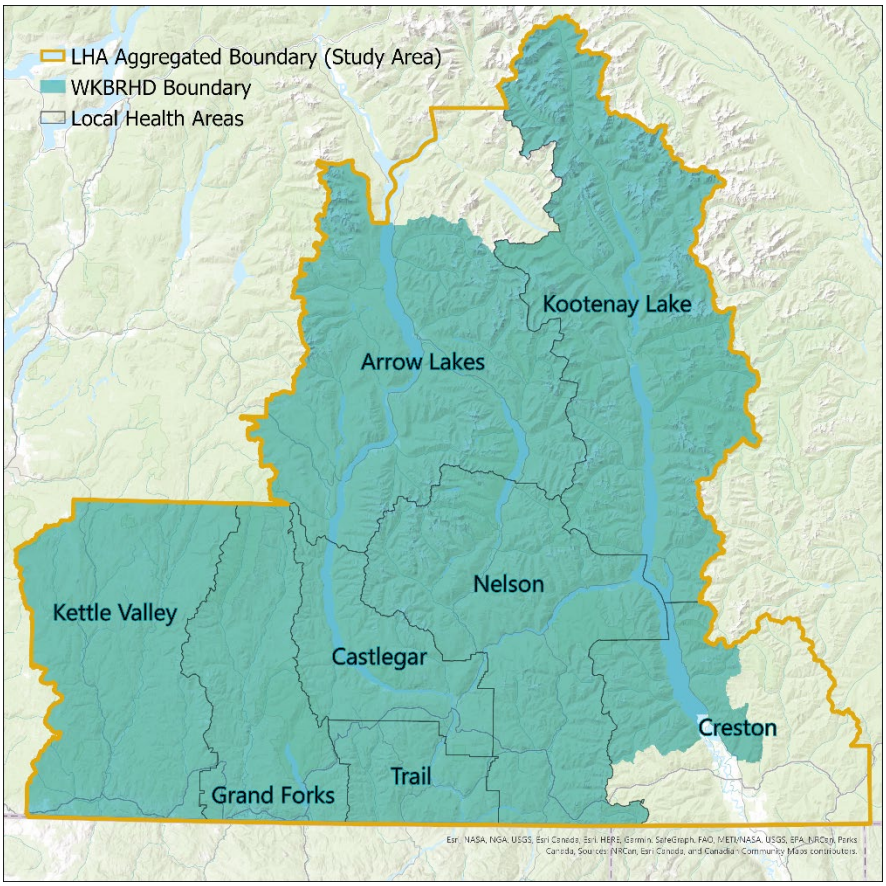

Figure 1: Study area showing LHAs, LHA aggregated boundary, and WKBRHD boundary

Table 1: List of municipalities and unincorporated communities within each LHA

Local Health Area	Municipalities	Unincorporated Communities	
Arrow Lakes	Nakusp New Denver Silverton	Edgewood Fauquier Burton	Trout Lake Hills
Castlegar	Castlegar	Robson Ootischenia Deer Park	
Creston	Creston	Yahk Kitchener	Boswell Wyndel
Grand Forks	Grand Forks	Christina Lake	
Kettle Valley	Greenwood Midway	Rock Creek Bridesville	Westbridge Beaverdell
Kootenay Lake	Kaslo	Meadow Creek Crawford Bay Riondel	Ainsworth Hot Springs Argenta Gray Creek
Nelson	Nelson Slocan Salmo	Balfour Winlaw Ymir	
Trail	Trail Rossland Warfield Fruitvale Montrose	Genelle	

Methods

Data for this research was acquired from multiple sources and analyzed using summary statistics and/or geospatial analysis. The sources of the data and information are included as references found with each analysis.

Demographic analysis for current population uses the recently released Census 2021 data and is analyzed to the true WKBRHD boundary. All other demographic analyses (including population projections) use data from BC Stats, which is available by LHA. Presenting demographics by LHAs allows for comparison against various health service situations. See the **Study Area** section above for a detailed description of the area used for analysis.

Health facility data was acquired from numerous sources based on availability. The IHA was a key source of information. The Manager of Research Data at IHA confirmed the best sources for health facilities data. Footnotes are included as needed to add any additional information about information sources.

Spatial data were acquired from the Regional District of Central Kootenay, BC Transit, BC Data Catalogue, and ESRI. Geospatial analysis was conducted for sections of this report using ESRI's ArcGIS Pro software. This software was also used to generate all maps included in this report. The ArcGIS Network Analysis extension was used to calculate the travel time needed to access health services (i.e., service areas) across the WKBRHD. ArcGIS Online routing service data were utilized for these calculations.[3] All maps in this report use the topographic basemap from the Community Map of Canada.[4] The true WKBRHD boundary was visualized using census subdivision boundaries and the aggregated LHA study area uses LHA boundaries.[5,6] The community points used across several maps were published by GeoBC.[7]

Results

Demographics

CURRENT DEMOGRAPHICS

With a population of approximately 89,000 residents, the current demographics of the entire WKBRHD are shown in **Figure 2**.[ii,2] When looking at 5-year age cohorts, the age cohorts of 60- to 64- year-olds and 65- to 69-year-olds have the largest percent of the population. The population aged 60-years old and older make up 36% of the total population in the WKBRHD.

[ii] These demographics are for the true WKBRHD area, not the larger aggregated LHA study area. Gender is presented in two categories – 'men+' and 'women+', which includes non-binary and transgender persons. These gender + additions are not expected to have a significant impact on data analysis and historical comparability due to the small size of the transgender and non-binary populations.

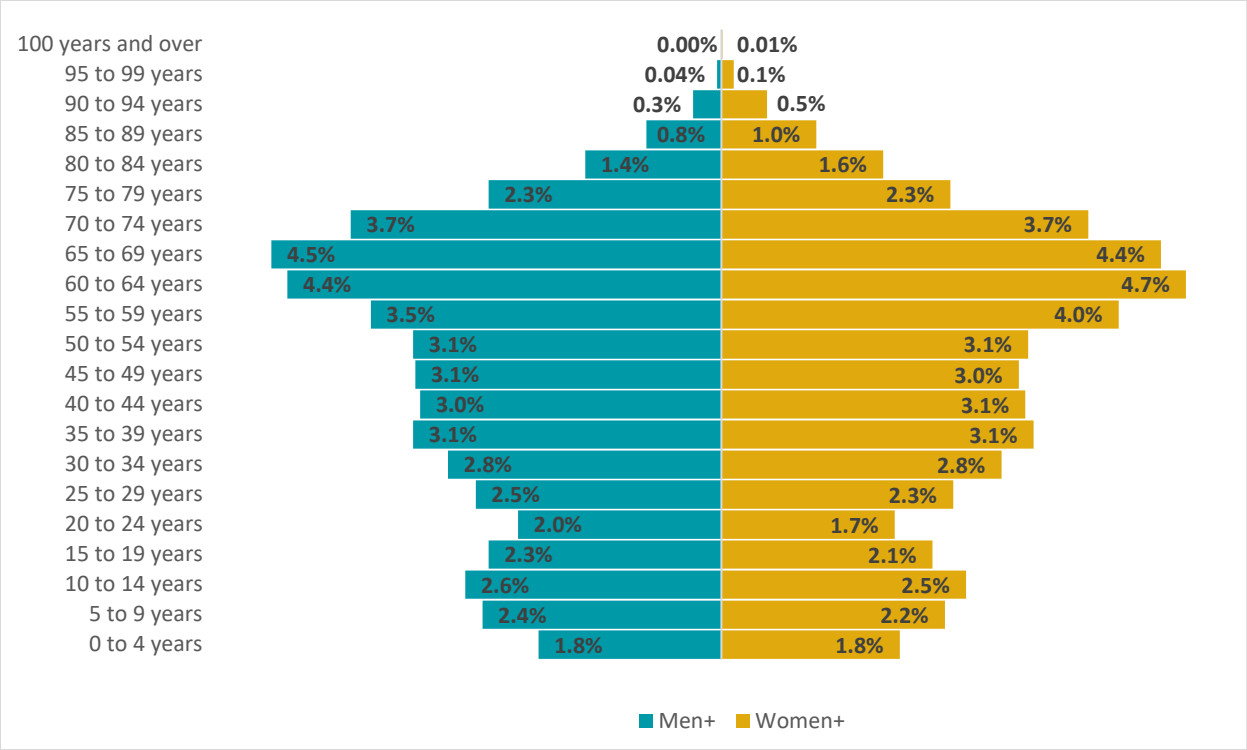

Figure 2: Population pyramid for men+ and women+ by age cohorts in the WKBRHD, 2021 Census

Table 2 summarizes the Census 2016 and 2021 population of the WKBRHD by age cohort, with a focus on the older cohorts.[2,8] Between the 2016 and 2021 Census years, the age cohort that increased the most is 70- to 74-year-olds (+34%), followed by 75- to 79-year-olds (+22%). When looking at the population aged 65-years old and older, that demographic grew by 17% between 2016 and 2021.

Table 2: WKBRHD population by age cohort, with focus on older cohorts, for Census years, 2016 and 2021

Age Cohorts	2016 Census Population	% of Total Population, 2016	2021 Census Population	% of Total Population, 2021	% Change 2016-2021
Under 50	42,340	50.1%	45,105	50.5%	6.5%
50-54	6,295	7.5%	5,530	6.2%	-12.2%
55-59	7,610	9.0%	6,725	7.5%	-11.6%
60-64	7,880	9.3%	8,095	9.1%	2.7%
65-69	7,130	8.4%	8,000	9.0%	12.2%
70-74	4,945	5.9%	6,630	7.4%	34.1%
75-79	3,420	4.1%	4,180	4.7%	22.2%
80-84	2,390	2.8%	2,675	3.0%	11.9%
85-89	1,545	1.8%	1,555	1.7%	0.6%
90-94	705	0.8%	675	0.8%	-4.3%
95-99	175	0.2%	150	0.2%	-14.3%
100+	15	0.02%	15	0.02%	0.0%
65+	**20,330**	**24.1%**	**23,870**	**26.7%**	**17.4%**
85+	**2,440**	**2.9%**	**2,400**	**2.7%**	**-1.6%**

POPULATION PROJECTIONS

The percent of the population aged 65-years old and older has been increasing over time; however, it is projected to level out. Using BC Stats population estimates for past years and population projections for future years, **Table 3**, **Table 4** and **Figure 3**, show the change in the population 65-years old and older over time.[9] When looking at the aggregated LHA study area, the population 65-years old and older was only 18% of the population in 2005. This is expected to jump to 28% by 2025 and 30% by 2030, leveling out after that for the ensuing decade.

The population aged 65-years old and older varies depending on the LHA. The Kettle Valley LHA is expected to have the highest percentage of the population aged 65-years old and older, ranging from 47% in 2025 to 54% in 2040. This is followed by Kootenay Lake LHA ranging from 44% in 2025 to 51% in 2040.

Table 3: Percent of total population 65-years old and older by Local Heath Area, 2005, 2015, 2025, 2030, 2035, 2040

	% of Total Population Aged 65+					
Local Health Area	**2005**	**2015**	**2025**	**2030**	**2035**	**2040**
Arrow Lakes	19%	31%	41%	45%	42%	38%
Castlegar	16%	18%	22%	24%	25%	24%
Creston	24%	27%	33%	34%	33%	32%
Grand Forks	22%	32%	41%	45%	45%	44%
Kettle Valley	18%	33%	47%	52%	53%	54%
Kootenay Lake	18%	28%	44%	49%	50%	51%
Nelson	14%	16%	22%	23%	23%	24%
Trail	18%	19%	25%	28%	29%	29%
Aggregated LHAs	**18%**	**22%**	**28%**	**30%**	**30%**	**30%**

Table 4: Population 65-years old and older by Local Health Area, 2005, 2015, 2025, 2030, 2035, 2040

	Population Aged 65+ (#)					
Local Health Area	**2005**	**2015**	**2025**	**2030**	**2035**	**2040**
Arrow Lakes	886	1,442	1,995	2,186	2,067	1,841
Castlegar	2,041	2,585	3,435	3,886	4,174	4,306
Creston	2,887	3,502	4,426	4,590	4,505	4,289
Grand Forks	1,943	2,817	3,614	3,764	3,562	3,236
Kettle Valley	626	1,182	1,653	1,723	1,620	1,474
Kootenay Lake	638	927	1,533	1,608	1,544	1,462
Nelson	3,258	4,301	6,273	7,139	7,561	8,163
Trail	3,469	3,836	5,219	5,929	6,176	6,237
Aggregated LHAs	**15,748**	**20,592**	**28,148**	**30,825**	**31,209**	**31,008**

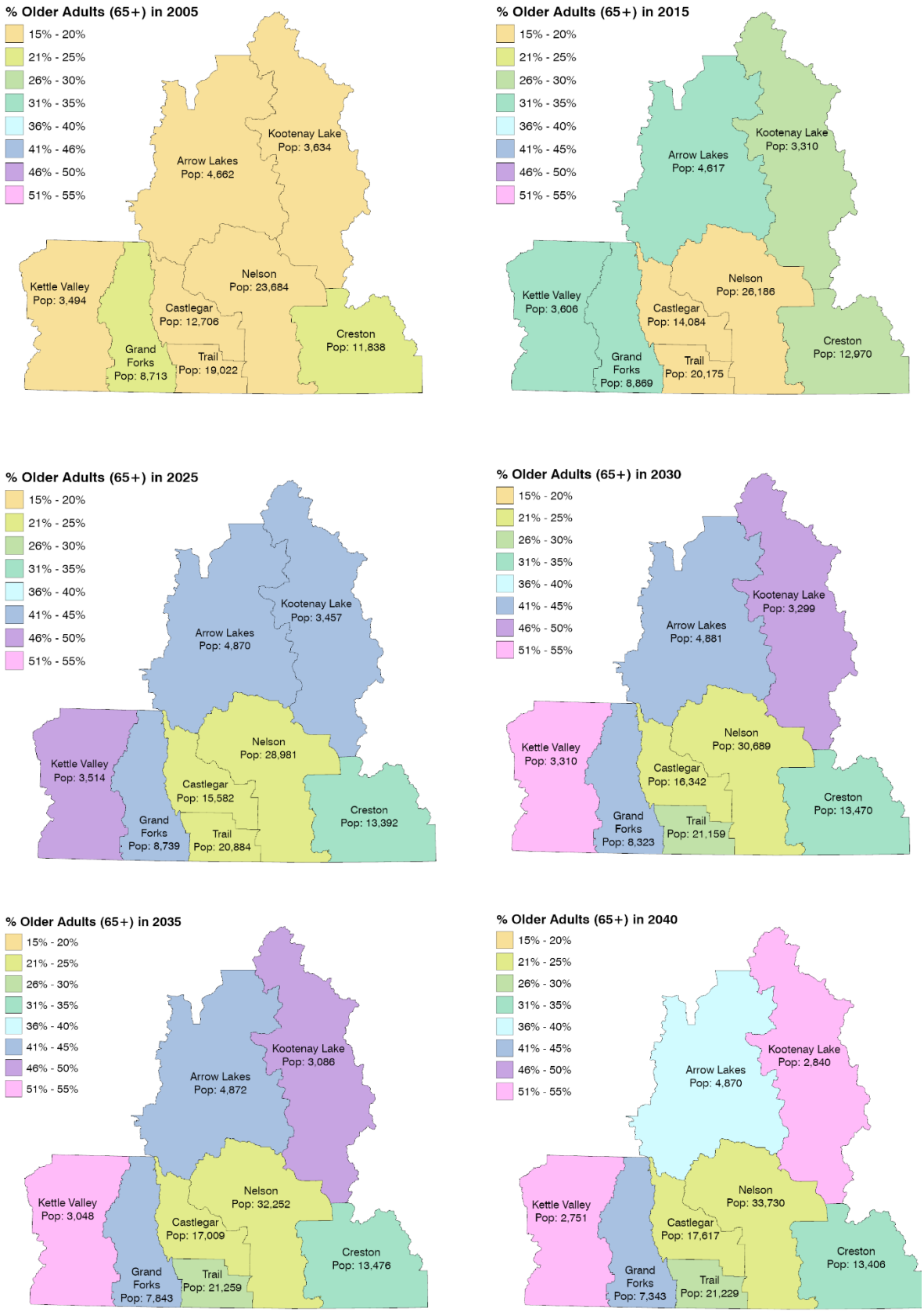

Figure 3: Percent of population aged 65-years old and older, and total population, by Local Health Area, 2005 to 2040

As shown in **Figure 4**, the total population of the aggregated LHA study area (all ages) is projected to increase by 6.7% from 2021 to 2041.[9] This is less than the estimated increase to the total population of BC (26.1%).

The estimated change in population varies by LHA over this 20-year time period. Population increases are projected for the LHAs of Nelson (+23.4%), Castlegar (+18.6%), Trail (2.9%), Arrow Lakes (+1.1%), and Creston (+0.6%). Decreases in population are estimated for Grand Forks (-19.7%), Kootenay Lake (-21.2%), and Kettle Valley (-25.8%).

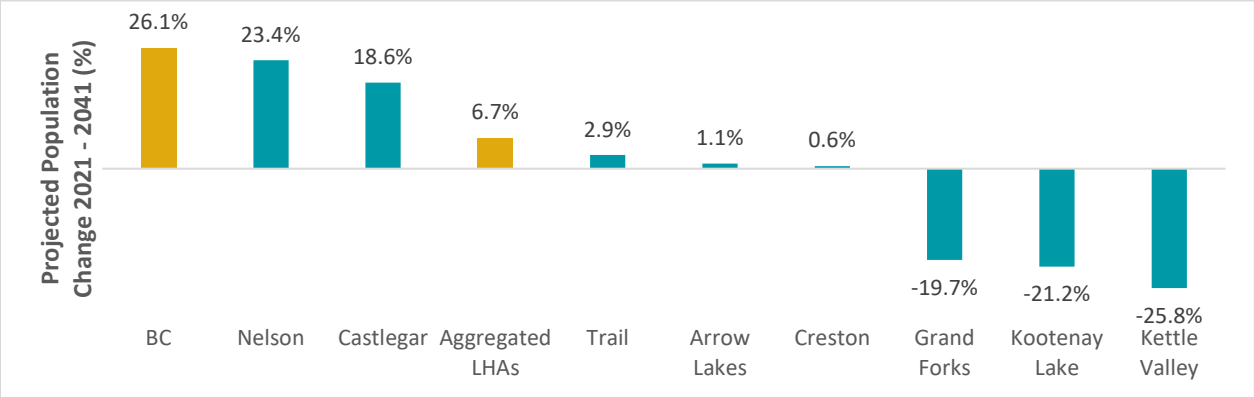

Figure 4: Projected population change (%) for BC, and by Local Health Area, 2021 to 2041

Health Facilities

There are various types of health facilities throughout the WKBRHD (**Table 5**). [10,11,12] These include:

- **Regional Hospital:** provides core medical and surgical specialty services.
- **Urgent and Primary Care:** addresses medical needs that require same day attention.
- **Level 1 Community Hospital:** offers surgical, inpatient, and emergency services.
- **Community Health Centre:** offers a variety of services in one location, but services vary depending on the specific centre. They do not have acute care beds but may provide basic laboratory and radiology; urgent care; community services; long-term care; and doctor's offices.
- **Primary Health Care:** offers a comprehensive and coordinated approach to healthcare delivery and has an interdisciplinary team at a single site that matches the unique needs of the community.
- **Laboratory:** provides accessible laboratory outpatient services.

Table 5: Health facilities within the WKBRHD, including regular hours of operation and emergency/urgent care hours[iii]

Local Health Area	Community	Facility	Facility Type	Hours of Operation	Emergency/ Urgent Care Hours
Arrow Lakes	Nakusp	Arrow Lakes Hospital	Level 1 Community Hospital	24 hours/day; 7 days/week	24 hours/day; 7 days/week
	New Denver	Slocan Community Health Centre	Primary Health Care Centre	Tue, Wed, Fri: 8:00am - 11:30am	24 hours/day; 7 days/week
	Edgewood	Edgewood Health Centre	Community Health Centre	Mon - Fri: 8:00am - 12:00pm and 1:00pm - 4:00pm (closed stats)	Monday - Thursday starting at 4pm; No ER Fri 4pm to Mon 8am
Castlegar	Castlegar	Castlegar and District Community Health Centre	Community Health Centre/Urgent & Primary Care	Mon - Fri: 8:30am - 4:30pm	8:00am - 8:00pm; 7 days/week
Creston	Creston	Creston Valley Hospital & Health Centre	Level 1 Community Hospital & Community Health Centre	24 hours/day; 7 days/week	24 hours/day; 7 days/week
Grand Forks	Grand Forks	Boundary District Hospital	Level 1 Community Hospital	24 hours/day; 7 days/week	24 hours/day; 7 days/week
		Boundary Community Health Centre	Community Health Centre	Mon - Fri: 8:30am - 12pm and 1pm to 4:30pm	-
Kettle Valley	Midway	Midway Blood Lab Services	Laboratory	Mon: 8 am-12:30 pm; Wed: 10:15 am - 12:30 pm	-
		Midway Health Unit	Community Health Centre	Mon, Tue, Wed, Fri: 8:30am - 4:30pm	-
	Greenwood	Greenwood Public Health	Laboratory	Wed 7:55 am - 8:45 am	-
	Rock Creek	Rock Creek Health Centre	Community Health Centre	N/A	-
Kootenay Lake	Kaslo	Kaslo Primary Health Centre	Primary Health Care	Mon - Fri: 8:30am - 4:30pm	-
	Crawford Bay	East Shore Community Health Centre	Community Health Centre	Mon - Fri: 8:30am - 4:30pm	-
Nelson	Nelson	Kootenay Lake Hospital	Level 1 Community Hospital	24 hours/day; 7 days/week	24 hours/day; 7 days/week
		Nelson Health Centre	Community Health Centre	8:00am - 4:30pm	-
	Salmo	Salmo Health and Wellness Centre	Community Health Centre	Tue to Thu: 9am - 4pm (closed noon-1pm)	-
Trail	Trail	Kootenay Boundary Regional Hospital	Regional Hospital	24 hours/day; 7 days/week	24 hours/day; 7 days/week
		Trail Health Centre Laboratory	Laboratory	Mon to Fri: 9:00am - 3:00pm	-
		Kiro Wellness Centre	Community Health Centre	Mon to Fri: 8:30am - 4:30pm	-
	Rossland	Associate Medical Clinic Laboratory	Laboratory	Thurs: 8 am - 11:30 am	-

[iii] Note that hours of operation are subject to change. For example, the Slocan Community Health Centre emergency hours are sometimes reduced depending on staffing or other reasons.

The services available at each facility differ, see **Table 6**.[13,iv]

Table 6: Availability of a selection of services at health facilities within the WKBRHD

Local Health Area	Community	Facility	24-Hour Emergency	Urgent Care	Pulmonary Function	Radiology (x-ray)	Ultrasound	Nuclear Medicine	CT	MRI	ECG	Dialysis	Laboratory	Mental Health
Arrow Lakes	Nakusp	Arrow Lakes Hospital	✔		✔	✔					✔		✔	✔
	New Denver	Slocan Community Health Centre			✔	✔					✔		✔	
	Edgewood	Edgewood Health Centre									✔		✔	
Castlegar	Castlegar	Castlegar and District Community Health Centre		✔	✔	✔	✔				✔		✔	✔
Creston	Creston	Creston Valley Hospital & Health Centre				✔					✔	✔	✔	
Grand Forks	Grand Forks	Boundary District Hospital	✔		✔	✔	✔				✔	✔	✔	
		Boundary Community Health Centre												✔
Kettle Valley	Midway	Midway Blood Lab Services											✔	
		Midway Health Unit												
	Greenwood	Greenwood Public Health											✔	
	Rock Creek	Rock Creek Health Centre												
Kootenay Lake	Kaslo	Kaslo Primary Health Centre				✔					✔		✔	✔
	Crawford Bay	East Shore Community Health Centre									✔		✔	
Nelson	Nelson	Kootenay Lake Hospital	✔		✔	✔	✔		✔		✔		✔	
		Nelson Health Centre												✔
	Salmo	Salmo Health and Wellness Centre									✔		✔	✔
Trail	Trail	Kootenay Boundary Regional Hospital	✔		✔	✔	✔	✔	✔	✔	✔	✔	✔	
		Trail Health Centre Laboratory											✔	
		Kiro Wellness Centre												✔
	Rossland	Associate Medical Clinic Laboratory											✔	

[iv] These services were captured from IHA's website; however, some inconsistencies were noted, such as MRI and CT that were not indicated at Kootenay Boundary Regional Hospital according to the website while those services are known to be present and were therefore added. IHA was not able to provide an accurate list of services by facility. Therefore, caution should be used when referring to this list due to these inconsistencies.

Service Areas

Accessing health care services in rural areas like the WKBRHD can be challenging because of geographic barriers that result in increased travel distances and times.[14] Service areas were calculated to determine the travel time needed to access a variety of health care services in the WKBRHD.[v]

AMBULANCE

Service areas were calculated for all ambulance stations in the WKBRHD using ambulance stations as the point of departure and a road network for travelling times (**Figure 5**).[15] There are six categories of travel times, ranging between 15-minutes and 120-minutes (i.e., 2-hours).[vi] Unsurprisingly, the areas immediately surrounding an ambulance station fall within the 15-minute category. Response time increases as distance from an ambulance station increases.

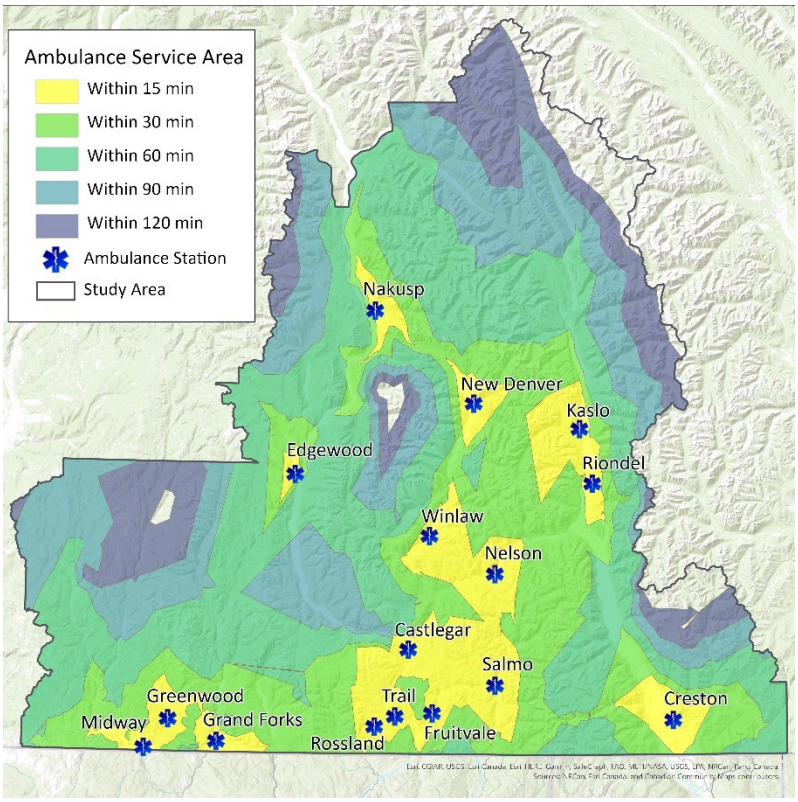

Figure 5: Service area distances to ambulance stations within the WKBRHD

EMERGENCY ROOM

As shown in **Figure 6,** service areas were calculated to determine the travel time to facilities with emergency room (ER) services.[16] All of the ERs are open 24-hours per day/seven days a week, except for the Castlegar and District Community Health Centre, which is open 12-hours per day/seven days a

[v] Service area travel times may vary depending on traffic, weather and road conditions, delays and construction, ferry dependency and availability, and discrepancies in the estimated speed limit.

[vi] Ambulatory service areas do not account for wait times, other first responder services, the true speeds that ambulances travel, the urgency of the request for assistance, road conditions, weather, etc.

week.[vii] These hours of operation result in limited availability for the surrounding area north-east of Castlegar within one-hour of the facility. Edgewood Health Centre also has some limited emergency hours, but they are too limited to be included in this service analysis (see **Table 5** for hours).

As of 2022, the total service area within one-hour of an ER in the RDCK is 17,306.9 km^2.[viii] Up to 95% of houses in the RDCK are within one-hour of an ER open 24 hours/seven days a week.[17]

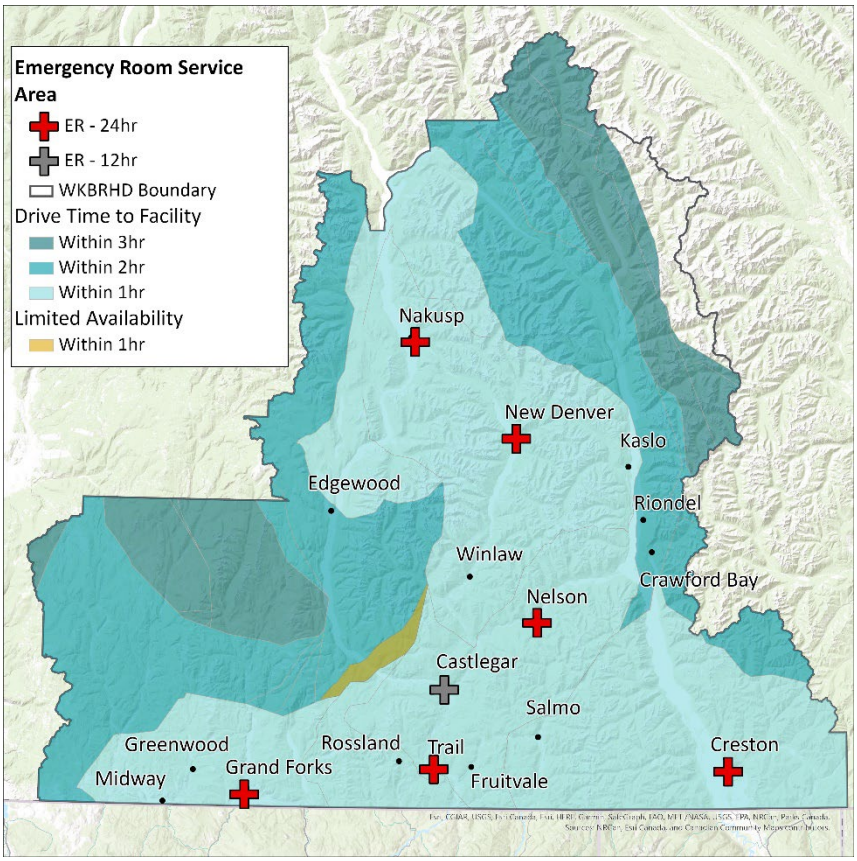

Figure 6: Service area distances to emergency rooms within the WKBRHD

DIAGNOSTIC AND SPECIALIZED TREATMENT FACILITIES

Service areas were calculated for facilities offering eight types of diagnostic and specialized treatments: pulmonary function, radiology (x-ray), ultrasound, nuclear medicine, computed tomography (CT), magnetic resonance imaging (MRI), electrocardiogram (ECG), and dialysis.[ix]

[vii] Hours of emergency service do change occasionally. For example, as of late July 2022, the emergency room at Slocan Community Health Centre has temporarily been reduced to 12 hours per day.

[viii] Previous results cannot be compared to current results because of more accurate methodologies applied in 2022.

[ix] These services were captured from IHA's website; however, some inconsistencies were noted, such as MRI and CT that were not indicated at Kootenay Boundary Regional Hospital according to the website while those services are known to be present and were therefore added. IHA was not able to provide an accurate list of services by facility. Therefore, caution should be used when referring to this list due to these inconsistencies.

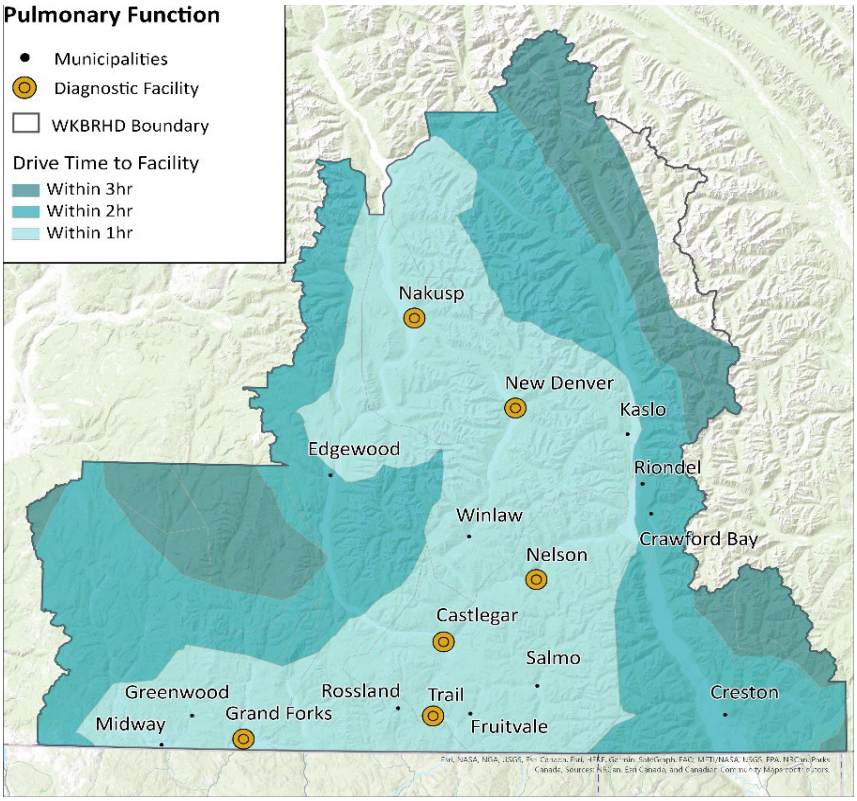

Figure 7: Service area distances to pulmonary function diagnostic facilities within the WKBRHD

PULMONARY FUNCTION

Figure 7 shows the service areas for the six facilities offering pulmonary diagnostics in the WKBRHD.[18] Edgewood and communities on the East Shore of Kootenay Lake are within the two-hour drive time to access facilities with these services.

RADIOLOGY (X-RAY)

As shown in **Figure 8**, service areas were calculated for the eight facilities offering radiology (X-Ray) services in the WKBRHD.[19]

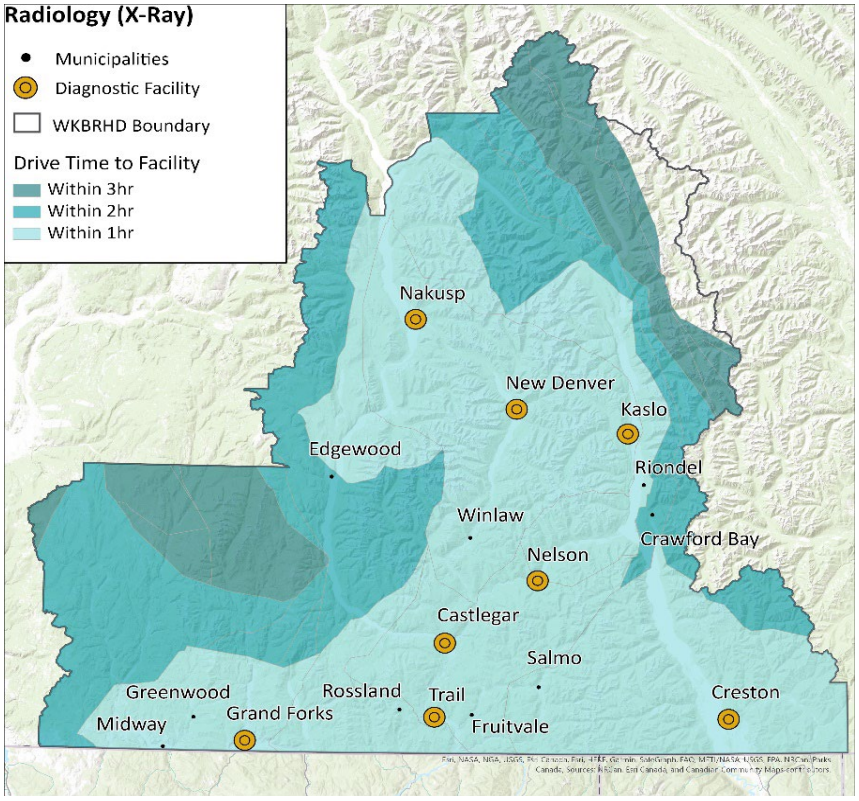

Figure 8: Service area distances to radiology (X-Ray) diagnostic facilities within the WKBRHD

ULTRASOUND

Figure 9 shows the service areas ultrasound (sonography) diagnostics in the WKBRHD.[20] There are five facilities offering this service. Communities in the northern and north-eastern parts of the study area have longer travel times to access these facilities.

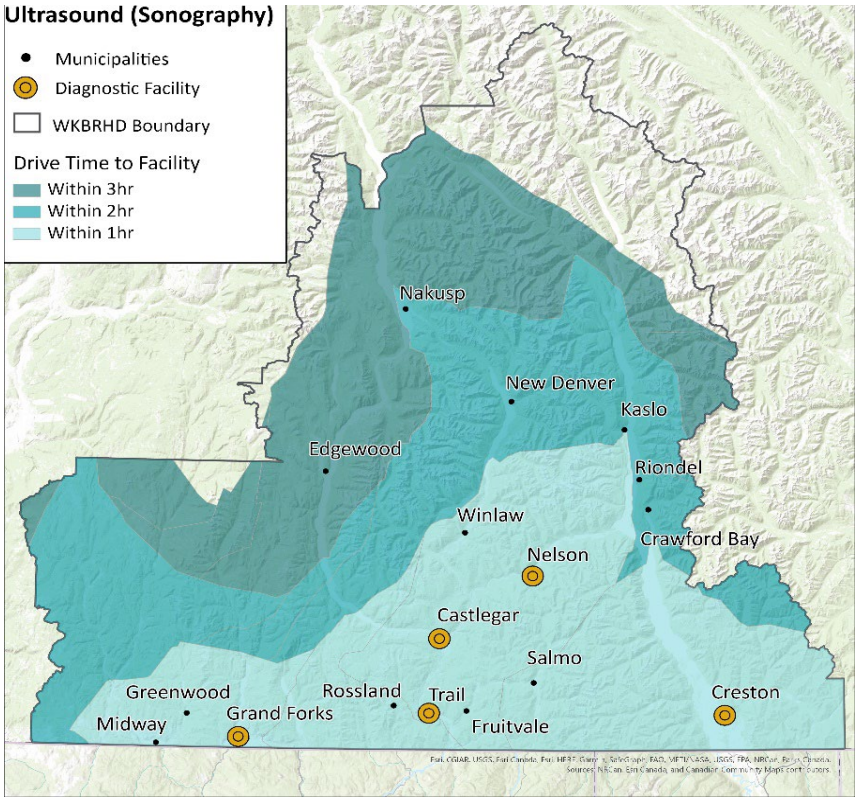

Figure 9: Service area distances to ultrasound (sonography) diagnostic facilities within the WKBRHD

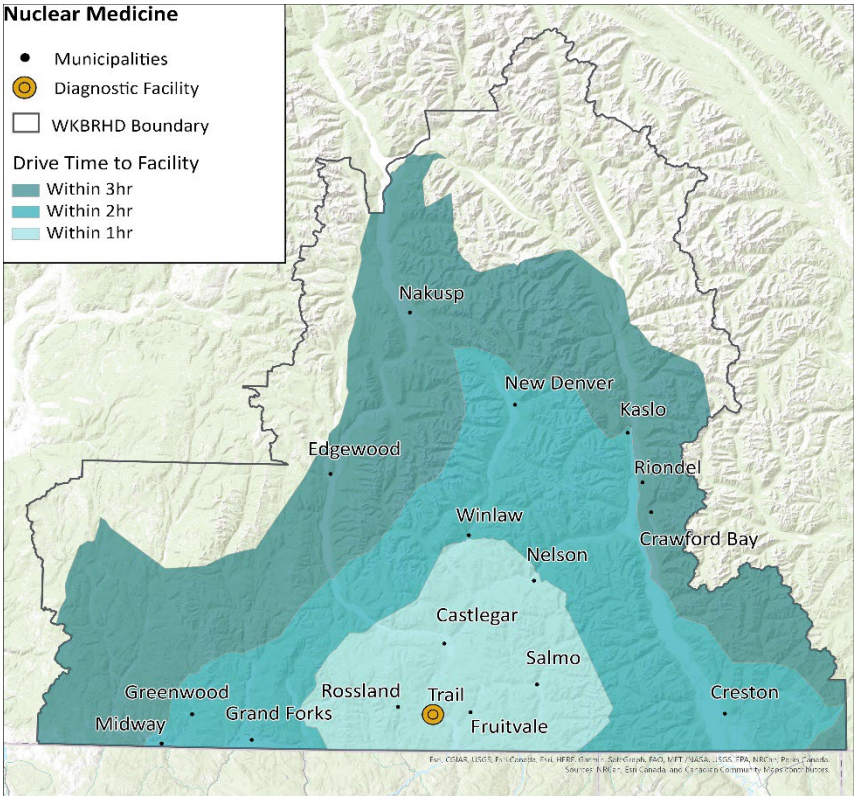

Figure 10: Service area distances to nuclear medicine diagnostic facilities within the WKBRHD

NUCLEAR MEDICINE

The Kootenay Boundary Regional Hospital in Trail is the only facility offering nuclear medicine diagnostics in the WKBRHD (**Figure 10**).[21]

COMPUTED TOMOGRAPHY (CT)

There are two facilities offering CT diagnostics in the WKBRHD, Kootenay Lake Hospital in Nelson and Kootenay Boundary Regional Hospital (**Figure 11**).

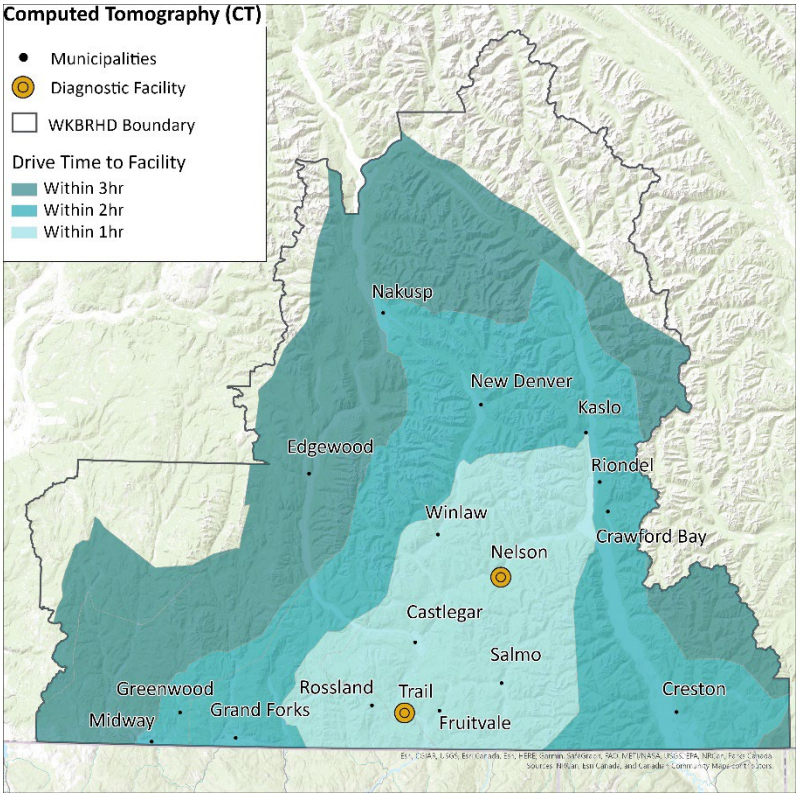

Figure 11: Service area distances to computed tomography (CT) diagnostic facilities in the WKBRHD

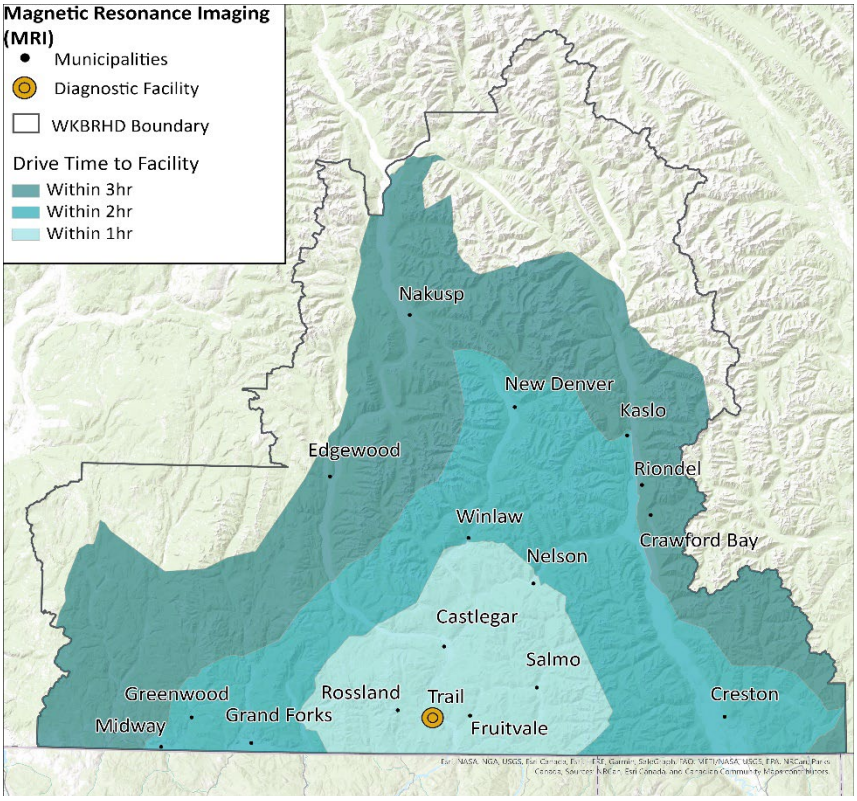

Figure 12: Service area distances to magnetic resonance imaging (MRI) diagnostic facilities in the WKBRHD

MAGNETIC RESONANCE IMAGING (MRI)

The Kootenay Boundary Regional Hospital is the only facility offering MRI diagnostics in the WKBRHD (**Figure 12**).

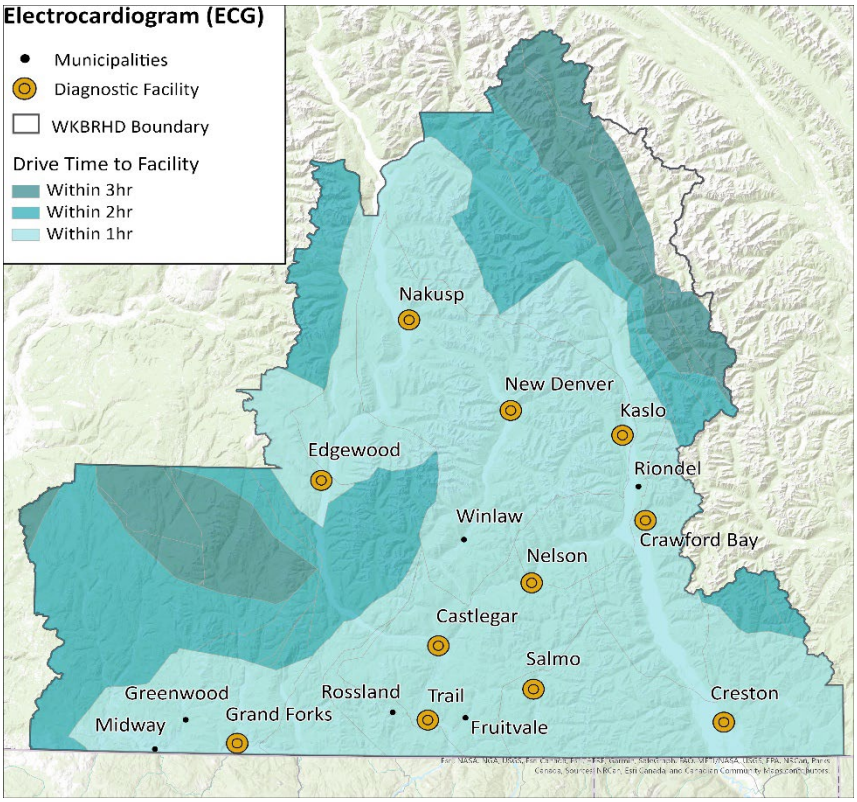

Figure 13: Service area distances to electrocardiogram (ECG) diagnostic facilities in the WKBRHD

ELECTROCARDIOGRAM (ECG)

As shown in **Figure 13**, there are 13 facilities offering ECG diagnostic services in the WKBRHD. Most of the region is within a one-hour drive of these services.

DIALYSIS

There are three facilities in the WKBRHD offering dialysis services: Boundary Hospital, Kootenay Boundary Regional Hospital, and Creston Valley Hospital & Health Centre (**Figure 14**). Communities in the northern parts of the region have longer drive times to access these facilities.

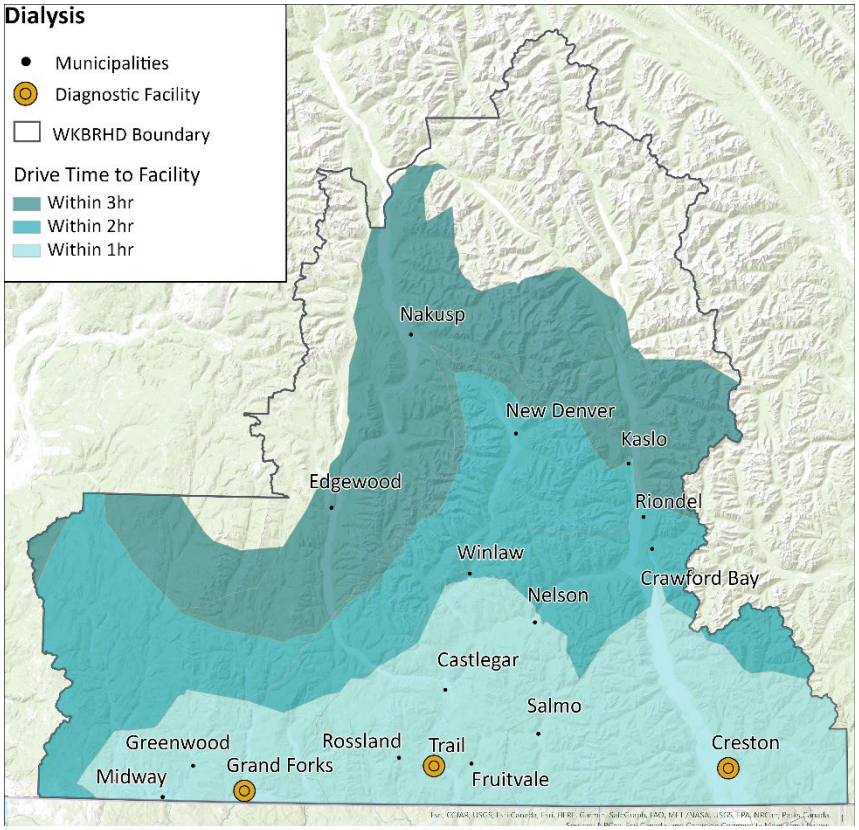

Figure 14: Service area distances to dialysis specialized treatments in the WKBRHD

Care Beds

HOSPITAL CARE BEDS

The total number of fully staffed hospital beds per 1000 people is examined at the regional, provincial, and national levels (**Figure 15**).[22, 9] This number includes long term care (LTC) beds located at hospitals. As of 2021, the WKBRHD has an average of 2.9 beds per 1000 people. This is a higher bed density than the IHA (2.8) and Okanagan (2.5).[x] It also exceeds the hospital bed-to-population ratio in BC (2.5) and Canada (2.5).

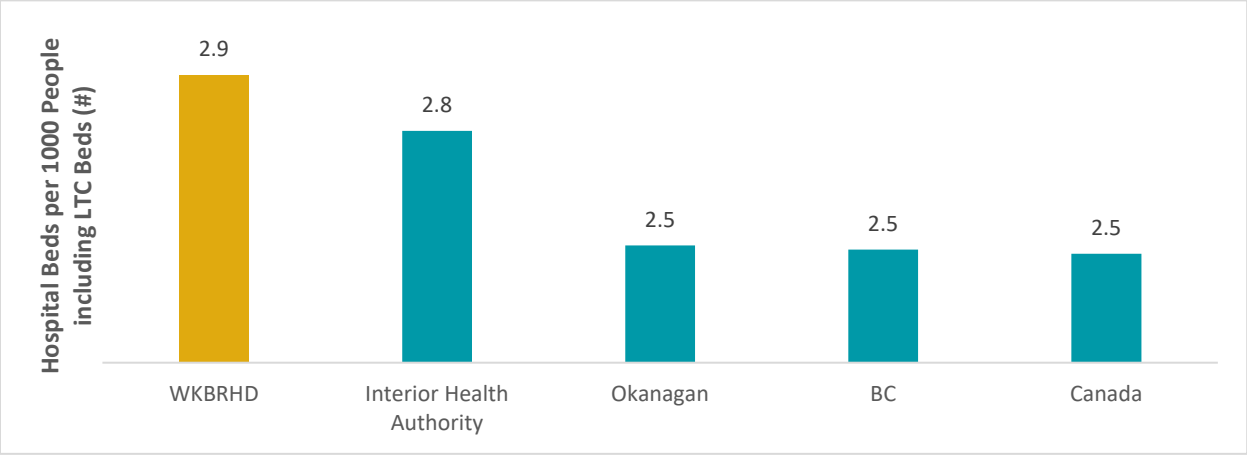

Figure 15: Number of hospital beds (including LTC beds) per 1000 people for Canada, BC, Interior Health Authority, Okanagan, and WKBRHD, 2021

The total number of fully staffed hospital beds per 1000 people, including LTC beds in the hospital, varies for each hospital[xi] in the WKBRHD **(Figure 16**).[9,22] In 2021, Boundary Hospital has the highest ratio, with 7.2 beds per 1000 people.

[x] The Okanagan is an aggregation of the following LHAs: Central Okanagan, Keremeos, Penticton, South Okanagan, Summerland, and Vernon.

[xi] The following assumptions were made regarding hospital catchment areas:

- Arrow Lakes Hospital serves the Arrow Lakes LHA
- Boundary Hospital serves the Grand Forks and Kettle Valley LHAs
- Creston Valley Hospital serves the Creston LHA
- Kootenay Boundary Regional Hospital serves the Castlegar and Trail LHAs
- Kootenay Lake Hospital serves the Kootenay Lake and Nelson LHAs

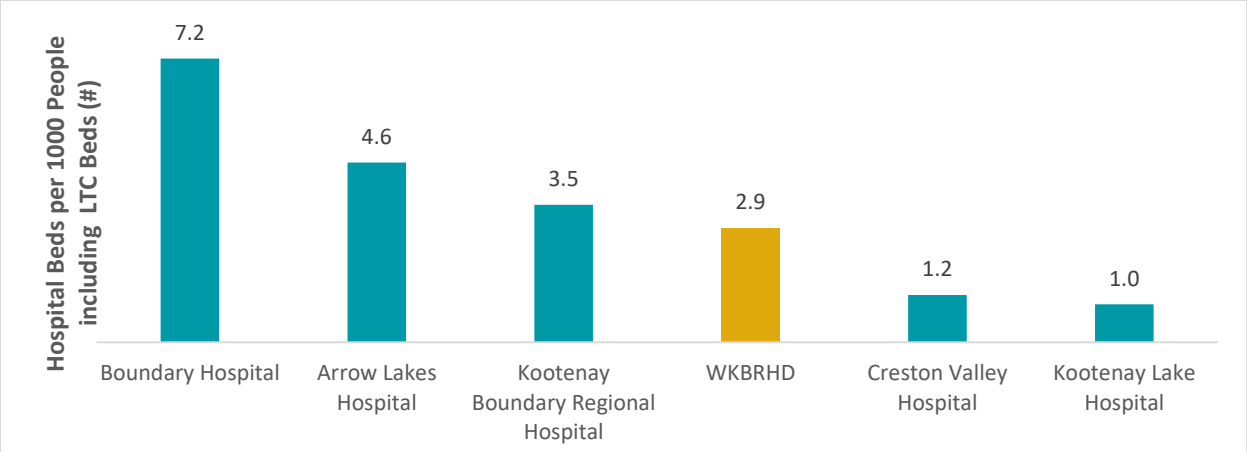

Figure 16: Number of hospital beds per 1000 people (including LTC beds) by hospital and WKBRHD, 2021

It is important to note that the IHA does not consider any of its long-term care beds located in its hospitals to be part of the hospital due to the way facilities are licensed.[23] When the count of hospital beds per 1000 people are re-analyzed without long-term care beds included, the results are quite different (**Figure 17**, **Figure 18**). For example, when long-term care beds located in hospitals are omitted from the hospital bed count, the number of hospital beds in the WKBRHD drops from 2.9 to 1.4 per 1000 people and the number of hospital beds at Boundary Hospital drops from 7.2 to 0.9 beds per 1000 people.

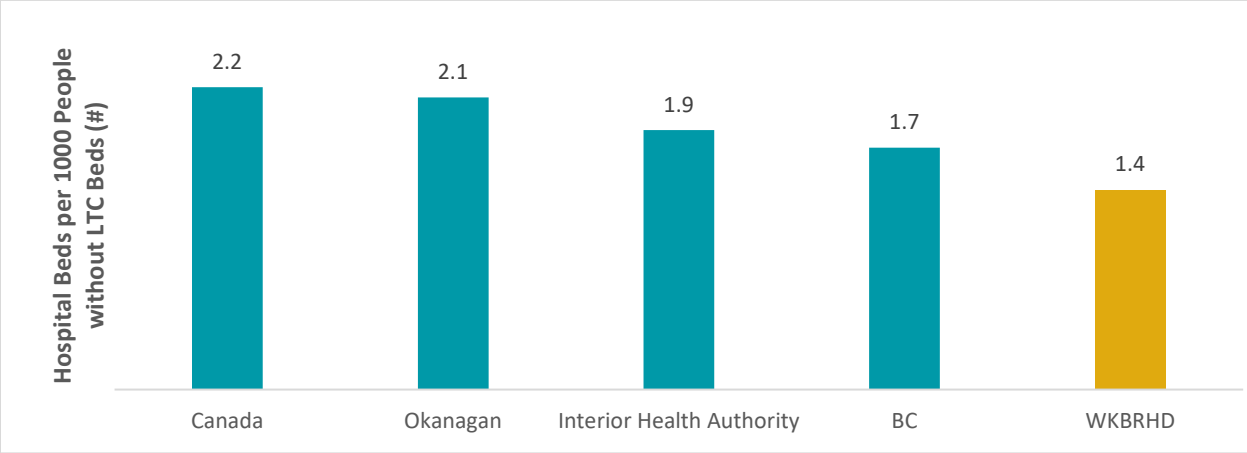

Figure 17: Number of hospital beds (without LTC beds) per 1000 people for Canada, BC, Interior Health Authority, Okanagan, and WKBRHD, 2021

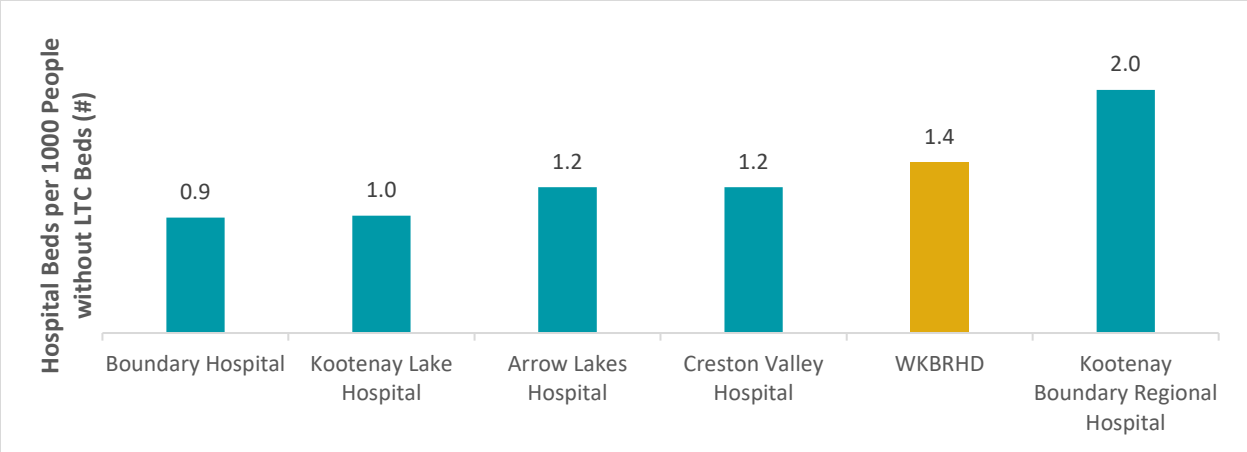

Figure 18: Number of hospital beds per 1000 people (without LTC beds) by hospital and WKBRHD, 2021

See **Table 7** for the hospital bed count by care setting for hospitals within the WKBRHD in 2021.[23] With a total of 124 beds, the Kootenay Boundary Regional Hospital has the highest number of beds across all types of care-settings (excluding rehabilitation). The number of hospital beds by care setting and hospital have remained the same since last examined in 2015, except for the 79 long-term care beds that have been added at the Boundary Hospital.[1]

Table 7: Number of hospital beds by care setting for hospitals in the WKBRHD, including WKBRHD total, 2021

Hospital	Intensive Care	Obstetrics	Pediatrics	Mental Health	Rehabil-itation	Long-Term Care	Other Acute Care	Total
Arrow Lakes Hospital	-	-	-	-	-	16	6	22
Boundary Hospital	-	-	-	-	-	79	12	91
Creston Valley Hospital	-	-	-	-	-	-	16	16
Kootenay Boundary Regional Hospital	6	3	4	12	-	49	50	124
Kootenay Lake Hospital	-	-	-	-	-	-	30	30
WKBRHD	**6**	**3**	**4**	**12**	**0**	**144**	**114**	**283**

LONG-TERM CARE BEDS

When individuals are no longer able to reside at home, long-term care facilities can help. "Long-term care is for adults with complex health care needs requiring 24-hour professional care due to physical disability, or mental or behavioural conditions, including brain injuries or dementia."[24] The number of long-term care beds within long-term care facilities in the WKBRHD is examined using available data from 2002 to 2021 (**Figure 19**,**Table 8**).[1,25]

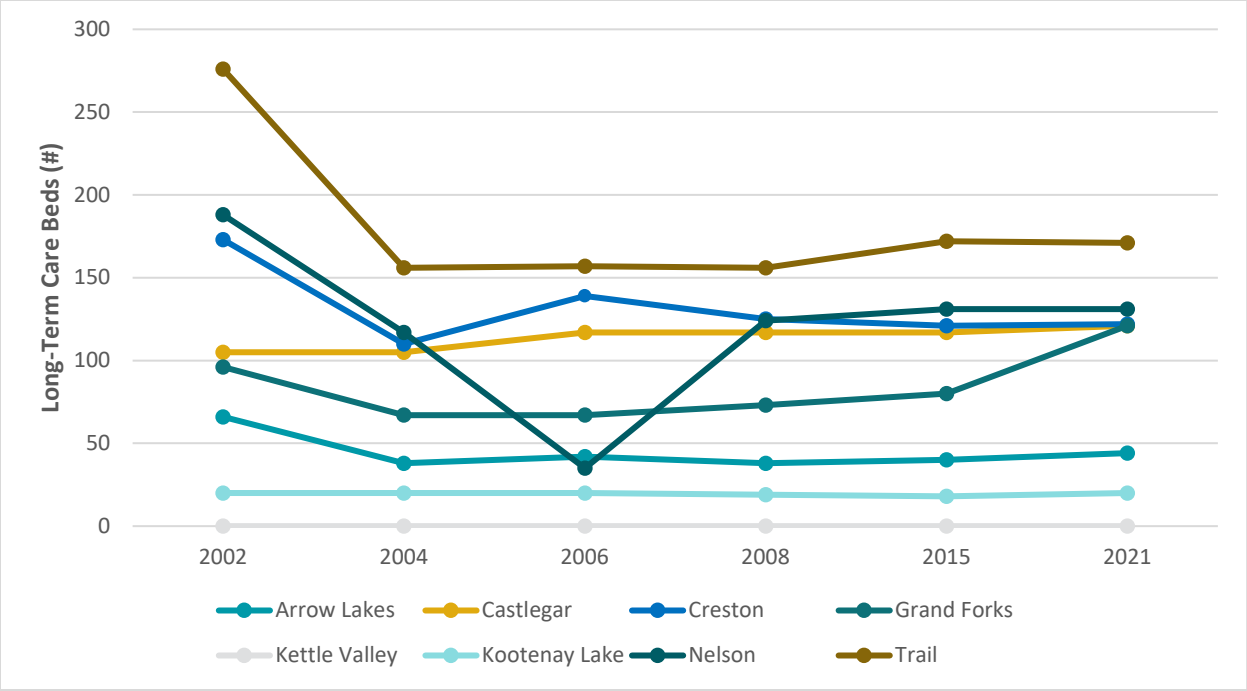

Figure 19: Number of long-term care beds by Local Health Area, 2002, 2004, 2006, 2008, 2015, and 2021

Table 8: Number of long-term care beds by Local Health Area and change over time, 2002, 2004, 2006, 2008, 2015, 2021

Local Health Area	# Long-term Care Beds						Difference 2015-2021	Difference 2002-2021	Six-Year Change (2015-2021)	19-Year Change (2002-2021)
	2002	2004	2006	2008	2015	2021				
Arrow Lakes	66	38	42	38	40	44	4	-22	10.0%	-33.3%
Castlegar	105	105	117	117	117	121	4	16	3.4%	15.2%
Creston	173	110	139	125	121	122	1	-51	0.8%	-29.5%
Grand Forks	96	67	67	73	80	121	41	25	51.3%	26.0%
Kettle Valley	0	0	0	0	0	0	N/A	N/A	N/A	N/A
Kootenay Lake	20	20	20	19	18	20	2	0	11.1%	0.0%
Nelson	188	117	35	124	131	131	0	-57	0.0%	-30.3%
Trail	276	156	157	156	172	171	-1	-105	-0.6%	-38.0%
WKBRHD	**924**	**613**	**577**	**652**	**679**	**730**	**51**	**-194**	**7.5%**	**-21.0%**

Between 2015 and 2021, the number of long-term care beds across the WKBRHD increased by 51 beds. The beds increased in all LHAs except for Kettle Valley (where there are no long-term care facilities) and Trail (-1 bed). The highest increase in that five-year period occurred in the Grand Forks LHA (51.3%), followed by Kootenay Lake (11.1%), Arrow Lakes (10%), Castlegar (3.4%), and Creston (0.8%). The number of long-term care beds in the Nelson LHA did not change during that time. In July 2020, the Province of British Columbia announced 75 new long-term care beds for Nelson.[26] The facility will be built at the site of the former Mount St. Francis hospital and is anticipated to be completed in September 2024. The facility is being developed by Columbia Basin Trust and Golden Life Management, and will be leased and operated by IHA upon completion. [27]

Between 2002 and 2021, the number of long-term care beds in the WKBRHD decreased by 194 beds (-21%). During this 19-year period, the number of long-term care beds increased in the Grand Forks LHA (26%) and Castlegar LHA (15.2%) (**Figure 20**).[1, 25] There was no difference in the Kootenay Lake LHA. During the same time period, decreases in the number of long-term care beds occurred in the following LHAs: Trail (-38%), Arrow Lakes (-33.3%), Nelson (-30.3%), and Creston (-29.5%).

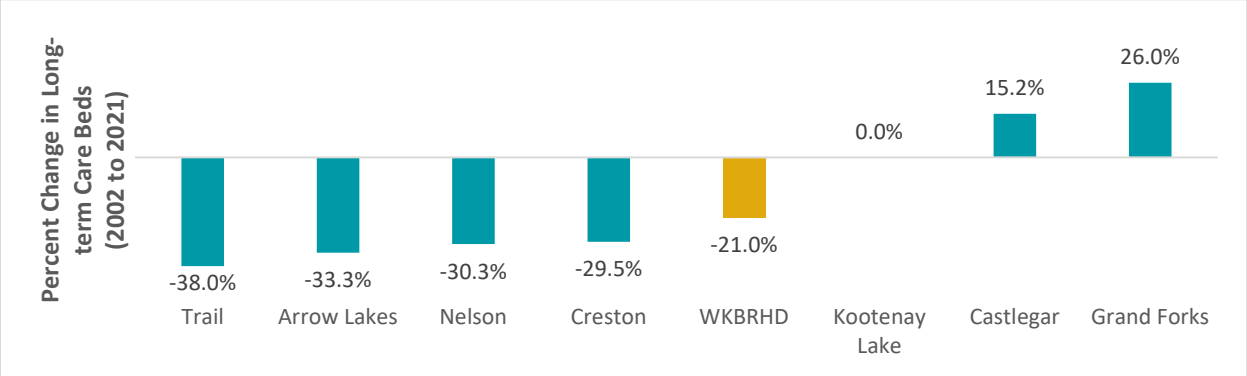

Figure 20: Change in residential care beds by LHA and WKBRHD, 2002 to 2021

Figure 21 shows the number of long-term care beds per 1,000 people by population aged 65-years old and older and total population.[9, 25] The Castlegar LHA has the largest number of beds, at 39.6 beds per 1,000 people aged 65-years old and older. The Kootenay Lake LHA has the lowest number of beds per 1,000 people aged 65-years old and older at 15.5 beds. Overall, the average for the WKBRHD is 29.3 beds per 1,000 people aged 65-years old and older. When examining the highest number of beds per total population, Grand Forks LHA has the most long-term care beds, at 13.4 beds per 1,000 people.

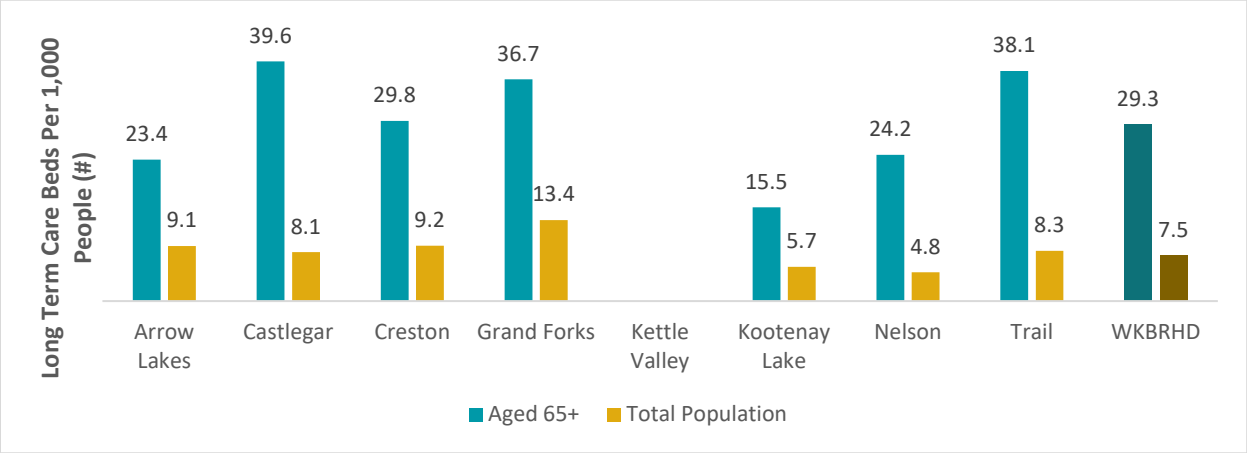

Figure 21: Long-term care beds per 1000 people (aged 65-years old and older and total population) by LHA and WKBRHD, 2021

A 2011 study conducted by the Canadian Institute for Health and Information found that 25% of seniors aged 85-years old and older have "*a moderate (15%), severe (5%) or total (5%) limitation in functional capacity*."[28] **Figure 22** shows the number of seniors aged 85-years and older who may have limited

functional capacity and require care as compared to the number of long-term care beds.[xii] Of all the LHAs, Kettle Valley is the only area that does not have a long-term care facility to service the estimated population of persons aged 85-years old and older who may require support. However, there may be beds available in the Grand Forks LHA to cover that need. In the Grand Forks LHA, there are an estimated 84 seniors with limited functional capacity compared to the 121 beds. For the other LHAs, the estimated number of seniors requiring care is the same or less than the number of long-term care beds presently accounted for in the WKBRHD. While this specific analysis only looks at those aged 85-years old and older needing care and does not consider those needing care under that age, it provides one lens to understand the possible need versus availability of long-term care beds.

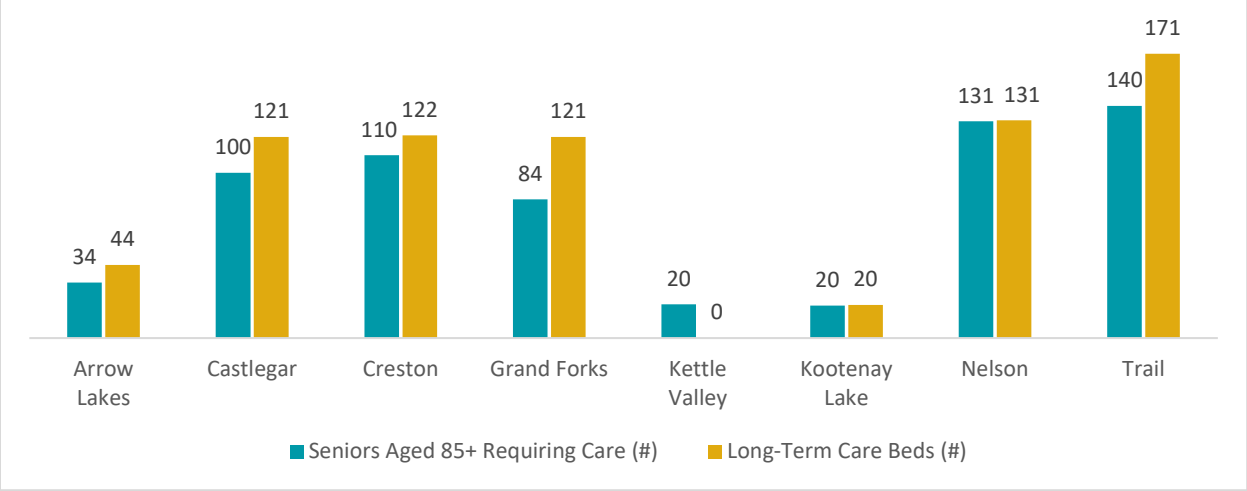

Figure 22: Estimated population of persons aged 85-years and older requiring long-term care versus the number of long-term care beds by Local Health Area, 2021

Transportation

Transportation options for those without a personal vehicle who require transportation to health services is explored.

Part of the study area is serviced by BC Transit West Kootenay Transit System.[29] **Figure 23** shows the main routes in the West Kootenay Transit System that link some of the communities with health facilities. Other parts of the study area are served by smaller BC Transit systems including the Boundary Transit System[30] and Creston Valley Transit system.[31] There are no BC Transit options between the Boundary region and the Kootenay Boundary Regional Hospital in Trail or from the Creston area to the regional hospital in Trail. However, Creston does have a BC Transit route that connects to Cranbrook.

See **Table 9** for a summary of regional transit routes and the windows available for health service appointments.[xiii] More details about these routes are provided below.

[xii] This analysis does not consider persons under the age of 85 requiring care and assumes 25% of seniors aged 85-years and older require long-term care beds in the WKBRHD, as per the CIHI study referenced.
[xiii] It is assumed that persons accessing health services require return transit fare. Appointment windows are calculated by taking the difference in time between the first arrival and the last departure.

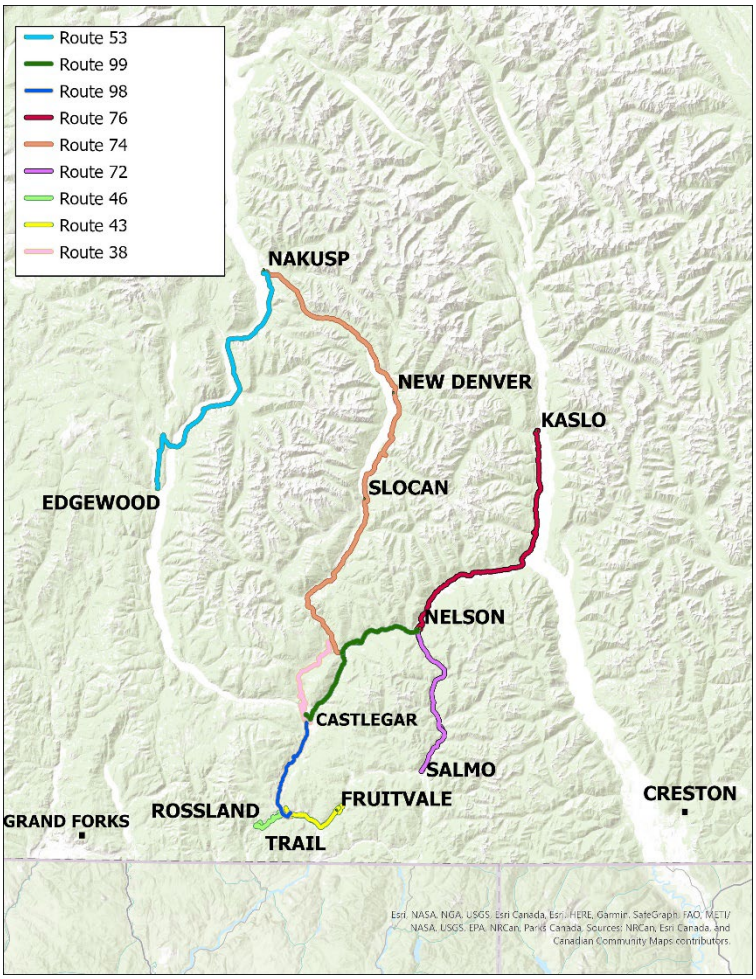

Figure 23: BC Transit West Kootenay Transit system main routes

Table 9: BC Transit West Kootenay Transit system routes, service frequencies, and health service appointment windows

Route #	Route Name	Appointment Location	Appointment Window	Daily Frequency	Service Days	First Departure	Last Departure (return trip)
53	**Edgewood - Nakusp**	Nakusp	6 hrs	2x	Friday Only	9:25 am	3:20 pm
74	**Nakusp - Nelson**	Nelson	6 hrs	1x	Tues, Thur	8:05 am	4:05 pm
76	**Kaslo - Nelson**	Nelson	< 15 mins	1x	Tuesday Only	8:30 am	10:00 am
10	**Balfour - Nelson**	Nelson	Flexible	9x	Weekdays	6:58 am	8:36 pm
1	**Uphill Loop (Nelson)**	Nelson	Flexible	25x	Weekdays	6:45 am	11:18 pm
72	**Salmo - Nelson**	Nelson	3 hrs / 8 hrs	3x	Tues, Thur, Fri	8:05 am	6:45 pm
99	**Castlegar - Nelson**	Nelson	Flexible	15x	Weekdays	4:45 am	5:46 pm
38	**Playmor Loop (Castlegar)**	Castlegar	5 hrs	2x	Tues, Fri	8:50 am	1:55 pm
98	**Castlegar - Trail**	Trail	Flexible	7x	Weekdays	6:58 am	7:51 pm
43	**Fruitvale - Trail**	Trail	Flexible	10x	Weekdays	6:08 am	8:12 pm

WEST BOUNDARY TO GRAND FORKS

While there are no BC Transit routes from the Boundary Transit System to the regional hospital in Trail, there are two BC Transit options to link communities in the west Boundary to Grand Forks.[30] This includes one bus route that leaves Greenwood on Friday mornings at 9:10 a.m., then leaves Grand Forks for the return trip at 1:00 p.m. This route provides one three-hour window per week for medical appointments in Grand Forks. The other option is to use the Health Connections route that leaves Rock Creek at 8:30 a.m. on Tuesdays, then leaves Grand Forks at 1:00 p.m. for the return trip. This provides a second three-hour window per week for medical appointments in Grand Forks.

ARROW LAKES AND SLOCAN VALLEY TO NELSON

Figure 24 and **Figure 25** show two main routes that support access to health services in the Arrow Lakes and Slocan Valley regions and to Nelson. It is important to note that trips using BC Transit are very limited each week. The route between Edgewood and Nakusp only travels one day per week, but it does provide an appointment window of approximately six hours in Nakusp.

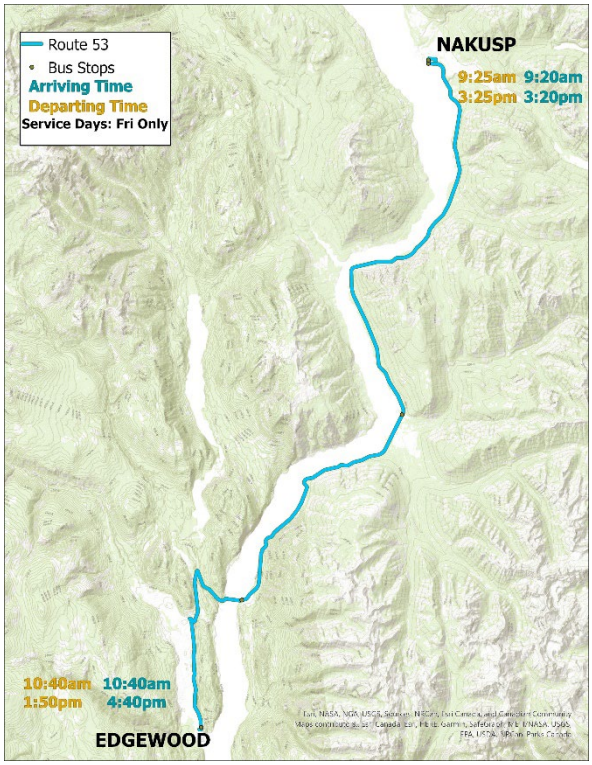

Figure 24: BC Transit route (#53) between Edgewood and Nakusp

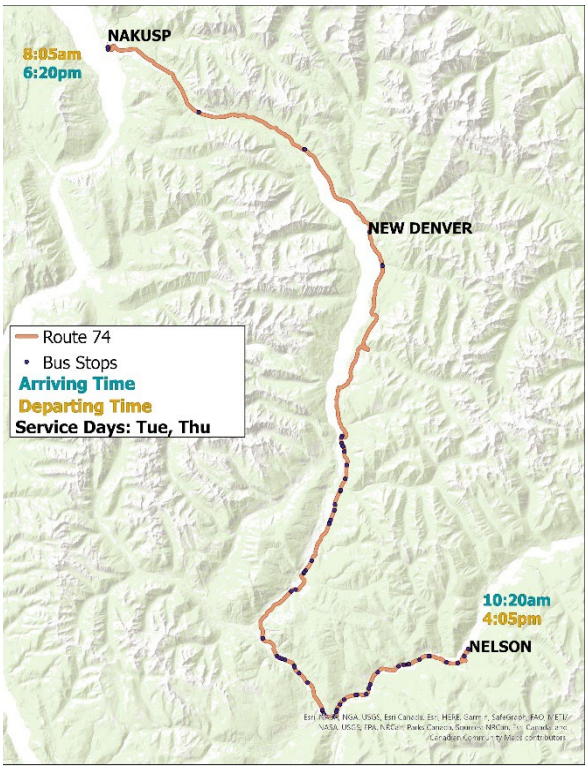

Figure 25: BC Transit route (#74) between Nakusp and Nelson

Route 74: Nakusp-Nelson travels two days per week and provides an appointment window of approximately six hours in Nelson.[32] This is a Health Connections route that offers service to/from Kootenay Lake Hospital by request. Alternatively, passengers can make two connections (via Route 2: Fairview to Ward and Baker, followed by Route 1: Uphill Loop to the hospital) and have a window of just under 3.5 hours for health service appointments.

NORTH KOOTENAY LAKE AND EAST SHORE TO NELSON

Figure 27 and **Figure 28** show the main routes to access health services between North Kootenay Lake, the East Shore of Kootenay Lake, and Nelson.

BC Transit provides limited service between North Kootenay Lake, Kaslo, and Nelson.

Service is available between North Kootenay Lake communities and Kaslo on Thursdays (via Route 58: Argenta Loop), with a 12-hour window to access health services in Kaslo.[33] Passengers can also access services in Nelson on Thursdays by transferring buses twice (Kaslo to Balfour via Route 76, and Balfour to Nelson via Route 10), but there is no return fare available that day.

Direct service from Kaslo to Kootenay Lake Hospital is available on Tuesday mornings (via Route 76).[34] By transferring routes, there are multiple options for passengers to travel between Kaslo and Nelson on Tuesdays and Wednesdays. There is also a Health Connections route between Kaslo and Kootenay Lake Hospital available upon request.[35]

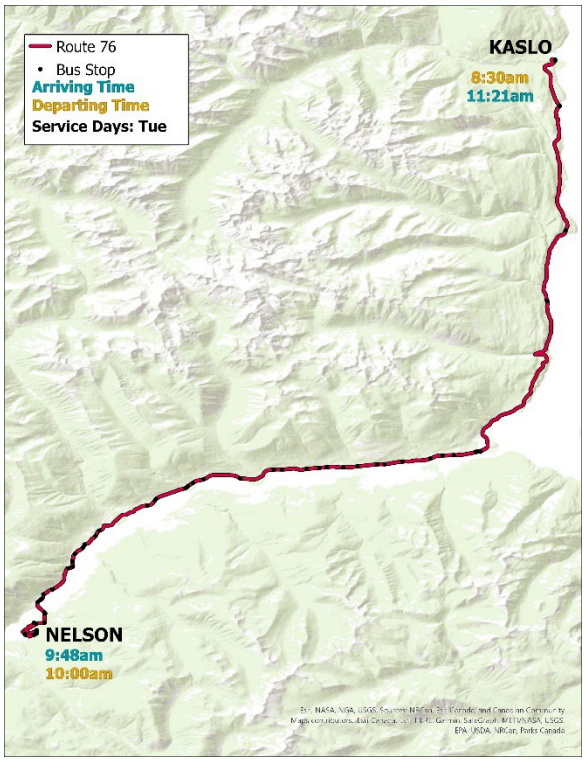

Figure 26: BC Transit route (#76) details for direct route between Kaslo and Nelson

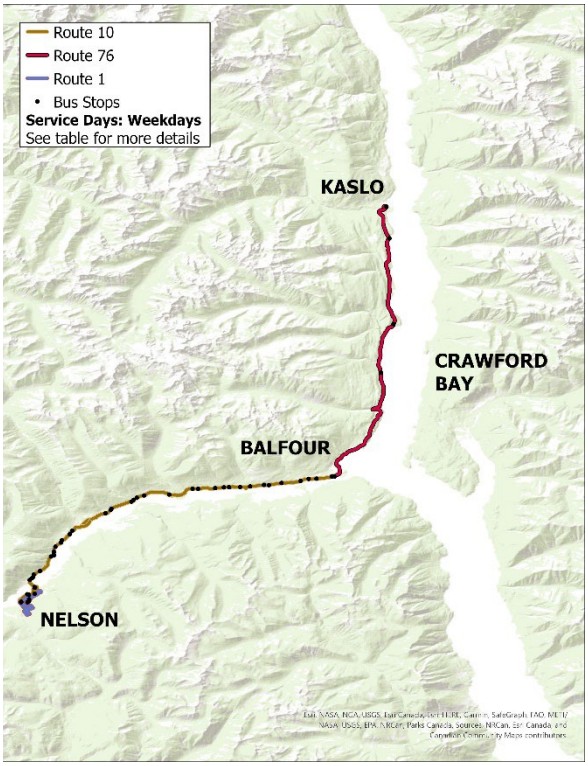

Figure 27: BC Transit route details for route with connections between Kaslo and Nelson

On a daily basis, passengers from the East Shore can ride the free Kootenay Lake ferry,[36] followed by taking the BC Transit bus to Nelson (via Route 10 to downtown and transferring to Route 1: Uphill Loop to get direct service to Kootenay Lake Hospital).[37, 38] This offers a nearly 13-hour window to access health services in Nelson, with the last bus arriving in Balfour at 9:30 p.m., in time for the 9:40 p.m. sailing of the ferry back to Crawford Bay.

The East Shore Transportation Society offers service upon request. Passengers can arrange transportation by emailing estsbus@gmail.com or calling 250-551-8800.[39]

BC Transit also offers the handyDART transit service for persons with disabilities.[40] Passengers can register for service in Nelson, available weekdays from 7:30 a.m. to 4:00 p.m.

SALMO TO NELSON

As show in **Figure 28**, BC Transit offers service from Salmo and Ymir to Nelson on Tuesdays, Thursdays, and Fridays.[41] This is a Health Connections route with between three and eight-hours available for health service appointments in Nelson.[42] Passengers must transfer buses (via Route 1: Uphill Loop) to get to Kootenay Lake Hospital.[38]

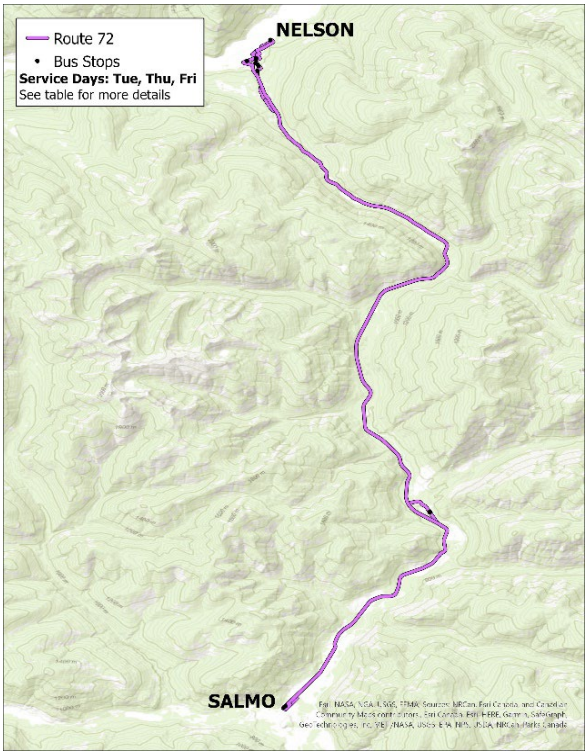

Figure 28: BC Transit route (#72) details for route with connections between Nelson and Salmo

Figure 29: BC Transit route (#99) details between Castlegar and Nelson

CASTLEGAR TO NELSON

Figure 29 shows the transit route between Castlegar and Nelson.[43] This route, the Kootenay Connector, is available Monday to Saturday, and departs from the Selkirk College campus. There is a transit exchange at the Castlegar and District Community Complex, which connects several routes from Castlegar and surrounding area (e.g., Robson, Ootischenia) to the stop at Selkirk College. Passengers from Pass Creek and Crescent Valley can also connect at the Playmor Junction Park and Ride.[44] Connecting to Route 1: Uphill is needed to get to Kootenay Lake Hospital.[38] On the last return ride of the day, there is a one-hour delay at the Ward and Baker stop before the bus leaves Nelson for Castlegar.

Excluding this delay, there is a window of eight-hours to access health service appointments between the first arrival in Nelson and the last departure for Castlegar.

MULTIPLE COMMUNITIES TO TRAIL

Figure 30 shows the main routes to access health services in Trail from Castlegar, Rossland, and Fruitvale.

Buses travel between Castlegar and Trail on weekdays (via Route 98: Columbia Connector).[45] Passengers can use the transit exchange at Cedar Street and Spokane Street to connect to Route 44: Sunningdale/Hospital Loop, which stops at the Kootenay Boundary Regional Hospital.[46] This option offers a window of just under eight-hours to access health services at the regional hospital. There is also one Columbia Connector bus that departs from the hospital at 3:20 p.m. and travels directly to Castlegar. BC Transit also offers the handyDART transit service for persons with disabilities.[40] Passengers can register for service in the Columbia Zone (Castlegar and Trail), available weekdays from 8:00 a.m. to 4:00 p.m.

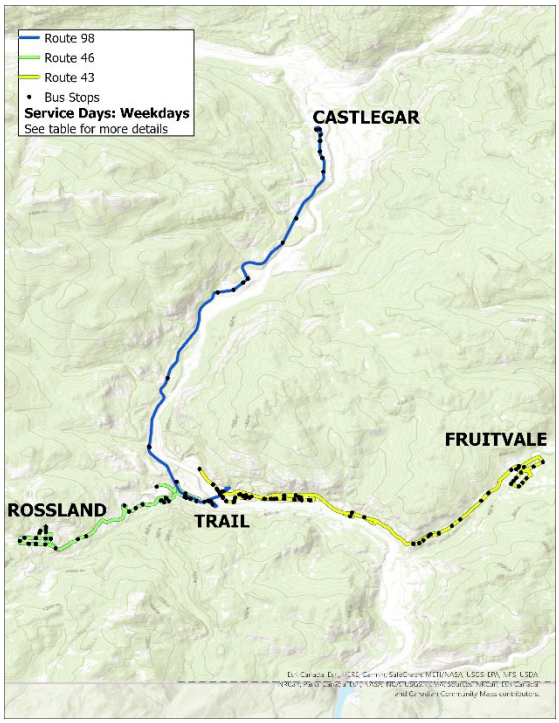

Figure 30: BC Transit route details between Castlegar, Fruitvale, and Rossland to Trail

Transit is available between Rossland and Trail (via Route 46: Rossland) on weekdays.[47] There is a 1.5 hour wait at the Cedar and Spokane transit exchange before passengers can transfer to the Sunningdale/Hospital Loop.[46] Even taking that delay into account, this option offers a window of over eight-hours to access health services at the regional hospital.

There is weekday transit service available between Fruitvale, Montrose, and Trail.[48] Passengers travelling to Trail (via Route 43: Glenmerry/Fruitvale) can use the transit exchange at Cedar and Spokane to connect to the Sunningdale/Hospital Loop, which stops at the regional hospital.[46] This option provides a window of over 12-hours to access health services at the hospital.

In a recent announcement, Nelson CARES has launched a medical services bus service between Nelson and Trail. This service is built around the Kootenay Boundary Regional Hospital's dialysis schedule. It leaves Nelson at 6:30 a.m., with the return trip leaving Trail at 1:00 p.m. The route takes place on Tuesday, Thursday, and Saturdays for a fee of $35. The bus picks up passengers at their home and be arranged by calling 778-426-5247.[49]

Multiple transit connections are needed to get to the Kootenay Boundary Regional Hospital from afar. For example, passengers from Kaslo can access health services in Trail on Tuesdays, if they depart from Kaslo at 8:30 a.m. and catch four connections to get to the hospital for 11:30 a.m. There is a window of just over 2.5 hours to access health services, before the bus departs from the hospital at 2:24 p.m. After catching another five connections, arrival in Kaslo occurs at 6:35 p.m.

Conversely, transit riders from Nakusp would be unable to access services at the regional hospital in Trail. In total, there are 11 connections required to get to the hospital and even the earliest arrival at the hospital (2:12 p.m.) would prevent passengers from catching the necessary return fare.

Conclusion

According to the 2021 Census the population of the WKBRHD is getting older. When examined by five-year age cohorts, the largest percentage of the total population is aged 60- to 64-years (9.1%) and 65- to 69-years (9.0%). Over the five-year period between the 2016 and 2021 Census years, the largest population increases were seen in the 70- to 74-years age cohort (+34.1%) and the 75- to 79-years age cohort (+22.2%). Overall, persons aged 65-years old and older account for 26.7% of the total population of the WKBRHD in 2021. This is a 17.4% increase between 2016 and 2021.

In 2015, the population aged 65-years old and older comprised 18% of the total population. This is projected to increase to 28% of the total population by 2025 and 30% by 2030, before leveling off for the ensuing decade. This trend is predicted to be similar at the LHA level. In 2040, the cohort aged 65-years old and older is projected to account for 54% of the total population of the Kettle Valley LHA and 51% of the total population of the Kootenay Lake LHA.

These demographic changes may result in differing health service needs across the WKBRHD. Currently, some diagnostic services and specialized treatments are only available in select communities. The Kootenay Boundary Regional Hospital in Trail is the only facility in the region offering nuclear medicine diagnostic services and MRI. CT scans can only be completed at Kootenay Lake Hospital in Nelson and in Trail. Dialysis is only available in Creston, Grand Forks, and Trail. As the population of the region changes, so too will the service needs.

The availability of hospital and long-term care beds varies across the region. As of 2021, there are 1.4 hospital beds per 1000 people (excluding long-term care beds) in the WKBRHD, but that number decreases when examined by hospital. The Boundary Hospital has the lowest number of hospital beds per 1000 people (excluding long-term care beds), at 0.9 beds. Between 2015 and 2021, the total number of long-term care beds in the WKBRHD increased by 51 beds (+7.5%). The 75 new long-term care beds in Nelson will be a welcome addition for long-term care in the WKBRHD.

There are some limitations to using transit for transportation to health services in the WKBRHD. The region's primary public transit provider is BC Transit's West Kootenay Transit System, but there are no connections to the Boundary Transit System (i.e., Grand Forks) or the Creston Valley Transit System (i.e., Creston). While most of the communities served by the West Kootenay Transit System have transit options to access health services, some areas have limited service (e.g., Arrow Lakes, Slocan Valley, North Shore of Kootenay Lake). There are handyDART services available for persons with disabilities, and three Health Connections routes across the region. In one unique example, communities on the East Shore of Kootenay Lake can utilize transportation services provided by the East Shore Transportation Society.

This report provided an overview of population demographics and health services in the WKBHRD. This information can be used to support evidence-based decision-making when evaluating the infrastructure in place to accommodate the region's changing population demographics.

References

[1] Woodbeck, K., & Parfitt, I. (2015). *Aging populations and health services in the West Kootenay Boundary Regional Hospital District.* Selkirk College Geospatial Research Centre. Selkirk College.
[2] Statistics Canada. (2022). *2021 Census program – Census of Population*. https://www12.statcan.gc.ca/census-recensement/index-eng.cfm
[3] ESRI. (n.d.). *Network analysis coverage*. https://doc.arcgis.com/en/arcgis-online/reference/network-coverage.htm
[4] Community Map of Canada. (2022). *Topographic / topographie* [Data set]. https://www.arcgis.com/home/item.html?id=98652eb8458a464fa95feb9bd812b29a
[5] BC Stats. (2016). *Current census subdivision boundaries* [Data set]. BC Data Catalogue. https://catalogue.data.gov.bc.ca/dataset/current-census-subdivision-boundaries
[6] BC Ministry of Health. (2019). *Local Health Area boundaries* [Data set]. BC Data Catalogue. https://catalogue.data.gov.bc.ca/dataset/local-health-area-boundaries
[7] GeoBC. (2003). *BC major cities points 1:2,000,000 (digital baseline mapping)* [Data set]. BC Data Catalogue. https://catalogue.data.gov.bc.ca/dataset/bc-major-cities-points-1-2-000-000-digital-baseline-mapping
[8] Statistics Canada. (2019). *2016 Census Profile*. https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/index.cfm?Lang=E
[9] BC Stats. (2022). *Population estimates & projections for British Columbia*. https://www2.gov.bc.ca/gov/content/data/statistics/people-population-community/population/population-projections
[10] Interior Health Authority. (2022). *Find a location.* https://www.interiorhealth.ca/locations
[11] Interior Health Authority. (2022). *Slocan Community Health Centre emergency department resuming 24-hour service*. https://www.interiorhealth.ca/media/slocan-community-health-centre-emergency-department-resuming-24-hour-service
[12] ImmunizeBC. (2020). *Kiro Wellness Centre*. https://immunizebc.ca/public-health-unit/kiro-wellness-centre
[13] Interior Health Authority. (2022). *Find a service.* https://www.interiorhealth.ca/services
[14] Browne, A. (2005). *Issues affecting access to health services in northern, rural and remote regions of Canada*. University of Northern British Columbia. https://www2.unbc.ca/sites/default/files/sections/northern-studies/issuesaffectingaccesstohealthservicesinnorthern.pdf
[15] GeoBC. (2016). *First responders* [Data set]. BC Data Catalogue. https://catalogue.data.gov.bc.ca/dataset/first-responders
[16] Interior Health Authority. (2022). *Emergency health services*. https://www.interiorhealth.ca/services/emergency-health-services
[17] Regional District of Central Kootenay. (2022). *Civic addresses* [Custom data set].
[18] Interior Health Authority. (2022). *Pulmonary diagnostics*. https://www.interiorhealth.ca/services/pulmonary-diagnostics
[19] Interior Health Authority. (2022). *Radiology (X-ray)*. https://www.interiorhealth.ca/services/radiology
[20] Interior Health Authority. (2022). *Ultrasound (sonography).* https://www.interiorhealth.ca/services/ultrasound-sonography
[21] Interior Health Authority. (2022). *Nuclear medicine*. https://www.interiorhealth.ca/services/nuclear-medicine
[22] Canadian Institute for Health Information. (2022). *Number of hospital beds staffed and in operation: Breakdown by care setting, 2020–2021* [Data set]. https://www.cihi.ca/en/access-data-and-reports/data-tables
[23] Buhler, H. (2022, June 1). *Long-term care beds* [personal communication].
[24] Interior Health. (n.d.). *Long-term care*. https://www.interiorhealth.ca/health-and-wellness/child-community-and-home-care/long-term-care
[25] Office of the Seniors Advocate of British Columbia. (2021). *Long term care directory – information and reports*. https://www.seniorsadvocatebc.ca/long-term-care-directory/
[26] BC Ministry of Health. (2020). *Interior getting 495 new long-term care beds.* BC Gov News. https://archive.news.gov.bc.ca/releases/news_releases_2017-2021/2020HLTH0220-001270.htm
[27] BC Ministry of Health. (2022). *Construction starts on 75 new long-term care beds in Nelson*. BC Gov News. https://news.gov.bc.ca/releases/2022HLTH0166-001119

[28] Canadian Institute for Health Information. (2011). *Health care in Canada, 2011: A focus on seniors and aging*. https://www.homecareontario.ca/docs/default-source/publications-mo/hcic_2011_seniors_report_en.pdf
[29] BC Transit. (2022). *Welcome to the West Kootenay transit system*. https://www.bctransit.com/west-kootenay/home
[30] BC Transit. (2022). *Boundary transit system*. https://www.bctransit.com/boundary/home
[31] BC Transit. (2022). *Welcome to the Creston Valley transit system.* https://www.bctransit.com/creston-valley/home
[32] BC Transit. (2022). *Health connections: Nakusp / Nelson*. https://www.bctransit.com/west-kootenay/schedules-and-maps/health-connections/nakusp-nelson
[33] BC Transit. (2022). *Route 58: Kaslo-Argenta*. https://www.bctransit.com/west-kootenay/schedules-and-maps/route-overview?route=58
[34] BC Transit. (2022). *Route 76: Kaslo-Nelson.* https://www.bctransit.com/west-kootenay/schedules-and-maps/route-overview?route=76
[35] BC Transit. (2022). *Health connections: Kaslo / Nelson*. https://www.bctransit.com/west-kootenay/schedules-and-maps/health-connections/kaslo-nelson
[36] Government of BC. (2022). *Kootenay Lake Ferry.* https://www2.gov.bc.ca/gov/content/transportation/passenger-travel/water-travel/inland-ferries/kootenay-lake-ferry
[37] BC Transit. (2022). *Route 10: North Shore*. https://www.bctransit.com/west-kootenay/schedules-and-maps/route-overview?route=10
[38] BC Transit. (2022). *Route 1: Uphill*. https://www.bctransit.com/west-kootenay/schedules-and-maps/route-overview?route=1
[39] East Shore Transportation Society. (n.d.) *Information*. https://eastshoretransit.com/information/
[40] BC Transit. (20220. *handyDART*. https://www.bctransit.com/west-kootenay/schedules-and-maps/handydart
[41] BC Transit. (2022). *Route 72: Salmo-Nelson via Ymir*. https://www.bctransit.com/west-kootenay/schedules-and-maps/route-overview?route=72
[42] BC Transit. (2022). *Health connections: Salmo / Nelson*. https://www.bctransit.com/west-kootenay/schedules-and-maps/health-connections/salmo-nelson
[43] BC Transit. (2022). *Route 99: Kootenay connector. https://www.bctransit.com/west-kootenay/schedules-and-maps/route-overview?route=99*
[44] BC Transit. (2022). *Route 38: Playmor via Pass Creek*. https://www.bctransit.com/west-kootenay/schedules-and-maps/route-overview?route=38
[45] BC Transit. (2022). *Route 98: Columbia Connector*. https://www.bctransit.com/west-kootenay/schedules-and-maps/route-overview?route=98
[46] BC Transit. (2022). *Route 44: Sunningdale*. https://www.bctransit.com/west-kootenay/schedules-and-maps/route-overview?route=44
[47] BC Transit. (2022). *Route 46: Rossland*. https://www.bctransit.com/west-kootenay/schedules-and-maps/route-overview?route=46
[48] BC Transit. (2022). *Route 43: Glenmerry/Fruitvale*. https://www.bctransit.com/west-kootenay/schedules-and-maps/route-overview?route=43
[49] Metcalfe, B. (2022). *Nelson CARES launches medical bus service to Trail.* https://www.castlegarnews.com/news/nelson-cares-launches-medical-bus-service-to-trail/

301 Frank Beinder Way,
Castlegar, BC V1N 4L3
phone **250.365.7292**
toll free **1.888.953.1133**
email **info@selkirk.ca**

Selkirk College

selkirk.ca