

REPORT

Physician Resource Forecast for Family Medicine
Newfoundland and Labrador

Submitted to Robert Thompson
Executive Director
Newfoundland and Labrador Medical Association



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Letter of Introduction

December 6, 2019

Robert Thompson
Executive Director, Newfoundland and Labrador Medical Association
164 MacDonald Drive
St. John's, Newfoundland and Labrador A1A 4B3

Dear Mr. Thompson:

Following is a ten-year physician resource forecast for family medicine in Newfoundland and Labrador. It has been derived using the best available data, merging the qualitative and quantitative elements, applying variables of provider supply, population need, and models of care. This provides a base case with parallel high and low cases that reflect the impact of variables. The base case is modeling based on the best evidence and incorporates current deficiencies; the low case reflects achieving targets beyond expectations and the high case reflects the impact of the least favourable variables.

Parallel submissions are a data compendium for this report and a summary file of counts and derived FTEs by regions and primary healthcare service areas. The indexed compendium underpins the report and is cross-referenced throughout. Separating the report and the compendium provides easier access to the relevant data and their updating, and facilitates review of the report and its recommendations.

Health Intelligence is independent of Newfoundland and Labrador Medical Association, Newfoundland and Labrador College of Family Practice, and Newfoundland and Labrador Department of Health and Community Services and its agencies and health authorities. No potential or perceived conflicts of interest were identified prior to or during the research or analysis that underpin this review and resource plan. The acquisition, analysis, and interpretation of data were the sole responsibility of Health Intelligence and should not be attributed elsewhere.

Please do not hesitate to contact me regarding any clarification.

Respectfully submitted,

David Peachey
Principal, Health Intelligence Inc.



Executive Summary

ES .01 Background

A primary care setting is traditionally the first place individuals seek care for their non-urgent health care needs. Participants in the Canadian health system are clearly supportive of the essential role of comprehensive primary care in an effective, patient-centred health care system. Governments, commissions, and professional associations have each contributed to the collective values and statements that underpin this common understanding.

The Newfoundland and Labrador Medical Association (NLMA) is developing a 10-year, evidence-based physician resource forecast for family medicine and contracted Health Intelligence Inc. to provide the quantitative starting point for a human resource forecast. The forecast is designed to be navigational, not prescriptive, and is based on the best available evidence. It is a 10-year rolling forecast based on a convergence of qualitative and quantitative data, a current state assessment, models of care, and projection variables.

Health Intelligence Inc. used data sources from the NLMA, the Newfoundland and Labrador Centre for Health Information (NLCHI), and national databases. It also consulted with expert informants and health leaders from the Department of Health and Community Services, the four regional health authorities (RHAs), the NLCHI, the College of Family Practice-Newfoundland and Labrador, and others.

The report and its analytics are founded on the principle that health care is a provincial resource that is operationalized regionally, but always in the context of provincial planning and integration. It is a work-in-progress that will continue to be shaped and re-shaped, never with an endpoint. The constant touchpoint for the province is accessible, quality care that is patient-centric and provided by health care professionals committed to collaborative models and role optimization.

ES .02 Objectives

The objectives of the study are to provide a forecast of the need for family physicians in Newfoundland and Labrador over the next 10 years, taking into account the care needs of the population as well as the role of multidisciplinary teams.

Twelve principles are the foundation for how planning is designed, conducted, and applied to the undertaking.

i. Transparent

All aspects of methodology, data acquisition and analysis, decision-making, and modelling are easily understood or able to be explained.

ii. Patient-Centred

Decisions, modelling, and related considerations are focused on the patient as the centre of the care delivery system; patient-centred means a health delivery system is organized around the holistic needs of patients and families and is culturally safe and culturally sensitive.

iii. Appropriate to Population Need

Evidence-based markers of population need, such as growth, aging, mobility, gender, disease incidence/prevalence rates, and morbidity and mortality rates, have been identified and applied.

iv. Affordable Now and Sustainable in the Future

The forecast of health needs is consistent with the economic base and its annual real growth.

v. Equitable Across the Geographic Distribution of the Population

Local access to core services and additional access to referred services have been incorporated.

vi. Preserve and Enhance Quality of Care

Apply defined standards for acceptable, appropriate, accessible, efficient, effective, and safe care.

vii. Support Appropriate Access to Needed Services

Identify needed services and define access standards and progressive targets for services delivered at the local, regional, provincial, and out-of-province levels.

viii. Active, Robust Provider Engagement

Define and implement actions to ensure effective practitioner input at each phase.

- ix. Align with Appropriate Inter-professional and Intra-professional, Innovative, Delivery Models
Define and integrate collaborative models of care and ensure role optimization of health professionals.
- x. Design in the Context of Government and Stakeholder Strategic Priorities and Plans
Inclusive of relevant determinants of current and future provider supply.
- xi. Integrate Age, Gender, Canadian and International Graduates, Practice Profiles, and other Relevant Determinants
Predicated on productive, sustainable, quality, benchmarked workload. Concepts such as full-time equivalence, sustainable call rota, qualitative and quantitative metrics, and productivity benchmarks are defined and integrated.
- xii. Decision-making Based on Evidence



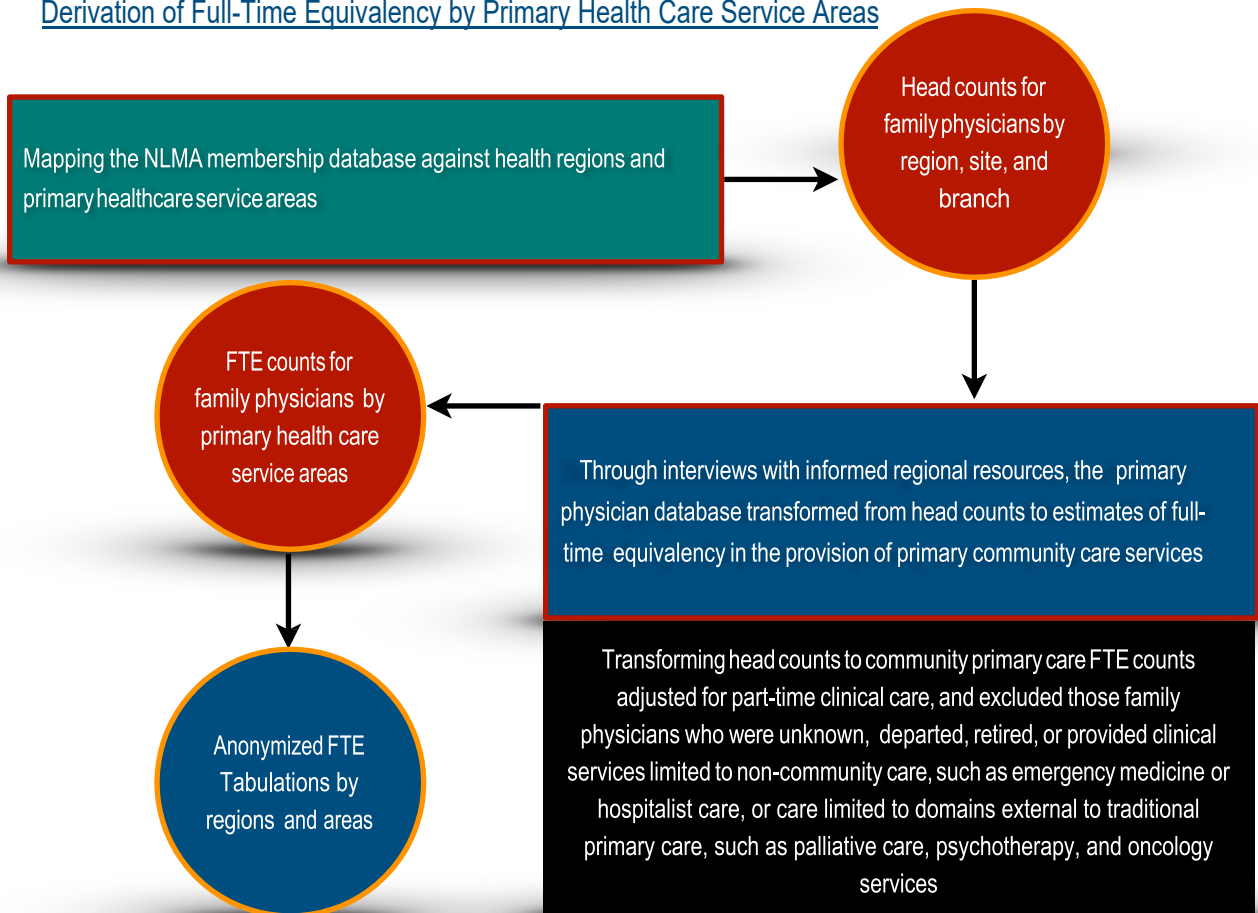
ES .03 Assessing Need and Supply

The adjusted population needs-based (APNM) model,¹ applied in this study, uses a primary model that is population needs-based, but with specific adjustments or modifications to compensate for known additional population needs.

At a high level, this approach can be viewed as a series of interdependent steps and merging of data. Some data is more significant than others in planning for family medicine resources. Other datasets that may be meaningful for resource planning in one jurisdiction, or a geographic subset of that jurisdiction, may not be significant in the context of Newfoundland and Labrador.

The first step was the generation of datasets that demonstrated current full-time equivalent (FTE) status for family physicians by primary health care service areas as demonstrated in the following schematic.

Derivation of Full-Time Equivalency by Primary Health Care Service Areas



¹ Developed and applied across Canadian jurisdictions by Social Sector Metrics Inc. and Health Intelligence Inc.

The second step was to identify estimates of family physician need and supply for which data and expert opinion were both available and applicable to this study. New parameters can be added at any time in the future.

Adjustments to the current supply of FTE family physicians were made for:

Unattached Patients – A conservative estimate of unattached patients was used to produce an estimate of physicians required to serve these needs.

Age-Gender Standardization of the Population – As the provincial population, particularly in certain regions, skews older, adjustments are made for the additional quantity of services required.

Use of Collaborative Health Teams – Integrated teams are not entrenched in the primary care system in Newfoundland and Labrador. It is estimated that a physician could attach up to 50 per cent more patients if working within a properly resourced multidisciplinary team that has achieved reasonable efficiency and quality.

Burden of Illness – Chronic disease affects all age groups and is becoming more prevalent in the population, especially in Newfoundland and Labrador.

Indigenous Peoples – The needs of indigenous peoples in Labrador has been identified as an adjustment factor.

Care of Older Adults – Beyond the general needs of an older population, the care of older adults in areas such as frailty has been under-serviced.

Mental Health and Addictions – Significant attention has been placed on mental health and addictions, especially in relation to allied health providers, but the needs of these patients for access to family physician services have not been specifically addressed.

Family Medicine Oncology – In certain locations, there is a need to recognize additional family medicine capacity for oncology-related services.

Ambulatory Care Sensitive Conditions – Limited access to timely primary care can lead to otherwise unnecessary hospitalizations. As well, as hospitals become more efficient and shorten patients' lengths of stay, a corresponding increase in demand for family medicine is needed after patients return to their homes.

Diversion of Emergency Department Volume to Family Medicine – Acuity in emergency departments is measured according to the Canadian Triage and Acuity Scale (CTAS). A goal of all health systems is to have family physician capacity such that low acuity visits to the emergency department are reduced or eliminated.

To accomplish this goal, family physician capacity must increase. Typically, care in the community by a family physician is less expensive than that in an emergency department.

Some of these adjustments are purely quantitative (unattached patients and age standardization of the population), and some are qualitative (based on interviews with expert informants regarding current gaps in family practice within certain regions, such as indigenous peoples and mental health and addictions).

The final step was to tabulate each parameter and the estimated metrics over the 10 years of the forecast, and to compute the total for each parameter for each year and for three cases:

- [Base case](#) reflects the number of additional FTE family physicians required according to best evidence of population and health needs today.
- [High case](#) reflects the additional family physicians required if population and health needs or system changes evolve at a significantly inferior rate.
- [Low case](#) reflects the additional family physicians required if population and health needs or system changes evolve at a significantly superior rate.

The results are included in the appendix for each regional health authority (RHA) area, as well as for the province.

ES .04 Interpretations

The following observations can be determined from the forecast:

The starting point to the forecast is the 629 licensed, practising family physicians as recorded in the NLMA membership database as of September 2019. As noted above, this number was converted into an estimate of full-time-equivalent family physicians as a standard unit of analysis. The number of FTE family physicians carrying out community-based family practice services is estimated to be 431.1. The ratio of practising family physicians to FTE physicians is therefore 1:4:1 and varies by region.

The province currently has a significant primary care/family physician deficit. There are a high number of unattached patients and an under-supply of physicians to address the needs of an aging population. The first three years of the forecast include additional physician resources as a “catch-up” period to address unmet population needs.

The forecast adds physicians over the full 10-year period to keep pace with emerging population needs. The most significant adjustment factors include continued aging of the population, the burden of illness in all age groups arising from chronic disease, and the care of older adults arising from such factors as frailty and palliative care. The significance of each adjustment factor differs between regions.

Collaborative interdisciplinary teams can partially offset the need for additional family physicians over the forecast period. The forecast assumes the government will facilitate the arrangements necessary for physicians to be able to attach more patients through participation in multidisciplinary teams. The impact of the forecast starts in 2022 and builds throughout the 10-year period.

Despite the fact that national comparisons of physician supply show that Newfoundland and Labrador has a relatively high supply of family physicians, these data sources are headcounts rather than FTE counts. They include many licensed family physicians who do not participate in community-based family practice; they do not account for the greater prevalence of team-based practices in some jurisdictions that permit more patients to be attached to each physician; and, they are not adjusted for the distances and low population density in this province. A low-density jurisdiction will often provide services in more locations, at lower volumes per physician, than higher density jurisdictions. When comparing Newfoundland and Labrador to other Canadian jurisdictions, it should be noted the province ranks at or near the bottom for most indices of population health status and has one of the oldest populations in the country. These two factors converge to drive demand for primary care services and the need for a greater supply of family physicians.

In addition to forecasted growth to respond to population needs, a normal turnover of doctors will continue throughout the period.

New family physicians can be recruited from the Memorial University residency program, the residency programs of other Canadian universities, physicians practising in other parts of Canada, or international medical graduates (IMGs) practising in other countries. Memorial University's residency program, as well as Memorial University graduates who do their residencies in other provinces, are key sources for building the supply of family physicians to meet the growing needs of the population. There will also be a continued need to recruit and retain IMGs to fill essential needs.

Each year, Memorial University accepts 60 Newfoundland and Labrador students into its undergraduate medical education program. At the end of the program, each graduate may elect to pursue a family medicine residency or a residency in another specialty, either at Memorial University or another Canadian university. Typically, about 30 of the Newfoundland and Labrador graduates become family practice residents, with most remaining at Memorial University. A number of graduates from elsewhere in Canada also come to Memorial University for their family medicine residency. Therefore, the total potential for recruitment of these doctors at the end of their residency is about 30 per year. It is recognized that some will inevitably pursue jobs in other provinces, and some will extend their training into a third year. The actual retention of the residents who were formerly graduates of Memorial University varies from year to year, typically around 14 or 15, but has declined recently to eight or nine annually. Many of these doctors work as locum tenens physicians or in emergency departments, rather than committing to community family practice.

The retention of Memorial University graduates from the 2017 graduating class suggests an increase to former levels of about 15. The challenge, therefore, is twofold:

1. To recruit and retain more residents, closer to the potential of 30 per annum
2. To attract them into community family practice

Both objectives should be pursued as part of a physician resource strategy.

ES .05 Limitations

To varying degrees, each research data source comes with limitations. Mitigation strategies include the application of a number of research techniques, including the use of corroborating evidence, standardized interview questionnaires, and iterative data refinement to improve accuracy and quality, and, to conduct testing, revision, and validation of preliminary analytic results.

A 10-year time frame is sufficient to permit trend identification and analytics.

Key data challenges and limitations that are relevant to primary care are as follows:

Access to Services

Indicators of access to services are one of a number of important indicators of population need. The quality of data on access to services varies by service, location, and discipline.

Academic Apportionment

Accurate apportionment of full-time equivalency between clinical and academic work (didactic teaching and research) is important, but is made complex by issues of “budget” versus “actual” positions and overlapping work. The unit of measurements is clinical full-time equivalent.

Full-time Equivalency

- Current or baseline starting roster of providers by discipline in the province. Full-time equivalency (FTE) is an essential but contentious concept, filled with competing interpretations and definitions. Health Intelligence uses fee-for-service and individual status within alternative payment plans, and academic status (full-time, part-time, retired) to derive FTE.
- FTE may change over the forecast period. Opinion will be sought and integrated into the model to make future supply requirements more clinically relevant.
- The salary model in Newfoundland and Labrador does not include productivity and accountability measures or shadow billing for salaried physicians.

Timing

Changes in physician counts and FTEs occurring after the effective date of source data will not be reflected in the baseline of the forecast projections.

Model Uncertainty

Workforce supply and needs modelling occurs under conditions of uncertainty. As such, it is necessary to make note of the key areas of uncertainty.

Independent Variables are not Mutually Independent

A problem that arises in forecasting is the nature of variable interdependency. For example, to what extent does supply influence demand? To what degree does demand for services represent need for services (a source of constant challenge for practitioners necessitating case-by-case judgement decisions)?

Impact of Single Events

The possible effects of overlooked events can be substantial, as can over-estimating or under-estimating future events. For example, the launch of a new cancer screening program may be known, but the percentage uptake by the population may be highly uncertain and the impact on service need is proportionately uncertain.

Casual Patterns

Correlation does not imply causation. For example, supply may have less to do with the volume of physicians entering the workforce on completion of residency than the relative inter-provincial and intra-provincial job prospects. A more extreme example might be a strong statistical correlation between the incidence of left knee arthritis and cardiology service utilization, namely, correlation without causation.

A second problem is that correlation with causation in one time period may not hold true in a subsequent time period. For example, the demand for renal services and changes in the incidence of diabetes mellitus may have a strong historical and short-term future statistical relationship, but introduction in forecast year five of a program (single event) that transfers the bulk of secondary level care to other providers can substantially alter the statistical relationship. Controlling for covariates can be accomplished to a certain degree.

Managing Expectations

Workforce supply and service planning is an inexact science due to varying degrees of uncertainty in each variable, the nature of their inter-relationship, and variables not modelled. Models do not deliver certainty. A well-designed, maintained, and enhanced model will significantly reduce uncertainty, thereby adding value to decision-making



ES .06 Conclusions

The study conclusions are supported by the progressively granular details in the report, a data compendium, and derived FTEs of family physicians by regions and primary health care service areas. Distribution within the service areas will depend on the evolution of the plan and, where necessary, redistribution of resources.

Dependency on IMGs is addressed only indirectly. IMG retention is an appropriate strategy and many IMGs have made long and substantial contributions. For the purposes of forecasting, it is assumed the dependency will be decreased over time. In the meantime, the current state will continue with replacement of departing IMGs with others (typically after two to three years of service), unless retention efforts for IMGs are improved.

Family physicians and the broad domain of primary care in Newfoundland and Labrador are at a crossroad. The status quo is unacceptable to providers, funders, administrators, and to the patients at the centre of quality care. Providers are inhibited by geographic challenges and opportunities for role optimization and collaborative care. All are aware that system transformation takes time, but want to initiate change now to avoid inaction.

Family physicians are burned out and frustrated by an inability to provide the care they believe to be ideal; they are looking for a new model to support that care. The success of a new model is linked closely to an evidence-based resource forecast that is navigational and not prescriptive, built on a data infrastructure that can be monitored and adjusted, as forecast.

This study reflects a foundation of qualitative and quantitative data upon which layers of evidence and well-founded assumptions are built to generate a physician resource forecast for family medicine. It is an important first step; nonetheless, it will only achieve its full potential with the gradual implementation of collaborative multidisciplinary teams. These and other issues, including data related to all adjustment factors and explanations of modelling concepts, are included in the technical report.



ES .07

Statistical Appendix

Family Physician FTE Forecast, Eastern Health Region , by Adjustment Factor												
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Row Totals
Primary - for no health care provider		7.1										7.1
Secondary - for no health care provider			7.1	7.1								14.2
Age/Gender Standardization		5.9	5.9	5.9	5.9	5.9						29.5
Burden of Illness		4.0	4.0	4.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0	29.0
Birth Rate												
Collaborative Team				-6.0		-6.0		-6.0	-6.0	-6.0	-6.0	-36.0
Indigenous Peoples												
Care of Older Adults		3.0	3.0	2.0	2.0	4.0	4.0	4.0	4.0	4.0	4.0	34.0
Mental Health and Addictions												
Palliative Care												
Family Med. Oncology												
Ambulatory Care Sens. Conditions												
Canadian Triage/Acuity Scale		4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	35.0
Total Incremental Requirement		24.0	24.0	17.0	14.9	10.9	10.0	3.0	3.0	3.0	3.0	112.8
Retirement		2.0	4.0	1.0	7.0		7.0	6.0	2.0	4.0	8.0	41.0
Net Physician Migration		4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	46.0
Total Recruitment Requirement		30.6	32.6	22.6	26.5	15.5	21.6	13.6	9.6	11.6	15.6	199.8
Total FTEs	263.3	287.3	311.3	328.3	343.2	354.1	364.1	367.1	370.1	373.1	376.1	

Family Physician FTE Forecast, Central Health Region , by Adjustment Factor												
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Row Totals
Primary - for no health care provider		2.0										2.0
Secondary - for no health care provider			2.0	1.0								3.0
Age/Gender Standardization		2.0	2.0	2.0	2.0	2.0						10.0
Burden of Illness		3.0	3.0	3.0	2.0	2.0	2.0	2.0	1.0	1.0	1.0	20.0
Birth Rate												
Collaborative Team			-4.0	-4.0		-4.0		-4.0		-4.0		-20.0
Indigenous Peoples												
Care of Older Adults		1.5	1.5	1.5	2.5	2.5	2.5	2.5	2.5	3.5	3.5	24.0
Mental Health and Addictions		0.5	0.5	0.5	0.5			0.5	0.5			
Palliative Care		0.5	0.5				0.5	0.5			1.0	
Family Med. Oncology		0.5	0.5	0.5	0.5							
Ambulatory Care Sens. Conditions												
Canadian Triage/Acuity Scale		2.0	2.0	1.5	1.5	1.5	1.0	1.0	1.0	1.0	1.0	13.5
Total Incremental Requirement		12.0	8.0	6.0	9.0	4.0	6.0	2.5	5.0	1.5	6.5	60.5
Retirement		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net Physician Migration		4.0	4.0	4.0	4.0	2.5	2.5	2.5	2.5	2.5	2.5	31.0
Total Recruitment Requirement		16.0	12.0	10.0	13.0	6.5	8.5	5.0	7.5	4.0	9.0	91.5
Total FTEs	75	91.0	99.0	105.0	114.0	118.0	124.0	126.5	131.5	133.0	139.5	

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Family Physician FTE Forecast, Western Health Region , by Adjustment Factor												
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Row Totals
Primary - for no health care provider		3.0										3.0
Secondary - for no health care provider			1.0	1.0								2.0
Age/Gender Standardization		1.4	1.4	1.4	1.4	1.4						7.0
Burden of Illness		2.0	2.0	2.0	2.0	2.0	1.0	1.0	1.0	1.0	1.0	15.0
Birth Rate												
Collaborative Team			-2.0	-2.0		-2.0			-2.0			-8.0
Indigenous Peoples												
Care of Older Adults		0.5	0.5	1.0	1.0	1.0	1.0	1.5	1.5	1.5	1.5	11.0
Mental Health and Addictions		0.5	0.5									1.0
Palliative Care		1.0										1.0
Family Med. Oncology		1.0										1.0
Ambulatory Care Sens. Conditions		1.5	1.0	1.0	1.0	1.0						5.5
Canadian Triage/Acuity Scale		1.5	1.0	1.0	1.0	1.0	0.5	0.5	0.5	0.5	0.5	8.0
Total Incremental Requirement		12.4	5.4	5.4	6.4	4.4	2.5	3.0	1.0	3.0	3.0	46.5
Retirement		0.0	0.0	0.0	2.0	0.0	0.0	1.0	0.0	0.0	2.0	5.0
Net Physician Migration		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	30.0
Total Recruitment Requirement		15.4	8.4	8.4	11.4	7.4	5.5	7.0	4.0	6.0	8.0	81.5
Total FTEs	61.1	76.5	81.9	87.3	93.7	98.1	100.6	103.6	104.6	107.6	110.6	

Family Physician FTE Forecast, Labrador Grenfell Health Region , by Adjustment Factor												
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Row Totals
Primary - for no health care provider		4.0										4.0
Secondary - for no health care provider			2.0	2.0								4.0
Age/Gender Standardization		0.7	0.7	0.7	0.7	0.7						3.5
Burden of Illness		1.0	1.0	1.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	6.5
Birth Rate		1.0	1.0	1.0								
Collaborative Team			-2.0	-4.0			-2.0					-8.0
Indigenous Peoples		1.0	1.0	1.0								
Care of Older Adults												0.0
Mental Health and Addictions		0.5	0.5	0.5	0.5	0.5						2.5
Palliative Care		1.0										1.0
Family Med. Oncology		1.0										1.0
Ambulatory Care Sens. Conditions		0.5	0.5	0.5								1.5
Canadian Triage/Acuity Scale		0.5	0.5	0.5								1.5
Total Incremental Requirement		11.2	5.2	3.2	1.7	1.7	-1.5	0.5	0.5	0.5	0.5	23.5
Retirement								1.0				1.0
Net Physician Migration		2.0			1.0	1.0	1.0	1.0	1.0	1.0	1.0	9.0
Total Recruitment Requirement		13.2	5.2	3.2	2.7	2.7	-0.5	2.5	1.5	1.5	1.5	33.5
Total FTEs	31.7	44.9	50.1	53.3	55.0	56.7	55.2	55.7	56.2	56.7	57.2	

Physician Resource Forecast for Family Medicine

Family Physician FTE Forecast, Newfoundland and Labrador , by Adjustment Factor												
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Row Totals
Primary - for no health care provider		16.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.1
Secondary - for no health care provider		0.0	12.1	11.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.2
Age/Gender Standardization		10.0	10.0	10.0	10.0	10.0	0.0	0.0	0.0	0.0	0.0	50.0
Burden of Illness		10.0	10.0	10.0	7.5	7.5	6.5	5.5	4.5	4.5	4.5	70.5
Birth Rate		1.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0
Collaborative Team		0.0	-8.0	-16.0	0.0	-12.0	-2.0	-10.0	-8.0	-10.0	-6.0	-72.0
Indigenous Peoples		1.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0
Care of Older Adults		5.0	5.0	4.5	5.5	7.5	7.5	8.0	8.0	9.0	9.0	69.0
Mental Health and Addictions		1.5	1.5	1.0	1.0	0.5	0.0	0.5	0.5	0.0	0.0	6.5
Palliative Care		2.5	0.5	0.0	0.0	0.0	0.5	0.5	0.0	0.0	1.0	5.0
Family Med. Oncology		2.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	4.0
Ambulatory Care Sens. Conditions		2.0	1.5	1.5	1.0	1.0	0.0	0.0	0.0	0.0	0.0	7.0
Canadian Triage/Acuity Scale		8.0	7.5	7.0	6.5	6.5	4.5	4.5	4.5	4.5	4.5	58.0
Total Incremental Requirement		59.6	42.6	31.6	32.0	21.0	17.0	9.0	9.5	8.0	13.0	243.3
Retirement		2.0	4.0	1.0	9.0	0.0	7.0	8.0	2.0	4.0	10.0	47.0
Net Physician Migration		13.6	11.6	11.6	12.6	11.1	11.1	11.1	11.1	11.1	11.1	116.0
Total Recruitment Requirement		75.2	58.2	44.2	53.6	32.1	35.1	28.1	22.6	23.1	34.1	406.3
Total FTEs	431.1	490.7	533.3	564.9	596.9	617.9	634.9	643.9	653.4	661.4	674.4	

Physician Resource Forecast for Family Medicine

Family Physician FTE Forecast, Newfoundland and Labrador, by Adjustment Factor												
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Row Totals
Primary - for no healthcare provider	16.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.1
Secondary - for no healthcare provider	0.0	12.1	11.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.2
Age Standardization	10.0	10.0	10.0	10.0	10.0	10.0	0.0	0.0	0.0	0.0	0.0	50.0
Burden of Illness	10.0	10.0	10.0	7.5	7.5	6.5	5.5	4.5	4.5	4.5	4.5	70.5
Birth Rate	1.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0
Collaborative Team	0.0	-8.0	-16.0	0.0	-12.0	-2.0	-10.0	-8.0	-10.0	-6.0	-6.0	-72.0
Indigenous Peoples	1.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0
Care of Older Adults	5.0	5.0	4.5	5.5	7.5	7.5	8.0	8.0	9.0	9.0	9.0	69.0
Mental Health and Addictions	1.5	1.5	1.0	1.0	0.5	0.0	0.5	0.5	0.0	0.0	0.0	6.5
Palliative Care	2.5	0.5	0.0	0.0	0.0	0.5	0.5	0.0	0.0	0.0	1.0	5.0
FM Oncology	2.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0
Ambulatory Care Sensitive Conditions	2.0	1.5	1.5	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0
Clinical Triage Acuity Scores	8.0	7.5	7.0	6.5	6.5	4.5	4.5	4.5	4.5	4.5	4.5	58.0
Total Incremental Requirement	59.6	42.6	31.6	32.0	21.0	17.0	9.0	9.5	8.0	13.0	13.0	243.3
Retirement	2.0	4.0	1.0	9.0	0.0	7.0	8.0	2.0	4.0	10.0	10.0	47.0
Net Physician Migration	13.6	11.6	11.6	12.6	11.1	11.1	11.1	11.1	11.1	11.1	11.1	116.0
Total Recruitment Requirement	75.2	58.2	44.2	53.6	32.1	35.1	28.1	22.6	23.1	34.1	34.1	406.3
Total FTEs	431.1	490.7	533.3	564.9	596.9	617.9	634.9	643.9	653.4	661.4	674.4	

Physician Resource Forecast for Family Medicine

Physician Resource Forecast for Family Medicine, Newfoundland and Labrador, 2020-2029												
Total Recruitment Requirement for High, Base, and Low Cases												
Region	Case	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Eastern 2019 FTE 263.3	High	51.5	46.5	42.0	38.0	43.5	28.6	29.6	23.6	26.6	29.6	359.5
	Base	30.6	32.6	22.6	26.5	15.5	21.6	13.6	9.6	11.6	15.6	199.8
	Low	26.4	21.4	14.7	15.4	8.4	9.0	5.0	1.0	3.0	7.0	111.3
Central 2019 FTE 75.0	High	23.5	20.5	20.0	18.0	13.0	11.0	11.5	11.0	11.0	13.0	152.5
	Base	16.0	12.0	10.0	13.0	6.5	8.5	5.0	7.5	4.0	9.0	91.5
	Low	12.5	12.5	9.0	5.5	5.0	2.0	2.0	1.0	1.0	2.0	52.5
Western 2019 FTE 61.1	High	15.4	14.4	14.4	13.9	14.4	14.5	12.5	13.0	12.0	14.0	138.5
	Base	15.4	8.4	8.4	11.4	7.4	5.5	7.0	4.0	6.0	8.0	81.5
	Low	12.4	3.4	3.4	8.4	0.4	4.0	5.0	2.0	4.0	6.0	49.0
Labrador -Grenfell 2019 FTE 31.7	High	16.7	12.7	12.7	7.7	5.7	4.5	5.5	4.5	4.5	4.5	79.0
	Base	13.2	5.2	3.2	2.7	2.7	-0.5	2.5	1.5	1.5	1.5	33.5
	Low	8.7	2.7	-0.8	1.7	0.7	-1.5	0.0	0.0	0.0	1.0	12.5
Base Totals		75.2	58.2	44.2	53.6	32.1	35.1	28.1	22.6	23.1	34.1	406.3



1.0

Context

1.01 Overview

A primary care setting is traditionally the first place that individuals seek care for their non-urgent health care needs. Participants in the Canadian health system are clearly supportive of the essential role of comprehensive primary care in an effective, patient-centred healthcare system. Governments, commissions, and professional associations have each contributed to the collective values and statements that underpin this common understanding.

The essential role of comprehensive primary care in an effective healthcare system is inarguable. Health Canada, through a program of primary health care transition funding, has invested in the principle articulated by the [Romanow Commission](#) that there is ... *almost universal agreement that primary health care offers tremendous potential benefits to Canadians and to the health care system. (There is) no other initiative (that) holds as much potential for improving health and sustaining our health care system.* The [2003 First Ministers Health Accord on Health Care Renewal](#) set a target of 50% of Canadians having full access to an appropriate primary health care provider by 2011. One clear challenge for system planners is the core assumption underlying these statements and overarching goal: that “having” an appropriate primary health care provider will effectively translate into the ability for citizens accessing needed care in a timely manner.

While the [College of Family Physicians of Canada \(CFPC\)](#) strategic plan emphasizes access to comprehensive, continuous care in a family practice setting as the cornerstone of quality health, others have commented that, because of the fragmentation of primary care, comprehensive care as an ongoing characteristic may not be achievable or realistic.

In their principles to guide health care transformation in Canada, [Canadian Medical Association \(CMA\) and the Canadian Nurses Association \(CNA\)](#) stated, ... *a strong primary health care foundation as well as collaboration and communication within and between health professional disciplines along the continuum are essential to achieving patient-centred care.* This is more inclusive and pragmatic than the approach advocated by the CFPC, and considers the continuing evolution in family physician practice patterns.

A concern with the CMA statement, and with the experiences to date across Canada, is that fragmentation, duplication, and cost inefficiency result when the responsibility for primary care delivery is dispersed across multiple providers, with no single provider being fully accountable.

In recent years, there has been an observed [dissolution of the homogeneity of family medicine](#) in urban settings. Urban family physicians have long been withdrawing from the provision of services in an acute setting, eliminating emergency department service, obstetrical deliveries, surgical assisting, and the management of hospital inpatients. As models of care across the continuum evolve, so too will the roles of primary care physicians. Frequently, the diversity is influenced by the individual physician's desire to design his or her practice in alignment with their desired lifestyle or the unique needs of the local community that he or she is serving.

In urban settings, there has been a shift away from "traditional" family medicine and the practice has drifted away from generalism. In rural settings, however, a family physician still, typically, provides a broad, comprehensive suite of services. This is one factor among many that have posed challenges for patients accessing services in a timely manner. Governments have responded with different approaches, frequently associated under the banner of "primary care reform." These approaches have included reforms to service delivery (group practice models, integrated allied health professionals) and physician compensation in an attempt to improve quality of and access to care.

Despite intentions, there is a widening dissonance between traditional primary care services and the evolution of primary care, witnessed across most settings (particularly, urban) and jurisdictions.

[Newfoundland and Labrador Medical Association \(NLMA\)](#) is developing a ten-year, evidence-based physician resource plan for family medicine. It is designed to be navigational, not prescriptive, and based on the best available evidence. It is a ten-year rolling plan based on a convergence of qualitative and quantitative data, a current state assessment, models of care, and projection variables. As well, the parallel data compendium can be updated so that the plan can be maintained in "real time."

The report and its analytics are founded on the principle that healthcare is a provincial resource that is operationalized regionally, but always in the context of provincial planning and integration. It is a work-in-progress that will continue to be shaped and re-shaped, never with an endpoint. The constant touchpoint for the province is accessible, quality care that is patient-centric and provided by healthcare professionals committed to collaborative models and role optimization.

The long-term success of the plan will reflect policy persistence, provincial thinking, and clinical governance that measures outcomes and adjusts for standards and best practices as lessons are learned.

Successful planning provides better services for patients and their families, and opportunities to address inequities. To achieve successful planning in the long-term requires commitment across the system, belief in the values of the system, and the imperative for change that maintains the patient at the centre of that system. Making progress will be incremental and the full engagement of stakeholders across the system will

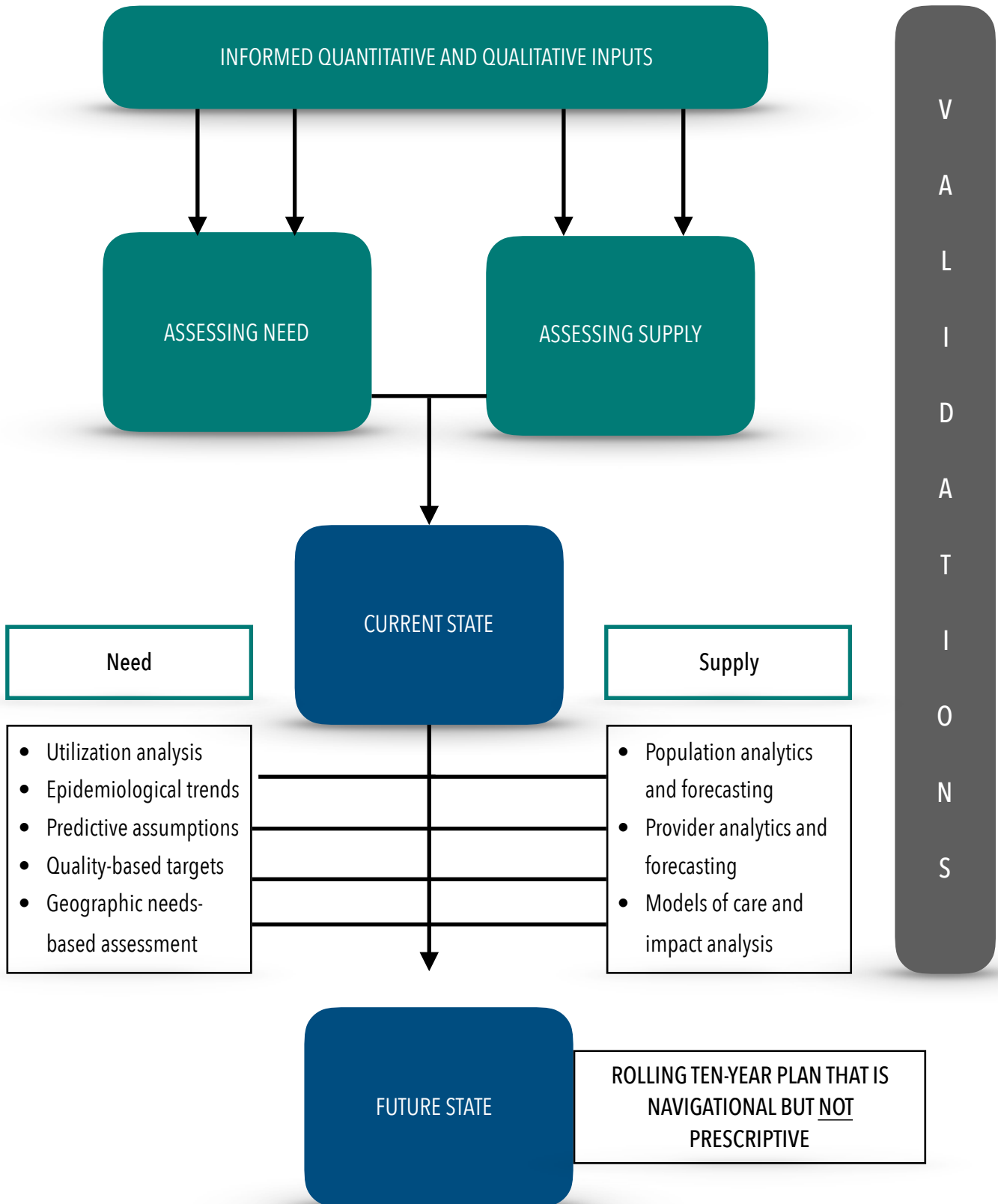
be inevitably staggered; however, policy persistence and an unwavering dedication to “our system” will lead to a successful endpoint.

The challenges of planning for services provided by family physicians are exacerbated by fragmentation of services, concerns over quality and access, redundancy and inefficiency, and challenges for those responsible for planning health human resources, capital investments, and digital technology.

An analysis for the the [Organization for Economic Cooperation and Development \(OECD\)](#) evoked questions that continue to be succinct reminders of the pressures faced by healthcare systems today (*Schieber GJ, Poullier JP, Greenwald LM: Health system performance in OECD countries, 1980-1992. Health Affairs 1994; Fall: 100-112*):

- *How can nations deal with underlying socio-economic stressors?*
- *How can healthcare systems stem the increasing medicalization of social costs at both ends of the age spectrum?*
- *Can reductions in waste and inefficiency really underwrite the costs of healthcare reform?*
- *Can market-oriented efforts lead to efficient consumption and provision of health services?*
- *How can nations deal rationally with the increasing advances in technology?*
- *Can healthcare costs be constrained with socially affordable boundaries?*
- *Can healthcare costs be constrained without rationing?*

1.02 Schematic of Approach



1.03 Needs-Based Planning

[Population needs-based planning](#) estimates compare the projected provider supply with expert estimates of disease incidence and prevalence, estimates by provider panels of services required to manage these illnesses, time per encounter, and the average time per year spent in the provision of patient care-related services. This approach includes new technology development. It does not control for substitution in health providers or that portion of care that is inter-disciplinary.²

Studies of this type are often criticized for generating forecasts of need that are unobtainable since the method does not reflect the functional realities of the health system and supply marketplace, and ignores cost and economic realities. Other challenges include difficulty in translating population need into provider supply, the risk of provider panels being less than objective, and lack of recognition of technological advances. These shortcomings led to the development of “adjusted” needs-based methodologies.

The utility of population needs approaches is the attempt to separate “what is” from “what should be” as seen through a lens of an optimal health delivery system - optimal from a quantitative, qualitative, and economic, perspective. This approach acts as a counterbalance, when applied in combination with the purely demand-based approach in a hybrid or blended approach.

Blended models combine attributes of the early four models. Hybrid approaches are adaptations to limitations in the primary model of choice. The [adjusted population needs-based \(APNM\) model](#), applied in this study, utilizes a primary model that is population needs-based, but with specific adjustments or modifications to compensate for known inherent weaknesses of the earlier population needs-based model.

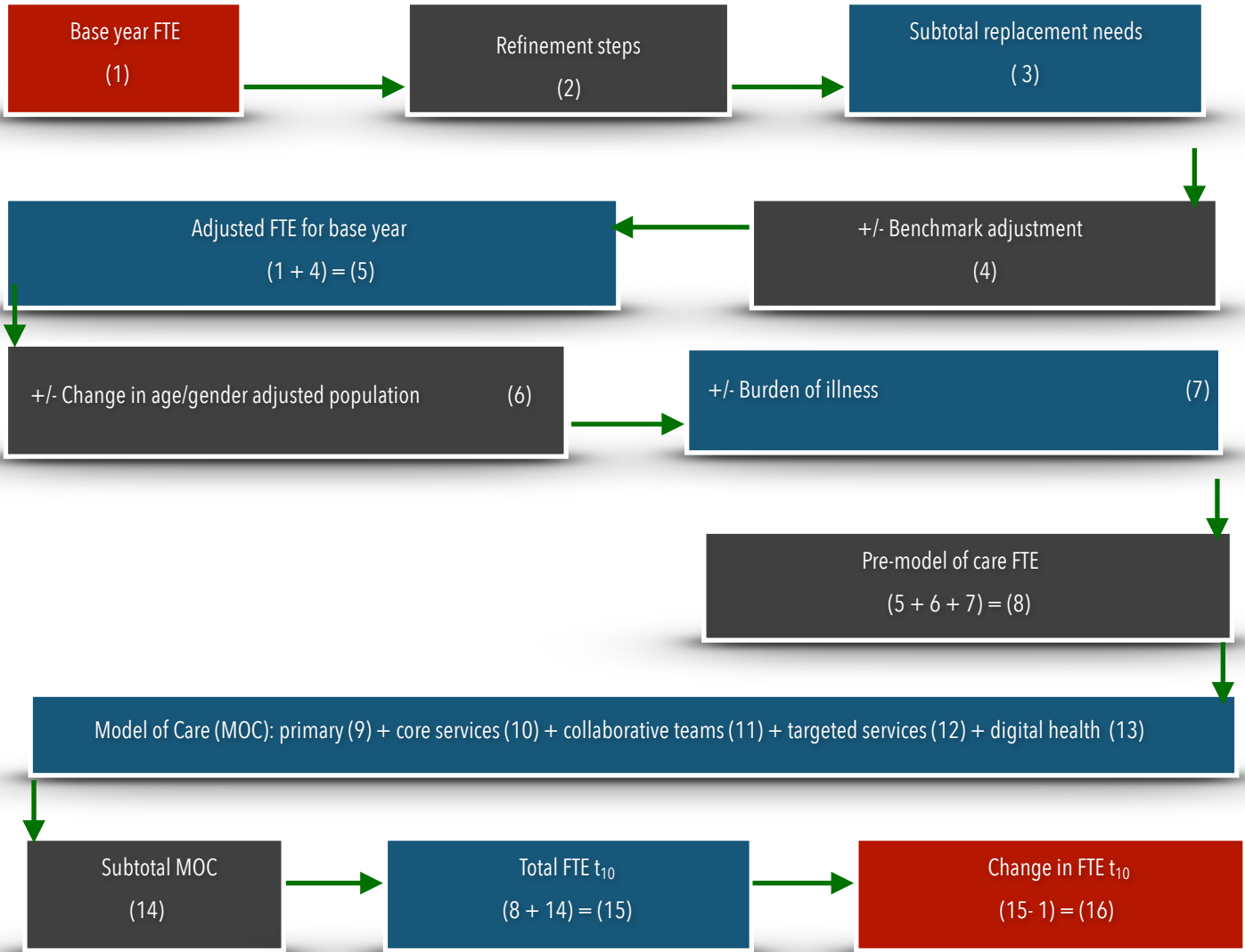
Two schematics summarize the approach undertaken in the study:

² Congress of the United States, Graduate Medical Education National Advisory Committee (GMENAC), Forecast of Physician Supply and Requirements, April 1980

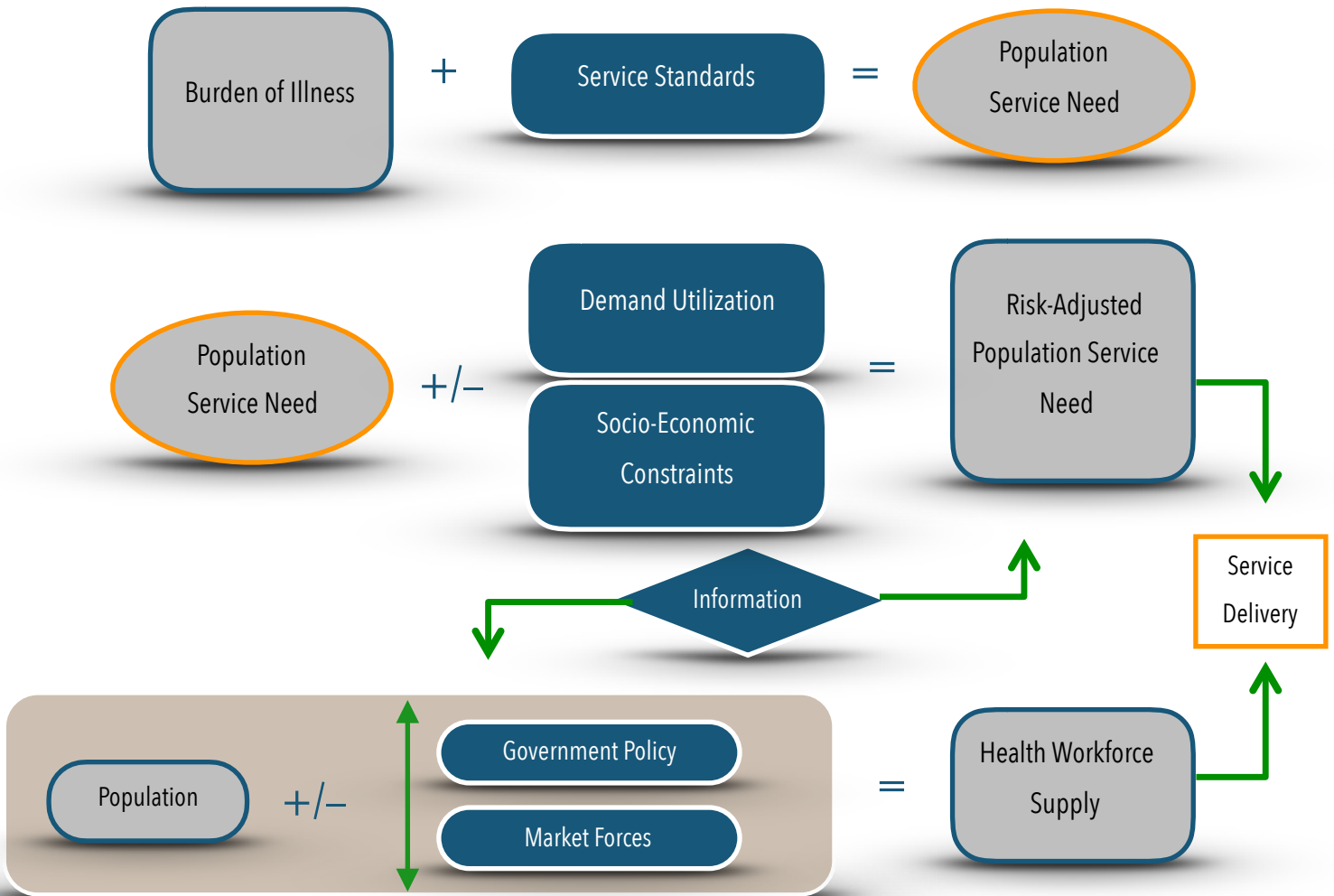
Linear Summary of Data Management

For each of low, base, and high case scenarios across defined time frames:

The base case is the most likely as determined by the evidence; the high case reflects changes that represent unfavourable variables; and, the low case reflects a significant improvement over the anticipated changes in the variables. It should be noted further that the low and high cases represent system boundaries that will not be exceeded during the rolling ten-year plan.



Application of the Risk-Adjusted Model to Planning



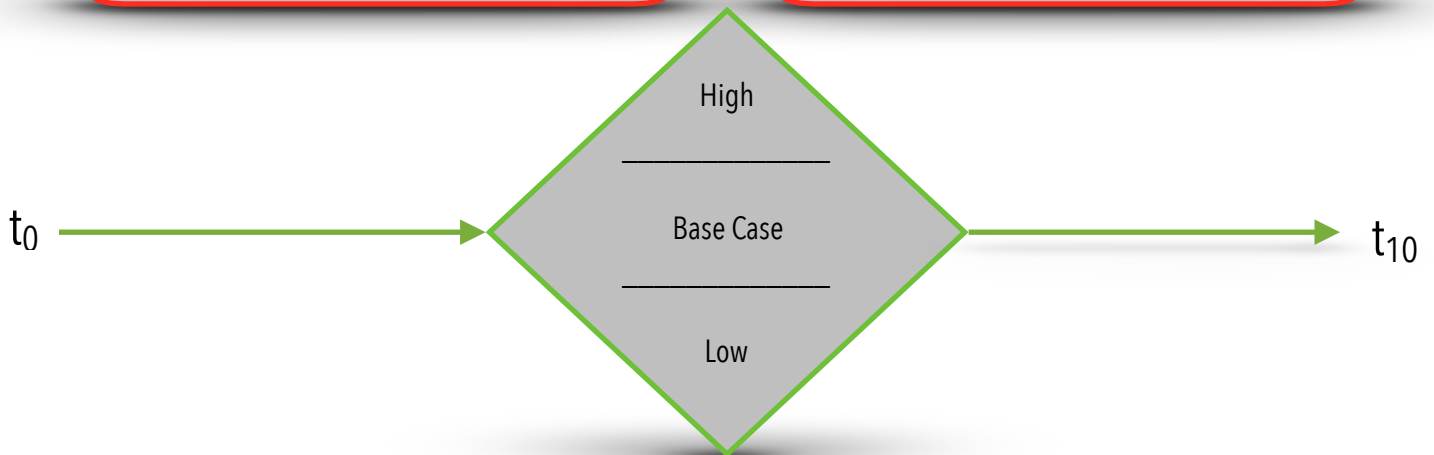
An APNM combines demand model variables with population need model variables (such as, population growth, disease incidence and prevalence, chronic disease management) and then conducts a reasonability test of the results against benchmarks and ratios. This hybrid approach is adaptable to limitations in a primary model. When the primary model is population needs-based, the specific adjustments address gaps between perceived service needs and actual service requirements. The information becomes triangulated into probable forecasting scenarios that are both system-level and at that of individual providers of care. The reasonableness of forecasting scenarios that merge need and supply is tested against benchmarks and ratios.

1.04 Assessing Need

Variables of Need Aligned with Future Need

- Population and demographic characteristics
- Utilization trends and demand
- Clinical profiles
- Academic mandate
- Leadership and administration
- Access to care
- Quality of care
- Standards and clinical practice guidelines
- Advances in technology
- Socioeconomic status
- Health status
- Epidemiological trends

- Population and demographic shifts by region and in the aggregate
- Disease incidence and prevalence (
- Models of care
- Access to care
- Quality framework
- Effective productivity framework
- System policy and direction
- Ongoing impact of standards, guidelines, and technology
- Major capital projects

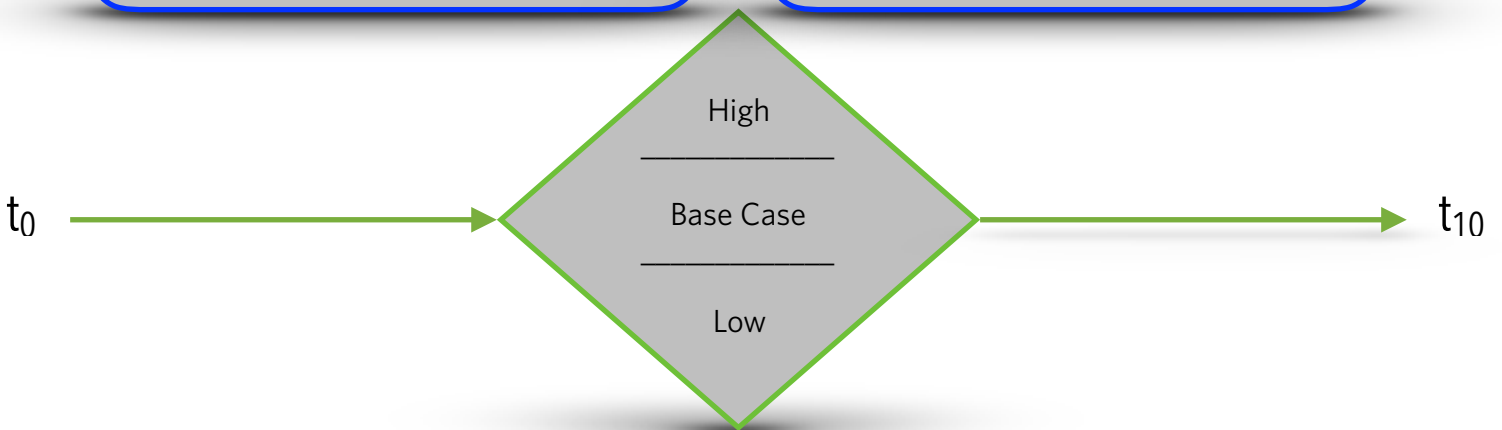


1.05 Assessing Supply

Variables of Supply Aligned with Future Supply

- Baseline roster profiles (clinical and academic)
- Service models workload
- Clinical FTEs
- Provider demographics
- Special competency
- Academic mandate
- Benchmarks
- Additions
- Attrition
- Impact of market forces

- Roster shifts
- Demographics with age and gender adjustments
- Geography and mobility, including intra-provincial, interprovincial, and net foreign migration net
- Workload - full-time equivalency
- Workload - hours worked adjustment
- Workload - benchmarking
- Workload - practice profiles
- Education system



1.06 Principles

Project principles anchor the complexity of a ten-year resource and services plan and demand quality, evidence-based care that is sustainable and based on population health needs.

Twelve principles are explicitly evident in how planning is designed, conducted, and applied to the undertaking.

i. [Transparent](#)

All aspects of methodology, data acquisition and analysis, decision-making, and modeling are easily understood or able to be explained

ii. [Patient-Centred](#)

Decisions, modeling, and related considerations are focused on the patient as the centre of the care delivery system; patient-centred means a health delivery system that is organized around the holistic needs of patient and family; culturally safe; culturally sensitive

iii. [Appropriate to population need](#)

Identify and apply evidence-based markers of population need, such as growth, aging, mobility, gender, disease incidence/prevalence rates, and morbidity and mortality rates

iv. [Affordable now and sustainable in the future](#)

Consistent with the economic base and its annual real growth

v. [Equitable across the geographic distribution of the population](#)

Incorporate local access to core services; additional access to referred services

vi. [Preserve and enhance quality of care](#)

Apply defined standards for acceptable, appropriate, accessible, efficient, effective, and safe care

vii. [Support appropriate access to needed services](#)

Identify needed services and define access standards and progressive targets for locally, regionally, territorially, and extra-territorially delivered services

viii. [Active, robust provider engagement](#)

Define and implement actions to ensure effective practitioner input at each phase and with each component deliverable

- ix. Align with appropriate inter-professional and intra-professional, innovative, delivery models
Define and integrate collaborative models of care; role optimization of health professions
- x. Design in the context of government and stakeholder strategic priorities and plans
Inclusive of relevant determinants of current and future provider supply
- xi. Integrate age, gender, national and provincial UGE/PGE, international graduates including IMGs and RFAs, practice profiles, and other relevant determinants
Predicated on productive, sustainable, quality, benchmarked workload; define and integrate the concepts of full-time equivalence, sustainable call rota, sentinel qualitative and quantitative metrics, and productivity benchmarks
- xii. Decision-making based on evidence



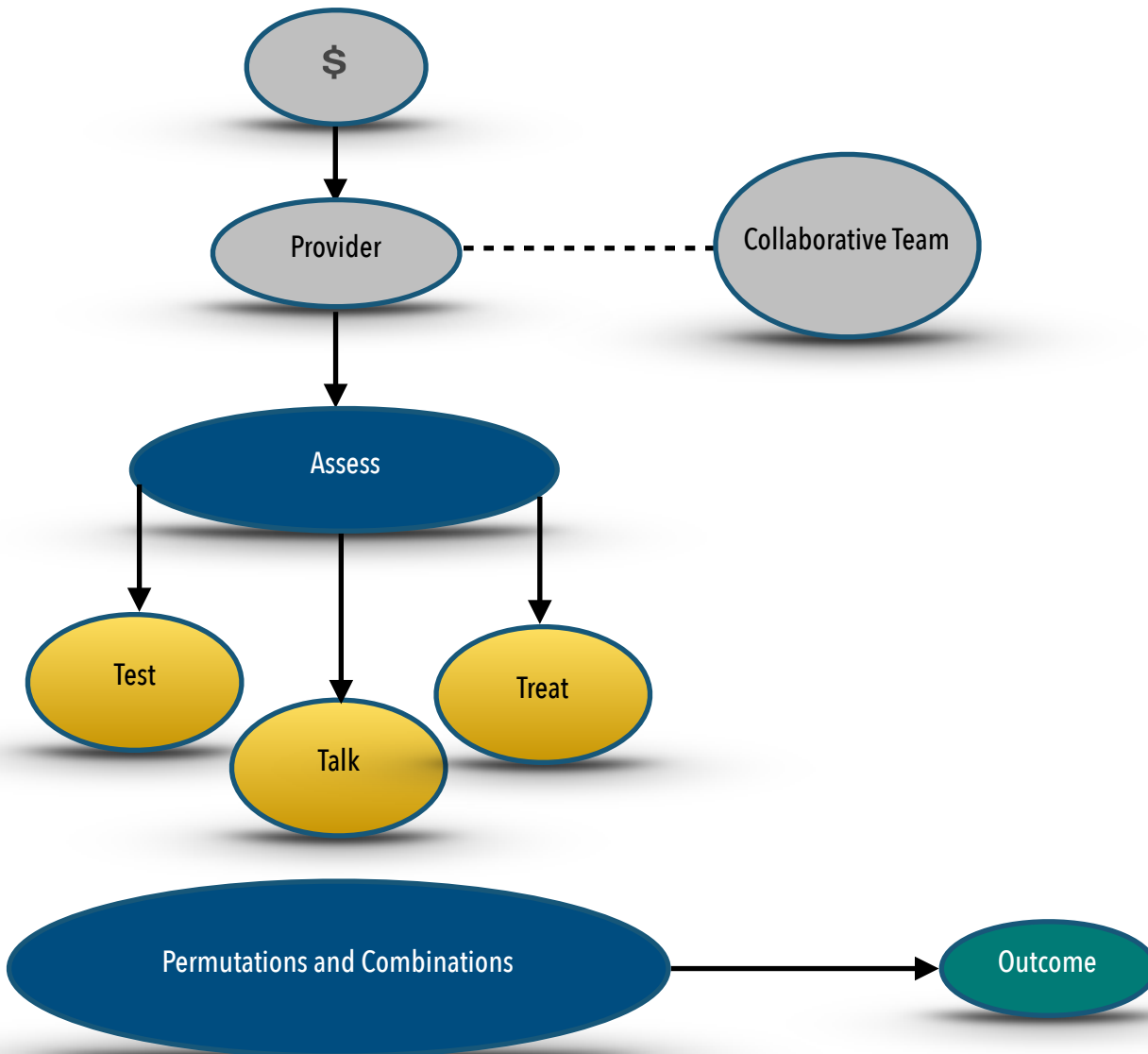
2.0

Environmental Scan

2.01 National Environment

On one hand, the funding of healthcare can be anticipated as a simple marketplace exchange, as demonstrated in the following schematic:

Schematic of a Clinical Sequence



There are reasonable [assumptions associated with this schematic of a clinical sequence](#):

- ➔ The funding is adequate and is measurable
- The provider is seen in a timely fashion
- The provider is trained to provide the service and is working within the scope of this training
- The provider is part of a collaborative team and can share care when required
- The drivers of decision-making are patient-centred
- The tests are actionable and chosen wisely
- Talking and treating are linked
- The subsequent permutations and combinations are clinically sound
- ➔ The outcome is good and is measurable

Ultimately, the [return on the investment in healthcare](#) pivots on the first and last bullets. The challenge in reforming care is that the first bullet is generally easy to measure and its constituent elements, fairly precisely; however, in times of fiscal constraint the addition of a service to the front end is, not infrequently, viewed dimly. The last bullet exacerbates the concerns, as it is generally difficult to measure and almost never precise.

This scenario does not diminish the need for new services and planning - it makes them more difficult to achieve; the balance comes from the outcomes for patients and families (not "measures of satisfaction").

The [outcomes](#) can be material (disability years and other measures of productivity) or they can be "savings." The savings may be distant in time (and not clearly able to be linked to the original action) or they may be speculative (especially with interventions of public health, prevention and health promotion, and mental health and addictions).

The other key variable is that the provider is able to provide services that are most appropriate, timely, and based on evidence.

The lens through which the schematic is viewed will often vary according to the funder, the provider, or the patient. Ultimately, there is a strong element of trust that is able to surpass the possible absence of a precise outcome linked to an earlier decision, process, provider, or infrastructure.

Equally important is the understanding that health status has little to do with a healthcare system - it is strongly linked, however, to the social determinants of health.

Over time, [provincial and territorial reviews](#) have been consistent on those areas that surface as deficits to be addressed. Most or all of these are within the domain of family physicians - - but, to variable degrees that reflect geography and access. They are, as follows:

- Care of older adults
- Collaborative care models
- Consolidated services
- Emergency medical and health services
- Home care
- Indigenous peoples
- Maternal health
- Mental health and addictions
- Palliative care
- Public and population health

All jurisdictions are experiencing an [older population that continues to grow](#). There may be some academic dispute on the relative burden placed on the healthcare system by older adults; however, there can be no argument that clinical and preventive services planning must incorporate an examination of the available care for this segment of the population, especially as many older adults remain productive members of society for longer, their numbers increase, and their needs change (including eventual level of care).

Beyond the population growth, the following issues characterize many older adults and are significant in planning for the following reasons:

- Longer in the workforce
- Greater physical activity
- Co-morbidities
- Polypharmacy
- Lower thresholds for interventions
- Lack of preparation for seamless transition within levels of non-acute care:
 - Home care
 - Chronic care

- Continuing care
- Personal care homes
- Rehabilitation services
- Cognitive dysfunction

Of the earlier identified characteristics of older adults, the planning challenges are:

- Co-morbidities and polypharmacy
- Thresholds for medical interventions
- Capacity and training for home care and personal care homes
- Sufficient team-based care for geriatrics and psychogeriatrics

Other [consistent themes](#) across jurisdictions are, as follows:

- Inequitable access to care and core services in rural and remote locations
- Growth of physician expenditures in excess of population growth
- Diminished access to primary care
- Theoretical support for collaborative teams
- Independent quality assessment
- Enormous energy and resources have been harnessed in pursuit of the ideal transformation of primary care, the indisputable centre of patient-centred care; lessons have been learned but sustained success has not been prominent; in no small part, this appears to reflect that “primary care reform” has become code for “compensation reform.”
- Experience suggests that no single compensation model (and, therefore, no single delivery model) is flexible enough to support all clinical settings for primary care; there is consensus, however, that compensation must be designed to fit the characteristics of a health care delivery system and be consistent with jurisdictional goals and policies
- Quality is difficult to define and, therefore, to quantify, yet, this is necessary to incorporate outcomes into effective productivity, particularly when an outcome can be positive, negative, or neutral from the perspectives of patients and providers
- Provincial and integrated regional planning has replaced hospital-centric planning in virtually all provinces; that notwithstanding, there has been a Canadian legacy of cyclical evolution of degrees of

regionalization; governance models to oversee health service delivery in the provinces and territories continue to evolve, albeit without stable underpinning

2.02 Profile of Newfoundland and Labrador

The [Newfoundland and Labrador Statistics Agency](#) reports the 2019 provincial population as 521,542 (sourced from [Statistics Canada](#)) with a land mass of 108,860 square kilometres. 92% of the population of the province live on the island of Newfoundland, and more than 50% live on the Avalon Peninsula. Overall, the province has a much lower population density of 1.4 people per square kilometre when compared to that of Canada as a whole at 3.7 people per square kilometre.

During the qualitative research, [recurrent themes](#) were expressed by many sectors:

- The status quo is unacceptable
- The province has been going down a path of specialty care when the the real need is generalism
- Not uncommonly, many new entrants to family practice are reluctant to assume the business model of opening a community practice
- It is essential to stop thinking long-term - - the repair to family medicine in Newfoundland and Labrador must occur now
- While not to be overlooked, compensation reform should not be confused with resource planning
- Family physicians in Newfoundland and Labrador are struggling with higher than usual burn-out rates and consistently note an increasing complexity of clinical issues
- Digital health and virtual care have been improving, but there is still a long way to go
- The fee schedule and funding models do not align with contemporary care
- Innovation is impeded by the limitations of "return on investment" - it is not difficult to price the upfront costs of innovation but almost impossible to quantify an endpoint of savings, despite the understanding that quality of care will improve and savings can be realized

The [Faculty of Medicine at Memorial University of Newfoundland](#) has 80 annual new admissions - - of these, 60 are allocated to residents of the province, ten to New Brunswick, four to Prince Edward Island, one to Yukon Territory; the remaining five are "open." There is also a priority allowance for candidates from rural settings, indigenous populations, and lower socio-economic status. The faculty target is that 50% of the 80 admissions will enter family medicine (the actual varies between 25 and 50%). There remains strong support for distributed education, innovative models of care, and care provided by collaborative teams (with constituent elements tailored to need). For the purpose of planning, it will be assumed that 50% of the retained graduates enter family medicine, also requiring and FTE career-based gender adjustment. The following table shows the number of family medicine graduates currently practising in Newfoundland and Labrador as of the stated year. In recent years, the retention rate in the workforce of family doctors who graduated from MUN has declined, from a high of about 15 family doctors to a low of eight family doctors. Not only is this new level of retention below the historic peak, it is also far below the desired 40 family doctors who would be in the province each year if 50% of the 80 grads entered family medicine residencies and stayed in the province (or 30 of the 60 Newfoundland and Labrador graduates).

Year of Graduation	Degrees Awarded	2015		2017		2019	
		NL	%	NL	%	NL	%
2006	56	9	16.1	9	16.1	10	17.9
2007	58	15	25.8	15	25.8	16	27.6
2008	59	5	8.5	5	8.5	5	8.5
2009	63	11	17.4	7	11.1	8	12.7
2010	61	13	21.3	12	19.7	11	18.0
2011	65	12	18.5	13	20.0	14	21.5
2012	59	7	12.0	11	18.6	13	22.0
2013	72			14	19.4	15	20.8
2014	65			14	21.5	12	18.5
2015	61			5	8.2	9	14.8
2016	69					8	11.6
2017	80					9	11.3

Dependency Ratios

The total demographic dependency ratio is the ratio of the combined youth population (0 to 19 years) and senior population (65 or older) to the working-age population (20 to 64 years). It is expressed as the number of "dependents" for every 100 "workers." A sizeable share of seniors aged 65 years or older and children and youth younger than age 20 are likely to be socially and/or economically dependent on working-age Canadians, and they may put additional demands on health services.

From [2013 to 2017](#) in Newfoundland and Labrador, the dependency ratio increased steadily from 58.7 to 64.1.³ During that same time span, the Canadian dependency ratio increased steadily from 60.4 to 62.6.

Calculating [dependency ratios by health region from 2019 to 2029](#), using age and gender projections,⁴ generates the following data:

Health Region	Dependency Ratio 2019	Dependency Ratio 2029
Eastern Health	63.5	66.9
Central Health	79.6	101.9
Western Health	74.2	100.0
Labrador-Grenfell Health	65.1	78.3

The [provincial burden of dependency today](#) is mid-range compared to Canadian provinces and territories, although it is significantly higher for Central Health and Western Health. [Calculations for 2029 projections rise for all four health regions](#), with the burden particularly concerning for Central Health and Western Health, and the lowest increase for Eastern Health.

[Between 2019 and 2029](#), the overall dependency ratio for Newfoundland and Labrador is estimated to increase from 67.8 to 77.4.

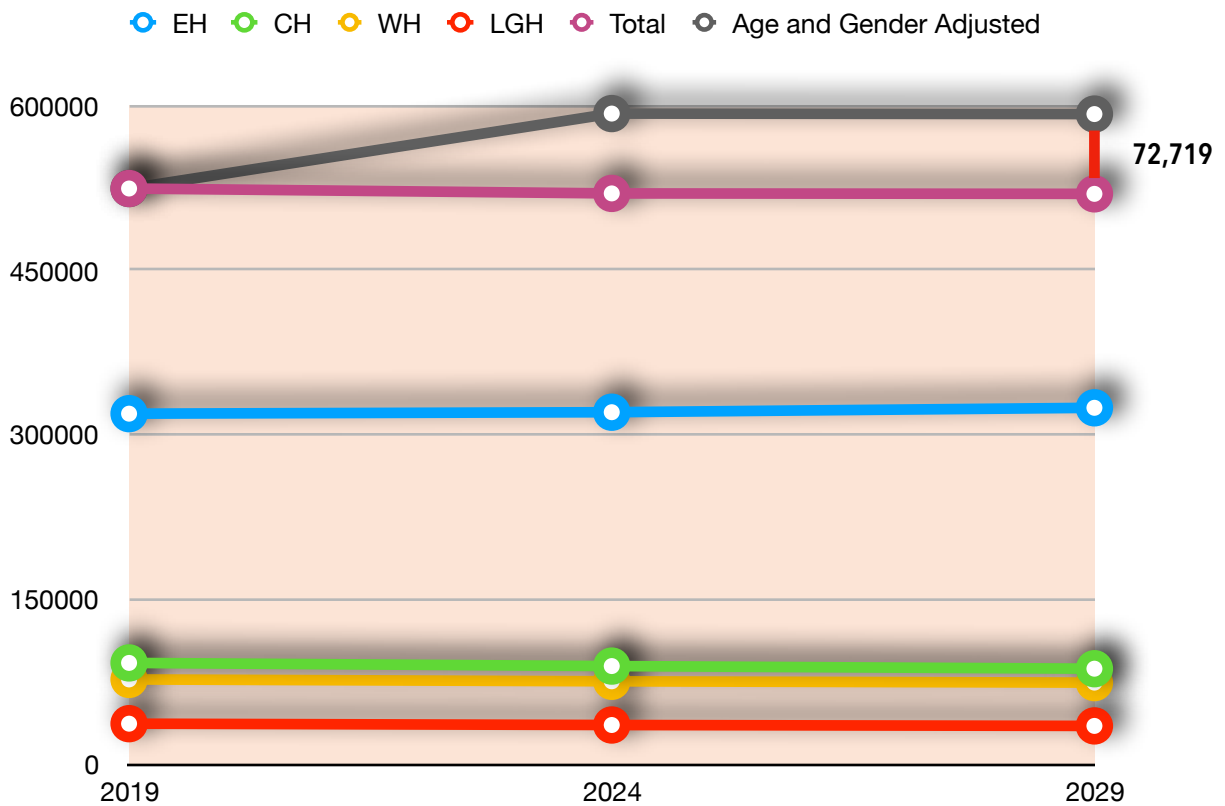
³ Please see page 12 of data compendium (1.09)

⁴ Please see pages 7 to 10 of data compendium (1.04 to 1.07)

2.03 Interpretation of Population Data

The following chart demonstrates population projections from 2019 to 2029 by health region and the provincial total. The province and each health region are projected to experience slight decreases over the ten-year span

The key vectors are the age-gender adjusted totals in 2024 and 2029, using a statistical impact analysis program. They reveal an impact of 72,719, meaning that, despite a reasonably flat population (slight increase in Eastern Health and slight decrease in the other three regions), the impact on the healthcare system is equivalent to a population increase of 72,719. [The age-gender adjusted figure should be used for planning healthcare services.](#)



In addition to age-gender adjustments over the next ten years, following are comments on the populations of Newfoundland and Labrador⁵ linked to the data compendium, in addition to the compendium sections on ten-year projections, and dependency ratios:

- In 2016, the percentage of the population of Newfoundland and Labrador greater than 65 years of age was comparable to the other three Atlantic provinces and greater than Canada as a whole (examining all, male, and female categories)
- The percentage of population changes between 2011 and 2016 for Newfoundland and Labrador was significantly less than Canada as a whole; Newfoundland and Labrador increased by 1.0% compared to the remaining Atlantic provinces:
 - Prince Edward Island was the greatest at 1.9%
 - Nova Scotia was 0.2%
 - New Brunswick fell by 0.5%
- Not surprisingly, in 2016, the population density in Newfoundland and Labrador was substantially lower than the remaining Atlantic provinces at 1.4 per sq. km. and lower than Canada as a whole at 3.9 per sq. km.; this reflects the geography and rurality of Newfoundland and Labrador
- Within Newfoundland and Labrador, the percentage increase in population between 2011 and 2016 was positive for the Avalon Peninsula, Humber District, Central Newfoundland, and Labrador; it was negative for the Burin Peninsula, South Coast, St. George's, Bonavista / Trinity, Notre Dame Bay, Northern Peninsula, and Nunatsiavut
- Within Newfoundland and Labrador, population density is not surprisingly high in Avalon Peninsula and is lowest in South Coast, Northern Peninsula, Labrador, and Nunatsiavut
- Ten-year population projections for Eastern Health show minimal overall growth, but substantial increases in the older age cohorts; for Central Health, there is slight ten-year decrease in overall population but an increase in the older age cohorts; for Western Health, there is a similar ten-year decrease in overall population and increase in the older age cohorts; this pattern is repeated for Labrador-Grenfell Health
- [Most significant are the age-gender adjusted totals demonstrated in the graph on the previous page](#)

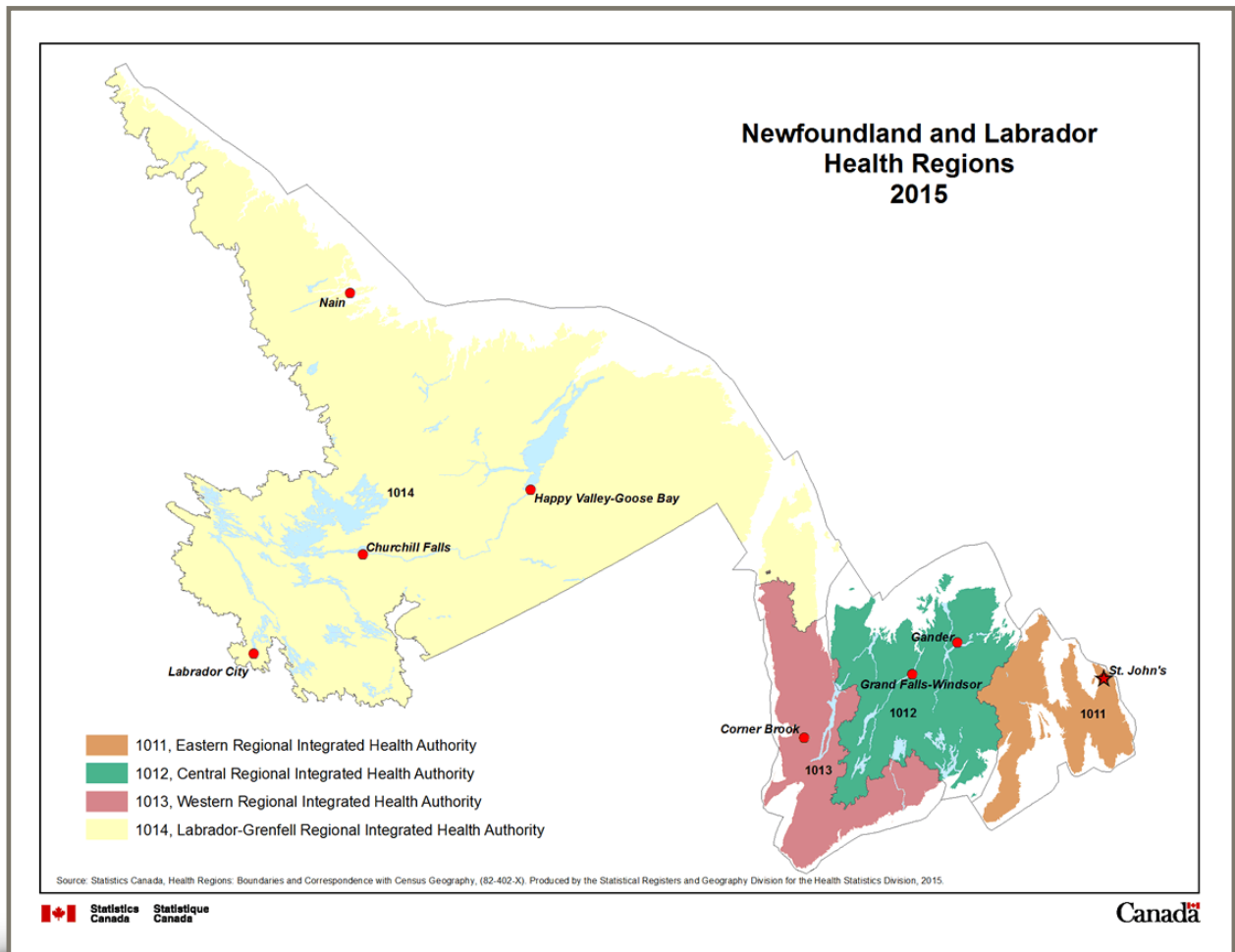
⁵ Please see page 2 of data compendium (1.01), page of data compendium (1.02), pages 4 to 10 of data compendium (1.03 to 1,.07), and page 11 of data compendium (1.08)

2.04 Health Regions

Healthcare in Newfoundland and Labrador is operationalized through four regional health authorities:

- Eastern Health
- Central Health
- Western Health
- Labrador-Grenfell Health

Each region is described in more detail in the respective sections of the report.



2.05 Primary Healthcare Service Areas

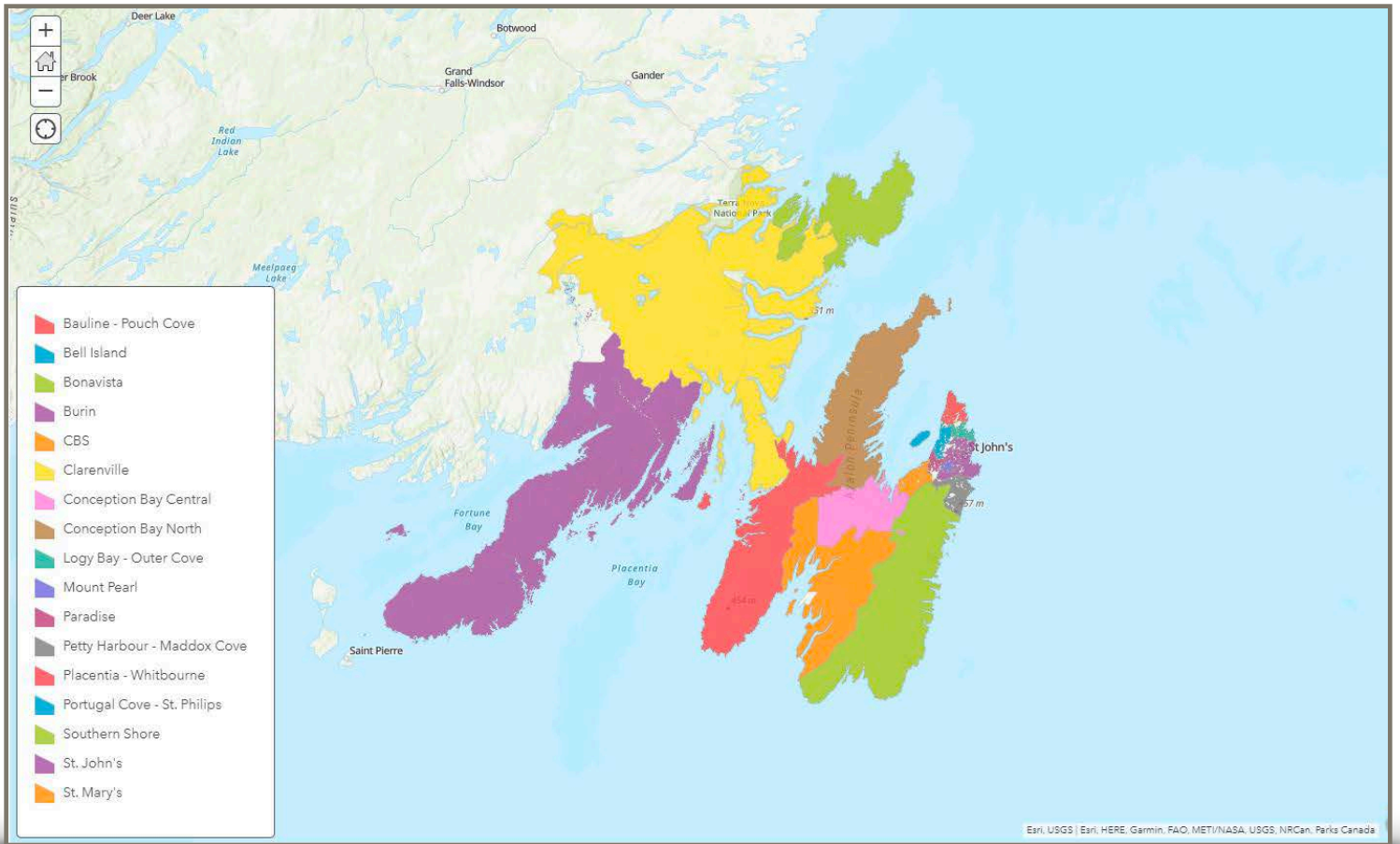
Recent segmentation of the four health regions into primary healthcare service areas offers reasoned planning units for family medicine in the province. These were developed through collaboration between the regions and Newfoundland and Labrador Centre for Health Information (NLCHI).

Following are regional maps with primary healthcare service areas and tabulated communities within the areas, provided by NLCHI.⁶ The communities within each service area are tabulated in the data compendium from page 13 to 31 (1.10 to 1.13).

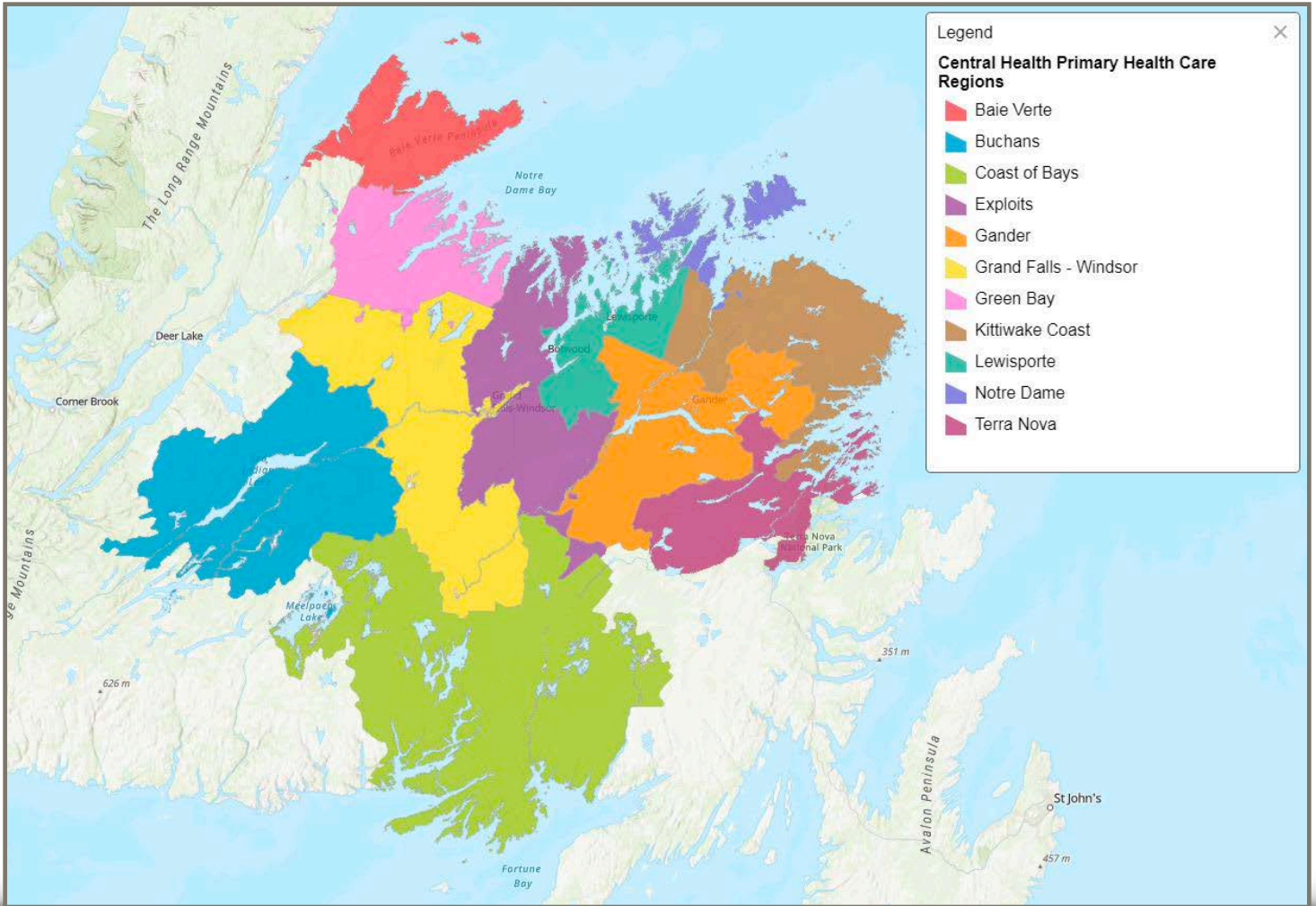
[The NLMA database is mapped by communities against the primary healthcare service areas in a separate folder that reveals head counts and full-time equivalent counts by communities and service areas.](#)

⁶ Please note that the allocation of communications is subject to change

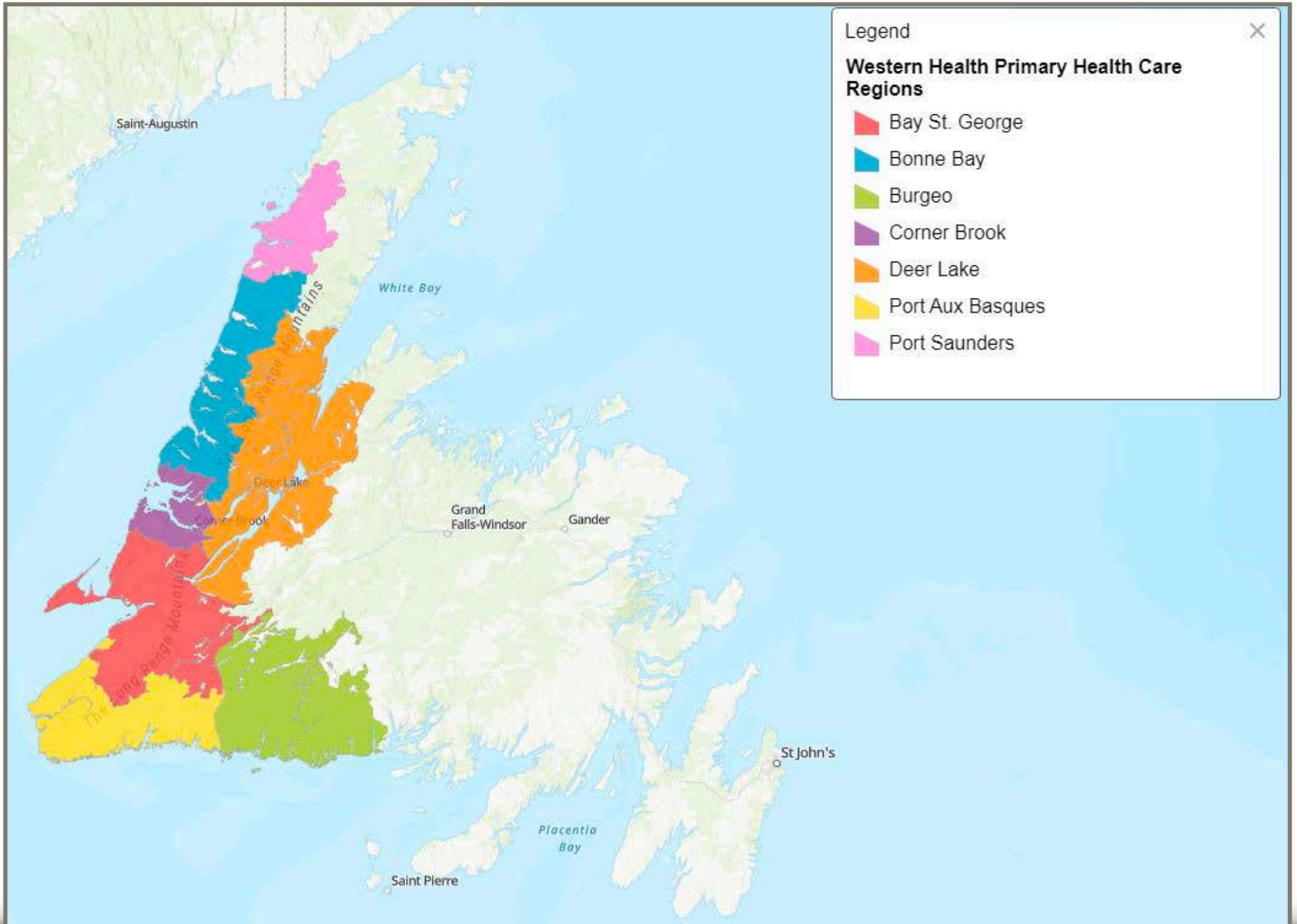
2.05.01 Eastern Health Primary Healthcare Service Areas



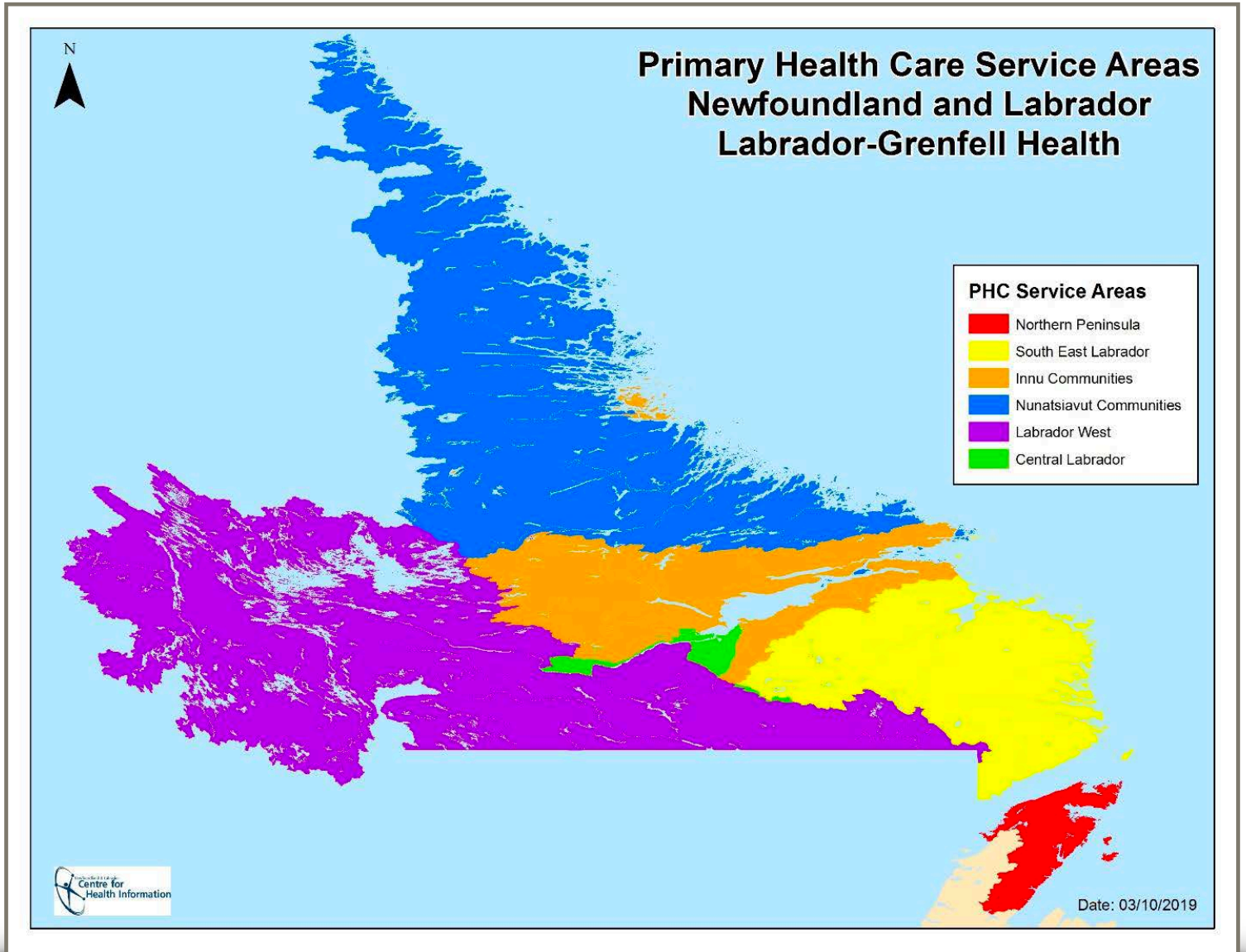
2.05.02 Central Health Primary Healthcare Service Areas



2.05.03 Western Health Primary Healthcare Service Areas



2.05.04 Labrador-Grenfell Health Primary Healthcare Service Areas



2.06 Family Practice Networks

The four initial Family Practice Networks (FPNs) are a mix of established practices and new entrants to practice, and are characterized as networks of practices that share information and experience. The development of FPNs has been the result of the focused efforts of the Family Practice Renewal Program. A memorandum of agreement between the NLMA and the DHCS denotes FPNs as a means to organize family physicians in a network at the sub-regional or regional levels as a means to address common healthcare goals. Approximately 200 family physicians participate in the four FPNs.

Physicians entering FPNs are consistent in the expressed need to improve connectivity and efficiency, and to enhance regional communication, collaboration, and coordination - - in short, to contribute to a system of integrated care. Central to these goals are an evaluation framework, measurement, and overarching quality initiatives.

Advocates and participants believe that FPNs are not an endpoint, but the beginning of something bigger and better, underpinned by collaborative teams tailored to need. Joining an FPN, for many, has been a consequence of reaching a crossroad with increasing complexity of care, increased demands on time, changing patient expectations, and the need to maintain a wide scope of practice. These goals were realized as unachievable in the absence of a supportive, communications forum.

As well, it has been recognized that FPNs can be a vehicle to generate change, to share resources (such as, locum tenens physicians and group purchasing), and to offer improved recruitment and retention due to the opportunity of network or model.

In short, the interviewed FPN members are enthusiastic and committed.

The [Rural Eastern FPN](#) has been challenged in engaging physicians due to a widespread geography and the absence of a central hub; members acknowledge that it is a work-in-progress, but recognize that the geographic spread and inability to meet regularly will be an ongoing challenge. The future is seen as one of growth and patience, increased collaborative teams, and a new and appropriate funding model. Achieving these has the potential for FPNs (or their next generation) the practice norm in the province.

The [Endeavour FPN](#) has recognized that established physicians and new entrants to practice, alike, were experiencing a sense of isolation within silos of providing care. Initial expectations included the ability to network, an improved work-life balance, improved quality of care, improved recruitment and retention, and shared resources. The future state is seen as continued growth and engagement, despite concerns about the matrix of reporting and some residual skepticism among non-participants. The potential for collaborative teams is seen as fundamental, but requiring a clear definition of such a model.

The [Long Range FPN](#) has approximately 70 members and became an entity, in no small part, due to a disconnected environment and an unwillingness to accept the status quo, in parallel with an expectation of increased capacity for required complex care. The complex care is anticipated to increase due to the need for augmented GP oncology services and palliative care. The challenges facing the leadership have been ongoing growing pains, the absence of a firm identity, and the capacity to reach out to other disconnected physicians. That notwithstanding, there is optimism for growth and a strong endorsement for collaborative teams.

The [Shalloway FPN](#) has 75 members out of 99 family physicians, with some skepticism identified among the non-participants. Allowance for unique geography and implicit variations are recognized as areas of required attention for success and future growth. Over the previous ten years, much discussion on the need for change had not yielded results until the FPN became a reality as a first material step to overcome regional silos of care. The growth phase has been challenging due to the geography, the need to work more effectively with IMGs, and the level of engagement of the established administration. Support for a future collaborative model underpins the need to adapt to an aging population, complexity of care, and the prominence of co-morbidities.

2.07 High-Level Issues

Reference continues to be made to the 1978 discussion of primary care resource policy by the Institute of Medicine where four features were identified as constituting “good” care:

- First access for new medical issues
- Long-term patient-focused care (not disease-focused or provider-focused)
- Comprehensive scope
- Care coordination when referral is required

Ultimately, the forces to overcome will be those that separate community care (and its multiple levels and providers) and hospital care (and its multiple acuties) and then expect that the end product is still a “system.” [Further, a sound principle is to maintain what is working \(and, conversely, to stop funding what isn't\).](#)

Any continuing discussion of primary care renewal and transformation should support pluralism and generalism, as it is unlikely to develop a single model that aligns with every geography and population.



3.0

Key Concepts

3.01 Core Services

Conceptually, core services are uncomplicated, described as an evidence-based understanding of population health service needs that carry expectations of timely and efficient access.

The consensus practice in Canada is to include the following as physician core services: comprehensive family practice, emergency medicine, general internal medicine, general surgery (and corresponding anaesthesiology services), and general psychiatry, general paediatrics, and obstetrics, supported by general laboratory (specimen collection and transport, ECG) and medical imaging (screening, routine diagnostic and imaging) services.

Core services integrate five issues, both implicitly and explicitly:

- Definition of reasonable access time ("x" minutes driving time to PHC)
- Definition of community categories (rural, hamlet, village, town, city)
- Criteria for rurality/remoteness and determinants of a service delivery model that is unique to remote communities (air ambulance, fly-in PHC)
- Balancing need for appropriate access with factors such as maintenance of competency and affordability in low volume situations, recruitment realities in rural and remote areas
- Critical mass of a given specialty to function in a sustainable manner (can a single specialist function in a sustainable manner or is there a minimum number of specialists required in a given catchment area).

3.02 Rurality and Remoteness

Areas of rural and remote populations have been identified statistically as experiencing lower health status than urban populations. This can include examination of life expectancies, overall mortality, mortality rates, and infant mortality rates. While there are many social and age factors that underlie this disparity in health status, it can be surmised that difficulties in recruiting and retaining health care providers to rural and remote areas are compounding factors, as well as the time and distance to receive medical services.

Even the definition of “rural and remote” is not uniform in the related literature. It has been referenced as narrowly as “not urban” or defined by strict geographic criteria, unfortunately applied variably in different jurisdictions. No single definition has been accepted nor applied in research, policy, or planning. Statistics Canada uses the “not urban” standard, with urban defined as an area with a population concentration of at least 1,000 and a population density of at least 400 per square kilometre. Other initiatives utilize various population thresholds relative to distance from a population base of another threshold.

Perhaps, more important than a definition is an understanding of the characteristics of rural and remote communities. From these characteristics, it becomes possible to develop objective rurality indices.

An attempt to measure rurality was undertaken as a multistakeholder initiative of the Canadian Medical Association, the Society of Rural Physicians of Canada, the Canadian Nurses Association, and the Canadian Pharmacists Association.⁷ This project used expert resources from the sponsoring organizations and commissioned an external survey. It determined ten factors, by ordinal ranking and profession, from which a scoring system from 1 to 5 was developed for each factor. This is a useful piece of work as part of the development of national thinking about rurality indices; however, the scoring and its application lacked the rigour to be applied broadly.

In 2002, the Ministries of Health Services and Health Planning in British Columbia constructed provincial standards of accessibility to ensure services as being the most appropriate within available resources.⁸ This report offered a framework for sustainability and quality of care for emergency services, acute inpatient services, and specialty services. Not in the format of an actual rurality index, the report developed provincial standards, based on access time for each element of service, applicable to 98% of a regional population and 95% of a health service delivery area population. The following factors were deemed important in reviewing

⁷ The Development of a Multistakeholder Framework/Index of Rurality. Final Report to Health Canada: Rural and Remote Health Innovations Initiative; 2003

⁸ Standards of Accessibility and Guidelines for Provision of Sustainable Acute Care Services. Ministry of Health Services and Health Planning, British Columbia; 2002

the quality of acute care services: population and demographics, professional competence, critical mass, and distance and geography.

A Canadian Medical Association survey of rural physicians ranked 21 possible characteristics and factors that define a rural community from their professional perspectives. The resulting ten factors defining rurality were:

1. High level of on-call responsibility
2. Long distance to secondary referral centre
3. Lack of specialist services
4. Insufficient numbers of family physicians
5. Long distance to tertiary referral centre
6. Absence of diagnostic equipment
7. Difficulty in obtaining locum tenens support
8. No ambulance service
9. Inability to provide obstetrical and surgical services
10. Sparsely populated catchment area

The paper identified three categories within which to consider factors of rurality:

1. Community and lifestyle
2. Nature of rural practice
3. Professional isolation and support

Multiple complex formulae have been used to measure rurality; interestingly, the most basic formula has proven reliable and preserves the ordinal ranking of the complex formulae:

$$\text{Basic rurality index} = \text{Population} + \text{Time}_a + \text{Time}_b$$

Where:

Population = a measure of community population and population density (implicit weighting of 28.6%)

Time_a = Measure of travel time to nearest advanced referral centre (implicit weighting of 23.8%)

Time_b = Measure of travel time to nearest basic referral centre (implicit weighting of 47.6%)

3.03 Role Optimization

Traditional models of care anchor the professional activities of health professionals to related physician activity. To some degree, this is still true; however, models of care and professional autonomy are in transition, as are scopes of practice and the ability to fulfill role optimization at the top-of-license. As change continues and models become refined, there will be an impact on both service and resource planning.

Models of care that emanate from experience and logic inherently encompass role optimization. These models are collaborative and built on mutual respect among professions in a non-hierarchical arrangement characterized by a shared responsibility for quality.

Role optimization is central in primary care transformation and planning and offers relief to the challenges faced in a traditional medical model.

3.04 Patient-Centred Care

Patient-centred care (PCC) receives greater reference than attention in Canadian health care. That notwithstanding, a tenet of clinical and preventive services planning is the central position of the patient and, in many circumstances, this requires a shift in thinking and models. Perhaps most importantly is an understanding that PCC is a care model and not a simple concept.

Initial interest in patient-centred care emerged in opposition to the prevailing, traditional model of provider-centred decision-making, with seminal thinking having been undertaken in 1985 by [Dr. Ian McWhinney](#), then Professor of Family Medicine at the University of Western Ontario. Described as seeing the world through the eyes of patients and their families, the paradigm shift to PCC can facilitate patients and their families to better inform the therapeutic process, taking into account their desire for sharing information and an equal and shared role in decision-making.

The four attributes of patient-centred care, described by the [Institute of Medicine](#) in 2001, are, as follows:

- Comprehensiveness of care
- Coordination and communication
- Support for the patient and his or her empowerment
- Timely access

The core of primary care reform requires a clearly defined, patient-centred “medical home” that can be a role assumed by emerging practice models. The [College of Family Physicians of Canada](#) described the core elements of patient-centred medical homes, summarized as follows:–

- Each patient has a personal family physician⁹
- Patients have access to nurses or nurse practitioners and other health professionals, as needed, either in the practice or through formal links to other settings
- Health professionals work as well-coordinated teams; each offers unique skills to ensure optimal patient benefit
- Systems are in place to ensure timely appointments with the family doctor and other members of the care team

⁹ This core element is restrictive and needs to be expanded to a more general term, namely primary care provider

- Arrangements for and coordination of all other medical services are carried out through the medical home
- Electronic medical records are in place to facilitate appropriate information storage and sharing

These core elements form the basis of a collaborative care model and the role optimization of health professionals working in an integrated team and an environment of evidence-based, quality care. The patient-centred medical home has all of the elements to transform primary care, an evolutionary process well underway in several national and international jurisdictions.

[Steven Lewis](#) described the fundamentals of patient-centred care in a 2009 paper prepared for the Government of Saskatchewan, in which he posed the central questions:

How would you know if the care you received was truly patient-centred? How would providers know if they were delivering patient-centred care? How would system managers know? What indicators best reflect a patient centred approach? PCC is in some ways in the eye of the beholder. Providers might think they are delivering PCC but their patients might disagree. Different aspects of PCC will be more relevant to some patients than others.

Lewis continued with the premise of health care as a service industry - - he stressed the differences from a commercial undertaking, but reinforced the one concept fundamental to the commercial world is relevant to health care: the customer is always right. Of course, customers are not always right; but, Lewis reminds us that a dissatisfied customer is one whose needs have not been met and, . . . the essential insight is to recognize this as a failure and reflects, . . . failures of disrespect, inconvenience, poor communication, and fragmentation.

One way around this is to espouse health care as a collaborative service industry that is responsive to needs. Attributes that underpin these needs can be any combination of structural, organizational, attitudinal, and behavioural.

Patient-centred care extends into high-performing primary care. A 2012 paper prepared for the [California Healthcare Foundation](#) focused on six inter-related characteristics identified as the building blocks of high-performing practices, further defined as having high levels of patient and staff satisfaction.

- Data-driven improvement, to achieve efficiencies
- Empanelment and panel-size management, to sustain continuity of care and access
- Team-based care, wherein all members are responsible for quality
- Population management, whereby the specific needs of subgroups are addressed

- Continuity of care provisions
- Prompt access to care, including a spectrum of providers



4.0

Eastern Health

4.01 Overview

Eastern Health is the largest integrated health organization in Newfoundland and Labrador. The authority provides the full continuum of health services to a regional population of greater than 300,000 and is responsible for a number of unique provincial programs. Eastern Health extends west from St. John's to Port Blandford and includes all communities on the Avalon, Burin and Bonavista Peninsulas.

In addition to the regional mandate, Eastern Health has unique [provincial responsibilities for tertiary level institutional services including:](#)

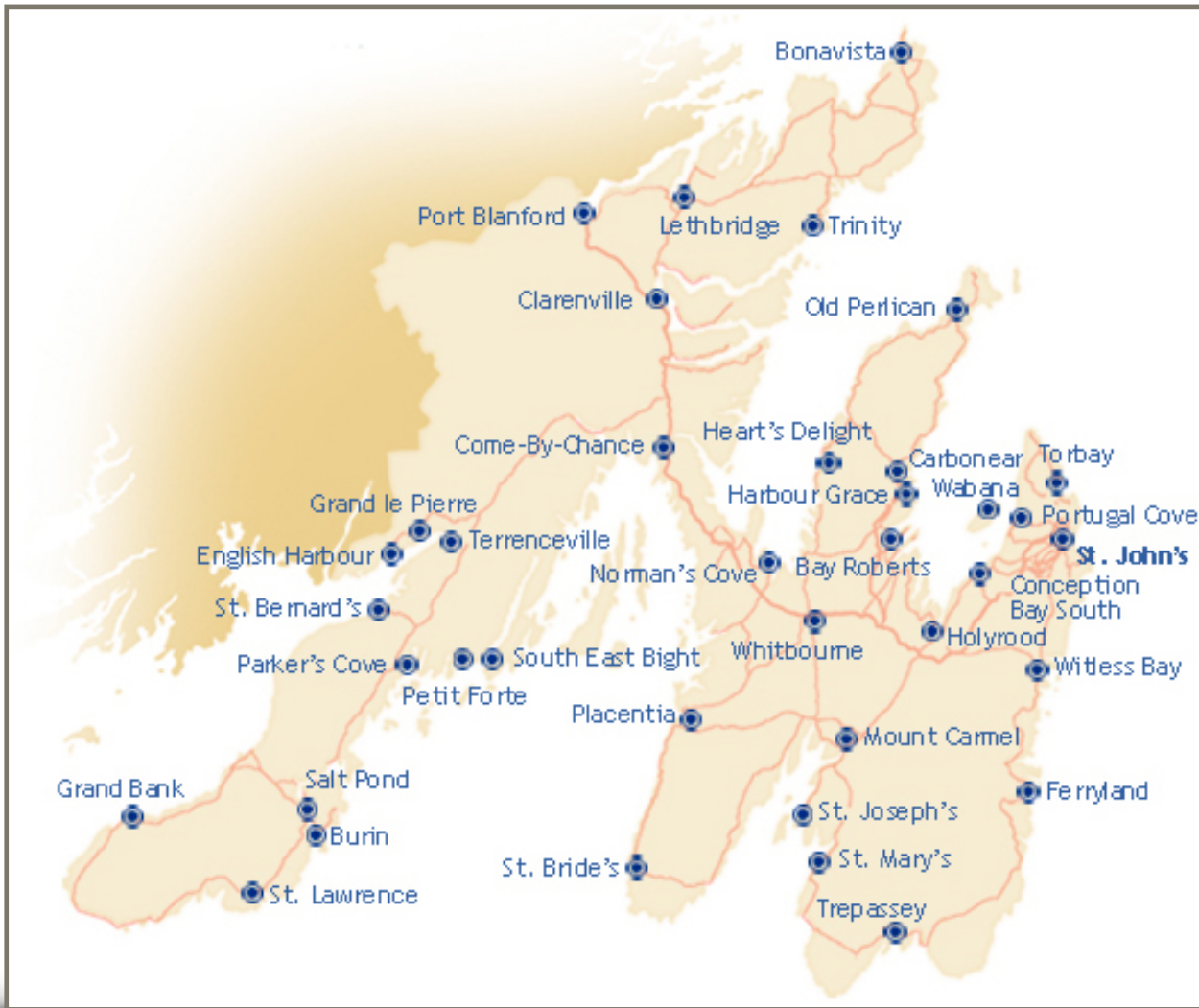
- Cancer care
- Cardiac and critical care
- Children and women's health
- Diagnostic Imaging
- Laboratory services
- Mental health and addictions
- Rehabilitation
- Surgery

The [geographic boundaries](#) for Eastern Health include the island portion of the province east of (and including) Port Blandford. This area includes the entire Avalon, Burin and Bonavista Peninsulas as well as Bell Island, within a total of 21,000 sq. km.

Traditionally, the settlement patterns of this area have been tied to the fishing industry, which results in many small communities scattered along the coastline of these three peninsulas.

The area also includes the provincial capital, St. John's, and the province's largest metropolitan area, the St. John's CMA (Statistics Canada Census Metropolitan Area). In total, the Eastern Health region includes 111 incorporated municipalities, 69 local service districts and 66 unincorporated municipal units.

Health and community services are offered through community-based offices, medical clinics, nursing homes and clinics. Eastern Health has [sites](#) in the communities noted on the following map.



4.02 Supply of Family Physicians¹⁰

Assessment of the supply of family physicians in Eastern Health is informed by the separate folder that maps communities against the primary healthcare service areas, using head counts (Newfoundland and Labrador Medical Association membership database) and full-time equivalency (regional interviews), including gender and age cohorts. Following are the key aggregate tabulations:

Work City Town	Head Count	FTE Count	Catchment Area
Arnold's Cove	1	0.60	Clareville and area / Come by Chance and area
Avondale	1	1.00	Conception Bay Central / Holyrood and area
Bay Bulls	6	5.66	Southern Shore and area
Bay L'Argent	1	1.00	Burin Peninsula / St. Bernard's / Placentia West and area
Bay Roberts	3	3.75	Conception Bay North / Trinity Bay South / Bay Roberts and area
Bonavista	8	6.00	Bonavista and area
Burin	6	2.00	Burin Peninsula / Marystown / Burin and area
Burin Bay Arm	3	3.25	Burin Peninsula / Marystown / Burin and area
Carbonear	15	8.25	Conception Bay North / Trinity Bay South / Harbour Grace / Carbonear
Catalina	1	2.00	Bonavista and area
Clareville	19	11.00	Clareville and area
Clarke's Beach	1	1.00	Conception Bay North / Trinity Bay South / Bay Roberts and area
Conception Bay South	18	17.50	St. John's Metro Region 3
Goulds	1	1.00	St. John's Metro Region 7
Grand Bank	5	5.00	Burin Peninsula / Grand Bank / Fortune and area
Harbour Grace	3	3.00	Conception Bay North / Trinity Bay South / Harbour Grace / Carbonear

¹⁰ Due the lack of reliability of using "head counts" for planning purposes, estimates of FTE status for each physician were made by informed local resources

Physician Resource Forecast for Family Medicine

Work City Town	Head Count	FTE Count	Catchment Area
Holyrood	2	1.00	Conception Bay Central / Holyrood and area
Marystown	2	2.00	Burin Peninsula / Marystown / Burin and area
Mount Pearl	17	16.00	St. John's Metro Region 5
Old Perlican	4	3.00	Conception Bay North / Trinity Bay South / Old Perlican and area
Paradise	8	6.75	St. John's Metro Region 6
Placentia	5	2.50	Placentia / Whitbourne and area
Port Blandford	1	1.00	Clarenville and area / Lethbridge and area
Portugal Cove - St. Phillips	6	5.00	St. John's Metro Region 8
South River	1	1.00	Conception Bay North / Trinity Bay South / Bay Roberts and area
Spaniard's Bay	1	1.00	Conception Bay North / Trinity Bay South / Harbour Grace / Carbonear
St. John's	222	150.45	St. John's Metro Region 9
St. Lawrence	2	2.00	Burin Peninsula / St. Lawrence
St. Mary's	1	1.00	St. Mary's and area
Torbay	3	3.00	St. John's Metro Region 4
Trepassy	1	1.00	Southern Shore and area
Upper Island Cove	2	1.00	Conception Bay North / Trinity Bay South / Harbour Grace / Carbonear
Wabana	5	4.20	Bell Island
Western Bay	1	1.00	Conception Bay North / Trinity Bay South / Harbour Grace / Carbonear
Whitbourne	6	5.00	Placentia / Whitbourne and area
Winterton	1	1.00	Conception Bay North / Trinity Bay South / Heart's Delight and area
	383	280.91	

High-level physician demographics reveal a male-to-female physicians ratio of 1:1 and 40.7% of the physicians in the highest age cohort.

4.03 Key Issues

During interviews with the medical leadership, the following key issues were identified:

- Understanding scope of practice is essential
- Develop the correct plan and stay with it
- Supports system built around core services
- Two measures of success are less IMG dependency and less locum dependency
- Special interest areas tend to be palliative, oncology, geriatric, and psychotherapy - - priorities are geriatrics and palliative
- Work-life balance does not mean abandoning community care - it's the model that makes the difference
- Can not replicate a model successful in one setting and automatically import it to another
- You don't have to be isolated just because you are rural and remote
- Recruit to a model, not a community or setting
- 12-18% of EH does not have a family doctor (>5% is unacceptable)
- Role optimization is the key to team development - pharmacists are under-represented on care teams



5.0

Central Health

5.01 Overview

Central Health provides health and community services to approximately 20 per cent of the province's population. It is the second largest health region serving a population of approximately 94,000. The geographical area served by Central Health includes 177 communities and encompasses more than half the total landmass of the island. The region extends from Charlottetown in the east, Fogo Island in the north, Harbour Breton in the south, to Baie Verte in the west.

Central Health operates 35 community health centres, and 13 health facilities including two regional referral centres, six health centres, and five long-term care facilities. It employs approximately 3,000 people throughout the region. There are about 845 beds of which 268 are acute care, 517 are long-term care, 32 are residential units, and 28 are bassinets.

Each regional referral centre has a designated Category A Emergency Room staffed by an on site casualty officer 24-hours per day. As well, the region has nine designated Category B emergency room sites with physicians on site during regular working hours and available on-call after-hours. There are several private medical clinics and a number of clinics operated by Central Health on a full-time or traveling basis.

The James Paton Memorial Regional Health Centre (JPMRHC) in Gander is a secondary care facility serving the eastern part of the region. The facility has about 90 acute care beds and offers specialty services including anesthesia, general internal medicine, general surgery, neurology, obstetrics and gynaecology, ophthalmology, paediatrics, pathology, psychiatry, and radiology. There are between 40 to 50 full-time physicians (family physicians and specialists) providing services in Gander.

Located in Grand Falls-Windsor, the Central Newfoundland Regional Health Centre (CNRHC), with about 130 acute care beds, is a secondary care facility serving the western part of the region. The facility offers a number of specialty services including anesthesia, general internal medicine, general surgery, neurology, obstetrics/gynaecology, ophthalmology, paediatrics, pathology, psychiatry, urology, and radiology. There are between 45 to 55 full-time physicians (family physicians and specialists) providing services in Grand Falls-Windsor.

In addition to 24 hour on-site emergency physician coverage, the secondary referral centres provide advanced diagnostic imaging, laboratory, and other investigative services. The region has nine designated Category B emergency sites: Baie Verte, Botwood, Brookfield, Buchans, Fogo Island, Harbour Breton, Lewisporte, Springdale, and Twillingate. These sites have physician complements ranging from solo practice

to six full-time positions and offer routine general practice services during regular working hours. Most sites have a medical clinic and a combination of acute/long-term care beds supported with a medical transfer system. As well, most sites offer basic diagnostic services. In total, the region typically has between 35 to 50 full-time General Practitioners providing services at rural sites. Central Health also has five dedicated long-term care facilities.



5.02 Supply of Family Physicians¹¹

Assessment of the supply of family physicians in Central Health is informed by the separate folder that maps communities against the primary healthcare service areas, using head counts (Newfoundland and Labrador Medical Association membership database) and full-time equivalency (regional interviews), including gender and age cohorts. Following are the key aggregate tabulations:

Work City Town	Head Count	FTE Count	Catchment Area
Badger's Quay	5	5.0	Kittiwake Coast
Baie Verte	3	3.0	Baie Verte area
Bishop's Falls	1	1.0	Exploits area
Botwood	7	6.0	Exploits area
Buchans	1	1.0	Buchans
Centreville-Wareham-Trinity	1	1.0	Kittiwake Coast
Fogo	2	2.0	Isle of Notre Dame
Gambo	1	1.0	Terra Nova area
Gander	26	13.0	Gander area
Glovertown	3	2.0	Terra Nova area
Grand Falls - Windsor	31	21.0	Grand Falls - Windsor
Harbour Breton	4	4.0	Coast of Bays area
Lewisporte	4	4.0	Lewisporte area
Springdale	5	5.0	Green Bay area
St. Alban's	1	1.0	Coast of Bays area
Twillingate	8	5.0	Isle of Notre Dame
	103	75.0	

High-level physician demographics reveal a male-to-female ratio of 1.77:1 and 36.1% of the physicians in the highest age cohort.

¹¹ Due the lack of reliability of using "head counts" for planning purposes, estimates of FTE status for each physician were made by informed local resources

5.03 Key Issues

During interviews with the medical leadership, the following key issues were identified:

- Only 27% of CH FPs expect to be there in three years
- Half of FPs are "rurban" and rural
- 60% of CH FPs are IMG - typical 2.5 year cycle - problem will become more acute with new CPSNL policy
- High locum tenens dependency
- Reluctance of new entrants to practice to open a community office is very real issue for CH
- Economic base is largely government
- Distributed education has impact on eventual choice of practice location (especially if start as clinical clerks)
- Pilots under Shalloway FPN include preceptor travel with R1 or R2 to rural site
- Linkages exist for psychology, psychiatry, and internal medicine
- Requires an enhanced geriatric focus



6.0

Western Health

6.01 Overview

Western Health's geographic boundaries are from Port aux Basques southeast to Francois, northwest to Bartlett's Harbour, and on the eastern boundary north to Jackson's Arm. Within this geographical region, Western Health serves a population of approximately 77,980 residents.

Western Health provides a broad range of programs and services to the people of Western Newfoundland. These programs and services are based in community and facility settings. Western Health provides community-based services from 24 office sites, community-based medical services from 26 medical clinic sites (including traveling clinic sites), and eight health facilities.

The health facilities include two hospitals: Sir Thomas Roddick Hospital in Stephenville and Western Memorial Regional Hospital in Corner Brook; four health centres: Dr. Charles L. LeGrow Health Centre in Port aux Basques, Bonne Bay Health Centre in Norris Point, Calder Health Centre in Burgeo and Rufus Guinard Health Centre in Port Saunders; and two long term care centres: Corner Brook Long Term Care Centre in Corner Brook and Bay St. George Long Term Care Centre in Stephenville Crossing.

Within its facilities, Western Health operates 293 acute care beds, and 434 long term care beds, 40 enhanced assisted living beds for individuals with mild to moderate dementia, as well as 14 restorative care beds.

The following regional map includes hospitals, health centres, clinics and/or offices, ambulance services, and long-term care facilities



6.02 Supply of Family Physicians¹²

Assessment of the supply of family physicians in Western Health is informed by the separate folder that maps communities against the primary healthcare service areas, using head counts (Newfoundland and Labrador Medical Association membership database) and full-time equivalency (regional interviews), including gender and age cohorts. Following are the key aggregate tabulations:

Work City Town	Head Count	FTE Count	Catchment Area
Burgeo	2	2.0	Burgeo
Channel Port aux Basques	10	9.25	Port aux Basques
Corner Brook	53	29.8	Corner Brook / Bay of Islands
Cox's Cove	1	0.5	Corner Brook / Bay of Islands
Deer Lake	3	2.0	Deer Lake / White Bay
Hampden	1	1.0	Deer Lake / White Bay
Lourdes	1	1.0	Bay St. George
Norris Point	4	4.0	Bonne Bay
Pasadena	2	2.0	Deer Lake / White Bay
Port au Choix	2	2.0	Port Saunders
Port Saunders	2	1.0	Port Saunders
Steady Brook	1	0.0	Corner Brook / Bay of Islands
Stephenville	17	10.0	Bay St. George
Stephenville Crossing	1	1.0	Bay St. George
	100	65.6	

High-level physician demographics reveal a male-to-female ratio of 2.35:1 and 40.3% of the physicians in the highest age cohort.

¹² Due the lack of reliability of using "head counts" for planning purposes, estimates of FTE status for each physician were made by informed local resources

6.03 Key Issues

During interviews with the medical leadership, the following key issues were identified:

- Small communities are 50% salary (exception Port-aux-Basque)
- FFS physicians tend to stay
- Typically, two out of six trainees return to practice in Western Health
- Communities outside of Corner Brook typically staffed by IMGs with 2.5 to 3-year cycles
- Recruitment an ongoing challenge for smaller communities - exception is Bonne Bay - Stephenville has high need despite new hospital and CT
- Not uncommon for a replacement FP to require a 2:1 ratio
- Future state looks like:
 - Older
 - Sicker
 - More co-morbidities
 - Younger families move to Humber Corridor for activities while older populations move to Corner Brook for proximity to hospital
 - Corner Brook net population is stagnant
 - Cancer care will become regional and require a greater number of GP Oncologists (two)
 - Will need to increase palliative care (two) - palliative telephone line has been very helpful
 - Improved transportation system for patients
 - Increased use of telemedicine, advanced care paramedics, and nurse practitioners
 - Gaps in pain management and clinical psychology
- Supports a collaborative model and concept of "adopt-a-community" - team-based care is the solution for future care with parallel rural and remote rotations
- Practice challenges exacerbated by lack of access to specialty care - as well, FPs drifting away from hospital care creates learning gaps
- Hospitalist model not active in Western Health



7.0

Labrador-Grenfell Health

7.01 Overview

Labrador-Grenfell Health includes Labrador and all communities north of Bartlett's Harbour on the Northern Peninsula. Labrador-Grenfell Health provides services to approximately 37,000 people (Statistics Canada, Census 2016 data) inclusive of three indigenous groups: Innu First Nation, Inuit, and Southern Inuit.

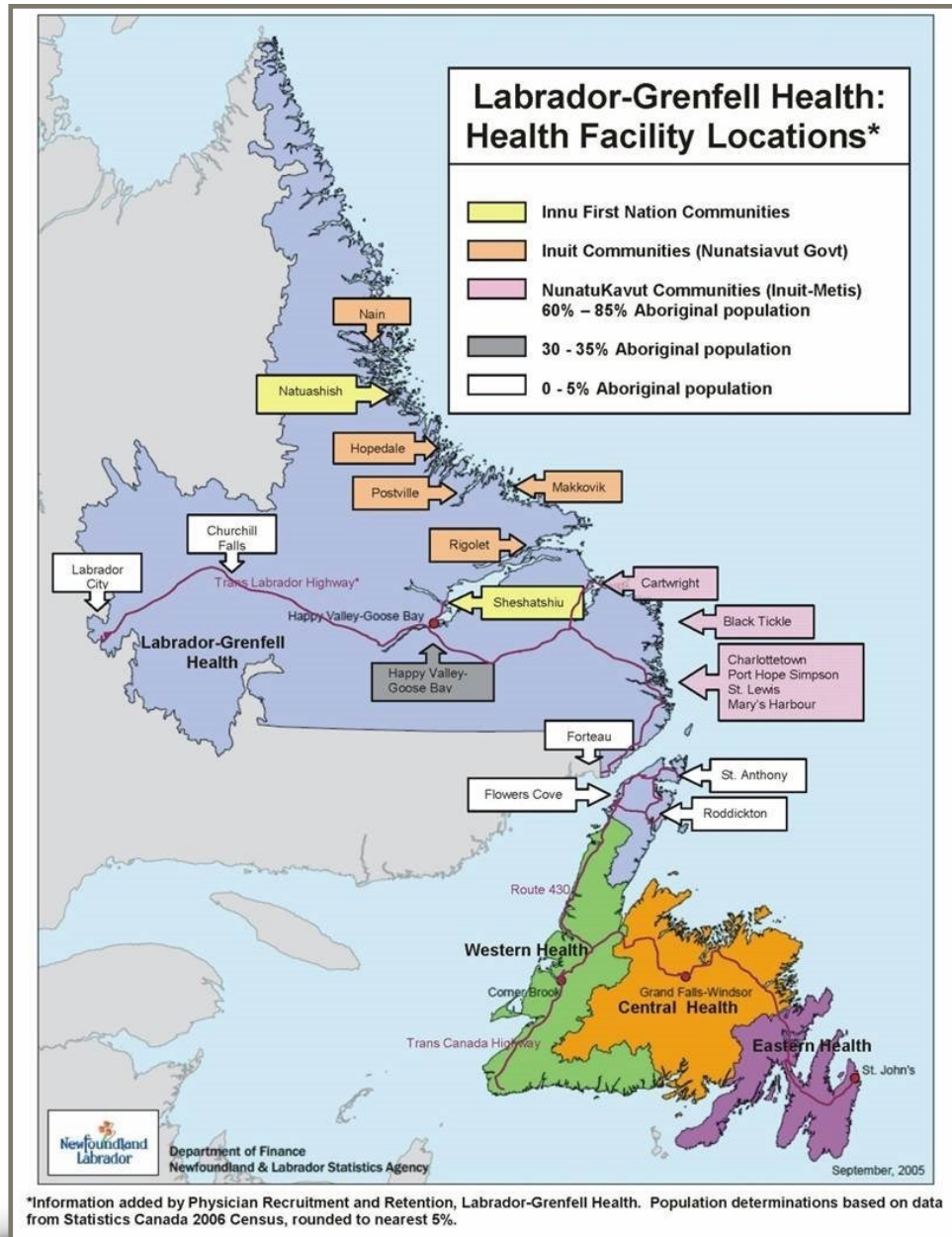
Labrador-Grenfell Health employs approximately 1,500 staff and operates 22 facilities, including three hospitals, three community health centres, 14 community clinics, and two long-term care facilities..

It delivers both primary and secondary health services to the residents of the region, including:

- Acute care, diagnostic and clinical support services
- Community health and wellness
- Dental services
- Health protection services
- Long-term care
- Mental health and addictions services
- Residential services
- Therapeutic intervention, family rehabilitation, and other rehabilitation services

In the Aboriginal communities, Labrador-Grenfell Health is joined by the Nunatsiavut Department of Health and Social Development, two Innu Band Councils, NunatuKavut (formerly the Labrador Métis Nation), Health Canada, and private practitioners in delivering community health programs that meet the health needs of residents in the region.

The following map reveals its vast geography and locations of the health facilities.



7.02 Supply of Family Physicians¹³

Assessment of the supply of family physicians in Labrador-Grenfell Health is informed by the separate folder that maps communities against the primary healthcare service areas, using head counts (Newfoundland and Labrador Medical Association membership database) and full-time equivalency (regional interviews), including gender and age cohorts. Following are the key aggregate tabulations:

Work City Town	Head Count	FTE Count	Catchment Area
Churchill Falls	1	1.0	Labrador West / Churchill Falls CC
Flower's Cove	2	2.0	Northern Peninsula / Strait of Belle Isle HC
Forteau	2	2.0	South East Labrador and Straits / Mary's Harbour CC
Happy Valley - Goose Bay	19	11.7	Central Labrador / Labrador HC
Labrador City	7	7.0	Labrador West / Labrador West HC
Roddickton	2	2.0	Northern Peninsula
St. Anthony	10	6.0	Northern Peninsula / Charles Curtis Memorial Hospital
	43.0	31.7	

High-level physician demographics reveal a male-to-female ratio of 2.3:1 and 24.2% of the physicians in the highest age cohort.

¹³ Due the lack of reliability of using "head counts" for planning purposes, estimates of FTE status for each physician were made by informed local resources

7.03 Key Issues

During interviews with the medical leadership, the following key issues were identified:

- High turnover but distributed education has yielded returns - key recruitment focus needs to be generalist rural care
- 40 FPs with wide scope of practice - some site variation but virtually all are full-time - all are salary except 7-8
 - 14 in Goose Bay - recruits well because of stick rate from residency program
 - Goose Bay has a high birth rate and a large population < 30 years of age
 - 11 in St. Anthony - IMGs with typical 2.5 year turnover
 - 6 in health centres (3) - constant turnover and shorter cycles
 - 1 in Churchill Falls
 - 7-8 in Labrador West with longer cycles
- 40 family physicians offers stability but there is some unpredictability due to unpaid leave
- Of the 40, 90% at St. Anthony and the health centres are provisionally licensed (and 50% at Labrador West)
- Patient population fairly stable - Northern Labrador is stable - Labrador West is boom or bust, depending on iron mines - St. Anthony experiences increasing outmigration and a further shrinking population due to age
- Recruitment and retention could be improved by a model of care transformation - but first hurdle is a pending change in CPSNL requirements - need to partner with other stakeholders in a seamless entry - will become more stringent due to zero risk tolerance
- Social determinants of health are prominent - high TB rates, DM, and renal disease (various screening programs)
- High risk obstetrics
- Early interest in a collaborative model, but still uncertain
- Untapped potential for telemedicine - but, with caution - think of a virtual care network with the existing providers



8.0

Indicators for Family Medicine

8.01 Overview

Indicators that can be abstracted and collated for family medicine are essential analytic components. That notwithstanding, their use and interpretation requires caution as neither a single indicator nor an aggregate of indicators can be viewed as an absolute. There are variables that intersect with all indicators, requiring acknowledgement and context; Variables include socio-economic status and social determinants of health, personal lifestyle decisions, health-related behaviours, and environmental factors. These do not diminish that indicators are an integral part of understanding the current state, projecting the future state, and providing a framework for ongoing measurement.

Indicators and related data incorporated into this review and plan are available from reliable sources:

- Newfoundland and Labrador Centre for Health Information
- Newfoundland and Labrador Statistical Agency
- Statistics Canada
- Canadian Institute for Health Information

The timing of data acquisition and analysis is not aligned across these sources; as such, cross-linking and cross-referencing, where necessary, has been undertaken carefully in order to maintain the integrity of the underpinning database.

The indicators for family medicine have been considered within two categories:

- System performance
- Population health

They are merged with population data in subsequent sections on the metrics of need and the metrics of supply. This convergence is the foundation for a gap analysis, developing models of care, and subsequent projections and planning.

8.02 System Performance

i. [Ambulatory Care Sensitive Conditions](#)

Ambulatory care sensitive conditions are, arguably, the most relevant indicator for family medicine. As such, a detailed overview is being provided.

The study of marker conditions and diagnoses, originally reported and further advanced by John Billings included an expert panel using a modified Delphi approach to derive three basic categories for groupings of causes of hospitalization. These groupings were:

- Marker conditions or diagnoses for which the provision of timely and effective outpatient care was unlikely to be a significant factor
- [Ambulatory care sensitive conditions \(ACSC\)](#) for which timely and effective outpatient care could reduce the risk of hospitalization through prevention, control of an acute episode, or management of a chronic condition
- Referral-sensitive high-cost and technology-intensive procedures for which impaired access to care could reduce the chance of a surgical intervention

The Billings methodology included risk adjustment and a group process of interpreting diagnoses specified at the ICD-9-CM level. The original study focused on socio-economic status; however, other key factors were acknowledged, including insurance status, age cohorts, race, disease prevalence and incidence, lifestyle decisions, and differences in physician decision-making. The study outcome of an ACSC application in the evaluation framework is the impact of timely access to primary care and evidence-based care if other variables are held constant. ACSC studies can suggest answers to the question or, at a minimum, raise other relevant questions to be addressed.

The referral-sensitive, high-cost, and technology-intensive procedures are important, but not included in an ACSC study. They represent interventions that benefit from timely consultations and available technology. The absence of either can influence, adversely, the efficacy or the outcome of the procedure. These procedures are less well reported than ACSCs and include such procedures as large joint replacements, breast reconstruction after mastectomy, pacemaker insertion, organ and bone marrow transplant surgeries, coronary artery bypass surgery, and coronary angioplasty. While there is some overlap with ACSCs, these procedures can stand alone as a category, but are less well reported in the literature.

The measurement of ACSCs, as a rate per 1,000 population (or another selected denominator), can reflect a specific geography, such as a regional health authority. Accountability and physician productivity within that geography will influence the rate, never expecting to eliminate it. ACSC rates are useful tools for

benchmarking system performance, and ultimately the individual physicians within that segment of the system.

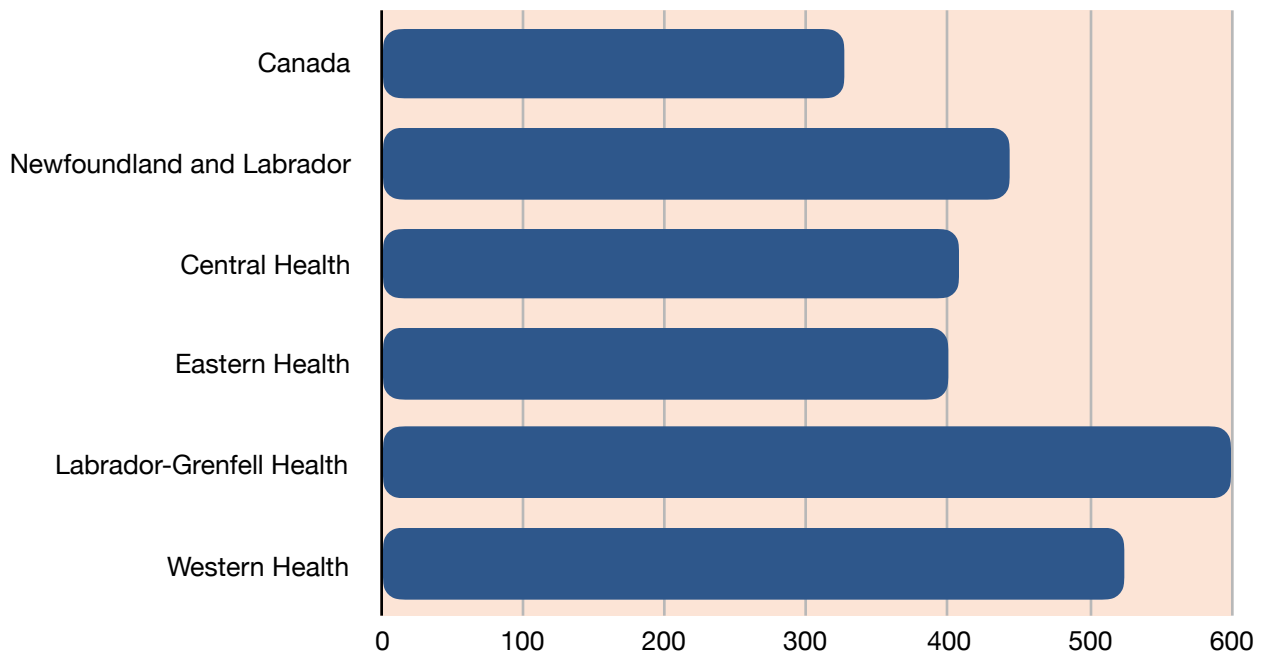
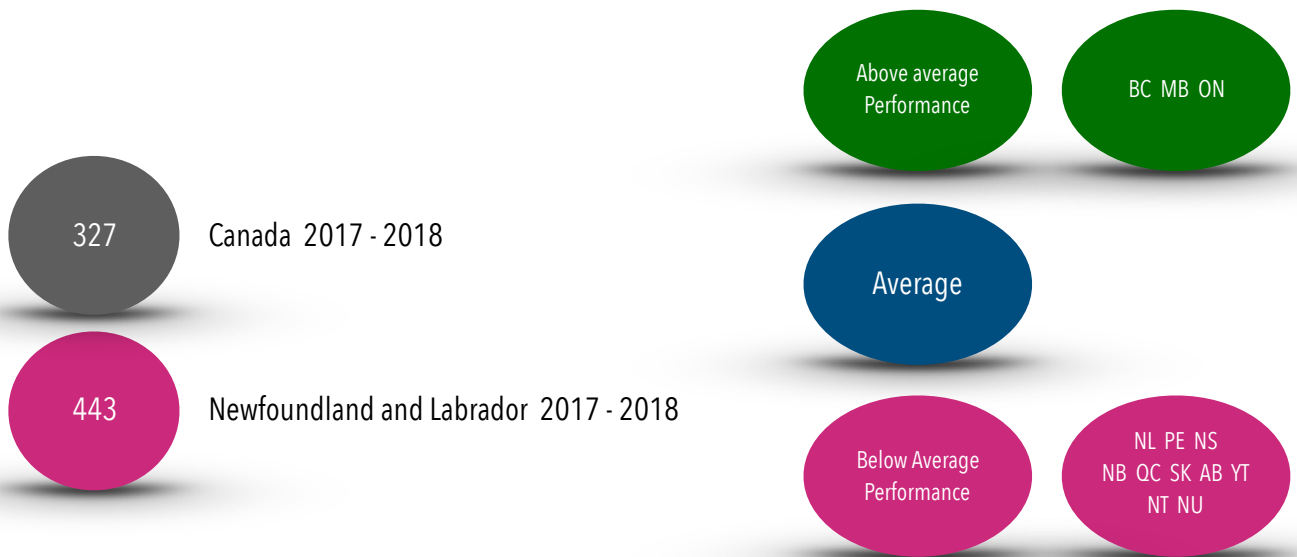
Five examples of benchmarks can be considered:

- Self, or year-over-year tracking of ACSC rates, in total or for a specific diagnosis or marker condition as an indication of compliance with clinical practice guidelines; the former is a collective rate for all ACSCs; the latter could be a study of asthma for specific age cohorts before and after the dissemination of guidelines and academic detailing on the use of inhaled corticosteroids
- Internal, or tracking the same ACSC rate at different sites within a region; using the asthma example, divergent results could indicate compliance with the guidelines or environmental factors; this is an example where the questions get asked, rather than answered immediately
- External-local, with comparisons among regions in the province
- External-national, with comparisons to adjusted data from other provinces
- External-numeric, with comparisons against stable literature benchmarks

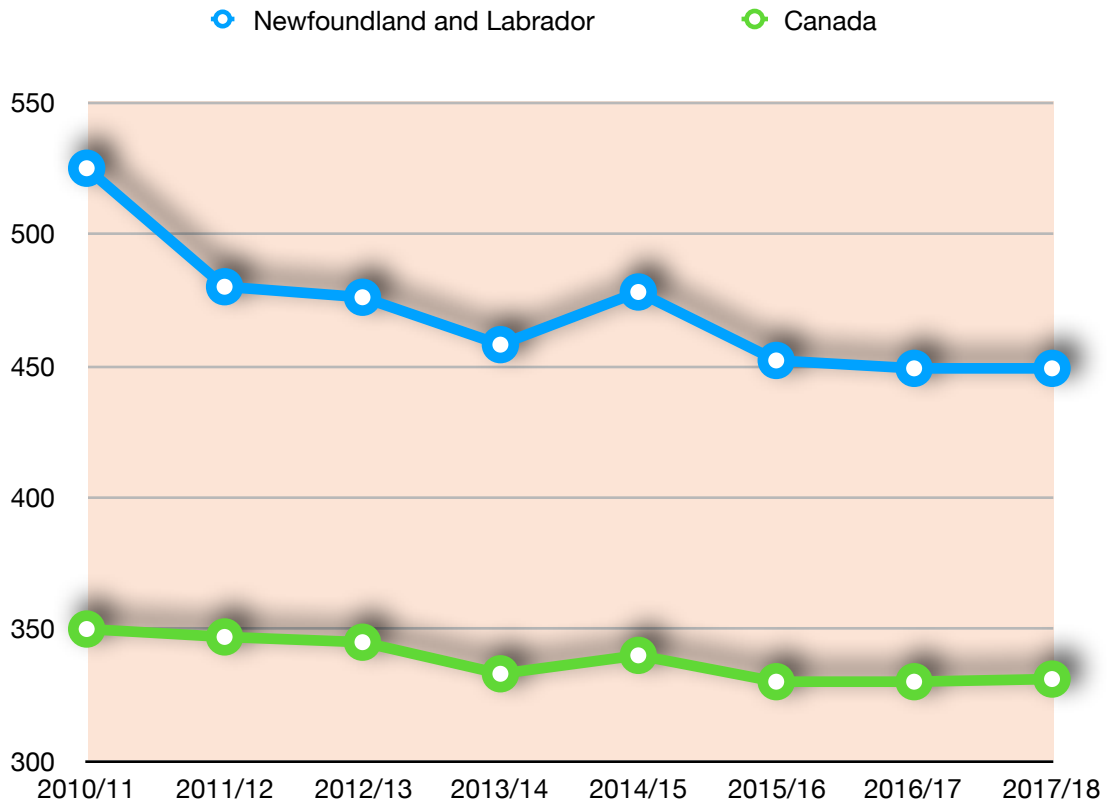
In the current evaluation framework, ACSCs can be useful in the provision of an overarching picture of primary care access and evidence-based care. [While analyses that include ACSCs should not be viewed as absolute cause and effect answers, the trends are able to suggest the impact of related programs.](#)

The advantage of the use of ACSCs is the ease of understanding and the ability to measure, using accessible data. Abnormal ACSC rates can reflect physician productivity, quality of primary care, impediments to access, or any combination of these factors. A study, or year-over-year series of studies, of these rates can focus on individual markers or their aggregate. An initial step is the identification of suitable marker conditions (a number of these have been used over time). The following ACSC rates are sourced from [Canadian Institute for Health Information and Statistics Canada](#).

Newfoundland and Labrador Ambulatory Care Sensitive Conditions Rates per 100,000 - 2017-2018



Trends Over Time (ACSC Rates per 100,000)



Interpretation

ACSC rates are key indicators as they are sensitive to accessible and evidence-based primary care, and can reflect a specific identified geography. The value is enhanced as risk-adjusted data that encourage comparisons across settings in the same time frame and, particularly useful, provide opportunity for trend analyses that inform system and self comparisons. They are not intended to indicate absolute cause and effect interpretations and do not correct for all characteristics of catchment populations; however, there is a strong argument for inclusion as a parameter of both need and supply.

In 2017-2018, the ACSC rate for Newfoundland and Labrador was significantly higher than that for Canada (443 compared to 327). In that year, only British Columbia, Manitoba, and Ontario demonstrated ACSC performance that was better than average; all other jurisdictions were below average. The differential between Newfoundland and Labrador and Canada held closely for the previous eight years.

In 2017-2018, all four health regions in Newfoundland and Labrador performed below average compared to Canada; Central Health and Eastern Health performed better than the provincial average, while Labrador-Grenfell Health and Western Health performed worse than the provincial average.

ACSC rates should be measured annually for the province and all regions as an ongoing key indicator of primary care and collaborative team performance, tracking against both provincial and local trends.

ii. Regular Healthcare Provider

These data can be considered unstable, but useful. The instability is due to constantly changing metrics that reflect a snap-shot in time with variance generated by the sampled population, age cohorts, the underpinning survey science, and the nature of the question(s) asked.

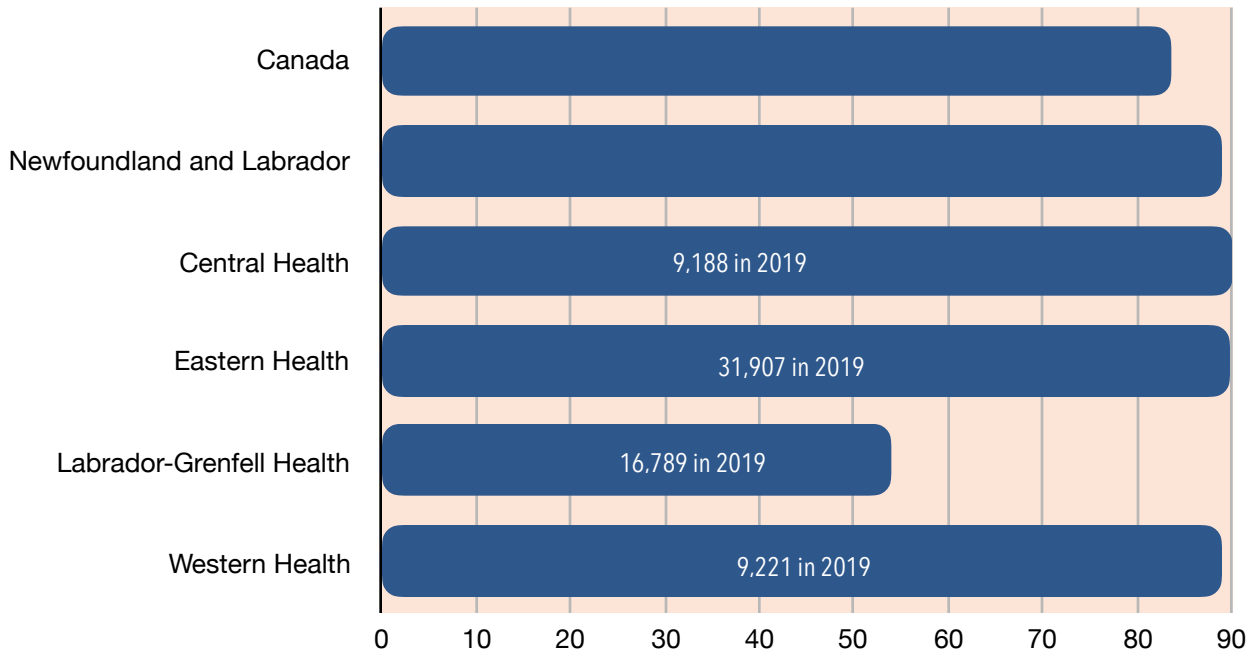
Recently, the reported evidence has varied from 9% to 19% of the population of Newfoundland and Labrador indicating no healthcare provider. What is evident across sources is that this number typically exceeds 10% and appears to be worsening.

In 2019, [Statistics Canada](#) reported the following data for having a [regular healthcare provider](#):

Age Cohort CANADA	2017		2018	
	Number	Percentage	Number	Percentage
Total > 12 years	26,030,400	84.7	26,612,900	85.3
12-17 years	1,876,100	85.6	1,947,500	87.8
18-34 years	6,027,200	74.2	6,153,700	74.7
35-49 years	5,818,600	82.5	6,059,400	84.9
50-64 years	6,773,200	90.4	6,728,800	89.4
> 65 years	5,535,200	94.3	5,723,500	93.9

Age Cohort NL	2017		2018	
	Number	Percentage	Number	Percentage
Total > 12 years	402,900	87.6	395,600	86.3
12-17 years	25,700	83.6	26,600	87.0
18-34 years	84,200	83.7	80,600	81.6
35-49 years	87,100	84.5	86,800	86.5
50-64 years	112,700	89.9	105,900	85.3
> 65 years	93,200	92.8	95,600	91.6

[Canadian Institute for Health Information and Statistics Canada](#) provide both aggregated and granular data for Newfoundland and Labrador, all greater than the corresponding national data. Regional data are provided in the following chart:



Interpretation

Metrics of having a regular healthcare provider are useful system indicators; however, caution is required due to sampling techniques and unexplained changes.

In both 2017 and 2018, Statistics Canada noted that Newfoundland and Labrador tracked closely to Canadian data across age cohorts. These differ significantly from 2015-2016 data reported by the Canadian Institute for Health Information when Newfoundland and Labrador was above average and performing better than Canadian data; the change over the ensuing two years suggest a deterioration in this measure for Newfoundland and Labrador; the 2015-2016 data indicated the only regional exception to be Labrador-Grenfell Health with a substantially greater percentage of the catchment population without a regular healthcare provider.

Recent NLMA survey data indicated up to 20% of the population without a regular provider.

The conclusion from these data is that the current state in Newfoundland and Labrador has continued to deteriorate and that between 10% and 20% of the population do not have a regular healthcare provider. Anything greater than 5% is typically considered unacceptable.

iii. [Birth Indices](#)

It can be argued that birth indices could be considered an indicator of either system performance or population health. There is no requirement to resolve that question as long as the context is maintained. Low birth weight, small gestation, and pre-term births can reflect possible deficiencies in prenatal care. High birth weight can reflect maternal health and prenatal care. These data are provided on pages 54 and 55 (4.05) of the data compendium, using five-year cycles between 2000 and 2015 for each of Canada, Newfoundland and Labrador, and the four health regions. The advantage of these comparators is that both urban and rural data are incorporated.

Low birth weights and pre-term births are the two best indicators, although examining all four (and trends) are useful.

In 2000, the national and provincial data for low birth weights were close, with better results for Central Health and Labrador-Grenfell Health. Data for pre-term births were close for Canada and the province, with Central Health and Western Health better than the other two regions and both Canada and Newfoundland and Labrador.

In 2005, Newfoundland and Labrador outperformed Canada for low birth weights, largely due to Central Health, Western Health, and Labrador-Grenfell Health. The same distribution was seen for pre-term births.

In 2010, Canada, Newfoundland and Labrador, and Eastern Health were close for low birth weights; the other three regions achieved better results. Pre-term births were better for Western Health compared to all other sites where Canada outperformed the three other regions.

In 2015, the best results for low birth weights were in Labrador-Grenfell Health and Western Health; Eastern Health and the province out-performed Canada and Central Health had the least favourable rate. For pre-term births, Western Health had the best results, while Canada outperformed the province and the other three regions.

[Interpretation](#)

These legacy data are diverse and do not suggest strong trends; Western Health and Labrador-Grenfell generally ranked highly and were closely followed by Central Health.

[These metrics do not necessarily suggest inclusion with planning parameters but warrant continued monitoring.](#) The data will be contemplated during the projection phase.

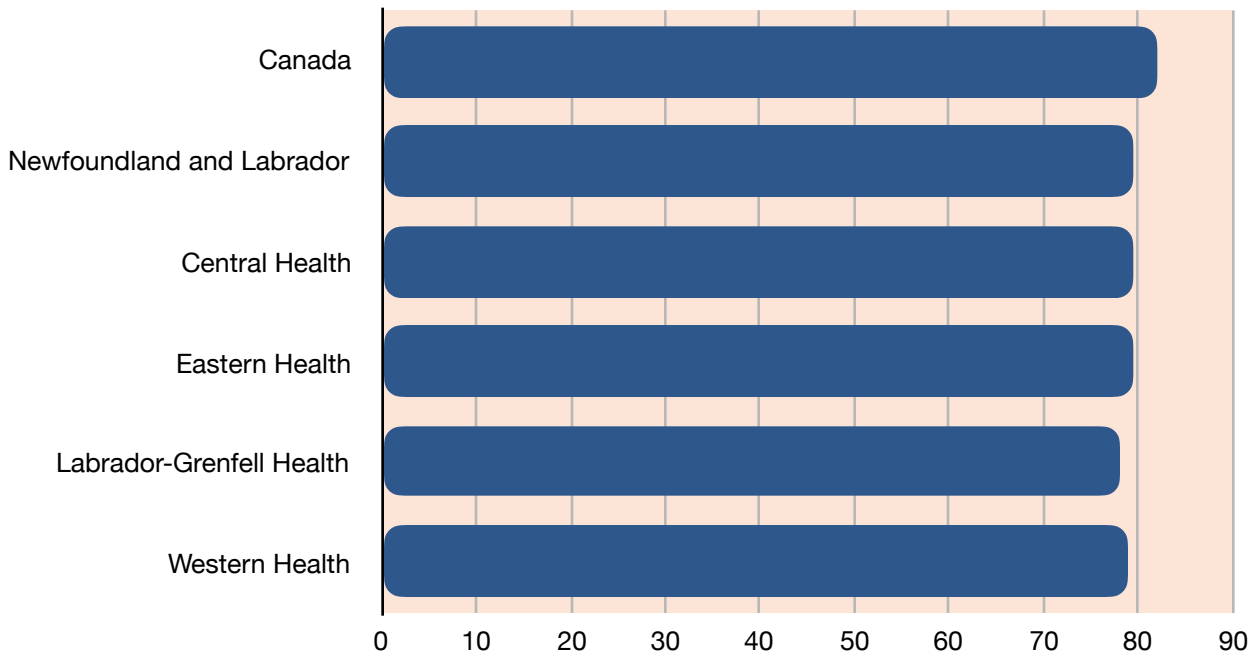
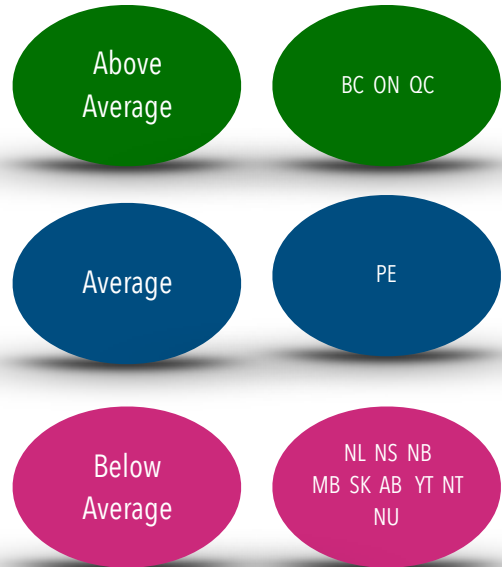
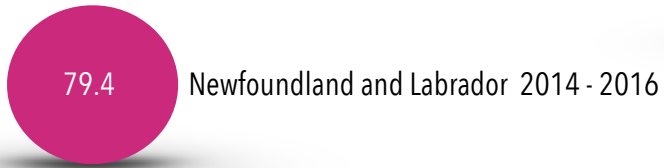
iv. [Life Expectancy](#)

It can be argued that life expectancy be considered an indicator of either system performance or population health. There is no requirement to resolve that question as long as the context is maintained. There are two accepted measures of life expectancy -- at birth and at 65 years of age.

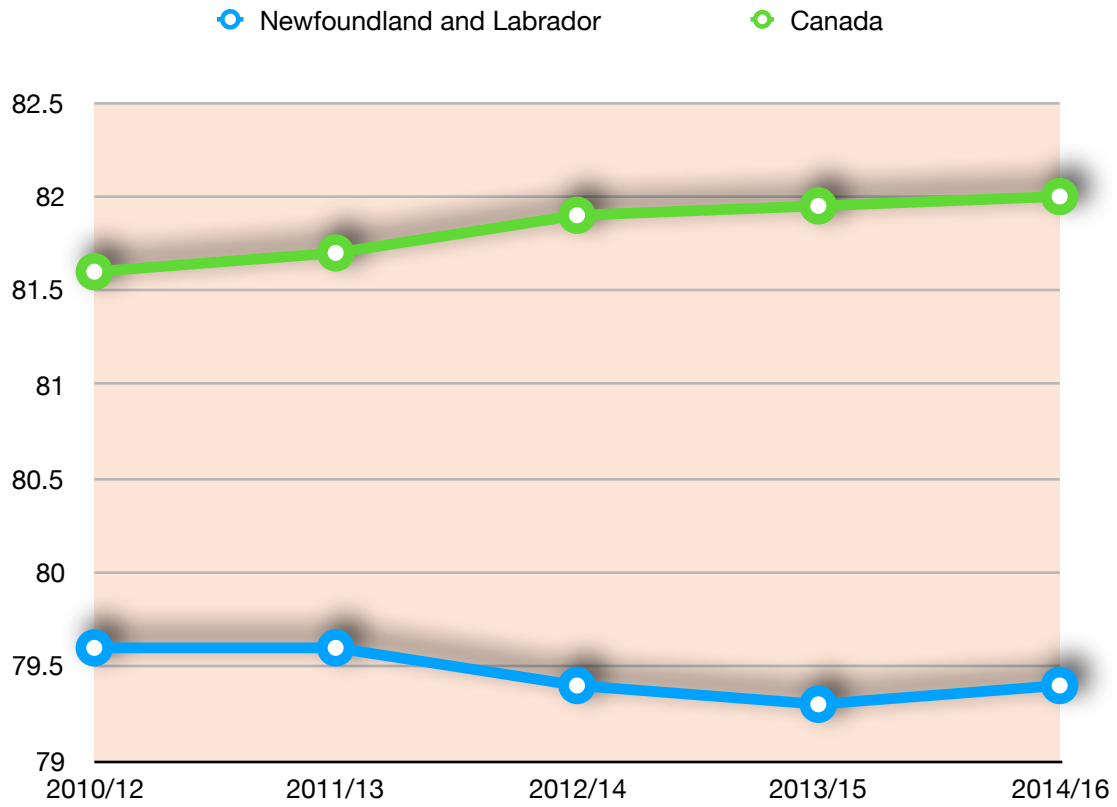
The following tables were abstracted from [Statistics Canada](#):

The following graphics and data were abstracted from [Canadian Institute for Health Information and Statistics Canada](#).

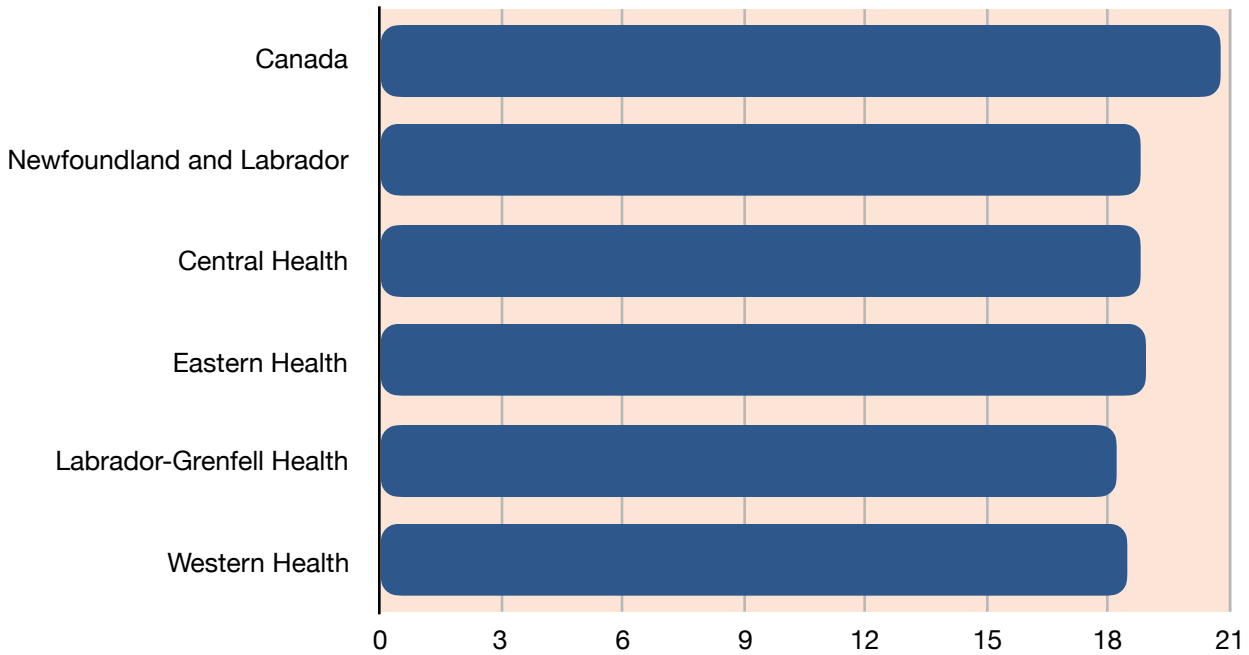
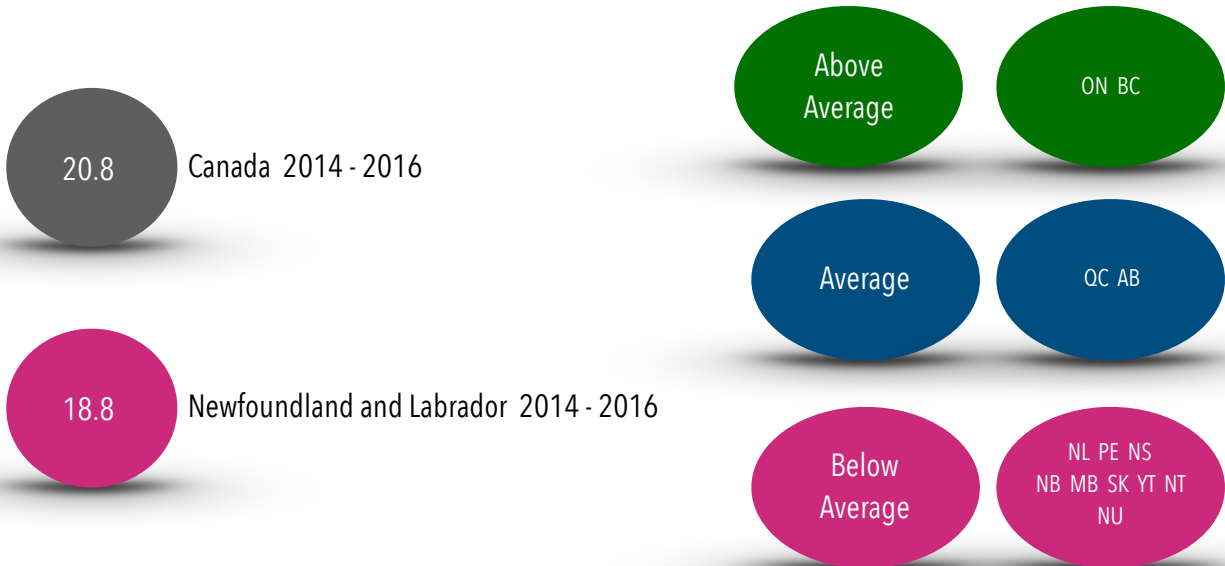
Life Expectancy at Birth



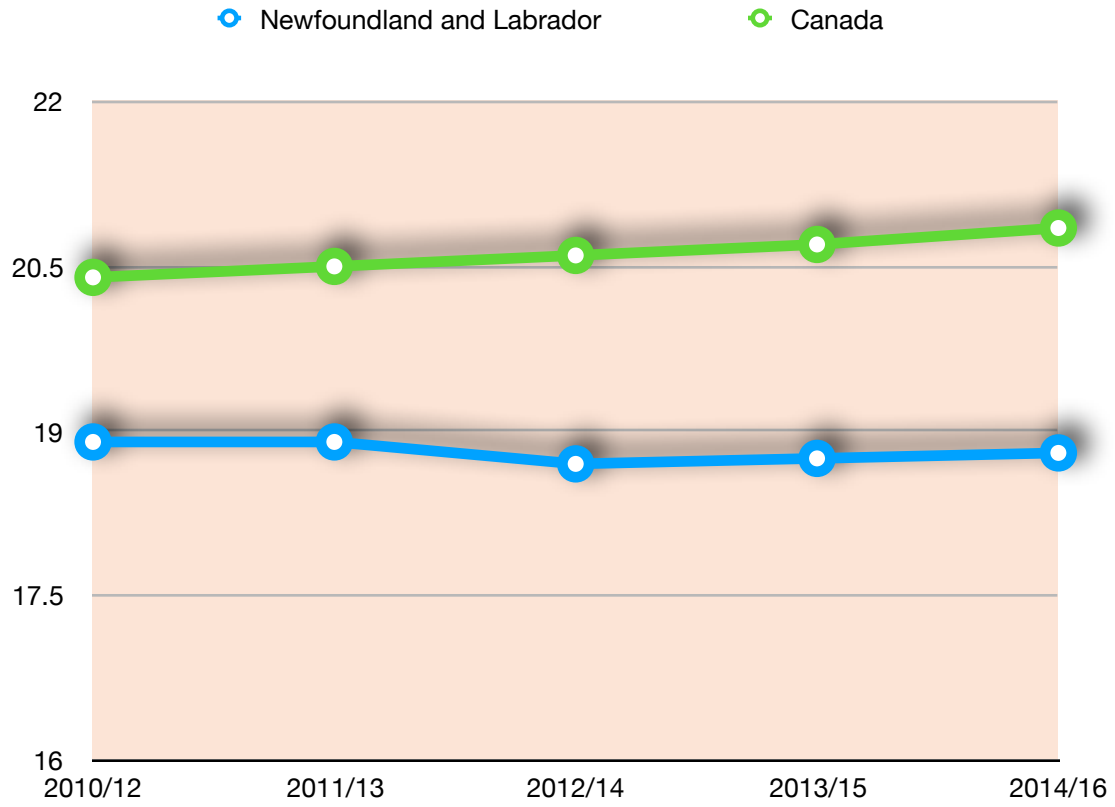
Trends Over Time (Life Expectancy at Birth)



Life Expectancy at 65 Years



Trends Over Time (Life Expectancy at 65 Years)



Interpretation

Life expectancy at birth and at 65 years of age are fairly uniform across Newfoundland and Labrador and the regions, all slightly less than the same national data, but not statistically significant and not considered relevant to planning parameters.

v. [Birth Rates](#)

Birth rates per 1,000 population (2017) by region and catchment area are tabulated on page 57 (4.07) of the data compendium. The data can be a proxy for need if statistically significant and can reflect population demographics. The best use of these data is in combination with related indices.

[Interpretation](#)

[Eastern Health](#)

The [five highest](#) birth rates by catchment area are, as follows:

- Paradise (12.3)
- Bauline - Pouch Cove - Flatrock (10.1)
- Conception Bay South (9.7)
- Logy Bay - Torbay - Middle Cove - Outer Cove (8.8)
- Portugal Cove - St. Phillip's (8.8)

The [five lowest](#) birth rates by catchment area are, as follows:

- St. Mary's (3.5)
- Burin Peninsula (5.4)
- Bonavista (6.2)
- Placentia/Whitbourne (6.2)
- Conception Bay North and Trinity Bay South (6.2)

[Central Health](#)

The [three highest](#) birth rates by catchment area are, as follows:

- Gander (9.5)
- Terra Nova (7.3)
- Coast of Bays (7.0)

The [three lowest](#) birth rates by catchment area are, as follows:

- Green Bay (3.5)
- Isle of Notre Dame (4.2)

- Lewisporte (5.2)

Western Health

The **two highest** birth rates by catchment area are, as follows:

- Deer Lake/White Bay (7.6)
- Corner Brook/Bay of Islands (7.2)

The **two lowest** birth rates by catchment area are, as follows:

- Burgeo (2.6)
- Port aux Basques (3.7)

Labrador-Grenfell Health

The **two highest** birth rates by catchment area are, as follows:

- Innu Communities (27.5)
- Nunatsiavut Communities (14.9)

The **two lowest** birth rates by catchment area are, as follows:

- Northern Peninsula (4.6)
- South East Labrador and Straits (5.9)

The areas with the highest birth rates are most significant for planning purposes, particularly in consideration of the model(s) of care.

vi. [Mortality Rates](#)

Mortality rates per 1,000 population (2017) by region and catchment area are tabulated on page 59 (4.08) of the data compendium. The data are absolute rates and do not correct for social determinants. They can be a proxy for need if statistically significant. The best use of these data is in combination with related indices.

[Interpretation](#)

[Eastern Health](#)

The [five highest](#) mortality rates by catchment area are, as follows:

- Bell Island (15.5)
- Bonavista (14.2)
- St. Mary's (13.9)
- Placentia/Whitbourne (11.3)
- Conception Bay North and Trinity Bay South (11.1)

The [five lowest](#) mortality rates by catchment area are, as follows:

- Paradise (3.4)
- Logy Bay - Torbay - Middle Cove - Outer Cove (5.0)
- Portugal Cove - St. Phillip's (5.4)
- Conception Bay South (6.6)
- Petty Harbour - Maddox Cove - Goulds - Kilbride (6.7)

[Central Health](#)

The [three highest](#) mortality rates by catchment area are, as follows:

- Buchans (23.5)
- Lewisporte (13.0)
- Grand Falls - Windsor (12.2)

The [three lowest](#) mortality rates by catchment area are, as follows:

- Baie Verte (6.6)
- Coast of Bays (9.0)

- Kittiwake Coast (9.6)

Western Health

The **two highest** mortality rates by catchment area are, as follows:

- Port Saunders (14.9)
- Bay St. George (11.8)

The **two lowest** mortality rates by catchment area are, as follows:

- Deer lake/White Bay (8.8)
- Bonne Bay (9.5)

Labrador-Grenfell Health

The **two highest** mortality rates by catchment area are, as follows:

- South East Labrador and Straits (11.0)
- Northern Peninsula (10.5)

The **two lowest** mortality rates by catchment area are, as follows:

- Labrador West (3.4)
- Central Labrador (5.8)

The areas with the highest mortality rates carry significance for planning purposes, particularly in combination with data that reflect chronic diseases, demographics, and social determinants.

AGGREGATE NOTE FOR BIRTH RATES AND MORTALITY RATES

For all four regions, there is no overlap by catchment area for highest birth rates and highest mortality rates. This suggests that, for planning purposes, these data do not indicate any primary decision point; they should, however, be given consideration as stand-alone parameters.

8.03 Burden of Illness

Data underpinning chronic diseases in a jurisdiction, region, or area can reflect any or all of following:

- Social determinants of health
- Timely access to evidence-based primary care
- Access to multidisciplinary collaborative care characterized by role optimization
- Timely access to evidence-based specialty care
- Rurality and remoteness
- Co-morbidities

Specific Chronic Diseases

1. Arthritis
2. Asthma
3. Chronic obstructive pulmonary disease
4. Diabetes mellitus
5. Hypertension
6. Acute myocardial infarction
7. Stroke
8. Congestive heart failure
9. Ischaemic heart disease

Data Sources

Two data sources were used in the assessment of chronic diseases:

- [NLCHI Provincial Chronic Disease Registry and CCDSS 2017/2018](#)

Data for the Provincial Chronic Disease Registry come from the Canadian Chronic Disease Surveillance System (CCDSS), as well as provincial laboratory data for diabetes mellitus. The CCDSS uses data collected through hospitalization and physician visits. The CCDSS has the limitation that it does not include data on visits to physicians paid by arrangements other than fee-for-service. In Newfoundland and Labrador, approximately two-thirds of general practitioners and specialists are paid on a fee-for-service basis and

one-third are paid by salary. To be included in the chronic disease registry/CCDSS, an individual must be an active MCP registrant for the fiscal year and meet the case definition for a disease.

- [Canadian Institute for Health Information \(multiple years\)](#)

CIHI prevalence data for chronic diseases are examined in two ways (prevalence tabulation is less useful than the NLCHI age-adjusted prevalence data):

- Hospitalization rates per 100,000 population for Canada and Newfoundland and Labrador and specific fiscal year
- Ten-year trends for hospitalization rates per 100,000 population for Canada and Newfoundland and Labrador

Technical Notes

Prevalence for the Provincial Chronic Disease Registry and CCDSS data is defined as the total number of new and existing disease cases (as defined by the case algorithm for that disease) in a fiscal year divided by the total number of people insured with MCP in that fiscal year that meet the age restriction for the disease, given as a percentage.

Crude prevalence rates reflect the burden of disease on the population (actual number of diseased patients in the geographic area). However, crude rates are influenced by the underlying age distribution of the population in the defined region. The age distribution of a population (the number of people in particular age categories) can change over time and can be different in different geographic areas.

Age-adjusting the rates ensures that differences in prevalence from one year to another, or between one geographic area and another, are not due to differences in the age distribution of the populations being compared. Therefore, the **age-standardized rate** should be used when comparing rates between the PHC area, RHAs, and the province.

Rates are age-standardized to the 2011 Canadian population.

All chronic disease data are significant as planning parameters for family medicine and are relevant to both the traditional medical model and the ideal collaborative team approach, particularly with the varied capacity in "adopting" rural and remote communities as described in the section on collaboration.

i. Prevalence of Arthritis

(Canadian Institute for Health Information)

Age Cohort CANADA	2017		2018	
	Number	Percentage	Number	Percentage
Total > 12 years	5,731,300	19.3	5,725,400	19.0
12-17 years	6,200	0.6	13,500	1.3
18-34 years	187,000	2.3	228,800	2.8
35-49 years	692,600	9.8	698,900	9.7
50-64 years	2,089,500	27.7	2,036,600	27.0
> 65 years	2,756,000	46.9	2,747,500	45.0

Age Cohort NL	2017		2018	
	Number	Percentage	Number	Percentage
Total > 12 years	116,000	26.1	124,700	28.2
12-17 years	---	---	---	---
18-34 years	3,200	3.2	4,400	4.5
35-49 years	15,000	14.6	25,300	25.1
50-64 years	46,900	37.6	37,600	30.3
> 65 years	50,700	50.3	57,400	55.2

Interpretation2017

By age cohorts and percentage of the populations, arthritis was more prevalent in Newfoundland and Labrador than in Canada. This has implications for primary care and chronic disease management; however, one possible weakness in the data is variance in diagnostic criteria and functional limitations.

2018

The interpretation of 2018 data was the same as that in 2017.

ii. Asthma Age Standardized Prevalence Rates

(NLCHI Provincial Chronic Disease Registry and CCDSS 2017/2018)

Asthma data come from the Provincial Chronic Disease Registry - please refer to pages 63 through 65 of the data compendium.

To be considered an asthma case, an individual must have one or more hospitalizations ever or two or more physician claims within two years using diagnostic codes ICD-9 493 or ICD-10-CA J45, J46 (all hospital diagnostic types) for individuals one year of age and older.

Prevalence is for life.

LEGEND	
	PHC catchment value at or above median for region
	PHC catchment value below median for region
	PHC catchment value at high end differential from median
	PHC catchment value at low end differential from median

PHC Catchment	Asthma
EASTERN HEALTH	Median 12.6
Bauline - Pouch Cove - Flatrock	12.7
Bell Island	5.7
Bonavista	8.0
Burin Peninsula	14.0
Clarenville	14.0
Conception Bay Central	11.4
Conception Bay North - Trinity Bay South	12.1
Conception Bay South	12.6
Logy Bay - Torbay - Middle Cove - Outer Cove	13.3
Mount Pearl	13.7
Paradise	12.4
Petty Harbour - Maddox Cove - Goulds - Kilbride	13.8

Physician Resource Forecast for Family Medicine

PHC Catchment	Asthma
Placentia - Whitbourne	10.7
Portugal Cove - St. Phillip's	12.7
Southern Shore	14.3
St. John's	11.5
St. Mary's	10.6
CENTRAL HEALTH	Median 10.0
Baie Verte	9.1
Buchans	11.9
Coast of Bays	5.7
Exploits	8.7
Gander	10.5
Grand Falls - Windsor	9.8
Green Bay	10.0
Isle Notre Dame	10.0
Kittiwake Coast	10.9
Lewisporte	11.7
Terra Nova	15.6
WESTERN HEALTH	Median 8.3
Bay St. George	5.4
Bonne Bay	8.3
Burgeo	3.0
Corner Brook	12.7
Deer Lake - White Bay	10.0
Port Saunders	7.7
Port aux Basques	9.4
LABRADOR-GRENFELL HEALTH	Median 2.45
Central Labrador	3.6

PHC Catchment	Asthma
Innu Communities	1.5
Labrador West	9.0
Northern Peninsula	2.6
Nunatsiavut Communities	1.5
South East Labrador and Straits	2.3
REGIONAL AND PROVINCIAL	Median 10.2
Eastern Health	12.3
Central Health	10.2
Western Health	9.6
Labrador-Grenfell Health	4.2
Newfoundland and Labrador	10.9

Interpretation

Eastern Health

The **greatest burden of illness** for asthma by catchment area was identified for Southern Shore (14.3), Burin Peninsula (14.0), and Clarenville (14.0).

- Values **above the median** were Bauline - Pouch Cove - Flatrock, Conception Bay South, Petty Harbour - Maddox Cove - Goulds - Kilbride, Logy Bay - Torbay - Middle Cove - Outer Cove, Mount Pearl, and Portugal Cove - St. Phillip's

The **lowest burden of illness** for asthma by catchment area was identified for Bell Island (5.7).

- Values **below the median** were Bonavista, Conception Bay Central, Conception Bay North - Trinity Bay South, Paradise, Placentia - Whitbourne, St. John's, and St. Mary's

Central Health

The **greatest burden of illness** for asthma by catchment area was identified for Buchans.

- Values **above the median** were Gander, Green Bay, Isle Notre Dame, and Kittiwake Coast

The **lowest burden of illness** for asthma by catchment area was identified for Coast of Bays.

- Values **below the median** were Baie Verte, Exploits, and Grand Falls-Windsor

Western Health

The **greatest burden of illness** for asthma by catchment area was identified for Corner Brook.

- Values **above the median** were Bonne Bay, Deer Lake - White Bay, and Port aux Basques

The **lowest burden of illness** for asthma by catchment area was identified for Burgeo.

- Values **below the median** were Bay St. George and Port Saunders

Labrador-Grenfell Health

The **greatest burden of illness** for asthma by catchment area was identified for Labrador West.

- Values **above the median** were Central Labrador and Northern Peninsula

The **lowest burden of illness** for asthma by catchment area was identified for Innu Communities and Nunatsiavut Communities.

- Value **below the median** was South East Labrador and Straits

Regional and provincial comparators had a median value of 10.2; the highest rate was Eastern Health (12.3) and the lowest was Labrador-Grenfell Health (4.2). Central Health and the province were above the median and Western Health below it.

iii. Chronic Obstructive Pulmonary Disease Age Standardized Prevalence Rates

(NLCHI Provincial Chronic Disease Registry and CCDSS 2017/2018)

Chronic Obstructive Pulmonary Disease (COPD) data come from the Provincial Chronic Disease Registry - please refer to pages 63 through 65 of the data compendium.

To be considered a COPD case, an individual must have one or more hospitalizations or one or more physician claims ever using diagnostic codes ICD-9 491, 492, 496 or ICD-10-CA J41, J42, J43, J44 (all hospital diagnostic types) for individuals 35 years of age and older.

Prevalence is for life.

LEGEND	
	PHC catchment value at or above median for region
	PHC catchment value below median for region
	PHC catchment value at high end differential from median
	PHC catchment value at low end differential from median

PHC Catchment	COPD
EASTERN HEALTH	Median 10.5
Bauline - Pouch Cove - Flatrock	12.7
Bell Island	10.7
Bonavista	7.2
Burin Peninsula	8.3
Clarenville	7.5
Conception Bay Central	12.3
Conception Bay North - Trinity Bay South	13.5
Conception Bay South	11.1
Logy Bay - Torbay - Middle Cove - Outer Cove	10.7
Mount Pearl	9.5
Paradise	8.7
Petty Harbour - Maddox Cove - Goulds - Kilbride	10.5

Physician Resource Forecast for Family Medicine

PHC Catchment	COPD
Placentia - Whitbourne	8.9
Portugal Cove - St. Phillip's	9.2
Southern Shore	14.3
St. John's	10.2
St. Mary's	14.2
CENTRAL HEALTH	Median 10.5
Baie Verte	10.0
Buchans	13.3
Coast of Bays	5.5
Exploits	11.0
Gander	7.3
Grand Falls - Windsor	10.8
Green Bay	11.5
Isle Notre Dame	8.1
Kittiwake Coast	8.4
Lewisporte	13.1
Terra Nova	5.6
WESTERN HEALTH	Median 11.7
Bay St. George	7.9
Bonne Bay	11.8
Burgeo	3.5
Corner Brook	16.0
Deer Lake - White Bay	11.7
Port Saunders	10.2
Port aux Basques	14.0
LABRADOR-GRENFELL HEALTH	Median 3.35
Central Labrador	3.2

PHC Catchment	COPD
Innu Communities	4.9
Labrador West	7.1
Northern Peninsula	3.2
Nunatsiavut Communities	3.5
South East Labrador and Straits	2.6
REGIONAL AND PROVINCIAL	Median 10.1
Eastern Health	10.3
Central Health	9.3
Western Health	12.1
Labrador-Grenfell Health	3.9
Newfoundland and Labrador	10.1

Interpretation

Eastern Health

The **greatest burden of illness** for chronic obstructive pulmonary disease by catchment area was demonstrated for Southern Shore and St. Mary's.

- Values **above the median** were Bauline - Pouch Cove - Flatrock, Bell Island, Conception Bay Central, Conception Bay North - Trinity Bay South, Conception Bay South, Logy Bay - Torbay - Middle Cove - Outer Cove, and Petty Harbour - Maddox Cove - Goulds - Kilbride

The **lowest burden of illness** for chronic obstructive pulmonary disease by catchment area was demonstrated for Bonavista.

- Values **below the median** were Burin Peninsula, Clarenville, Mount Pearl, Paradise, Placentia - Whitbourne, Portugal Cove - St. Phillip's, and St. John's

Central Health

The **greatest burden of illness** for chronic obstructive pulmonary disease by catchment area was demonstrated for Buchans and Lewisporte.

- Values **above the median** were Exploits, Grand Falls-Windsor, and Green Bay

The [lowest burden of illness](#) for [chronic obstructive pulmonary disease](#) by catchment area was demonstrated for Coast of Bays and Terra Nova.

- Values **below the median** were Gander, Isle Notre Dame, and Kittiwake Coast

Western Health

The [greatest burden of illness](#) for [chronic obstructive pulmonary disease](#) by catchment area was demonstrated for Corner Brook.

- Values **above the median** were Bonne Bay, Deer Lake - White Bay, and Port aux Basques

The [lowest burden of illness](#) for [chronic obstructive pulmonary disease](#) by catchment area was demonstrated for Burgeo.

- Values **below the median** were Bay St. George and Port Saunders

Labrador-Grenfell Health

The [greatest burden of illness](#) for [chronic obstructive pulmonary disease](#) by catchment area was demonstrated for Labrador West.

- Values **above the median** were Innu Communities and Nunatsiavut Communities

The [lowest burden of illness](#) for [chronic obstructive pulmonary disease](#) by catchment area was demonstrated for South East Labrador and Straits.

- Values **below the median** were Central Labrador and Northern Peninsula

[Regional and provincial comparators had a median value of 10.1; the highest rate was Western Health \(12.1\) and the lowest was Labrador-Grenfell Health \(3.9\). Eastern Health and the province were above the median and Central Health below it.](#)

iv. Diabetes Mellitus Age Standardized Prevalence Rates

(NLCHI Provincial Chronic Disease Registry and CCDSS 2017/2018)

Diabetes data come from the Provincial Chronic Disease Registry - please refer to pages 63 through 65 of the data compendium.

To be considered a diabetes case, an individual must meet the following criteria:

Identified as a diabetes case in the CCDSS, OR

Any two of the following test results in a two year period:

- Fasting plasma glucose result of ≥ 7 mmol/L, OR
- Hb A1C result of $\geq 6.5\%$, OR
- 2 hour plasma glucose in a 75g oral glucose tolerance test result of ≥ 11.1 mmol/L, OR
- Random plasma glucose result of ≥ 11.1 mmol/L

The diabetes case definition used by the CCDSS is one or more hospitalizations or two or more physician claims within two years using diagnostic codes ICD-9 250 or ICD-10-CA E10, E11, E12, E13, E14 (all hospital diagnostic types) for individuals of all ages. Exclusions are gestational diabetes in women age 10-54, 120 days preceding or 180 days after hospital records containing any of the gestational diagnostic codes: ICD-9 641-676, V27 or ICD-10-CA O1, O21-95, O98, O99, Z37.

Prevalence is for life.

LEGEND	
	PHC catchment value at or above median for region
	PHC catchment value below median for region
	PHC catchment value at high end differential from median
	PHC catchment value at low end differential from median

PHC Catchment	Diabetes Mellitus
EASTERN HEALTH	Median 10.5
Bauline - Pouch Cove - Flatrock	10.4
Bell Island	13.8
Bonavista	11.9
Burin Peninsula	13.3

Physician Resource Forecast for Family Medicine

PHC Catchment	Diabetes Mellitus
Clarenville	11.2
Conception Bay Central	10.0
Conception Bay North - Trinity Bay South	12.0
Conception Bay South	10.5
Logy Bay - Torbay - Middle Cove - Outer Cove	9.3
Mount Pearl	10.3
Paradise	9.6
Petty Harbour - Maddox Cove - Goulds - Kilbride	10.3
Placentia - Whitbourne	10.5
Portugal Cove - St. Phillip's	9.4
Southern Shore	10.6
St. John's	9.5
St. Mary's	11.5
CENTRAL HEALTH	Median 12.4
Baie Verte	11.6
Buchans	12.6
Coast of Bays	14.5
Exploits	13.3
Gander	11.0
Grand Falls - Windsor	11.7
Green Bay	11.0
Isle Notre Dame	12.4
Kittiwake Coast	13.1
Lewisporte	12.4
Terra Nova	13.8
WESTERN HEALTH	Median 10.8
Bay St. George	10.8

PHC Catchment	Diabetes Mellitus
Bonne Bay	10.5
Burgeo	13.5
Corner Brook	10.6
Deer Lake - White Bay	11.2
Port Saunders	10.8
Port aux Basques	15.2
LABRADOR-GRENFELL HEALTH	MEDIAN 11.3
Central Labrador	11.2
Innu Communities	23.2
Labrador West	10.7
Northern Peninsula	11.4
Nunatsiavut Communities	9.0
South East Labrador and Straits	14.1
REGIONAL AND PROVINCIAL	MEDIAN 11.3
Eastern Health	10.6
Central Health	12.4
Western Health	11.3
Labrador-Grenfell Health	12.0
Newfoundland and Labrador	11.1

Interpretation

Eastern Health

The **greatest burden of illness** for diabetes mellitus by catchment area was demonstrated for Bell Island.

- Values **above the median** were Bonavista, Burin Peninsula, Clarenville, Conception Bay North - Trinity Bay South, Conception Bay South, Placentia - Whitbourne, Southern Shore, and St. Mary's

The **lowest burden of illness** for diabetes mellitus by catchment area was demonstrated for Logy Bay - Torbay - Middle Cove - Outer Cove, Paradise, Portugal Cove - St. Phillip's, and St. John's.

- Values **below the median** were Bauline - Pouch Cove - Flatrock, Mount Pearl, Conception Bay Central, and Petty Harbour - Maddox Cove - Goulds - Kilbride

Central Health

The **greatest burden of illness** for diabetes mellitus by catchment area was demonstrated for Coast of Bays.

- Values **above the median** were Buchans, Exploits, Isle Notre Dame, Kittiwake Coast, Lewisporte, and Terra Nova

The **lowest burden of illness** for diabetes mellitus by catchment area was demonstrated for Baie Verte and Green Bay.

- Values **below the median** were Gander and Grand Falls-Windsor

Western Health

The **greatest burden of illness** for diabetes mellitus by catchment area was demonstrated for Port aux Basques

- Values **above the median** were Bay St. George, Burgeo, Deer Lake - White Bay, and Port Saunders

The **lowest burden of illness** for diabetes mellitus by catchment area was demonstrated for Bonne Bay and Corner Brook.

- No other values were **below the median**.

Labrador-Grenfell Health

The **greatest burden of illness** for diabetes mellitus by catchment area was demonstrated for Innu Communities.

- Values **above the median** were Northern Peninsula and South east Labrador and Straits

The **lowest burden of illness** for diabetes mellitus by catchment area was demonstrated for Nunatsiavut Communities.

- Values **below the median** were Central Labrador and Labrador West

Regional and provincial comparators had a median value of 11.3; the highest rate was Central Health (12.1) and the lowest was Eastern Health (10.6). Western Health and Labrador-Grenfell Health were above the median and the province below it.

v. [Hypertension Age Standardized Prevalence Rates](#)

(NLCHI Provincial Chronic Disease Registry and CCDSS 2017/2018)

Hypertension data come from the Provincial Chronic Disease Registry - please refer to pages 63 through 65 of the data compendium.

To be considered a hypertension case, an individual must have one or more hospitalizations or two or more physician claims within two years using diagnostic codes ICD-9 401, 402, 403, 404, 405 or ICD-10-CA I10, I11, I12, I13, I15 (all hospital diagnostic types) for individuals 20 years of age and older. Excludes pregnancy-induced hypertension in women age 20-54, 120 days preceding or 180 days after hospital records containing any of the gestational diagnostic codes: ICD-9 641-676, V27 or ICD-10-CA O1, O21-95, O98, O99, Z37.

Prevalence is for life.

LEGEND	
	PHC catchment value at or above median for region
	PHC catchment value below median for region
	PHC catchment value at high end differential from median
	PHC catchment value at low end differential from median

PHC Catchment	Hypertension
EASTERN HEALTH	Median 34.1
Bauline - Pouch Cove - Flatrock	34.1
Bell Island	31.1
Bonavista	26.8
Burin Peninsula	34.9
Clarenville	33.7
Conception Bay Central	41.1
Conception Bay North - Trinity Bay South	36.8
Conception Bay South	34.9
Logy Bay - Torbay - Middle Cove - Outer Cove	31.6
Mount Pearl	37.3

Physician Resource Forecast for Family Medicine

PHC Catchment	Hypertension
Paradise	36.7
Petty Harbour - Maddox Cove - Goulds - Kilbride	35.5
Placentia - Whitbourne	31.2
Portugal Cove - St. Phillip's	31.7
Southern Shore	31.6
St. John's	31.8
St. Mary's	34.8
CENTRAL HEALTH	Median 33.9
Baie Verte	38.7
Buchans	34.5
Coast of Bays	19.2
Exploits	29.8
Gander	38.7
Grand Falls - Windsor	30.0
Green Bay	38.0
Isle Notre Dame	30.2
Kittiwake Coast	33.9
Lewisporte	33.7
Terra Nova	34.5
WESTERN HEALTH	Median 23.0
Bay St. George	18.6
Bonne Bay	21.4
Burgeo	15.0
Corner Brook	30.4
Deer Lake - White Bay	28.7
Port Saunders	23.0
Port aux Basques	42.4

PHC Catchment	Hypertension
LABRADOR-GRENFELL HEALTH	Median 10.5
Central Labrador	10.1
Innu Communities	11.2
Labrador West	28.5
Northern Peninsula	10.0
Nunatsiavut Communities	7.4
South East Labrador and Straits	7.0
REGIONAL AND PROVINCIAL	Median 31.3
Eastern Health	33.8
Central Health	32.3
Western Health	28.1
Labrador-Grenfell Health	13.3
Newfoundland and Labrador	31.3

Interpretation

Eastern Health

The **greatest burden of illness** for hypertension by catchment area was demonstrated for Conception Bay Central.

- Values **above the median** were Bauline - Pouch Cove - Flatrock, Burin Peninsula, Conception Bay North - Trinity Bay South, Conception Bay South, Mount Pearl, Paradise, Petty Harbour - Maddox Cove - Goulds - Kilbride, and St. Mary's

The **lowest burden of illness** for hypertension by catchment area was demonstrated for Bonavista.

- Values **below the median** were Bell Island, Clarenville, Logy Bay - Torbay - Middle Cove - Outer Cove, Placentia - Whitbourne, Portugal Cove - St. Phillip's, Southern Shore, and St. John's

Central Health

The **greatest burden of illness** for hypertension by catchment area was demonstrated for Baie Verte and Gander.

- Values **above the median** were Buchans, Green Bay, Kittiwake Coast, and Terra Nova

The **lowest burden of illness** for hypertension by catchment area was demonstrated for Coast of Bays.

- Values **below the median** were Exploits, Grand Falls - Windsor, Isle Notre Dame, and Lewisporte

Western Health

The **greatest burden of illness** for hypertension by catchment area was demonstrated for Porte aux Basques.

- Values **above the median** were Corner Brook, Deer Lake - White Bay, and Port Saunders

The **lowest burden of illness** for hypertension by catchment area was demonstrated for Burgeo.

- Values **below the median** were Bay St. George, and Bonne Bay

Labrador-Grenfell Health

The **greatest burden of illness** for hypertension by catchment area was demonstrated for Labrador West

- Value **above the median** was Innu Communities

The **lowest burden of illness** for hypertension by catchment area was demonstrated for South East Labrador and Straits

- Values **below the median** were Central Labrador, Northern Peninsula, and Nunatsiavut Communities

Regional and provincial comparators had a median value of 31.3; the highest rate was Eastern Health (33.8) and the lowest was Labrador-Grenfell Health (13.3). Central Health and the province were above the median and the Western Health below it.

vi. Acute Myocardial Infarction Age Standardized Prevalence Rates

(NLCHI Provincial Chronic Disease Registry and CCDSS 2017/2018)

Acute myocardial infarction (AMI) data come from the CCDSS - please refer to pages 66 through 68 of the data compendium.

To be considered an AMI case, an individual must have one or more hospitalizations within one year with diagnostic codes ICD-9 410 or ICD-10-CA codes I21, I22 (diagnostic types MRDx, W, X, Y, 1, 2) for individuals 20 years of age and older.

Prevalence is for life.

LEGEND	
	PHC catchment value at or above median for region
	PHC catchment value below median for region
	PHC catchment value at high end differential from median
	PHC catchment value at low end differential from median

PHC Catchment	AMI
EASTERN HEALTH	Median 2.6
Bauline - Pouch Cove - Flatrock	2.6
Bell Island	2.9
Bonavista	2.7
Burin Peninsula	3.3
Clarenville	3.3
Conception Bay Central	2.6
Conception Bay North - Trinity Bay South	3.3
Conception Bay South	2.5
Logy Bay - Torbay - Middle Cove - Outer Cove	2.3
Mount Pearl	2.6
Paradise	2.5
Petty Harbour - Maddox Cove - Goulds - Kilbride	2.8

Physician Resource Forecast for Family Medicine

PHC Catchment	AMI
Placentia - Whitbourne	2.5
Portugal Cove - St. Phillip's	2.4
Southern Shore	3.1
St. John's	2.4
St. Mary's	2.3
CENTRAL HEALTH	Median 2.6
Baie Verte	2.9
Buchans	2.4
Coast of Bays	2.3
Exploits	2.8
Gander	2.4
Grand Falls - Windsor	3.0
Green Bay	2.2
Isle Notre Dame	2.6
Kittiwake Coast	3.1
Lewisporte	2.4
Terra Nova	2.9
WESTERN HEALTH	Median 2.6
Bay St. George	2.4
Bonne Bay	2.6
Burgeo	2.4
Corner Brook	2.6
Deer Lake - White Bay	2.0
Port Saunders	3.0
Port aux Basques	2.6
LABRADOR-GRENFELL HEALTH	Median 2.85
Central Labrador	3.0

PHC Catchment	AMI
Innu Communities	5.0
Labrador West	3.3
Northern Peninsula	2.5
Nunatsiavut Communities	2.7
South East Labrador and Straits	2.4
REGIONAL AND PROVINCIAL	Median 2.7
Eastern Health	2.7
Central Health	2.7
Western Health	2.5
Labrador-Grenfell Health	2.9
Newfoundland and Labrador	2.7

Interpretation

Eastern Health

The **greatest burden of illness** for acute myocardial infarction by catchment area was demonstrated for Burin Peninsula, Clarenville, and Conception Bay North - Trinity Bay South.

- Values **above the median** were Bauline - Pouch Cove - Flatrock, Bell Island, Bonavista, Conception Bay Central, Mount Pearl, Petty Harbour - Maddox Cove - Goulds - Kilbride, and Southern Shore

The **lowest burden of illness** for acute myocardial infarction by catchment area was demonstrated for Logy Bay - Torbay - Middle Cove - Outer Cove, Portugal Cove - St. Phillip's, St. John's, and St. Mary's.

- Values **below the median** were Conception Bay South, Paradise, and Placentia - Whitbourne

Central Health

The **greatest burden of illness** for acute myocardial infarction by catchment area was demonstrated for Kittiwake Coast.

- Values **above the median** were Baie Verte, Exploits, Grand Falls - Windsor, Isle Notre Dame, and Terra Nova

The [lowest burden of illness](#) for [acute myocardial infarction](#) by catchment area was demonstrated for Green Bay.

- Values **below the median** were Buchans, Coast of Bays, Gander, and Lewisporte

Western Health

The [greatest burden of illness](#) for [acute myocardial infarction](#) by catchment area was demonstrated for Port Saunders.

- Values **above the median** were Bonne Bay, Corner Brook, and Port aux Basques

The [lowest burden of illness](#) for [acute myocardial infarction](#) by catchment area was demonstrated for

- Values **below the median** were Bay St. George and Burgeo

Labrador-Grenfell Health

The [greatest burden of illness](#) for [acute myocardial infarction](#) by catchment area was demonstrated for Innu Communities.

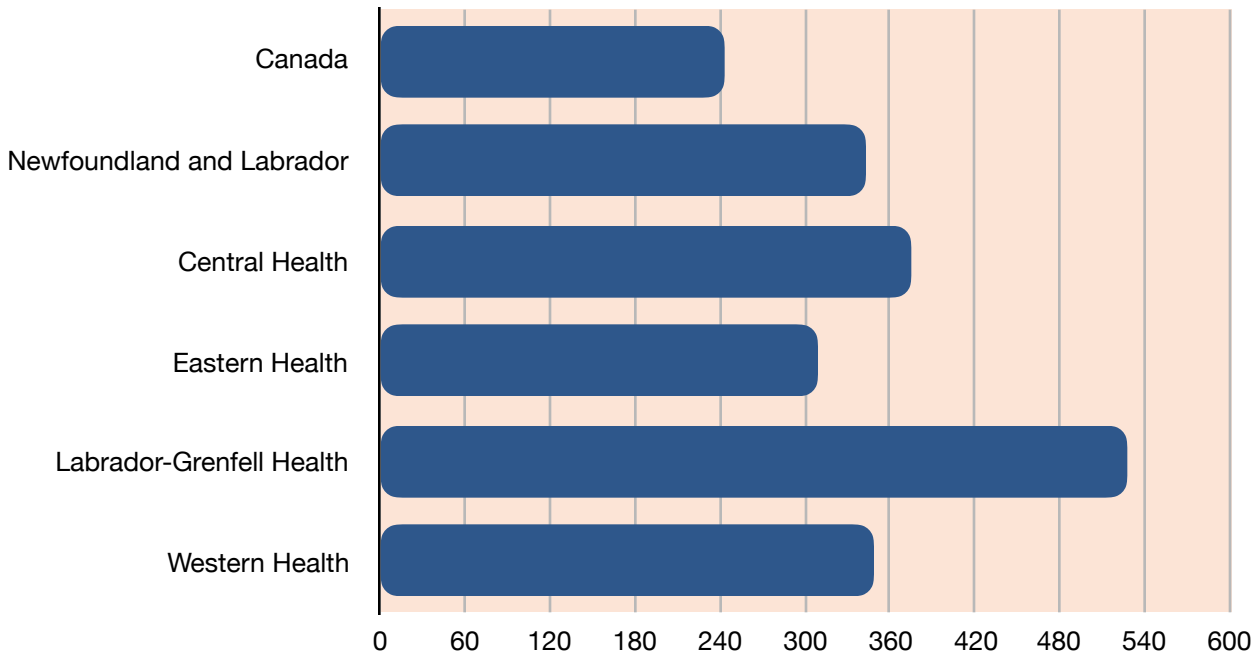
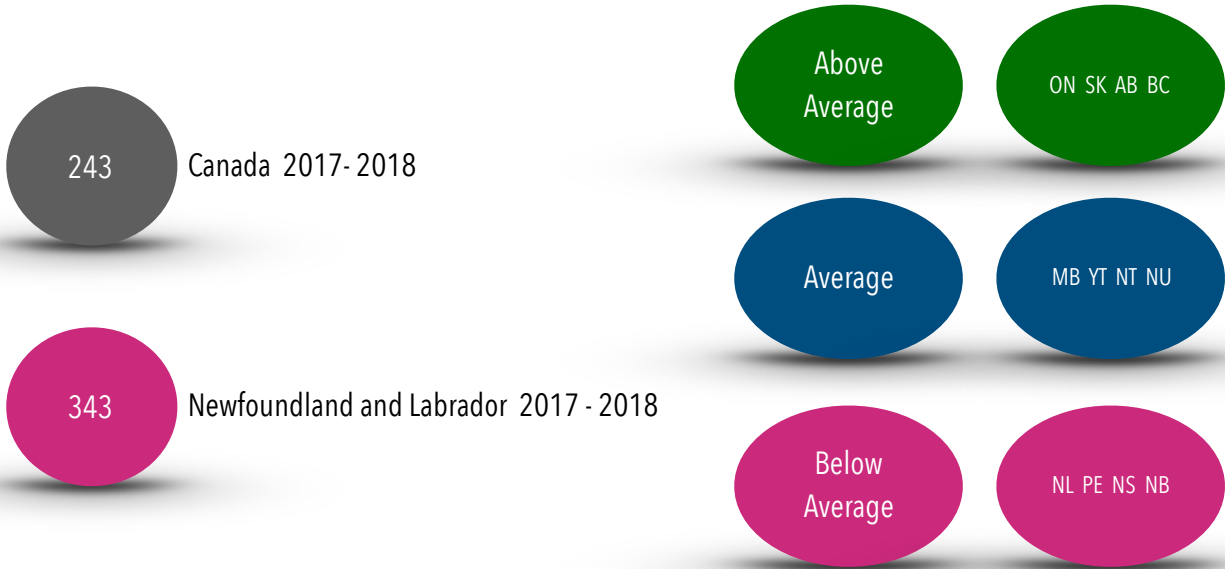
- Values **above the median** were Central Labrador and Labrador West

The [lowest burden of illness](#) for [acute myocardial infarction](#) by catchment area was demonstrated for South East Labrador and Straits.

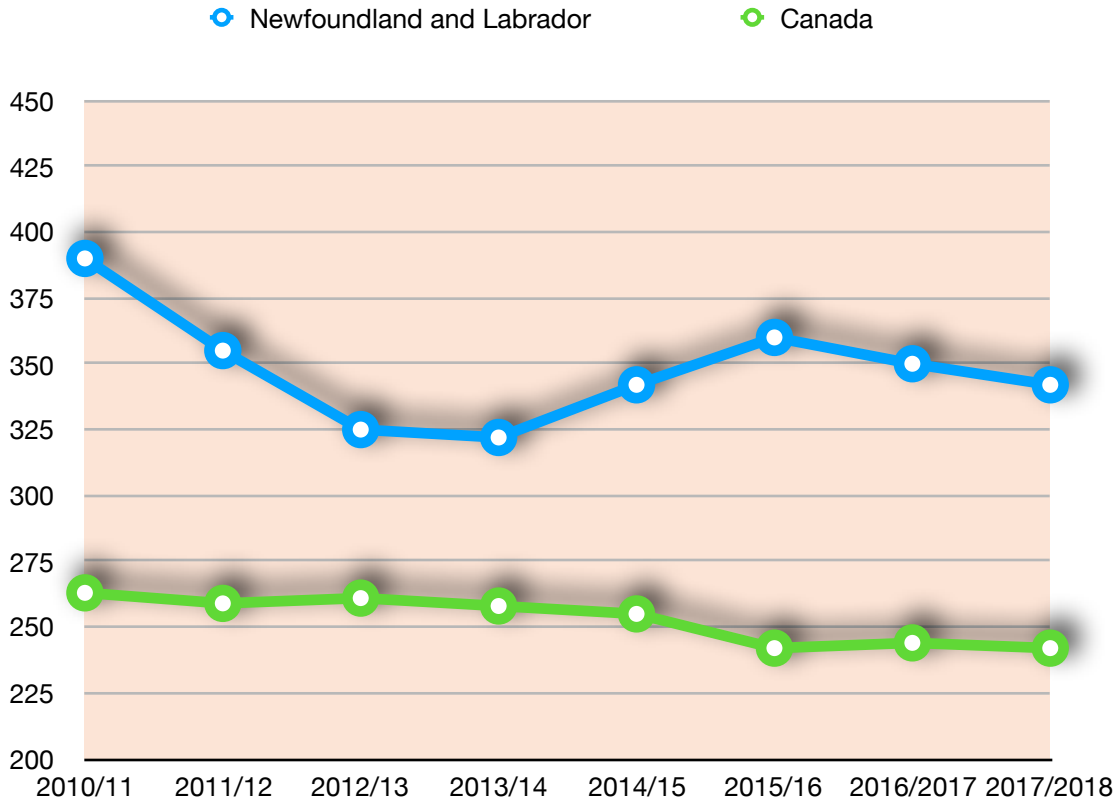
- Values **below the median** were Northern Peninsula and Nunatsiavut Communities

[Regional and provincial comparators had a median value of 2.7; the highest rate was Labrador-Grenfell Health \(2.9\) and the lowest was Western Health \(2.5\). Eastern Health, Central Health, and the province were equal to the median.](#)

Hospitalizations per 100,000 for Acute Myocardial Infarction
(Canadian Institute for Health Information)



Hospitalizations per 100,000 for Acute Myocardial Infarction



Interpretation

Population-based rates of hospitalization for acute myocardial infarction were significantly greater in Newfoundland and Labrador than in Canada in 2017-2018; all Atlantic provinces demonstrated greater rates and were classified as below average.

All regions in the province demonstrated greater rates than Canada; least favourable were those for Central Health and Labrador-Grenfell Health, consistent with rural and remote populations.

Eight-year trends indicate a generally increased differential between the province and Canada since 2013-2015.

vii. Stroke Age Standardized Prevalence Rates

(NLCHI Provincial Chronic Disease Registry and CCDSS 2017/2018)

Stroke data come from the Provincial Chronic Disease Registry - please refer to pages 66 through 68 of the data compendium.

To be considered a stroke case, an individual must have one or more hospitalizations or two or more physician claims within one year with diagnostic codes ICD-9 325, 362.3x, 430, 431, 432.9, 433.x1, 434 (or 434.x1), 435.x, 436, 437.6 or ICD-10-CA G08, G45.x (excluding G45.4), H34.0, H34.1, I60.x, I61.x, I62.9, I63.x, I64, I67.6 (all hospital diagnostic types) for individuals 20 years of age and older.

Prevalence is for life.

LEGEND	
	PHC catchment value at or above median for region
	PHC catchment value below median for region
	PHC catchment value at high end differential from median
	PHC catchment value at low end differential from median

PHC Catchment	Stroke
EASTERN HEALTH	MEDIAN 2.1
Bauline - Pouch Cove - Flatrock	2.0
Bell Island	2.3
Bonavista	1.3
Burin Peninsula	1.7
Clarenville	2.2
Conception Bay Central	3.2
Conception Bay North - Trinity Bay South	2.3
Conception Bay South	2.4
Logy Bay - Torbay - Middle Cove - Outer Cove	1.7
Mount Pearl	2.0
Paradise	2.0

Physician Resource Forecast for Family Medicine

PHC Catchment	Stroke
Petty Harbour - Maddox Cove - Goulds - Kilbride	2.1
Placentia - Whitbourne	1.9
Portugal Cove - St. Phillip's	1.9
Southern Shore	3.0
St. John's	2.2
St. Mary's	3.2
CENTRAL HEALTH	Median 2.0
Baie Verte	2.5
Buchans	1.9
Coast of Bays	1.7
Exploits	2.3
Gander	1.7
Grand Falls - Windsor	2.2
Green Bay	2.2
Isle Notre Dame	2.0
Kittiwake Coast	2.0
Lewisporte	2.3
Terra Nova	1.8
WESTERN HEALTH	Median 1.9
Bay St. George	1.8
Bonne Bay	1.5
Burgeo	1.3
Corner Brook	2.4
Deer Lake - White Bay	1.9
Port Saunders	2.8
Port aux Basques	1.9
LABRADOR-GRENFELL HEALTH	Median 2.2

PHC Catchment	Stroke
Central Labrador	2.3
Innu Communities	3.0
Labrador West	2.1
Northern Peninsula	2.1
Nunatsiavut Communities	3.2
South East Labrador and Straits	1.8
REGIONAL AND PROVINCIAL	Median 2.1
Eastern Health	2.2
Central Health	2.1
Western Health	2.1
Labrador-Grenfell Health	2.2
Newfoundland and Labrador	2.1

Interpretation

Eastern Health

The **greatest burden of illness** for stroke by catchment area was demonstrated for Conception Bay Central and St. Mary's.

- Values **above the median** were Bell Island, Clarenville, Conception Bay North - Trinity Bay South, Conception Bay South, Petty Harbour - Maddox Cove - Goulds - Kilbride, Southern Shore, and St. John's

The **lowest burden of illness** for stroke by catchment area was demonstrated for Bonavista.

- Values **below the median** were Bauline - Pouch Cove - Flatrock, Burin Peninsula, Logy Bay - Torbay - Middle Cove - Outer Cove, Mount Pearl, Paradise, Placentia - Whitbourne, and Portugal Cove - St. Phillip's

Central Health

The **greatest burden of illness** for stroke by catchment area was demonstrated for Baie Verte

- Values **above the median** were Exploits, Grand Falls - Windsor, Isle Notre Dame, Kittiwake Coast, Green Bay, and Lewisporte

The **lowest burden of illness** for stroke by catchment area was demonstrated for Coast of Bays and Gander

- Values **below the median** were Buchans and Terra Nova

Western Health

The **greatest burden of illness** for stroke by catchment area was demonstrated for Port Saunders.

- Values **above the median** were Corner Brook, Deer Lake - White Bay, and Port aux Basques

The **lowest burden of illness** for stroke by catchment area was demonstrated for Burgeo.

- Values **below the median** were Bay St. George and Bonne Bay

Labrador-Grenfell Health

The **greatest burden of illness** for stroke by catchment area was demonstrated for Nunatsiavut Communities.

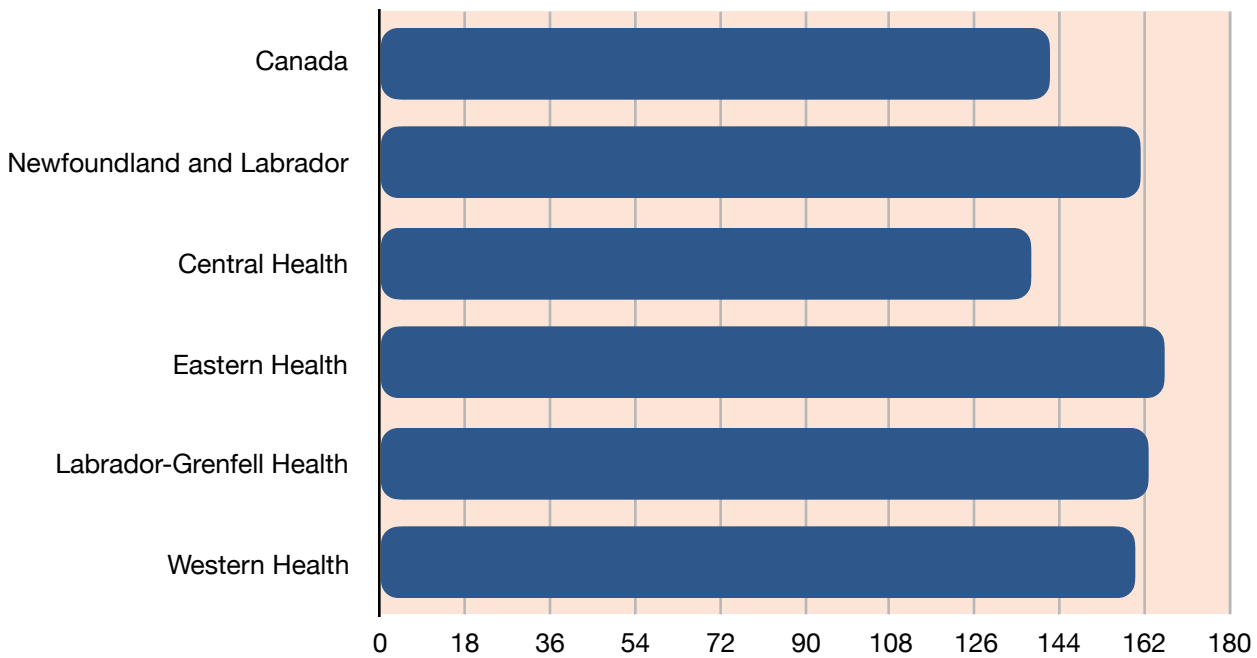
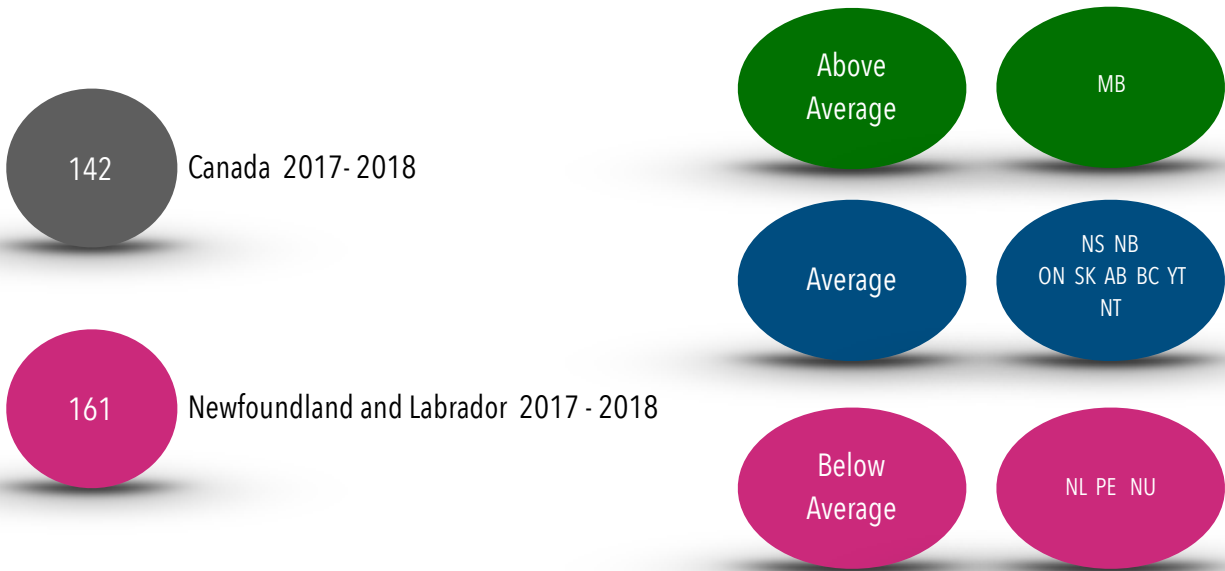
- Values **above the median** were Central Labrador and Innu Communities

The **lowest burden of illness** for stroke by catchment area was demonstrated for South East Labrador and Straits.

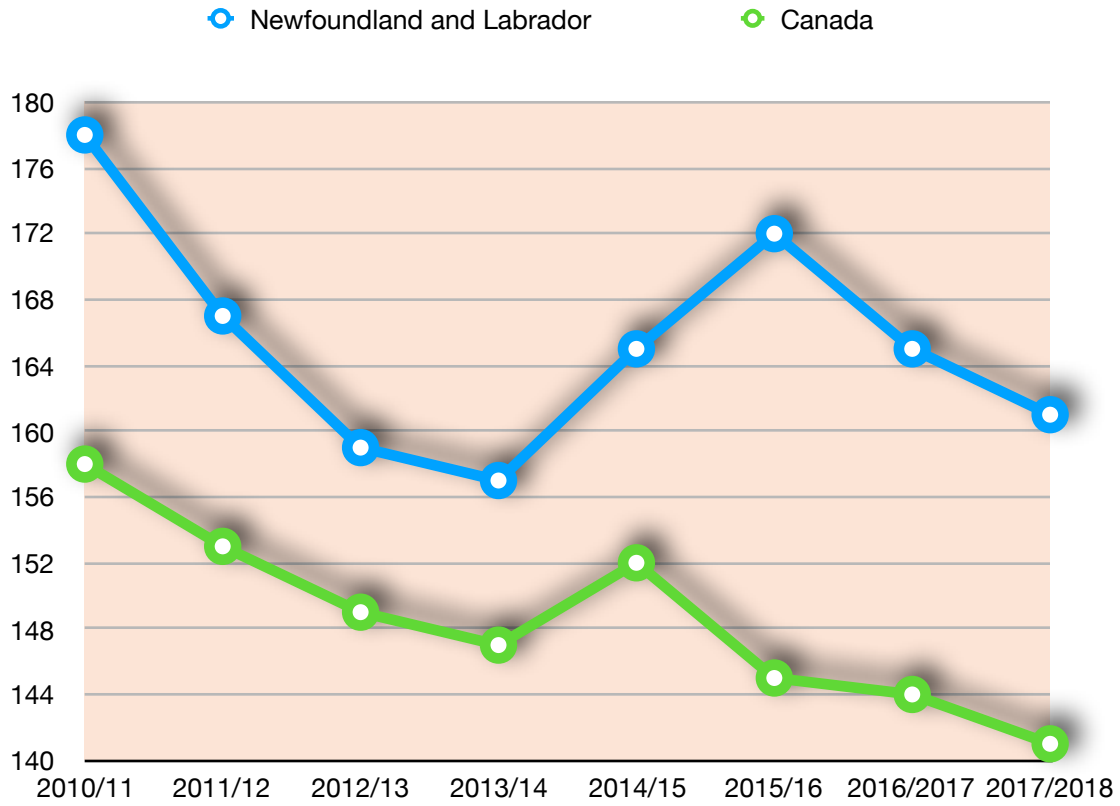
- Values **below the median** were Labrador West and Northern Peninsula

Regional and provincial comparators had a median value of 2.1; the highest rate was Eastern Health and Labrador-Grenfell Health(2.2) and the lowest was Central Health, Western Health, and the province (2.1).

Hospitalizations per 100,000 for Stroke
(Canadian Institute for Health Information)



Hospitalizations per 100,000 for Stroke



Interpretation

Population-based rates of hospitalization for stroke were significantly greater in Newfoundland and Labrador than in Canada in 2017-2018; Prince Edward Island and Nunavut also demonstrated greater rates and were classified as below average.

Central Health had a lower rate than Canada and the other regions of Newfoundland and Labrador, all of which exceeded the Canadian rate.

Eight-year trends were parallel between Canada and the province with a growing differential since 2013-2015 (similar to the trend seen for hospitalization rates for acute myocardial infarction).

viii. Congestive Heart Failure Age Standardized Prevalence Rates

(NLCHI Provincial Chronic Disease Registry and CCDSS 2017/2018)

Heart failure data come from the Provincial Chronic Disease Registry - please refer to pages 66 through 68 of the data compendium.

To be considered a heart failure case, an individual must have one or more hospitalizations or two or more physician claims within one year using codes ICD-9 428 or ICD-10-CA I50 (all hospital diagnostic types) for individuals 40 years of age and older.

Prevalence is for life.

LEGEND	
	PHC catchment value at or above median for region
	PHC catchment value below median for region
	PHC catchment value at high end differential from median
	PHC catchment value at low end differential from median

PHC Catchment	Congestive Failure
EASTERN HEALTH	MEDIAN 2.6
Bauline - Pouch Cove - Flatrock	3.1
Bell Island	2.8
Bonavista	2.6
Burin Peninsula	2.8
Clarenville	2.8
Conception Bay Central	2.8
Conception Bay North - Trinity Bay South	2.7
Conception Bay South	2.7
Logy Bay - Torbay - Middle Cove - Outer Cove	2.4
Mount Pearl	2.2
Paradise	2.6
Petty Harbour - Maddox Cove - Goulds - Kilbride	2.0

Physician Resource Forecast for Family Medicine

PHC Catchment	Congestive Failure
Placentia - Whitbourne	2.6
Portugal Cove - St. Phillip's	2.3
Southern Shore	3.8
St. John's	2.4
St. Mary's	2.5
CENTRAL HEALTH	Median 3.4
Baie Verte	3.7
Buchans	4.4
Coast of Bays	3.0
Exploits	3.0
Gander	3.4
Grand Falls - Windsor	2.7
Green Bay	3.2
Isle Notre Dame	3.5
Kittiwake Coast	3.6
Lewisporte	2.7
Terra Nova	3.5
WESTERN HEALTH	Median 8.9
Bay St. George	7.7
Bonne Bay	8.4
Burgeo	7.8
Corner Brook	12.4
Deer Lake - White Bay	10.9
Port Saunders	12.0
Port aux Basques	8.9
LABRADOR-GRENFELL HEALTH	Median 3.3
Central Labrador	3.6

PHC Catchment	Congestive Failure
Innu Communities	5.1
Labrador West	4.0
Northern Peninsula	3.0
Nunatsiavut Communities	2.5
South East Labrador and Straits	2.6
REGIONAL AND PROVINCIAL	Median 3.3
Eastern Health	2.5
Central Health	3.2
Western Health	9.7
Labrador-Grenfell Health	3.3
Newfoundland and Labrador	4.0

Interpretation

Eastern Health

The **greatest burden of illness** for congestive heart failure by catchment area was demonstrated for Southern Shore.

- Values **above the median** were Bauline - Pouch Cove - Flatrock, Bell Island, Bonavista, Burin Peninsula, Clarenville, Conception Bay Central, Conception Bay North - Trinity Bay South, Conception Bay South, Paradise, and Placentia - Whitbourne

The **lowest burden of illness** for congestive heart failure by catchment area was demonstrated for Petty Harbour - Maddox Cove - Goulds - Kilbride.

- Values **below the median** were Logy Bay - Torbay - Middle Cove - Outer Cove, Mount Pearl, Portugal Cove - St. Phillip's, St. John's, and St. Mary's

Central Health

The **greatest burden of illness** for congestive heart failure by catchment area was demonstrated for Buchans.

- Values **above the median** were Baie Verte, Gander, Isle Notre Dame, Kittiwake Coast, and Terra Nova

The **lowest burden of illness** for congestive heart failure by catchment area was demonstrated for Grand Falls - Windsor and Lewisporte.

- Values **below the median** were Coast of Bays, Exploits, and Green Bay

Western Health

The **greatest burden of illness** for congestive heart failure by catchment area was demonstrated for Corner Brook.

- Values **above the median** were Deer Lake - White Bay, Port Saunders, and Port aux Basques

The **lowest burden of illness** for congestive heart failure by catchment area was demonstrated for Bay St. George and Burgeo.

- Value **below the median** was Bonne Bay

Labrador-Grenfell Health

The **greatest burden of illness** for congestive heart failure by catchment area was demonstrated for Innu Communities.

- Values **above the median** were Central Labrador and Labrador West

The **lowest burden of illness** for congestive heart failure by catchment area was demonstrated for Nunatsiavut Communities and South East Labrador and Straits

- Value **below the median** was Northern Peninsula

Regional and provincial comparators had a median value of 3.3; the highest rate was Western Health (9.7) and the lowest was Eastern Health (2.5). The province and Labrador-Grenfell Health were above the median and Central Health below it.

ix. Ischaemic Heart Disease Age Standardized Prevalence Rates

(NLCHI Provincial Chronic Disease Registry and CCDSS 2017/2018)

Ischaemic heart disease (IHD) data come from the Provincial Chronic Disease Registry - please refer to pages 66 through 68 of the data compendium.

To be considered an IHD case, an individual must have one or more hospitalizations or procedure codes or two or more physician claims within one year using diagnostic codes ICD-9 410, 411, 412, 413, 414 or ICD-10-CA I20, I21, I22, I23, I24, I25 (all hospital diagnostic types) for individuals 20 years of age and older.

Prevalence is for life.

LEGEND	
	PHC catchment value at or above median for region
	PHC catchment value below median for region
	PHC catchment value at high end differential from median
	PHC catchment value at low end differential from median

PHC Catchment	IHD
EASTERN HEALTH	Median 7.3
Bauline - Pouch Cove - Flatrock	7.3
Bell Island	6.4
Bonavista	6.3
Burin Peninsula	9.3
Clarenville	8.8
Conception Bay Central	10.8
Conception Bay North - Trinity Bay South	8.4
Conception Bay South	7.2
Logy Bay - Torbay - Middle Cove - Outer Cove	6.1
Mount Pearl	7.3
Paradise	6.8
Petty Harbour - Maddox Cove - Goulds - Kilbride	8.0

Physician Resource Forecast for Family Medicine

PHC Catchment	IHD
Placentia - Whitbourne	6.3
Portugal Cove - St. Phillip's	7.0
Southern Shore	9.5
St. John's	6.8
St. Mary's	9.5
CENTRAL HEALTH	Median 9.3
Baie Verte	11.9
Buchans	8.7
Coast of Bays	7.6
Exploits	8.7
Gander	9.3
Grand Falls - Windsor	9.3
Green Bay	8.2
Isle Notre Dame	9.6
Kittiwake Coast	9.7
Lewisporte	8.7
Terra Nova	11.1
WESTERN HEALTH	Median 6.5
Bay St. George	5.0
Bonne Bay	6.9
Burgeo	5.0
Corner Brook	6.7
Deer Lake - White Bay	6.6
Port Saunders	6.5
Port aux Basques	6.2
LABRADOR-GRENFELL HEALTH	Median 6.0
Central Labrador	6.8

PHC Catchment	IHD
Innu Communities	9.0
Labrador West	7.5
Northern Peninsula	5.1
Nunatsiavut Communities	4.9
South East Labrador and Straits	5.2
REGIONAL AND PROVINCIAL	Median 7.5
Eastern Health	7.5
Central Health	9.1
Western Health	6.5
Labrador-Grenfell Health	6.0
Newfoundland and Labrador	7.6

Interpretation

Eastern Health

The **greatest burden of illness** for ischaemic heart disease by catchment area was demonstrated for Conception Bay Central.

- Values **above the median** were Bauline - Pouch Cove - Flatrock, Burin Peninsula, Clarenville, Conception Bay North - Trinity Bay South, Mount Pearl, Petty Harbour - Maddox Cove - Goulds - Kilbride, Southern Shore, and St. Mary's

The **lowest burden of illness** for ischaemic heart disease by catchment area was demonstrated for Logy Bay - Torbay - Middle Cove - Outer Cove.

- Values **below the median** were Bell Island, Bonavista, Conception Bay South, Paradise, Placentia - Whitbourne, Portugal Cove - St. Phillip's, and St. John's

Central Health

The **greatest burden of illness** for ischaemic heart disease by catchment area was demonstrated for Baie Verte.

- Values **above the median** were Gander, Grand Falls- Windsor, Isle Notre Dame, Kittiwake Coast, and Terra Nova

The [lowest burden of illness](#) for [ischaemic heart disease](#) by catchment area was demonstrated for Coast of Bays.

- Values **below the median** were Buchans, Exploits, Green Bay, and Lewisporte

Western Health

The greatest burden of illness for [ischaemic heart disease](#) by catchment area was demonstrated for Bonne Bay.

- Values **above the median** were Corner Brook, Deer Lake - White Bay, and Port Saunders

The [lowest burden of illness](#) for [ischaemic heart disease](#) by catchment area was demonstrated for Bay St. George and Burgeo.

- Value **below the median** was Port aux Basques

Labrador-Grenfell Health

The [greatest burden of illness](#) for [ischaemic heart disease](#) by catchment area was demonstrated for Innu Communities.

- Values **above the median** were Central Labrador and Labrador West

The [lowest burden of illness](#) for [ischaemic heart disease](#) by catchment area was demonstrated for Nunatsiavut Communities.

- Values **below the median** were Northern Peninsula and South East Labrador and Straits

[Regional and provincial comparators had a median value of 7.5; the highest rate was Central Health \(9.1\) and the lowest was Labrador-Grenfell Health \(6.0\). Eastern Health and the province were above the median and Western Health below it.](#)



9.0

Assessing Need

9.01 Merging Analytics

The relevant constituent analytics for assessing need in this study prior to applying models of care are, as follows:

- i. Populations
- ii. Age-Gender Adjusted Populations
- iii. Dependency Ratios
- iv. Core Services and Rurality
- v. Ambulatory Care Sensitive Conditions
- vi. Regular Healthcare Provider
- vii. Birth Rates and Mortality Rates
- viii. Burden of Illness
- ix. Emergency Department Utilization

i. Populations

Population indices are provided on pages 2 through 11 (1.01 to 1.08) of the data compendium. The relevant data are abstracted, first, at a high level and, then, with progressive granularity down to planning units. The following tabulations provide the [base populations by region](#) in 2017-2018 (to be considered the current state for the study) and [projections by region and primary healthcare service areas](#) from 2019 to 2029 (to be considered the future state for the study).¹⁴

The [percentage of the population of older adults](#) in Newfoundland and Labrador has a very similar distribution as the other Atlantic provinces and is greater than Canada, as a whole. In 2016, the percentage of the population > 65 years of age was 19.4% (18.6% male and 20.3% female).

Due to the significant rurality, especially in Labrador, the [population density](#) per sq. km. was very low in Newfoundland and Labrador (1.4 compared to 3.9 for Canada and from 10.5 to 25.1 in the other Atlantic provinces). The internal geographic variation of the population density in 2016 and the percentage change of populations from 2011 to 2016 was, as follows:

Geography	Percentage Change in Population (2011-2016)	Population Density per sq. km. (2016)
Province	1.0	1.4
Avalon Peninsula	3.0	29.3
Burin Peninsula	(4.6)	3.3
South Coast	(4.6)	0.8
St. George's	(2.2)	2.9
Humber District	2.5	4.1
Central Newfoundland	2.8	2.4
Bonavista / Trinity	(1.7)	3.5
Notre Dame Bay	(3.6)	3.8
Northern Peninsula	(7.0)	1.2
Labrador	2.2	0.1
Nunatsiavut	(2.3)	0.0

¹⁴ Age cohorts by gender are available in the data compendium

Physician Resource Forecast for Family Medicine

RHA and PHC Catchment	2017-2018	2019		2024		2029	
EASTERN HEALTH	Total	Male	Female	Male	Female	Male	Female
		157,334	161,737	157,237	163,159	158,500	165,917
Totals	325,768	319,071		320,396		324,417	
Bauline - Pouch Cove - Flatrock	4,267						
Bell Island	2,766						
Bonavista	8,090						
Burin Peninsula	20,735						
Clarenville	18,631						
Conception Bay Central	6,135						
Conception Bay North - Trinity Bay South	39,743						
Conception Bay South	26,692						
Logy Bay - Torbay - Middle Cove - Outer Cove	10,453						
Mount Pearl	23,944						
Paradise	21,764						
Petty Harbour - Maddox Cove - Goulds - Kilbride	8,065						
Placentia - Whitbourne	9,062						
Portugal Cove - St. Phillip's	8,173						
Southern Shore	7,522						
St. John's	107,416						
St. Mary's	2,310						

Physician Resource Forecast for Family Medicine

RHA and PHC Catchment	2017-2018	2019		2024		2029	
CENTRAL HEALTH	Total	Male	Female	Male	Female	Male	Female
		45,498	46,386	43,822	45,915	42,384	44,234
Totals	95,931	91,884		89,737		86,618	
Baie Verte	5,495						
Buchans	895						
Coast of Bays	7,127						
Exploits	9,777						
Gander	13,547						
Grand Falls - Windsor	15,513						
Green Bay	8,237						
Isle Notre Dame	10,329						
Kittiwake Coast	9,667						
Lewisporte	8,918						
Terra Nova	6,426						
RHA and PHC Catchment	2017-2018	2019		2024		2029	
WESTERN HEALTH	Total	Male	Female	Male	Female	Male	Female
		37,801	39,041	36,786	38,338	36,034	37,891
Totals	80,607	76,842		75,124		73,925	
Bay St. George	19,779						
Bonne Bay	4,524						
Burgeo	1,923						
Corner Brook - Bay of Islands	30,521						
Deer Lake - White Bay	12,634						
Port Saunders	2,554						
Port aux Basques	8,672						

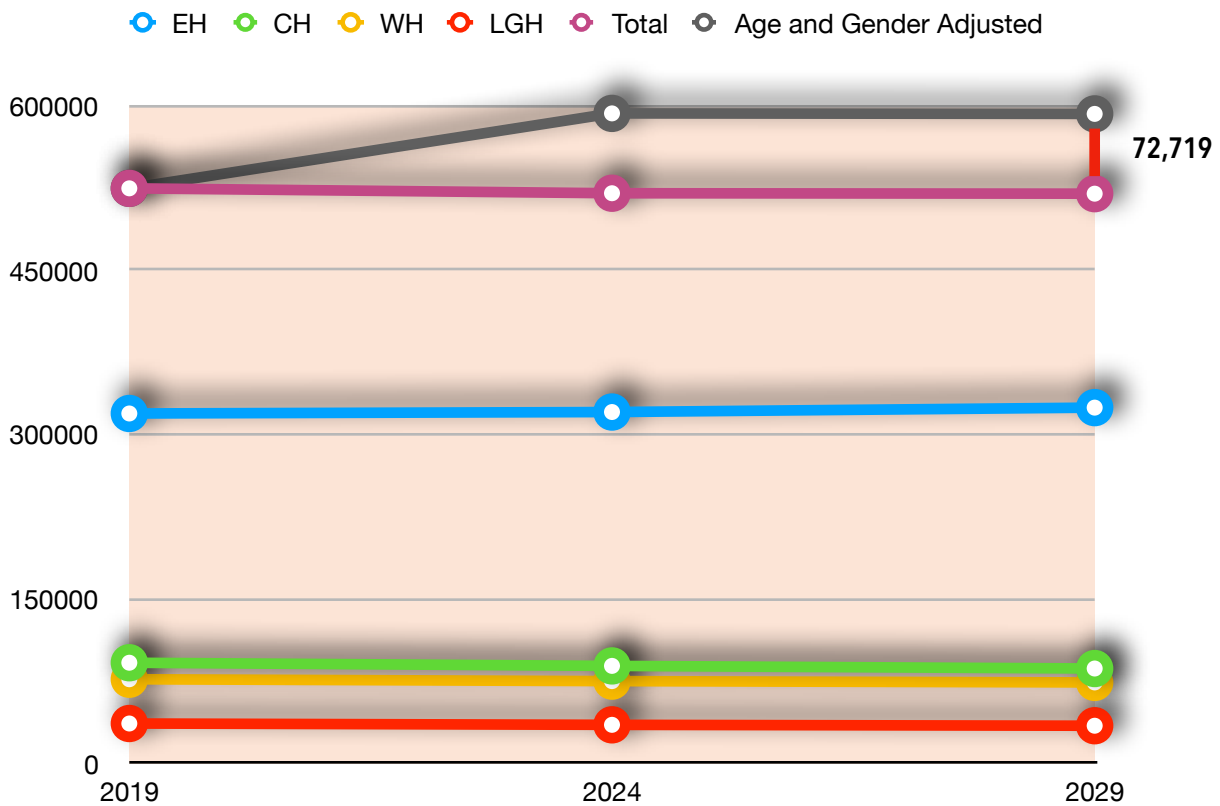
Physician Resource Forecast for Family Medicine

RHA and PHC Catchment	2017-2018	2019		2024		2029	
LABRADOR-GRENFELL HEALTH	Total	Male	Female	Male	Female	Male	Female
		18,579	17,918	17,794	17,496	17,226	17,242
Totals	37,150	36,497		35,290		34,468	
Central Labrador	8,574						
Innu Communities	2,981						
Labrador West	9,947						
Northern Peninsula	9,318						
Nunatsiavut Communities	2,615						
South East Labrador and Straits	3,715						
UNKNOWN	3,971						
PROVINCIAL TOTAL	543,327	524,294		520,547		519,428	

ii. Age-Gender Adjusted Populations

Age-gender adjusted populations through 2024 to 2029 are significant, as demonstrated in the reproduced graph for the province and four health regions:

The age-gender adjusted population demonstrates the impact of the projected population. Despite flat-line projections, the impact of age and gender on the healthcare system is equivalent to a population growth of approximately 14% (72,719). Focusing on the projected data and failure to plan for the adjusted data would result in an unprepared workforce over the next ten years.



In summary, the planning population over the next ten years is required to be approximately 592,149 at both year-five and year-ten, rather than the projected population of 519,428. The regional impacts are assumed to be symmetrical, as follows:

Eastern Health	369,835
Central Health	98,745
Western Health	84,275
Labrador-Grenfell Health	39,294

iii. Dependency Ratios

The calculated dependency ratios are significant across the planning cycle and regions. The burden of the ratios is reiterated due to a sizeable share of seniors aged 65 years or older and children and youth younger than age 20 are likely to be socially and/or economically dependent on working-age Canadians, and they may put additional demands on health services.

Health Region	Dependency Ratio 2019	Dependency Ratio 2029
Eastern Health	63.5	66.9
Central Health	79.6	101.9
Western Health	74.2	100.0
Labrador-Grenfell Health	65.1	78.3

The impact of a dependency ratio is assimilated, only in part, by the age-gender adjusted populations. The regional increases are disproportionate between 2019 and 2029:

- Eastern Health increases by 5.4%
- Central Health increases by 28.0%
- Western Health increases by 34.8%
- Labrador-Grenfell Health increases by 20.3%

The short-term planning challenge is to translate the increases in dependency ratios into a planning framework; it is important to ensure that the adjusted populations are also sensitive to the 0 to 19-year age cohorts as well as the wider age distributions. These younger cohorts, by five-year increments, by region are, as follows:

Health Region	2019	2024	2029
Eastern Health	61,659	60,508	59,539
Central Health	15,915	14,189	12,964
Western Health	13,168	12,149	11,617
Labrador-Grenfell Health	8,632	8,224	7,931

The symmetry of the changes in the younger age cohorts supports the position that, while the dependency ratios are significant measures, it can be assumed that the ten-year adjustment by age and gender to the regional populations is sufficient to include both ends of the age spectrum.

iv. Core Services and Rurality

Comprehensive family practice is more required and more likely to be identified in non-urban settings, specifically outside of St. John's, Gander, Grand Falls - Windsor, and Corner Brook. This can be further supported by identified measures (and impact) of rurality.

The underpinning issues for planning projections are, therefore:

- Critical mass to function in a sustainable and competent manner
- Access
- Provision of care close to home when safe
- Digital health and virtual care

Rurality can be implied, or measured using the formula suggested in the report. The formulaic approach may be less useful in Newfoundland and Labrador, considering the clearly delineated urban settings and the potential impact of incremental adoption of the full collaborative team approach with rural outreach. Therefore, for planning and projection purposes focused on family physicians, core services and rurality will be addressed through models of care.

Inaction will perpetuate the adverse outcomes in rural settings; however, implementation of models of care will address access, care close to home, and virtual care.

This approach is germane to each of base case planning, low case planning, and high case planning.

v. Ambulatory Care Sensitive Conditions

Rates of ambulatory care sensitive conditions (ACSC) have been presented and defended as key indicators of accessible and evidence-based primary care, for both planning and tracking purposes. They are essential elements for each of planning projections, needs-based analyses, and models of care.

In the current state, all four regions performed below average compared to Canada, with Central Health and Eastern Health performing better than the provincial average and Labrador-Grenfell Health and Western Health performing worse.

It can be anticipated that corresponding FTE adjustments and models of care will improve the ACSC rates and will be incorporated, particularly, in Labrador-Grenfell Health and Western Health. It is also anticipated that ACSC metrics will improve in Central Health and Eastern Health in parallel with the physician resource plan for the province.

vi. Regular Healthcare Provider

The study indicated the instability of data that underpin reporting of a regular healthcare provider; that notwithstanding, a modest estimate is that 10% or approximately 50,000 residents of Newfoundland and Labrador do not have a regular provider.¹⁵ The realistic threshold of acceptability is generally considered to be 5%.

The greatest deficiency is in Labrador-Grenfell Health, with the other three regions consonant with the provincial reporting.

The CIHI data by region (percentage of population without provider) suggest that closer to 13% of the population do not have a regular healthcare provider and will be viewed as 2019 numbers:

Eastern Health	31,907
Central Health	9,188
Western Health	9,221
Labrador-Grenfell Health	16,789

The ten-year planning projections will incorporate the absence of a regular healthcare provider in the context of both full-time equivalency of family physicians and models of care.

¹⁵ The actual number may be higher, up to 20%

vii. Birth Indices and Mortality Rates

In 2005, Newfoundland and Labrador outperformed Canada for low birth weights, largely due to Central Health, Western Health, and Labrador-Grenfell Health. The same distribution was seen for pre-term births. In 2015, the best results for low birth weights were in Labrador-Grenfell Health and Western Health; Eastern Health and the province out-performed Canada and Central Health had the least favourable rate. For pre-term births, Western Health had the best results, while Canada outperformed the province and the other three regions.

The highest and lowest birth rates by primary healthcare planning areas were identified and will be cross-checked with the final projections.

Continued monitoring is essential (the next national reporting is anticipated in 2020).

While birth indices are relevant for planning, additional adjustments are not anticipated beyond full-time equivalency and models of care.

The areas with the highest adjusted mortality rates are, as follows:

- Eastern Health (Bell Island, Bonavista, St. Mary's, Placentia/Whitbourne, and Conception Bay South and Trinity Bay South)
- Central Health (Buchans, Lewisporte, and Grand Falls - Windsor)
- Western Health (Port Saunders and Bay St. George)
- Labrador-Grenfell Health (South East Labrador and Straits, and Northern Peninsula)

Mortality rates can be significant for planning purposes, but only in combination with data that reflect chronic diseases, demographics, and social determinants.

In summary, these data are particularly useful as decision points if other data are equivocal rather than as stand-alone parameters.

viii. Burden of Illness

Eastern Health	Greatest Burden	Above Median	Lowest Burden	Below Median
Arthritis	For both 2017 and 2018, By age cohorts and percentage of the populations, arthritis was more prevalent in Newfoundland and Labrador than in Canada. This has implications for primary care and chronic disease management; however, one possible weakness in the data is variance in diagnostic criteria and functional limitations.			
Asthma	Southern Shore Burin Peninsula Clarenville	Bauline - Pouch Cove - Flatrock Conception Bay South Petty Harbour - Maddox Cove - Goulds - Kilbride Logy Bay - Torbay - Middle Cove - Outer Cove Mount Pearl Portugal Cove - St. Phillip's	Bell Island	Bonavista Conception Bay Central Conception Bay North - Trinity Bay South Paradise Placentia - Whitbourne St. John's St. Mary's
Chronic Obstructive Pulmonary Disease	Southern Shore St. Mary's	Bauline - Pouch Cove - Flatrock Bell Island Conception Bay Central Conception Bay North - Trinity Bay South Conception Bay South Logy Bay - Torbay - Middle Cove - Outer Cove Petty Harbour - Maddox Cove - Goulds - Kilbride	Bonavista	Burin Peninsula Clarenville Mount Pearl Paradise Placentia - Whitbourne Portugal Cove - St. Phillip's St. John's
Diabetes Mellitus	Bell Island	Bonavista Burin Peninsula Clarenville Conception Bay North - Trinity Bay South Conception Bay South Placentia - Whitbourne Southern Shore St. Mary's	Logy Bay - Torbay - Middle Cove - Outer Cove Paradise Portugal Cove - St. Phillip's St. John's	Bauline - Pouch Cove - Flatrock Mount Pearl Conception Bay Central Petty Harbour - Maddox Cove - Goulds - Kilbride

Physician Resource Forecast for Family Medicine

Eastern Health	Greatest Burden	Above Median	Lowest Burden	Below Median
Hypertension	Conception Bay Central	Bauline - Pouch Cove - Flatrock Burin Peninsula Conception Bay North - Trinity Bay South Conception Bay South Mount Pearl Paradise Petty Harbour - Maddox Cove - Goulds - Kilbride St. Mary's	Bonavista	Bell Island Clarenville Logy Bay - Torbay - Middle Cove - Outer Cove Placentia - Whitbourne Portugal Cove - St. Phillip's Southern Shore St. John's
Acute Myocardial Infarction	Burin Peninsula Clarenville Conception Bay North - Trinity Bay South	Bauline - Pouch Cove - Flatrock Bell Island Bonavista Conception Bay Central Mount Pearl Petty Harbour - Maddox Cove - Goulds - Kilbride Southern Shore	Logy Bay - Torbay - Middle Cove - Outer Cove Portugal Cove - St. Phillip's St. John's St. Mary's	Conception Bay South Paradise Placentia - Whitbourne
Stroke	Conception Bay Central St. Mary's	Bell Island Clarenville Conception Bay North - Trinity Bay South Conception Bay South Petty Harbour - Maddox Cove - Goulds - Kilbride Southern Shore St. John's	Bonavista	Bauline - Pouch Cove - Flatrock Burin Peninsula Logy Bay - Torbay - Middle Cove - Outer Cove Mount Pearl Paradise Placentia - Whitbourne Portugal Cove - St. Phillip's

Physician Resource Forecast for Family Medicine

Eastern Health	Greatest Burden	Above Median	Lowest Burden	Below Median
Congestive Heart Failure	Southern Shore	Bauline - Pouch Cove - Flatrock Bell Island Bonavista Burin Peninsula Clarenville Conception Bay Central Conception Bay North - Trinity Bay South Conception Bay South Paradise Placentia - Whitbourne	Petty Harbour - Maddox Cove - Goulds - Kilbride	Logy Bay - Torbay - Middle Cove - Outer Cove Mount Pearl Portugal Cove - St. Phillip' St. John's St. Mary's
Ischaemic Heart Disease	Conception Bay Central	Bauline - Pouch Cove - Flatrock Burin Peninsula Clarenville Conception Bay North - Trinity Bay South Mount Pearl Petty Harbour - Maddox Cove - Goulds - Kilbride Southern Shore St. Mary's	Logy Bay - Torbay - Middle Cove - Outer Cove	Bell Island Bonavista Conception Bay South Paradise Placentia - Whitbourne Portugal Cove - St. Phillip's St. John's

Central Health	Greatest Burden	Above Median	Lowest Burden	Below Median
Arthritis	For both 2017 and 2018, By age cohorts and percentage of the populations, arthritis was more prevalent in Newfoundland and Labrador than in Canada. This has implications for primary care and chronic disease management; however, one possible weakness in the data is variance in diagnostic criteria and functional limitations.			
Asthma	Terra Nova Buchans Lewisporte	Gander Green Bay Isle Notre Dame Kittiwake Coast	Coast of Bays	Baie Verte Exploits Grand Falls-Windsor
Chronic Obstructive Pulmonary Disease	Buchans Lewisporte	Exploits Grand Falls - Windsor Green Bay	Coast of Bays Terra Nova	Gander Isle Notre Dame Kittiwake Coast

Physician Resource Forecast for Family Medicine

Central Health	Greatest Burden	Above Median	Lowest Burden	Below Median
Diabetes Mellitus	Coast of Bays	Buchans Exploits Isle Notre Dame Kittiwake Coast Lewisporte Terra Nova	Baie Verte Green Bay	Gander Grand Falls - Windsor
Hypertension	Baie Verte Gander	Buchans Green Bay Kittiwake Coast Terra Nova	Coast of Bays	Exploits Grand Falls - Windsor Isle Notre Dame Lewisporte
Acute Myocardial Infarction	Kittiwake Coast	Baie Verte Exploits Grand Falls - Windsor Terra Nova	Green Bay	Buchans Coast of Bays Gander Lewisporte
Stroke	Baie Verte	Exploits Grand Falls - Windsor Isle Notre Dame Kittiwake Coast Lewisporte Green Bay	Coast of Bays Gander	Buchans Terra Nova
Congestive Heart Failure	Buchans	Baie Verte Gander Isle Notre Dame Kittiwake Coast Terra Nova	Grand Falls - Windsor Lewisporte	Coast of Bays Exploits Green Bay
Ischaemic Heart Disease	Baie Verte	Gander Grand Falls - Windsor Isle Notre Dame Kittiwake Coast Terra Nova	Coast of Bays	Buchans Exploits Green Bay Lewisporte

Western Health	Greatest Burden	Above Median	Lowest Burden	Below Median
Arthritis	For both 2017 and 2018, By age cohorts and percentage of the populations, arthritis was more prevalent in Newfoundland and Labrador than in Canada. This has implications for primary care and chronic disease management; however, one possible weakness in the data is variance in diagnostic criteria and functional limitations.			

Physician Resource Forecast for Family Medicine

Western Health	Greatest Burden	Above Median	Lowest Burden	Below Median
Asthma	Corner Brook	Bonne Bay Deer Lake - White Bay Port aux Basques	Burgeo	Bay St. George Port Saunders
Chronic Obstructive Pulmonary Disease	Corner Brook	Bonne Bay Deer Lake - White Bay Port aux Basques	Burgeo	Bay St. George Port Saunders
Diabetes Mellitus	Port aux Basques	Bay St. George Burgeo Deer Lake - White Bay Port Saunders	Bonne Bay Corner Brook	Nil
Hypertension	Port aux Basques	Corner Brook Deer Lake - White Bay Port Saunders	Burgeo	Bay St. George Bonne Bay
Acute Myocardial Infarction	Port Saunders	Bonne Bay Deer Lake - White Bay Port aux Basques	Deer Lake - White Bay	Bay St. George Burgeo
Stroke	Port Saunders	Corner Brook Deer Lake - White Bay Port aux Basques	Burgeo	Bay St. George Bonne Bay
Congestive Heart Failure	Corner Brook	Deer Lake - White Bay Port Saunders Port aux Basques	Bay St. George Burgeo	Bonne Bay
Ischaemic Heart Disease	Bonne Bay	Corner Brook Deer Lake - White Bay Port Saunders	Bay St. George Burgeo	Port aux Basques

Physician Resource Forecast for Family Medicine

Labrador-Grenfell Health	Greatest Burden	Above Median	Lowest Burden	Below Median
Arthritis	For both 2017 and 2018, By age cohorts and percentage of the populations, arthritis was more prevalent in Newfoundland and Labrador than in Canada. This has implications for primary care and chronic disease management; however, one possible weakness in the data is variance in diagnostic criteria and functional limitations.			
Asthma	Labrador West	Central Labrador Northern Peninsula	Innu Communities Nunatsiavut Communities	South East Labrador and Straits
Chronic Obstructive Pulmonary Disease	Labrador West	Innu Communities Nunatsiavut Communities	South East Labrador and Straits	Central Labrador Northern Peninsula
Diabetes Mellitus	Innu Communities	Northern Peninsula South Eastern Labrador and Straits	Nunatsiavut Communities	Central Labrador Labrador West
Hypertension	Labrador West	Innu Communities	South East Labrador and Straits	Central Labrador Northern Peninsula Nunatsiavut Communities
Acute Myocardial Infarction	Innu Communities	Central Labrador Labrador West	South East Labrador and Straits	Northern Peninsula Nunatsiavut Communities
Stroke	Nunatsiavut Communities	Central Labrador Innu Communities	South East Labrador and Straits	Labrador West Northern Peninsula
Congestive Heart Failure	Innu Communities	Central Labrador Labrador West	Nunatsiavut Communities South East Labrador and Straits	Northern Peninsula
Ischaemic Heart Disease	Innu Communities	Central Labrador Labrador West	Nunatsiavut Communities	Northern Peninsula South East Labrador and Straits

Interpretation of Burden of Illness

Assessing burden of illness by primary healthcare service areas is essential for planning and projections. The tabulations are applied through the following criteria:

- Any primary healthcare service area with the highest burden of illness for any chronic disease subset is identified across all regions
- Any primary healthcare service area with greater than one highest or lowest burden of illness across all regions is identified further (underlined)
- A secondary list is identified for those primary healthcare service area with the lowest burden of illness across all regions for any chronic disease subset
- It is observed that there is no revealing pattern between those primary healthcare service areas above the median and those below the median

Chronic Disease	Highest Burden EH	Highest Burden CH	Highest Burden WH	Highest Burden LGH
Asthma	<u>Southern Shore</u> <u>Burin Peninsula</u> <u>Clareville</u>	Terra Nova <u>Buchans</u> <u>Lewisporte</u>	<u>Corner Brook</u>	<u>Labrador West</u>
Chronic Obstructive Pulmonary Disease	<u>Southern Shore</u> <u>St. Mary's</u>	<u>Buchans</u> <u>Lewisporte</u>	<u>Corner Brook</u>	<u>Labrador West</u>
Diabetes Mellitus	Bell Island	Coast of Bays	<u>Port aux Basques</u>	<u>Innu Communities</u>
Hypertension	<u>Conception Bay</u> <u>Central</u>	<u>Baie Verte</u> Gander	<u>Port aux Basques</u>	<u>Labrador West</u>
Acute Myocardial Infarction	<u>Burin Peninsula</u> <u>Clareville</u> Conception Bay North - Trinity Bay South	Kittiwake Coast	Port Saunders	<u>Innu Communities</u>
Stroke	<u>Conception Bay</u> <u>Central</u> <u>St. Mary's</u>	<u>Baie Verte</u>	<u>Port Saunders</u>	Nunatsiavut Communities
Congestive Heart Failure	<u>Southern Shore</u>	<u>Buchans</u>	<u>Corner Brook</u>	<u>Innu Communities</u>
Ischaemic Heart Disease	<u>Conception Bay</u> <u>Central</u>	<u>Baie Verte</u>	Bonne Bay	<u>Innu Communities</u>

Physician Resource Forecast for Family Medicine

Chronic Disease	Lowest Burden EH	Lowest Burden CH	Lowest Burden WH	Lowest Burden LGH
Asthma	Southern Shore Burin Peninsula Clareville	Coast of Bays	Burgeo	Innu Communities Nunatsiavut Communities
Chronic Obstructive Pulmonary Disease	Southern Shore St. Mary's	Coast of Bays Terra Nova	Burgeo	South East Labrador and Straits
Diabetes Mellitus	Bell Island	Baie Verte Green Bay	Bonne Bay Corner Brook	Nunatsiavut Communities
Hypertension	Conception Bay Central	Coast of Bays	Burgeo	South East Labrador and Straits
Acute Myocardial Infarction	Burin Peninsula Clareville Conception Bay North - Trinity Bay South	Green Bay	Deer Lake - White Bay	South East Labrador and Straits
Stroke	Conception Bay Central St. Mary's	Coast of Bays Gander	Burgeo	South East Labrador and Straits
Congestive Heart Failure	Petty Harbour - Maddox Cove - Goulds - Kilbride	Grand Falls - Windsor Lewisporte	Bay St. George Burgeo	Nunatsiavut Communities South East Labrador and Straits
Ischaemic Heart Disease	Logy Bay - Torbay - Middle Cove - Outer Cove	Coast of Bays	Bay St. George Burgeo	Nunatsiavut Communities

The highest burden primary healthcare service areas and lowest burden primary healthcare service areas will be variables applied to planning and projections.

9. Emergency Department Utilization

Emergency department utilization data are available on pages 44 through 46 (3.01) of the data compendium.¹⁶ The key metrics are Canadian Triage and Acuity Scale (CTAS) scores for the use of emergency departments by residents of primary healthcare service areas. Prominence of CTAS 1 and 2 scores reflect high acuity and may indicate an issue of access to evidence-based care. Prominence of CTAS 4 and 5 reflect low acuity that, typically, does not require care in an emergency department and may indicate an issue of access or under-service. The following tables are computed to demonstrate ED usage:

CTAS Level	Levels 1 and 2	Level 4	Level 5	Total
EASTERN HEALTH	1 = resuscitation / 2 = emergent / 4 = less urgent / 5 = non-urgent			
Bauline - Pouch Cove - Flatrock	8.7%	43.6%	3.8%	2,414
Bell Island	1.5%	33.5%	34.5%	5,846
Bonavista	2.7%	47.8%	9.6%	12,107
Burin Peninsula	1.7%	60.4%	17.3%	32,768
Clarenville	6.5%	52.4%	4.8%	21,716
Conception Bay Central	7.6%	42.1%	6.6%	3,681
Conception Bay North - Trinity Bay South	3.7%	54.9%	8.2%	37,986
Conception Bay South	8.2%	41.6%	3.9%	13,793
Logy Bay - Torbay - Middle Cove - Outer Cove	6.6%	43.9%	4.0%	4,973
Mount Pearl	8.8%	42.2%	4.8%	13,824
Paradise	6.6%	45.1%	4.1%	12,423
Petty Harbour - Maddox Cove - Goulds - Kilbride	8.2%	43.4%	5.8%	4,844
Placentia - Whitbourne	2.9%	45.7%	16.6%	9,501
Portugal Cove - St. Phillip's	0.7%	43.1%	4.2%	4,043
Southern Shore	11.8%	36.8%	4.7%	3,512
St. John's	8.8%	41.6%	5.0%	63,564
St. Mary's	8.1%	39.2%	4.7%	1,286
REGIONAL TOTAL	6.0%	47.6%	8.3%	248,281

¹⁶ This section is followed in the data compendium by the number of acute hospitalizations by primary healthcare service areas; the focus on hospitalization is transferred in this study to ACSC rates

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CTAS Level	Levels 1-2	Level 4	Level 5	Total
CENTRAL HEALTH	1 = resuscitation / 2 = emergent / 4 = less urgent / 5 = non-urgent			
Baie Verte	1.0%	35.4%	46.6%	7,009
Buchans	3.6%	23.4%	29.4%	1,699
Coast of Bays	2.3%	33.3%	28.0%	8,581
Exploits (data invalid due to large number unknown)	2.7%	34.5%	19.6%	13,007
Gander	1.5%	60.3%	10.4%	11,709
Grand Falls - Windsor	5.1%	50.1%	20.3%	14,718
Green Bay	2.5%	33.4%	28.1%	8,927
Isle Notre Dame (data invalid due to large number unknown)	0.5%	8.1%	1.6%	18,904
Kittiwake Coast (data invalid due to large number unknown)	1.3%	42.3%	5.7%	7,054
Lewisporte	3.7%	62.3%	11.9%	8,947
Terra Nova	2.5%	57.8%	7.6%	4,790
REGIONAL TOTAL	2.3%	38.4%	16.7%	105,345
WESTERN HEALTH	1 = resuscitation / 2 = emergent / 4 = less urgent / 5 = non-urgent			
Bay St. George	0.9%	72.1%	7.0%	29,381
Bonne Bay (data invalid due to large number unknown)	1.3%	6.8%	1.6%	4,512
Burgeo	3.0%	20.8%	10.0%	1,841
Corner Brook - Bay of Islands	4.5%	54.2%	16.6%	29,371
Deer Lake - White Bay	5.7%	49.9%	11.5%	7,101
Port Saunders (data invalid due to large number unknown)	0.2%	2.5%	1.2%	6,392
Port aux Basques	1.5%	54.7%	11.0%	7,209
REGIONAL TOTAL	2.6%	53.0%	10.3%	85,807

Physician Resource Forecast for Family Medicine

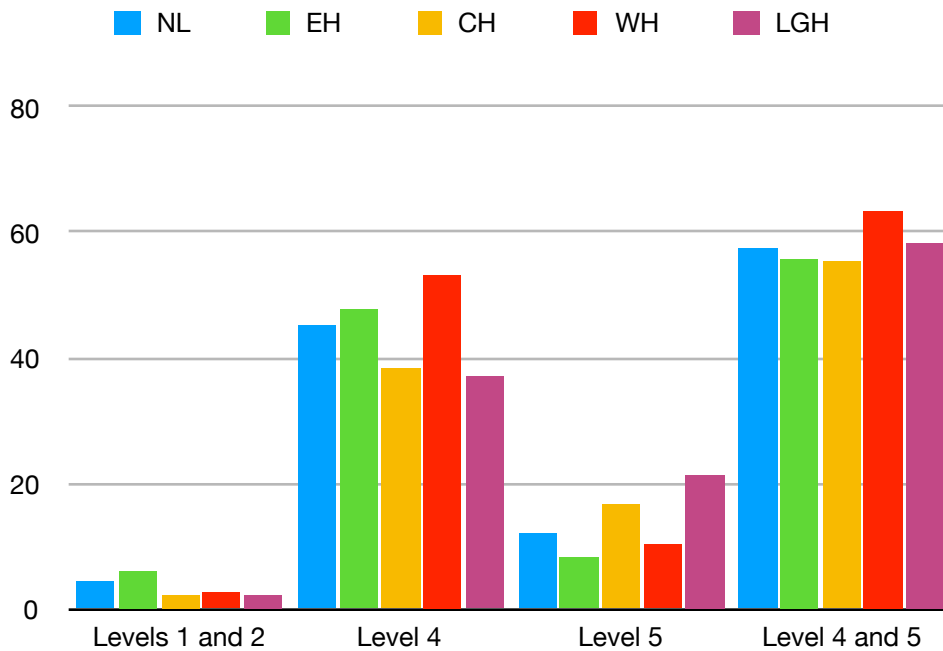
CTAS Level	Levels 1-2	Level 4	Level 5	Total
LABRADOR-GRENFELL HEALTH	1 = resuscitation / 2 = emergent / 4 = less urgent / 5 = non-urgent			
Central Labrador	5.9%	47.9%	12.3%	11,464
Innu Communities	4.4%	44.3%	13.7%	7,264
Labrador West	0.9%	48.3%	38.7%	17,681
Northern Peninsula (data invalid due to large number unknown)	0.8%	20.9%	17.1%	16,959
Nunatsiavut Communities (data invalid due to large number unknown)	3.2%	31.5%	11.5%	3,075
South East Labrador and Straits (data invalid due to large number unknown)	1.4%	12.9%	9.6%	3,675
REGIONAL TOTAL	2.4%	37.0%	21.4%	60,118
UNKNOWN	320	3,058	811	6,597
PROVINCIAL TOTAL	4.2%	45.3%	12.0%	506,148

CTAS scores are imperfect but the aggregate by selected levels are good indicators of primary care access. The imperfections of CTAS scores are consistency in scoring and the impact of patient choice. Levels 1 and 2 are anticipated to be low percentages; levels 4 and, especially 5, may indicate access issues as indicators of care that typically would be provided in a primary care setting. Further, rural hospitals have a number of unique characteristics, typically in the supply of medical and nursing staff.

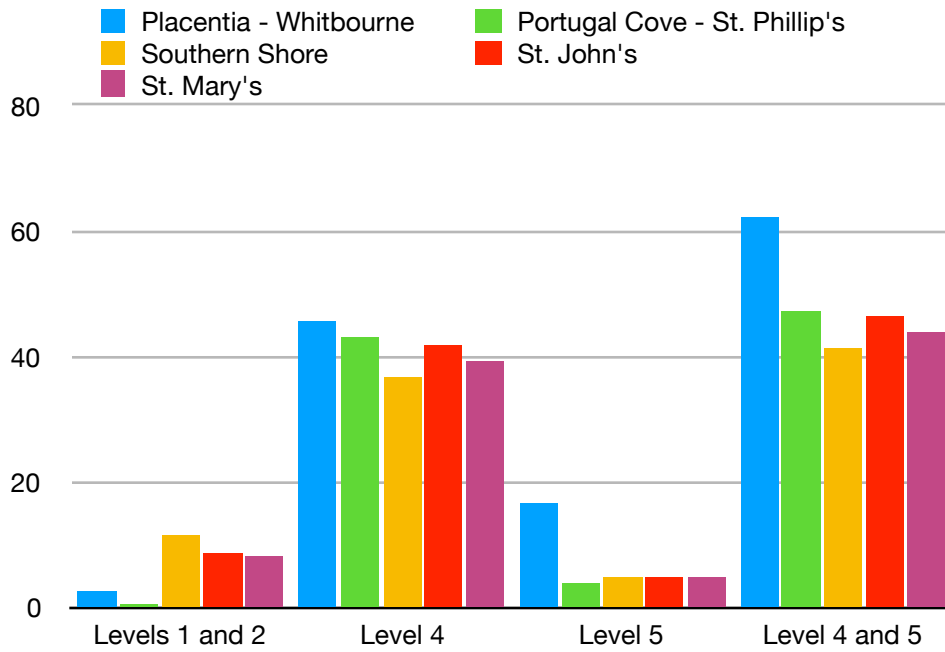
CTAS scoring criteria are reviewed and revised every four years. There is no absolute standard to assess the propriety of CTAS scores.; however, conservatively, greater than 50% scores for levels 4 and 5 may suggest primary care under-service or inadequate access. Nonetheless, it has been noted that 7.6% of non-urgent cases result in hospitalization.

The following charts compare provincial and regional data in Newfoundland and Labrador:

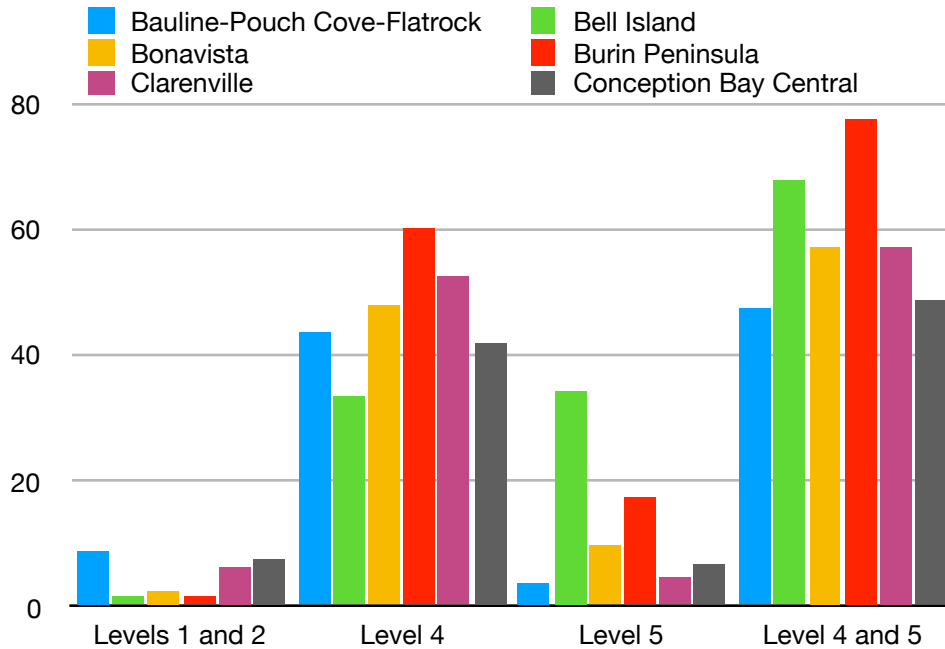
CTAS Comparisons for Newfoundland and Labrador and Regions



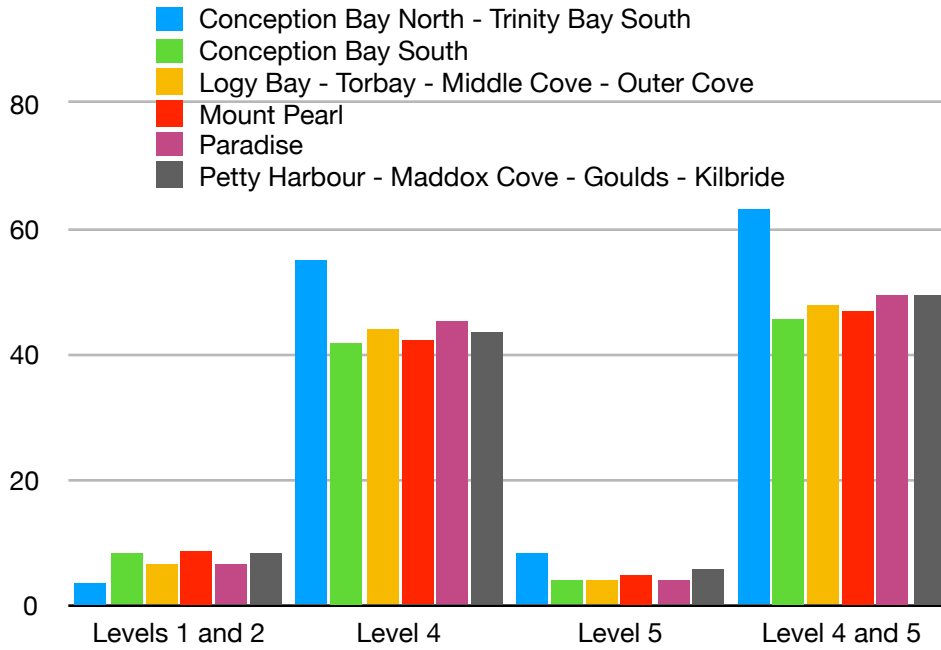
CTAS Comparisons for Eastern Health (1 of 3)



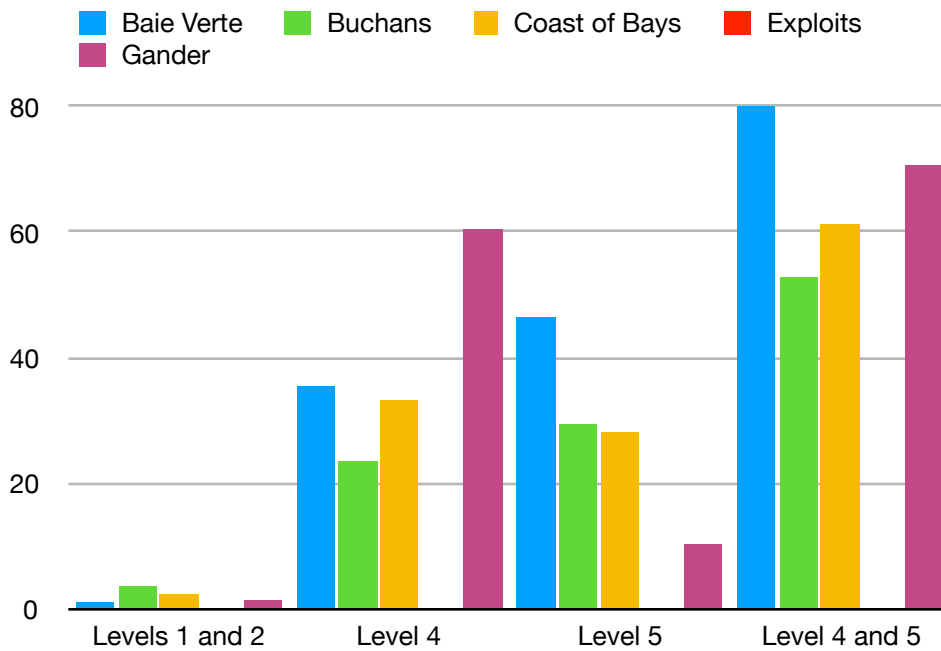
CTAS Comparisons for Eastern Health (2 of 3)



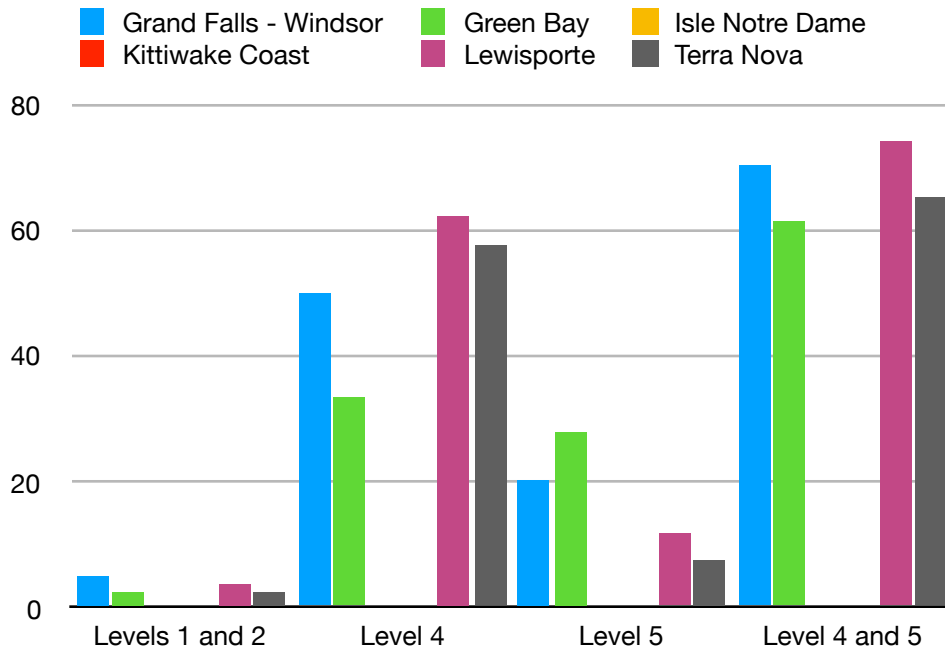
CTAS Comparisons for Eastern Health (3 of 3)



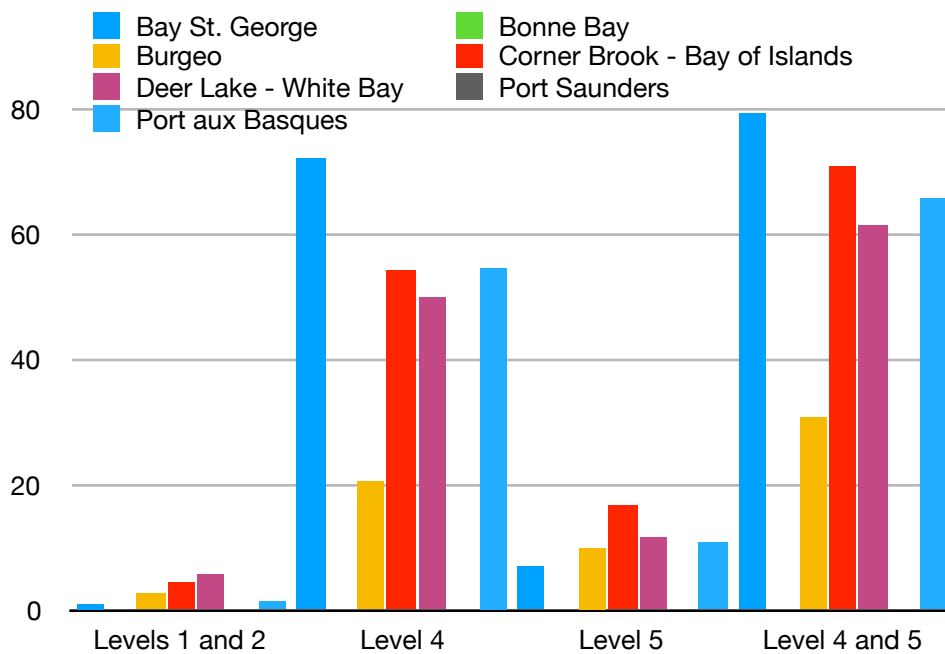
CTAS Comparisons for Central Health (1 of 2)



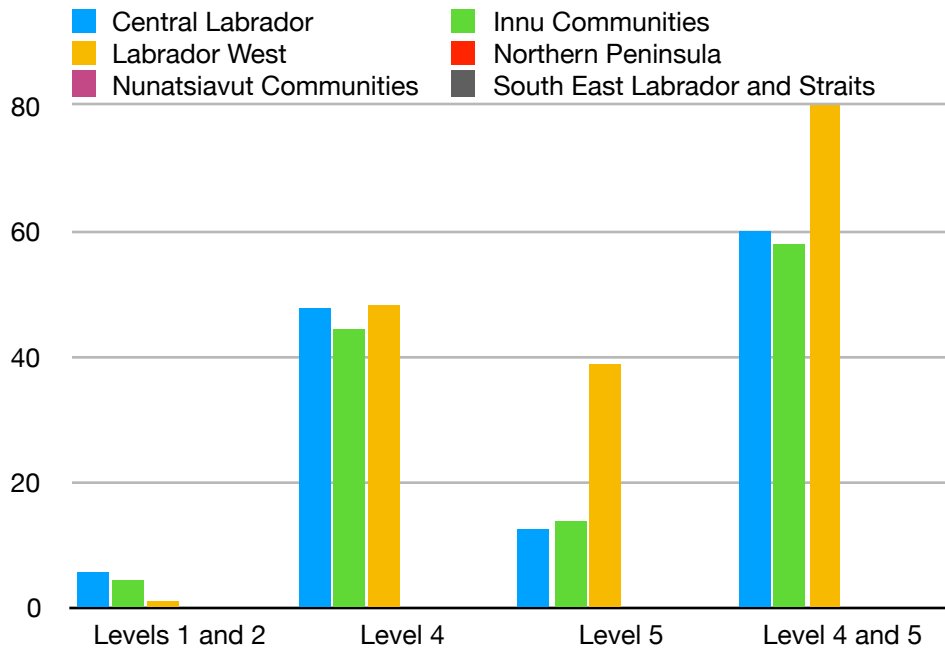
CTAS Comparisons for Central Health (2 of 2)



CTAS Comparisons for Western Health



CTAS Comparisons for Labrador-Grenfell Health



Observations on CTAS Scores

- Provincial and regional comparisons reveal generally high Level 4 and 5 scores, largely due to high scores for Level 4, especially for Western Health
- Within the regions the Level 4 and 5 scores tend to be higher than ideal
- For Eastern Health:
 - Highest Level 4 and 5 scores are seen for Burin Peninsula, Bell Island, Conception Bay North - Trinity Bay South, and Placentia - Whitbourne
 - Highest Level 4 scores are seen for Burin Peninsula, Clarendville, Bonavista, Conception Bay North - Trinity Bay South, and Placentia - Whitbourne
 - Highest Level 5 scores are seen for Bell Island, Burin Peninsula, and Placentia - Whitbourne

CTAS scores indicate early attention may be required for Bell Island, Burin Peninsula, Placentia - Whitbourne; additional attention may be required for Conception Bay North - Trinity Bay South

- For Central Health:
 - Highest Level 4 and 5 scores are seen generally for all primary healthcare service areas, especially Baie Verte and Gander
 - Highest Level 4 scores are seen for Gander, Grand Falls - Windsor, Lewisporte, and Terra Nova
 - Highest Level 5 scores are seen for Baie Verte and Green Bay

CTAS scores indicate early attention may be required for Baie Verte and Gander; additional attention may be required for Green Bay

- For Western Health:
 - Highest Level 4 and 5 scores are seen for Port aux Basque, Corner Brook - Bay of Islands, and Bay St. George
 - Highest Level 4 scores are seen for Port aux Basque, Bay St. George, and Deer Lake - White Bay
 - Highest Level 5 scores are seen for Corner Brook - Bay of Islands

CTAS scores indicate early attention may be required for Corner Brook - Bay of Islands, Port aux Basques, and Bay St. George

- For Labrador-Grenfell Health:
 - Highest Level 4 and 5 scores are seen for the three areas with valid data
 - Highest Level 4 scores are seen for Central Labrador, Innu Communities, and Labrador West
 - Highest Level 5 scores are seen for Labrador West

CTAS scores indicate early attention may be required for Labrador West; however, the overall scores suggest additional attention for all primary healthcare areas, likely to include those without valid data

9.02 Interpretation of Parameters of Need

Key points in assessing need are summarized, as follows:

- Low population density
- Flat or decreased population numbers over the ten planning years
- Age-gender adjusted populations have a increased planning impact of approximately 14%
- Core services and rurality are essential planning parameters and will be addressed through models of care
- Current below average ambulatory care sensitive condition rates will be addressed through full-time equivalent adjustments and models of care, especially in Labrador-Grenfell Health and Western Health
- The absence of a regular healthcare provider is significant and will be addressed through full-time equivalent adjustments and models of care
- Birth indices are relevant but will not generate adjustments beyond full-time equivalent adjustments and models of care; applications are useful, however, if other data are equivocal
- Mortality rates can be significant for planning purposes, but only in combination with data that reflect chronic diseases, demographics, and social determinants
- The highest burden primary healthcare service areas and, to a lesser degree, lowest burden primary healthcare service areas will be important variables applied to planning and projections
- CTAS scores indicate early attention may be required for Bell Island, Burin Peninsula, Placentia - Whitbourne; additional attention may be required for Conception Bay North - Trinity Bay South
- CTAS scores indicate early attention may be required for Baie Verte and Gander; additional attention may be required for Green Bay
- CTAS scores indicate early attention may be required for Corner Brook - Bay of Islands, Port aux Basques, and Bay St. George
- CTAS scores indicate early attention may be required for Labrador West; however, the overall scores suggest additional attention for all primary healthcare service areas in Labrador, likely to include those without valid data



10.0

Assessing Supply

10.01 Merging Analytics

The relevant constituent analytics for assessing supply in this study prior to applying models of care are, as follows:

- i. Current state profile of family physicians in Newfoundland and Labrador
- ii. New entrants to family medicine
- iii. Counts and full-time equivalency by site of practice and catchment area - Eastern Health
- iv. Counts and full-time equivalency by site of practice and catchment area - Central Health
- v. Counts and full-time equivalency by site of practice and catchment area - Western Health
- vi. Counts and full-time equivalency by site of practice and catchment area - Labrador-Grenfell Health
- vii. Gender adjustment
- viii. Benchmarking

i. New Entrants to Family Medicine

The Faculty of Medicine at Memorial University of Newfoundland (MUN) has targeted 50% of 80 annual admissions for family medicine. Distributed education has provided a modest contribution to retention in rural settings.

Retention of MUN graduates by year of graduation and continuing practice in the province has fallen recently; data by year of graduation between 2006 and 2014 has been in the 20% range (with lower exceptions); however, more recent graduation years have shown decline (11.6% for 2016 and 11.3% for 2017).

The base case will assume that the retention stays at the current number of 8.0 for family medicine and that 4.0 provide comprehensive family medicine services, and that half of these are female.

As already indicated, 39.6% of Newfoundland and Labrador family physicians were internationally trained and it is not unusual for these physicians to remain for 2.5 years. Central Health has a particularly significant dependency on international graduates.

ii. Counts and Full-Time Equivalency by Site of Practice and Catchment Area - Eastern Health

Thirty-six practice communities (work city town) and ten primary healthcare service areas are identified in Eastern Health; as well, there are a large number of smaller communities.

Community FTE counts (to include part-time practice and to exclude those family physicians who work full-time in emergency departments, hospitalist care, administration, and subspecialty care) have been estimated for the 36 practice communities (and catchment areas); these provide natural planning units and are summarized, as follows:

Work City Town	FTE Count	Catchment Area
Arnold's Cove	0.60	Clareville and area / Come by Chance and area
Avondale	1.00	Conception Bay Central / Holyrood and area
Bay Bulls	5.66	Southern Shore and area
Bay L'Argent	1.00	Burin Peninsula / St. Bernard's / Placentia West and area
Bay Roberts	3.75	Conception Bay North / Trinity Bay South / Bay Roberts and area
Bonavista	6.00	Bonavista and area
Burin	2.00	Burin Peninsula / Marystown / Burin and area
Burin Bay Arm	3.25	Burin Peninsula / Marystown / Burin and area
Carbonear	8.25	Conception Bay North / Trinity Bay South / Harbour Grace / Carbonear
Catalina	2.00	Bonavista and area
Clareville	11.00	Clareville and area
Clarke's Beach	1.00	Conception Bay North / Trinity Bay South / Bay Roberts and area
Conception Bay South	17.50	St. John's Metro Region 3
Goulds	1.00	St. John's Metro Region 7
Grand Bank	5.00	Burin Peninsula / Grand Bank / Fortune and area
Harbour Grace	3.00	Conception Bay North / Trinity Bay South / Harbour Grace / Carbonear
Holyrood	1.00	Conception Bay Central / Holyrood and area

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Work City Town	FTE Count	Catchment Area
Marystown	2.00	Burin Peninsula / Marystown / Burin and area
Mount Pearl	16.00	St. John's Metro Region 5
Old Perlican	3.00	Conception Bay North / Trinity Bay South / Old Perlican and area
Paradise	6.75	St. John's Metro Region 6
Placentia	2.50	Placentia / Whitbourne and area
Port Blandford	1.00	Clarenville and area / Lethbridge and area
Portugal Cove - St. Phillips	5.00	St. John's Metro Region 8
South River	1.00	Conception Bay North / Trinity Bay South / Bay Roberts and area
Spaniard's Bay	1.00	Conception Bay North / Trinity Bay South / Harbour Grace / Carbonear
St. John's	150.45	St. John's Metro Region 9
St. Lawrence	2.00	Burin Peninsula / St. Lawrence
St. Mary's	1.00	St. Mary's and area
Torbay	3.00	St. John's Metro Region 4
Trepassy	1.00	Southern Shore and area
Upper Island Cove	1.00	Conception Bay North / Trinity Bay South / Harbour Grace / Carbonear
Wabana	4.20	Bell Island
Western Bay	1.00	Conception Bay North / Trinity Bay South / Harbour Grace / Carbonear
Whitbourne	5.00	Placentia / Whitbourne and area
Winterton	1.00	Conception Bay North / Trinity Bay South / Heart's Delight and area
	280.91	

iii. Counts and Full-Time Equivalency by Site of Practice and Catchment Area - Central Health

Sixteen practice communities (work city town) and 11 primary healthcare service areas are identified in Central Health; as well, there are a number of smaller communities.

Community FTE counts (to include part-time practice and to exclude those family physicians who work full-time in emergency departments, hospitalist care, administration, and subspecialty care) have been estimated for the 16 practice communities (and catchment areas); these provide natural planning units and are summarized, as follows:

Work City Town	FTE Count	Catchment Area
Badger's Quay	5.0	Kittiwake Coast
Baie Verte	3.0	Baie Verte area
Bishop's Falls	1.0	Exploits area
Botwood	6.0	Exploits area
Buchans	1.0	Buchans
Centreville-Wareham-Trinity	1.0	Kittiwake Coast
Fogo	2.0	Isle of Notre Dame
Gambo	1.0	Terra Nova area
Gander	13.0	Gander area
Glovertown	2.0	Terra Nova area
Grand Falls - Windsor	21.0	Grand Falls - Windsor
Harbour Breton	4.0	Coast of Bays area
Lewisporte	4.0	Lewisporte area
Springdale	5.0	Green Bay area
St. Alban's	1.0	Coast of Bays area
Twillingate	5.0	Isle of Notre Dame
	75.0	

iv. Counts and Full-Time Equivalency by Site of Practice and Catchment Area - Western Health

Fourteen practice communities (work city town) and eight primary healthcare service areas are identified in Western Health; as well, there are a number of smaller communities.

Community FTE counts (to include part-time practice and to exclude those family physicians who work full-time in emergency departments, hospitalist care, administration, and subspecialty care) have been estimated for the 14 practice communities (and catchment areas); these provide natural planning units and are summarized, as follows:

Work City Town	FTE Count	Catchment Area
Burgeo	2.0	Burgeo
Channel Port aux Basques	9.25	Port aux Basques
Corner Brook	29.8	Corner Brook / Bay of Islands
Cox's Cove	0.5	Corner Brook / Bay of Islands
Deer Lake	2.0	Deer Lake / White Bay
Hampden	1.0	Deer Lake / White Bay
Lourdes	1.0	Bay St. George
Norris Point	4.0	Bonne Bay
Pasadena	2.0	Deer Lake / White Bay
Port au Choix	2.0	Port Saunders
Port Saunders	1.0	Port Saunders
Steady Brook	0.0	Corner Brook / Bay of Islands
Stephenville	10.0	Bay St. George
Stephenville Crossing	1.0	Bay St. George
	65.6	

v. Counts and Full-Time Equivalency by Site of Practice and Catchment Area - Labrador-Grenfell Health

Seven practice communities (work city town) and six primary healthcare service areas are identified in Labrador-Grenfell Health; the geographic distribution is wide.

Community FTE counts (to include part-time practice and to exclude those family physicians who work full-time in emergency departments, hospitalist care, administration, and subspecialty care) have been estimated for the seven practice communities (and catchment areas); these provide natural planning units and are summarized, as follows:

Work City Town	FTE Count	Catchment Area
Churchill Falls	1.0	Labrador West / Churchill Falls CC
Flower's Cove	2.0	Northern Peninsula / Strait of Belle Isle HC
Forteau	2.0	South East Labrador and Straits / Mary's Harbour CC
Happy Valley - Goose Bay	11.7	Central Labrador / Labrador HC
Labrador City	7.0	Labrador West / Labrador West HC
Roddickton	2.0	Northern Peninsula
St. Anthony	6.0	Northern Peninsula / Charles Curtis Memorial Hospital
	31.7	

vi. Gender Adjustment

Gender adjustment is the relative difference between males and females in absolute FTE value between the ages of 25 years and 74 years.

In general, a female physician, over the course of her career, will work less than a male physician. As the proportion of female physicians entering the workforce increases, the number of physicians required to replace each retiring male physician increases.

Previous studies typically revealed the ratio of female-to-male FTE in family practice was 0.81. A ratio of 0.81 to 1.00 suggests recruiting 1.2 females to equal 1.0 FTE and that, over her career, a female family physician will work 0.19 FTE less than a male family physician. Before and after family raising years, females will work similarly or equivalent to males.

This impacts future FTE supply at a female-to-male FTE ratio of 0.81 in Family Medicine.

vii. Benchmarking

Full-time equivalency is the valid unit for benchmarking; these data are included in the National Physician Database (NPDB) maintained by the Canadian Institute for Health Information (CIHI). The NPDB warrants attention but with caution:

- FTE is not sensitive to wide geography and low population density
- FTE calculations by CIHI have historically been based on fee-for-service data; CIHI has switched to an FTE indicator to reflect full clinical payments

CIHI jurisdictional and national FTE data for family physicians are provided on page 39 (2.06) of the data compendium and reproduced (noting the caution required), as follows:

Geography	Full-Time Equivalent Family Physicians	Population per FTE Family Physician	FTE Family Physician per 100,000 Population
NL	585.60	902	111
PE	149.55	1,013	99
NS	962.54	983	102
NB	709.26	1,075	93
QC	7,465.55	1,113	90
ON	15,792.77	894	112
MB	1,319.67	1,013	99
SK **	675.80	1,706	59
AB **	4,215.31	1,009	99
BC	4,761.25	1,037	96
Total	36,637.30	996	100
NOTE **	Full-time-equivalent computations for Saskatchewan and Alberta are derived only from fee-for-service data		

Newfoundland and Labrador FTE family physician rankings among the ten provinces is, as follows:

- Total number of FTE family physicians (585.60) is ranked nine, greater than only Prince Edward Island; Four of the five lowest FTE numbers are the Atlantic provinces
- Population per FTE family physician (902) is ranked nine, greater than only Ontario
- FTE family physicians per 100,000 population (111) is ranked two, behind only Ontario

Despite the fact that national comparisons of physician supply show that Newfoundland and Labrador has a relatively high supply of family physicians, these data sources are head counts rather than real-time FTE counts. They include many licensed family physicians who do not participate in community-based family practice; they do not account for the greater prevalence of team-based practices in some jurisdictions that permit more patients to be attached to each physician; and, they are not adjusted for the distances and low population density in this province. A low-density jurisdiction will often provide services in more locations, at lower volumes per physician, than higher density jurisdictions.

The CIHI counts include physicians who are not in active practice at the community level. The over-arching caution with the CIHI data is that the head counts are not reflecting those in active practice and the subsequent FTE estimates are based on income data that are silent on population needs and density.

When comparing Newfoundland and Labrador to other Canadian jurisdictions, it should be noted that the province ranks at or near the bottom for most indices of population health status and has one of the oldest populations in the country. These two factors converge to drive demand for primary care services and the need for a greater supply of family physicians.

Benchmarking is not considered useful for the purposes of this study

10.02 Interpretation

Key points in assessing supply are summarized, as follows:

- Family physicians in Newfoundland and Labrador have recently decreased in absolute and FTE counts
- Dependency on internationally trained physicians is high; many of these physicians do not stay longer than 2.5 years
- The male-to-female family physician ratio is equal in Eastern Health; the other regions are dominantly male (from 1.77:1 to 2.35:1)
- As a proportion of physicians in the oldest age cohort, Eastern Health is greatest at 40.7%, followed by Western Health (40.3%), Central Health (36.1%), and Labrador-Grenfell Health (24.2%)
- Retention of MUN medical graduates is an active initiative with modest results to date
- Thirty-six practice communities (work city town) and ten primary healthcare service areas are identified in Eastern Health; as well, there are a large number of smaller communities
- Sixteen practice communities (work city town) and 11 primary healthcare service areas are identified in Central Health; as well, there are a number of smaller communities
- Fourteen practice communities (work city town) and eight primary healthcare service areas are identified in Western Health; as well, there are a number of smaller communities
- Seven practice communities (work city town) and six primary healthcare service areas are identified in Labrador-Grenfell Health; the geographic distribution is wide
- Gender adjustment impacts future FTE supply of family physicians at a female-to-male FTE ratio of 0.81
- Benchmarking is not considered useful for purposes of this study



11.0

Models of Care

11.01 Impact of Models of Care

Models of care have been developed to align the professional services of other health disciplines to physician activity and patient-centred care; however, models of care and professional autonomy are in transition, as are scopes of practice and the ability to fulfill role optimization at the top-of-license. As change continues and models become refined, there will be an impact on both service and resource planning.

A model of care can be characterized, as follows:

- Variable front-end costs
- Imperative for measurement of outcomes
- Improved quality and outcomes
- Achievement of efficiencies
- Role optimization and individual accountability for quality are constants
- Consistency among similar models but adaptability to distinct locations

11.02 Collaborative Care

No single model of delivery will address all of the primary care needs of the province.

Collaboration is the centrepiece of most, if not all, models of care and delivery that can address many of the challenges faced in Newfoundland and Labrador.

In 2000, the Ontario College of Family Physicians characterized collaborative care as, . . . a patient and family centred process for communication and decision-making that enables the separate and shared knowledge and skills of care providers to synergistically influence the client/patient care provided . . . designed to promote the active participation of several care providers . . . and fosters respect for the contributions of all members of the team.

In this context, secondary concepts include “quality” and “effective productivity.” The core attributes of “quality” health care have been defined by the Institute of Medicine as: safe, effective, patient-centred, timely, efficient, and equitable.– The Western and Northern Health Human Resource Planning Forum¹⁷ defined, “effective productivity as an increase in outputs per unit of input where there is evidence of improved quality of care and improved health outcomes that contribute to achieving health system goals.”

The definition of effective productivity, linking an economic model and indices with the quality model and outcomes, avoids contemplating either in isolation.

Much continues to be misunderstood with respect to the collaborative care model. The following observations on collaborative care models inform further the planning of primary care services:

- Gaps in the provision of care can be assisted by expanded roles and use of the family practice nurse, advanced practice nurse (nurse practitioner), and licensed practical nurses
- Many continue to misunderstand the collaborative care model; too often, it is assumed that having different types of health professionals together means collaborative care; however, collaborative care is a delivery model, not an office arrangement
- The model can be, but needn't be, expensive; collaboration provides true value, with integrated care that focuses on outcomes rather than outputs; this focus presents a real challenge in conducting a cost-benefit analysis (it is easy to quantify the upfront costs and difficult to place monetary value on the subsequent system savings). It has been consistently noted that patient satisfaction with such models is high

¹⁷ See Chapter Four of the scan

- Collaborative care can assume a particularly important role in providing care to older adults, to complex patients, and to those requiring mental health services
- Nurse practitioners, either as part of an integrated team or as a clinic lead, have an integral and expanding role in delivery of care
- Physician workforce planning requires the flexibility to adjust to new roles assumed by nurse practitioners, other advanced practice nurses, midwives, and physician assistants
- Collaborative care is suited to provide outreach services to more remote communities
- Care gaps will be narrowed by expanded roles and use of the family practice nurse, particularly through collaborative care models
- Collaborative care can be described as one of many models of similar care; the essence of the model, however, is that it is much more than simply multiple professional disciplines under a single roof; rather, it is an integrated care model with professionals working “top-of-license” in providing patient-centred care
- Collaborative care is non-hierarchical within a governance model - - all team members are equals

There are four key lessons identified as the elements of a successful approach to collaborative care:

- Shared philosophy and values, operating from a patient-centred, harm-reduction perspective
- Regionally specific definitions of minimum team constituents
- Community development beyond the walls of the centre
- Mutual respect among providers, fostering strong communication and alignment of goal

[In Newfoundland and Labrador, the foundation for a provincial collaborative model has been laid through the FPNs.](#) Ultimately, the requirement will be to move beyond networks to hubs of team-based care. The teams need to be non-hierarchical and characterized by measurement of outcomes and a mutual accountability for quality.

The ideal roster of providers is not fully defined and requires regional sensitivity, but consideration should be given to:

- Family physicians
- Pharmacists
- Nurses
- Nurse practitioners

- Social workers
- Clinical psychologists
- Dietitians
- Physiotherapists
- Occupational therapists

Notable is that co-location does not achieve collaborative team; as well, the absence of governance on a regional or provincial basis will jeopardize success.

At the centre of planning initiatives, each collaborative team would be linked to one or more remote communities where day-to-day care would be provided by an NP and PA, and have access to an advanced care paramedic serving a cluster of communities. Each remote community would have a single telephone number to call for problem-solving, prescription renewal, and urgent care advice. As well, rotations of the disciplines would go to the remote community at scheduled intervals for enhanced preventive services and required clinical services. This remote care component would increase quality overall and, most likely, enable patients to receive increased amounts of care at home and to avoid costly medical travel; it would not only expand the available care (and could include a link to a provincial palliative care model) but also would establish a continuity of care framework not previously imagined.

Ultimately, successful implementation of the collaborative model will depend on the model breaking down decades of episodic silo care and standing on its own merits. In essence it would be “implementation by standing ovation” whereby success and enthusiasm for a provincial care model and measurement drives expansion.

The evidence from the collaborative model in Manitoba (MyHealthTeam) can be extrapolated to Newfoundland and Labrador with some predictability. The population served can be estimated at 2,300 patients per family physician. These data are consistent with similar models and assumptions based on the UK Primary Care Trust and US VA Health Networks.

It is important to note that, while collaborative teams are an essential future model, this does not offset the need to increase the number of family physicians; every resident of Newfoundland and Labrador should be able to be attached to a family physician, even if a substantial part of their care may be provided by other members of the team. The other providers are additive to the provision of care and are not replacing family physicians; all providers bring unique skill sets to the integrated team.

Multidisciplinary collaborative teams with outreach capacity will be the cornerstone of planning and projections in Newfoundland and Labrador

11.03 Focused Models of Care

Focused models of care cross many disciplines and medical specialties; that notwithstanding, typically, five examples warrant particular attention in projecting the supply of family physicians:

- Mental health and addictions
- Care of the older adult
- Palliative care
- Public health
- Home care

Attention to these essential services can improve the quality of care and outcomes and, critically, serve as key variables in projections, especially when aligned with collaborative care teams and FPNs. They are the foundation of variables that impact base level projections, low case, and high case

[Mental health and addictions](#) are a major challenge across Canada with estimates of one-in-four residents experiencing anxiety or depression; as well, at the level of primary care intervention, the common primary care tool is pharmacology and the use of that tool has been considered both inappropriate and early in a management cycle. In contrast, stepwise layers of cognitive behavioural therapy (CBT) are underused and not sufficiently available, despite the compelling evidence for such services.

The state of mental health and addictions in Newfoundland and Labrador is not dissimilar from the rest of the country; despite dedicated resources and professionals, the issues of access and service are inadequate, not only in rural and remote areas of the province, but urban, as well. Mental health and addiction counselors, psychologists, and psychiatrists all strive to break through the wall of timely access to an appropriate level of care and follow-up, but the difficulties continue particularly without a system capacity to implement follow-up or a treatment plan.

Deficiencies include access to crisis stabilization, housing and community supports, and ongoing care after an intervention. Five recurring lessons continue to be prominent:

- Don't spend money on solutions for mental illness that are not based on evidence
- Whenever possible, treatment and interventions should be provided as close to home as possible, and include spiritual health and trauma-informed care.
- Early intervention in mental illness is critical to achieving maximum benefits
- Tele-psychiatry is under-used

- Care for addictions and substance abuse is not sustainable without a new approach

A recommended model of care most relevant to family medicine, their patients, and outcomes requires commitment and time. This is focused on the inclusion of clinical psychologists in each collaborative care team, with the ideal number determined by catchment populations and indices of need. The community roles for clinical psychologists should include primary services to collaborative care team patients, regular visits to the remote community aligned with that team, and referral assessments for psychiatrists to determine quickly who requires urgent referral based on early diagnosis, who requires mental health and addiction services from other mental health professionals (counselors, registered psychiatric nurses, and social workers), who requires stepped cognitive behavioural therapy beginning with self-care, who requires dialectical behavioural therapy, and who does not require further navigation but can appropriately remain in a primary care setting.

Implementation of this model limits the role for primary care providers in the delivery of mental health services (once a full complement of appropriate providers is achieved); the exceptions to this are general practitioners and family physicians with training in the field.

[Care of the older adult](#) is an immediate stressor that will only increase and significantly impact projected need for family physicians. Many older adults remain productive members of society for longer, their numbers increase, and their needs change (including eventual level of care). The identified issues are chronic disease management, complex co-morbidities, cognitive dysfunction, social needs, and the risk of polypharmacy.

Solutions pivot on primary care services, psychogeriatrics, and timely access to specialized care and home care. The burden of illness is high and demonstrates the importance of measuring catchment populations by age as well as number when making family physician projections.

[Palliative care](#) has assumed, appropriately, an increased role in caring for those with terminal illness. A provincial palliative care program can be built around provincial leadership, regional leadership, and community teams. The most obvious gap today is sustained regional leadership (physician, nurse, and psychosocial). As well, to achieve the goals of a provincial program, there must be dedicated rural and indigenous funding. All of these initiatives require action - - some are resource-based, some are based on voluntarism, some require additional funding, and some require different resource allocations (availability during unsocial hours, provincial on-call group). The backdrop to these deliberate activities will need to be education of providers at the community level, and enhanced roles for family physicians as palliation leads or integral roles in community-based care.

The numbers of patients receiving palliative care have been reasonably steady, with a slight increase. What is not known or predictable is the future workload that reflects unmet need; it will, however, be significant and the province needs to plan accordingly. Some patients enter palliation early and some, late; early entry is preferred (but, only when the patient is comfortable with the need for support).

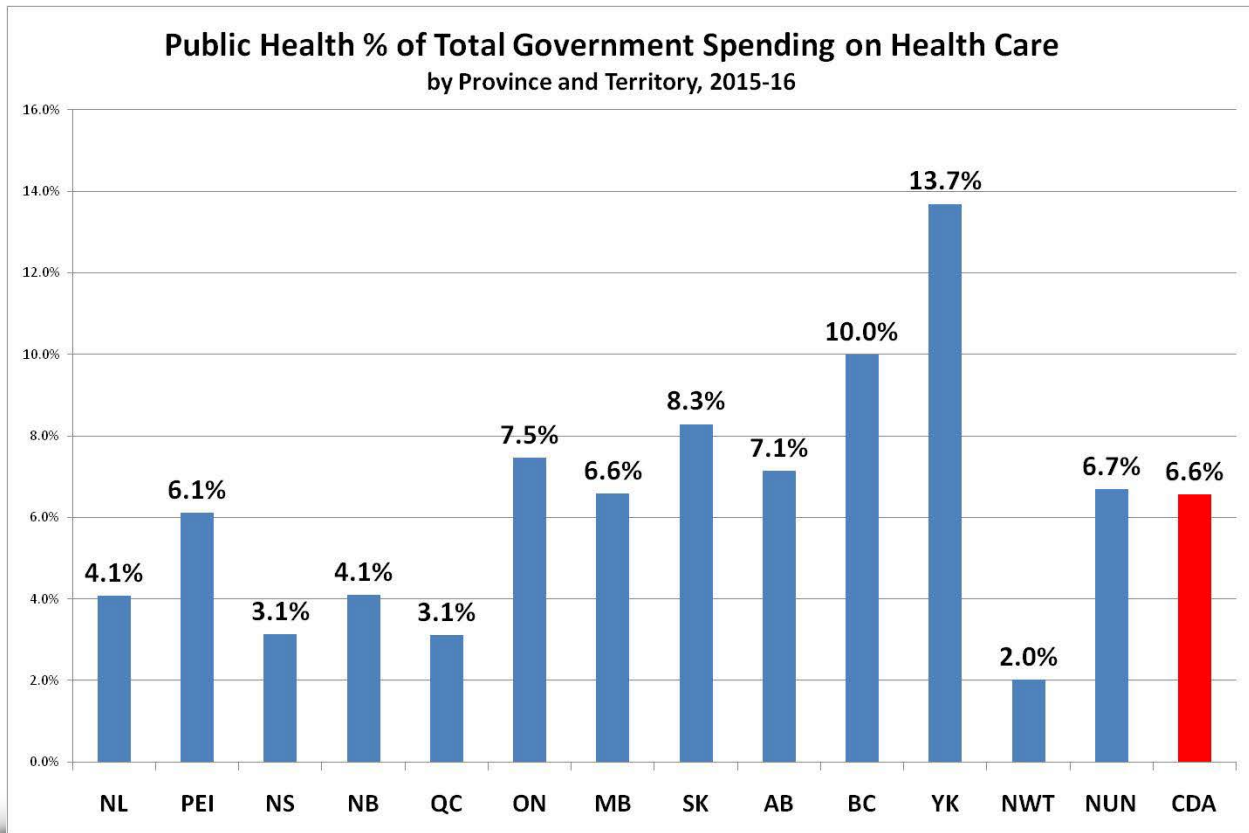
Palliative care is comfort-focused care and support for those affected by life-limiting illness. The centre of care is not only the patient but also the family, and in small rural and remote settings, the community as well may experience the impact of the illness.

The end of life-limiting illness with care focused on comfort should be an experience shared by the family and community with the peripheral support of health care, rather than a medical event with peripheral involvement of family and community. Likely the key under-used human resource today is a palliative nurse practitioner role. While telehealth already is significant in palliative care, an enhanced “telehomecare” model using iPads will have a significant impact on care when aligned with regional and provincial on-call support.

[Public health](#) is not well understood beyond public health professionals, and the enormous potential of the impact of a greater relative resource allocation is greatly underestimated, in no small part attributable to the absence of a crisp ROI formula when applied to upfront public health investments.

The real challenge is to translate beliefs and values into action within a system as complex as healthcare:

- How do you start?
- Who takes the lead?
- What are the priorities?
- How are inputs and outcomes measured as part of continuing evaluations?
- Where will the services be provided and by whom?
- Is a new infrastructure necessary?
- Are all the pieces already available but not yet channeled?
- What is the evolution from communicable to non-communicable diseases?
- Is a provincial prevention strategy substantially different from a provincial chronic health strategy (previously identified as a chronic disease strategy)?



Newfoundland and Labrador has been at the low end of funding relative to total jurisdictional spending on healthcare (2015-2016). It is not difficult for public health to become absorbed into other initiatives; this is to the disadvantage of public health and, as such, requires boundaries. The reasoning is pure logic - - service provision other than public health (such as, collaborative care teams) tends to be one at a time, while public health services are generally based on populations. As evidence, there are three public health tools:

- Policy
- Environment
- Resource allocation

Home care solutions are required for two fundamental questions, both central to the projection variables for family physicians:

Does home care exist to provide a place for hospitals to send people?

and

Is home care a community service that also receives transfers from hospitals?

Equally significant is the challenge of **how can home care become equitable?** The range of services that are included are: assessment, care planning and coordination, and direct services (nursing, personal care,

rehabilitation assessment, meal preparation, home support, and respite). Answers to these questions and challenges in the context of primary care have a direct impact on planning for family physicians in Newfoundland and Labrador, and require integrated models and team-based care. Integration with family services and collaborative care teams would be beneficial for providing home care services, as would improved access to geriatric teams and clinical psychologists.

Collaborative care in the province will incorporate varied approaches to mental health and addictions, care of the older adult, palliative care, oncology, and home care



12.0

Digital Health

12.01 Art of the Possible

Patients now expect to see digital health in all aspects of their care, from scheduling appointments and referrals, to self-care models, to remote monitoring for chronic care. Electronic health records, virtual care, and other care delivery technologies are central to the health sector's ability to deliver its primary value proposition.

A provincial health strategy is required to provide direction and to establish a footprint that enables new capabilities for digital health through partnerships, collaboration, and an improved understanding of the investment.

Digital health will shift the total cost of care and needs to be acknowledged for improving capacity, quality of care, and cost efficiencies. It should also be recognized for the value that will be built over time through data collection, with the potential to improve the system, enabling predictive and operational decisions. The system will continue to extend its reach and influence across the inpatient, outpatient, long-term, and home care settings. Collaboration goes beyond coordination to enable patients and providers to engage and share in real-time.

With broadband Internet declared as an essential service for Canadians, mobility will be used to engage, inform, and care for the patient. It contributes to better coordinated and optimized workflows and timely access to information. Along with the EHR, mobility is one of the most transformational technologies in health care. Not only does it support new models and efficiencies inside existing service delivery locations, but, it innovates new ways of delivering services remotely or virtually.

Electronic health systems enhance the quality of care. Interoperability drives the concept of a single system. Information and communications technology (ICT) is used to improve healthcare delivery through province-wide solutions to integrate systems, to improve and expand services, and to improve efficiency and effectiveness.

This section of the report is focused on what a connected healthcare system could look like.

[Much work remains to be done. The experience of using evolving technology has been generally consistent with the short-term impacts being over-estimated and the long-term impacts being under-estimated.](#)

12.02 Digital Health Means Change

An important element of the Clinical Stabilization Fund is expansion and refinement of digital health in Newfoundland and Labrador, with successes having been realized. Examples of these successes are, as follows:

- E-consultation demonstrating a 60% reduction in face-to-face consultations, a stable outcome consistent with other Canadian experience
 - Notably helpful in Labrador, but is provincial success
 - Cost-benefit high
 - High quality of information noted in both directions
 - Uptake now at >300 FPs, NPs, and learners
 - Dermatology includes photography
 - Psychiatry includes therapy
 - Being integrated into EMR - very positive move
- Rapid Access to Clinical Expertise (RACE) is not active at this point but the potential is deemed to be high, whereby family physicians have daily access to a dedicated psychiatrist to provide telephone advice on patient management
- Future state is expansionary with all virtual care possibilities

12.03 The Next Generation

Alternative ICT service delivery models will play a bigger role in the digital health enterprise. Tools for end-user experience monitoring, configuration, and business continuity management will be necessary to keep the system highly responsive and available.

A modern digital health enterprise includes software systems and technologies from many generations that both impede and paradoxically enable progress. As the demands on health care increase, the role of ICT becomes that of navigators from the traditional, disjointed operation to a more streamlined digital health-care model that possesses sophisticated situational awareness and operational intelligence and the means to make use of it.

All healthcare systems are challenged to respond effectively to the growing impact of chronic disease on healthcare delivery and the health of communities. Self-management is a key element of primary care renewal and one component of person-centred, quality improvement strategies to address the chronic disease burden. Supporting and improving self-management is a concrete action to shift the focus of health care delivery away from institutions and toward the person's own 'home as the hub' from which self-management occurs. Individuals who self-manage their health from their home experience fewer access issues with care and may experience fewer costly hospital re-admissions and reduced utilization of emergency room services. The business case for "telehomecare" has been demonstrated clearly by the Ontario Telemedicine Network, including an economic return on investment, alignment with primary care strategies, enhanced chronic disease self-management skills, reduced institutional care, and improved quality of life.

12.04 Enabling a Real-Time Digital Health System

As the convergence of administration, resources, and technology, digital health represents the future of health-care delivery, enabling seamless crossing of boundaries, borders and technologies, patients, and providers.

As such, the next generation of digital health delivery and technology can be referred to as a “real-time health system” (RTHS). The RTHS represents the transformation of healthcare services by leveraging the digital health enterprise, whose nature and reach will create more and better care options and an improved healthcare experience.

A vision for digital health depicts a multidimensional concept for executing operations digitally and identifying the role of the enterprise, limited only by choosing to do so. The purpose of an industry vision is to stretch thinking about the art of the possible.

Harnessing digital technologies is essential for the provincial health sector to achieve key industry priorities:

- Governance set by evidence-based priorities
- A digital strategy for the RTHS to enable advanced management and operating practices
- Key information, technologies, and vendors, constituting the building blocks of the RTHS
- Impactful technologies that enable key business initiatives, which seek to lower the cost of care and improve quality and access
- Strategic decision-making related to other dependencies in the delivery of digital health

Applications of digital health have progressed in Newfoundland and Labrador; however, the rate of expansion should be accelerated



13.0

From Data to Projections

13.01 Gap Analysis

Rural and remote access to care.

No existing plan for FM.
No existing NL services plan.
Need for contemporary funding model.

Care of older adults in an aging population.
Home care.
Mental health and addictions.
Palliative care.
Indigenous peoples.
Attention to core services model.

Progress in digital health is good but more to be done.
Small steps to collaboration require more to be done.

High dependency ratios - and increasing.
Continuity of care.
Overall, high ACSC rates.

NLMA database not consonant with regions.
High physician burnout.
Attain enhanced role optimization.

Low population density.
Steady population that requires age-gender adjustment.

High IMG and locum dependencies.
Insufficient generalism.
Resistance to setting up new practice.
Low retention of MUN graduates

Difference between head counts and FTE.
Recruitment and retention.
Male-to-female ratio of 2.3:1.
Revolving door of IMGs.
Fragile mental health care in Labrador West.
Some instability due to unpaid leave.
High provisional licensure.
Substantial social determinants of health.
Untapped potential for telemedicine.
Significant rates of TB, DM, and renal.
High risk obstetrics.
Highest ACSC rates.
Lowest rate of regular healthcare provider.
Highest birth rates in Innu Communities and Nunatsiavut Communities.
Highest mortality rates in South East Labrador and Straits and Northern Peninsula.

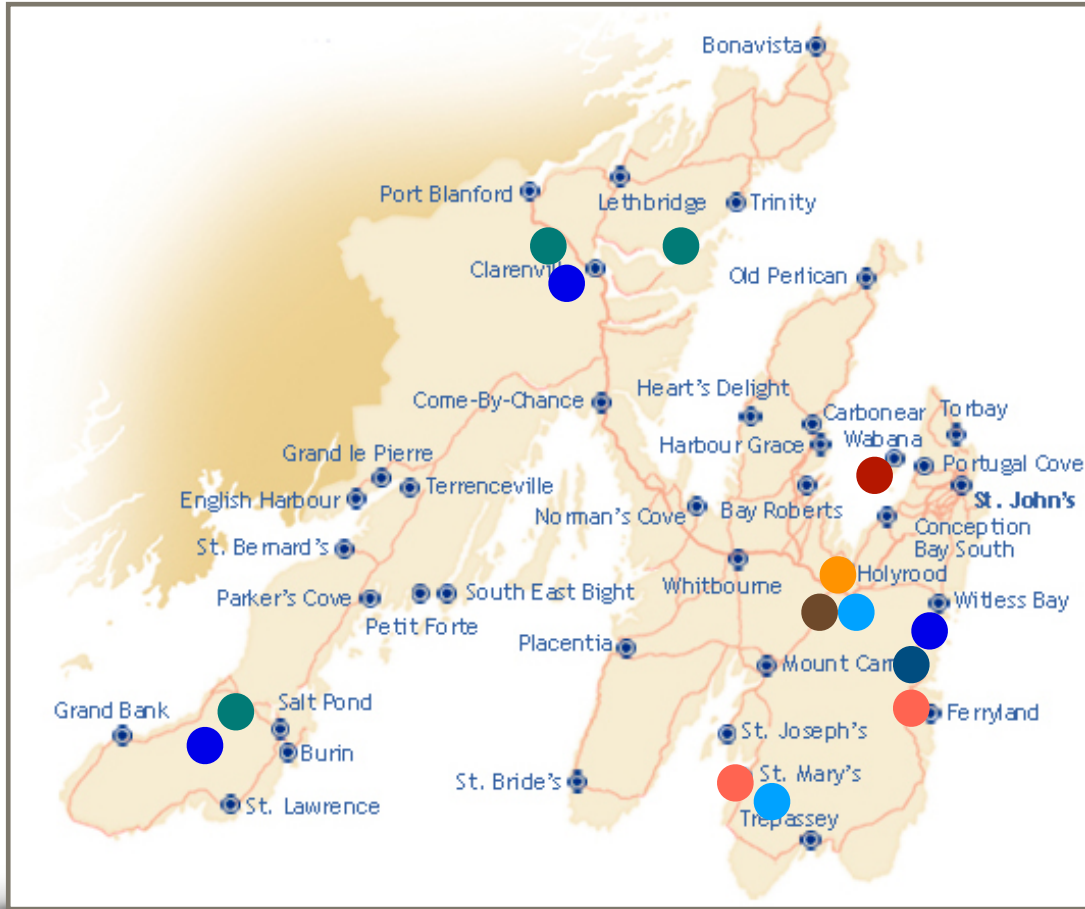


Difference between head counts and FTE.
Recruitment and retention.
Male-to-female ratio of 1.77:1.
36.1% of FP in oldest age cohort.
Only 27% of FP expect to stay after three years.
60% IMG dependency.
High locum tenens dependency.
Significant resistance of new entrants to open a practice.
Ill-prepared for aging population.
Highest birth rates in Gander, Terra Nova, Coast of Bays.
Highest mortality rates in Buchans, Lewisporte, Grand Falls-Windsor.

Difference between head counts and FTE.
Recruitment and retention.
High turnover rate.
Male-to-female ratio of 2.35:1.
40.3% of FP in oldest age cohort.
Aging population with increased co-morbidities.
Need one addition GP oncologist.
Need additional palliative care.
Gaps in pain management and clinical psychology.
High ACSC rates.
Highest low birth weights.
Highest birth rates in Deer Lake-White Bay and Corner Brook-Bay of Islands.
Highest mortality rates in Port Saunders, Bay St. George

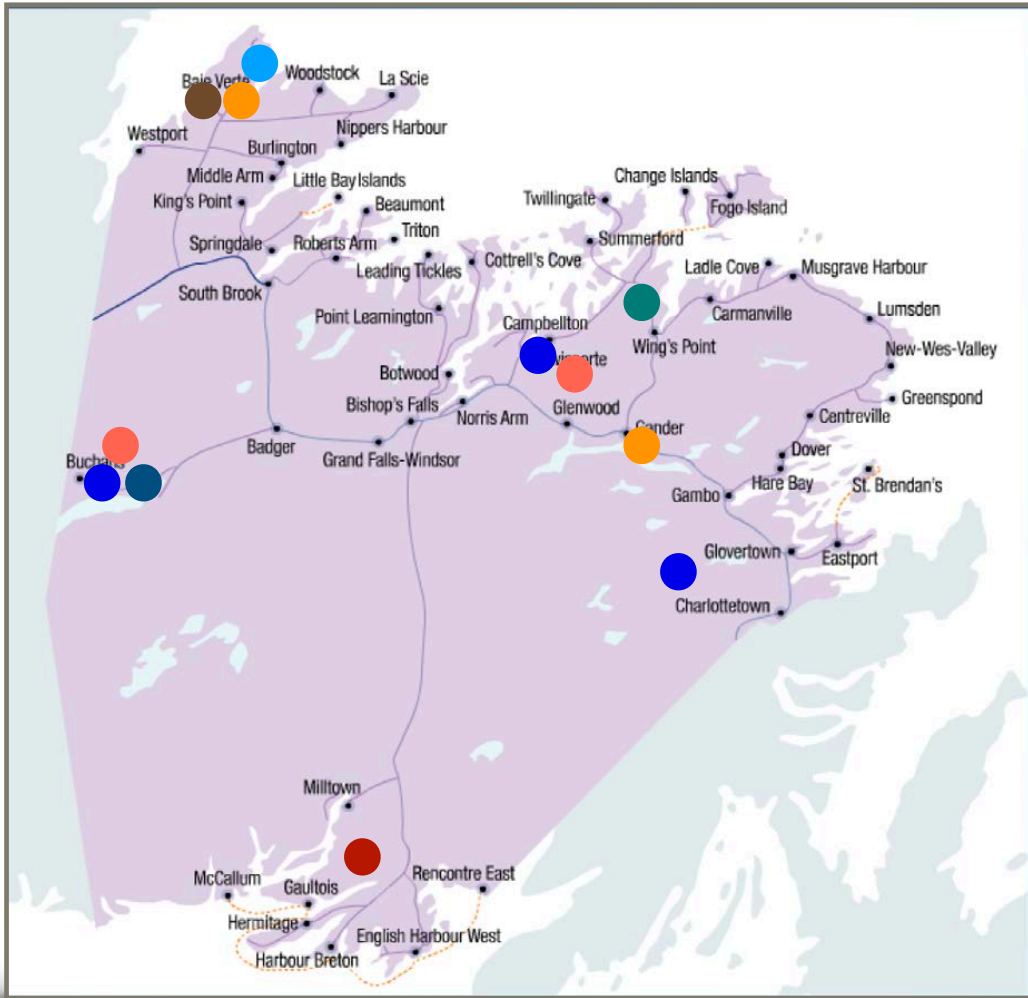
Difference between head counts and FTE.
Recruitment and retention.
40.7% of FP in oldest age cohort.
IMG and locum tenens dependency.
12-18% population without FP.
Highest birth rates in Paradise, Bauline - Pouch Cove - Flatrock, Conception Bay South, Logy Bay - Torbay - Middle Cove - Outer Cove.
Highest mortality rates in Bell Island, Bonavista, St. Mary's, Placentia-Whitbourne, Conception Bay North and Trinity Bay South.

13.02 Highest Burden of Illness - Eastern Health



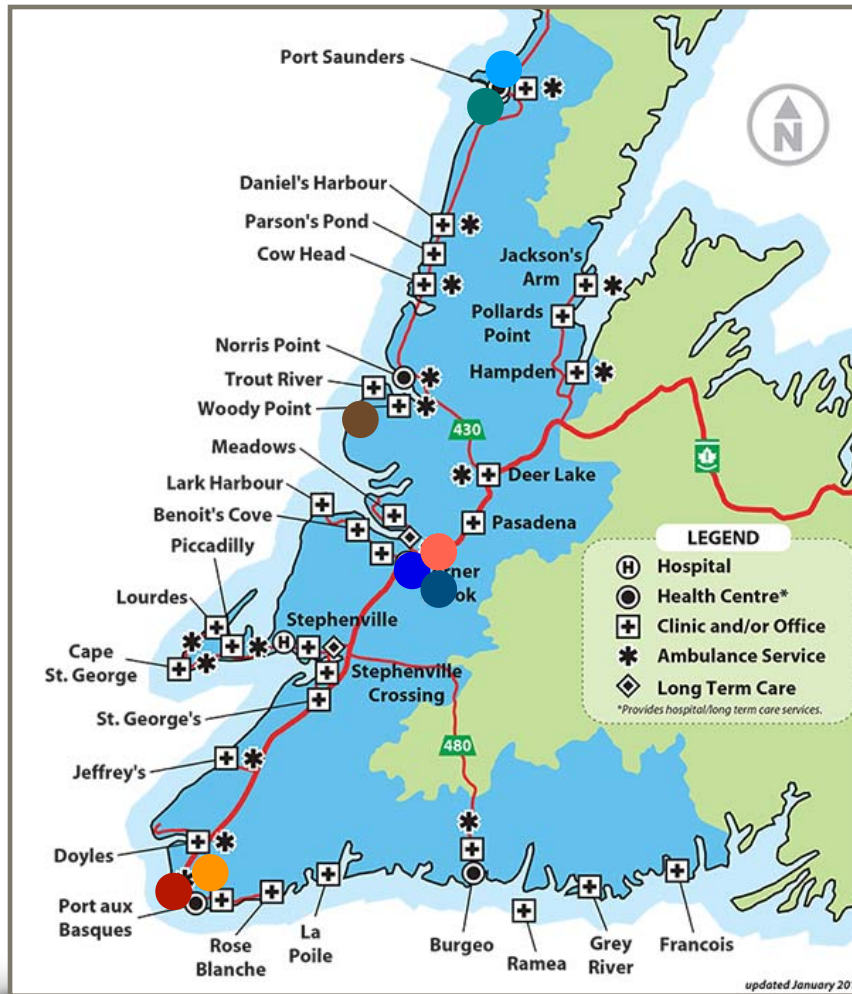
- Asthma
- Acute myocardial infarction
- Chronic obstructive pulmonary disease
- Diabetes mellitus
- Hypertension
- Stroke
- Congestive heart failure
- Ischaemic heart disease

13.03 Highest Burden of Illness - Central Health



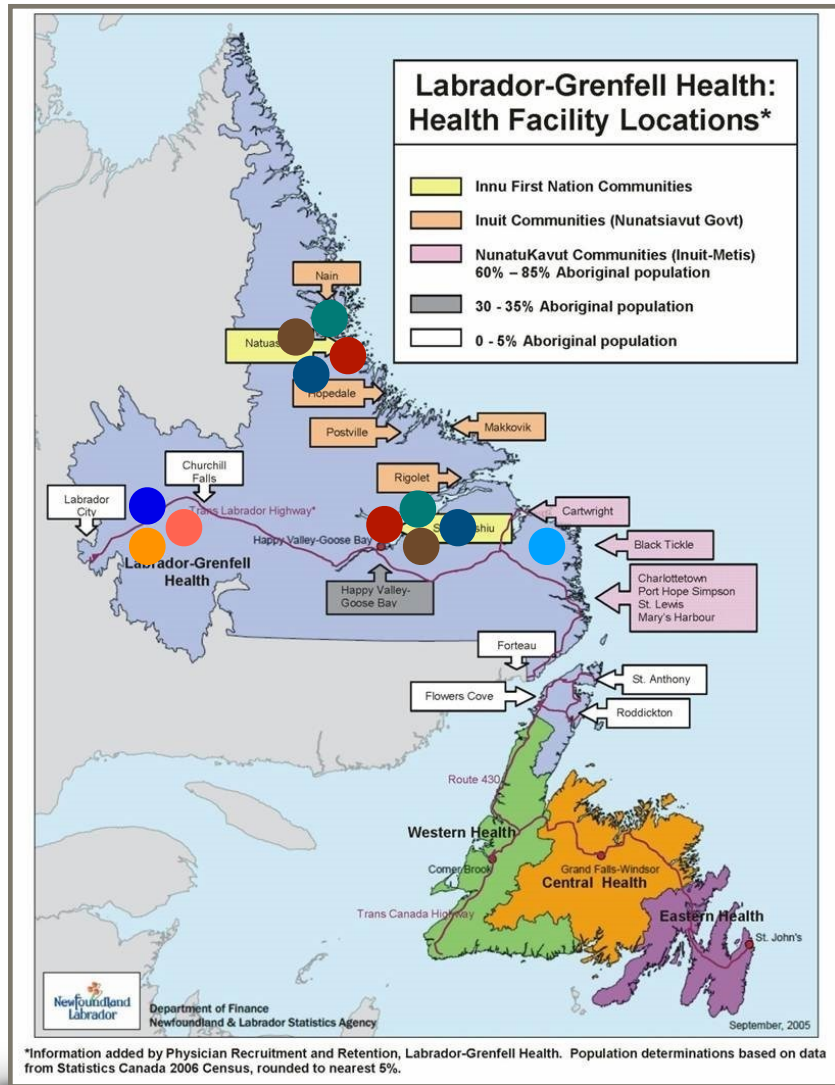
- Asthma
- Chronic obstructive pulmonary disease
- Diabetes mellitus
- Hypertension
- Acute myocardial infarction
- Stroke
- Congestive heart failure
- Ischaemic heart disease

13.04 Highest Burden of Illness - Western Health



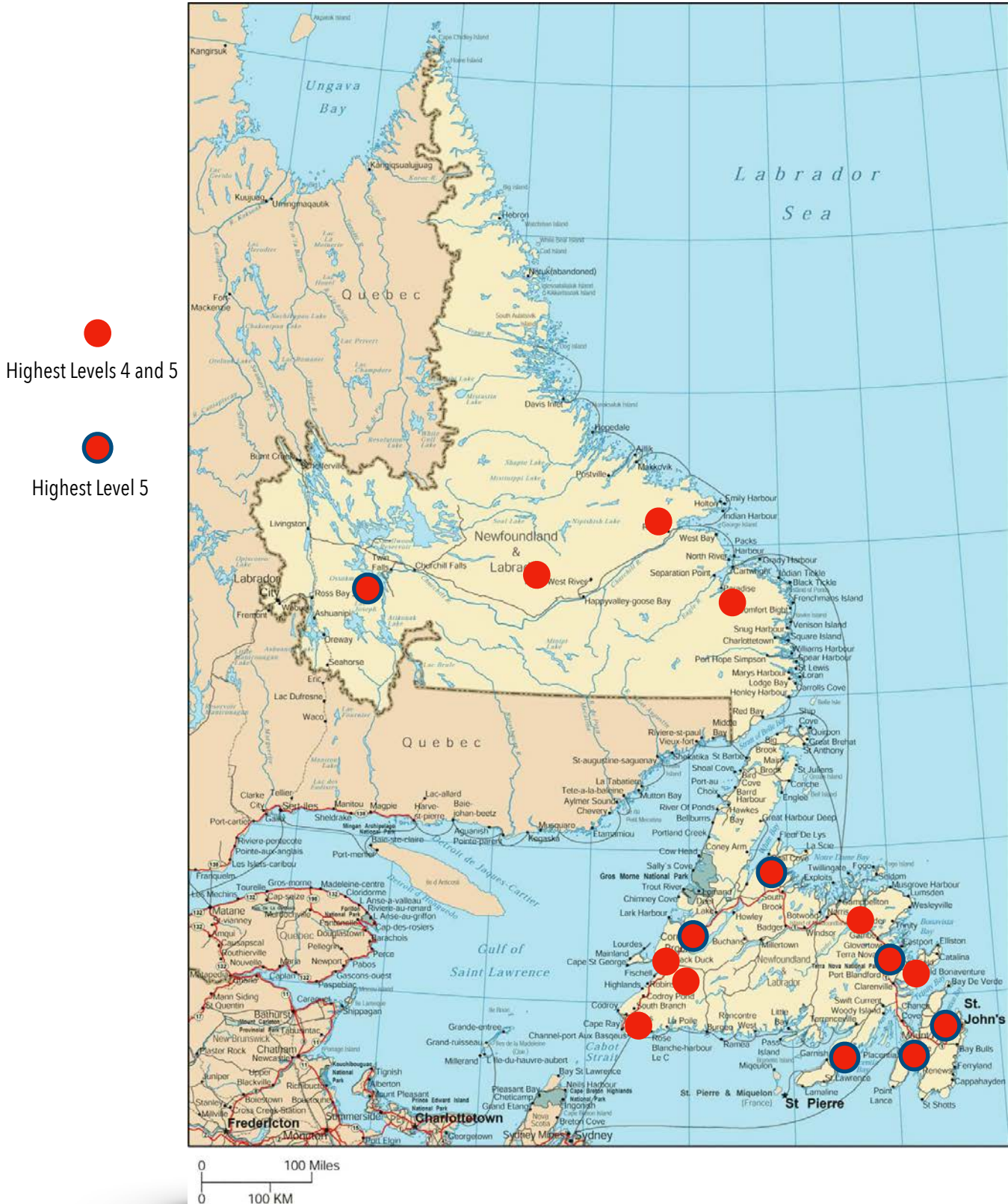
- | | |
|--|--|
| ● Asthma | ● Acute myocardial infarction |
| ● Chronic obstructive pulmonary disease | ● Stroke |
| ● Diabetes mellitus | ● Congestive heart failure |
| ● Hypertension | ● Ischaemic heart disease |

13.05 Highest Burden of Illness - Labrador-Grenfell Health



- Asthma
- Chronic obstructive pulmonary disease
- Diabetes mellitus
- Hypertension
- Acute myocardial infarction
- Stroke
- Congestive heart failure
- Ischaemic heart disease

13.06 Highest Levels 4 and 5 CTAS Scores



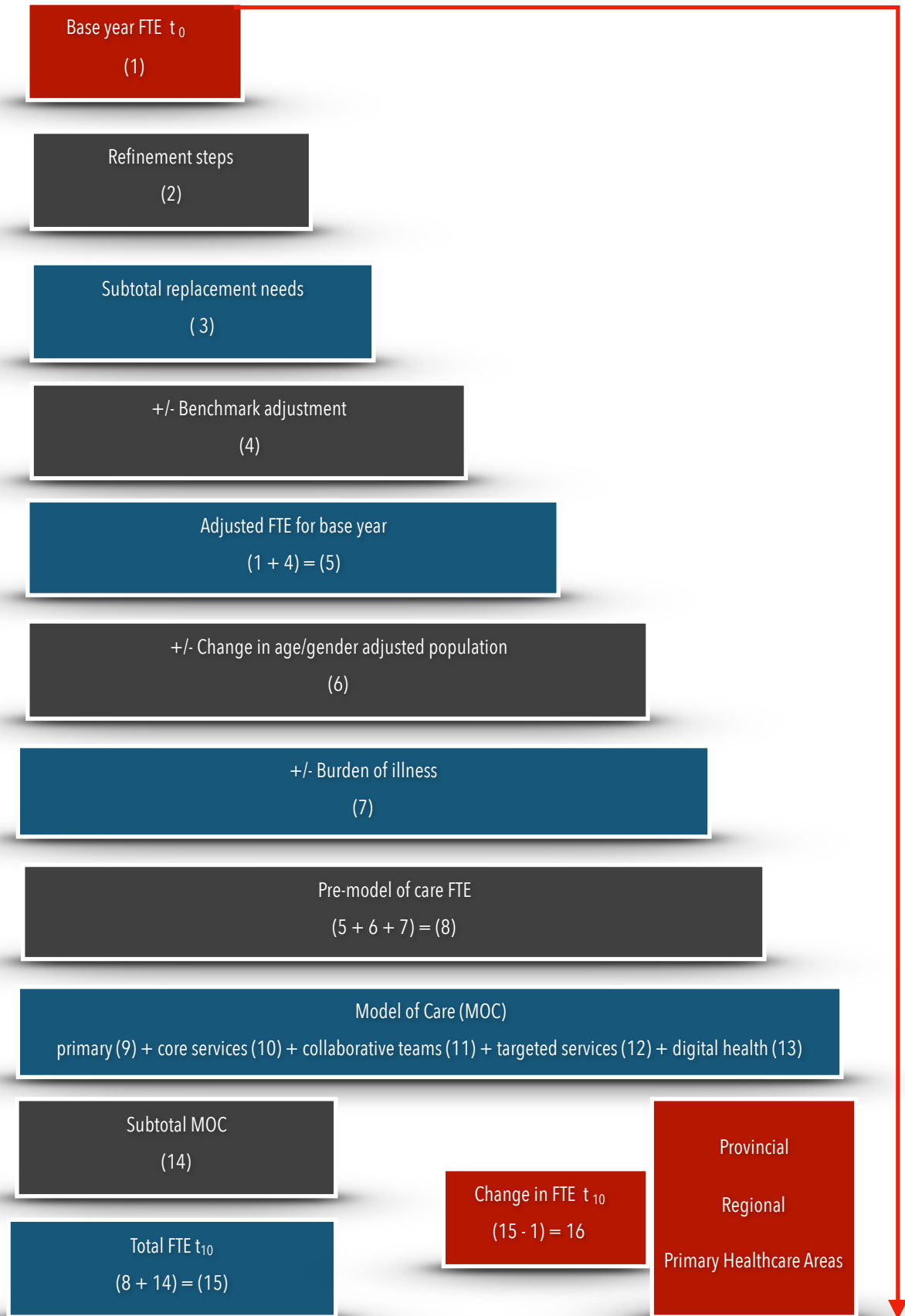
13.07 Integrated Projections and Variables

The underpinning elements and approach to projection as summarized in the linear summary of data management¹⁸ collates and merges the qualitative and quantitative datasets. [These apply to each of low, base, and high scenarios across defined time frames.](#) The [base](#) scenario is the most likely as determined by the evidence; the [high](#) scenario reflects changes that represent unfavourable variables, and the [low](#) scenario reflects a significant improvement over the anticipated variables. Also, low and high scenarios represent system boundaries that will not be exceeded during the rolling ten-year plan.

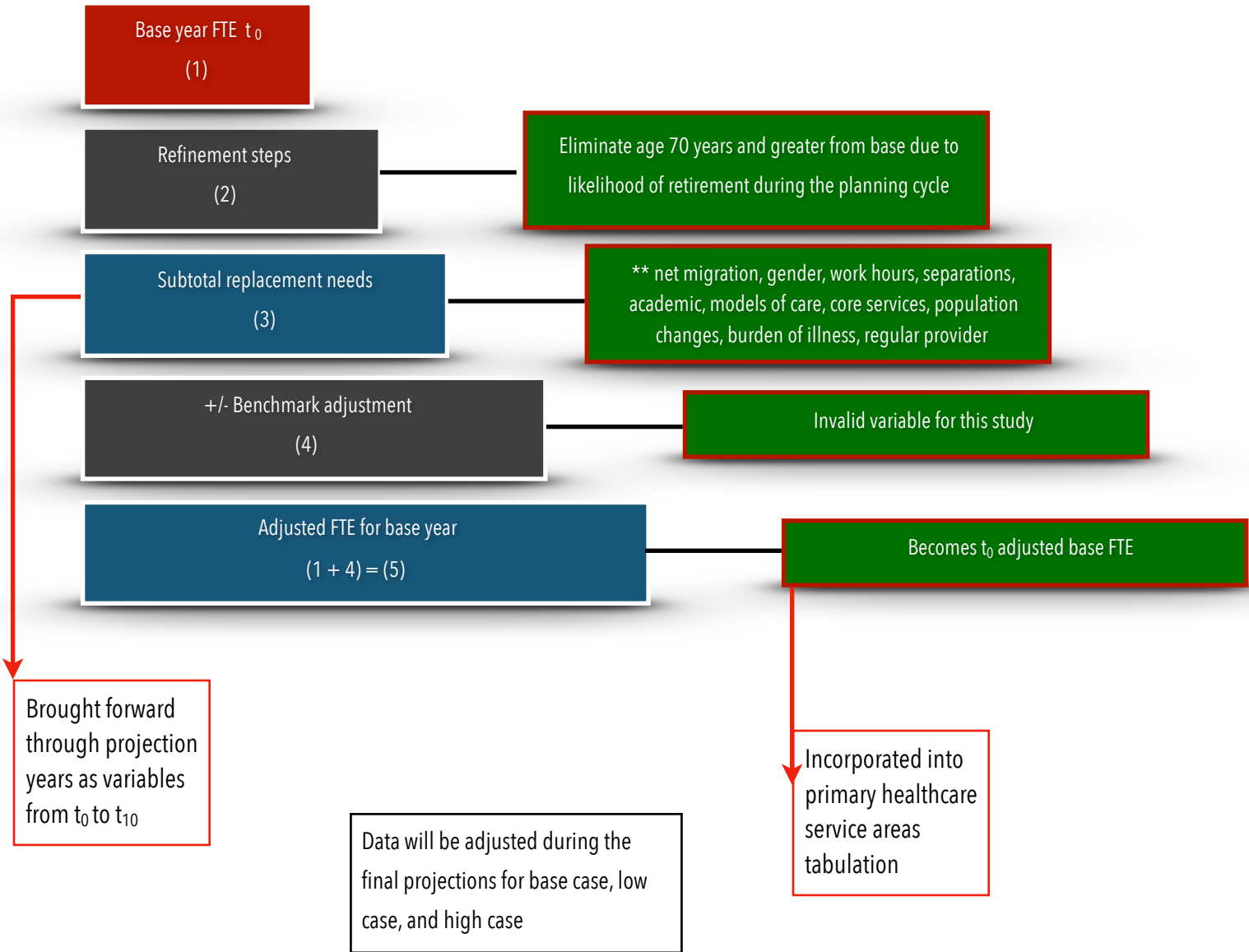
The stacking model on the following page demonstrates the assumptions, interdependencies, and evolution of the change in FTEs over a ten-year span.

¹⁸ Please see page 8 of the report

Physician Resource Forecast for Family Medicine



Physician Resource Forecast for Family Medicine



Physician Resource Forecast for Family Medicine

Eastern Health Primary Healthcare Areas	Practice Communities	FTE	Adjusted for Age to FTE	Totals
Clarenville and Area	Arnold's Cove	0.6	0.0	12.0
	Clarenville	11.0	11.0	
	Port Blandford	1.0	1.0	
Burin Peninsula	Bay L'Argent	1.0	0.0	13.25
	Burin	2.0	2.0	
	Burin Bay Arm	3.25	3.25	
	Grand Bank	5.0	4.0	
	Marystown	2.0	2.0	
	St. Lawrence	2.0	2.0	
Bonavista and surrounding area	Bonavista	6.0	6.0	8.0
	Catalina	2.0	2.0	
Placentia/Whitbourne and area	Placentia	2.5	1.5	6.5
	Whitbourne	5.0	5.0	
St. Mary's and surrounding area	St. Mary's	1.0	1.0	1.0
Southern Shore and surrounding area	Bay Bulls	5.66	4.66	4.66
	Trepassy	1.0	0.0	
Conception Bay North and Trinity Bay South Region	Bay Roberts	3.75	2.75	20.0
	Carbonear	8.25	7.25	
	Clarke's Beach	1.0	1.0	
	Harbour Grace	3.0	3.0	
	Old Perlican	3.0	3.0	
	South River	1.0	1.0	
	Spaniard's Bay	1.0	1.0	
	Upper Island Cove	1.0	1.0	
	Western Bay	1.0	0.0	
	Winterton	1.0	0.0	
	Bell Island	Wabana	4.2	
Conception Bay Central Region	Avondale	1.0	1.0	2.0
	Holyrood	1.0	1.0	

Physician Resource Forecast for Family Medicine

Eastern Health Primary Healthcare Areas	Practice Communities	FTE	Adjusted for Age to FTE	Totals
St. John's Metro Region	Conception Bay South	17.5	15.5	191.7
	Goulds	1.0	1.0	
	Mount Pearl	16.0	16.0	
	Paradise	6.75	6.75	
	Portugal Cove - St. Phillip's	5.0	5.0	
	St. John's	150.45	144.45	
	Torbay	3.0	3.0	
	TOTAL			263.3

Physician Resource Forecast for Family Medicine

Central Health Primary Healthcare Areas	Practice Communities	FTE	Adjusted for Age to FTE	Totals
Gander Area	Gander	13.0	13.0	13.0
Grand Falls-Windsor	Grand Falls-Windsor	21.0	21.0	21.0
Baie Verte Area	Baie Verte	3.0	3.0	3.0
Green Bay Area	Springdale	5.0	5.0	5.0
Buchans	Buchans	1.0	1.0	1.0
Exploits Area	Bishop's Falls Botwood	1.0 6.0	1.0 6.0	7.0
Lewisporte Area	Lewisporte	4.0	4.0	4.0
Coast of Bays Area	Harbour Breton St. Alban's	4.0 1.0	4.0 1.0	5.0
Kittiwake Coast	Badger's Quay Centreville-Wareham- Trinity	5.0 1.0	5.0 1.0	6.0
Terra Nova Area	Gambo Glovertown	1.0 2.0	1.0 2.0	3.0
Isle of Notre Dame	Fogo Twillingate	2.0 5.0	2.0 5.0	7.0
	TOTAL			75.0

Physician Resource Forecast for Family Medicine

Western Health Primary Healthcare Areas	Practice Communities	FTE	Adjusted for Age to FTE	Totals
Bay St. George	Lourdes	1.0	1.0	10.0
	Stephenville	10.0	8.0	
	Stephenville Crossing	1.0	1.0	
Deer Lake - White Bay	Deer Lake	2.0	2.0	5.0
	Hampden	1.0	1.0	
	Pasadena	2.0	2.0	
Bonne Bay	Norris Point	4.0	4.0	4.0
Port Saunders	Port au Choix	2.0	2.0	3.0
	Port Saunders	1.0	1.0	
Port aux Basques	Port aux Basques	9.25	8.25	8.25
Burgeo	Burgeo	2.0	2.0	2.0
Corner Brook - Bay of Islands	Corner Brook	29.8	28.8	28.8
	Cox's Cove	0.5	0.0	
	Steady Brook	0.0	0.0	
TOTAL				61.1

Physician Resource Forecast for Family Medicine

Labrador-Grenfell Health Primary Healthcare Areas	Practice Communities	FTE	Adjusted for Age to FTE	Totals
Labrador West	Churchill Falls	1.0	1.0	8.0
	Labrador City	7.0	7.0	
Central Labrador	Happy Valley - Goose Bay	11.7	11.7	11.7
Nunatsiavut Communities		0.0	0.0	0.0
Innu Communities		0.0	0.0	0.0
South East Labrador and Straits	Forteau	2.0	2.0	2.0
Northern Peninsula	Flower's Cove	2.0	2.0	10.0
	Roddickton	2.0	2.0	
	St. Anthony	6.0	6.0	
TOTAL				31.7

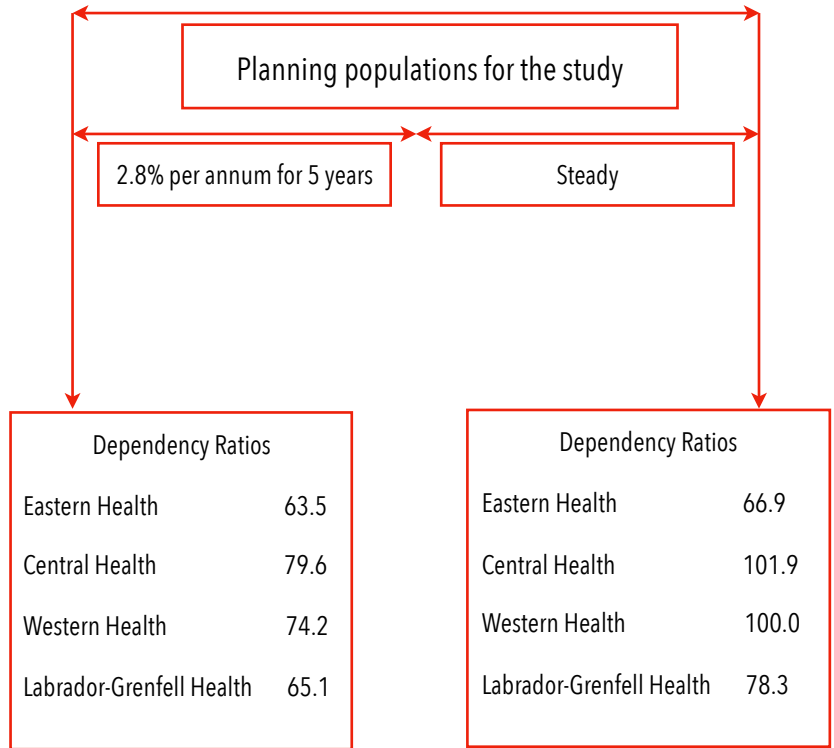
+/- Change in age/gender adjusted population
(6)

Health Region	2017-2018	2019 Estimated	2024 Estimated	2029 Estimated
Eastern Health	325,768	319,071	320,396	324,417
Central Health	95,931	91,884	89,737	86,618
Western Health	80,607	76,842	75,124	73,925
Labrador-Grenfell Health	37,150	36,497	35,290	34,468

Health Region	2017-2018	2019 Estimated	2024 Age-Gender Adjusted	2029 Age-Gender Adjusted
Eastern Health	325,768	319,071	363,740	363,740
Central Health	95,931	91,884	104,748	104,748
Western Health	80,607	76,842	87,600	87,600
Labrador-Grenfell Health	37,150	36,497	41,607	41,607

Planning Assumptions
 Due to the variability in the accuracy of planning assumptions, the historical trends, and the adjustments for age and gender, it will be assumed that growth is symmetrical for the first five years and then holds steady after year six.

The impact on the FTE counts of family physicians will be variable, as well; for the impact of age and gender adjustment, it will be assumed that 1.0 FTE will be required for each 1,500 increment (will vary by uptake of collaborative teams and geography).



Physician Resource Forecast for Family Medicine

Eastern Health

Population Impacts by Year (planning assumption is symmetry)		
	FTE Impact	
t ₀	----	----
t ₁	8,934	5.9
t ₂	8,934	5.9
t ₃	8,934	5.9
t ₄	8,934	5.9
t ₅	8,934	5.9
t ₆	----	----
t ₇	----	----
t ₈	----	----
t ₉	----	----
t ₁₀	----	----

Central Health

Population Impacts by Year (planning assumption is symmetry)		
	FTE Impact	
t ₀	----	----
t ₁	2,573	1.7
t ₂	2,573	1.7
t ₃	2,573	1.7
t ₄	2,573	1.7
t ₅	2,573	1.7
t ₆	----	----
t ₇	----	----
t ₈	----	----
t ₉	----	----
t ₁₀	----	----

Data will be adjusted during the final projections for base case, low case, and high case

Western Health

Population Impacts by Year (planning assumption is symmetry)		
	FTE Impact	
t ₀	----	----
t ₁	2,152	1.4
t ₂	2,152	1.4
t ₃	2,152	1.4
t ₄	2,152	1.4
t ₅	2,152	1.4
t ₆	----	----
t ₇	----	----
t ₈	----	----
t ₉	----	----
t ₁₀	----	----

Labrador-Grenfell Health

Population Impacts by Year (planning assumption is symmetry)		
	FTE Impact	
t ₀	----	----
t ₁	1,022	0.7
t ₂	1,022	0.7
t ₃	1,022	0.7
t ₄	1,022	0.7
t ₅	1,022	0.7
t ₆	----	----
t ₇	----	----
t ₈	----	----
t ₉	----	----
t ₁₀	----	----

+/- Burden of illness
(7)

Data will be adjusted during the final projections for base case, low case, and high case

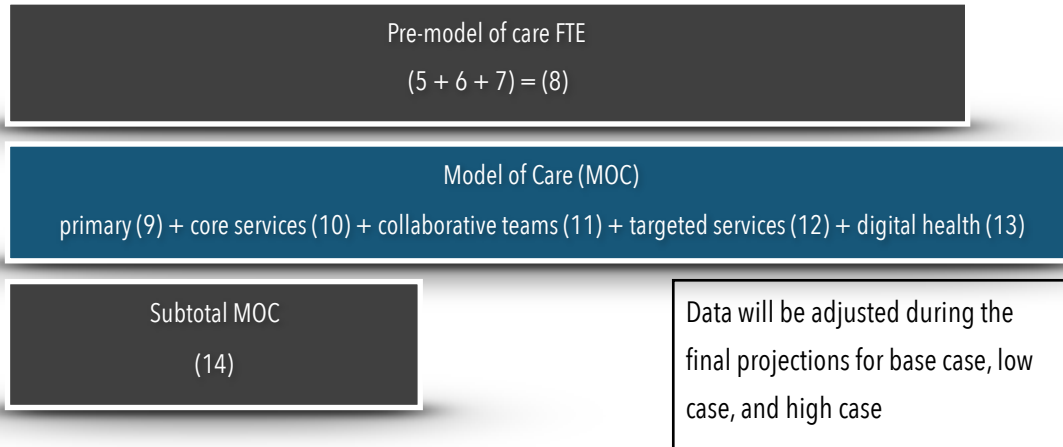
The greatest burden of illness in Newfoundland and Labrador has been identified and collated using data from primary healthcare service areas. Those with the greatest burden will require additional primary care resources (that may be modified by the uptake of models of care). While the burden may be lessened, for planning purposes, it should be assumed that the base case will be the most likely with modest variance for high and low case scenarios.

The burden of illness modifiers to the projections will reflect the analyses in the report, as follows at a high level (with variation across the primary healthcare service areas):

- Eastern Health has the highest or second highest age-standardized prevalence rates for six of the chronic illnesses
- Central Health has the highest or second highest age-standardized prevalence rates for seven of the chronic illnesses
- Western Health has the highest or second highest age-standardized prevalence rates for four of the chronic illnesses
- Labrador-Grenfell Health has the highest or second highest age-standardized prevalence rates for two of the chronic illnesses
- The average of the median values for the eight age-standardized prevalence rates is:
 - Eastern Health (10.29)
 - Central Health (10.51)
 - Western Health (9.21)
 - Labrador-Grenfell Health (5.24)

The burden of illness is greatest for Eastern Health and Central Health (with primary healthcare service area variation). No adjustments are required for base case, high case, and low case.

Physician Resource Forecast for Family Medicine



The key model of care is the collaborative team approach that builds on the foundation of FPNs. Fulfilling collaborative team goals will require financial support by DHCS; the main consequences will be improved quality and care closer to home. The system impact will be substantial and will provide a model to which family physicians can be recruited.

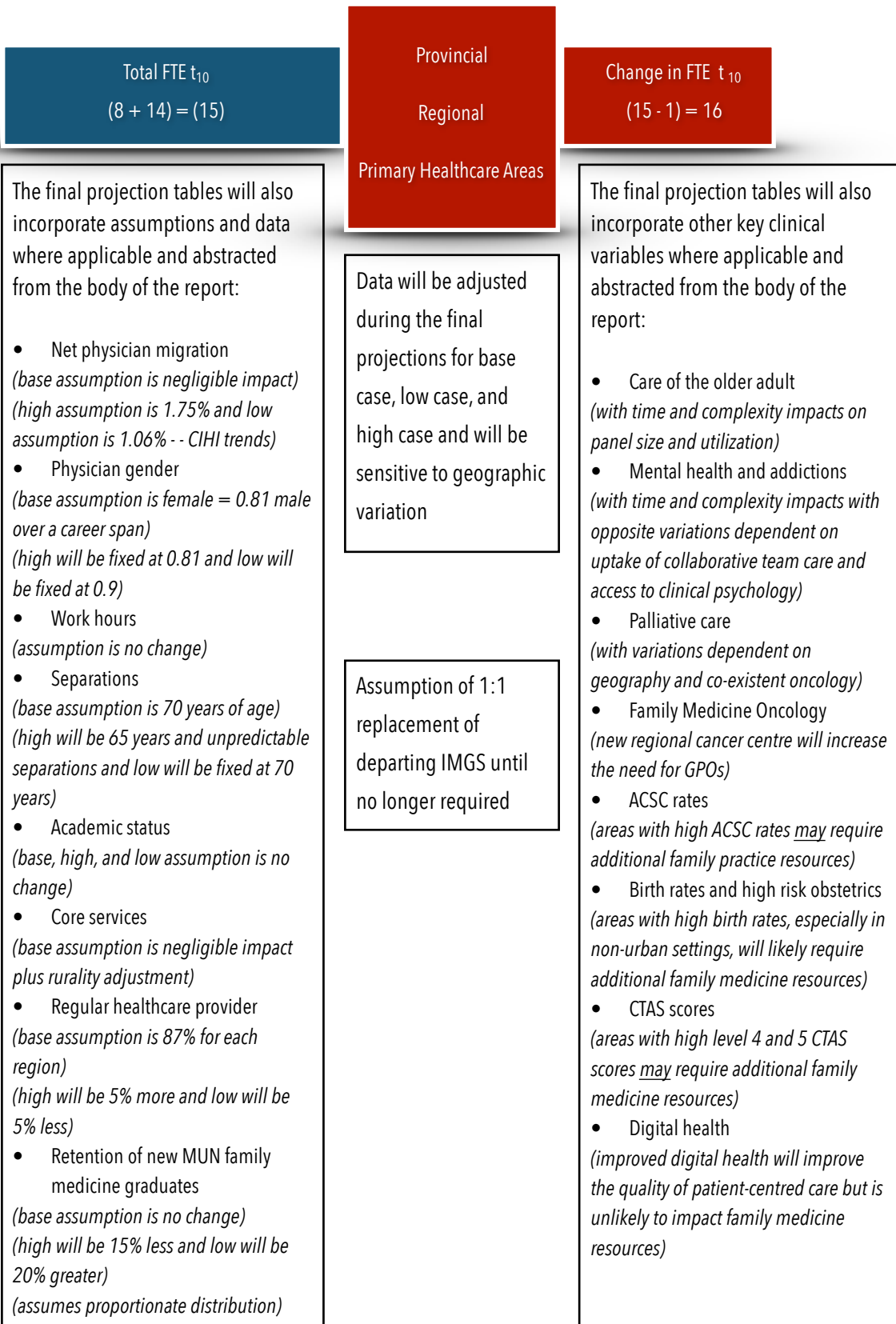
In addition to quality and recruitment benefits, the collaborative team will enhance care for the older adult, mental health and addictions, and home care, with a foundation of role optimization and shared accountability.

The multidisciplinary providers will vary by site, but will include a combination, of family practitioners, nurse practitioners, clinical psychologists, pharmacists, physiotherapists, dietitians, and social workers. The professional roles will include telephone support to remote communities (typically staffed by NPs and PAs) and rotations through the “adopted” communities.

It is likely, but not mandatory, that the first sites for collaborative teams will be larger regional centres; development of the teams in rural settings will be a natural outcome over time.

Planning to operationalize the collaborative team requires modest expectations to start, with the initial establishment of two or three pilot sites within two years. The subsequent growth of the model can also follow two year cycles, but may be accelerated with a significant impact of family physician resource planning. The evidence-to-date with a similar model is that the patient roster for a team can increase by 50% over a traditional practice setting (or, conversely, the need for family physicians at that site can decrease by 30%).

Targeted models of care, as discussed, can be built into the collaborative team based on population health needs-based planning.





14.0

Projection Tables

EASTERN HEALTH - LEGEND

Primary Healthcare Area	Practice Communities	Adjusted FTEs t_0
Clarenville/area	a. Arnold's Cove b. Clarenville c. Port Blandford	12.0
Burin Peninsula	a. Bay L'Argent b. Burin c. Burin Bay Arm d. Grand Bank e. Marystown f. St. Lawrence	13.25
Bonavista/area	a. Bonavista b. Catalina	8.0
Placentia/Whitbourne/area	a. Placentia b. Whitbourne	6.5
St. Mary's/area	a. St. Mary's	1.0
Southern Shore/area	a. Bay Bulls b. Trepassy	4.66
Conception Bay North /Trinity Bay South	a. Bay Roberts b. Carbonear c. Clarke's Beach d. Harbour Grace e. Old Perlican f. South River g. Spaniard's Bay h. Upper Island Cove i. Western Bay j. Winterton	20.0
Bell Island	a. Wabana	4.2
Conception Bay Central	a. Avondale b. Holyrood	2.0
St. John's/metro region	a. Conception Bay South b. Goulds c. Mount Pearl d. Paradise e. Portugal Cove - St. Phillip's f. St. John's g. Torbay	191.7
	TOTAL	263.3

Physician Resource Forecast for Family Medicine

EASTERN HEALTH - BASE CASE

t ₁t ₁₀	t ₁	t ₂	t ₃	t ₄	t ₅	t ₆	t ₇	t ₈	t ₉	t ₁₀	Totals
Variable	Adjusted t ₀ base FTE 263.3										
Primary FTE adjustment for no healthcare provider	7.1	----	----	----	----	----	----	----	----	----	7.1
Secondary FTE adjustment for no healthcare provider	----	7.1	7.1	----	----	----	----	----	----	----	14.2
Population FTE adjustment	5.9	5.9	5.9	5.9	5.9	----	----	----	----	----	29.5
FTE MUN retention at 3.0 per year not additive											Not additive
FTE gender adjustments at 0.6 per year not additive											Not additive
Work hours adjustments	----	----	----	----	----	----	----	----	----	----	----
Academic adjustments	----	----	----	----	----	----	----	----	----	----	----
Core service adjustments	----	----	----	----	----	----	----	----	----	----	----
Burden of illness adjustments to FTE status	4.0	4.0	4.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0	29.0
Birth rate adjustments to FTE status	----	----	----	----	----	----	----	----	----	----	----
Collaborative team FTE adjustments	----	----	-6.0	----	-6.0	----	-6.0	-6.0	-6.0	-6.0	-36
Indigenous peoples	----	----	----	----	----	----	----	----	----	----	----
Care of older adults FTE adjustments	3.0	3.0	2.0	2.0	4.0	4.0	4.0	4.0	4.0	4.0	34.0
Mental health and addictions FTE adjustments	----	----	----	----	----	----	----	----	----	----	----
Palliative care FTE adjustments	----	----	----	----	----	----	----	----	----	----	----
Family medicine oncology FTE adjustments	----	----	----	----	----	----	----	----	----	----	----
ACSC FTE adjustments	----	----	----	----	----	----	----	----	----	----	----
CTAS scores adjustments	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	35.0
Benchmark adjustments	----	----	----	----	----	----	----	----	----	----	----
FTE separations	2.0	4.0	1.0	7.0	----	7.0	6.0	2.0	4.0	8.0	41.0
FTE net physician migration	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	46.0
TOTALS	30.6	32.6	22.6	26.5	15.5	21.6	13.6	9.6	11.6	15.6	112.8
Clarenville/area											
Burin Peninsula											
Bonavista/area											

Physician Resource Forecast for Family Medicine

t ₁t ₁₀	t ₁	t ₂	t ₃	t ₄	t ₅	t ₆	t ₇	t ₈	t ₉	t ₁₀	Totals
Placentia/Whitbourne/area											
St. Mary's/area											
Southern Shore/area											
Conception Bay North /Trinity Bay South											
Bell Island											
Conception Bay Central											
St. John's/metro region											
TOTALS											

Physician Resource Forecast for Family Medicine

EASTERN HEALTH - HIGH CASE

t ₁t ₁₀	t ₁	t ₂	t ₃	t ₄	t ₅	t ₆	t ₇	t ₈	t ₉	t ₁₀	NET
Variable	Adjusted t ₀ base FTE 263.3										
Primary FTE adjustment for no provider	8.0	----	----	----	----	----	----	----	----	----	8.0
Secondary FTE adjustment for no healthcare provider	----	6.0	6.0	4.0	2.0	----	----	----	----	----	18.0
Population FTE adjustment	5.9	5.9	5.9	5.9	5.9	----	----	----	----	----	29.5
FTE MUN retention at 3.0 per year not additive											Not additive
FTE gender adjustments at 0.6 per year not additive											Not additive
Work hours adjustments	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	5.0
Academic adjustments	----	----	----	----	----	----	----	----	----	----	----
Core service adjustments	----	----	----	----	----	----	----	----	----	----	----
Burden of illness adjustments to FTE status	7.5	7.5	7.5	5.5	5.5	5.5	3.5	3.5	3.5	3.5	53.0
Birth rate adjustments to FTE status	----	----	----	----	----	----	----	----	----	----	----
Collaborative team FTE adjustments	----	----	----	----	----	----	----	----	----	----	----
Indigenous peoples	----	----	----	----	----	----	----	----	----	----	----
Care of older adults FTE adjustments	4.0	4.0	3.5	3.5	5.0	5.0	5.0	5.0	5.0	5.0	45.0
Mental health and addictions FTE adjustments	2.0	----	2.0	----	2.0	1.0	1.0	1.0	1.0	1.0	11.0
Palliative care FTE adjustments	----	----	----	----	----	----	----	----	----	----	----
Family medicine oncology FTE adjustments	----	----	----	----	----	----	----	----	----	----	----
ACSC FTE adjustments	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	15.0
CTAS scores adjustments	6.5	6.5	6.5	6.5	6.5	4.5	4.5	4.5	4.5	4.5	55.0
Benchmark adjustments	----	----	----	----	----	----	----	----	----	----	----
FTE separations	7.0	6.0	2.0	4.0	8.0	5.0	8.0	2.0	5.0	8.0	55.0
FTE net physician migration	8.6	8.6	6.6	6.6	6.6	5.6	5.6	5.6	5.6	5.6	65.0
TOTALS	51.5	46.5	42.0	38.0	43.5	18	16	16	16	16	359.5
Clareville/area											
Burin Peninsula											
Bonavista/area											

Physician Resource Forecast for Family Medicine

t ₁ t ₁₀	t ₁	t ₂	t ₃	t ₄	t ₅	t ₆	t ₇	t ₈	t ₉	t ₁₀	NET
Placentia/Whitbourne/area											
St. Mary's/area											
Southern Shore/area											
Conception Bay North /Trinity Bay South											
Bell Island											
Conception Bay Central											
St. John's/metro region											
TOTALS											

Physician Resource Forecast for Family Medicine

EASTERN HEALTH - LOW CASE

t ₁t ₁₀	t ₁	t ₂	t ₃	t ₄	t ₅	t ₆	t ₇	t ₈	t ₉	t ₁₀	NET
Variable	Adjusted t ₀ base FTE 263.3										
Primary FTE adjustment for no provider	9.0	----	----	----	----	----	----	----	----	----	9.0
Secondary FTE adjustment for no healthcare provider	----	8.0	4.3	----	----	----	----	----	----	----	12.3
Population FTE adjustment	5.9	5.9	5.9	5.9	5.9	----	----	----	----	----	29.5
FTE MUN retention at 3.0 per year not additive											Not additive
FTE gender adjustments at 0.6 per year not additive											Not additive
FTE separations	2.0	4.0	1.0	7.0	----	7.0	6.0	2.0	4.0	8.0	41.0
Academic adjustments	----	----	----	----	----	----	----	----	----	----	----
Core service adjustments	----	----	----	----	----	----	----	----	----	----	----
Burden of illness adjustments to FTE status	2.0	2.0	2.0	1.0	1.0	1.0	----	----	----	----	9.0
Birth rate adjustments to FTE status	----	----	----	----	----	----	----	----	----	----	----
Collaborative team FTE adjustments	----	-6.0	-6.0	-6.0	-6.0	-6.0	-8.0	-8.0	-8.0	-8.0	-62.0
Indigenous peoples	----	----	----	----	----	----	----	----	----	----	----
Care of older adults FTE adjustments	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	20.0
Mental health and addictions FTE adjustments	----	----	----	----	----	----	----	----	----	----	----
Palliative care FTE adjustments	----	----	----	----	----	----	----	----	----	----	----
Family medicine oncology FTE adjustments	----	----	----	----	----	----	----	----	----	----	----
ACSC FTE adjustments	----	----	----	----	----	----	----	----	----	----	----
CTAS scores adjustments	2.5	2.5	2.5	2.5	2.5	2.0	2.0	2.0	2.0	2.0	22.5
Benchmark adjustments	----	----	----	----	----	----	----	----	----	----	----
FTE separations	2.0	4.0	1.0	7.0	----	7.0	6.0	2.0	4.0	8.0	41.0
FTE net physician migration	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	30.0
TOTALS	26.4	21.4	14.7	15.4	8.4	9.0	5.0	1.0	3.0	7.0	111.3
Clareville/area											
Burin Peninsula											
Bonavista/area											

Physician Resource Forecast for Family Medicine

t ₁ t ₁₀	t ₁	t ₂	t ₃	t ₄	t ₅	t ₆	t ₇	t ₈	t ₉	t ₁₀	NET
Placentia/Whitbourne/area											
St. Mary's/area											
Southern Shore/area											
Conception Bay North /Trinity Bay South											
Bell Island											
Conception Bay Central											
St. John's/metro region											
TOTALS											

CENTRAL HEALTH - LEGEND

Primary Healthcare Area	Practice Communities	Adjusted FTEs t ₀
Gander Area	a. Gander	13.0
Grand Falls-Windsor	a. Grand Falls-Windsor	21.0
Baie Verte Area	a. Baie Verte	3.0
Green Bay Area	a. Springdale	5.0
Buchans	a. Buchans	1.0
Exploits Area	a. Bishop's Falls b. Botwood	7.0
Lewisporte Area	a. Lewisporte	4.0
Coast of Bays Area	a. Harbour Breton b. St. Alban's	5.0
Kittiwake Coast	a. Badger's Quay b. Centreville-Wareham-Trinity	6.0
Terra Nova Area	a. Gambo b. Glovertown	3.0
Isle of Notre Dame	a. Fogo b. Twillingate	7.0
	TOTAL	75.0

Physician Resource Forecast for Family Medicine

CENTRAL HEALTH - BASE CASE

t ₁t ₁₀	t ₁	t ₂	t ₃	t ₄	t ₅	t ₆	t ₇	t ₈	t ₉	t ₁₀	NET
Variable	Adjusted t ₀ base FTE 75.0										
Primary FTE adjustment for no provider	2.0	----	----	----	----	----	----	----	----	----	2.0
Secondary FTE adjustment for no healthcare provider	----	2.0	1.0	----	----	----	----	----	----	----	3.0
Population FTE adjustment	2.0	2.0	2.0	2.0	2.0	----	----	----	----	----	10.0
FTE MUN retention at 2.0 per year not additive											Not additive
FTE gender adjustments at 0.4 per year not additive											
Work hours adjustments	----	----	----	----	----	----	----	----	----	----	----
Academic adjustments	----	----	----	----	----	----	----	----	----	----	----
Core service adjustments	----	----	----	----	----	----	----	----	----	----	----
Burden of illness adjustments to FTE status	3.0	3.0	3.0	2.0	2.0	2.0	2.0	1.0	1.0	1.0	20.0
Birth rate adjustments to FTE status	----	----	----	----	----	----	----	----	----	----	----
Collaborative team FTE adjustments	----	-4.0	-4.0	----	-4.0	----	-4.0	----	-4.0	----	-20.0
Indigenous peoples	----	----	----	----	----	----	----	----	----	----	----
Care of older adults FTE adjustments	1.5	1.5	1.5	2.5	2.5	2.5	2.5	2.5	3.5	3.5	24.0
Mental health and addictions FTE adjustments	0.5	0.5	0.5	0.5	----	----	0.5	0.5	----	----	3.0
Palliative care FTE adjustments	0.5	0.5	----	----	----	0.5	0.5	----	----	1.0	3.0
Family medicine oncology FTE adjustments	0.5	0.5	0.5	0.5	----	----	----	----	----	----	2.0
ACSC FTE adjustments	----	----	----	----	----	----	----	----	----	----	----
CTAS scores adjustments	2.0	2.0	1.5	1.5	1.5	1.0	1.0	1.0	1.0	1.0	13.5
Benchmark adjustments	----	----	----	----	----	----	----	----	----	----	----
FTE separations	----	----	----	----	----	----	----	----	----	----	----
FTE net physician migration	4.0	4.0	4.0	4.0	2.5	2.5	2.5	2.5	2.5	2.5	31.0
TOTALS	16.0	12.0	10.0	13.0	6.5	8.5	5.0	7.5	4.0	9.0	91.5
Gander Area											
Grand Falls-Windsor											
Baie Verte Area											

Physician Resource Forecast for Family Medicine

t ₁t ₁₀	t ₁	t ₂	t ₃	t ₄	t ₅	t ₆	t ₇	t ₈	t ₉	t ₁₀	NET
Green Bay Area											
Buchans											
Exploits Area											
Lewisporte Area											
Coast of Bays Area											
Kittiwake Coast											
Terra Nova Area											
Isle of Notre Dame											
TOTALS											

Physician Resource Forecast for Family Medicine

CENTRAL HEALTH - HIGH CASE

t ₁t ₁₀	t ₁	t ₂	t ₃	t ₄	t ₅	t ₆	t ₇	t ₈	t ₉	t ₁₀	NET
Variable	Adjusted t ₀ base FTE 75.0										
Primary FTE adjustment for no provider	1.0	----	----	----	----	----	----	----	----	----	1.0
Secondary FTE adjustment for no healthcare provider	----	1.0	3.0	----	----	----	----	----	----	----	4.0
Population FTE adjustment	2.0	2.0	2.0	2.0	2.0	----	----	----	----	----	10.0
FTE MUN retention at 2.0 per year not additive											Not additive
FTE gender adjustments at 0.4 per year not additive											
Work hours adjustments	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	5.0
Academic adjustments	----	----	----	----	----	----	----	----	----	----	----
Core service adjustments	----	----	----	----	----	----	----	----	----	----	----
Burden of illness adjustments to FTE status	3.5	3.5	3.5	2.5	2.0	2.0	2.0	1.0	1.0	1.0	22.0
Birth rate adjustments to FTE status	----	----	----	----	----	----	----	----	----	----	----
Collaborative team FTE adjustments	----	----	----	----	----	----	----	----	----	----	----
Indigenous peoples	----	----	----	----	----	----	----	----	----	----	----
Care of older adults FTE adjustments	2.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0	29.0
Mental health and addictions FTE adjustments	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	5.0
Palliative care FTE adjustments	0.5	0.5	----	----	----	0.5	0.5	----	1.0	1.0	4.0
Family medicine oncology FTE adjustments	0.5	0.5	0.5	0.5	----	----	----	----	----	----	2.0
ACSC FTE adjustments	1.0	1.0	0.5	0.5	0.5	0.5	----	----	----	----	4.0
CTAS scores adjustments	2.0	2.0	1.5	1.5	1.5	1.0	1.0	1.0	1.0	1.0	13.5
Benchmark adjustments	----	----	----	----	----	----	----	----	----	----	----
FTE separations	4.0	1.0	----	1.0	----	----	1.0	2.0	----	2.0	11.0
FTE net physician migration	6.0	6.0	6.0	6.0	3.0	3.0	3.0	3.0	3.0	3.0	42.0
TOTALS	23.5	20.5	20.0	18.0	13.0	11.0	11.5	11.0	11.0	13.0	152.5
Gander Area											
Grand Falls-Windsor											
Baie Verte Area											

Physician Resource Forecast for Family Medicine

t ₁t ₁₀	t ₁	t ₂	t ₃	t ₄	t ₅	t ₆	t ₇	t ₈	t ₉	t ₁₀	NET
Green Bay Area											
Buchans											
Exploits Area											
Lewisporte Area											
Coast of Bays Area											
Kittiwake Coast											
Terra Nova Area											
Isle of Notre Dame											
TOTALS											

Physician Resource Forecast for Family Medicine

CENTRAL HEALTH - LOW CASE

t ₁t ₁₀	t ₁	t ₂	t ₃	t ₄	t ₅	t ₆	t ₇	t ₈	t ₉	t ₁₀	NET
Variable	Adjusted t ₀ base FTE 75.0										
Primary FTE adjustment for no provider	1.0	----	----	----	----	----	----	----	----	----	1.0
Secondary FTE adjustment for no healthcare provider	----	1.0	3.0	----	----	----	----	----	----	----	4.0
Population FTE adjustment	2.0	2.0	2.0	2.0	2.0	----	----	----	----	----	10.0
FTE MUN retention at 2.0 per year not additive											Not additive
FTE gender adjustments at 0.4 per year not additive											
Work hours adjustments	----	----	----	----	----	----	----	----	----	----	----
Academic adjustments	----	----	----	----	----	----	----	----	----	----	----
Core service adjustments	----	----	----	----	----	----	----	----	----	----	----
Burden of illness adjustments to FTE status	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.0	1.0	1.0	17.0
Birth rate adjustments to FTE status	----	----	----	----	----	----	----	----	----	----	----
Collaborative team FTE adjustments	----	----	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	-32.0
Indigenous peoples	----	----	----	----	----	----	----	----	----	----	----
Care of older adults FTE adjustments	1.0	1.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	16.0
Mental health and addictions FTE adjustments	0.5	0.5	0.5	----	----	----	----	----	----	----	1.5
Palliative care FTE adjustments	0.5	0.5	----	----	----	----	----	----	----	1.0	2.0
Family medicine oncology FTE adjustments	0.5	0.5	0.5	0.5	----	----	----	----	----	----	2.0
ACSC FTE adjustments	----	----	----	----	----	----	----	----	----	----	----
CTAS scores adjustments	1.0	1.0	1.0	1.0	1.0	----	----	----	----	----	5.0
Benchmark adjustments	----	----	----	----	----	----	----	----	----	----	----
FTE separations	----	----	----	----	----	----	----	----	----	----	----
FTE net physician migration	4.0	4.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0	26.0
TOTALS	12.5	12.5	9.0	5.5	5.0	2.0	2.0	1.0	1.0	2.0	52.5
Gander Area											
Grand Falls-Windsor											
Baie Verte Area											

Physician Resource Forecast for Family Medicine

t ₁ t ₁₀	t ₁	t ₂	t ₃	t ₄	t ₅	t ₆	t ₇	t ₈	t ₉	t ₁₀	NET
Green Bay Area											
Buchans											
Exploits Area											
Lewisporte Area											
Coast of Bays Area											
Kittiwake Coast											
Terra Nova Area											
Isle of Notre Dame											
TOTALS											

WESTERN HEALTH - LEGEND

Primary Healthcare Area	Practice Communities	Adjusted FTEs t ₀
Bay St. George	a. Lourdes b. Stephenville c. Stephenville Crossing	10.0
Deer Lake - White Bay	a. Deer Lake b. Hampden c. Pasadena	5.0
Bonne Bay	a. Norris Point	4.0
Port Saunders	a. Port au Choix b. Port Saunders	3.0
Port aux Basques	a. Port aux Basques	8.25
Burgeo	a. Burgeo	2.0
Corner Brook - Bay of Islands	a. Corner Brook b. Cox's Cove c. Steady Brook	28.8
	TOTAL	61.1

Physician Resource Forecast for Family Medicine

WESTERN HEALTH - BASE CASE

t ₁ t ₁₀	t ₁	t ₂	t ₃	t ₄	t ₅	t ₆	t ₇	t ₈	t ₉	t ₁₀	NET
Variable	Adjusted t ₀ base FTE 61.1										
Primary FTE adjustment for no provider	3.0	----	----	----	----	----	----	----	----	----	3.0
Secondary FTE adjustment for no healthcare provider	----	1.0	1.0	----	----	----	----	----	----	----	2.0
Population FTE adjustment	1.4	1.4	1.4	1.4	1.4	----	----	----	----	----	7.0
FTE MUN retention at 2.0 per year not additive											Not additive
FTE gender adjustments at 0.4 per year not additive											
Work hours adjustments	----	----	----	----	----	----	----	----	----	----	----
Academic adjustments	----	----	----	----	----	----	----	----	----	----	----
Core service adjustments	----	----	----	----	----	----	----	----	----	----	----
Burden of illness adjustments to FTE status	2.0	2.0	2.0	2.0	2.0	1.0	1.0	1.0	1.0	1.0	15.0
Birth rate adjustments to FTE status	----	----	----	----	----	----	----	----	----	----	----
Collaborative team FTE adjustments	----	-2.0	-2.0	----	-2.0	----	----	-2.0	----	----	-8.0
Indigenous peoples	----	----	----	----	----	----	----	----	----	----	----
Care of older adults FTE adjustments	0.5	0.5	1.0	1.0	1.0	1.0	1.5	1.5	1.5	1.5	11.0
Mental health and addictions FTE adjustments	0.5	0.5	----	----	----	----	----	----	----	----	1.0
Palliative care FTE adjustments	1.0	----	----	----	----	----	----	----	----	----	1.0
Family medicine oncology FTE adjustments	1.0	----	----	----	----	----	----	----	----	----	1.0
ACSC FTE adjustments	1.5	1.0	1.0	1.0	1.0	----	----	----	----	----	5.5
CTAS scores adjustments	1.5	1.0	1.0	1.0	1.0	0.5	0.5	0.5	0.5	0.5	8.0
Benchmark adjustments	----	----	----	----	----	----	----	----	----	----	----
FTE separations	----	----	----	2.0	----	----	1.0	----	----	2.0	5.0
FTE net physician migration	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	30.0
TOTALS	15.4	8.4	8.4	11.4	7.4	5.5	7.0	4.0	6.0	8.0	81.5
Bay St. George											
Deer Lake - White Bay											
Bonne Bay											

Physician Resource Forecast for Family Medicine

t ₁t ₁₀	t ₁	t ₂	t ₃	t ₄	t ₅	t ₆	t ₇	t ₈	t ₉	t ₁₀	NET
Port Saunders											
Port aux Basques											
Burgeo											
Corner Brook - Bay of Islands											
TOTALS											

Physician Resource Forecast for Family Medicine

WESTERN HEALTH - HIGH CASE

t ₁t ₁₀	t ₁	t ₂	t ₃	t ₄	t ₅	t ₆	t ₇	t ₈	t ₉	t ₁₀	NET
Variable	Adjusted t ₀ base FTE 61.1										
Primary FTE adjustment for no provider	1.0	----	----	----	----	----	----	----	----	----	1.0
Secondary FTE adjustment for no healthcare provider	----	1.0	2.0	----	----	----	----	----	----	----	3.0
Population FTE adjustment	1.4	1.4	1.4	1.4	1.4	----	----	----	----	----	7.0
FTE MUN retention at 2.0 per year not additive											Not additive
FTE gender adjustments at 0.4 per year not additive											
Work hours adjustments	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	----
Academic adjustments	----	----	----	----	----	----	----	----	----	----	----
Core service adjustments	----	----	----	----	----	----	----	----	----	----	----
Burden of illness adjustments to FTE status	1.5	1.5	1.5	1.0	1.0	1.0	1.0	1.5	1.5	1.5	13.0
Birth rate adjustments to FTE status	----	----	----	----	----	----	----	----	----	----	----
Collaborative team FTE adjustments	----	----	----	----	----	----	----	----	----	----	----
Indigenous peoples	----	----	----	----	----	----	----	----	----	----	----
Care of older adults FTE adjustments	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	2.0	18.0
Mental health and addictions FTE adjustments	0.5	0.5	0.5	0.5	0.5	----	----	----	----	1.0	3.5
Palliative care FTE adjustments	1.0	----	----	----	1.0	----	----	----	----	----	2.0
Family medicine oncology FTE adjustments	1.0	----	----	----	1.0	----	----	----	----	1.0	3.0
ACSC FTE adjustments	1.5	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	17.5
CTAS scores adjustments	1.5	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	17.5
Benchmark adjustments	----	----	----	----	----	----	----	----	----	----	----
FTE separations	----	1.0	----	2.0	----	4.0	2.0	2.0	1.0	1.0	13.0
FTE net physician migration	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	35.0
TOTALS	15.4	14.4	14.4	13.9	14.4	14.5	12.5	13.0	12.0	14.0	138.5
Bay St. George											
Deer Lake - White Bay											
Bonne Bay											

Physician Resource Forecast for Family Medicine

t ₁ t ₁₀	t ₁	t ₂	t ₃	t ₄	t ₅	t ₆	t ₇	t ₈	t ₉	t ₁₀	NET
Port Saunders											
Port aux Basques											
Burgeo											
Corner Brook - Bay of Islands											
TOTALS											

Physician Resource Forecast for Family Medicine

WESTERN HEALTH - LOW CASE

t ₁t ₁₀	t ₁	t ₂	t ₃	t ₄	t ₅	t ₆	t ₇	t ₈	t ₉	t ₁₀	NET
Variable	Adjusted t ₀ base FTE 61.1										
Primary FTE adjustment for no provider	3.0	----	----	----	----	----	----	----	----	----	3.0
Secondary FTE adjustment for no healthcare provider	----	1.0	1.0	----	----	----	----	----	----	----	2.0
Population FTE adjustment	1.4	1.4	1.4	1.4	1.4	----	----	----	----	----	7.0
FTE MUN retention at 2.0 per year not additive											Not additive
FTE gender adjustments at 0.4 per year not additive											
Work hours adjustments	----	----	----	----	----	----	----	----	----	----	----
Academic adjustments	----	----	----	----	----	----	----	----	----	----	----
Core service adjustments	----	----	----	----	----	----	----	----	----	----	----
Burden of illness adjustments to FTE status	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	10.0
Birth rate adjustments to FTE status	----	----	----	----	----	----	----	----	----	----	----
Collaborative team FTE adjustments	----	-4.0	-4.0	----	-6.0	----	----	-2.0	----	----	-16.0
Indigenous peoples	----	----	----	----	----	----	----	----	----	----	----
Care of older adults FTE adjustments	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	10.0
Mental health and addictions FTE adjustments	----	----	----	----	----	----	----	----	----	----	----
Palliative care FTE adjustments	1.0	----	----	----	----	----	----	----	----	----	1.0
Family medicine oncology FTE adjustments	1.0	----	----	----	----	----	----	----	----	----	1.0
ACSC FTE adjustments	1.0	----	----	----	----	----	----	----	----	----	1.0
CTAS scores adjustments	1.0	1.0	1.0	1.0	1.0	----	----	----	----	----	5.0
Benchmark adjustments	----	----	----	----	----	----	----	----	----	----	----
FTE separations	----	----	----	2.0	----	----	1.0	----	----	2.0	5.0
FTE net physician migration	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	20.0
TOTALS	12.4	3.4	3.4	8.4	0.4	4.0	5.0	2.0	4.0	6.0	49.0
Bay St. George											
Deer Lake - White Bay											
Bonne Bay											

Physician Resource Forecast for Family Medicine

t ₁ t ₁₀	t ₁	t ₂	t ₃	t ₄	t ₅	t ₆	t ₇	t ₈	t ₉	t ₁₀	NET
Port Saunders											
Port aux Basques											
Burgeo											
Corner Brook - Bay of Islands											
TOTALS											

Physician Resource Forecast for Family Medicine

LABRADOR-GRENFELL HEALTH - LEGEND

Labrador-Grenfell Health Primary Healthcare Areas	Practice Communities	Totals
Labrador West	a. Churchill Falls b. Labrador City	8.0
Central Labrador	a. Happy Valley - Goose Bay	11.7
Nunatsiavut Communities		0.0
Innu Communities		0.0
South East Labrador and Straits	a. Forteau	2.0
Northern Peninsula	a. Flower's Cove b. Roddickton c. St. Anthony	10.0
	TOTAL	31.7

Physician Resource Forecast for Family Medicine

LABRADOR-GRENFELL HEALTH - BASE CASE

t ₁t ₁₀	t ₁	t ₂	t ₃	t ₄	t ₅	t ₆	t ₇	t ₈	t ₉	t ₁₀	NET
Variable	Adjusted t ₀ base FTE 31.7										
Primary FTE adjustment for no provider	4.0	----	----	----	----	----	----	----	----	----	4.0
Secondary FTE adjustment for no provider	----	2.0	2.0	----	----	----	----	----	----	----	4.0
Population FTE adjustment	0.7	0.7	0.7	0.7	0.7	----	----	----	----	----	3.5
FTE MUN retention at 2.0 per year not additive											Not additive
FTE gender adjustments at 0.4 per year not additive											
Work hours adjustments	----	----	----	----	----	----	----	----	----	----	----
Academic adjustments	----	----	----	----	----	----	----	----	----	----	----
Core service adjustments	----	----	----	----	----	----	----	----	----	----	----
Burden of illness adjustments to FTE status	1.0	1.0	1.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	6.5
Birth rate adjustments to FTE status	1.0	1.0	1.0	----	----	----	----	----	----	----	3.0
Collaborative team FTE adjustments	----	-2.0	-4.0	----	----	-2.0	----	----	----	----	-8.0
Indigenous peoples	1.0	1.0	1.0	----	----	----	----	----	----	----	3.0
Care of older adults FTE adjustments	----	----	----	----	----	----	----	----	----	----	----
Mental health and addictions FTE adjustments	0.5	0.5	0.5	0.5	0.5	----	----	----	----	----	2.5
Palliative care FTE adjustments	1.0	----	----	----	----	----	----	----	----	----	1.0
Family medicine oncology FTE adjustments	1.0	----	----	----	----	----	----	----	----	----	1.0
ACSC FTE adjustments	0.5	0.5	0.5	----	----	----	----	----	----	----	1.5
CTAS scores adjustments	0.5	0.5	0.5	----	----	----	----	----	----	----	1.5
Benchmark adjustments	----	----	----	----	----	----	----	----	----	----	----
FTE separations	----	----	----	----	----	----	1.0	----	----	----	1.0
FTE net physician migration	2.0	----	----	1.0	1.0	1.0	1.0	1.0	1.0	1.0	9.0
TOTALS	13.2	5.2	3.2	2.7	2.7	-0.5	2.5	1.5	1.5	1.5	33.5
Labrador West											
Central Labrador											
Nunatsiavut Communities											

Physician Resource Forecast for Family Medicine

t ₁t ₁₀	t ₁	t ₂	t ₃	t ₄	t ₅	t ₆	t ₇	t ₈	t ₉	t ₁₀	NET
Innu Communities											
South East Labrador and Straits											
Northern Peninsula											
TOTALS											

Physician Resource Forecast for Family Medicine

LABRADOR-GRENFELL HEALTH - HIGH CASE

t ₁t ₁₀	t ₁	t ₂	t ₃	t ₄	t ₅	t ₆	t ₇	t ₈	t ₉	t ₁₀	NET
Variable	Adjusted t ₀ base FTE 31.7										
Primary FTE adjustment for no provider	4.0	----	----	----	----	----	----	----	----	----	4.0
Secondary FTE adjustment for no healthcare provider	----	2.0	2.0	----	----	----	----	----	----	----	4.0
Population FTE adjustment	0.7	0.7	0.7	0.7	0.7	----	----	----	----	----	3.5
FTE MUN retention at 2.0 per year not additive											Not additive
FTE gender adjustments at 0.4 per year not additive											
Work hours adjustments	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	----
Academic adjustments	----	----	----	----	----	----	----	----	----	----	----
Core service adjustments	----	----	----	----	----	----	----	----	----	----	----
Burden of illness adjustments to FTE status	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	20.0
Birth rate adjustments to FTE status	1.0	1.0	1.0	----	----	----	----	----	----	----	3.0
Collaborative team FTE adjustments	----	----	----	----	----	----	----	----	----	----	----
Indigenous peoples	2.0	2.0	2.0	2.0	----	----	----	----	----	----	8.0
Care of older adults FTE adjustments	----	----	----	----	----	----	----	----	----	----	----
Mental health and addictions FTE adjustments	0.5	0.5	0.5	0.5	0.5	----	----	----	----	----	2.5
Palliative care FTE adjustments	1.0	----	----	----	----	----	----	----	----	----	1.0
Family medicine oncology FTE adjustments	1.0	----	----	----	----	----	----	----	----	----	1.0
ACSC FTE adjustments	1.0	1.0	1.0	----	----	----	----	----	----	----	3.0
CTAS scores adjustments	1.0	1.0	1.0	----	----	----	----	----	----	----	3.0
Benchmark adjustments	----	----	----	----	----	----	----	----	----	----	----
FTE separations	----	----	----	----	----	----	1.0	----	----	----	1.0
FTE net physician migration	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	20.0
TOTALS	16.7	12.7	12.7	7.7	5.7	4.5	5.5	4.5	4.5	4.5	79.0
Labrador West											
Central Labrador											
Nunatsiavut Communities											

Physician Resource Forecast for Family Medicine

t ₁t ₁₀	t ₁	t ₂	t ₃	t ₄	t ₅	t ₆	t ₇	t ₈	t ₉	t ₁₀	NET
Innu Communities											
South East Labrador and Straits											
Northern Peninsula											
TOTALS											

Physician Resource Forecast for Family Medicine

LABRADOR-GRENFELL HEALTH - LOW CASE

t ₁t ₁₀	t ₁	t ₂	t ₃	t ₄	t ₅	t ₆	t ₇	t ₈	t ₉	t ₁₀	NET
Variable	Adjusted t ₀ base FTE 31.7										
Primary FTE adjustment for no provider	4.0	----	----	----	----	----	----	----	----	----	4.0
Secondary FTE adjustment for no healthcare provider	----	2.0	2.0	----	----	----	----	----	----	----	4.0
Population FTE adjustment	0.7	0.7	0.7	0.7	0.7	----	----	----	----	----	3.5
FTE MUN retention at 2.0 per year not additive											Not additive
FTE gender adjustments at 0.4 per year not additive											
Work hours adjustments	----	----	----	----	----	----	----	----	----	----	----
Academic adjustments	----	----	----	----	----	----	----	----	----	----	----
Core service adjustments	----	----	----	----	----	----	----	----	----	----	----
Burden of illness adjustments to FTE status	0.5	0.5	0.5	----	----	0.5	----	----	----	----	2.0
Birth rate adjustments to FTE status	----	----	----	----	----	----	----	----	----	----	----
Collaborative team FTE adjustments	----	-2.0	-4.0	----	----	-2.0	-2.0	----	----	----	-10.0
Indigenous peoples	1.0	----	----	----	----	----	----	----	----	----	1.0
Care of older adults FTE adjustments	----	----	----	----	----	----	----	----	----	----	----
Mental health and addictions FTE adjustments	0.5	0.5	----	----	----	----	----	----	----	----	1.0
Palliative care FTE adjustments	----	----	----	----	----	----	----	----	----	----	----
Family medicine oncology FTE adjustments	----	----	----	----	----	----	----	----	----	----	----
ACSC FTE adjustments	0.5	0.5	----	----	----	----	----	----	----	----	1.0
CTAS scores adjustments	0.5	0.5	----	----	----	----	----	----	----	----	1.0
Benchmark adjustments	----	----	----	----	----	----	----	----	----	----	----
FTE separations	----	----	----	----	----	----	1.0	----	----	----	1.0
FTE net physician migration	1.0	----	----	1.0	----	----	1.0	----	----	1.0	4.0
TOTALS	8.7	2.7	-0.8	1.7	0.7	-1.5	0.0	0.0	0.0	1.0	12.5
Labrador West											
Central Labrador											
Nunatsiavut Communities											

Physician Resource Forecast for Family Medicine

t ₁t ₁₀	t ₁	t ₂	t ₃	t ₄	t ₅	t ₆	t ₇	t ₈	t ₉	t ₁₀	NET
Innu Communities											
South East Labrador and Straits											
Northern Peninsula											
TOTALS											



15.0

Conclusions

The conclusions are supported by progressively granular details in the report, a data compendium, and derived FTEs of family physicians by regions and primary healthcare service areas - - distribution within the service areas will depend on the evolution of the plan and, where necessary, redistribution of resources.

Dependency on internationally trained physicians is addressed only indirectly. For the purposes of planning, it is assumed that the dependency will decrease substantially over time; in the meantime, the current state will continue with replacement of departing internationally trained physicians with others (typically after two to three years of service).

Family physicians and the broad domain of primary care in Newfoundland and Labrador are at a crossroad. The status quo is unacceptable to providers, funders, administrators, and to the patients at the centre of quality care. All are aware that system transformation takes time - - but, all want to initiate change now and to avoid inaction. The providers are inhibited by geographic challenges and opportunities for role optimization and collaborative care.

Family physicians are burned out and frustrated by an inability to provide the care they believe to be ideal; they are looking for a new model to support that care. The success of a new model is linked closely to an evidence-based resource plan that is navigational and not prescriptive, built on a data infrastructure that can be monitored and adjusted, as required.

The funder of care struggles with uncertainty about what is being purchased, and resists initiatives that entail upfront costs and described benefits to quality and cost at a future date.

This study reflects a foundation of qualitative and quantitative data, upon which layers of evidence and assumptions are built to generate a physician resource plan for family medicine. It is an important first step; nonetheless, it will only achieve its full potential with the gradual implementation of collaborative teams constituted by multidisciplinary teams, tailored to location to include, where possible, generalist physicians, nurse practitioners, clinical psychologists, pharmacists, physiotherapists, occupational therapists, and social workers. Care pathways as described in the report, such as enhanced use of clinical psychologists, are fundamental to improved outcomes, when aligned with rotations through remote communities, providing care close to home when safe.

Physician Resource Forecast for Family Medicine

The requisite ten-year planning by region is provided for each of a [base case](#) (as the realistic ideal using the best evidence), a [high case](#) (necessitated by planning due to less than ideal circumstances), and a [low case](#) (achieved through better than anticipated uptake and speed).

Within these parameters, the following table provides the regional ranges of additions and deletions to the base FTE derived through the adjusted population needs-based modeling.

Physician Resource Forecast for Family Medicine, Newfoundland and Labrador, 2020-2029												
Total Recruitment Requirement for High, Base, and Low Cases												
Region	Case	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Eastern 2019 FTE 263.3	High	51.5	46.5	42.0	38.0	43.5	28.6	29.6	23.6	26.6	29.6	359.5
	Base	30.6	32.6	22.6	26.5	15.5	21.6	13.6	9.6	11.6	15.6	199.8
	Low	26.4	21.4	14.7	15.4	8.4	9.0	5.0	1.0	3.0	7.0	111.3
Central 2019 FTE 75.0	High	23.5	20.5	20.0	18.0	13.0	11.0	11.5	11.0	11.0	13.0	152.5
	Base	16.0	12.0	10.0	13.0	6.5	8.5	5.0	7.5	4.0	9.0	91.5
	Low	12.5	12.5	9.0	5.5	5.0	2.0	2.0	1.0	1.0	2.0	52.5
Western 2019 FTE 61.1	High	15.4	14.4	14.4	13.9	14.4	14.5	12.5	13.0	12.0	14.0	138.5
	Base	15.4	8.4	8.4	11.4	7.4	5.5	7.0	4.0	6.0	8.0	81.5
	Low	12.4	3.4	3.4	8.4	0.4	4.0	5.0	2.0	4.0	6.0	49.0
Labrador -Grenfell 2019 FTE 31.7	High	16.7	12.7	12.7	7.7	5.7	4.5	5.5	4.5	4.5	4.5	79.0
	Base	13.2	5.2	3.2	2.7	2.7	-0.5	2.5	1.5	1.5	1.5	33.5
	Low	8.7	2.7	-0.8	1.7	0.7	-1.5	0.0	0.0	0.0	1.0	12.5
Base Totals		75.2	58.2	44.2	53.6	32.1	35.1	28.1	22.6	23.1	34.1	406.3

The final conclusion is that recruitment and retention initiatives will only improve with recruitment to a model rather than to a location.



A.0

Appendices

A.01 Acknowledgements

Health Intelligence benefited from many thoughtful comments during the underpinning research phase of this study. Both qualitative and quantitative contributions were substantial. The acquisition of metrics and concepts, and the related analytics, were the responsibility of Health Intelligence and should not be attributed elsewhere.

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A.02 Data Challenges and Limitations

To varying degrees, each research data source comes with limitations. Mitigation strategies include the application of a number of research techniques, including the use of corroborating evidence, standardized interview questionnaires, and iterative data refinement to improve accuracy and quality, and to conduct testing, revision, and validation of preliminary analytic results.

A ten-year time frame is sufficient to permit trend identification and analytics.

[Key data challenges and limitations](#) that are relevant to primary care are, as follows:

[Access to services](#)

Indicators of access to services are one of a number of important indicators of population need. The quality of data on access to services varies, typically, by service, location, and discipline.

[Active disciplines](#)

Achievement of an accurate provincial roster of active disciplines is important as a baseline data input to the model. Roster accuracy is difficult to achieve and maintain due to factors such as frequent coming and going and changes in work status, practice scope, and location. Corroboration across multiple sources will add substantial integrity to the resulting roster.

[Academic apportionment](#)

Accurate apportionment of full-time equivalency between clinical and academic work (didactic teaching and research) is important but is made complex by issues of “budget” versus “actual” and overlapping work. The unit of measurement is clinical full-time equivalent.

[Full-time Equivalency](#)

- Current or baseline starting roster of providers by discipline in the province – full-time equivalency (FTE) is an essential but contentious concept, filled with competing interpretations and definitions. Health Intelligence uses fee-for-service and individual status within alternative payment plans, and academic status (full-time, part-time, retired).
- Change in FTE over the forecast period – opinion will be sought and integrated to the model to make future supply requirements more clinically relevant.
- The salary model in Newfoundland and Labrador does not include productivity and accountability measures or shadow billing

Timing

Changes in physician counts and FTEs occurring after the effective date of source data will not be reflected in the baseline of the forecast projections.

Model Uncertainty

Workforce supply and needs modeling occurs under conditions of uncertainty. As such, it is necessary to make note of the key areas of uncertainty.

Independent variables are not mutually independent

- The central problem in forecasting is that cases (the source data by time period) used to make forecasts do not represent the future time periods about which predictions are made.
- A second problem that arises in forecasting is the nature of variable interdependency. For example, to what extent does supply influence demand? To what degree does demand for services represent need for services (a source of constant challenge for practitioners necessitating case-by-case judgment decisions)?

Impact of single events

The possible effects of overlooked events can be substantial as can over-estimating or under-estimating future events. For example, the launch of a new cancer screening program may be known, but the percentage uptake by the population may be highly uncertain and the impact on service need is proportionately uncertain.

Causal patterns

Correlation does not imply causation. For example, supply may have less to do with the volume of physicians residents entering the workforce than the relative inter-provincial and intra-provincial job prospects. A more extreme example might be a strong statistical correlation between the incidence of left knee arthritis and cardiology service utilization, namely, correlation without causation.

A second problem is that correlation with causation in one time period may not hold true in a subsequent time period. For example, the demand for renal services and changes in the incidence of diabetes mellitus may have a strong historical and short-term future statistical relationship, but introduction in forecast year five of a program (single event) that transfers the bulk of secondary level care to other providers can substantially alter the statistical relationship. Controlling, statistically, for co-variables can be accomplished to a certain degree.

Managing Expectations

Workforce supply and service planning is an inexact science due to varying degrees of uncertainty in each variable, the nature of their inter-relationship, and variables not modeled. Models do not deliver certainty. A well-designed, maintained, and enhanced model will significantly reduce uncertainty, thereby adding value to decision-making

A.03 Environmental Scan (2016)

A summary report prepared for the Clinical Stabilization Fund (CSF) was published in 2016. CSF has been overseen by a management committee constituted by NLMA and DHCS to provide support to projects and initiatives that inform and advance primary care renewal and/or establish new patterns of practice.

Underpinning the scan was an online survey of 484 primary care providers (PCPs); the response rate was satisfactory at 43% and the sampling was considered representative.

The complete report warrants careful consideration; key points have been abstracted to inform the current work, as follows:

- 44% of PCPs were in a private group practice and 20% were in an inter-disciplinary setting with other PCPs and healthcare providers
- 30% worked in a regional health facility
- The remainder were academic (14%), solo practice (12%), walk-in clinic (5%), or private nursing home (2%)
- The majority of PCPs had closed practices or be willing to accept a new patient under specific circumstances
- Across the demographics, females, urban PCPs, fee for service (FFS), those in Eastern Health, and Canadian graduates were more likely to be practising in a private clinic with other PCPs. In contrast, those working in rural areas, Labrador-Grenfell, salaried physicians and international medical graduates (IMGs) were more likely to be working in a RHA facility. PCPs in academic settings were more likely to report having an electronic medical record (EMR), whereas those working in a RHA facility are less likely to have an EMR.
- Estimates of the number of patients with active files ranged from less than 100 patients to over 3,000 patients, with the average being 1,671 patients. As might be expected, panel size increases with age. PCPs in Western, males, and those who are FFS are also more likely to have larger panels.
- Those PCPs who were working in an RHA facility were working in multiple settings within the RHA, with the emergency room (55%), long-term care (55%), community health centre (55%), and palliative care (47%) being the most frequently identified settings followed distantly by surgical assists (23%), obstetrics/intrapartum maternity care (23%) and oncology (21%).
- Overall, PCPs were working in practices with multiple focus areas. Given the aging population, it was not surprising to learn that two-thirds (66%) of PCPs were focused on healthcare of the elderly. In addition,

one-half (50%) identified mental health as a focus area, while over four in ten identified child and adolescent health (46%) and palliative care (45%) as comprising a large portion of their practice. Similarly, four in ten cited chronic non-cancer pain (40%) as a focus and three in ten were focused on providing emergency medicine (32%) and maternity/intrapartum obstetrics (31%). Relatively speaking, PCPs were less focused on sports and exercise, occupational, addiction, and travel medicine as well as developmental disabilities, albeit a minority considered these areas of medicine to comprise a significant portion of their practice.

- While there was minimal demographic variation, it was noted that PCPs practising in rural locations were more likely to identify healthcare of the elderly/geriatric and palliative care as focus areas of their practices. In addition, females were more likely than their male counterparts to be focused on child and adolescent health.
- On average, six in ten (58%) PCPs were seeing in excess of 96 patients per week, while two in ten (20%) were seeing between 66 and 95 patients within this timeframe. Very few were seeing less than 55 patients in a week.
- FFS PCPs were more likely to see in excess of 96 patients per week, as were males and those who were not using an EMR. In contrast, PCPs in Labrador-Grenfell were least likely to see more than 96 patients.
- On average, PCPs were working 58 hours per week, excluding on-call activities. While there was minimal demographic variation, it warrants highlighting that PCPs in Labrador-Grenfell, on average, have longer work weeks than their counterparts in the other RHAs.
- Most PCPs were not offering a 24-7 on-call service for their patients. Seven in ten (72%) were not participating in a 24-7 on-call system for their patients, while the remaining three in ten (28%) were providing such a service. Females, those under the age of 55, Canadian trained PCPs, and those who were FFS were least likely to be participating in a 24-7 on-call system.
- Three of ten providers had reduced or were planning to reduce weekly hours; another three in ten were planning to add a focus area to their practice (thereby, diluting generalism); two in ten were planning to increase scope, reduce call, or join a larger group of physicians.
- The ability to coordinate continuing care for complex patients among other healthcare providers was not uniform.
- The following table demonstrates the number of other health care professionals in physician practices

Physician Resource Forecast for Family Medicine

Number of Other Health Care Professionals in Practice					
	0	1	2	3+	Mean*
Nurse Practitioners	74%	22%	3%	1%	1.4
Registered Nurses (RN)	75%	6%	4%	15%	10.4
Licensed Practical Nurses (LPN)	76%	4%	6%	14%	7.1
Personal Care Attendants (PCA)	89%	3%	2%	7%	6.3
Dietitians	83%	15%	2%	--	1.1
Physiotherapists	87%	9%	1%	3%	1.7
Occupational Therapists	90%	8%	0%	1%	1.4
Pharmacists	82%	9%	5%	4%	1.8
Social Workers	82%	10%	4%	4%	1.9
Mental Health Workers	84%	11%	1%	4%	2.1
Psychologists	95%	3%	1%	--	1.3
Public Health	87%	8%	2%	3%	1.7
Other	86%	8%	2%	4%	4.3

Q.7a-m: How many of each of the following types of other health care professionals are in your practice? (n=209)
 * Responses of 0 have been removed for the mean calculation

A.04 Ten-Year Vision (2018)

In 2018, a ten-year vision paper was released by Newfoundland and Labrador Medical Association, Newfoundland and Labrador College of Family Practice, and Memorial University Faculty of Medicine (Discipline of Family Medicine). It was constructed in response to worsening conditions for family physicians and their patients in Newfoundland and Labrador, including a significant aging population and high rates of chronic disease and obesity.

The vision described the forces that created the problems, effective strategies, and the required steps to advance family medicine in the province. The complete report warrants careful consideration of its context, data, and reflections by a variety of physicians. The following visions have been abstracted from the report:

Vision: To establish an additional payment model based on blended capitation, to complement the FFS and salaried models, that will help attract and retain new family doctors, and establish a foundation for interdisciplinary team-based care.

Vision: That the NLMA and the provincial government will continue to provide FPRP investments with priority consideration over 10 years to achieve the potential of this program

Vision: That within 10 years all family physicians who want to adopt EMRs in their practice are using the provincial EMR, and that all physicians in the province are using the provincial electronic health record HEALTHeNL when appropriate. The provincial EMR's functionality should incorporate prescribing, referrals, e-consult, and patient portals. The EMR should be used to link primary health care teams so that patient information can be used within the circle of care. The data from EMR should also be used to create a system of peer comparison and learning.

Vision: That within 10 years every family physician will have the opportunity to work as part of a primary health care team where they can work with other health care providers to provide a patient's medical home. The basket of services and composition of the team may vary somewhat from region to region, based on the needs of the community, which should be regularly assessed. The governance structure for each team will vary as well – some may be RHA-based with salaried physicians and other RHA employee-providers; some may be RHA-based where physician fee-for-service groups affiliate with an RHA and provide a basket of services defined in a contract; and some may be provider-governed with physicians and other providers directly contracted by the practice. Whatever the governance arrangement and payment model, the vision would be that each region would have reasonably comprehensive services available from a team, each member of which is working within a scope of practice that optimizes efficiency, access and excellent patient outcomes.

Vision: To establish a respectful relationship with the provincial government built on trust and shared goals, and where the future of the health system is planned through partnership and a full awareness of the valuable role of family physicians.

Vision: That within one year Memorial University, including clinical faculty, will review and advocate for the necessary resources to deliver a nationally accredited family medicine education program. Within three years the number of family medicine residency training placements will be aligned to the completed physician resource plan. Within five years there will be sufficient established distributed teaching sites in family medicine, specifically supported to deliver comprehensive, continuous and interprofessional education in rural, urban and underserved primary care contexts.

Vision: That within 10 years, indicators for measuring resource utilization in the primary health care system in Newfoundland and Labrador attain a record better than the national average for eliminating unnecessary care in Canada. The setting of goals should be based on a careful examination of the extent of unnecessary care that currently exists and the key reasons. All partners, including the NLCFP, NLMA and the DFM, should participate in the strategy to reduce unnecessary care, including expansion of continuing medical education opportunities.

Vision: That within one year a recruitment and retention study will be completed to produce recommendations for ensuring our tools and tactics for recruiting and retaining doctors rival the best in Canada. Within two years a physician human resource plan should be completed that forecasts the demand for physician services based on population need and new models of care. Within 10 years Newfoundland and Labrador will have a stable physician workforce that replenishes itself with an optimal share of graduates from MUN, and other sources of supply.

COMMENT

December 6, 2019

It has been noted by many that little has changed since the ten-year vision was released 18-months ago.