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Canadian Medical Imaging Inventory 2022–2023: SPECT and SPECT-CT

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Abbreviations

AI	artificial intelligence
CDST	clinical decision support tool
CIHI	Canadian Institute for Health Information
CMII	Canadian Medical Imaging Inventory
FTE	full-time equivalent
MRT	medical radiation technologist
PACS	picture archiving and communication system

Key Messages

- SPECT is a nuclear imaging technique that provides 3D information on functional and molecular processes in the body. SPECT has been integrated with CT to combine the imaging strengths of both modalities in SPECT-CT.
- In total, 331 SPECT-CT units in 10 provinces and 210 SPECT units operating in 9 provinces were identified by the Canadian Medical Imaging Inventory (CMII) in its 2022–2023 national survey. There are no SPECT-CT and SPECT units operating in Yukon, Northwest Territories, and Nunavut.
- Canada has 8.3 SPECT-CT units per million people and 5.3 SPECT units per million people. The greatest density of units per million people for SPECT-CT is in Newfoundland and Labrador and the greatest density for SPECT are in Alberta and New Brunswick.
- The combined volume of SPECT-CT and SPECT exams conducted in 2022–2023 has decreased by approximately 37.5% since 2015, which is attributed to the gradual decommissioning of SPECT units and replacement of these technologies with other imaging modalities.
- SPECT-CT is primarily used for oncology exams, followed by cardiology exams and musculoskeletal exams. SPECT is primarily used for cardiology exams, followed by oncology and musculoskeletal exams.
- On average, SPECT-CT and SPECT units operate approximately 42 hours per week across jurisdictions in Canada that have capacity.

What Is the Context?

SPECT is a nuclear imaging technique that provides 3D information on functional and molecular processes in the body. SPECT has been integrated with CT to create a hybrid modality known as SPECT-CT. This hybrid imaging modality combines functional and anatomic imaging into a single session to provide complementary information and improve diagnostic accuracy.^{1,2} Although there is a distinct trend toward the replacement of SPECT with SPECT-CT, compared to the hybrid modality of PET-CT, the transition from SPECT to SPECT-CT has been slower in Canada.³

Radiopharmaceuticals are essential in SPECT-CT and SPECT imaging, and are used, with 1 or more gamma cameras, to detect radiation in specific organs, bones, or tissues.² The type of radiopharmaceutical used depends on the diagnostic requirement, with different radiopharmaceuticals used for imaging different body parts.⁴ SPECT-CT and SPECT are primarily used to evaluate physiology and monitor oncological and cardiovascular disease, central nervous system disorders, and brain functions.⁵

Technological advances with cadmium zinc telluride (CZT) detectors and imaging reconstruction software continue to expand the applications of SPECT imaging.⁵ Artificial intelligence (AI) tools that improve the imaging analysis and efficiency, including enhancing spatial resolution, shortening scan times, and reducing radiotracer dose, further enable novel clinical applications with these imaging modalities.^{5,6} Ongoing developments in compact and portable SPECT-CT and SPECT systems may extend the accessibility of

these modalities, especially in remote or underserved areas.² As well, innovations in radiopharmaceuticals may expand the clinical applications of SPECT, leading to more targeted imaging and improving the early detection and monitoring of many conditions.^{2,6,7}

The Canadian Medical Imaging Inventory (CMII) was created in 2015 to track, compare, and map trends over time related to the availability, distribution, technical specifications, and use of advanced imaging equipment in Canada (i.e., CT, MRI, PET-CT, PET-MRI, SPECT, and SPECT-CT). In 2001, CADTH's predecessor (then the Canadian Coordinating Office for Health Technology Assessment) conducted its first inventory of diagnostic medical imaging technologies in Canada, and the Canadian Institute for Health Information (CIHI) continued this work from 2003 to 2012.¹⁰⁻¹³ This is the fourth iteration of the CMII since CADTH resumed the collection of this data in 2015.

The CMII collects data through a survey conducted approximately once every 2 years and details the use of strategies for improving appropriate imaging, enhancing system efficiencies, reducing wait lists, and addressing other systemic challenges. Through this work, the CMII provides health care decision-makers with information on the imaging landscape in Canada that may be used to identify and address service and medical equipment gaps and inform strategic planning.

This report summarizes the SPECT- and SPECT-CT-related findings of the 2022–2023 national CMII survey.

What Did We Do?

The purpose of this CMII report is to document current practices and developments in the supply, distribution, technical operations, and general clinical use of SPECT and SPECT-CT across Canada. This report is part of a series of publications that CADTH has produced as part of the CMII national survey that also includes CT, MRI, and PET-CT and PET-MRI.

Why Did We Do This?

The CMII provides information on the medical imaging landscape across Canada to help support health care decision-making. Robust data are required to ensure health systems can deliver the imaging required to provide timely, safe, patient-centred care; improve health outcomes; and deliver health care efficiencies. Further details on the purpose of the CMII are provided in the *Canadian Medical Imaging Inventory 2022–2023: Provincial and Territorial Overview* report located on the [CMII webpage](#).

Methods Overview

Data were collected on 6 imaging modalities, including SPECT-CT and SPECT, primarily using a web-based self-report survey that was sent to all identified health care facilities with advanced imaging equipment in Canada (refer to the *Canadian Medical Imaging Inventory 2022–2023: Methods* document located on the [CMII](#)

[webpage](#)). Data were supplemented with information from provincial and territorial validators who are senior medical imaging-related health care decision-makers who are tasked with validating unit and exam counts for consistency. As well, data from peer reviewers, literature searches, CIHI, and previous iterations of CMII data were incorporated into the report. Both English and French versions of the survey were provided.

The CMII survey collected the following data:

- number and location of imaging equipment
- volume of exams
- hours of equipment operation
- age of imaging equipment
- technical specifications of machines
- adoption of new and emerging supportive tools and technologies
- imaging storing and communication services.

The survey opened on May 5, 2023, and primary data collection and validator responses were collected up until October 31, 2023. The full data collection and analysis strategy, including survey development, respondent identification, sources of data used, and data validation procedures can be found in the *Canadian Medical Imaging Inventory 2022–2023: Methods* document located on the [CMII webpage](#).

The CMII also presents data from all data sources relating to human resources, funding structures, ordering and referral practices, and the adoption of tools that may support appropriate imaging, system efficiencies, and wait list reductions.

Comparisons between data from Canada and data from other Organisation for Economic Co-operation and Development countries are reported, as are trends and projections on imaging capacity.

Provincial and territorial validators provided high-level information for nonresponding publicly funded health facilities. Data obtained from the previous survey iteration, and from other sources (e.g., personal communications, websites of health care facilities), were used to inform the status of the remaining sites. Data from freestanding sites with private imaging capacity supplemented data for public capacity; detailed information for private imaging facilities is limited because of the low number of survey responses.

The survey questions, full data collection, and analysis strategy, including survey development, respondent identification, sources of data used, and data validation procedures can be found in the *Canadian Medical Imaging Inventory 2022–2023: Methods* document on the [CMII webpage](#). Definitions for the type of facility included in the survey are provided in [Appendix 2](#).

Response Rate for the 2022–2023 National Survey

A total of 504 sites were invited to participate in the survey. Data on modalities and unit counts were available for 467 sites (92.7%).

A 100% participation rate was received from publicly funded facilities (i.e., hospitals) in 7 provinces and all territories. The participation rate for the remaining provinces ranged from 51% to 93% for publicly funded facilities.

A complete response rate was received for unit counts and exam volumes by provincial and territorial validators, while the response rate varied for other survey questions. A total of approximately 308 sites provided updated or new information (72%), reflecting an increased response rate of 34% since the CMII 2019–2020 survey.

While the overall survey participation rate was high, in some instances, not all survey questions were answered. This may lead to a nonresponse bias, which may result in the over generalization of some findings. To enable readers to assess representativeness of each data point, the number of sites who responded to each question are included alongside the reported data.

Provincial and territorial validators provided high-level information for nonresponding publicly funded health facilities. Data obtained from the previous survey iteration, and from other sources (e.g., personal communications, websites of health care facilities), were used to inform the status of the remaining sites. Data from freestanding sites with private imaging capacity supplemented data for public capacity; detailed information for private imaging facilities is limited due to the low number of survey responses.

The survey questions and full data collection and analysis strategy, including survey development, respondent identification, sources of data used, and data validation procedures can be found in the *Canadian Medical Imaging Inventory 2022–2023: Methods* document on the [CMII webpage](#). Definitions for the type of facility included in the survey are provided in [Appendix 2](#).

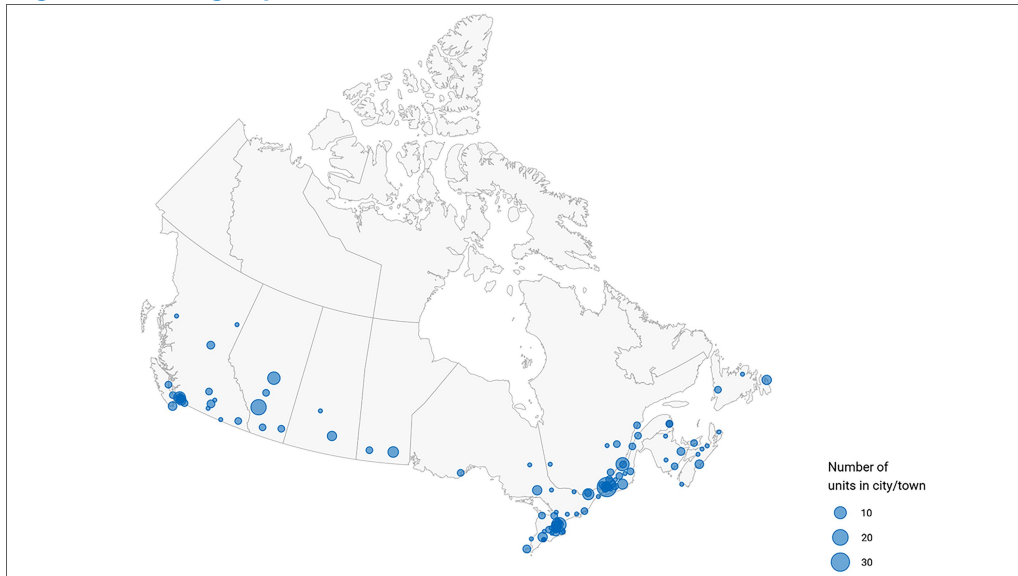
SPECT-CT and SPECT Imaging Facility Overview

Characteristics of Facilities With SPECT-CT and SPECT Equipment

A summary of the geographic distribution, type, location, and funding source for facilities in Canada with SPECT-CT or SPECT equipment that responded to the 2022–2023 update is provided subsequently.

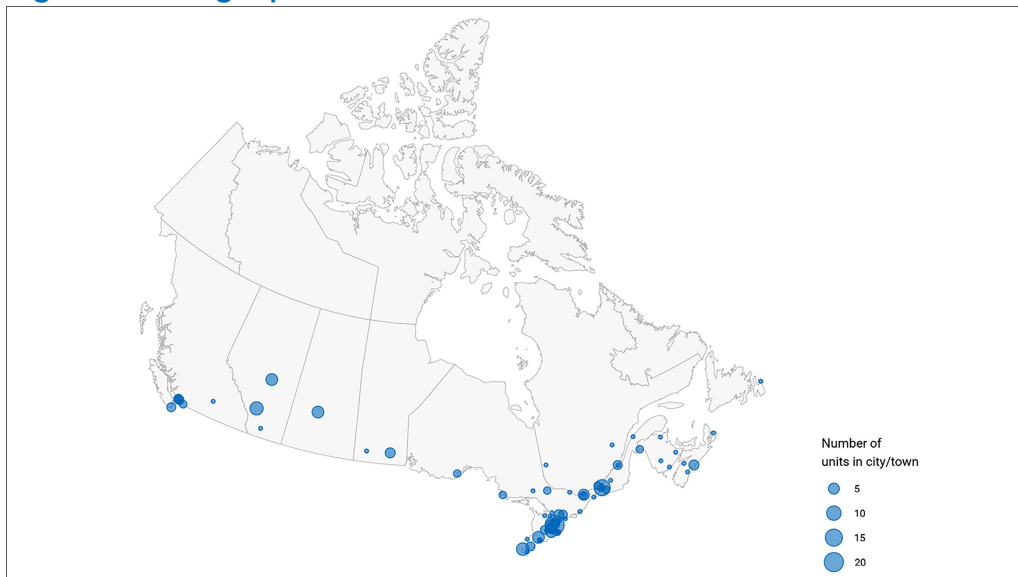
- Overall, **331 SPECT-CT units** are distributed across **180 sites** in all **10 provinces and no territories** in Canada ([Figure 1](#)).
- Overall, **210 SPECT units** are distributed across **138 sites** in **9 provinces and no territories** in Canada ([Figure 2](#)).

Figure 1: Geographic Distribution of SPECT-CT Units in Canada, 2022–2023



Notes: Location information is available for all units across all jurisdictions with SPECT-CT capacity. Location was derived from the survey and validator data. Mobile units appear as 1 unit at each of the sites served.

Figure 2: Geographic Distribution of SPECT Units in Canada, 2022–2023



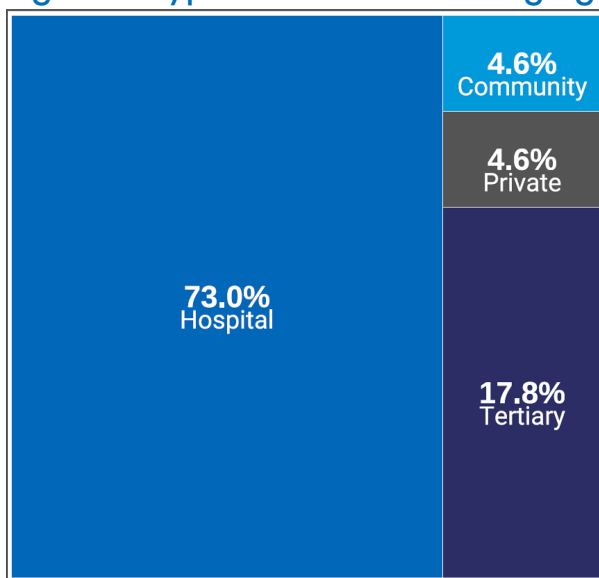
Notes: Location information is available for all units across all jurisdictions with SPECT capacity. Location was derived from the survey and validator data. Mobile units appear as 1 unit at each of the sites served.

Location and Facility Characteristics of SPECT-CT Units

- Overall, 87.9% of sites with SPECT-CT units were reported that operate in urban settings, while 12.1% reported rural operation ([Appendix 3, Table 10](#)). No SPECT-CT equipment operate in the Northwest Territories, Nunavut, or Yukon.

- In total, 73.0% of sites with SPECT-CT units identified themselves as hospitals, 17.8% as tertiary care centres, 4.6% as private facilities, and 4.6% as community hospitals ([Figure 3](#) and [Appendix 3, Table 11](#)). The data came from 152 sites with responses to this survey question. Definitions for the type of facility included in the survey are provided in [Appendix 2](#).
- Regarding funding, 96.5% of sites reported being publicly funded, 0.9% reported private funding, and 2.6% reported receiving funds from both public and private sources ([Figure 4](#) and [Appendix 3, Table 12](#)). The data came from 114 sites that responded to this survey question.

Figure 3: Types of SPECT-CT Imaging Facilities in Canada, 2022–2023



Notes: Survey response data were available for 152 out of 180 sites across all jurisdictions with SPECT-CT capacity.

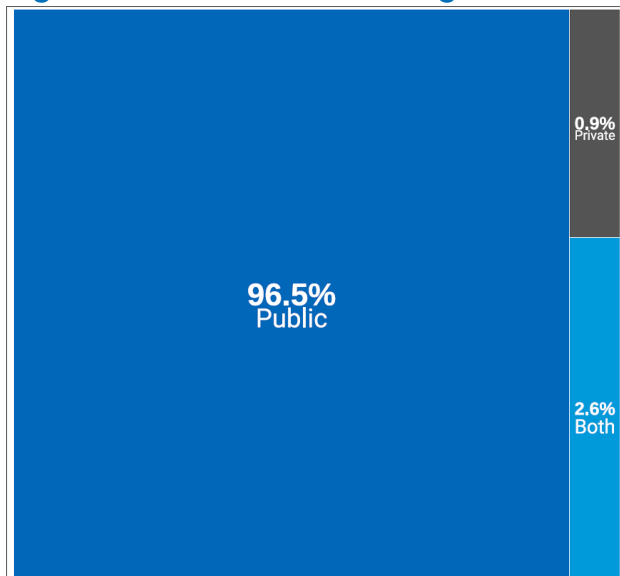
Data were derived from the survey question: "What type of facility is this?"

Data summaries by province and territory are available in [Appendix 3, Table 11](#).

[Figure 3](#) presents the number of sites as proportions according to facility type of all reported sites. Survey responses for facility type from private sites were limited because of a low response rate.

Definitions for type of facility are provided in [Appendix 2](#).

Figure 4: Sources of Funding for SPECT-CT Imaging Facilities, 2022–2023



Notes: Survey response data were available for 114 out of 180 sites across all jurisdictions with SPECT-CT capacity.

Data were derived from the survey question: “How is this facility funded?”

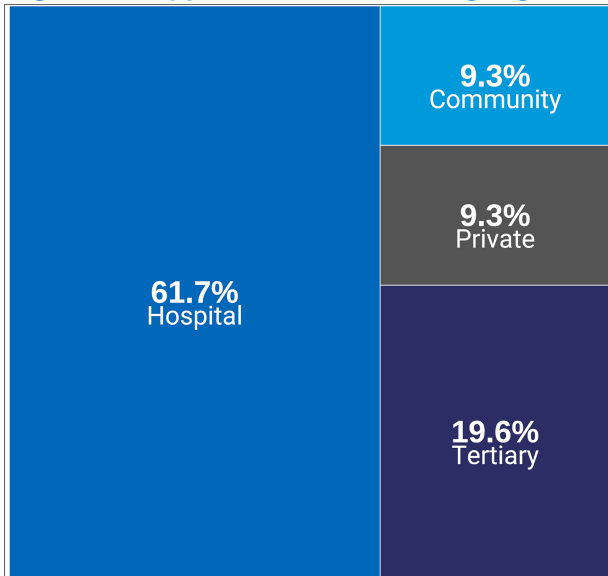
Data summaries by province and territory are available in [Appendix 3, Table 12](#).

[Figure 4](#) presents the number of sites as proportions according to the funding source of all reported sites. Survey responses for funding source from private sites were limited because of a low response rate.

Location and Facility Characteristics of SPECT Units

- Overall, 91.8% of sites with SPECT units indicated that they operate in urban settings, while 8.2% reported rural operation. No SPECT equipment operates in Prince Edward Island or the Northwest Territories, Nunavut, or Yukon. The data came from 98 sites with responses to this survey question.
- In total, 61.7% of sites with SPECT units identified themselves as hospitals, 19.6% as tertiary care centres, 9.3% as private facilities, and 9.3% as community hospitals ([Figure 5](#) and [Appendix 3, Table 13](#)). The data are from 107 sites with responses to this survey question. Definitions for the type of facility included in the survey are provided in [Appendix 2](#).
- Regarding funding, 97% of sites reported being publicly funded and 3% reported receiving funds from both public and private sources ([Figure 6](#) and [Appendix 3, Table 14](#)). The data are from 67 sites that responded to this survey question.

Figure 5: Types of SPECT Imaging Facilities in Canada, 2022–2023



Notes: Survey response data were available for 107 out of 138 sites across all jurisdictions with SPECT capacity.

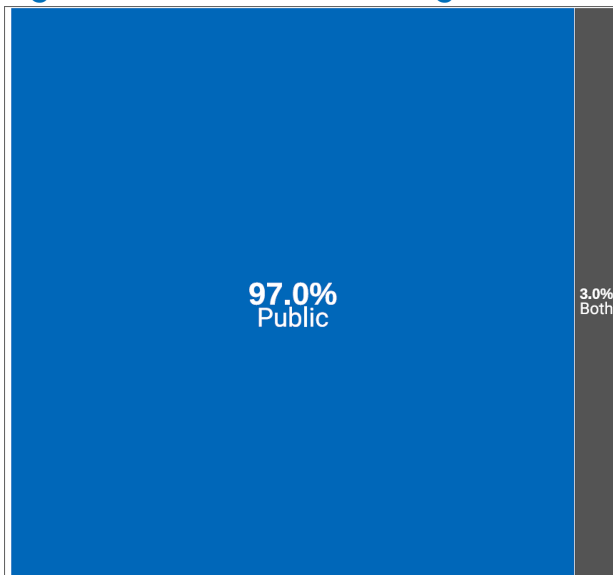
Data were derived from the survey question: “What type of facility is this?”

Data summaries by province and territory are available in [Appendix 3, Table 13](#).

[Figure 5](#) presents the number of sites as proportions according to facility type of all reported sites. Survey responses for facility type from private sites were limited because of a low response rate.

Definitions for type of facility are provided in [Appendix 2](#).

Figure 6: Sources of Funding for SPECT Imaging Facilities, 2022–2023



Notes: Survey response data were available for 67 out of 138 sites across all jurisdictions with SPECT capacity.

Data were derived from the survey question: “How is this facility funded?”

Data summaries by province and territory are available in [Appendix 3, Table 14](#).

[Figure 6](#) presents the number of sites as proportions according to the funding source of all reported sites. Survey responses for funding source from private sites were limited because of a low response rate.

Inventory of SPECT-CT and SPECT Imaging Equipment

SPECT-CT Unit and Exams in 2022–2023

Total Number of SPECT-CT Units in 2022–2023

A total of 331 SPECT-CT units are reported for 2022–2023, an increase from the 271 units reported in 2019–2020³ (Table 1 and Figure 7):

- The provinces with the highest number of SPECT-CT units are Quebec and Ontario, with 107 and 92 units, respectively. No SPECT-CT units operate in the Northwest Territories, Nunavut, or Yukon.
- Canada has 8.3 SPECT-CT units per million population. The jurisdictions with the greatest density of SPECT-CT units per million are Newfoundland and Labrador (15.0), Quebec (12.1), and Prince Edward Island (11.4). This does not reflect accessibility, particularly in provinces with large rural and remote areas where travel to urban centres is required.
- No sites reported the operation of mobile SPECT-CT units.
- Overall, 11 SPECT-CT units are reported to operate in 10 private sites in Alberta and 1 in Nova Scotia.

Table 1: Inventory of SPECT-CT for Public and Private Facilities in Canada, 2022–2023

Province or territory	Number of sites (private sites) ^{a,b}	Total units (private) ^c	Units per million population (private)	Population ^d
Alberta	23 (10)	39 (11)	8.3 (2.3)	4,703,772
British Columbia	25 (0)	50 (0)	9.2 (0)	5,437,722
Manitoba	5 (0)	10 (0)	6.9 (0)	1,444,190
New Brunswick	5 (0)	8 (0)	9.6 (0)	831,618
Newfoundland and Labrador	3 (0)	8 (0)	15 (0)	533,710
Northwest Territories	NA	NA	NA	45,668
Nova Scotia	9 (1)	9 (0)	8.6 (0)	1,047,232
Nunavut	NA	NA	NA	40,715
Ontario	56 (0)	92 (0)	5.9 (0)	15,500,632
Prince Edward Island	1 (0)	2 (0)	11.4 (0)	176,113
Quebec	50 (0)	107 (0)	12.1 (0)	8,831,257
Saskatchewan	3 (0)	6 (0)	4.9 (0)	1,221,439
Yukon	NA	NA	NA	44,412
Canada	180 (11)	331 (11)	8.3 (0.3)	39,858,480

NA = not applicable.

Notes: Data were derived from the survey question, “Do you have the following fixed, mobile, or portable units at the site?” Options included CT, MRI, PET-CT, PET-MRI, SPECT-CT, and SPECT.

For the 2022–2023 survey, complete unit count data were available for 180 sites with SPECT-CT capacity out of 467 participating sites with advanced imaging capacity (i.e., SPECT-CT, SPECT, CT, MRI, PET-CT, PET-MRI).

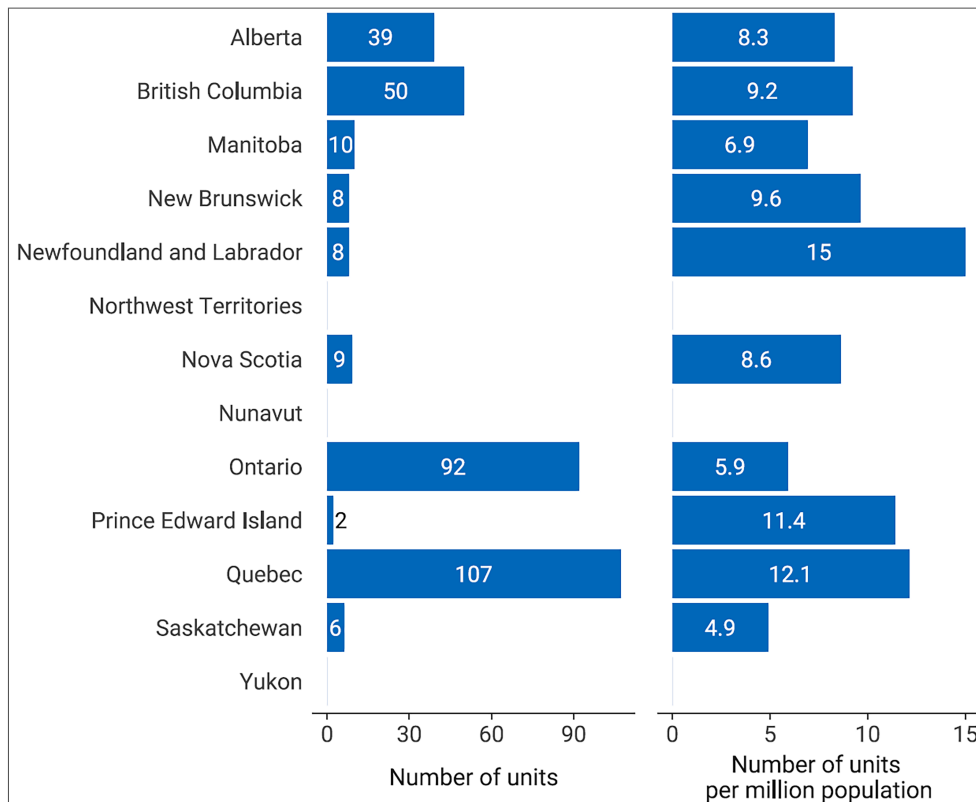
^aThese are per-jurisdiction site availability according to the validator if the validator provided lists of sites with SPECT-CT availability; where these were unavailable, the data were taken from the survey and from private sites.

^bPrivate units are a unit located in a health care facility that operates privately but that is either privately or publicly funded.

^cThese are per-jurisdiction unit counts according to the validator if the validator provided lists of units; where these were unavailable, the data were taken from the survey and responses from private sites.

^dThe population (estimated) as of the first quarter of 2023.¹⁴

Figure 7: Units and Units per Million Population for SPECT-CT, 2022–2023



Notes: For the 2022–2023 survey, complete unit count data were available for 180 sites with SPECT-CT capacity out of 467 participating sites with advanced imaging capacity (i.e., SPECT-CT, SPECT, CT, MRI, PET-CT, PET-MRI).

Data were derived from the survey question “Do you have the following fixed, mobile, or portable units at the site?” Options included: CT, MRI, PET-CT, PET-MRI, SPECT-CT, and SPECT.

Total Volume of SPECT-CT and SPECT Exams in Canada 2022–2023

The total number of overall examinations and the total per capita (per 1,000 population) are combined for SPECT-CT and SPECT units. They are reported for the most recent fiscal (or calendar) year and are presented in [Table 2](#) and [Figure 8](#).

- British Columbia and Ontario did not submit the number of SPECT-CT or SPECT exams for 2022–2023. The number reported in the 2019–2020 national CMII survey is used for comparison.
- In total, **929,010 SPECT-CT and SPECT exams** were performed, representing a national average of **23.3 exams per 1,000 population**, ranging from 11.3 to 56.3 across all jurisdictions with capacity.
- An average of 2,806.7 exams per SPECT-CT or SPECT unit were conducted across Canada in 2022–2023.

- **Quebec, Ontario, and British Columbia** have the highest volume of SPECT-CT or SPECT exams of reporting jurisdictions with capacity in Canada, at 496,843, 192,189, and 66,604 exams, respectively.
- **Quebec, Newfoundland and Labrador, and New Brunswick** have the highest density of SPECT-CT or SPECT exams of reporting jurisdictions in Canada, at 56.3, 42.9, and 34.2 exams per 1,000 people, respectively.

Table 2: Total Exams for the Latest Fiscal (Or Calendar) Year With Data Availability for SPECT-CT and SPECT Across Canada for Public Facilities, 2022–2023

Province or territory	Population ^a	Total exams ^{b,c}	Exams per unit	Exams per thousand population
Alberta	4,703,772	59,099	1,515.4	12.6
British Columbia	5,437,722	66,604 ^d	1,332.1	12.2
Manitoba	1,444,190	22,378	2,237.8	15.5
New Brunswick	831,618	28,408	3,551.0	34.2
Newfoundland and Labrador	533,710	22,910	2,863.8	42.9
Northwest Territories	45,668	NA	NA	NA
Nova Scotia	1,047,232	12,511	1,390.1	11.9
Nunavut	40,715	NA	NA	NA
Ontario	15,500,632	192,189 ^e	2,089.0	12.4
Prince Edward Island	176,113	1,985 ^f	992.5	11.3
Quebec	8,831,257	496,843 ^g	4,643.4	56.3
Saskatchewan	1,221,439	26,083	4,347.2	21.4
Yukon	44,412	NA	NA	NA
Canada	39,858,480	929,010	2,806.7	23.3

NA = not applicable.

Note: Complete exam volume data for public facilities was reported by validators for 8 out of 10 jurisdictions with capacity.

^aThe population (estimated) as of the first quarter of 2023.¹⁴

^bData were derived from the number of units with reported exam data and from the survey question: "For all units, how many examinations on average were conducted in the last fiscal/calendar year?"

^cThese are per-jurisdiction public exam volumes according to the validator.

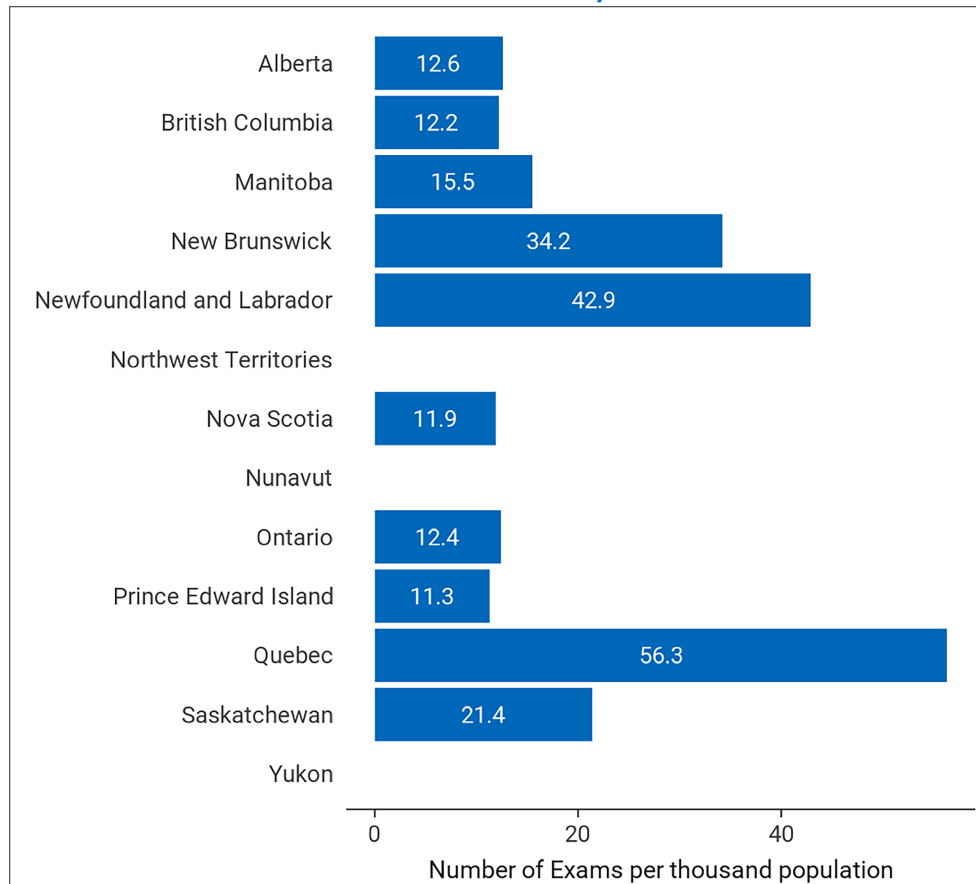
^dData from 2019–2020.

^eData from 2017.

^fPrince Edward Island reported to have 2 SPECT-CT units and no SPECT unit.

^gData from 2021–2022.

Figure 8: SPECT-CT and SPECT Exams per 1,000 Population for the Latest Fiscal (or Calendar) Year With Data Availability Across Canada in Public Facilities, 2022–2023



Notes: Complete exam volume data for public facilities was reported by validators for 8 out of 10 jurisdictions with capacity. Data were derived from the survey question “For all units, how many examinations on average were conducted in the last fiscal/calendar year?”

SPECT Units in 2022–2023

Total Number of SPECT Units in 2022–2023

Overall, 210 SPECT units were reported for 2022–2023, distributed across 9 jurisdictions with capacity, down from 305 in 2019–2020³ (Table 3 and Figure 9).

- The provinces with the highest number of SPECT units are Ontario and Alberta, with 102 and 36 units, respectively. No SPECT units operate in Prince Edward Island or the Northwest Territories, Nunavut, or Yukon.
- Canada has 5.3 SPECT units per million population. The jurisdictions with the greatest density of SPECT units per million people are Alberta (7.7), New Brunswick (7.2), and Nova Scotia (6.7). This does not reflect accessibility, particularly in provinces with large rural and remote areas where travel to urban centres is required.
- SPECT is delivered in the private setting at 17 sites in Alberta and 9 sites in Ontario.

- No sites reported the operation of mobile SPECT units.

Table 3: Inventory of SPECT for Public and Private Facilities in Canada, 2022–2023

Province or territory	Number of sites (private sites) ^a	Total units ^b (private)	Units per million population	Population ^c
Alberta	23 (17)	36 (27)	7.7 (5.7)	4,703,772
British Columbia	10 (0)	16 (0)	2.9 (0)	5,437,722
Manitoba	3 (0)	4 (0)	2.8 (0)	1,444,190
New Brunswick	5 (0)	6 (0)	7.2 (0)	831,618
Newfoundland and Labrador	1 (0)	1 (0)	1.9 (0)	533,710
Northwest Territories	NA	NA	NA	45,668
Nova Scotia	7 (0)	7 (0)	6.7 (0)	1,047,232
Nunavut	NA	NA	NA	40,715
Ontario	63 (9)	102 (9)	6.6 (0.6)	15,500,632
Prince Edward Island	NA	NA	NA	176,113
Quebec	23 (0)	32 (0)	3.6 (0)	8,831,257
Saskatchewan	3 (0)	6 (0)	4.9 (0)	1,221,439
Yukon	NA	NA	NA	44,412
Canada	138 (26)	210 (36)	5.3 (0.9)	39,858,480

NA = not applicable.

Notes: Data were derived from the survey question: “Do you have the following fixed, mobile, or portable units at the site?” Options included CT, MRI, PET-CT, PET-MRI, SPECT-CT, and SPECT.

For the 2022–2023 survey, complete unit count data were available for 138 sites with SPECT capacity out of 467 participating sites with advanced imaging capacity (i.e., SPECT-CT, SPECT, CT, MRI, PET-CT, PET-MRI).

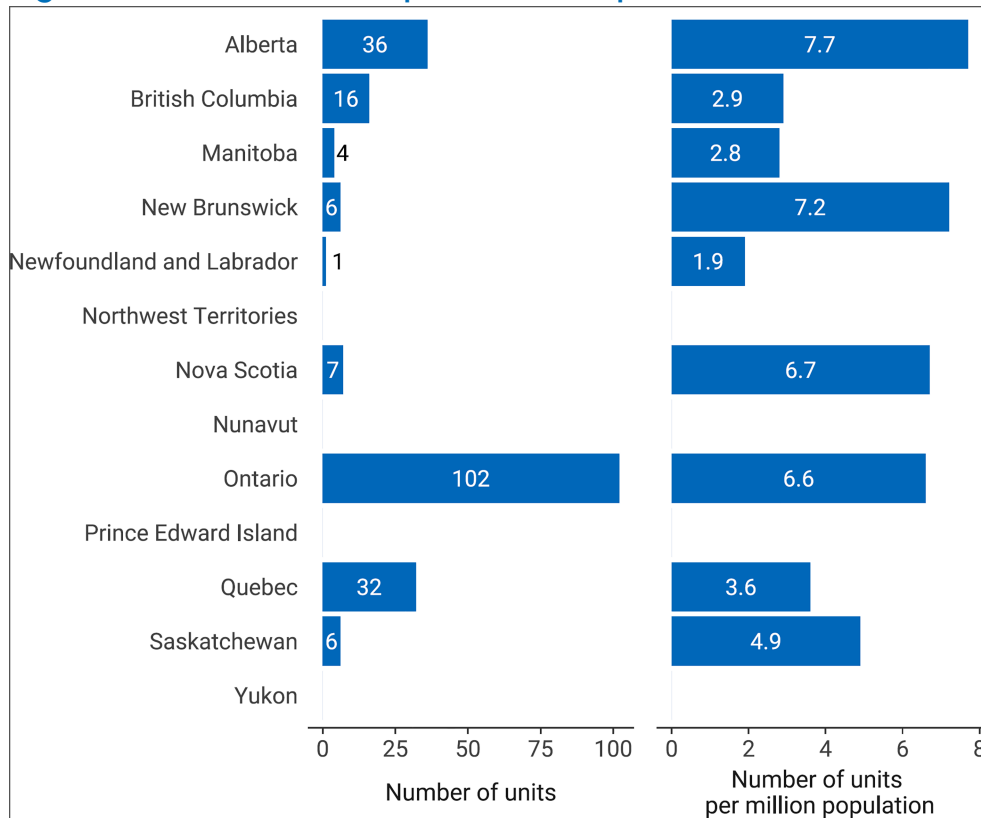
^aThese are per-jurisdiction site availability according to the validator if the validator provided lists of sites with SPECT availability; where these were unavailable, the data came from the survey.

^bThese are per-jurisdiction unit counts according to the validator if the validator provided lists of units; where these were unavailable, the data were taken from the survey and responses from private sites.

^cThese are per-jurisdiction unit counts according to the validator and responses from private sites.

^dThe population (estimated) as of the first quarter of 2023.¹⁴

Figure 9: Units and Units per Million Population for SPECT, 2022–2023



Notes: For the 2022–2023 survey, complete unit count data were available for 138 sites with SPECT capacity out of 467 participating sites with advanced imaging capacity (i.e., SPECT-CT, SPECT, CT, MRI, PET-CT, PET-MRI).

Per-jurisdiction unit counts according to the validator if the validator provided lists of units; where these were unavailable, the data came from the survey and responses from private sites.

Data were derived from the survey question “Do you have the following fixed, mobile, or portable units at the site?” Options included: CT, MRI, PET-CT, PET-MRI, SPECT-CT, and SPECT.

Change in SPECT-CT Units Since 2015

Trends in Number of Units and Units per Million People, 2015 to 2022–2023

The number of SPECT-CT units and units per million people between 2015 and 2022–2023 are presented in [Appendix 3, Table 15](#).^{3,8,9} Over the past 10 years, more accurate SPECT-CT technology has been steadily replacing the use of SPECT.

- Since 2015, the **number of SPECT-CT units** in Canada has **increased by 54.7%**, from 214 to 331 units.
- Between 2015 and 2022–2023, the **number of units per million people** has **increased by 38.3%**, from 6.0 to 8.3 units per million. During this time, Newfoundland and Labrador, Prince Edward Island, and Quebec maintained some of the highest numbers of units per capita among jurisdictions with SPECT-CT capacity.

- Since 2017, Newfoundland and Labrador, Nova Scotia, Prince Edward Island, and Saskatchewan experienced a **decrease** in the number of **units per million people** of all jurisdictions with SPECT-CT capacity.

Change in SPECT-CT and SPECT Exams Across Public Facilities Since 2015

Trends in Exam Volume Across Public Facilities per 1,000 People, 2015 to 2022–2023

Information on the number of exams across public facilities per 1,000 people for both SPECT-CT and SPECT between 2015 and 2022–2023 are combined and are presented in [Appendix 3, Table 16](#).^{3,8,9} Overall, the replacement of SPECT and planar technology with SPECT-CT over the past decade, and investment in the use of other advanced imaging modalities, has contributed to lower SPECT and SPECT-CT exam volumes.

- Since 2015, the **volume of SPECT-CT and SPECT exams** across public facilities in Canada has **decreased by 37.5%**, from 1,485,296 to 929,010 exams.
- Between 2015 and 2022–2023 the number of **exams across public facilities per 1,000 people** has **decreased by 43.7%**, from 41.4 to 23.3 exams per 1,000. During this time, Quebec maintained the highest number of exams per capita among jurisdictions with SPECT-CT and SPECT capacity.
- Since 2019 to 2020, Alberta and New Brunswick have experienced an **increase** in the volume of **exams per capita** among jurisdictions with SPECT-CT or SPECT capacity.

Change in SPECT Units Since 2015

Trends in Number of Units and Units per Million People, 2015 to 2022–2023

Information of the number of SPECT units and units per million people between 2015 and 2022–2023 are presented in [Appendix 3, Table 17](#).^{3,8,9} The decline in SPECT is attributed to its gradual replacement by SPECT-CT.

- Since 2015, the **number of SPECT units** in Canada has **decreased by 20.5%**, from 264 to 210 units.
- Between 2015 and 2022–2023, the number of **units per million people** has **decreased by 28.4%**, from 7.4 to 5.3 units per million.
- Since 2019–2020, **no provinces** experienced an **increase** in number of **units per million people** with SPECT capacity.

Operation of SPECT-CT and SPECT Imaging Equipment

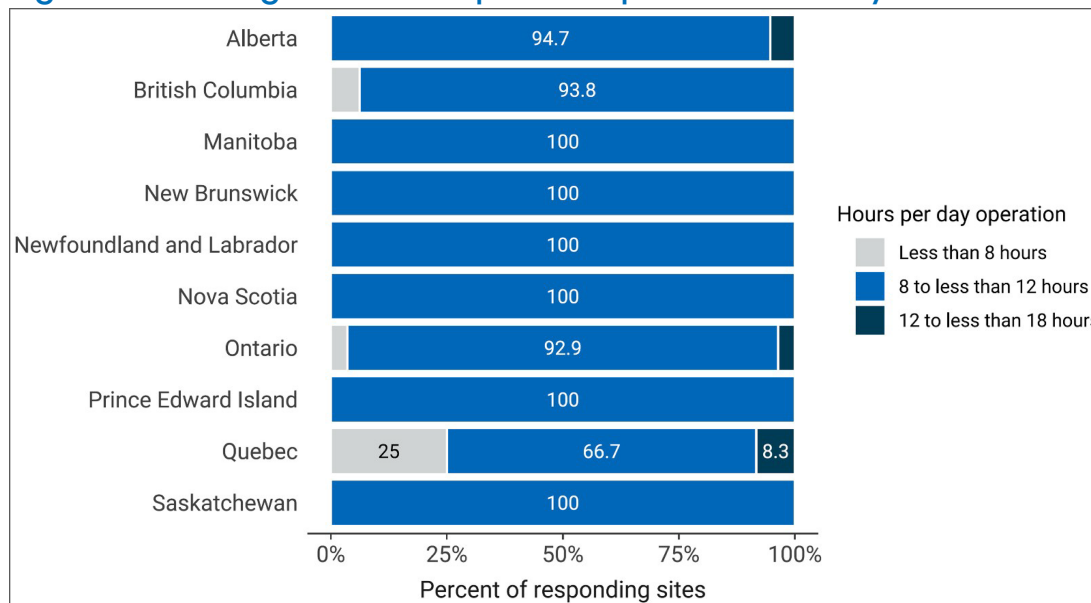
Hours of Operation for SPECT-CT Equipment

Hours Per Day and 24-Hour Use for SPECT-CT Units

- SPECT-CT units operate an **average of 8.6 hours per day** in Canada, ranging from 7 to 14 hours across all jurisdictions with capacity ([Appendix 3, Table 18](#)). [Table 44](#) in [Appendix 4](#) presents the average daily hours of operation reported for publicly funded sites with capacity.

- Saskatchewan and Nova Scotia reported the highest average hours of use per day across all jurisdictions with capacity, at 9.3 hours.
- Approximately 92% of sites with SPECT-CT capacity in Canada reported use between 8 and 12 hours per day, 3.2% reported use for more than 12 hours per day, and 5.3% reported use for less than 8 hours per day (Figure 10). The data came from 94 sites that responded to this survey question.
- One site with capacity reported SPECT-CT operation 24 hours per day in New Brunswick (Appendix 3, Table 19).

Figure 10: Average Hours of Operation per 24-Hour Day of SPECT-CT Use, 2022–2023

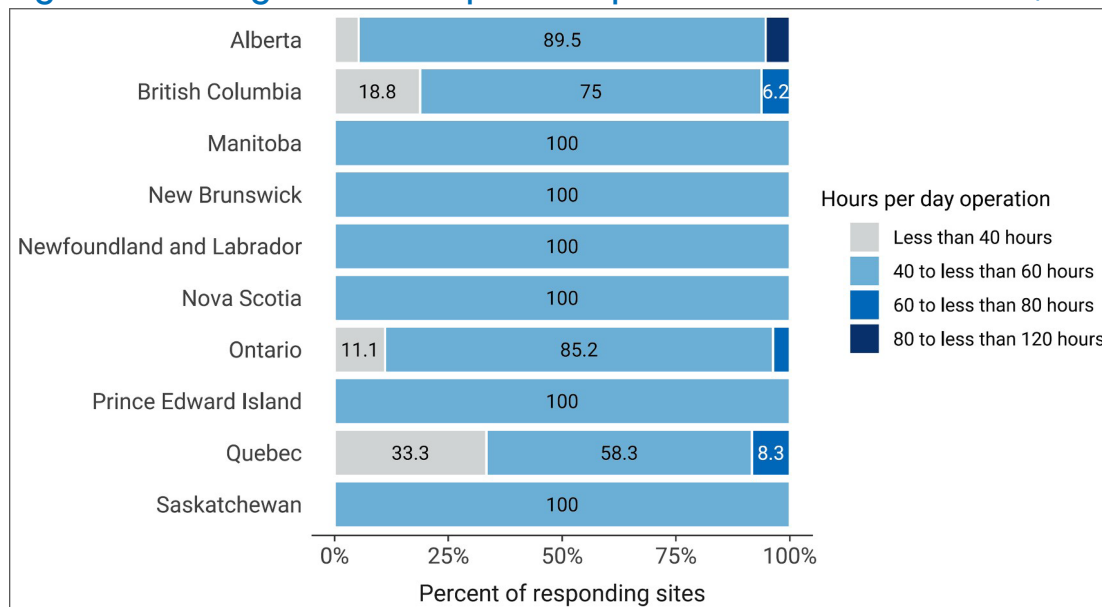


Notes: Survey response data were available for 94 out of 180 sites across all jurisdictions with SPECT-CT capacity.

Data were derived from the survey question: "In an average 24-hour day, how many hours are the units staffed through regular scheduled service capacity (do not include hours where staff are only on call)".

Hours Per Week and Weekend Use for SPECT-CT Units

- SPECT-CT units operate an average of 43.2 hours per week in Canada, ranging from 10 to 88 hours across jurisdictions with capacity (Appendix 3, Table 20). Table 45 (Appendix 4) presents the average weekly hours of operation reported for publicly funded sites with capacity.
- Nova Scotia and Saskatchewan reported the highest average hours of use per week of all jurisdictions with capacity, both at 46.7 hours.
- About 12% of SPECT-CT units in Canada operate less than 40 hours per week, 84% operate between 40 to 60 hours, and 4% exceed 60 hours of operation per week (Figure 11).
- Overall, 10 sites (10.5%) in 5 jurisdictions reported that at least 1 SPECT-CT unit is used on weekends (Appendix 3, Table 19).

Figure 11: Average Hours of Operation per Week of SPECT-CT Use, 2022–2023


Notes: Survey response data were available for 93 out of 180 sites across all jurisdictions with SPECT-CT capacity.

Data were derived from the survey question: "In an average 24-hour day, how many hours are the units staffed through regular scheduled service capacity (do not include hours where staff are only on call)."

Hours of Operation for SPECT Equipment

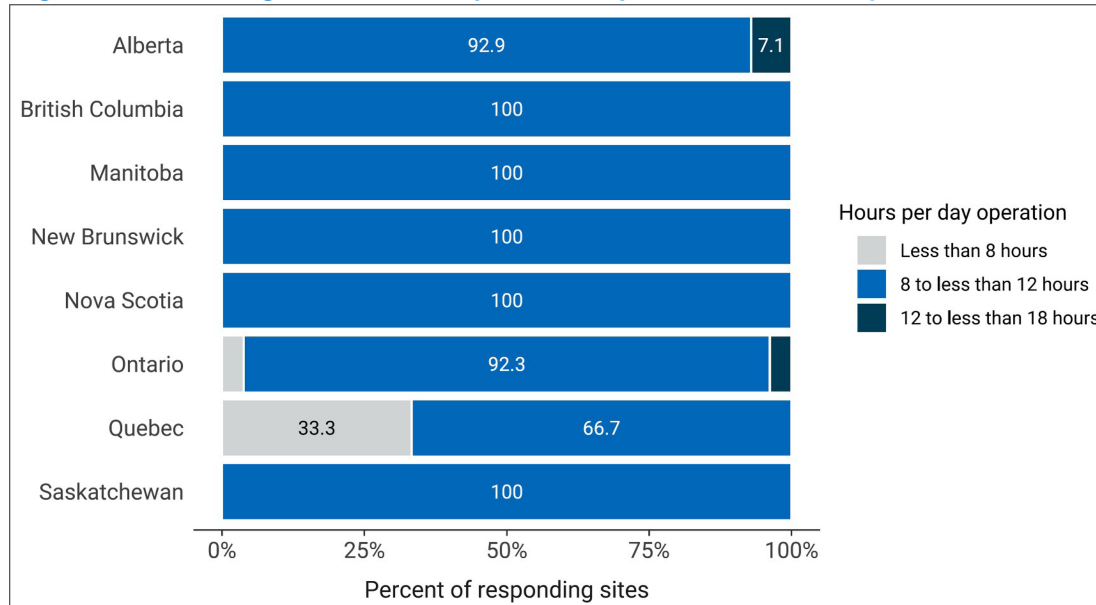
Hours Per Day and 24-Hour Use for SPECT Units

- SPECT units operate for an average of 8.6 hours per day, ranging from 5 to 14 hours across all jurisdictions with capacity ([Appendix 3, Table 21](#)). [Table 46 \(Appendix 4\)](#) presents the average daily hours of operation reported for publicly funded sites with capacity. Data are drawn from 64 sites that provided data for the average number of hours per day of use.
- About 91% of SPECT units in Canada operate between 8 and less than 12 hours per day ([Figure 12](#)).
- One site reported the use of a SPECT unit 24 hours per day in New Brunswick ([Appendix 3, Table 22](#)).

Hours Per Week and Weekend Use for SPECT Units

- SPECT units operate an average of 41.6 hours a week, ranging from 8 to 88 hours across all jurisdictions with capacity. [Table 47 \(Appendix 4\)](#) presents the average daily hours of operation reported for publicly funded sites with capacity. The data are drawn from 64 sites that provided data for the average number of hours per week of use ([Appendix 3, Table 23](#)).
- About 20% of SPECT units in Canada are used less than 40 hours per week, 77% are used between 40 to 60 hours, and 3% exceed 60 hours of use per week ([Figure 13](#)).
- Three sites reported the use of SPECT units on weekends ([Appendix 3, Table 22](#)).

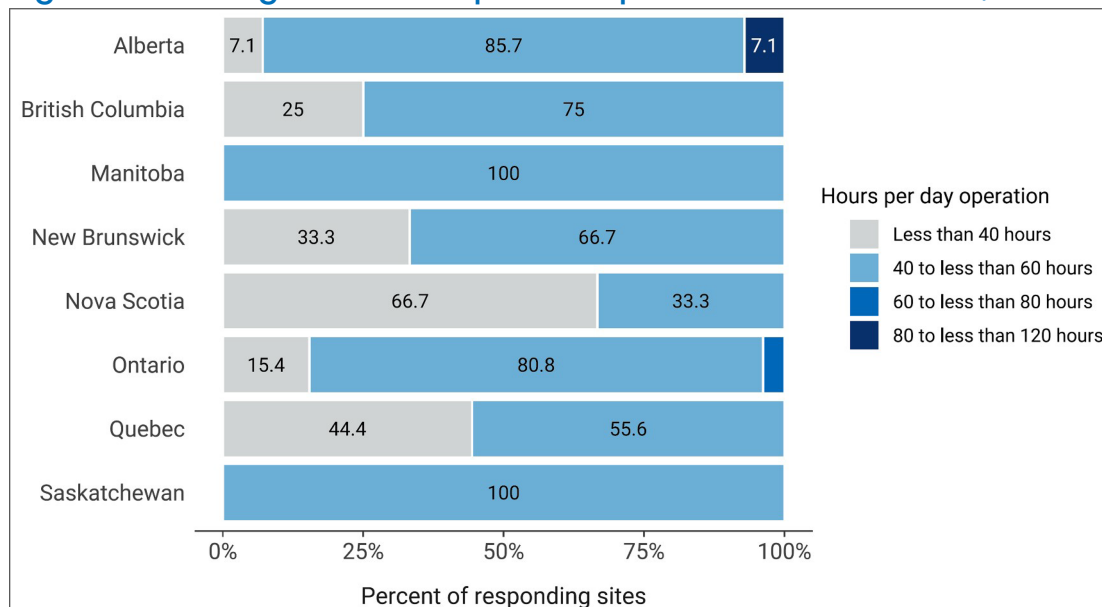
Figure 12: Average Hours of Operation per 24-Hour Day of SPECT Use, 2022–2023



Notes: Survey response data were available for 64 out of 138 sites across 8 of the 9 jurisdictions with SPECT capacity. No data were available for Newfoundland and Labrador.

Data were derived from the survey question: "In an average 168-hour week, how many hours are the [modality] units staffed through regular scheduled service capacity (do not include hours where staff are only on call)?"

Figure 13: Average Hours of Operation per Week of SPECT Use, 2022–2023



Notes: Survey response data were available for 64 out of 138 sites across 8 of the 9 jurisdictions with SPECT capacity. No data were available for Newfoundland and Labrador.

Data were derived from the survey question: "In an average 168-hour week, how many hours are the [modality] units staffed through regular scheduled service capacity (do not include hours where staff are only on call)?"

Annual Planned and Unplanned Downtime for SPECT-CT and SPECT Units

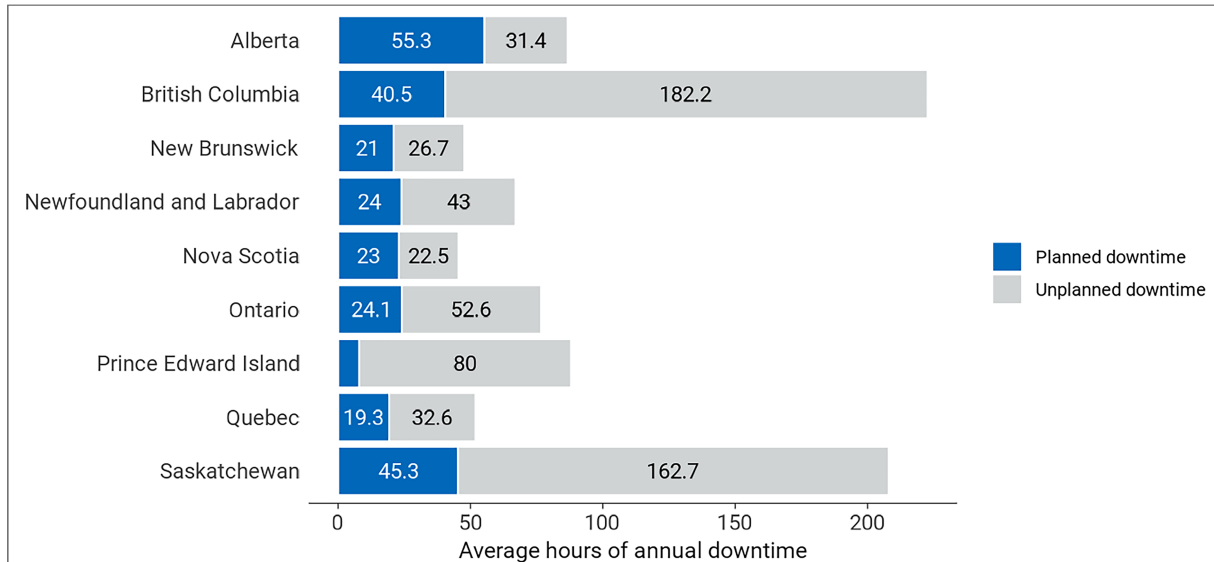
SPECT-CT Annual Downtime

- The average **planned downtime** for SPECT-CT units is **34.0 hours per year**, ranging from 7 to 112 hours across 79 sites with reported data ([Appendix 3, Table 24](#)). [Figure 14](#) presents the annual planned downtime for each jurisdiction with SPECT-CT capacity.
- The average **unplanned downtime** for SPECT-CT is **70.4 hours per year**, ranging from 7 to 534 hours across 67 sites with reported data. [Figure 14](#) presents the annual unplanned downtime for each jurisdiction with SPECT-CT capacity.
- Three sites in British Columbia reported unplanned downtime that exceeded 400 hours because of low staffing levels and major part failures.
- Some commonly reported reasons for unplanned downtime for SPECT-CT units include equipment and system failure, software issues, and recalibration requirements.

SPECT Annual Downtime

- The average **planned downtime** for SPECT units is **26.4 hours per year**, ranging from 7 to 108 hours across 50 sites with reported data ([Appendix 3, Table 25](#)). [Figure 15](#) presents the annual planned downtime for each jurisdiction with SPECT capacity.
- The average **unplanned downtime** for SPECT is **82.8 hours per year**, ranging from 1 to 1,000 hours across 44 sites with reported data. [Figure 15](#) presents the annual unplanned downtime for each jurisdiction with SPECT capacity.
- Four sites located in British Columbia and Quebec reported unplanned downtime that exceeded 600 hours because of low staffing levels and equipment breakdown. Data were only available for 2 sites each in Nova Scotia and Saskatchewan; therefore, average downtime for all units within these jurisdictions may not be reflected in this report.
- Some commonly reported reasons for unplanned downtime for SPECT units include equipment and system failure, aging machine, and recalibration requirements.

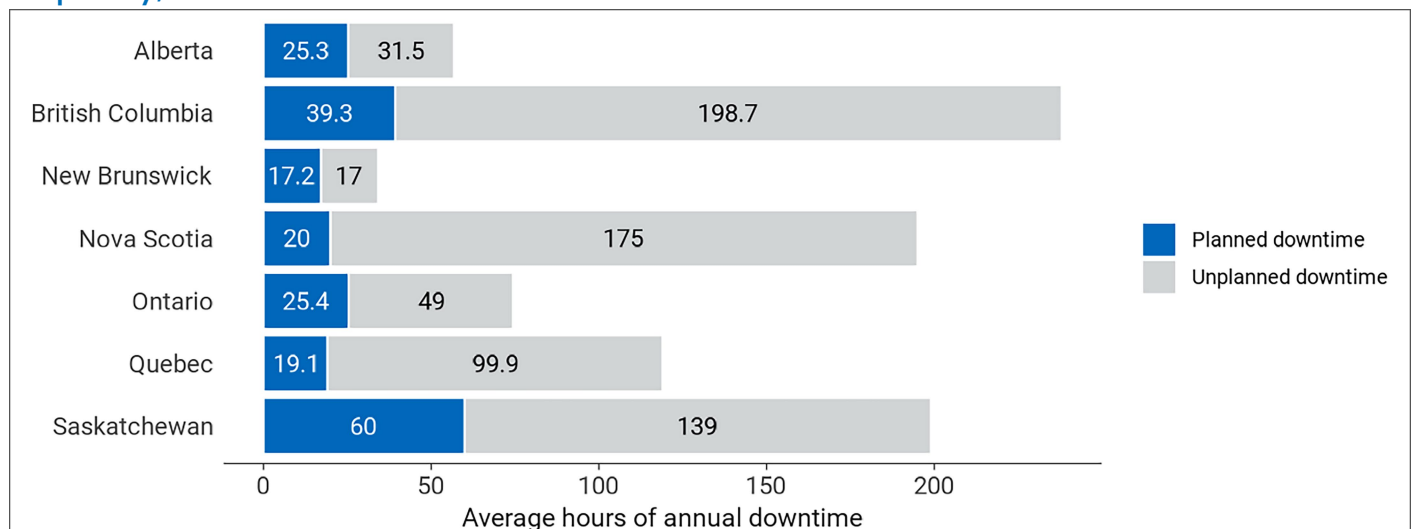
Figure 14: Average Downtime at Sites With SPECT-CT Units by Reporting Jurisdictions With Capacity, 2022–2023



Notes: Survey response data for planned downtime were available for 79 out of 180 sites across 9 of the 10 jurisdictions with SPECT-CT capacity. No data were available for Manitoba. Survey response data for unplanned downtime were available for 67 out of 180 sites across 9 of the 10 jurisdictions with SPECT-CT capacity. No data were available for Manitoba.

Data were derived from the survey questions: “How much planned downtime is anticipated for scheduled maintenance for all units in a given year? (expressed in hours)” and “How much unplanned downtime is experienced for all units in a given year? (expressed in hours).” Bars are labelled with the number of hours in each category.

Figure 15: Average Downtime at Sites With SPECT Units by Reporting Jurisdictions With Capacity, 2022–2023



Notes: Survey response data for planned downtime were available for 50 out of 138 sites across 7 of the 9 jurisdictions with SPECT capacity. No data were available for Manitoba and Newfoundland and Labrador. Survey response data for unplanned downtime were available for 44 out of 138 sites across 7 of the 9 jurisdictions with SPECT capacity. No data were available for Manitoba and Newfoundland and Labrador.

Data were derived from the survey questions: “How much planned downtime is anticipated for scheduled maintenance for all units in a given year? (expressed in hours)” and “How much unplanned downtime is experienced for all units in a given year? (expressed in hours).” Bars are labelled with the number of hours in each category.

Equipment Servicing at Sites With SPECT-CT and SPECT Imaging

The routine maintenance, inspection, and calibration of imaging equipment is usually managed through different types of equipment service agreements. Equipment servicing is part of health technology management and is intended to optimize the use of imaging equipment across its life cycle. The survey participants were asked to report on methods of servicing imaging equipment. The servicing methods included à la carte, full vendor, insurance, managed service contracts, shared service, third party, under warranty, and others. Definitions for types of servicing methods are available in [Appendix 2](#).

Data were derived from the survey question: “How is imaging equipment serviced?”

Survey participants were asked to report these data at the modality level rather than the unit level. We received feedback indicating that, at sites with more than 1 unit, in some instances, different servicing agreements may be used for different units.

- For SPECT-CT, the most commonly used **equipment servicing method** is **full vendor service**, with 54.3% of sites, followed by shared service (36.2%) ([Table 4](#)).
- For SPECT, the most commonly used **equipment servicing method** is **full vendor service**, with 45% sites, followed by shared service (35%) ([Table 5](#)).

Table 4: Imaging Equipment Servicing Methods at Sites With SPECT-CT Units by Reporting Jurisdictions With Capacity, 2022–2023

Province or territory	À la carte (time and parts by external service provider)	Full vendor service contract	Insurance	Managed equipment service	Other	Shared service (between vendor and in house or a third party)	Third party
Alberta	0 (0)	13 (72.2)	0 (0)	0 (0)	0 (0)	5 (27.8)	0 (0)
British Columbia	0 (0)	9 (47.4)	0 (0)	0 (0)	0 (0)	10 (52.6)	0 (0)
Manitoba	0 (0)	2 (20)	0 (0)	0 (0)	0 (0)	8 (80)	0 (0)
New Brunswick	0 (0)	2 (50)	0 (0)	0 (0)	0 (0)	2 (50)	0 (0)
Newfoundland and Labrador	0 (0)	3 (100)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Northwest Territories	NA	NA	NA	NA	NA	NA	NA
Nova Scotia	0 (0)	6 (100)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Nunavut	NA	NA	NA	NA	NA	NA	NA
Ontario	0 (0)	14 (48.3)	0 (0)	4 (13.8)	1 (3.4)	7 (24.1)	3 (10.3)
Prince Edward Island	0 (0)	1 (100)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Quebec	0 (0)	6 (50)	0 (0)	1 (8.3)	1 (8.3)	4 (33.3)	0 (0)
Saskatchewan	0 (0)	1 (33.3)	0 (0)	0 (0)	0 (0)	2 (66.7)	0 (0)

Province or territory	À la carte (time and parts by external service provider)	Full vendor service contract	Insurance	Managed equipment service	Other	Shared service (between vendor and in house or a third party)	Third party
Yukon	NA	NA	NA	NA	NA	NA	NA
Canada	0 (0)	57 (54.3)	0 (0)	5 (4.8)	2 (1.9)	38 (36.2)	3 (2.9)

NA = not applicable.

Notes: Survey response data were available for 105 out of 180 sites across all jurisdictions with SPECT-CT capacity.

Table 5: Imaging Equipment Servicing Methods at Sites With SPECT Units by Reporting Jurisdictions With Capacity, 2022–2023

Province or territory	À la carte (time and parts by external service provider)	Full vendor service contract	Insurance	Managed equipment service	Other	Shared service (between vendor and in house or a third party)	Third party
Alberta	0 (0)	3 (50)	0 (0)	0 (0)	0 (0)	3 (50)	0 (0)
British Columbia	1 (14.3)	1 (14.3)	0 (0)	0 (0)	0 (0)	5 (71.4)	0 (0)
Manitoba	0 (0)	1 (25)	0 (0)	0 (0)	0 (0)	3 (75)	0 (0)
New Brunswick	0 (0)	2 (50)	0 (0)	0 (0)	0 (0)	2 (50)	0 (0)
Newfoundland and Labrador	NR	NR	NR	NR	NR	NR	NR
Northwest Territories	NA	NA	NA	NA	NA	NA	NA
Nova Scotia	0 (0)	4 (100)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Nunavut	NA	NA	NA	NA	NA	NA	NA
Ontario	0 (0)	9 (33.3)	1 (3.7)	3 (11.1)	2 (7.4)	7 (25.9)	5 (18.5)
Prince Edward Island	NA	NA	NA	NA	NA	NA	NA
Quebec	0 (0)	5 (83.3)	0 (0)	0 (0)	0 (0)	1 (16.7)	0 (0)
Saskatchewan	0 (0)	2 (100)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Yukon	NA	NA	NA	NA	NA	NA	NA
Canada	1 (1.7)	27 (45.0)	1 (1.7)	3 (5.0)	2 (3.3)	21 (35.0)	5 (8.3)

NA = not applicable; NR = not reported.

Notes: Survey response data were available for 60 out of 138 sites across 8 of the 9 jurisdictions with SPECT capacity. No data were available for Newfoundland and Labrador.

Data were derived from the survey question: "How is imaging equipment serviced?"

Full-Time Equivalent Medical Radiation Technologists for SPECT-CT and SPECT Units

Sites were asked to provide information on the number of full-time equivalent (FTE) medical radiation technologists (MRTs) assigned at the site level. An FTE position for an MRT was defined as an 8-hour workday, 5 days per week. The reported number of FTE MRTs may not reflect the total number of filled FTE MRTs in jurisdictions with SPECT-CT or SPECT capacity, but rather the total number of budgeted positions.

MRTs that work with SPECT and SPECT-CT are often the same staff. In some instances, jurisdiction-reported data may include combined MRT counts.

- For SPECT-CT, an average of 4 FTE MRTs are assigned per site, ranging from 1 to 18 ([Table 6](#)).
- For SPECT, an average of 4 FTE MRT are assigned per site, ranging from 1 to 18 ([Table 7](#)).

Table 6: Number of Full-time Equivalent MRT for SPECT-CT, 2022–2023

Province or territory	Number of reporting sites	Total FTE MRTs	Average FTE MRTs per site (minimum to maximum)	FTE MRTs per million population ^a	Total units ^b
Alberta	19	76	4 (1 to 9)	16.2	39
British Columbia	18	85	4.7 (2 to 10)	15.6	50
Manitoba	5 ^c	37	7.4 (3 to 14)	25.6	10
New Brunswick	4	15	3.8 (2 to 6)	18	8
Newfoundland and Labrador	3	15	5 (2 to 10)	28.1	8
Northwest Territories	NA	NA	NA	NA	NA
Nova Scotia	3	7	2.3 (2 to 3)	6.7	9
Nunavut	NA	NA	NA	NA	NA
Ontario	28	97	3.5 (1 to 12)	6.3	92
Prince Edward Island	1	3	3 (3 to 3)	17	2
Quebec	12	58	4.8 (1 to 18)	6.6	107
Saskatchewan	3	17	5.7 (1 to 8)	13.9	6
Yukon	NA	NA	NA	NA	NA
Canada	96	410	4.3 (1 to 18)	10.3	331

FTE = full-time equivalent; MRT = medical radiation technologist; NA = not applicable.

Notes: Survey response data available for 96 out of 180 sites across all jurisdictions with SPECT-CT capacity.

Data were derived from the survey question: "How many full-time equivalents (FTE) technologists are assigned to all units (collective number of FTEs for all units)?"

^aThe population (estimated) as of the first quarter of 2023.¹⁴

^bThese are per-jurisdiction unit counts according to the validator if the validator provided lists of units; where these were unavailable, the data came from the survey and responses from private sites.

^cThis is a combined SPECT and SPECT-CT FTE MRT count.

Table 7: Number of Full-time Equivalent MRT for SPECT, 2022–2023

Province or territory	Number of reporting sites	Total FTE MRTs	Average FTE MRTs per site (minimum to maximum)	FTE MRTs per million population ^a	Total SPECT units ^b
Alberta	14	68	4.9 (2 to 9)	14.5	36
British Columbia	5	16	3.2 (1 to 10)	2.9	16
Manitoba	0 ^c	NA	NA	NA	4
New Brunswick	4	13	3.2 (2 to 6)	15.6	6
Newfoundland and Labrador	0	NR	NR	NR	1
Northwest Territories	NA	NA	NA	NA	NA
Nova Scotia	4	9	2.2 (2 to 3)	8.6	7
Nunavut	NA	NA	NA	NA	NA
Ontario	24	83	3.5 (1 to 12)	5.4	102
Prince Edward Island	NA	NA	NA	NA	NA
Quebec	9	28	3.1 (2 to 11)	3.2	32
Saskatchewan	2	20	10 (2 to 18)	16.4	6
Yukon	NA	NA	NA	NA	NA
Canada	62	237	3.8 (1 to 18)	5.9	210

FTE = full-time equivalent; MRT = medical radiation technologist; NA = not applicable; NR = no response.

Notes: Survey response data available for 62 out of 138 sites across 8 of the 9 jurisdictions with SPECT capacity. No data were available for Newfoundland and Labrador. Data were derived from the survey question: "How many full-time equivalents (FTE) technologists are assigned to all units (collective number of FTEs for all units)?"

^aThe population (estimated) as of the first quarter of 2023.¹⁴

^bUnit count includes data from all sites included in the national survey that reported information for number of units.

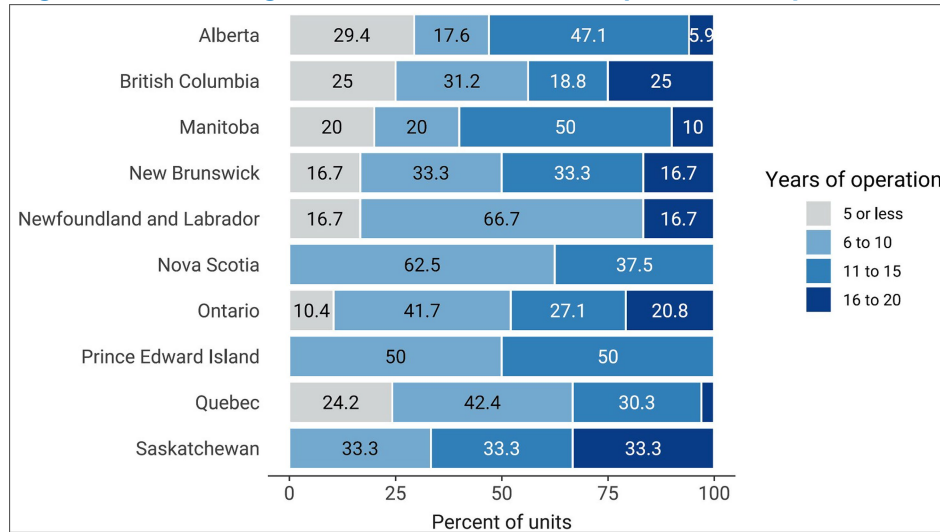
^cCombined SPECT-CT and SPECT FTE MRT counts are reported in [Table 6](#).

Age of SPECT-CT and SPECT Imaging Equipment

Average Age of SPECT-CT

- The average age of SPECT-CT equipment in Canada is 9.5 years, ranging between 0 and 19 years ([Appendix 3, Table 26](#)). More than half (54.6%) of SPECT-CT units were operational within the past 10 years and a fifth (18.9%) began operation within the past 5 years ([Figure 16](#) and [Appendix 3, Table 27](#)). [Table 48 \(Appendix 4\)](#) presents the average age of equipment for publicly funded sites with capacity.
- Ontario installed 3 new SPECT-CT units in 2022–2023. British Columbia and Quebec have each installed 2 new SPECT-CT units in 2022 to 2023, and New Brunswick installed 1 new SPECT-CT unit in 2022–2023.

Figure 16: Average Year of SPECT-CT Operation by Province and Territory, 2022–2023

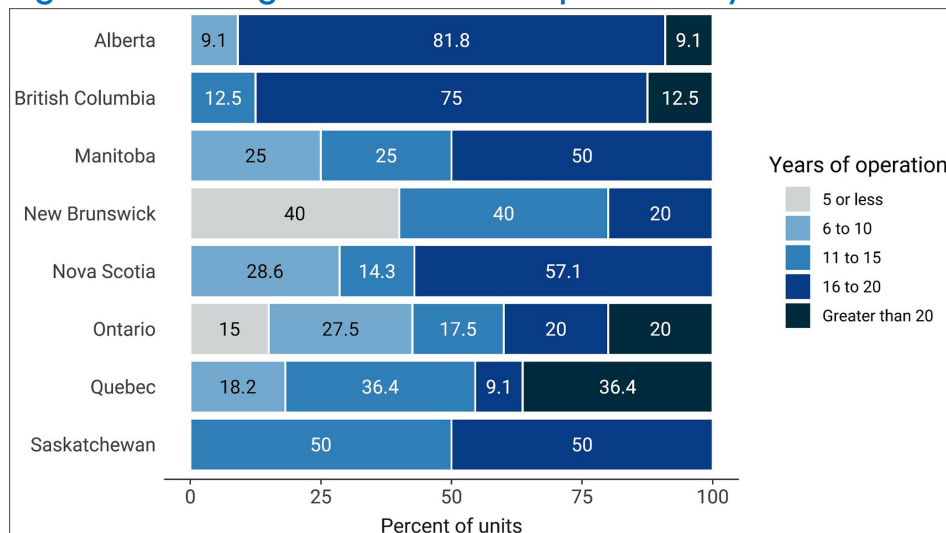


Notes: Survey response data were available for 185 of 331 SPECT-CT units across all jurisdictions with capacity. Age for each unit was calculated from the survey question: “What year did (or will) the [modality] unit become operational?” subtracted from 2023.

Average Age of SPECT

- The average age of SPECT equipment in Canada is 14.5 years, ranging between 0 and 26 years ([Appendix 3, Table 26](#)). More than a fourth (27.8%) of SPECT units were operational within the past 10 years and less than a 10th (8.9%) began operation within the past 5 years ([Figure 17](#) and [Appendix 3, Table 28](#)). [Table 49 \(Appendix 4\)](#) presents the average age of equipment for publicly funded sites with capacity.

Figure 17: Average Year of SPECT Operation by Province and Territory, 2022–2023



Notes: Survey response data were available for 90 of 210 SPECT units across 8 of the 9 jurisdictions with capacity. No data were available for Newfoundland and Labrador. Age for each unit was calculated from the survey question: “What year did (or will) the [modality] unit become operational?” subtracted from 2023.

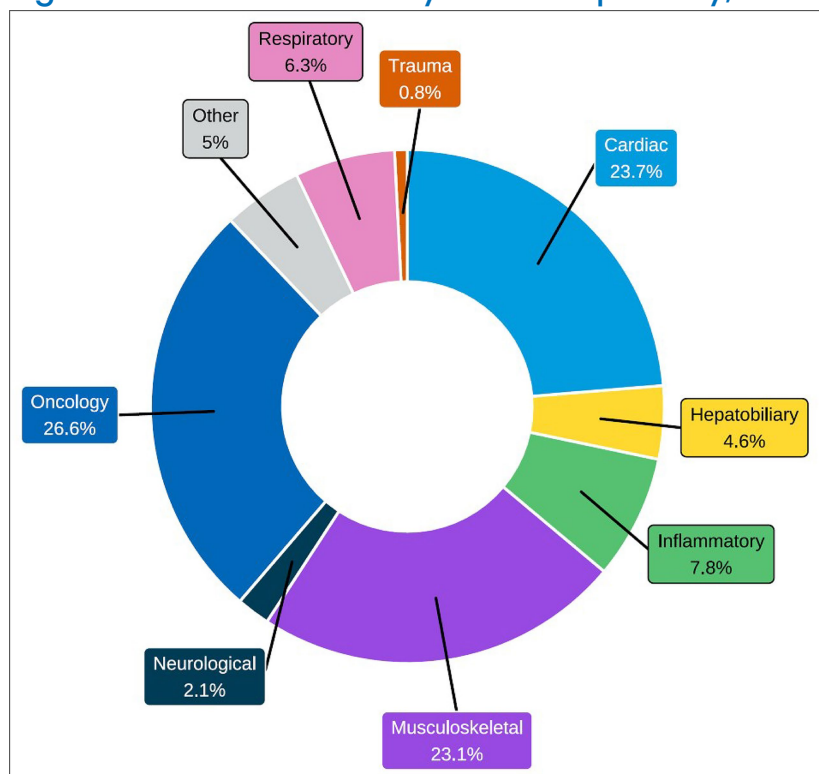
Patterns of Use of SPECT-CT and SPECT Imaging Equipment

Purpose and Indication for SPECT-CT and SPECT Units

Purpose of SPECT-CT Use

- For all sites that provided exam use data, on average, SPECT-CT exams are most often indicated for **oncology**, at 26.6% (use at individual sites ranged from 0% to 65%), followed by **cardiology** at 23.7% (use at individual sites ranged from 0% to 100%), and **musculoskeletal diseases** at 23.1% (use at individual sites ranged from 0% to 100%) (Figure 18 and Appendix 3, Table 29).
- SPECT-CT, on average, is most often used for **diagnostic non-cardiac purposes** (73.0%), followed by **diagnostic cardiac purposes** (27.3%), and **research purposes** (0.3%) (Figure 19 and Appendix 3, Table 30).

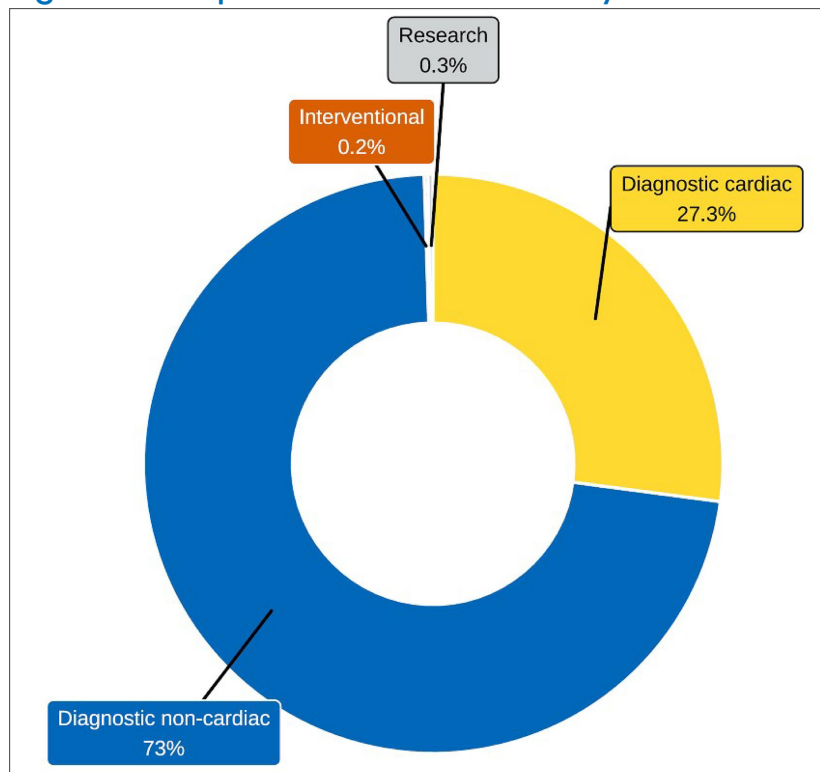
Figure 18: SPECT-CT Use by Clinical Specialty, 2022–2023



Notes: Survey response data on the average percentage of SPECT-CT use by discipline were available for 44 out of 180 sites across all 10 jurisdictions with SPECT-CT capacity.

Data were derived from the survey question: "On average, what percentage of these exams fall into the following categories? The total percentage, expressed as a number, must add up to 100." The following categories were offered: oncology, respiratory, hepatobiliary, musculoskeletal, inflammatory or infectious disease, neurologic, cardiac, trauma, and other.

Figure 19: Purpose of SPECT-CT Use by Medical Category, 2022–2023

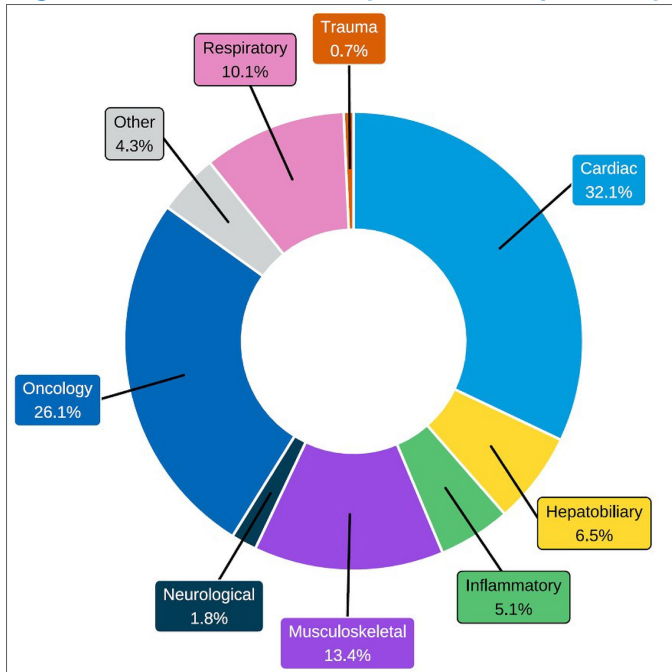


Notes: Survey response data were available for 78 sites out of 180 sites across 9 out of 10 jurisdictions with SPECT-CT capacity. No data were available for Manitoba. Data were derived from the survey question: “Based on your practice in the last fiscal year, what percentage of time are all units used for? The total percentage, expressed as a number, must add up to 100.” The following categories were offered: Diagnostic purposes (cardiac only), Diagnostic purposes (non-cardiac), Research, Interventional, and Other.

Purpose of SPECT Use

- For all sites that provided exam use data, on average, **SPECT exams are most often indicated for cardiac conditions**, at 32.1% (use at individual sites ranged from 0% to 100%), followed by oncology at 26.1% (use at individual sites ranged from 0% to 80%), and musculoskeletal diseases at 13.4% (use at individual sites ranged from 0% to 55%) ([Figure 20](#) and [Appendix 3, Table 31](#)).
- **SPECT, on average, was most often used for diagnostic non-cardiac purposes (71.2%)**, followed by diagnostic cardiac purposes (27.8%). None of the responding sites reported using SPECT for interventional use or other use ([Figure 21](#) and [Appendix 3, Table 32](#)).

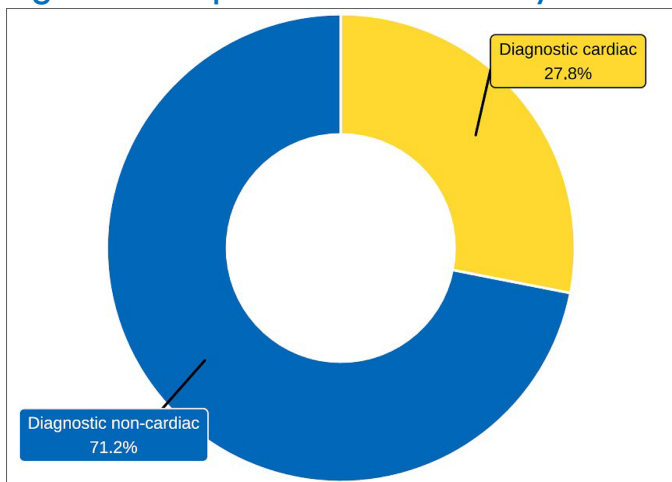
Figure 20: SPECT Use by Clinical Specialty, 2022–2023



Notes: Survey response data were available for 31 out of 138 sites across 6 out of 9 jurisdictions with SPECT capacity. No data were available for Alberta, Manitoba, and Newfoundland and Labrador.

Data were derived from the survey question: "On average, what percentage of these exams fall into the following categories? The total percentage, expressed as a number, must add up to 100." The following categories were offered: oncology, respiratory, hepatobiliary, musculoskeletal, inflammatory or infectious disease, neurologic, cardiac, trauma, and other.

Figure 21: Purpose of SPECT Use by Medical Category, 2022–2023



Notes: Survey response data were available for 60 out of 138 sites across 7 out of 9 jurisdictions with SPECT capacity. No data were available for Manitoba and Newfoundland and Labrador.

Data were derived from the survey question: "Based on your practice in the last fiscal year, what percentage of time are all units used for? The total percentage, expressed as a number, must add up to 100." The following categories were offered: diagnostic purposes (cardiac only), diagnostic purposes (non-cardiac), research, interventional, and other.

Integration of Use of AI in SPECT-CT and SPECT Imaging

AI is a branch of computer science concerned with the development of systems that can perform problem solving, reasoning, and recognition tasks.^{15,16}

The current focus of AI in medical imaging departments in Canada includes, but is not limited to, assisting imaging professionals in lowering radiation dose, reading and interpreting images, image reconstruction, planning treatment, predicting outcomes, and carrying out administrative tasks.^{15,16}

The survey participants were asked to report on the use of AI for SPECT-CT and SPECT in the clinical and/or research setting. Most sites either did not respond to the questions on AI use or answered with “no,” indicating that it was not used.

Use of AI for SPECT-CT

Data were available for 76 to 88 sites with SPECT-CT capacity, depending on how AI was used, and the results are presented in [Appendix 3, Table 33](#).

- In total, 13 sites located in British Columbia, New Brunswick, Nova Scotia, Ontario, and Quebec reported the use of AI with SPECT-CT for **image reconstruction**.
- One site in British Columbia used AI with SPECT-CT in the **research setting**.

Use of AI for SPECT

Data were available for 46 to 56 sites with SPECT capacity, depending on how AI was used, and the results are presented in [Appendix 3, Table 34](#).

- Eight sites located in New Brunswick and Ontario reported the use of AI with SPECT for **image reconstruction**.
- No sites reported using AI with SPECT in the **research setting** for **lowering radiation dose, image reconstruction, or carrying out administrative tasks**.

Ordering and Receiving Exams

Exam Ordering Privileges at Sites With SPECT-CT and SPECT Units

Jurisdictional validators were asked to provide details on which regulated health professionals working in the public setting were authorized to order SPECT-CT and SPECT exams in their jurisdictions. The responses are summarized in [Appendix 3, Table 35](#). The results show that:

- All clinical specialists in all provinces are authorized to order SPECT-CT and SPECT exams.
- Family physicians, general practitioners, and nurse practitioners have the same SPECT-CT and SPECT exam ordering privileges within each jurisdiction. In Newfoundland and Labrador, these health care professionals cannot order myocardial perfusion imaging exams, which requires consultation from a cardiology or internal medicine specialist; in Quebec, there are specific conditions (not specified) under which family doctors and nurse practitioners can order these exams. In Alberta, chiropractors

and podiatrists also have exam ordering privileges. Data from New Brunswick was not provided for this question.

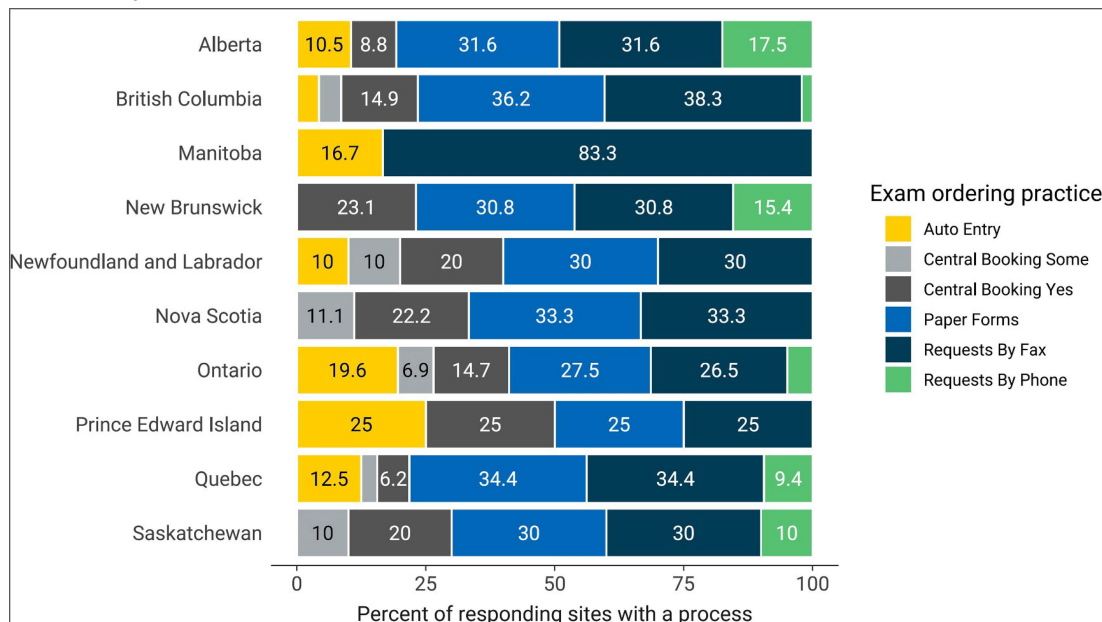
- In British Columbia, some health care professionals, such as chiropractors, dentists, and podiatric surgeons, can order SPECT-CT and SPECT exams.
- In the Northwest Territories, referrals for SPECT-CT and SPECT exams are made out of territory.
- No data were received for Yukon.

How Exam Requests are Received at Sites With SPECT-CT and SPECT Imaging

The survey participants were asked to report their exam ordering practices from the following options: requests by automated order entry, paper, fax, telephone, and centralized order entry for some, or all, exams.

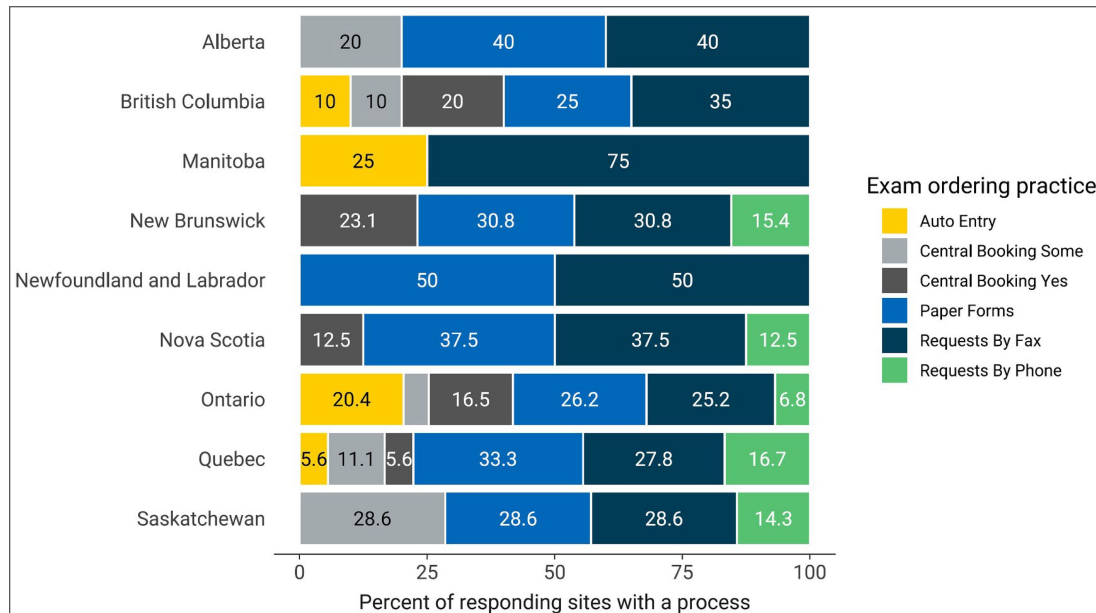
- For SPECT-CT exam requests, the most commonly reported exam ordering methods are **fax** (96.9%), **paper form** (91.7%), and **centralized order entry booking** (54.8%), based on 96 sites with responses ([Figure 22](#) and [Appendix 3, Table 36](#)).
- For SPECT exam requests, the most commonly reported exam ordering methods are also **fax** (94.6%), **paper form** (90.9%), and **centralized order entry booking** (70.3%), based on 56 sites with responses ([Figure 23](#) and [Appendix 3, Table 37](#)).

Figure 22: Summary of SPECT-CT Exam Ordering Practices at Sites That Reported a Process, 2022–2023



Notes: Survey response data are available for 96 out of 180 sites across all jurisdictions with SPECT-CT capacity. Data were derived from the survey question: “Are automated order entry forms (exams request) used?”; “Are paper forms (exams requests) used?”; “Are requests received by fax?”; “Are requests received by phone?”; and “Is a centralized order entry (booking) system used? For all exams: Yes/no; For some exams: yes/no.”

Figure 23: Summary of SPECT Exam Ordering Practices at Sites That Reported a Process, 2022–2023



Notes: Survey response data are available for 56 out of 138 sites across all jurisdictions with SPECT capacity. Data derived from the survey question: “Are automated order entry forms (exams request) used?”; “Are paper forms (exams requests) used?”; “Are requests received by fax?”; “Are requests received by phone?”; and “Is a centralized order entry (booking) system used? For all exams: Yes/no; For some exams: yes/no.”

Appropriateness and Quality Assurance Tools for SPECT-CT and SPECT Imaging

Low-value exam referrals can impact exam wait times.¹⁷ To help minimize low-value imaging, appropriateness processes, decision support tools, and peer review programs may be implemented.

Use of Clinical Decision Support Tools in SPECT-CT and SPECT

A clinical decision support tool (CDST) is a tool that provides real-time guidance to physicians on the appropriateness of diagnostic imaging tests for a given patient during the ordering process.³

- Four sites (4.3%) reported that referring physicians use CDSTs for ordering SPECT-CT exams ([Table 8](#)).
- Three sites (5.7%) reported that referring physicians use CDSTs for ordering SPECT exams ([Table 9](#)).

Use of Peer Learning in SPECT-CT and SPECT

Peer learning is a tool that is widely used in diagnostic imaging. Radiologists undertake peer review as part of the peer learning workflow, often anonymously, in clinical practice to provide ongoing feedback to improve performance, reduce discrepancies and errors, maintain standards, provide credibility, support learning, and identify gaps in education.¹⁸

- In total, 48 sites (44.4%) with SPECT-CT units reported using peer review of images for quality assurance ([Table 8](#)).

- Overall, 32 sites (53.3%) with SPECT units reported using peer review of images for quality assurance (Table 9).

Table 8: Use of Clinical Decision Support Tools and Peer Learning at Sites With SPECT-CT, 2022–2023

Province or territory	CDST		Peer review	
	Number of sites reporting “Yes” (% of sites)	Number of reporting sites	Number of sites reporting “Yes” (% of sites)	Number of reporting sites
Alberta	0 (0)	18	8 (42.1)	19
British Columbia	2 (11.8)	17	11 (57.9)	19
Manitoba	0 (0)	5	0 (0)	5
New Brunswick	0 (0)	4	1 (20)	5
Newfoundland and Labrador	0 (0)	3	0 (0)	3
Northwest Territories	NA	NA	NA	NA
Nova Scotia	0 (0)	3	3 (60)	5
Nunavut	NA	NA	NA	NA
Ontario	2 (7.4)	27	23 (65.7)	35
Prince Edward Island	0 (0)	1	0 (0)	1
Quebec	0 (0)	12	2 (15.4)	13
Saskatchewan	0 (0)	3	0 (0)	3
Yukon	NA	NA	NA	NA
Canada	4 (4.3)	93	48 (44.4)	108

CDST = clinical decision support tool; NA = not applicable.

Notes: Survey response data about CDSTs were available for 93 out of 180 sites across all jurisdictions with SPECT-CT capacity. Survey response data about peer review were available for 108 out of 180 sites across all jurisdictions with SPECT-CT capacity.

CDST data were derived from the survey question: “Is a clinical decision support tool used at the point of care by medical professionals referring patients to medical imaging? A clinical decision support tool provides real-time guidance to physicians on the appropriateness of diagnostic imaging tests for a given patient during the ordering process.” Options were: Yes, No, Don’t know. Additional data were supplemented from the following survey question: “Do you have a process for determining the appropriateness of orders that are received? If yes, which process is used?”

Peer review data were derived from the survey question: “Do radiologists at your facility participate in a peer review program for image reading and interpretation for the purpose of quality assurance?” Options were: Yes, No, Don’t know.

Table 9: Use of Clinical Decision Support Tools and Peer Learning at Sites With SPECT, 2022–2023

Province or territory	CDST		Peer review	
	Number of sites reporting “Yes” (% of sites)	Number of reporting sites	Number of sites reporting “Yes” (% of sites)	Number of reporting sites
Alberta	0 (0)	2	1 (50)	2
British Columbia	1 (14.3)	7	4 (44.4)	9
Manitoba	0 (0)	3	0 (0)	3
New Brunswick	0 (0)	4	1 (33.3)	3
Newfoundland and Labrador	0 (0)	1	0 (0)	1
Northwest Territories	NA	NA	NA	NA
Nova Scotia	0 (0)	3	1 (25)	4
Nunavut	NA	NA	NA	NA
Ontario	2 (7.7)	26	24 (75)	32
Prince Edward Island	NA	NA	NA	NA
Quebec	0 (0)	6	1 (25)	4
Saskatchewan	0 (0)	1	0 (0)	2
Yukon	NA	NA	NA	NA
Canada	3 (5.7)	53	32 (53.3)	60

CDST = clinical decision support tools; NA = not applicable; NR = not reported.

Notes: Survey response data about CDSTs were available for 53 out of 138 sites across all jurisdictions with SPECT capacity. Survey response data about peer review were available for 60 out of 138 sites across all jurisdictions with SPECT capacity.

CDST data were derived from the survey question: “Is a clinical decision support tool used at the point of care by medical professionals referring patients to medical imaging? A clinical decision support tool provides real-time guidance to physicians on the appropriateness of diagnostic imaging tests for a given patient during the ordering process.” Options were: Yes, No, Don’t know. Additional data were supplemented from the following survey question: “Do you have a process for determining the appropriateness of orders that are received? If yes, which process is used?”

Peer review data were derived from the survey question: “Do radiologists at your facility participate in a peer review program for image reading and interpretation for the purpose of quality assurance?” Options were: Yes, No, Don’t know.

Picture Archiving and Communication Systems

Picture archiving and communication systems (PACS) are electronic systems used to digitally manage images, including transmission, filing, storage, distribution, and retrieval of medical images. A detailed definition is provided in [Appendix 2](#).

SPECT-CT

Sites with SPECT-CT capacity were asked whether medical images were stored on a PACS and accessible throughout the jurisdiction in which the site operates. Data were available for 135 sites with a PACS:

- **82.2%** of responding sites with SPECT-CT capacity reported PACS access throughout the provincial health care system without the need of manual retrieval (111 of 135 sites)
- **17.8%** of sites reported local access to a PACS (24 of 135 sites)

- **29.6%** of sites had **regional access** to a PACS (40 of 135 sites)
- **34.8%** of sites had **intraprovincial access** to a PACS (47 of 135 sites)
- **97.0%** of sites reported that **PACS images** were **accessible to referring physicians** located in areas of the hospital outside of diagnostic imaging (131 of 135 sites).

SPECT

Sites with SPECT capacity were asked whether medical images were stored on a PACS and accessible throughout the jurisdiction in which the site operates. Data were available for 110 sites with a PACS:

- **80.9%** of responding sites with SPECT capacity reported **PACS access** throughout the **provincial** health care system without the need of manual retrieval (89 of 110 sites)
- **26.4%** of sites reported **local access** to a PACS (29 of 110 sites)
- **28.2%** of sites had **regional access** to a PACS (31 of 110 sites)
- **26.4%** of sites had **intraprovincial access** to a PACS (29 of 110 sites)
- **95.5%** of sites reported that **PACS images** were **accessible to referring physicians** located in areas of the hospital outside of diagnostic imaging (105 of 110 sites).

Technical Characteristics of SPECT-CT and SPECT Equipment

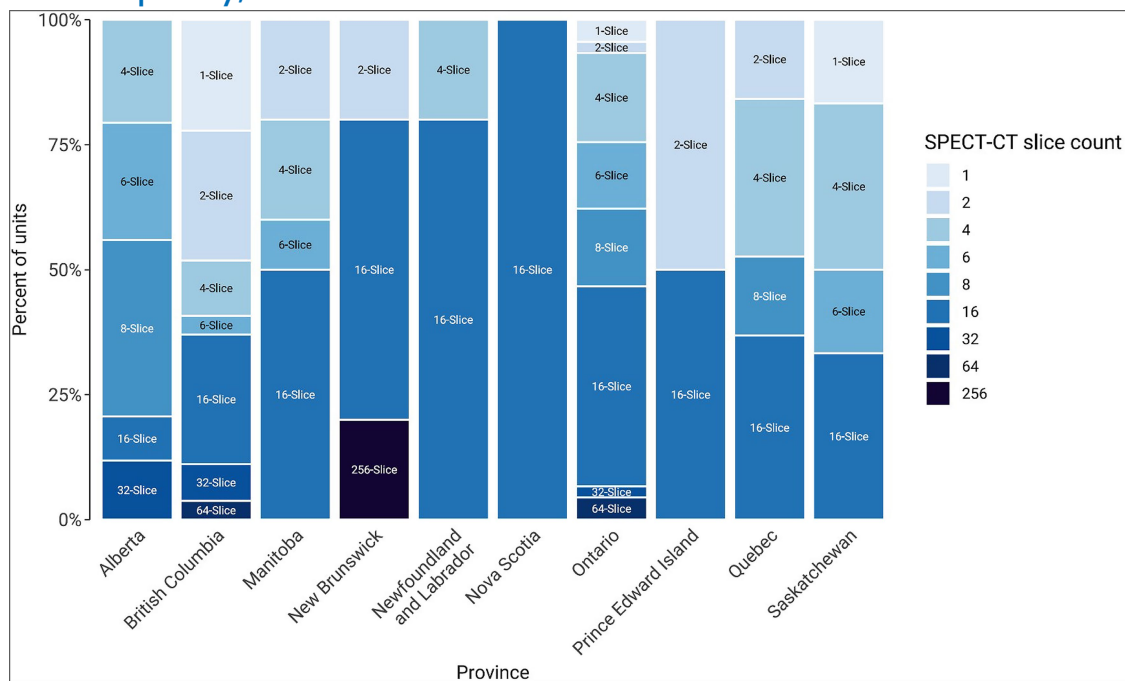
Technical Specifications of SPECT-CT Units

- The number of common multidetector slices available in the CT component of SPECT-CT units was available for 154 units ([Figure 24](#) and [Appendix 3, Table 38](#)).
 - In total, **16-slice** multidetectors were **most commonly used**, reported in 51 units (32.7%), followed by **4-slice** scanning in 29 units (18.6%), and **8-slice** scanning in 22 units (14.1%).
- The number of **detector heads** available in SPECT-CT units was available for 142 units located in 9 provinces.
 - One SPECT-CT unit in Ontario was reported to have 1 detector head (0.7%). The other units located in all 9 responding provinces were reported to have 2 detector heads (99.3%).
- Information on **field of view** in SPECT-CT units was available for 140 units.
 - More than 97% of units were reported to have a **standard multipurpose** field of view.
- Information on whether iterative reconstruction or filtered back projection **software** is used in SPECT-CT units was available for 140 units.
 - Overall, 84 units (60%) had the feature of **iterative reconstruction** and the other 56 units (40%) were reported to have the feature of **filtered back projection**.
- The **CT component** is **used independently** to provide extra CT capacity in **10.6% of units** located in 8 provinces (21 of 199 units reported): Alberta (3 of 35 units), British Columbia (4 of 36 units), Manitoba (2 of 7 units), New Brunswick (2 of 7 units), Nova Scotia (3 of 8 units), Ontario (5 of 62

units), Quebec (1 of 28 units), and Saskatchewan (1 of 6 units). For Newfoundland and Labrador and Prince Edward Island, no SPECT-CT units were reported to use the CT component independently (10 units).

- In total, **64.7%** of SPECT-CT units located in 9 provinces have **dose-management controls** (97 of 150 units with information): Alberta (24 of 34 units), British Columbia (7 of 29 units), New Brunswick (4 of 5 units), Newfoundland and Labrador (5 of 6 units), Nova Scotia (1 of 1 units), Ontario (38 of 48 units), Prince Edward Island (1 of 2 units), Quebec (11 of 19 units), and Saskatchewan (6 of 6 units).
- Overall, **73.6%** of units located in all provinces **record the patient radiation dose per exam** (142 of 193 units with information): Alberta (31 of 35 units), British Columbia (20 of 34 units), Manitoba (2 of 2 units), New Brunswick (5 of 6 units), Newfoundland and Labrador (1 of 7 units), Nova Scotia (6 of 9 units), Ontario (45 of 63 units), Prince Edward Island (1 of 2 units), Quebec (25 of 29 units), and Saskatchewan (6 of 6 units).
- The information on **future cumulative dose tracking** in SPECT-CT units was available for 128 units. Dose tracking was planned in the future for 38.3% of reported units: Alberta (28 of 34 units), British Columbia (5 of 25 units), New Brunswick (1 of 3 units), Ontario (12 of 36 units), Prince Edward Island (2 of 2), and Quebec (1 of 13 units). Manitoba, Newfoundland and Labrador, Nova Scotia, and Saskatchewan did not report plans for future dose tracking in SPECT-CT units (0 of 15).

Figure 24: Reported Proportion of Slices in SPECT-CT Units in 2022–2023 for Jurisdictions With Capacity, 2022–2023



Notes: Survey response data for specific slice count were available for 154 out of 331 units in all jurisdictions with SPECT-CT capacity. Data were derived from the survey question: “How many multi-detectors does the SPECT-CT unit have (how many slices)?”

Technical Specifications of SPECT Units

- The number of **detector heads** available in SPECT units was available for 71 units.
 - Overall, 16.9% of the reported SPECT units had 1 detector head (12 units). The other 83.1% had 2 detector heads (59 units).
- The information on field of view in SPECT units was available for 76 units.
 - In total, 71.1% of the units had a standard **multipurpose** field of view (54 units), 26.3% of the units had a **dedicated and limited** field of view (20 units), and 1 unit in British Columbia and 1 unit in Saskatchewan had other field of view (2.6%).
- Information on whether iterative reconstruction or filtered back projection **software** is used in SPECT units was available for 66 units.
 - Overall, 50% of units with information had the feature of **iterative reconstruction** and the other 50% were reported to have the feature of **filtered back projection**.

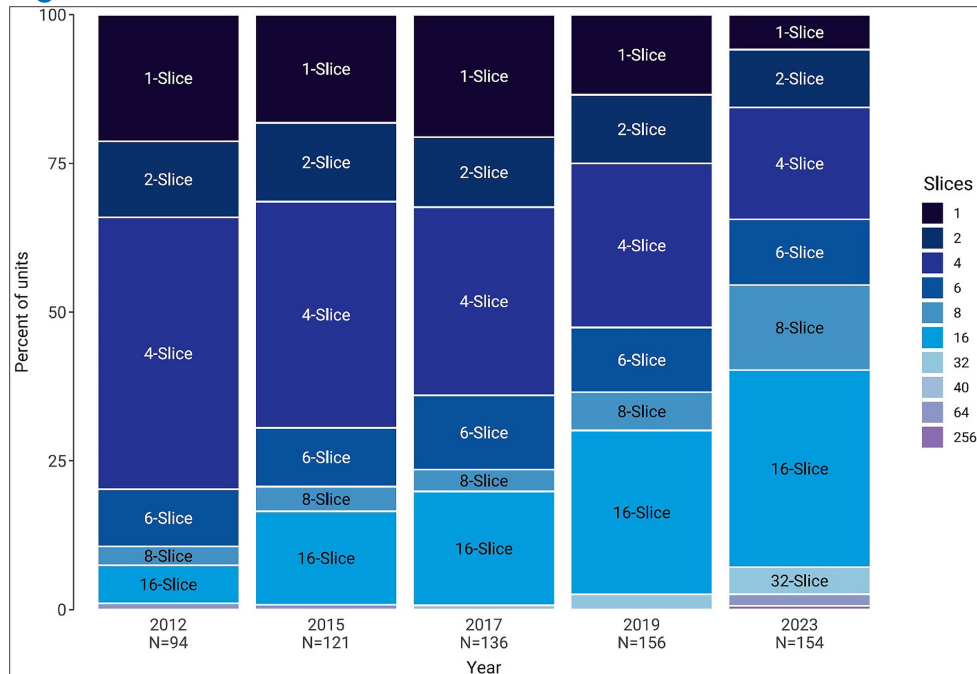
Trends in Technical Specifications of SPECT-CT

Trends are only reported for SPECT-CT as, because of a low survey response for technical specifications of SPECT, trends data on technical characteristics was not possible for that modality.

Trends Over Time in Number of Slices in SPECT-CT Units

- In 2012, **4-slice** was the **most common** scanning option used by SPECT-CT units. Since 2012, the percentage of SPECT-CT units with **4-slice** scanning has **decreased** from **45.7%** of units in 2012 to **18.6%** of units in 2022–2023. ([Figure 25](#) and [Appendix 3, Table 38](#)).
- Since 2012, the percentage of SPECT-CT units with **16-slice** scanning has steadily **increased** from **6.4%** of units in 2012 to **32.7%** of units in 2022–2023.
- In 2022–2023, **0.6%** of SPECT-CT units used **256-slice** scanning (1 of 154 reported units, which was located in New Brunswick).

Figure 25: Trends in Number of Slices in SPECT-CT Units, 2012 to 2022–2023



Notes: The number of units with data available for each year is indicated with the year.

The 2023 data were derived from the survey question: “How many multi-detectors does the SPECT-CT unit have (how many slices)?”

Source: Canadian Institute for Health Information (2012),¹⁹ the Canadian Institute for Health Information QuickStats dataset,²⁰ Canadian Medical Imaging Inventory (CMII) (2015),⁸ CMII (2017),⁹ CMII (2020),³ and CMII (2022–2023). The 2015 data were subject to additional data-cleaning before being uploaded for the 2017 survey, and this cleaned dataset was used.

Availability of Technologies for Control of Radiation Exposure, 2015 to 2022–2023

- Since 2015, the percentage of SPECT-CT units reported to have dose-management controls, increased from 16.1% in 2015 to 29.3% in 2022 to 2023 ([Appendix 3, Table 39](#)).

Patient Radiation Dose Recording for Control of Radiation Exposure, 2015 to 2022–2023

- All provinces reported the use of dose recording in SPECT-CT. [Appendix 3, Table 39](#) presents the availability of radiation exposure in SPECT-CT units from CMII surveys conducted between 2015 and 2022–2023 for units with available information.
- In 2015, the number of SPECT-CT units reported to record patient radiation dose by exam increased from 14.8% in 2015 to 42.9% in 2022–2023.

Projections of the Number of Units and Exams for SPECT-CT and SPECT

The CMII forecasts the number of SPECT-CT and SPECT units and the volume of exams needed to maintain current levels of service based on estimations of population growth in Canada for 2025, 2030, 2035, and 2040.

Our projections use a simple model based on 2022–2023 SPECT-CT and SPECT imaging unit and exam findings, which were applied to estimated population projections from Statistics Canada. Three different population scenarios are envisioned for low, medium, and high projected growth and are presented in 5-year increments to 2040 growth (refer to [Appendix 3, Table 40](#) for population projections). The projections use the current per capita number of unit and exam volumes for 2022–2023 and assume that population change is the only driver of growth over the forecasted period. Additional limitations of the data are summarized later in this section of this report.

Projected Number of SPECT-CT Units for 2025, 2030, 2035, and 2040

For each jurisdiction with existing SPECT-CT capacity, projections for the number of units needed to maintain current levels of service are presented in [Figure 26](#) and [Appendix 3, Table 41](#). Assuming medium population growth:

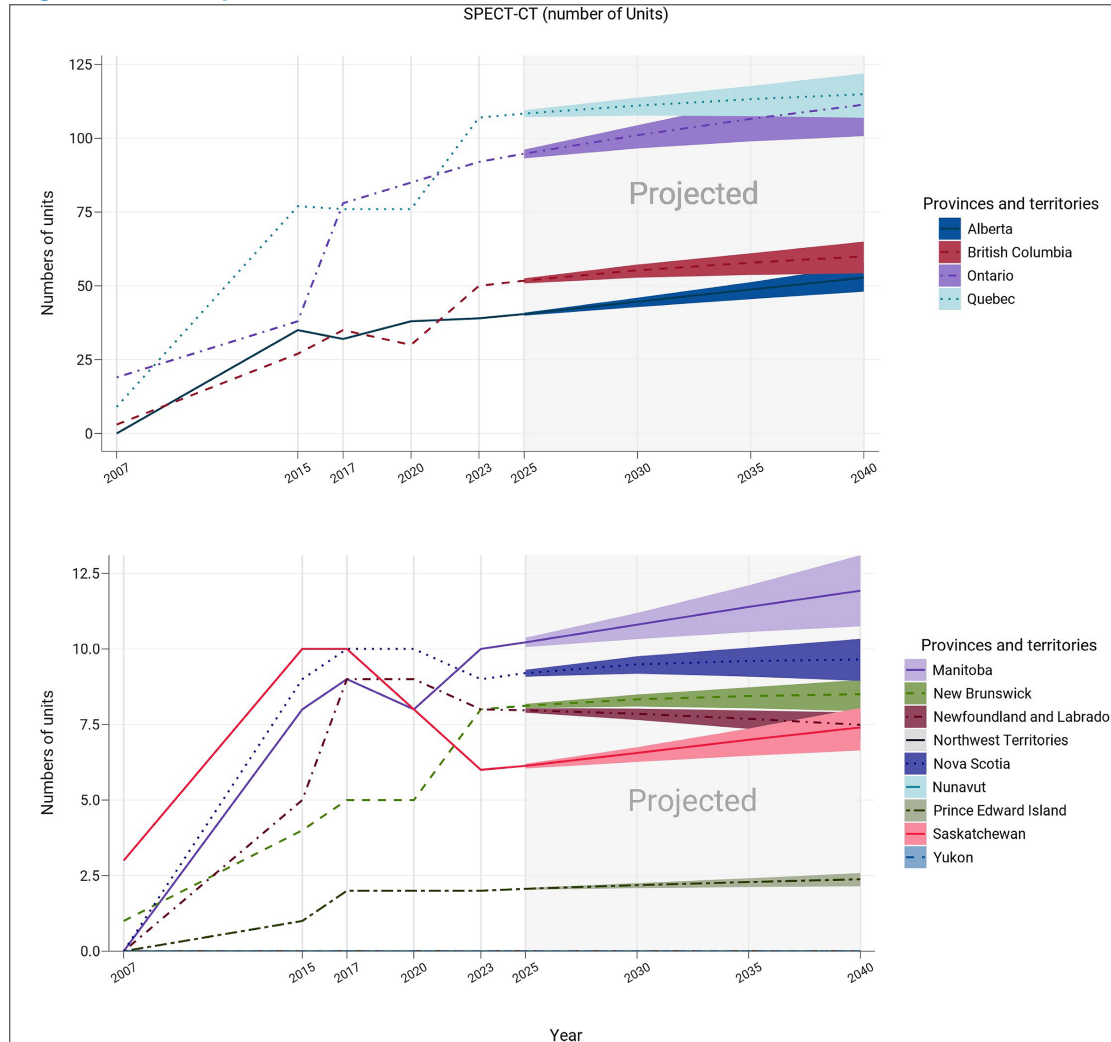
- In Canada, the number of SPECT-CT units is **projected to increase by 18.4%, from 331 units in 2022–2023 to 392 units in 2040** (range, 357.5 to 423.4).
- The number of SPECT-CT units is **projected to increase for all provinces** with existing capacity, except for Newfoundland and Labrador and Prince Edward Island.
- Three provinces are projected to have the **largest increase in units by 2040: Ontario**, from 92 to 111 units; **Alberta**, from 39 to 53 units; and **British Columbia**, from 50 to 60 units.

When **low population growth** is assumed, the number of SPECT-CT units is projected to increase in **Alberta, British Columbia, Manitoba, Ontario, and Saskatchewan**. New Brunswick, Nova Scotia, Prince Edward Island, and Quebec are projected to remain unchanged from 2022–2023.

Newfoundland and Labrador is the only province that has a projected population decline across growth scenarios.

Northwest Territories, Nunavut, and Yukon do not currently have any SPECT-CT units, and so estimated growth projections could not be calculated.

Figure 26: Projected Number of SPECT-CT Units for 2025, 2030, 2035, and 2040



Notes: The projection was calculated from the products of the numbers of per capita units in 2022–2023 and the population projections in 2025, 2030, 2035, and 2040. The numbers of imaging units or exams were provided by provincial or territorial validators in 2023. The population projections were retrieved from the Statistics Canada website on January 18, 2024.²¹ The solid lines of projections were based on the population projection, assuming medium growth. The upper and lower bounds were based on population projections, assuming high and low growth, respectively. The data displayed in this figure are presented in greater detail in Appendix 3, Table 41.

Projected Number of SPECT Units for 2025, 2030, 2035, and 2040

For each jurisdiction with existing SPECT capacity, the projections for the number of units needed to maintain current levels of service are presented in [Figure 27](#) and [Appendix 3, Table 42](#). Assuming medium population growth:

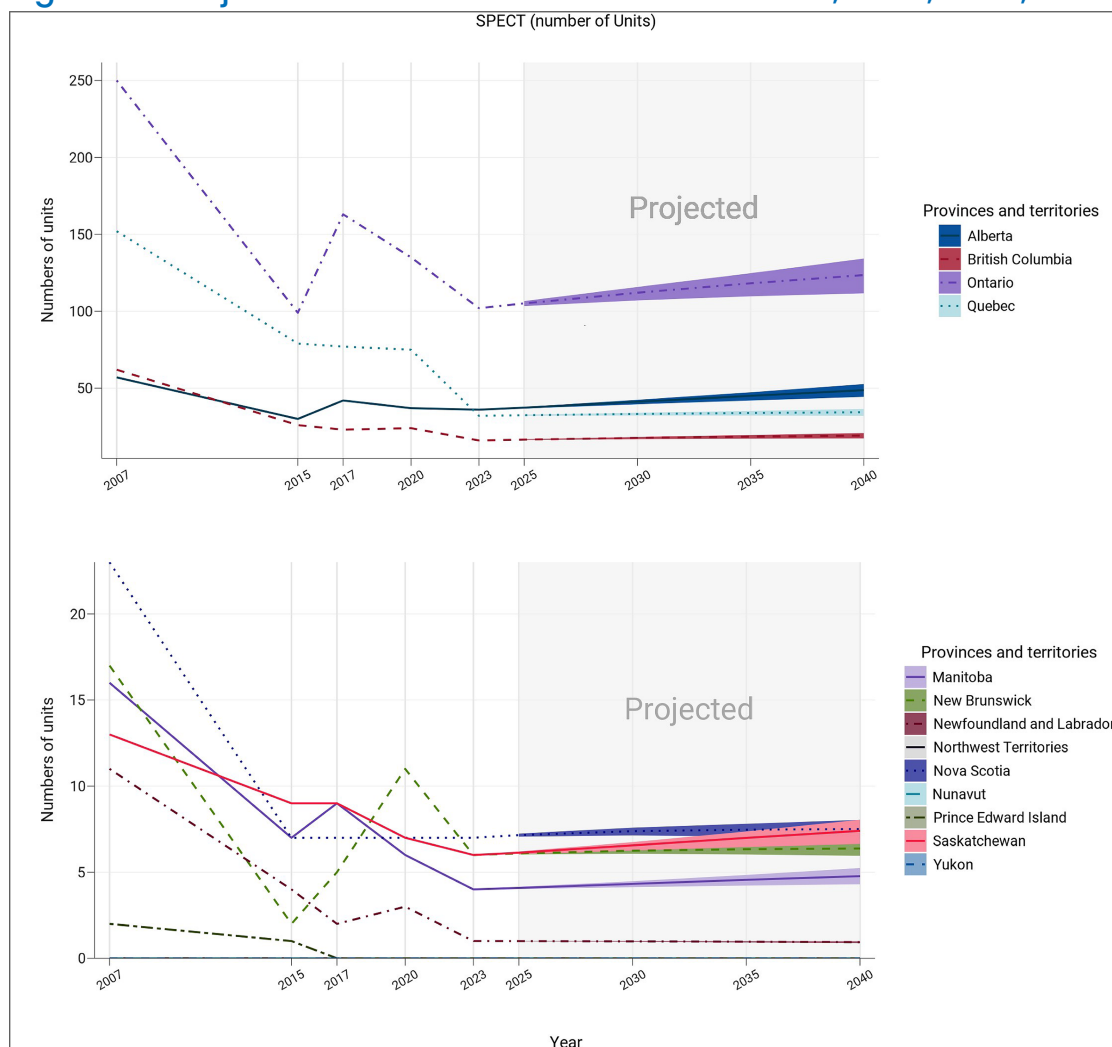
- In Canada, the number of SPECT units is **projected to increase by 18.6%, from 210 units in 2022–2023 to 249 units in 2040** (range, 226.8 to 268.6).
- The number of SPECT units is **projected to increase for all provinces** with existing capacity, except for Newfoundland and Labrador and New Brunswick.
- Three provinces are projected to have the **largest increase in units by 2040: Ontario**, from 102 to 124 units; **Alberta**, from 36 to 49 units; and **British Columbia**, from 16 to 19 units.

When **low population growth** is assumed, the number of SPECT units is projected to increase in **Alberta, British Columbia, Ontario, and Saskatchewan**. Manitoba, New Brunswick, Nova Scotia, and Quebec are projected to remain unchanged from 2022–2023.

Newfoundland and Labrador is the only province that has a projected population decline across growth scenarios.

Prince Edward Island, Northwest Territories, Nunavut, and Yukon do not currently have any SPECT units, and so estimated growth projections could not be calculated.

Figure 27: Projected Number of SPECT Units for 2025, 2030, 2035, and 2040



Notes: The projection was calculated from the products of the numbers of per capita units in 2022–2023 and the population projections in 2025, 2030, 2035, and 2040. The numbers of imaging units or exams were provided by provincial or territorial validators in 2023. The population projections were retrieved from the Statistics Canada website on January 18, 2024.²¹ The solid lines of projections were based on the population projection, assuming medium growth. The upper and lower bounds were based on population projections, assuming high and low growth, respectively. The data displayed in this figure are presented in greater detail in Appendix 3, Table 41.

Projected Number of SPECT-CT and SPECT Exams for 2025, 2030, 2035, and 2040

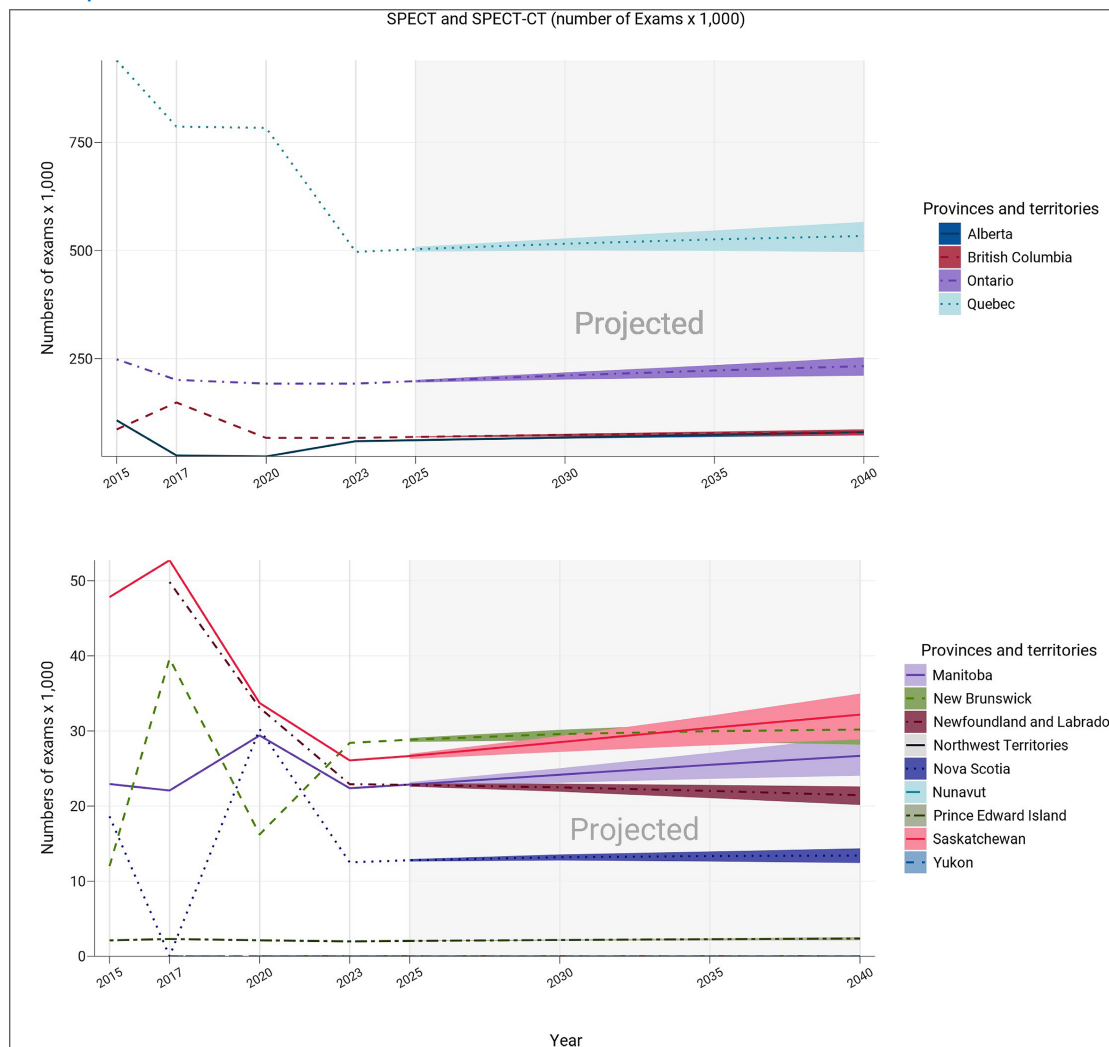
The projections for the number of exams for each province with existing SPECT-CT or SPECT capacity are presented in [Figure 28](#) and [Appendix 3, Table 43](#)). Assuming medium population growth:

- In Canada, the number of SPECT-CT or SPECT exams is projected to increase by 18.5%, from 929,010 to 1,100,980 by 2040 (range, 1,003,423 to 1,188,389)
- The number of SPECT-CT or SPECT exams is projected to increase for all provinces with existing capacity, except for Newfoundland and Labrador.

- **Alberta, Saskatchewan, and Ontario** are projected to have the largest increase in exams by 2040, at 35%, 23%, and 21%, respectively, as they are projected to have the largest increase in medium population growth from 2022–2023 to 2040.

When low population growth is assumed, the number of SPECT-CT or SPECT exams is projected to increase in **Alberta, British Columbia, Manitoba, Ontario, Prince Edward Island, and Saskatchewan.**

Figure 28: Projection of SPECT-CT or SPECT Examinations (Thousands) for 2025, 2030, 2035, and 2040



Notes: The projection was calculated from the products of the numbers of per capita exams in 2022–2023 and the population projections in 2025, 2030, 2035, and 2040. The numbers of imaging units or exams were provided by provincial or territorial validators in 2023. The population projections were retrieved from the Statistics Canada website on January 18, 2024.²¹ The solid lines of projections were based on the population projection, assuming medium growth. The upper and lower bounds were based on population projections, assuming high and low growth, respectively. The data displayed in this figure are presented in greater detail in Appendix 3, Table 43.

Projection Considerations and Limitations

Since 2015, the number of SPECT-CT units in Canada has increased by 54.7%, while the number of SPECT units and SPECT-CT or SPECT exam volumes have decreased, which is driven by the replacement of SPECT and planar technology with SPECT-CT and the use of other advanced imaging modalities. Additionally, when considering 2019–2020 CMII projections that expected the number of units or exams of both SPECT-CT and SPECT to increase in 2025,³ it is clear that other factors, in addition to population growth, influence projections.

To assist with policy development and planning around changing equipment and exam volumes, it may be helpful to consider additional factors such as:

- changing health care priorities and policies
- an aging population
- increasing disease prevalence
- the widening scope of clinical indications for which SPECT-CT and SPECT can be used
- funding (with a set level of funding, there may be a limited number of exams that can be performed).

Limitations of Findings

- While complete data are available from provincial and territorial validators for units and exams in the public setting, there is no equivalent publicly available repository for the private imaging sector; therefore, data for unit and exam counts are not reflective of overall private imaging facility operations. Challenges identifying private facilities and contacts within these facilities also contributed to the low number of survey responses for this category of imaging facility. Therefore, this may lead to underestimating the total number of units and exams, particularly in jurisdictions where privately run imaging facilities contribute to the overall use.
- For some survey questions, a low number of responses were received by participating sites, warranting caution when interpreting the data. For instance, while 138 sites reported SPECT capacity, 64 sites reported data for hours of operation. The number of sites that responded to each question are included alongside the reported data, to enable readers to assess representativeness. Future work will be undertaken to identify patterns in missing data and how this may impact reporting bias.
- To document the age of equipment, dates provided by reporting sites were variably reported as year of installation or first year of operation (depending on data availability). This frequently varied across datasets, leading to a 1- or 2-year uncertainty in the age of individual units, and a corresponding uncertainty in the reported mean age of equipment.
- For specific survey questions, the accuracy of the data in this report relies in part on the survey participants' personal knowledge of their particular health care setting (e.g., hours of operation, hours of unplanned downtime). For these survey questions, recall bias could not be avoided, as we were unable to assess whether all information was visually verified and based on real-time observations

or whether questions were answered from memory. As a result, the accuracy and completeness of reporting may be affected.

- Since 2015, the CMII national survey forms have been prepopulated with responses from sites that participated in previous CMII national survey iterations. Invited survey respondents were asked to update their data to reflect the status at the time of responding to the survey. If the survey data were not updated, it was assumed that no changes had been made from the previous CMII survey response. While this method improved survey respondent engagement and reduced fatigue, in some instances not all data may be up-to-date for some sites.
- SPECT and SPECT-CT accounting has been variable. Possible reasons include sites' and validators' uncertain identification of units with low CT resolution as SPECT rather than as SPECT-CT and the tendency for some jurisdictions to report combined unit and exam counts, leading us to estimate how many were SPECT and how many were SPECT-CT.

What Else Are We Doing?

This *Canadian Medical Imaging Inventory 2022–2023: SPECT and SPECT-CT* report is part of a series of publications that CADTH has produced as part of the CMII national survey.

The following additional publications, which can be found on the [CMII webpage](#), are available to provide jurisdiction-level information on medical imaging modalities and resources:

- *Canadian Medical Imaging Inventory 2022–2023: Provincial and Territorial Overview*
- *Canadian Medical Imaging Inventory 2022–2023: CT*
- *Canadian Medical Imaging Inventory 2022–2023: MRI*
- *Canadian Medical Imaging Inventory 2022–2023: PET-CT and PET-MRI*
- *Canadian Medical Imaging Inventory 2022–2023: The Medical Imaging Team*
- provincial and territorial summaries.

What Else Have We Done?

Other CMII-related reports that CADTH has released in 2023–2024 in response to specific decision-maker needs are listed here and published on the [CMII website](#):

- [General Ultrasound Examination Volumes per Sonographer 8-Hour Workday](#)
- [Average Volume of MRI Exams Conducted per Hour Across Canada](#)
- [Implications of ChatGPT on Radiology Workflow](#)
- [Use of MRI and CT in Private Imaging Facilities in Canada: Service Report](#)
- [Optimizing the Use of Iodinated Contrast Media: Conservation Strategies Used Across Canada During the 2022 Shortage](#)

- [Imaging Implementation Advice Panel: Guidance for PSMA-PET Implementation](#)
- [Individuals' Access to Medical Imaging Results via Patient Portals](#)
- [Privately Operated Medical Imaging Facilities Across Canada](#)
- [Optimizing the Use of Iodinated Contrast Media for CT: Managing Shortages and Planning for a Sustainable and Secure Supply](#)
- [Wait List Strategies for CT and MRI Scans](#)

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Appendix 1: Introduction to SPECT-CT and SPECT

Note that this appendix has not been copy-edited.

SPECT-CT

SPECT-CT combines SPECT and CT to create three-dimensional images of the body part of interest, such as brain, bone, and heart. Its main advantage is that it offers both metabolic and physiologic information, coupled with the resolution of CT. During a hybrid SPECT-CT, both scans are performed in sequence; the images are then computationally aligned with each other to show anatomic and functional detail, and to enable attenuation correction of the SPECT signal. Medical specialties that commonly use SPECT-CT imaging include oncology, neurology, cardiology, internal medicine, and orthopedics.

The challenges of SPECT-CT are those of the component modalities, both of which involve exposure to ionizing radiation,⁶⁶ and concerns about availability of radioisotopes.

SPECT

In nuclear medicine imaging, trace amounts of radiopharmaceuticals are administered to patients intravenously or by injection (e.g., subcutaneously or intradermally), ingestion, or inhalation to visualize areas of radioisotope uptake within the body.^{47,61} Depending on the radiopharmaceutical administered, the function (i.e., physiology) of almost any organ system can be observed. Nuclear medicine gamma cameras detect the gamma rays emanating from the radioisotope and form flat images; most cameras are also capable of cross-sectional imaging (SPECT).⁶²

Nuclear medicine exams identify and evaluate a variety of pathologies, including cancer, heart disease, as well as gastrointestinal, endocrine, and neurologic disorders. Medical specialties that commonly use SPECT imaging include oncology, neurology, cardiology, internal medicine, orthopedics, pediatrics, pneumology, and infectious disease.^{47,61}

Appendix 2: Definitions of Terms Used in This Report

Note that this appendix has not been copy-edited.

Type of Facility Operating Imaging Equipment

Hospital

An institution where patients are provided with continuing medical care and supporting diagnostic and therapeutic services. Hospitals are licensed or approved as hospitals by a provincial or territorial government or are operated by the Government of Canada. Included are those providing acute care.

Tertiary Care

A hospital that provides tertiary care, which is health care from specialists who investigate and treat patients in a large hospital after referral from primary care and secondary care facilities.

Private

A health care facility that operates privately but that is either privately or publicly funded, that ranges from specialized services by physicians, radiologists, dentists, chiropractors, or via mammography programs, to broad-based imaging centres offering a wide range of tests.

Community Hospital

A short-term (average length of stay with fewer than 30 days) hospital that provides acute care.

Picture Archiving and Communication Systems

PACS refers to an electronic system used to digitally manage images, including transmission, filing, storage, distribution, and retrieval of medical images. It is networked and frequently web-based. Combined with other web-based telehealth technologies, PACS allows timely access to medical images and specialists. PACS has replaced film and film library systems.

Access to images outside medical imaging departments by referring and consulting physicians is important for efficient patient care, particularly so in a country like Canada, with its large geographic size and dispersed population.

Type of Equipment Servicing Method Reported by Sites

À la Carte

Services and parts that are paid by the imaging facility on an as-needed basis, with the service provider charging for parts, labour, and travel.

Full Vendor Service Contracts

Full vendor contracts provide a wide range of services, such as corrective maintenance, operational maintenance, planned maintenance, and extended warranty, along with insurance maintenance programs for a set period.

Insurance

Insurance policy service contracts may vary, but most equipment insurance companies specialize in risk management, cost avoidance, or service billing audit functions.

Managed Equipment Service

This service package entails ownership, acquisition, installation and commissioning, user training, asset management, maintenance, and ongoing replacement of medical technology and equipment.

Shared Service

Organizations that have in-house expertise and resources may service their own imaging equipment and may use external service contracts for certain types of equipment.

Third Party

Third-party agreements may often be used for hardware support and to provide services offered through a company separate from the original equipment manufacturer.

Under Warranty

Equipment maintenance according to warranty service agreement. At the end of the warranty period, health care systems must select their service contract type.

Appendix 3: Supplementary Summary Tables for SPECT-CT and SPECT, the 2022–2023 CMII

Note that this appendix has not been copy-edited.

Table 10: Summary of Location of SPECT-CT Facilities Included in the CMII, 2022–2023

Province or territory	Rural	Urban	Remote
Number of sites (% in each jurisdiction)			
Alberta	3 (15)	17 (85)	0 (0)
British Columbia	4 (16)	21 (84)	0 (0)
Manitoba	0 (0)	5 (100)	0 (0)
New Brunswick	0 (0)	5 (100)	0 (0)
Newfoundland and Labrador	1 (33.3)	2 (66.7)	0 (0)
Northwest Territories	–	–	–
Nova Scotia	4 (50)	4 (50)	0 (0)
Nunavut	–	–	–
Ontario	4 (8.5)	43 (91.5)	0 (0)
Prince Edward Island	0 (0)	1 (100)	0 (0)
Quebec	1 (4.2)	23 (95.8)	0 (0)
Saskatchewan	0 (0)	3 (100)	0 (0)
Yukon	–	–	–
Canada	17 (12.1)	124 (87.9)	0 (0)

“–” = not applicable.

Notes: Survey response data were available for 141 out of 180 sites across all jurisdictions with SPECT-CT capacity.

Data derived from survey question: “In which of the following settings are you located?”

Table 11: Summary of Type of SPECT-CT Facility Included in the CMII, 2022–2023

Province or territory	Community hospital	Private facilities	Hospital	Tertiary care
Number of sites (% in each jurisdiction)				
Alberta	1 (5)	7 (35)	11 (55)	1 (5)
British Columbia	0 (0)	0 (0)	19 (76)	6 (24)
Manitoba	0 (0)	0 (0)	3 (60)	2 (40)
New Brunswick	0 (0)	0 (0)	4 (80)	1 (20)
Newfoundland and Labrador	0 (0)	0 (0)	3 (100)	0 (0)
Northwest Territories	–	–	–	–
Nova Scotia	0 (0)	0 (0)	5 (62.5)	3 (37.5)
Nunavut	–	–	–	–

Province or territory	Community hospital	Private facilities	Hospital	Tertiary care
Ontario	6 (11.1)	0 (0)	40 (74.1)	8 (14.8)
Prince Edward Island	0 (0)	0 (0)	1 (100)	0 (0)
Quebec	0 (0)	0 (0)	25 (89.3)	3 (10.7)
Saskatchewan	0 (0)	0 (0)	0 (0)	3 (100)
Yukon	–	–	–	–
Canada	7 (4.6)	7 (4.6)	111 (73.0)	27 (17.8)

“–” = not applicable.

Notes: Survey response data were available for 152 out of 180 sites across all jurisdictions with SPECT-CT capacity.

Data were derived from the survey question: “What type of facility is this?” The table includes only those facilities that responded to the survey question. In some instances, validator data, CMII data, and data from other publicly available sources supplemented survey responses. Definitions for the type of facility included in the survey are provided in [Appendix 2](#).

Table 12: Summary of Source of Funding for SPECT-CT Sites Included in the CMII, 2022–2023

Province or territory	Public	Private	Both
Number of sites (% in each jurisdiction)			
Alberta	17 (94.4)	0 (0)	1 (5.6)
British Columbia	23 (100)	0 (0)	0 (0)
Manitoba	5 (100)	0 (0)	0 (0)
New Brunswick	4 (80)	0 (0)	1 (20)
Newfoundland and Labrador	3 (100)	0 (0)	0 (0)
Northwest Territories	–	–	–
Nova Scotia	6 (100)	0 (0)	0 (0)
Nunavut	–	–	–
Ontario	32 (97)	0 (0)	1 (3)
Prince Edward Island	1 (100)	0 (0)	0 (0)
Quebec	16 (94.1)	1 (5.9)	0 (0)
Saskatchewan	3 (100)	0 (0)	0 (0)
Yukon	–	–	–
Canada	110 (96.5)	1 (0.9)	3 (2.6)

“–” = not applicable; SPECT-CT = single-photon emission CT-CT.

Notes: Survey response data were available for 114 out of 180 sites across all jurisdictions with SPECT-CT capacity.

Data were derived from the survey question: “How is this facility funded?” The table includes only those facilities that responded to the survey question. In some instances, validator data, CMII data, and data from other publicly available sources supplemented survey responses.

Table 13: Summary of Type of SPECT Facility Included in the CMII, 2022–2023

Province or territory	Community hospital	Private facilities	Hospital	Tertiary care
Number of sites (% in each jurisdiction)				
Alberta	1 (10)	4 (40)	4 (40)	1 (10)
British Columbia	0 (0)	0 (0)	7 (70)	3 (30)
Manitoba	0 (0)	0 (0)	1 (33.3)	2 (66.7)
New Brunswick	0 (0)	0 (0)	4 (80)	1 (20)
Newfoundland and Labrador	0 (0)	0 (0)	1 (100)	0 (0)
Northwest Territories	–	–	–	–
Nova Scotia	0 (0)	0 (0)	2 (33.3)	4 (66.7)
Nunavut	–	–	–	–
Ontario	9 (16.4)	6 (10.9)	34 (61.8)	6 (10.9)
Prince Edward Island	–	–	–	–
Quebec	0 (0)	0 (0)	13 (92.9)	1 (7.1)
Saskatchewan	0 (0)	0 (0)	0 (0)	3 (100)
Yukon	–	–	–	–
Canada	10 (9.3)	10 (9.3)	66 (61.7)	21 (19.6)

“–” = not applicable.

Notes: Survey response data were available for 107 out of 138 sites across all jurisdictions with SPECT capacity.

Data derived from survey question: “What type of facility is this?” The table includes only those facilities that responded to the survey question. In some instances, validator data, CMII data, and data from other publicly available sources supplemented survey responses. Definitions for the type of facility included in the survey are provided in [Appendix 2](#).

Table 14: Summary of Source of Funding for SPECT Sites Included in the CMII, 2022–2023

Province or territory	Public	Private	Both
Number of sites (% in each jurisdiction)			
Alberta	6 (100)	0 (0)	0 (0)
British Columbia	8 (100)	0 (0)	0 (0)
Manitoba	3 (100)	0 (0)	0 (0)
New Brunswick	4 (80)	0 (0)	1 (20)
Newfoundland and Labrador	1 (100)	0 (0)	0 (0)
Northwest Territories	–	–	–
Nova Scotia	4 (100)	0 (0)	0 (0)
Nunavut	–	–	–
Ontario	27 (96.4)	0 (0)	1 (3.6)
Prince Edward Island	–	–	–

Province or territory	Public	Private	Both
Quebec	9 (100)	0 (0)	0 (0)
Saskatchewan	3 (100)	0 (0)	0 (0)
Yukon	–	–	–
Canada	65 (97.0)	0 (0)	2 (3.0)

“–” = not applicable.

Notes: Survey response data were available for 67 out of 138 sites across all jurisdictions with SPECT capacity.

Data derived from survey question: “How is this facility funded?” The table includes only those facilities that responded to the survey question. In some instances, validator data, CMI data, and data from other publicly available sources supplemented survey responses.

Table 15: Number of SPECT-CT Units and Units per Capita, 2015 to 2022– 2023

Province or territory	2015		2017		2019–2020		2022–2023	
	Units	Units per million population	Units	Units per million population	Units	Units per million population	Units	Units per million population
Alberta	35	8.3	32	7.5	38	8.6	39	8.3
British Columbia	27	5.8	31	6.5	30	5.9	50	9.2
Manitoba	8	6.2	8	6.0	8	5.8	10	6.9
New Brunswick	4	5.3	5	6.6	5	6.4	8	9.6
Newfoundland and Labrador	5	9.5	9	17.0	9	17.2	8	15
Northwest Territories	0	–	0	–	–	–	–	–
Nova Scotia	9	9.5	10	10.5	10	10.2	9	8.6
Nunavut	0	–	0	–	–	–	–	–
Ontario	38	2.8	78	5.5	85	5.8	92	5.9
Prince Edward Island	1	6.9	2	13.4	2	12.7	2	11.4
Quebec	77	9.3	76	9.1	76	8.9	107	12.1
Saskatchewan	10	8.8	10	8.6	8	6.8	6	4.9
Yukon	0	–	0	–	–	–	–	–
Canada	214	6.0	261	7.1	271	7.2	331	8.3

“–” = not applicable.

Notes: Complete unit count data were available for all public SPECT units across all jurisdictions with capacity.

For the 2022–2023 survey, complete unit count data were available for 180 sites with SPECT-CT capacity out of 467 participating sites with advanced imaging capacity (i.e., SPECT-CT, SPECT, CT, MRI, PET-CT, PET-MRI). For 2019–2020, complete unit count data were available for 160 sites with SPECT-CT capacity out of 455 participating sites with advanced imaging capacity. For 2017, complete unit count data were available for 155 sites with SPECT-CT capacity out of 505 participating sites with advanced imaging capacity. For 2015, complete unit count data were available for 91 sites with SPECT-CT capacity out of 392 participating sites with advanced imaging capacity.

Data derived from survey question: “Do you have the following fixed, mobile, or portable units at the site?” Options included: CT, MRI, PET-CT, PET-MRI, SPECT-CT, and SPECT.

Source: CADTH (2015),⁹ CADTH (2017),⁹ CADTH (2020),³ CADTH (2024).

Table 16: Volume of SPECT-CT and SPECT Exams and Exams per Thousand People Across Canadian Public Facilities, 2015 to 2022–2023

Province or territory	2015		2017		2019 to 2020		2022 to 2023	
	Exams	Exams per thousand	Exams	Exams per thousand	Exams	Exams per thousand	Exams	Exams per thousand
Alberta	107,325	25.6	26,130	6.1	23,732	5.4	59,099	12.6
British Columbia	86,264	18.4	148,578	31.0	66,604	12.9	66,604 ^a	12.2
Manitoba	22,935	17.7	22,074	16.6	29,400	21.4	22,378	15.5
New Brunswick	12,000	15.9	39,635	52.3	16,219	20.8	28,408	34.2
Newfoundland and Labrador	–	–	49,835	94.3	33,095	63.4	22,910	42.9
Northwest Territories	–	–	–	–	–	–	–	–
Nova Scotia	18,633	19.8	25,413	26.7	30,235	31	12,511	11.9
Nunavut	–	–	–	–	–	–	–	–
Ontario	248,494	18.0	200,833	14.2	192,189 ^b	13.1	192,189 ^b	12.4
Prince Edward Island	2,119	14.5	2,299	15.3	2,129	13.5	1,985	11.3
Quebec	939,700	113.7	786,594	94.0	783,667	91.9	496,843	56.3
Saskatchewan	47,826	42.2	52,730	45.4	33,723	28.6	26,083	21.4
Yukon	–	–	–	–	–	–	–	–
Canada	1,485,296	41.4	1,354,121	37	1,210,993	32	929,010	23.3

“–” = not applicable; SPECT = single-photon emission CT; SPECT-CT = single-photon emission CT-CT.

Note: 2022–2023 combined SPECT-CT and SPECT exam volume was reported by validators for 8 of 10 jurisdictions with capacity.

^a2019–2020 exam data for British Columbia.

^b2017 exam data for Ontario.

Data derived from survey question: ““For all units, how many examinations on average were conducted in the last fiscal/calendar year?”

Source: CADTH (2015),⁸ CADTH (2017),⁹ CADTH (2020),³ CADTH (2024).

Table 17: Number of SPECT Units and Units per Capita, 2015 to 2022 to 2023

Province or territory	2015		2017		2019–2020		2022–2023	
	Units	Units per million population	Units	Units per million population	Units	Units per million population	Units	Units per million population
Alberta	30	7.2	42	9.8	37	8.4	36	7.7
British Columbia	26	5.6	28	5.9	24	4.7	16	2.9
Manitoba	7	5.4	9	6.8	6	4.4	4	2.8
New Brunswick	2	2.7	5	6.6	11	14.2	6	7.2
Newfoundland and Labrador	4	7.6	2	3.8	3	5.7	1	1.9

Province or territory	2015		2017		2019–2020		2022–2023	
	Units	Units per million population	Units	Units per million population	Units	Units per million population	Units	Units per million population
Northwest Territories	0	–	0	–	0	–	0	–
Nova Scotia	7	7.4	7	7.3	7	7.2	7	6.7
Nunavut	0	–	0	–	0	–	0	–
Ontario	99	7.2	151	10.7	135	9.2	102	6.6
Prince Edward Island	1	6.8	0	0.0	0	0	0	0
Quebec	79	9.6	77	9.2	75	8.8	32	3.6
Saskatchewan	9	7.9	9	7.8	7	5.9	6	4.9
Yukon	0	–	0	–	0	–	0	–
Canada	264	7.4	330	9.0	305	8.1	210	5.3

“–” = not applicable.

Notes: Complete unit count data were available for all public SPECT units across all jurisdictions with capacity.

For the 2022–2023 survey, complete unit count data were available for 138 sites with SPECT capacity out of 467 participating sites with advanced imaging capacity (i.e., SPECT-CT, SPECT, CT, MRI, PET-CT, PET-MRI). For 2019–2020, complete unit count data were available for 174 sites with SPECT capacity out of 455 participating sites with advanced imaging capacity. For 2017, complete unit count data were available for 181 sites with SPECT capacity out of 505 participating sites with advanced imaging capacity. For 2015, complete unit count data were available for 130 sites with SPECT capacity out of 392 participating sites with advanced imaging capacity.

Data derived from survey question: “Do you have the following fixed, mobile, or portable units at the site?” Options included: CT, MRI, PET-CT, PET-MRI, SPECT-CT, and SPECT.

Source: CADTH (2015),⁸ CADTH (2017),⁹ CADTH (2020),³ CADTH (2024).

Table 18: Summary of Average Hours per Day of SPECT-CT Use by Province and Territory, 2022–2023

Province or territory	Number of reporting sites	Mean hours	Median hours (min to max)
Alberta	19	8.89	8 (8 to 14)
British Columbia	16	8.62	8 (7 to 11)
Manitoba	5	8.5	8 (8 to 10)
New Brunswick	4	8.5	8.5 (8 to 9)
Newfoundland and Labrador	3	8.33	8 (8 to 9)
Northwest Territories	–	–	–
Nova Scotia	3	9.33	10 (8 to 10)
Nunavut	–	–	–
Ontario	28	8.61	8 (7 to 13)
Prince Edward Island	1	8	8 (8 to 8)
Quebec	12	8.17	8 (7 to 12)
Saskatchewan	3	9.33	10 (8 to 10)

Province or territory	Number of reporting sites	Mean hours	Median hours (min to max)
Yukon	–	–	–
Canada	94	8.63	8 (7 to 14)

“–” = not applicable.

Notes: Survey response data were available for 94 out of 180 sites across all jurisdictions with SPECT-CT capacity.

Data derived from the survey question: “In an average 24-hour day, how many hours are the units staffed through regular scheduled service capacity (do not include hours where staff are only on call)”.

Table 19: Summary of 24-Hour and Weekend Use of SPECT-CT by Province and Territory, 2022–2023

Province or territory	SPECT-CT operates 24-hours a day	SPECT-CT operates on the weekend
Number of sites (percent of responding sites)		
Alberta	0 (0% of 18)	2 (11.1% of 18)
British Columbia	0 (0% of 17)	2 (11.8% of 17)
Manitoba	0 (0% of 5)	0 (0% of 5)
New Brunswick	1 (25% of 4)	2 (50% of 4)
Newfoundland and Labrador	0 (0% of 3)	0 (0% of 3)
Northwest Territories	–	–
Nova Scotia	0 (0% of 3)	0 (0% of 3)
Nunavut	–	–
Ontario	0 (0% of 27)	1 (3.4% of 29)
Prince Edward Island	0 (0% of 1)	0 (0% of 1)
Quebec	0 (0% of 12)	3 (25% of 12)
Saskatchewan	0 (0% of 3)	0 (0% of 3)
Yukon	–	–
Canada	1 (1.1% of 93)	10 (10.5% of 95)

“–” = not applicable.

Notes: Survey response data for 24-hours a day operation were available for 93 out of 180 sites across all jurisdictions with SPECT-CT capacity. Survey response data for weekend operation were available for 95 out of 180 sites across all jurisdictions with SPECT-CT capacity.

Data derived from the survey questions: “Do any units operate 24 hours a day?” and “Do any units operate on the weekend?”

Table 20: Average Hours per Week of SPECT-CT Use by Province and Territory, 2022–2023

Province or territory	Number of reporting sites	Mean hours	Median hours (min to max)
Alberta	19	45.58	41 (38 to 88)
British Columbia	16	41.88	40 (10 to 66)
Manitoba	5	42.5	40 (40 to 50)
New Brunswick	4	42.5	42.5 (40 to 45)
Newfoundland and Labrador	3	46.33	43 (40 to 56)

Province or territory	Number of reporting sites	Mean hours	Median hours (min to max)
Northwest Territories	—	—	—
Nova Scotia	3	46.67	50 (40 to 50)
Nunavut	—	—	—
Ontario	27	41.7	40 (10 to 68)
Prince Edward Island	1	40	40 (40 to 40)
Quebec	12	42.58	40 (35 to 60)
Saskatchewan	3	46.67	50 (40 to 50)
Yukon	—	—	—
Canada	93	43.2	40 (10 to 88)

“—” = not applicable.

Notes: Survey response data were available for 93 out of 180 sites across all jurisdictions with SPECT-CT capacity.

Data derived from survey question: “In an average 168-hour week, how many hours are the [modality] units staffed through regular scheduled service capacity (do not include hours where staff are only on call)?”

Table 21: Summary of Average Hours per Day of SPECT Use by Province and Territory, 2022–2023

Province or territory	Number of reporting sites	Mean hours	Median hours (min to max)
Alberta	14	9.21	9 (8 to 14)
British Columbia	4	8.5	8 (8 to 10)
Manitoba	3	8.5	8 (8 to 10)
New Brunswick	3	8.33	8 (8 to 9)
Newfoundland and Labrador	NR	NR	NR
Northwest Territories	—	—	—
Nova Scotia	3	8.67	8 (8 to 10)
Nunavut	—	—	—
Ontario	26	8.62	8 (5 to 14)
Prince Edward Island	—	—	—
Quebec	9	7.78	8 (7 to 9)
Saskatchewan	2	8	8 (8 to 8)
Yukon	—	—	—
Canada	64	8.6	8 (5 to 14)

“—” = not applicable; NR = not reported.

Notes: Survey response data were available for 64 out of 138 sites across 8 of the 9 jurisdictions with SPECT capacity. No data were available for Newfoundland and Labrador.

Data derived from the survey question: “In an average 24-hour day, how many hours are the units staffed through regular scheduled service capacity (do not include hours where staff are only on call)?”

Table 22: Summary of 24-Hour and Weekend Use of SPECT by Province and Territory, 2022–2023

Province or territory	SPECT operates 24-hours a day	SPECT operates on the weekend
Number of sites (percent of responding sites)		
Alberta	0 (0% of 6)	0 (0% of 6)
British Columbia	0 (0% of 7)	0 (0% of 7)
Manitoba	0 (0% of 3)	0 (0% of 3)
New Brunswick	1 (25% of 4)	2 (50% of 4)
Newfoundland and Labrador	0 (0% of 1)	0 (0% of 1)
Northwest Territories	–	–
Nova Scotia	0 (0% of 3)	0 (0% of 3)
Nunavut	–	–
Ontario	0 (0% of 28)	1 (3.6% of 28)
Prince Edward Island	–	–
Quebec	0 (0% of 6)	0 (0% of 6)
Saskatchewan	0 (0% of 2)	0 (0% of 2)
Yukon	–	–
Canada	1 (1.7% of 60)	3 (5.0% of 60)

“–” = not applicable.

Notes: Survey response data for 24-hours a day operation and weekend operation were available for 60 out of 138 sites across all jurisdictions with SPECT capacity. Data derived from the survey questions: “Do any units operate 24 hours a day?” and “Do any units operate on the weekend?”

Table 23: Average Hours per Week of SPECT Use by Province and Territory, 2022–2023

Province or territory	Number of reporting sites	Mean hours	Median hours (min to max)
Alberta	14	47	43.5 (38 to 88)
British Columbia	4	34.5	40 (8 to 50)
Manitoba	3	42.5	40 (40 to 50)
New Brunswick	3	41	40 (38 to 45)
Newfoundland and Labrador	NR	NR	NR
Northwest Territories	–	–	–
Nova Scotia	3	42	38 (38 to 50)
Nunavut	–	–	–
Ontario	26	40.38	40 (10 to 68)
Prince Edward Island	–	–	–
Quebec	9	40.11	40 (35 to 56)
Saskatchewan	2	40	40 (40 to 40)

Province or territory	Number of reporting sites	Mean hours	Median hours (min to max)
Yukon	–	–	–
Canada	64	41.6	40 (8 to 88)

“–” = not applicable; NR = not reported.

Notes: Survey response data were available for 64 out of 138 sites across 8 of the 9 jurisdictions with SPECT capacity. No data were available for Newfoundland and Labrador.

Data derived from survey question: “In an average 168-hour week, how many hours are the [modality] units staffed through regular scheduled service capacity (do not include hours where staff are only on call)?”

Table 24: Planned and Unplanned Downtime at Sites With SPECT-CT Units, 2022–2023

Province or territory	Annual planned downtime		Annual unplanned downtime	
	Number of reporting sites	Mean hours (min to max)	Number of reporting sites	Mean hours (min to max)
Alberta	18	55.3 (18 to 96)	18	31.4 (10 to 85)
British Columbia	15	40.5 (8 to 112)	12	182.2 (10 to 534)
Manitoba	NR	NR	NR	NR
New Brunswick	4	21 (15 to 30)	3	26.7 (20 to 30)
Newfoundland and Labrador	2	24 (16 to 32)	2	43 (30 to 56)
Northwest Territories	–	–	–	–
Nova Scotia	2	23 (16 to 30)	2	22.5 (15 to 30)
Nunavut	–	–	–	–
Ontario	22	24.1 (10 to 80)	17	52.6 (7 to 300)
Prince Edward Island	1	8 (8 to 8)	1	80 (80 to 80)
Quebec	12	19.3 (7 to 35)	9	32.6 (7 to 100)
Saskatchewan	3	45.3 (24 to 64)	3	162.7 (8 to 350)
Yukon	–	–	–	–
Canada	79	34 (7 to 112)	67	70.4 (7 to 534)

“–” = not applicable; NR = not reported.

Notes: Survey response data for planned downtime were available for 79 out of 180 sites across 9 of the 10 jurisdictions with SPECT-CT capacity. No data were available for Manitoba. Survey response data for unplanned downtime were available for 67 out of 180 sites across 9 of the 10 jurisdictions with SPECT-CT capacity. No data were available for Manitoba.

Data derived from the survey question: “How much planned downtime is anticipated for scheduled maintenance for all units in a given year? (expressed in hours)” and “How much unplanned downtime is experienced for all units in a given year? (expressed in hours).”

Table 25: Planned and Unplanned Downtime at Sites With SPECT Units, 2022–2023

Province or territory	Annual planned downtime		Annual unplanned downtime	
	Number of reporting sites	Mean hours (min to max)	Number of reporting sites	Mean hours (min to max)
Alberta	6	25.3 (16 to 48)	6	31.5 (16 to 55)
British Columbia	6	39.3 (8 to 108)	6	198.7 (16 to 1,000)
Manitoba	NR	NR	NR	NR
New Brunswick	4	17.2 (8 to 30)	3	17 (1 to 30)
Newfoundland and Labrador	NR	NR	NR	NR
Northwest Territories	–	–	–	–
Nova Scotia	2	20 (16 to 24)	2	175 (100 to 250)
Nunavut	–	–	–	–
Ontario	21	25.4 (8 to 80)	18	49 (2 to 300)
Prince Edward Island	–	–	–	–
Quebec	9	19.1 (7 to 42)	7	99.9 (7 to 600)
Saskatchewan	2	60 (24 to 96)	2	139 (8 to 270)
Yukon	–	–	–	–
Canada	50	26.4 (7 to 108)	44	82.8 (1 to 1,000)

“–” = not applicable; NR = not reported.

Notes: Survey response data for planned downtime were available for 50 out of 138 sites across 7 of the 9 jurisdictions with SPECT capacity. No data were available for Manitoba and Newfoundland and Labrador. Survey response data for unplanned downtime were available for 44 out of 138 sites across 7 of the 9 jurisdictions with SPECT capacity. No data were available for Manitoba and Newfoundland and Labrador.

Data derived from the survey question: “How much planned downtime is anticipated for scheduled maintenance for all units in a given year? (expressed in hours)” and “How much unplanned downtime is experienced for all units in a given year? (expressed in hours).”

Table 26: Average Age of SPECT-CT and SPECT Imaging Equipment, 2022–2023

Province or territory	Number of SPECT-CT units	Average age SPECT-CT (years, min to max)	Number of SPECT units	Average age SPECT (years, min to max)
Alberta	34	9.2 (1 to 17)	11	17.1 (9 to 22)
British Columbia	32	9.3 (0 to 19)	8	18.2 (11 to 22)
Manitoba	10	10 (2 to 17)	4	14.8 (8 to 19)
New Brunswick	6	9 (1 to 18)	5	9 (2 to 19)
Newfoundland and Labrador	6	8.2 (2 to 17)	NR	NR
Northwest Territories	–	–	–	–
Nova Scotia	8	9.8 (6 to 13)	7	15.1 (6 to 20)
Nunavut	–	–	–	–
Ontario	48	10.4 (0 to 18)	40	12.9 (0 to 24)
Prince Edward Island	2	9.5 (6 to 13)	–	–

Province or territory	Number of SPECT-CT units	Average age SPECT-CT (years, min to max)	Number of SPECT units	Average age SPECT (years, min to max)
Quebec	33	8.3 (0 to 16)	11	16.2 (8 to 26)
Saskatchewan	6	13.3 (7 to 18)	4	15.8 (15 to 17)
Yukon	–	–	–	–
Canada	185	9.5 (0 to 19)	90	14.5 (0 to 26)

“–” = not applicable; NR = not reported.

Notes: Survey response data were available for 185 out of 331 SPECT-CT units across all jurisdictions with capacity. Survey response data were available for 90 out of 210 SPECT units in 8 of the 9 jurisdictions with capacity. No data were available for Newfoundland and Labrador.

Age for each unit was calculated from the survey question: “What year did (or will) the [modality] unit become operational?” subtracted from 2023.

Table 27: Age of SPECT-CT Units in Years, 2022–2023

Province or territory	Years				
	5 or less	6 to 10	11 to 15	16 to 20	Greater than 20
Number of units (% of age categories)					
Alberta	10 (29.4)	6 (17.6)	16 (47.1)	2 (5.9)	0 (0)
British Columbia	8 (25)	10 (31.2)	6 (18.8)	8 (25)	0 (0)
Manitoba	2 (20)	2 (20)	5 (50)	1 (10)	0 (0)
New Brunswick	1 (16.7)	2 (33.3)	2 (33.3)	1 (16.7)	0 (0)
Newfoundland and Labrador	1 (16.7)	4 (66.7)	0 (0)	1 (16.7)	0 (0)
Northwest Territories	–	–	–	–	–
Nova Scotia	0 (0)	5 (62.5)	3 (37.5)	0 (0)	0 (0)
Nunavut	–	–	–	–	–
Ontario	5 (10.4)	20 (41.7)	13 (27.1)	10 (20.8)	0 (0)
Prince Edward Island	0 (0)	1 (50)	1 (50)	0 (0)	0 (0)
Quebec	8 (24.2)	14 (42.4)	10 (30.3)	1 (3)	0 (0)
Saskatchewan	0 (0)	2 (33.3)	2 (33.3)	2 (33.3)	0 (0)
Yukon	–	–	–	–	–
Canada	35 (18.9)	66 (35.7)	58 (31.4)	26 (14.1)	0 (0)

“–” = not applicable.

Notes: Survey response data were available for 185 of 331 SPECT-CT units across all jurisdictions with capacity.

Age for each unit was calculated from the survey question: “What year did (or will) the [modality] unit become operational?” subtracted from 2023.

Table 28: Age of SPECT Units in Years, 2022–2023

Province or territory	Years				
	5 or less	6 to 10	11 to 15	16 to 20	Greater than 20
Number of units (% of age categories)					
Alberta	0 (0)	1 (9.1)	0 (0)	9 (81.8)	1 (9.1)
British Columbia	0 (0)	0 (0)	1 (12.5)	6 (75)	1 (12.5)
Manitoba	0 (0)	1 (25)	1 (25)	2 (50)	0 (0)
New Brunswick	2 (40)	0 (0)	2 (40)	1 (20)	0 (0)
Newfoundland and Labrador	NR	NR	NR	NR	NR
Northwest Territories	–	–	–	–	–
Nova Scotia	0 (0)	2 (28.6)	1 (14.3)	4 (57.1)	0 (0)
Nunavut	–	–	–	–	–
Ontario	6 (15)	11 (27.5)	7 (17.5)	8 (20)	8 (20)
Prince Edward Island	–	–	–	–	–
Quebec	0 (0)	2 (18.2)	4 (36.4)	1 (9.1)	4 (36.4)
Saskatchewan	0 (0)	0 (0)	2 (50)	2 (50)	0 (0)
Yukon	–	–	–	–	–
Canada	8 (8.9)	17 (18.9)	18 (20)	33 (36.7)	14 (15.6)

“–” = not applicable; NR = not reported.

Notes: Survey response data were available for 90 of 210 SPECT units across 8 of the 9 jurisdictions with capacity. No data were available for Newfoundland and Labrador. Age for each unit was calculated from the survey question: “What year did (or will) the [modality] unit become operational?” subtracted from 2023.

Table 29: Summary of Type of Use by Clinical Specialty for SPECT-CT, 2022–2023

Use category	Average percent	Median percent (min to max)
Oncology	26.6	30 (0 to 65)
Cardiac	23.7	22.5 (0 to 100)
Musculoskeletal	23.1	10 (0 to 100)
Inflammatory	7.8	5 (0 to 75)
Respiratory	6.3	5 (0 to 30)
Hepatobiliary	4.6	5 (0 to 20)
Neurologic	2.1	0 (0 to 16)
Trauma	0.8	0 (0 to 21.74)
Other	5	0 (0 to 100)

Notes: Survey response data on the average percentage of SPECT-CT use by discipline were available for 44 out of 180 sites across all 10 jurisdictions with SPECT-CT capacity.

Data derived from survey question: “On average, what percentage of these exams fall into the following categories? The total percentage, expressed as a number, must add up to 100.” The following categories were asked: oncology, respiratory disease, hepatobiliary or gastrointestinal, musculoskeletal disorders, inflammatory or infectious diseases, cardiac, neurologic disorders, trauma, and other use.

Table 30: Summary of Type of Use by Medical Category for SPECT-CT Units, 2022–2023

Use category	Average percent	Median percent (min to max)
Diagnostic non-cardiac	73.0	77.5 (0 to 100)
Diagnostic cardiac	27.3	22.5 (0 to 100)
Research	0.3	0 (0 to 10)
Interventional	0.2	0 (0 to 10)
Other	0.0	0 (0 to 0)

Notes: Survey response data on the average percentage of SPECT-CT use were available for 78 out of 180 sites across 9 of the 10 jurisdictions with SPECT-CT capacity. No data were available for Manitoba.

Data derived from survey question: “Based on your experience in the last fiscal year, what is the average percentage of overall time SPECT-CT units are used for?” The following categories were asked: cardiac, noncardiac, research, interventional, and other use.

Table 31: Summary of Type of Use by Clinical Specialty for SPECT, 2022–2023

Use category	Average percent	Median percent (min to max)
Cardiac	32.1	20 (0 to 100)
Oncology	26.1	20 (0 to 80)
Musculoskeletal	13.4	10 (0 to 55)
Respiratory	10.1	5 (0 to 100)
Hepatobiliary	6.5	5 (0 to 31)
Inflammatory	5.1	5 (0 to 20)
Neurologic	1.8	0 (0 to 15)
Trauma	0.7	0 (0 to 5)
Other	4.3	0 (0 to 100)

Notes: Survey response data on the average percentage of SPECT use by discipline were available for 31 out of 138 sites across 6 of the 9 jurisdictions with SPECT capacity. No data were available for Alberta, Manitoba, and Newfoundland and Labrador.

Data derived from survey question: “On average, what percentage of these exams fall into the following categories? The total percentage, expressed as a number, must add up to 100.” The following categories were asked: oncology, respiratory disease, hepatobiliary or gastrointestinal, musculoskeletal disorders, inflammatory or infectious diseases, cardiac, neurologic disorders, trauma, and other use.

Table 32: Summary of Type of Use by Medical Category for SPECT Units, 2022–2023

Use category	Average percent	Median percent (min to max)
Diagnostic non-cardiac	71.2	82.3 (0 to 100)
Diagnostic cardiac	27.8	13.5 (0 to 100)
Interventional	0	0 (0 to 0)
Research	0	0 (0 to 1)
Other	0	0 (0 to 0)

Notes: Survey response data on the average percentage of SPECT use were available for 60 out of 138 sites across 7 of the 9 jurisdictions with SPECT capacity. No data were available for Manitoba and Newfoundland and Labrador.

Data derived from survey question: “Based on your experience in the last fiscal year, what is the average percentage of overall time SPECT units are used for?” The following categories were asked: cardiac, noncardiac, research, interventional, and other use.

Table 33: Summary of Use of AI in SPECT-CT, 2022–2023

Use of AI in SPECT-CT	Number of responses	Number of sites – yes (%)	Used in clinical/research/ both	Provinces (number of sites)
Lowering radiation dose	76	4 (5.3)	3/0/1	BC (1), ON (2), QC (1)
Reading and interpreting images	88	1 (1.1)	1/0/0	ON (1)
Image reconstruction	78	13 (16.7)	8/0/0	BC (1), NB (1), NS (1), ON (8), QC (2)
Treatment planning	79	3 (3.8)	2/0/0	NB (1), ON (1), QC (1)
Predicting outcomes	79	0 (0)	0 (0)	0 (0)
Administrative tasks	81	2 (2.5)	1/0/0	ON (1), QC (1)

AI = artificial intelligence; BC = British Columbia; NB = New Brunswick; NS = Nova Scotia; ON = Ontario; QC = Quebec.

Notes: Number of sites out of 180 sites with SPECT-CT capacity that provided survey response data are indicated in the “Number of responses” column.

Data derived from the survey questions: “Is artificial intelligence used to support: The reading/interpretation of images? Predicting outcomes? Lower radiation dose? Image resolution/reconstruction enhancement? Treatment planning? Administrative tasks?”

Table 34: Summary of Use of AI in SPECT, 2022–2023

Use of AI in SPECT	Number of responses	Number of sites – yes (%)	Used in clinical/research/ both ^a	Provinces (number of sites)
Lowering radiation dose	47	1 (2.1)	2/0/0	QC (1)
Reading and interpreting images	56	2 (3.6)	2/0/0	ON (2)
Image reconstruction	46	8 (17.4)	3/0/0	NB (1), ON (7)
Treatment planning	50	1 (2)	NR	ON (1)
Predicting outcomes	50	1 (2)	2/0/0	ON (1)
Administrative tasks	51	4 (7.8)	NR	ON (4)

AI = artificial intelligence; NB = New Brunswick; NR = no response; ON = Ontario; QC = Quebec.

Notes: Number of sites out of 138 sites with SPECT capacity that provided survey response data are indicated in the “Number of Responses” column.

Data derived from the survey questions: “Is artificial intelligence used to support: The reading/interpretation of images? Predicting outcomes? Lower radiation dose? Image resolution/reconstruction enhancement? Treatment planning? Administrative tasks?”

^aThe “Used in clinical/research” column includes sites that did not select “yes” for the use of AI, but provided responses for the setting of use (clinical/research).

Table 35: Types of Health Care Professionals That Have SPECT-CT and SPECT Exam-Ordering Privileges, 2022–2023

Province or territory	Clinical specialists	Family physicians/general practitioners	Nurse practitioners
Alberta	Yes, all	Yes	Yes
	Other: chiropractor, podiatrist		
British Columbia	Yes, all	Yes	Yes
	Other: chiropractor, dentist, podiatric surgeon		
Manitoba	Yes	Yes	Yes

Province or territory	Clinical specialists	Family physicians/general practitioners	Nurse practitioners
New Brunswick ^a	Yes, all	NR	NR
Newfoundland and Labrador	Yes, all	All with exception of myocardial perfusion studies which requires consult from cardiology or internal medicine	
Northwest Territories	SPECT are referred to a southern facility. No unit available in the Northwest Territories.	Yes	Uncertain; may need physician co-signature
Nova Scotia	Yes	Yes	Yes
Nunavut	NR	Yes	Yes
Ontario	NR	Yes	Yes
Prince Edward Island	Yes, all	Yes	Yes
Quebec	Yes, all	Under certain conditions	Under certain conditions
Saskatchewan	Yes, all	Yes	Yes
Yukon	NR	NR	NR

NR = not reported.

Notes: Survey response data were available from 12 out of 13 jurisdictions. No data were available for the Yukon.

Data derived from the question: "Which health care professionals can order imaging exams for SPECT-CT/SPECT?"

^aFor New Brunswick, the responses came from one of the two regional health authorities, the Horizon Health Network.

Table 36: Exam-Ordering Practice at Sites With SPECT-CT Units, 2022–2023

Province or territory	Automated entry		Paper forms		Requests by fax		Requests by telephone		Central booking		
	Yes	No	Yes	No	Yes	No	Yes	No	All exams	Some exams	Not used
Number (%) of sites that use these exam-ordering practices											
Alberta	6 (33.3)	12 (66.7)	18 (100)	0 (0)	18 (100)	0 (0)	10 (55.6)	8 (44.4)	5 (27.8)	0 (0)	13 (72.2)
British Columbia	2 (11.1)	16 (88.9)	17 (94.4)	1 (5.6)	18 (100)	0 (0)	1 (5.9)	16 (94.1)	7 (38.9)	2 (11.1)	9 (50)
Manitoba	1 (20)	4 (80)	0 (0)	5 (100)	5 (100)	0 (0)	0 (0)	5 (100)	0 (0)	0 (0)	5 (100)
New Brunswick	0 (0)	3 (100)	4 (100)	0 (0)	4 (100)	0 (0)	2 (50)	2 (50)	3 (75)	0 (0)	1 (25)
Newfoundland and Labrador	1 (33.3)	2 (66.7)	3 (100)	0 (0)	3 (100)	0 (0)	0 (0)	3 (100)	2 (66.7)	1 (33.3)	0 (0)
Northwest Territories	–	–	–	–	–	–	–	–	–	–	–
Nova Scotia	0 (0)	3 (100)	3 (100)	0 (0)	3 (100)	0 (0)	0 (0)	3 (100)	2 (66.7)	1 (33.3)	0 (0)
Nunavut	–	–	–	–	–	–	–	–	–	–	–

Province or territory	Automated entry		Paper forms		Requests by fax		Requests by telephone		Central booking		
	Yes	No	Yes	No	Yes	No	Yes	No	All exams	Some exams	Not used
Ontario	20 (71.4)	8 (28.6)	28 (96.6)	1 (3.4)	27 (93.1)	2 (6.9)	5 (17.9)	23 (82.1)	15 (53.6)	7 (25)	6 (21.4)
Prince Edward Island	1 (100)	0 (0)	1 (100)	0 (0)	1 (100)	0 (0)	0 (0)	1 (100)	1 (100)	0 (0)	0 (0)
Quebec	4 (33.3)	8 (66.7)	11 (91.7)	1 (8.3)	11 (91.7)	1 (8.3)	3 (25)	9 (75)	2 (16.7)	1 (8.3)	9 (75)
Saskatchewan	0 (0)	3 (100)	3 (100)	0 (0)	3 (100)	0 (0)	1 (33.3)	2 (66.7)	2 (66.7)	1 (33.3)	0 (0)
Yukon	–	–	–	–	–	–	–	–	–	–	–
Canada	35 (37.2)	59 (62.8)	88 (91.7)	8 (8.3)	93 (96.9)	3 (3.1)	22 (23.4)	72 (76.6)	39 (41.1)	13 (13.7)	43 (45.3)

“–” = not applicable.

Notes: Survey response data are available for 96 out of 180 sites across all jurisdictions with SPECT-CT capacity.

Data derived from the survey question: “Are automated order entry forms (exams request) used?”; “Are paper forms (exams requests) used?”; “Are requests received by fax?”; “Are requests received by phone?”; and “Is a centralized order entry (booking) system used? For all exams: Yes/no; For some exams: yes/no.”

Table 37: Exam-Ordering Practice at Sites With SPECT Units, 2022–2023

Province or territory	Automated entry		Paper forms		Requests by fax		Requests by telephone		Central booking		
	Yes	No	Yes	No	Yes	No	Yes	No	All exams	Some exams	Not used
Number (%) of sites that use these exam-ordering practices											
Alberta	0 (0)	2 (100)	2 (100)	0 (0)	2 (100)	0 (0)	0 (0)	2 (100)	0 (0)	1 (50)	1 (50)
British Columbia	2 (28.6)	5 (71.4)	5 (83.3)	1 (16.7)	7 (100)	0 (0)	0 (0)	6 (100)	4 (57.1)	2 (28.6)	1 (14.3)
Manitoba	1 (33.3)	2 (66.6)	0 (0)	3 (100)	3 (100)	0 (0)	0 (0)	3 (100)	0 (0)	0 (0)	3 (100)
New Brunswick	0 (0)	3 (100)	4 (100)	0 (0)	4 (100)	0 (0)	2 (50)	2 (50)	3 (75)	0 (0)	1 (25)
Newfoundland and Labrador	0 (0)	1 (100)	1 (100)	0 (0)	1 (100)	0 (0)	0 (0)	1 (100)	0 (0)	0 (0)	0 (0)
Northwest Territories	–	–	–	–	–	–	–	–	–	–	–
Nova Scotia	0 (0)	3 (100)	3 (100)	0 (0)	3 (100)	0 (0)	1 (33.3)	2 (66.7)	1 (33.3)	0 (0)	2 (66.7)
Nunavut	–	–	–	–	–	–	–	–	–	–	–
Ontario	21 (77.8)	6 (22.2)	27 (96.4)	1 (3.6)	26 (92.9)	2 (7.1)	7 (26.9)	19 (73.1)	17 (63)	5 (18.5)	5 (18.5)

Province or territory	Automated entry		Paper forms		Requests by fax		Requests by telephone		Central booking		
	Yes	No	Yes	No	Yes	No	Yes	No	All exams	Some exams	Not used
Prince Edward Island	–	–	–	–	–	–	–	–	–	–	–
Quebec	1 (16.7)	5 (83.3)	6 (100)	0 (0)	5 (83.3)	1 (16.7)	3 (50)	3 (50)	1 (16.7)	2 (33.3)	3 (50)
Saskatchewan	0 (0)	2 (100)	2 (100)	0 (0)	2 (100)	0 (0)	1 (50)	1 (50)	0 (0)	2 (100)	0 (0)
Yukon	–	–	–	–	–	–	–	–	–	–	–
Canada	25 (46.3)	29 (53.7)	50 (90.9)	5 (9.1)	53 (94.6)	3 (5.4)	14 (26.4)	39 (73.6)	26 (48.1)	12 (22.2)	16 (29.6)

“–” = not applicable.

Notes: Survey response data are available for 56 out of 138 sites across all jurisdictions with SPECT capacity.

Data derived from the survey question: “Are automated order entry forms (exams request) used?”; “Are paper forms (exams requests) used?”; “Are requests received by fax?”; “Are requests received by phone?”; and “Is a centralized order entry (booking) system used? For all exams: Yes/no; For some exams: yes/no.”

Table 38: Trends in Reported Slices for SPECT-CT Units, 2012 to 2022–2023

Slices	2012	2015	2017	2019–2020	2022–2023 ^a
Number of units (% of total responses per survey year)					
1	20 (21.3)	22 (18.2)	28 (20.6)	21 (13.5)	9 (5.8)
2	12 (12.8)	16 (13.2)	16 (11.8)	18 (11.5)	15 (9.6)
4	43 (45.7)	46 (38)	43 (31.6)	43 (27.6)	29 (18.6)
6	9 (9.6)	12 (9.9)	17 (12.5)	17 (10.9)	17 (10.9)
8	3 (3.2)	5 (4.1)	5 (3.7)	10 (6.4)	22 (14.1)
16	6 (6.4)	19 (15.7)	26 (19.1)	43 (27.6)	51 (32.7)
32	0 (0)	0 (0)	0 (0)	4 (2.6)	7 (4.5)
40	0 (0)	0 (0)	1 (0.7)	0 (0)	0 (0)
64	1 (1.1)	1 (0.8)	0 (0)	0 (0)	3 (1.9)
128	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
256	0 (0)	0 (0)	0 (0)	0 (0)	1 (0.6)

Notes: 2022 to 2023 survey response data for specific slice count were available for 154 out of 331 SPECT-CT units across all 10 jurisdictions with capacity.

Data derived from the survey question: “How many multi-detectors does the CT unit have (how many slices)?”

^a2 units (1.3%) were reported in 2022 to 2023 to use a slice configuration not otherwise specified.

Table 39: Availability and Use of Technologies for Control of Radiation Exposure for SPECT-CT, 2015 to 2022–2023

Response	2015 n (%)	2017 n (%)	2019–2020 n (%)	2022–2023 n (%)
Does the SPECT-CT unit have dose-management controls?				
Yes	24 (16.1)	58 (20.5)	84 (30.5)	97 (29.3)
No	6 (4)	34 (12)	42 (15.3)	30 (9.1)
Don't know	0 (0)	11 (3.9)	22 (8)	23 (6.9)
Missing	119 (79.9)	180 (63.6)	127 (46.2)	181 (54.7)
If yes, are the dose-management controls used?				
Yes	NA	39 (13.8)	75 (27.3)	NA
No	NA	7 (2.5)	7 (2.5)	NA
Don't know	NA	1 (0.4)	2 (0.7)	NA
Missing	NA	236 (83.4)	191 (69.5)	NA
Does the SPECT-CT unit incorporate image reconstruction techniques for dose reduction?				
Yes	22 (14.8)	44 (15.5)	82 (29.8)	NA
No	8 (5.4)	35 (12.4)	31 (11.3)	NA
Don't know	0 (0)	13 (4.6)	27 (9.8)	NA
Missing	119 (79.9)	191 (67.5)	135 (49.1)	NA
Does the SPECT-CT unit record patient radiation dose by exam (e.g., as a save screen on PACS)?				
Yes	22 (14.8)	58 (20.5)	90 (32.7)	142 (42.9)
No	8 (5.4)	37 (13.1)	33 (12)	34 (10.3)
Don't know	0 (0)	8 (2.8)	23 (8.4)	17 (5.1)
Missing	119 (79.9)	180 (63.6)	129 (46.9)	138 (41.7)

PACS = picture archiving and communication system.

Notes: NA = not applicable; question not asked during survey time point.

2022 to 2023 survey response data available for 331 SPECT-CT units across all 10 jurisdictions with SPECT-CT capacity.

Data derived from survey question: "Does the SPECT-CT unit have dose management controls?"; "Does the modality make regularly use of dose management controls?"; "Does the SPECT-CT unit incorporate image reconstruction techniques for dose reduction?"; "Does the SPECT-CT unit record patient SPECT-CT radiation dose (e.g., as a save screen on PACS)?"; "Do you capture patient cumulative radiation dose tracking?"; and "If no, do you plan to capture patient cumulative radiation tracking in the future?." A definition for PACS is provided in [Appendix 2](#).

Table 40: Population Estimates and Projections, 2007–2040

Province or territory	2007	2015	2017	2020	2023	2025 (low- to high-growth projections)	2030 (low- to high-growth projections)	2035 (low- to high-growth projections)	2040 (low- to high-growth projections)
Alberta	3,533,414	4,163,048	4,253,530	4,412,013	4,591,100	4,761,500 (4,696,600 to 4,816,400)	5,254,600 (5,040,300 to 5,411,900)	5,739,800 (5,356,300 to 6,033,800)	6,212,900 (5,654,900 to 6,714,200)
British Columbia	4,312,048	4,795,547	4,962,706	5,173,896	5,451,700	5,642,800 (5,541,600 to 5,729,700)	6,027,500 (5,752,300 to 6,238,900)	6,306,700 (5,855,000 to 6,653,900)	6,541,200 (5,917,400 to 7,085,800)
Manitoba	1,191,684	1,298,120	1,340,426	1,381,809	1,414,400	1,445,300 (1,422,700 to 1,467,000)	1,527,900 (1,460,300 to 1,582,600)	1,611,300 (1,493,300 to 1,711,800)	1,686,700 (1,520,100 to 1,852,900)
New Brunswick	746,136	759,971	768,029	783,814	804,300	816,400 (808,200 to 822,800)	837,700 (813,900 to 853,700)	848,700 (808,100 to 877,500)	854,700 (798,100 to 902,100)
Newfoundland and Labrador	510,256	528,843	530,153	526,046	519,500	517,500 (512,500 to 522,000)	510,100 (496,900 to 521,200)	499,300 (477,700 to 517,200)	486,300 (456,900 to 512,600)
Northwest Territories	43,286	44,443	44,825	44,395	46,300	47,100 (46,500 to 47,600)	48,600 (46,900 to 49,900)	49,500 (46,600 to 51,800)	50,100 (46,100 to 54,000)
Nova Scotia	935,433	938,914	956,074	989,154	1,023,500	1,046,100 (1,032,900 to 1,058,600)	1,079,200 (1,043,800 to 1,109,400)	1,091,800 (1,033,100 to 1,142,000)	1,097,600 (1,016,900 to 1,175,100)
Nunavut	31,560	36,602	37,829	39,581	40,200	41,000 (40,700 to 41,300)	43,000 (42,100 to 43,700)	45,300 (43,600 to 46,500)	47,700 (45,200 to 49,700)
Ontario	12,807,497	13,759,762	14,610,084	14,757,582	15,372,100	15,837,800 (15,573,200 to 16,067,500)	16,883,800 (16,134,300 to 17,446,900)	17,807,200 (16,534,000 to 18,795,500)	18,615,400 (16,830,000 to 20,232,300)

Province or territory	2007	2015	2017	2020	2023	2025 (low- to high-growth projections)	2030 (low- to high-growth projections)	2035 (low- to high-growth projections)	2040 (low- to high-growth projections)
Prince Edward Island	138,020	144,949	150,595	159,179	171,800	177,400 (174,300 to 179,900)	187,700 (179,200 to 193,600)	196,600 (182,200 to 207,200)	204,400 (184,400 to 222,000)
Quebec	7,712,616	8,190,074	8,326,075	8,551,865	8,746,600	8,859,200 (8,757,800 to 8,953,600)	9,080,500 (8,802,700 to 9,298,900)	9,256,500 (8,788,300 to 9,621,900)	9,396,500 (8,739,100 to 9,970,200)
Saskatchewan	1,007,305	1,125,588	1,151,044	1,165,963	1,199,500	1,226,100 (1,208,100 to 1,239,500)	1,311,100 (1,251,800 to 1,349,100)	1,398,300 (1,292,400 to 1,472,700)	1,479,800 (1,327,800 to 1,608,600)
Yukon	32,663	37,730	39,705	42,109	45,000	46,500 (45,900 to 47,000)	48,900 (47,600 to 50,200)	50,100 (47,500 to 52,300)	50,900 (47,200 to 54,300)
Canada	33,001,918	35,823,491	36,722,075	38,027,406	39,426,000	40,647,000 (39,861,100 to 40,992,800)	42,840,800 (41,111,900 to 44,150,000)	44,901,100 (41,958,100 to 47,184,200)	46,724,200 (42,584,000 to 50,433,700)

Note: Data retrieved from Statistics Canada website.²¹

Table 41: Reported and Projected Numbers of SPECT-CT Units by Province and Territory, 2007–2040

Province or territory	2007	2015	2017	2020	2023	2025 (low- to high-growth projections)	2030 (low- to high-growth projections)	2035 (low- to high-growth projections)	2040 (low- to high-growth projections)
Alberta	0	35	32	38	39	40.4 (39.9 to 40.9)	44.6 (42.8 to 46.0)	48.8 (45.5 to 51.3)	52.8 (48.0 to 57.0)
British Columbia	3	27	35	30	50	51.8 (50.8 to 52.5)	55.3 (52.8 to 57.2)	57.8 (53.7 to 61.0)	60.0 (54.3 to 65.0)
Manitoba	0	8	9	8	10	10.2 (10.1 to 10.4)	10.8 (10.3 to 11.2)	11.4 (10.6 to 12.1)	11.9 (10.7 to 13.1)
New Brunswick	1	4	5	5	8	8.1 (8.0 to 8.2)	8.3 (8.1 to 8.5)	8.4 (8.0 to 8.7)	8.5 (7.9 to 9.0)
Newfoundland and Labrador	0	5	9	9	8	8.0 (7.9 to 8.0)	7.9 (7.7 to 8.0)	7.7 (7.4 to 8.0)	7.5 (7.0 to 7.9)
Northwest Territories	0	0	0	0	0	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)
Nova Scotia	0	9	10	10	9	9.2 (9.1 to 9.3)	9.5 (9.2 to 9.8)	9.6 (9.1 to 10.0)	9.7 (8.9 to 10.3)
Nunavut	0	0	0	0	0	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)
Ontario	19	38	78	85	92	94.8 (93.2 to 96.2)	101.0 (96.6 to 104.4)	106.6 (99.0 to 112.5)	111.4 (100.7 to 121.1)
Prince Edward Island	0	1	2	2	2	2.1 (2.0 to 2.1)	2.2 (2.1 to 2.3)	2.3 (2.1 to 2.4)	2.4 (2.1 to 2.6)
Quebec	9	77	76	76	107	108.4 (107.1 to 109.5)	111.1 (107.7 to 113.8)	113.2 (107.5 to 117.7)	115.0 (107.0 to 122.0)
Saskatchewan	3	10	10	8	6	6.1 (6.0 to 6.2)	6.6 (6.3 to 6.7)	7.0 (6.5 to 7.4)	7.4 (6.6 to 8.0)
Yukon	0	0	0	0	0	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)
Canada	35	214	266	271	331	339.7 (334.7 to 344.2)	359.7 (345.2 to 370.7)	377.0 (352.3 to 396.1)	392.3 (357.5 to 423.4)

Note: The projection was calculated as the product of the numbers of per capita units in 2022–2023 and the population projections in 2025, 2030, 2035, and 2040. The numbers of imaging units were provided by provincial or territorial validators in 2023. The population projections were retrieved from Statistics Canada website on January 18, 2024.²¹ The population projection assumed medium, low, and high growth.

Table 42: Reported and Projected Numbers of SPECT Units by Province and Territory, 2007–2040

Province or territory	2007	2015	2017	2020	2023	2025 (low- to high-growth projections)	2030 (low- to high-growth projections)	2035 (low- to high-growth projections)	2040 (low- to high-growth projections)
Alberta	57	30	42	37	36	37.3 (36.8 to 37.8)	41.2 (39.5 to 42.4)	45.0 (42.0 to 47.3)	48.7 (44.3 to 52.6)
British Columbia	62	26	23	24	16	16.6 (16.3 to 16.8)	17.7 (16.9 to 18.3)	18.5 (17.2 to 19.5)	19.2 (17.4 to 20.8)
Manitoba	16	7	9	6	4	4.1 (4.0 to 4.1)	4.3 (4.1 to 4.5)	4.6 (4.2 to 4.8)	4.8 (4.3 to 5.2)

Province or territory	2007	2015	2017	2020	2023	2025 (low- to high-growth projections)	2030 (low- to high-growth projections)	2035 (low- to high-growth projections)	2040 (low- to high-growth projections)
New Brunswick	17	2	5	11	6	6.1 (6.0 to 6.1)	6.2 (6.1 to 6.4)	6.3 (6.0 to 6.5)	6.4 (6.0 to 6.7)
Newfoundland and Labrador	11	4	2	3	1	1.0 (1.0 to 1.0)	1.0 (1.0 to 1.0)	1.0 (0.9 to 1.0)	0.9 (0.9 to 1.0)
Northwest Territories	0	0	0	0	0	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)
Nova Scotia	23	7	7	7	7	7.2 (7.1 to 7.2)	7.4 (7.1 to 7.6)	7.5 (7.1 to 7.8)	7.5 (7.0 to 8.0)
Nunavut	0	0	0	0	0	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)
Ontario	250	99	163	135	102	105.1 (103.3 to 106.6)	112.0 (107.1 to 115.8)	118.2 (109.7 to 124.7)	123.5 (111.7 to 134.2)
Prince Edward Island	2	1	0	0	0	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)
Quebec	152	79	77	75	32	32.4 (32.0 to 32.8)	33.2 (32.2 to 34.0)	33.9 (32.2 to 35.2)	34.4 (32.0 to 36.5)
Saskatchewan	13	9	9	7	6	6.1 (6.0 to 6.2)	6.6 (6.3 to 6.7)	7.0 (6.5 to 7.4)	7.4 (6.6 to 8.0)
Yukon	0	0	0	0	0	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)
Canada	603	264	337	305	210	215.5 (212.3 to 218.3)	228.2 (219.0 to 235.2)	239.2 (223.5 to 251.3)	248.9 (226.8 to 268.6)

Note: The projection was calculated as the product of the numbers of per capita units in 2022–2023 and the population projections in 2025, 2030, 2035, and 2040. The numbers of imaging units were provided by provincial or territorial validators in 2023. The population projections were retrieved from Statistics Canada website on January 18, 2024.²¹ The population projection assumed medium, low, and high growth.

Table 43: Reported and Projected Numbers of SPECT-CT and SPECT Exams by Province and Territory, 2007–2040

Province or territory	2007	2015	2017	2020	2023	2025 (low- to high-growth projections)	2030 (low- to high-growth projections)	2035 (low- to high-growth projections)	2040 (low- to high-growth projections)
Alberta	NA	107,325	26,130	23,732	59,099	61,292.0 (60,457.1 to 61,999.2)	67,640.0 (64,881.3 to 69,664.8)	73,886.0 (68,949.0 to 77,670.2)	79,976.0 (72,792.8 to 86,428.6)
British Columbia	NA	86,264	148,578	66,604	66,604 ^a	68,939.0 (67,702.3 to 70,000.4)	73,639.0 (70,276.5 to 76,221.3)	77,050.0 (71,531.2 to 81,291.4)	79,915.0 (72,293.5 to 86,568.0)
Manitoba	NA	22,935	22,074	29,400	22,378	22,866.9 (22,509.3 to 23,210.2)	24,173.7 (23,104.2 to 25,039.2)	25,493.3 (23,626.3 to 27,083.3)	26,686.2 (24,050.3 to 29,315.7)
New Brunswick	NA	12,000	39,635	16,219	28,408	28,835.0 (28,545.7 to 29,061.4)	29,588.0 (28,747.1 to 30,152.8)	29,976.0 (28,542.2 to 30,993.4)	30,188.0 (28,189.0 to 31,862.3)
Newfoundland and Labrador	NA	49,835	33,095	22,910	49,835	22,822.0 (22,601.3 to 23,020.3)	22,495.0 (21,913.3 to 22,985.0)	22,019.0 (21,066.6 to 22,808.6)	21,446.0 (20,149.3 to 22,605.7)
Northwest Territories	NA	0	0	0	0	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)
Nova Scotia	NA	18,633	0	30,235	12,511	12,787.0 (12,625.9 to 12,940.1)	13,192.0 (12,759.1 to 13,561.0)	13,346.0 (12,628.3 to 13,959.5)	13,417.0 (12,430.3 to 14,364.1)
Nunavut	NA	0	0	0	0	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)
Ontario	NA	248,494	200,833	192,189	192,189 ^a	198,011.0 (194,703.2 to 200,883.2)	211,089.0 (201,718.4 to 218,129.1)	222,634.0 (206,715.6 to 234,989.9)	232,738.0 (210,416.3 to 252,953.4)
Prince Edward Island	NA	2,119	2,299	2,129	1,985	2,050.0 (2,013.9 to 2,078.6)	2,169.0 (2,070.5 to 2,236.9)	2,272.0 (2,105.2 to 2,394.0)	2,362.0 (2,130.6 to 2,565.0)

Province or territory	2007	2015	2017	2020	2023	2025 (low- to high-growth projections)	2030 (low- to high-growth projections)	2035 (low- to high-growth projections)	2040 (low- to high-growth projections)
Quebec	NA	939,700	786,594	783,667	496,843	503,239.0 (497,479.2 to 508,601.5)	515,810.0 (500,029.7 to 528,215.9)	525,807.0 (499,211.7 to 546,563.7)	533,760.0 (496,417.0 to 566,348.5)
Saskatchewan	NA	47,826	52,730	33,723	26,083	26,661.0 (26,270.0 to 26,952.8)	28,510.0 (27,220.3 to 29,336.0)	30,406.0 (28,103.1 to 32,023.7)	32,178.0 (28,872.9 to 34,978.8)
Yukon	NA	0	0	0	0	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)
Canada	NA	1,485,296	1,354,121	1,210,993	929,010	953,485.3 (939,262.4 to 965,929.1)	1,009,474.2 (968,735.5 to 1,040,323.4)	1,058,021.9 (988,674.8 to 1,111,819.5)	1,100,980.3 (1,003,423.2 to 1,188,388.7)

NA = not available.

Notes: The projection was calculated as the product of the numbers of per capita exams in 2022–2023 and the population projections in 2025, 2030, 2035, and 2040. The numbers of imaging exams were provided by provincial or territorial validators in 2023. The population projections were retrieved from Statistics Canada website on January 18, 2024.²¹ The population projection assumed medium, low, and high growth.

^aBritish Columbia and Ontario did not report 2022–2023 exam values and so values from 2019–2022 and 2017 were used for the projections, respectively.

Appendix 4: Supplementary Summary Tables for Publicly Funded Sites With SPECT-CT or SPECT Units, 2022–2023

Note that this appendix has not been copy-edited.

Table 44: Average Hours per Day of SPECT-CT Use at Publicly Funded Sites by Province and Territory, 2022–2023

Province or territory	Number of reporting sites	Mean hours	Median hours (min to max)
Alberta	15	9.1	9 (8 to 14)
British Columbia	16	8.6	8 (7 to 11)
Manitoba	5	8.5	8 (8 to 10)
New Brunswick	4	8.5	8.5 (8 to 9)
Newfoundland and Labrador	3	8.3	8 (8 to 9)
Northwest Territories	—	—	—
Nova Scotia	3	9.3	10 (8 to 10)
Nunavut	—	—	—
Ontario	28	8.6	8 (7 to 13)
Prince Edward Island	1	8	8 (8 to 8)
Quebec	12	8.2	8 (7 to 12)
Saskatchewan	3	9.3	10 (8 to 10)
Yukon	—	—	—
Canada	90	8.7	8 (7 to 14)

“—” = not applicable.

Notes: 90 out of 94 sites that reported information for SPECT-CT daily operation identified as public facilities.

Data derived from the survey question: “In an average 24-hour day, how many hours are the units staffed through regular scheduled service capacity (do not include hours where staff are only on call)”.

Table 45: Average Hours per Week of SPECT-CT Use at Publicly Funded Sites by Province and Territory, 2022–2023

Province or territory	Number of reporting sites	Mean hours	Median hours (min to max)
Alberta	15	46.5	43 (38 to 88)
British Columbia	16	41.9	40 (10 to 66)
Manitoba	5	42.5	40 (40 to 50)
New Brunswick	4	42.5	42.5 (40 to 45)
Newfoundland and Labrador	3	46.3	43 (40 to 56)
Northwest Territories	—	—	—
Nova Scotia	3	46.7	50 (40 to 50)

Province or territory	Number of reporting sites	Mean hours	Median hours (min to max)
Nunavut	—	—	—
Ontario	27	41.7	40 (10 to 68)
Prince Edward Island	1	40	40 (40 to 40)
Quebec	12	42.6	40 (35 to 60)
Saskatchewan	3	46.7	50 (40 to 50)
Yukon	—	—	—
Canada	89	43.2	40 (10 to 88)

“—” = not applicable.

Notes: 89 out of 93 sites that reported information for SPECT-CT weekly operation identified as public facilities.

Data derived from survey question: “In an average 168-hour week, how many hours are the [modality] units staffed through regular scheduled service capacity (do not include hours where staff are only on call)?”

Table 46: Average Hours per Day of SPECT Use at Publicly Funded Sites by Province and Territory, 2022–2023

Province or territory	Number of reporting sites	Mean hours	Median hours (min to max)
Alberta	14	9.2	9 (8 to 14)
British Columbia	4	8.5	8 (8 to 10)
Manitoba	3	8.5	8 (8 to 10)
New Brunswick	3	8.3	8 (8 to 9)
Newfoundland and Labrador	NR	NR	NR
Northwest Territories	—	—	—
Nova Scotia	3	8.7	8 (8 to 10)
Nunavut	—	—	—
Ontario	23	8.6	8 (5 to 14)
Prince Edward Island	—	—	—
Quebec	9	7.8	8 (7 to 9)
Saskatchewan	2	8	8 (8 to 8)
Yukon	—	—	—
Canada	61	8.6	8 (5 to 14)

“—” = not applicable; NR = not reported.

Note: 61 out of 64 sites that reported information for SPECT daily operation identified as public facilities.

Note: Data derived from the survey question: “In an average 24-hour day, how many hours are the units staffed through regular scheduled service capacity (do not include hours where staff are only on call)?”

Table 47: Average Hours per Week of SPECT Use at Publicly Funded Sites by Province and Territory, 2022–2023

Province or territory	Number of reporting sites	Mean hours	Median hours (min to max)
Alberta	14	47	43.5 (38 to 88)
British Columbia	4	34.5	40 (8 to 50)
Manitoba	3	42.5	40 (40 to 50)
New Brunswick	3	41	40 (38 to 45)
Newfoundland and Labrador	NR	NR	NR
Northwest Territories	–	–	–
Nova Scotia	3	42	38 (38 to 50)
Nunavut	–	–	–
Ontario	23	41.4	40 (10 to 68)
Prince Edward Island	–	–	–
Quebec	9	40.1	40 (35 to 56)
Saskatchewan	2	40	40 (40 to 40)
Yukon	–	–	–
Canada	61	42	40 (8 to 88)

“–” = not applicable.

Notes: 61 out of 64 sites that reported information for SPECT weekly operation identified as public facilities.

Data derived from survey question: “In an average 168-hour week, how many hours are the [modality] units staffed through regular scheduled service capacity (do not include hours where staff are only on call)?”

Table 48: Average Age of Publicly Funded SPECT-CT Imaging Equipment, 2022–2023

Province or territory	Number of SPECT-CT units	Average age SPECT-CT (years, min to max)
Alberta	29	10.1 (3 to 17)
British Columbia	32	9.3 (0 to 19)
Manitoba	10	10 (2 to 17)
New Brunswick	6	9 (1 to 18)
Newfoundland and Labrador	6	8.2 (2 to 17)
Northwest Territories	–	–
Nova Scotia	8	9.8 (6 to 13)
Nunavut	–	–
Ontario	48	10.4 (0 to 18)
Prince Edward Island	2	9.5 (6 to 13)
Quebec	33	8.3 (0 to 16)
Saskatchewan	6	13.3 (7 to 18)

Province or territory	Number of SPECT-CT units	Average age SPECT-CT (years, min to max)
Yukon	–	–
Canada	180	9.6 (0 to 19)

“–” = not applicable.

Notes: 180 out of 185 SPECT-CT units with information reported for operational age were located at public facilities.

Age for each unit was calculated from the survey question: “What year did (or will) the [modality] unit become operational?” subtracted from 2023.

Table 49: Average Age of Publicly Funded SPECT Imaging Equipment, 2022–2023

Province or territory	Number of SPECT units	Average age SPECT (years, min to max)
Alberta	9	16.6 (9 to 20)
British Columbia	8	18.2 (11 to 22)
Manitoba	4	14.8 (8 to 19)
New Brunswick	5	9 (2 to 19)
Newfoundland and Labrador	NR	NR
Northwest Territories	–	–
Nova Scotia	7	15.1 (6 to 20)
Nunavut	–	–
Ontario	39	12.7 (0 to 24)
Prince Edward Island	–	–
Quebec	11	16.2 (8 to 26)
Saskatchewan	4	15.8 (15 to 17)
Yukon	–	–
Canada	87	14.3 (0 to 26)

“–” = not applicable; NR = not reported.

Notes: 87 out of 90 SPECT units with information reported for operational age were located at public facilities.

Age for each unit was calculated from the survey question: “What year did (or will) the [modality] unit become operational?” subtracted from 2023.

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