



**New Brunswick Department of
Health and Wellness**

**Health Human Resources Supply and
Demand Analysis**

Final Report

November 27, 2002

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1. EXECUTIVE SUMMARY

New Brunswick is facing a supply shortage within its health care workforce. This situation is being driven by the cumulative effect of a decade of national and provincial health care policy changes that began in the early 1990s. Decisions that decreased the share of Gross Domestic Product (GDP) devoted to health care caused the elimination of positions within a variety of occupational groups, as well as the conversion of full-time positions to part-time and casual positions. Positive population growth has continued with a demographic that is increasingly weighted toward an aging population, and as such, the demand for health care services has continued to escalate. This phenomenon has created increases to professional workloads, a requirement for existing staff to work more overtime to maintain adequate staffing patterns, and a visible trend toward substitution of labour with unregulated support workers. This work environment has led to frustration, job dissatisfaction, and burnout. New entrants to the health care workforce have only had part-time or casual employment and many have been forced into situations of multiple employment. This environment is impacting the ability to attract individuals into the health care occupations resulting in several educational institutions reporting an inability to fill their enrollment quotas, closure of some programs, and the reduction of seats in others, creating a reduced number of graduates. Meanwhile, the existing workforce for many occupations has continued to age. Collectively, these factors have contributed to an inadequate supply of several health occupations to meet the future health care needs of Canadians in general, and New Brunswickers in particular.

1.1 Overview

In consideration of the current health care landscape and the shortages being experienced throughout the labour force, the New Brunswick Department of Health and Wellness (Department) awarded Fujitsu Consulting a contract to conduct a Health Human Resources Supply and Demand Analysis (HHRSDA) for a predetermined group of health care occupations. This project commenced with a preliminary analysis and requirements definition in March 2002. The study was conducted between May 2002 and October 2002, across the spectrum of health care services, including both the public and private sectors.

The results of this study provided an inventory of New Brunswick's current workforce and a comprehensive analysis of twenty-seven health occupations. Supply of, and demand for, these health occupations are forecast over a five-year planning horizon, ending in 2007. The shortages or surpluses that can be expected throughout this planning period are highlighted.

A significant amount of work was completed in the short timeframe available for this study. The extent and depth of the study would not have been possible without the assistance of a number of key people from the Department, the Steering Committee, and representatives from the professional associations. The Fujitsu Consulting Team recognizes and thanks these people for their support and contribution.

Several clear actions have been taken in the past few years, which speak to a strong commitment by Government to tackle the health human resources (HR) planning challenges in New Brunswick. Momentum in this area will need to escalate however, with priority attention being given to ensuring New Brunswick has a health care workforce sufficient to sustain appropriate access to a mix of services necessary to meet the health care needs of New Brunswickers in the future.

1.2 Approach

A series of primary and secondary data collection methods were used throughout this study to gather the requisite data for the inventory of the current health care workforce, as well as the development of a database on the education programs deemed to be key sources of supply for new entrants to the market. There is no central data source available to populate the database that was created. Multiple data sources and methodologies were therefore required to create a comprehensive dataset.

The primary sources of data for the inventory of the current labour force were the Government's Human Resources Database (HRDB) and Human Resources Information System (HRIS), the Department of Health and Wellness Service Provider Database (SPD), and individual professional association/regulatory body databases and spreadsheets or paper files of membership data. In addition, a survey was distributed to approximately 1200 private sector employers by mail. For ease of response, the survey was also made available on a website.

Numerous steps were taken to ensure quality assurance and integrity of the data. These steps involved the use of queries written in Microsoft Access to assess the data, followed by manual interpretation of whether corrective steps were required.

Data/information for the sources of labour supply was also not resident in any central repository and was obtained through a combination of online web searches of specific educational institutions and through e-mail and telephone contact with individual Registrars, Deans, and/or Program Coordinators for the various educational programs of interest.

A Health Human Resources Database was subsequently developed in Microsoft Access 2000, comprised of two subsystems: an inventory of health occupations and an inventory of health education programs that supports the educational preparation of these occupational groups. This database is able to generate a wide range of reports based on various combinations of minimum dataset elements.

An extensive environmental scanning exercise was undertaken to provide a comprehensive picture of the trends and issues impacting the health care sector as a whole, and individual occupational groups in particular, within the context of the health care delivery system in New Brunswick. This was accomplished through a variety of methodologies.

- Where available, the strategic directions and planned changes/additions to health care programs were identified. The fact that the Provincial Health Plan is currently under development by Government posed a constraint to the study relative to the prediction of future demands on the system.
- A comprehensive review was conducted of current documents, studies, and commissioned reports that have been written, which influence or impact health human resource planning within New Brunswick, Atlantic Canada, or Canada.
- Thirty interviews were conducted and six focus groups were facilitated. A cross section of individuals and thirteen occupational groups in the service delivery and the education sectors were represented. They were identified as being key contributors to identifying the broad range of issues influencing both the supply and demand of HHR in New Brunswick.

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- A labour market analysis was conducted that focused on three primary dimensions of the market: New Brunswick Health Regions, Atlantic Canada, and the private sector. Data/information to support this analysis was collected through the environmental scanning process, as well as through an examination of wage rates for twelve health occupations in the public sector of Atlantic Canada.

A Health Human Resources Forecast Model was created in Microsoft Excel, and was designed to allow for scenario-based forecasting. This approach allows for incorporation of the most recent data, policies, and planning details and, most importantly, different combinations of these inputs depending on health care delivery changes and new health care developments anticipated in the future in New Brunswick.

Deliverables for this project included Access 2000 Inventory Database, Electronic and Bound Copies of Final Report, Database Reports, Microsoft Excel HHR Forecast Model, Labour Market Analysis, and Technical Documentation.

1.3 Findings

Overall, the findings from this study demonstrate that New Brunswick's health care workforce is exhibiting traditional signs of labour shortage, including increased numbers of vacancies across several health occupational groups, longer times to fill vacancies, increases in overtime hours, and wages rising in excess of cost of living, which collectively indicate a tightening of the labour market created by the failure of labour supply to keep pace with growing demand.

The current labour force is stretched, with an average of 26 percent of the public sector health care workforce working greater than one Full-Time Equivalent (FTE), or 1950 hours per year. This is not sustainable and requires immediate action to bring relief to a tired and aging labour force.

Government's efforts to continue to evolve an integrated Provincial Health Plan for New Brunswick must acknowledge these phenomena in planning for the delivery of services. The need to manage the rate of escalation of labour costs, while remaining competitive and ensuring appropriate access to services, requires strategies that address not only the distribution of services, but also the appropriate mix and utilization of health care providers.

Of the twenty groups for which data were sufficient to apply the forecast model, only four are predicted to be in any sort of surplus position by the end of the forecast period, recognizing there are some occupations whose supply vacillates between a state of slight shortage and slight surplus over the five years. For the majority of health occupations; however, New Brunswick can expect to see varying orders of magnitude of labour shortages that will require multiple cooperative strategies to redress.

The forecast model predicts the greatest impact (by percentage of the overall workforce) will be felt in the available supply of Health Records Practitioners, Pharmacists, Speech Language Pathologists, ECG Technicians, Medical Radiation Technologists, Medical Laboratory Technologists, Occupational Therapists, and Medical Radiation Therapists, all of which have predicted shortfalls in supply ranging from greater than 15 percent to over 40 percent of their workforce. The greatest impact by volume will be in the shortfall of Registered Nurses (RNs), with a forecast gap of over 1000 RNs by 2007, representing 15 percent of the total RN workforce.

The trend toward university education and specialization within many health occupational groups creates new costs for the health care system, as well as challenges in managing the supply of available labour. New Brunswick cannot ignore this trend and continue to remain competitive in the marketplace. The impact of better educated practitioners on their respective scopes of practice, and the overall service mix, warrants consideration as the Province moves toward collaborative practice service delivery models. New models of practice also need to be considered that incorporate a different professional/support worker mix, coupled with investment in enabling technologies that leverage the skills of scarce professional staff.

1.3.1 Recommendations

Health human resources planning is a complex and challenging enterprise, as is the development of policies guiding supply, deployment, utilization, and movement in and out of the workforce. The results of this study and the project deliverables do not constitute an HHR plan; however, they do provide the Department with information, data, and tools to use to develop a solid HHR plan that will support the various components of the Government's pending Provincial Health Plan, and help ensure a stable complement of Health Human Resources for New Brunswick.

There is no single recommendation to remedy the current supply shortages among several of the health occupations and ensure stability in the workforce. Effective management of HHR requires multiple strategies working synergistically. The challenges associated with current supply shortages did not arise overnight and they will not be solved overnight. Government alone will not be able to successfully undertake the effective planning and management of New Brunswick's health care workforce. This will require the active involvement of employers, health care providers, professional associations and regulatory bodies, unions, and educators in a collaborative process.

There are fifty-eight recommendations in the report that are presented within the following six themes:

- Health Human Resources Planning
- Data/Data Sources/Data Management
- Labour Supply
- Utilization
- Recruitment and Retention
- Supply and Demand Forecasting

These recommendations comprise a package that, collectively, is designed to address a broad based solution, which, with the commitment of the parties, can be implemented incrementally over a predominantly short, to medium time horizon. Together, these recommendations represent a plan of action that will require significant long-term investment on the part of the Government, as well as the other health care stakeholders. There will be a financial investment, an investment of time and human resources, as well as a willingness on the part of all parties to work more collaboratively, and even differently, to make the best use of every one of the resources available. This is a solid beginning, a baseline against which the Department and key stakeholders can build a framework for integrated health human resources planning in New Brunswick.

2. PROJECT DESCRIPTION

Fujitsu Consulting was awarded a contract to conduct a Health Human Resources Supply and Demand Analysis (HHRSDA) for the New Brunswick Department of Health and Wellness (Department). The project was conducted in two phases. The initial phase of the study (March 2002 to April 2002) involved a preliminary analysis, leading to a detailed methodology report to guide the actual study, known as Phase II. Phase II of the study was conducted between May 2002 to October 2002 and involved a comprehensive analysis of the selected health human resources (as defined by the RFP and refined during New Brunswick HHR Steering Committee meetings) employed in the public and private sectors. (Appendix A). The results of this study are intended to provide a current profile of health occupations in New Brunswick and serve to inform policy direction and decisions, for both the educational system and employers within the health sector. The deliverables will provide the DHW with a process by which to project future health human resource requirements. A final aspect of Phase II of this study, scheduled to start late Fall 2002, will involve a similar comprehensive analysis for Physicians in New Brunswick.

The project objectives required that Fujitsu Consulting:

- Create an inventory of health professionals in the public and private sectors (as per Appendix B) including a demographic analysis (age, gender, language ability, employment status, field of practice, and occupational status) by region, health sector, and employment sector, as per the Minimum Dataset defined in Appendix C.
- Provide an analysis of the labour market, including the availability of qualified health professionals and information on the Atlantic Canada and Quebec based training programs, as per the Minimum Dataset outlined in Appendix C.
- Conduct an environmental scan to determine the impact of current trends, federal and provincial initiatives, and/or strategies on the supply of and demand for health care providers.
- Conduct research and develop assumptions to be used in forecasting demand for health professionals.
- Forecast, based on available information, the demand for health professionals for the next five years, including attrition rates, changes in demand based on demographic projections, increased public expectations, and emerging trends and technologies.
- Identify potential shortages/surpluses over the next five years, based on the aforementioned supply and demand information.
- Identify the specific challenges that will impact the retention of current and recruitment of new health professionals.
- Provide recommendations to guide the Government in rational health human resources planning.

Deliverables for this project include the following:

- Microsoft Access 2000 Inventory Database with two subsystems: Inventory of 27 Occupational Groups and Inventory of Education programs
- Sample Reports, by multiple data elements, from the Inventory database subsystem

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- Technical Documentation supporting database development and population
 - Electronic (Microsoft Word 2000), 7 bound copies and 1 unbound copy of the Final Report in English
 - Microsoft Excel 97 HHR Forecast Model
 - Labour Market Analysis

3. APPROACH AND METHODOLOGY

3.1 Data Collection

A series of primary and secondary data collection methods, as outlined in the following subsections, were used throughout this study to gather the requisite data for the health inventory and education database.

3.1.1 Primary Data Collection

- Numerous sources were used to populate the minimum dataset for the occupation groups included in the study. In many instances, a single source of data did not provide all of the desired information; therefore, multiple sources were used to provide a comprehensive dataset.
- Service Provider Database (SPD) / HNRS - 8 electronic files containing “2001 final” data as supplied on the 2001 registration forms by association members for the following occupations: social workers, audiologists, occupational therapists, physiotherapists, speech language pathologists, medical laboratory technologists, registered nurses, and licensed practical nurses. These occupations require membership in their provincial association in order to practice in New Brunswick.
- HRDB - electronic file containing data from the May 2, 2002 pay period. Occupations that were not imported via other means were imported using HRDB. This data was also used to supplement/verify information that was received via other means, such as from associations.
- HRIS - electronic file containing data up to March 2002.
- Nurses Association of New Brunswick (NANB) - electronic file containing names and status information used to reconcile those members who are deceased or retired.
- New Brunswick Association of Licensed Practical Nurses - paper file with list of potential duplicates where LPNs may be associated with other occupations being studied.
- Maritime Association of Neuroelectrophysiology Technologists (EEG) - completed the survey spreadsheet for its members, not all fields were captured.
- Cardiology Technologists Association - paper file with limited information for each of its members.
- New Brunswick College of Psychologists - Word document with list of member names, addresses, status, and language preference.
- Association of Medical Radiation Technologists - two spreadsheets with a list of members, their specialty, registration status, employment status, address, hospital, graduation year, origin of training, and designation.
- Association of Respiratory Therapists – 12 survey spreadsheets containing a list of members for various employers; not all fields were captured.
- Paramedic Association - electronic file containing a list of members, address, date of birth, employer, and their level.

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- Association of Dieticians - electronic file containing almost all minimum dataset elements, except ages, which were collected in a separate exercise.
 - Association of Optometrists - electronic file containing list of members, date of birth, language, gender, education, employer, health sector and region, employment sector, and status.
 - Pharmaceutical Society - electronic file containing list of names, registration numbers, birth dates, and genders.
 - Health Record Association - electronic file containing list of names, address, date of birth, language, gender, education, registration number and status, and employer name.
 - Private Employer Survey - website survey responses and survey responses returned on paper.

Multiple data sources were also required to generate the information required to populate the education database with the labour market minimum data as outlined in the RFP as there is no central repository of this information on either a regional or national basis. Exclusive of the electronic file of 2002 data from the Maritime Provinces Higher Education, the remainder of education information was obtained through online web searches of specific educational institutions and through e-mail and telephone contact with individual Registrars, Deans, and/or Program Coordinators for the various educational programs of interest.

3.1.2 Database Abstractions

Programs (scripts) were written to download information that was received electronically. The technical specifications for these scripts can be found in the following documents: P490S_Aud, P490S_Diet, P490S_HRDB, P490S_HRIS, P490S_MLT, P490S_OPT, P490S_OT, P490S_paramedic, P490S_PHARM, P490S_physio, P490S_RN, P490S_RNA, P490S_SLP, P490S_SW, P490S_WEB. (Note: These documents were written prior to the name change for the RNA occupation group to LPN.)

These documents are written from a technical perspective. They explain the mappings of each field to the codes used in the HHR database and explain how to populate each of the fields in each table in the HHR database with the information received electronically from various sources. Each file that was received was imported into a temporary table in the HHR database. These temporary tables were then used to populate the HHR tables with data on each of the occupations.

In some cases, after the 490 functional specifications were created, additional information was obtained that would cause fields to be interpreted differently. Sometimes, this information was not received until after the scripts were executed to populate the database. Under these circumstances, queries were written to update/correct the data; sometimes the data required manual correction. The scripts and 490s were not updated to reflect the change because the scripts could not be executed again (re-running the scripts would overwrite data that had been manually entered/updated).

There are some cases requiring manual interpretation of data, in particular, this was necessary when the results from the web were imported. SPD Region 0 (where region was unknown) was manually re-distributed based on the employer health region on the employee record (rather than the employer health region in the SPD/HNRS employer tables). In other situations, conflicting information from multiple sources had to be resolved manually.

A manual process was used to extract duplicate individual entries from the database. Duplicates may have been created when multiple sources were used to populate information for a single occupation. Duplicates could also be created when the same individual belongs to more than one of the health occupations included in the study (for example, an LPN may also be an Ambulance Attendant).

3.1.3 Other Data Sources

In addition to the data received from various government departments and associations, information was also gathered from the private sector. This was done by means of a survey, distributed by mail to approximately 1200 private sector employers, which gave respondents the option of providing data using a website, completing and returning a paper copy, or by using an electronic version of the form. Data entry personnel made several follow up phone calls to respondents to clarify information that was returned or to request additional information.

There were numerous steps undertaken during a quality assurance stage of examining the data. This involved using queries written in Microsoft Access to assess the data, followed by manual interpretation of whether corrective steps were required. This included (but is not limited to) the following measures:

- Removal of duplicate individuals (duplicate individuals may have been input into the database when multiple sources of data were used to populate an occupation; duplicates were also input when a person was associated with multiple occupations)
- Updating/adding information from secondary sources (such as ages for numerous groups were obtained from HRIS/HRDB, dietician ages received via email, more detailed employment status for some SPD groups existed in HRDB, etc.)
- Ensuring each person had one and only one primary employer (thus ensuring each person would only be counted once on each report that shows number of employees as opposed to number of positions)
- Mapping of HRDB job classes to occupational groups being studied was done manually
- Mapping of Region 1 to Region 1 / Region 1SE / Region 1 B was done manually
- Re-mapping of over 1,700 positions in SPD to health regions from “unknown” (Unknown was specified in the employer table; however, health regions were available for the individual’s employer in the source files)
- Verification of data by cross checking of fields (e.g. Social Workers who completed the employer section of the form even though they were not employed in social work)
- Removal of web data that was entered erroneously by users (some employers entered information for people who were not part of the study and selected arbitrary occupation groups for them)
- Additional fields sometimes provided helpful information regarding field of practice; however, the fields required manual interpretation because they were not consistently worded (e.g. Dieticians “position title”)
- Verification of data using multiple sources (e.g. web responses were used to verify information received from various associations, HRDB was used in a similar fashion, etc.)

3.2 Environmental Scan

An extensive environmental scanning exercise was conducted to provide a comprehensive picture of the trends and issues impacting the health care sector as a whole, and individual occupational groups in particular, within the context of the health care delivery system in New Brunswick. As New Brunswick is an integral part of a larger Canadian health care system and must be competitive in attracting and retaining certain health occupations, the scope of the environmental scan included the issues affecting supply and demand of health occupations within the larger Canadian context where applicable, and the Atlantic region context otherwise. In the following subsections, the various methods used to obtain this information are described in further detail.

3.2.1 Literature/Document Review

A widespread review was conducted of the plethora of current documents, studies and commissioned reports that have been written which influence, or impact health human resource planning within New Brunswick, Atlantic Canada or Canada. The specific references are listed in Appendix B. In addition, on line searches were conducted for of secondary sources of labour market data.

3.2.2 Interviews/Focus Groups

In recognition of the short timeframe available to conduct this comprehensive study, a process was identified to select a cross section of individuals and occupational groups in the service delivery and the education sectors, who were identified by Fujitsu Consulting and the Steering Committee as being key contributors to identifying the broad range of issues influencing both the supply and demand of HHR in New Brunswick. Thirty interviews were subsequently conducted. Six focus groups were facilitated representing 13 separate and distinct health occupational groups. A listing of interviewees and focus group participants is in Appendix D.

In addition, an extensive number of telephone contacts were made with individuals from the various occupations, in the public and private sectors, regulatory and or professional associations, and other departments of Government to provide clarification and additional information needed by consultants.

3.2.3 Labour Market Analysis

A labour market analysis was conducted that focused on three dimensions of the market:

1. New Brunswick Health Regions: factors influencing movement within the labour market intra-provincially, across health sectors and health regions
2. Atlantic Canada: factors, such as wage and benefit differentials, working conditions, and other variables affecting supply and demand in New Brunswick
3. Public Private Sector: as a major competitor for the pool of health human resources the public/private sector dynamics are outlined for the several key occupations working in both sectors

Information for the labour market analysis was generated through two primary methods:

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1. The environmental scanning process as outlined in Section 3.2.1 and 3.2.2 above
 2. An examination of wage rates for the following 12 health sector occupations in the public sector of Atlantic Canada: Registered Nurses, Licensed Practical Nurses, Social Workers, Physiotherapists, Occupational Therapists, Speech Language Pathologists, Audiologists, Medical Radiation Therapists, Medical Sonography Technologists, Medical Laboratory Technologists, Pharmacists, and Health Record Practitioners

In examining wage rates, a comparative analysis was performed that ranks these professions in the various health systems throughout the Region and identifies New Brunswick's competitive position across these occupational groups. Private sector wage levels were included where available, adding an additional dimension to the factors that influence the supply and demand of health human resources in the short and medium term.

In our approach to this comparative analysis, it was important to recognize that the public sector working environments in New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland and Labrador are characterized by different union organizations representing different segments of these occupational categories in each province. The challenge of comparing the wage rates across jurisdictions was complicated by several factors.

- The number of unions representing these occupations and the current status of their collective agreements varies by province.
- The wage rates for each occupation occur within a range of job classifications, each having a range of wages in each jurisdiction.
- The existence of a large number of job classifications within each occupational category reflects the on-going implementation of health care reforms and the regionalization of health care delivery throughout Atlantic Canada.
- The "Step Progression" approach that influences wage levels is in place in the majority of collective agreements throughout the Atlantic Region and creates another level of wage differentiation.

Most collective agreements analyzed cover the **hospitals and health care institutions** within each province. In the case of Nova Scotia, most wage data were obtained from the Capital District Health Authority. The use of data from this organization ensured that the impact of the largest and most competitive health care market in Atlantic Canada, Halifax, was fully incorporated into our analysis.

Data regarding private sector wage levels and working conditions are less readily available; however, some sampling of the current market was provided for comparative purposes.

In addition, the analysis provides an overview of the ranking of New Brunswick's wage rates with other Atlantic Canada provinces in two broad health care categories: the wage levels currently in effect for entry-level human resources, as well as those with considerable experience in their respective health care systems. For the experienced category, it should be noted that additional skills/education are most often required for these types of positions, of which there are proportionately fewer than for the entry-level positions.

For ease of interpretation, the comparative analysis utilized the first or lowest assigned Step Progression for each Job Classification at the entry level. For each occupation, wage rates used were found in the mid-range of each collective agreement's respective Step Progression for that occupation's highest job classification as a proxy for public sector wage levels for "experienced" individuals currently in the health care workforce.

It should be noted that the methodology employed did not factor in any analysis of individual job specifications and was solely based on job titles, as defined in the various collective agreements. The analysis does not include management or other non-unionized positions in the individual health care systems. All positions and their respective rates are contained within current collective agreements in the four Atlantic Provinces.

Equally important to note is that the methodology for wage analysis did not encompass the different recruitment and retention strategies that may be in effect within specific provinces, regional health districts, or authorities throughout Atlantic Canada. These strategies have an important impact on wage levels; however, where the information was available, it is documented in the occupational analysis for each occupational group in Section 5.3.

The impact of these strategies and recruitment policies cannot be understated. While the comparative wage analysis provides an overview of current salary rates across the Atlantic Region, using secondary research, the entire results should be considered within the context of how current recruitment and retention activities differ, and how these influence each province's success in acquiring and keeping professional human resources within these health care occupations.

The cumulative results from the labour market analysis are incorporated in Section 5.3 to 5.8 for the respective occupational groups.

3.3 Database Development

The HHR database is comprised of two subsystems: an inventory of health occupations and an inventory of health education programs that support the educational preparation of the occupational groups. The subsystems are further explained in the following subsections.

3.3.1 Health Inventory Subsystem

The health inventory subsystem consists of a series of tables populated via scripts (importing data source files) and manual data entry. Refer to the minimum dataset (Appendix C) for a complete description of the elements. Because of data availability, all minimum dataset elements could not be populated for all individuals. Information could not be obtained for all individuals employed in the occupations being studied.

Some information that was used to populate the database was received directly from associations or private employers. A lot of information was self-reported by individuals and their interpretation of their association registration forms was not always consistent.

Where data was available, the individual's name, language ability and/or preference, and year of birth were captured. If the individual was associated with multiple occupations being studied, details for each occupation were stored. Occupation details include status (employed, unemployed, seeking, retired, etc.), specialty, field of practice, registration status, registration number, and education and/or credentials.

Information was also captured regarding an individual's employment. For each position/job held by a person for which data was received the employer's name and address, health sector, employment sector, employment status, and average number of weekly hours were stored.

3.3.2 Education Subsystem

This subsystem consists of a series of tables populated via manual data entry using information collected throughout the study. Information was obtained from community colleges, private schools, the Maritime Provinces Higher Education Commission, individual university registrars and department heads, and university websites.

Health education program details include institution and program name, level of program, language of the program, admission requirements, intake capacity, duration, credential received, number of graduates, total number of enrollments, number of New Brunswick student enrollments, and attrition rate.

Information was captured primarily for training institutions in the Maritimes, Quebec, and for other selected schools across Canada (if the program was not offered in the Maritime Provinces or Quebec).

3.3.3 Database Structure

Microsoft Access 2000 was used as the database tool for the HHR database. Tables, queries, forms, and reports are all components of the final product. There are two physical databases: HHR, and HHR_Name. The HHR database contains all of the tables for the health inventory and education subsystems excluding the names of individuals. Individual's names are found in a single table in the password protected HHR_Name database. This table can be imported into the HHR database at a later time if a similar exercise is undertaken and names are required to determine if duplicate individual records exist.

The database structure is described in detail in a separate technical deliverable. This deliverable describes all of the tables and fields being used to represent information on the health inventory and education aspects of the study. For a complete description of the database structure including a list of tables and fields, please refer to document "P210 Database Structure".

3.3.4 Database Reports

All of the reports in the HHR database can be produced to display information for all occupations, or for one particular occupation at a time. Reports can be produced using the list of occupations defined by the New Brunswick Department of Health and Wellness or by using the National Occupation Classification (NOC) codes defined by the New Brunswick Department of Training and Employment Development. Reports by NOC code include all occupations and cannot be produced for a single NOC.

Some of the information used to provide input to the forecasting model comes from database queries while other data is extracted from the formatted reports. For a complete listing of queries and reports refer to the HHR database “Queries” and “Reports” tabs.

Refer to the report binder for a printout of sample reports.

3.4 Design of the Health Human Resources (HHR) Forecast Model

The Health Human Resources (HHR) Forecast Model for New Brunswick shares a common basic structure with all models for forecasting supply and demand for human resources. The three components of the model are:

1. **Supply Side** = available supply of HHR
2. **Demand Side** = demand for HHR for the health care delivery system
3. **Gap Analysis** = the interaction of demand and supply, and the resulting equilibrium or disequilibrium

The model was created in Microsoft Excel for practicality, user-friendliness, and ease of manipulation and updating. The model incorporates a variety of input variables as described in the following sections. A five-year forecast of demand and supply, and the gap (number of people) between the two, by occupational group, will be generated for those occupational groups for which sufficient information exists.

The forecast model has been designed to allow for scenario-based forecasting. This approach enables incorporation of the most recent data, policies, and planning details, and most importantly, different combinations of these inputs depending on health care delivery changes and new health care developments anticipated in the future in New Brunswick.

The following sections describe the challenges that are inherent in health human resource modeling, and define the supply- and demand-side forecast models utilized for all the health occupations in this study (given available data).

3.4.1 Forecast Model Components

The following Supply and Demand Forecast Model definition applies to all of the health occupations as listed in Appendix B, for which there are sufficient numbers in that group and for which sufficient data are available to serve as inputs to the model.

3.4.1.1 Supply-Side

The supply-side of the model is comprised of the following components. Descriptions are provided thereafter.

$$\begin{aligned} & \text{Current Stock} \\ & + \\ & \text{Increments} \\ & - \\ & \text{Exits} \\ & \pm \\ & \text{Weighted Supply Factors} \end{aligned}$$

Current Stock

The current stock of individuals in an occupational group are those that have been captured in the New Brunswick Health Human Resources (HHR) Inventory Database. This current stock represents those currently working and/or registered in the specific occupation (head count method).

Increments

Depending on the occupational group and available data, increments include some or all of the following:

1. **New Entrants** – estimated as follows:
 - Estimation of the output from universities, training, and refresher courses during 2002-2007
 - Estimation of percentage of that output (number of individuals) who will stay or come to New Brunswick to work in that occupation
 - Estimating the age at entry to practice of new entrants
2. **Reserve Pool** (*where data exists*) includes the pool of inactive workers in an occupation who hold certificates, training, qualifications, etc. in an occupation, but for one reason or another have chosen not to work in that occupation. The reserve pool is an important input from a policy perspective, as these workers may need to be provided an incentive to return to the workforce in that occupation.
3. **Net Migration (in-migration, immigration, and out-migration)** – includes individuals coming into New Brunswick from other provinces and countries, as well as those leaving New Brunswick. According to the 1998 report *Interprovincial Mobility in Canada*¹, province size and wealth is an important determinant of the extent of out-migration, as generally, the larger, wealthier provinces had higher net population gains. In the health care context, it is known that other jurisdictions (including international) that are providing higher salaries have been successful in attracting health professionals from New Brunswick and other less-wealthy provinces. Where possible, migration rates on an occupational basis are incorporated into the model, and where this information is not available, general provincial migration rates by age group and gender are utilized as a proxy.

¹ Finnie, Ross. *Inter-provincial Mobility in Canada: A Longitudinal Analysis*. Human Resources Development Canada, Applied Research Branch. September 1998.

Exits

Exits from the labour force in an occupation are due to a variety of temporary or permanent reasons.

Temporary - Inactivation due to short- or long-term disability, maternity leaves, participation in training programs, etc.

Permanent - Inactivation due to retirement*, death, emigration, and out-migration (which is captured in the “Net Migration” input to the model). Death as an exit from the labour force is less frequent than retirement, and mortality tables provide estimations of the outflow from the workforce due to deaths. This information comes from Statistics Canada Abridged Life Tables for New Brunswick, on an age- and gender-specific basis.

Non-death, non-retirement attrition may be due to lifestyle choices, continuing education, health issues, etc.

Weighted Supply Factors

These are additional, important factors that impact on the supply of human resources in an occupation, but are not as straightforward to quantify as the other inputs to the model. An example of a weighted supply factor might be “high stress levels and heavy workloads are causing young New Brunswick nurses to quit the profession within a year of graduation”.²

The model allows for these factors to be weighted, based on perceived impact on a 0-10% scale. For instance, will the impact mean 5% fewer nurses will come to or stay in New Brunswick, or will it mean 10% fewer nurses come to or stay in New Brunswick? These supply factors were identified and weighted as part of the focus group component of the study.

*Retirements

It is important to note that retirements are not a separate input into the model, as retirements are captured through the model’s age-cohort approach, in that for each year of the forecast period, the individuals in an occupation naturally age, moving from one age group to the next. As such, the 60+ age cohorts are naturally retired at a very conservative rate of 50% per year. The average retirement age in Canada has been trending downward from near 65 in the 1970s and early 1980s, to a low of 61.3 in the late 1990s.

Supply Issues

One important supply issue to consider concerns New Entrants to an occupation(s) who hold certificates/training/registration in multiple occupations. If an individual holds training as both a nurse and a social worker, should that worker be counted as supply in both of those fields? How that worker is

² “Young nurses quitting quickly”, Telegraph Journal, Friday, January 18, 2002.

treated affects the supply-demand balance. In the context of this study, the HHR inventory database records both occupations; however, for the purposes of the forecast exercise, individuals were placed in their primary occupation (the occupation in which they spend the majority of their time working).

3.4.1.2 Demand-Side

The health care system serves roles of both intervention and prevention, and both roles contribute to the demand for health care services in general, and HHR services in particular.³ The more of the general population who present themselves as patients to the health and social services system, the greater the demand for health human resources. Given that health conditions deteriorate with age, seniors are the predominant users of the health care system. The demand for HHR, thus, depends on the age structure of the population (potential patients). As well, the mix of health care services consumed by the population varies across age groups. Where information is available, this model incorporates the upward growth trend of the elderly population, in that for occupations that primarily service this age group of the population, the growth curve of the population is applied to the occupation. For all other occupations, the growth curve of the total population is utilized. Similarly, where specific occupational groups primarily service the childhood age groups (under 15 years old), the downward growth trend of this population is applied.

The development of an HHR demand model requires that the following issues be understood and incorporated into the model:

- Where possible, the demand model incorporates staffing ratios and/or provider-to-population ratios that currently exist in the New Brunswick health care system (status quo). Given the absence of pre-defined “best practice” levels for the province, the existing ratio is assumed to be the desired ratio going forward, but where this is not the case, a suitable proxy is chosen and incorporated.
- Judgments need to be made as to how demand will change in the future. Factors underlying this change can be numerous, including technological developments, changes in health care delivery, responses to policy changes, etc. These anticipated trends/developments may have minor or major impacts on demand for the occupation in question. The Bureau of Labour Statistics in the United States is reportedly one of the few organizations to take into account these impacts in a structured way.⁴ In general, the Bureau feels that those variables having an impact on demand for an occupation, averaging around 10%, are considered to be small impacts; changes of 20% are moderate; and changes of 30% are considered more significant. In this model, it is generally assumed that any “qualitative” input will not have more than a 10% impact on the resources in that group. Detailed documentation accompanies assumptions made in determining the percentage impact of these

³ Caceres, Jaime A. *Health Human Resources Model: Projection Tool for Health Policy*. Prepared for the 2001 Canadian Health Economics Research Association Conference, May 2001. Applied Research and Analysis Directorate, Health Canada.

⁴ Bureau of Labour Statistics. *Handbook of Methods*. Chapter 13.

variables on occupational demand, as these are structured judgment calls made by planners, and not quantitative historical data.

The demand-side of the HHR equation is much more complicated, more variable, and less quantifiable than the supply-side of the equation. The demand-side variables considered in the model are:

Current Stock = Current Demand

(status quo)

+

Vacant positions in system

(public and private sector)

+

Planned new positions

-

Planned reduction in positions

±

Weighted Demand Factors

Current Supply = Current Demand

The model begins in equilibrium with current supply, as determined in the supply model, equating to current demand (this assumes status quo). Then the model moves on by applying the following demand factors (+ or -) to the current demand to determine demand in the subsequent year.

Vacant Positions

Vacant positions for the public sector were taken from the most recent Region Hospital Corporations reports for vacancies.

Planned New Positions

Planned new positions are positions that will be coming into the system as a result of new developments in the future. An example would be if the current proposal by the Medical Society were acted upon by government regarding the use of nurses in physicians' offices as primary contact for some patients.⁵ The planned introduction of new legislation introducing nurse practitioners into the service mix in New Brunswick is another area of potential impact in several service sectors.

⁵ New Brunswick Medical Society proposal to the province, as reported in the Telegraph Journal, April 3, 2002.

Planned Reduction in Positions

Planned reduction in positions was incorporated into the model in the event that future plans include the closure of facilities, programs, etc. that would result in people being displaced.

Weighted Demand Factors

Similar to the discussion around the supply-side of the HHR equation, there are also less-quantifiable, but crucial variables on the demand-side:

- Age structure of population
- Health status of the population
- Utilization profile of that health resource
- New trends impacting public expectations for services
- Changes in technology (can be HHR complement or HHR substitute)

Even though a number cannot be placed on some of these variables, it was possible; however, to determine the direction of impact on demand for a selection of them, and in some cases, to estimate the magnitude of that impact. This capacity is built into the demand side of the model based on the same 0-10% scale to weight the magnitude of the particular demand impact, based on focus group results and the environmental scanning exercise.

3.4.1.3 Supply/Demand Gap

A gap analysis requires that the supply and demand models interact to produce the resulting equilibrium or disequilibrium/imbalance. The gap analysis predicts future surpluses or shortages within each occupational category for which sufficient information is available.

Generally, the gap analysis presents the difference between forecasted supply of workers and demand for workers in that occupation and the immediacy of the imbalance (within the five-year forecast horizon). This enables decision-makers to determine if they need to consider things like:

- Incentive programs to attract and retain workers in certain occupations
- Bursary programs and seat purchase in some training schools
- Utilizing a different mix and/or substitution of service providers
- Changes to compensation packages
- Introduction of a new training program in New Brunswick
- Buying additional seats in some training programs
- Change timing of a new program start-up until resources are available

It is important to note that the gaps (shortages or surpluses) are cumulative over time, in that, if status quo prevails and nothing is done to redress the gap, it will intensify over the five-year forecast horizon.

4. TRENDS AND ISSUES AFFECTING FUTURE SUPPLY/DEMAND

There are indications that New Brunswick's health care system may not have the number and mix of health human resources to meet future health needs of the province's citizens. It is important to recognize these signs, as well as other external issues, trends, and patterns that will directly and indirectly affect health care policy and the health care delivery system as a whole in New Brunswick, with a subsequent impact on the current and future supply of and demand for health care providers. It is expected that the demand for health care services will continue to exceed available funding, thereby driving the establishment of provincial level priorities for health spending.

New Brunswick is in fact a microcosm of the national, and international reality of growing shortages within several key health occupational groups. In its February 2002 interim report *Shaping the Future of Health Care*, the Commission on the Future of Health Care in Canada (referred to herein as the Romanow Commission) reported that a pan-Canadian group of health organizations identified health human resources as one of the key research challenges in Canada over the next 2-5 years. Shortages among several professional groups, low morale attributed to working longer hours under more stressful conditions, concerns regarding scope of practice, and the trend toward "poaching" of scarce health professionals across regions/jurisdictions were cited as key issues for resolution. According to the study *Canadians' Thoughts on Their Health Care System: Preserving the Canadian Model Through Innovation*, commissioned by the Romanow Commission, it was acknowledged that shrinking staffs and growing wait times for care were among the top concerns of Canadians.

This current climate is creating a sense of immediacy for governments across the country to undertake rational health human resources planning in order to ensure sufficient health occupations with the right skills to address the future health needs of the citizenry. The results of this study are intended for use by the health and education sectors in New Brunswick to plan for future health human resource needs and to inform policy direction and decisions at the provincial and Atlantic regional level about required student intake for health related health education programs to meet forecast demand. As well, the study is intended to provide government and employers with information for decision-making relative to recruitment, retention, and workforce development initiatives.

4.1 Population Health Needs

According to the World Health Organization, "health" is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity. There are many factors, therefore, that contribute to determining health, including education, employment and working conditions, gender, culture, physical environment, income and social status, social support networks, healthy child development, personal health habits and coping skills, heredity and genetics, as well as available health services.

4.1.1 Determinants of Health

The 1999 Health Canada Report⁶ compares a variety indicators of health status and determinants between New Brunswick and the other provinces and territories. The following list presents some of those comparisons:

Positives for New Brunswick

- Lowest rate of work injuries in Canada
- Second lowest rate of underweight births in Canada
- Low rates of infant mortality

Negatives for New Brunswick

- Most obese 20-64 aged population in Canada (42%)
- Second highest cancer death rate in Canada for women
- Highest breast cancer death rate in Canada

Furthermore, as outlined in the Government's Prosperity Plan⁷, gaps exist between New Brunswick and the national average with respect to income per capita and employment per working age population.

In considering these health determinants, health care providers acknowledge, that access to quality health care is but one of the factors that contribute to the health of individuals and the communities in which they live. There is a need for a concerted, coordinated effort among all providers to address the range of factors impacting an individual's ability to attain and maintain good health.

There is an opportunity for Government to positively impact the health status of New Brunswickers through the design and effective execution of a healthy public policy model. This model might include such elements as a health impact assessment tool, to be used by all government departments in the formation of policy positions or to inform decision making on initiatives.

4.2 Demographic Issues

There is a wide range of demographic factors, which affect all levels of the health care and social services systems in New Brunswick. The provincial demography – population, age structure, density, vital statistics, etc. – plays an important role in indicating the population's demand for health care services, distribution of demand, and type of services demanded.

⁶ Health Canada. *Toward a Healthy Future: Second Report on the Health of Canadians*. 1999.

⁷ Government of New Brunswick. *Greater Opportunity: New Brunswick's Prosperity Plan*. 2002-2012.

4.3 Declining Population⁸

New Brunswick's population is shrinking. **After 25 years of growth, the province's population declined between 1996 and 2001, by 1.2% to 729,498.** This decline is due to several trends, including low fertility rates, declining births, and a higher death rate because of the aging population.

New Brunswick's rate of population increase (known as "natural increase") – the number of births minus the number of deaths – fell by more than 50% in the five-year period ending in 2001. Between 1996 and 2001, there were about 39,000 live births and 32,000 deaths in the province, for a natural increase of 7,000 people compared to a natural increase of 16,000 in the five-year period ending 1996.

When this natural increase, which is typically a population's main source of growth, is in decline, and in the absence of a higher immigration/migration rate, the population will naturally decrease.⁹ Given this negative natural increase, the province must thus rely to a greater degree on interprovincial migration and immigration to sustain its population. However, New Brunswick has not been a primary destination for immigrants coming to Canada. According to the 1996 Census, New Brunswick received only 0.3% of the total immigrants coming to Canada. Furthermore, New Brunswick is experiencing a net loss to interprovincial migration. Early estimates that are not part of the official census data released in March 2002 indicate that New Brunswick is losing about 7,500 people annually to other jurisdictions.¹⁰ In December 2002, Statistics Canada will release further migration data.

4.4 Population Shift

The dispersion/distribution of the province's population is changing. The population of New Brunswick and the Atlantic Provinces is now exhibiting a trend that has been happening in the rest of the country for some time – the population is shifting from rural to urban areas.¹¹ This trend was evident in the 2001 Census statistics as Fredericton and Moncton recorded population increases from 1996 of 2.3% and 2.9%, respectively, and fuelled by Dieppe's 19.6% growth, the population of the Greater Moncton census area jumped 3.7%. This tremendous growth in Dieppe's population illustrates another trend – the suburbanization of New Brunswick. This was further evidenced in the census data, as Fredericton's population grew by 2.3%, while the greater Fredericton area grew by 3.0%.

⁸ Statistics Canada 2001 Census Statistics.

⁹ Francois Nault, Demographer, Statistics Canada Interview re: 2001 Census Results.

¹⁰ Ibid.

¹¹ Brian Crowley, President, Atlantic Institute of Market Studies.

Saint John experienced the largest exodus from its urban core with a drop in population of 3.9%, while suburban areas such as Rothesay, Quispamsis, and Grand Bay-Westfield either held their own or grew slightly.

Similarly, the entire north of the province is in a population decline of more than 1.5% since 1996, with the Bathurst population down by 6.4%, Campbellton's population declining by 7.2%, and Edmundston's population slipping by 2.8%.

It is anticipated that moving into the future, given this population shift, New Brunswick will have fewer, smaller, but potentially more prosperous rural centers, as well as growing urban and suburban centers.¹²

4.5 Changing Age Structure of Population

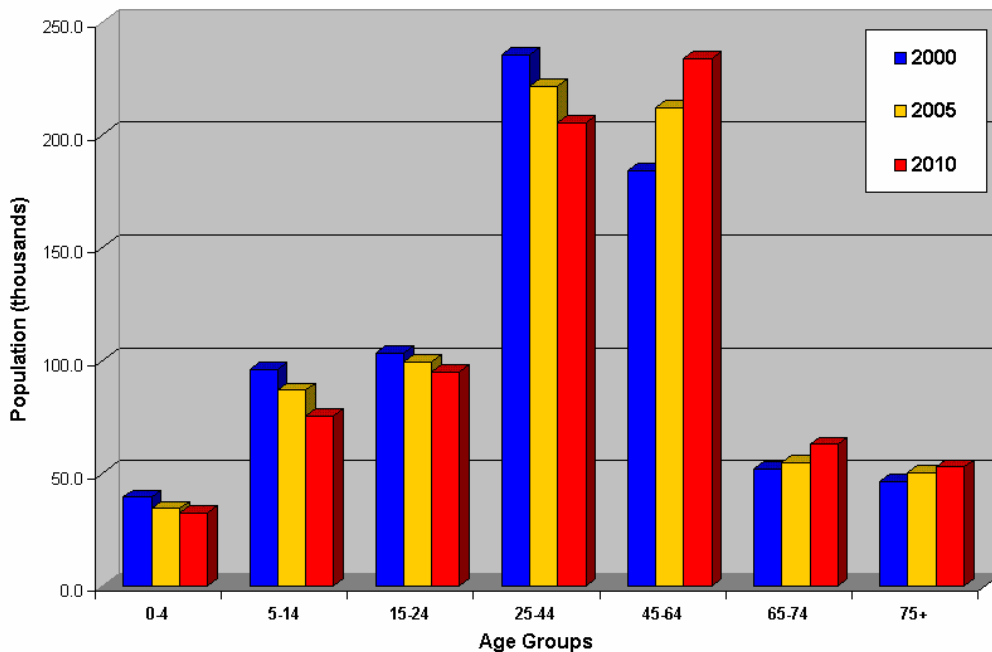
The change brought about by demographic transition of the population as described in the preceding sections affects not only the rate of population growth, but transforms the population age structure as well. This demographic transition to an older population is well underway in New Brunswick. An aging population is characterized by a declining proportion of young and an increasing proportion of elderly people.

During the next three decades as the baby boomers age, the biggest demographic shift in history will occur. The proportion of the population aged 65 and over in New Brunswick will increase from 13% today, to 18% in 2015, and 25% in 2025. This will have a significant impact on the provincial health system. As the baby boom generation ages, their expectations regarding health care and health service will be much higher than the existing generation. In addition to the availability of traditional health services, such as acute care and long-term care facilities, greater pressure will emerge to require expanded home care services and supports, early intervention, education, and community-based support strategies.

The New Brunswick Statistics Agency in conjunction with Statistics Canada prepares population projections for the province based on current demographic factors, fertility, mortality, and migration rates. Projections for the study period 2002 to 2007 are not broken down into such fine detail, but rather are available for 2000, 2005, 2010, etc., which is satisfactory for this analysis, as it reveals the general trends in population growth and age structure of the population. Figure 1 presents the population projections for New Brunswick to the year 2010. It also indicates the expected demographic profile of the province, in terms of age structure.

¹² Ibid.

Figure 1 – New Brunswick Population (2000-2010)



Between now and the year 2010, the total population is expected to remain roughly stable (increase by 0.2%); however, there are some dramatic shifts expected in the age structure of the population, as clearly depicted in the chart above. The 0-4 age group is expected to drop by 17%, the 5-14 age group is expected to decline by 21.5%, the 15-24 age group is projected to drop by 8%, the 25-44 age group is expected to decline by 13%, the 45-64 age group is projected to increase by 27%, the 65-74 age group is projected to increase by 21%, and the 75+ age group is expected to increase by 14%.

Similarly, the workforce within the health care system is aging as well. This presents, and will continue to present, some very critical human resource challenges to the system over the next decade or more. This reality is now in the forefront of the fears of health care managers and service providers. The aging workforce is one of the biggest challenges to the health care delivery system, not only on a provincial level, but nationally and internationally, as well.

4.6 Language

During the Spring 2002 sitting of the New Brunswick Legislature, new legislation was passed to be effective August 5, 2002. The new legislation, entitled the Official Languages Act (Bill 64), places greater requirements on the public sector to respect the official bilingual character of the province. The impact of this legislation will be considerable, as relates to recruitment of health occupations in short supply, and requires close scrutiny from the perspective of being able to successfully meet the spirit and intent of this Act during a time of shortage. A key policy question relative to the implementation of this legislation, is the ability of employers to avoid penalties during times of shortage of human resources available to meet both professional and language competencies. As health regions/sectors develop their

respective plans of establishment, implementation strategies will require criteria that weight the criticality of having both professional and language competencies. As an example, Speech Language Pathology is one occupational group where professional competence is equally as important as the language competence of the professional providing the service. It may be however, that for another occupational group, professional competence is critical as long as there is language competence within the health care team.

Much of New Brunswick's supply of French-speaking health providers has traditionally been provided through interprovincial agreements with the province of Quebec. A key challenge facing New Brunswick's recruitment of an adequate pool of French speaking health care providers is the movement by the Province of Quebec to systematically provide educational programs that meet its own provincial, but not necessarily national competency standards. The problems here are twofold. Enrollments of New Brunswick students in some of the Quebec programs is down, in spite of applicants meeting or exceeding minimum qualifications, and the curriculum in an increasing number of Quebec health programs does not meet national accrediting body minimum standards. While this is a Quebec-friendly strategy, it compromises graduates' ability to meet certification standards for employment outside of Quebec. The Health Records Practitioner programs, Registered Nurse, and several of the technical professions are faced with this dilemma. This creates a significant barrier to entry of key occupational groups to New Brunswick, which seriously impacts those occupations for which New Brunswick does not currently provide educational programming and relies on recruiting from outside the province. This situation presents New Brunswick with an opportunity to develop its own provincial programs and an opportunity to sell seats in these programs to other provinces faced with the same dilemma relative to its French speaking workforce. The additional requirement is for New Brunswick to be competitive and retain these graduates.

The data required to forecast the demand for health professionals based on language is not currently captured by the system at the level of detail required. As Government moves forward with collaborative HHR planning, improvements to the process for data capturing need to be addressed.

4.7 Economic Issues

4.7.1 Increasing Cost of Services

Health care costs continue to rise and there is a great risk that, without changes to the status quo, the sustainability of the system will be challenged, as demand for services continues to grow. Even though in recent years New Brunswick has enjoyed relatively healthy economic growth, increasing health care costs continue to be a major concern, magnified by an aging population. Furthermore, the current economic picture reveals that slower economic growth will translate into slower growth in government revenues. At the same time, the demand for public services continues to increase particularly for health care.

The recently tabled Budget for 2002-2003¹³ shows that health care (including nursing homes and family and community services) comprises roughly 34.5% of the total provincial government budget, similar to

¹³ Budget 2002-2003. Choosing Prosperity: A Balanced Approach. March 2002.

the 2001-2002 Fiscal Year. Excluding nursing home services and family and community services, this figure is 21%. The record \$1.8 billion invested in health care this year represents an additional \$80.6 million from the previous year, a 4.7% increase.

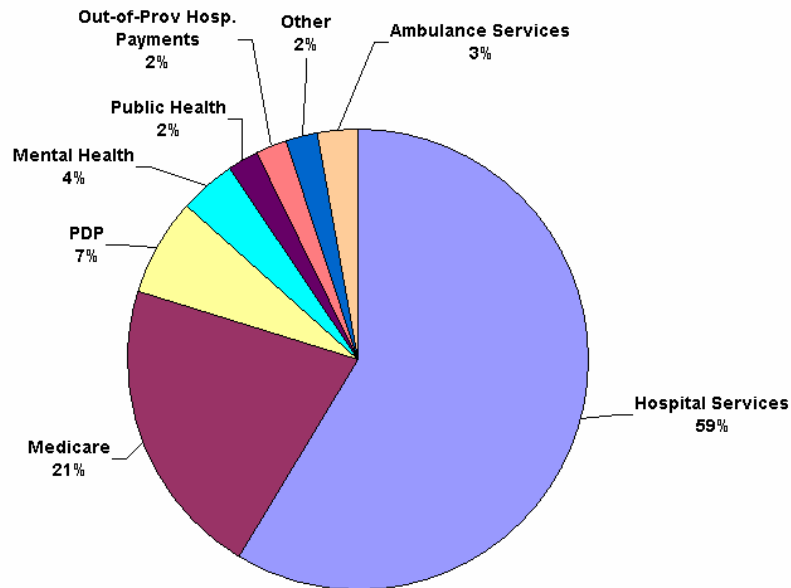
Between 1995-96 and 2001-02, the health care budget has increased by 40%, while the total provincial government budget has increased by 20%. This pace is clearly unsustainable, particularly in the current economic slowdown environment. For example, assuming government revenues increasing 2% per year, and the health care budget continues to increase by 7.8% per year, in 20 years time the health care budget will eat up well over 80% of the total provincial government budget.

The health care budget continues to eat more and more of New Brunswick's financial pie. Expenditure growth in health care from April 1999 to 2002-2003 is 2.5 times the next largest expenditure growth area, education, and for the current fiscal year, health care is eating up 56% of additional program expenditures, with education following at 32%. This budgetary pace is not sustainable, particularly in an economic slowdown environment. Still though, New Brunswick's health care expenditure per capita is not high relative to other provinces – provincial government spending per capita is actually among the lowest in Canada.¹⁴

The New Brunswick Department of Health and Wellness actual expenditures for the 2000-2001 fiscal year were \$1,324 million. Figure 2 shows the expenditure breakdown within the health care budget in 2001-2002.

¹⁴ Canadian Institute for Health Information. 2001.

Figure 2 – Expenditure Breakdown Within 2001-2002 Provincial Health Care Budget



Of the total health care budget, wages, salaries, and benefits comprise roughly 60%, and specifically in the hospital sector, wages, salaries, and benefits comprise 70-75%. The Province of New Brunswick Corporate Performance Measurement initiative, as discussed in previous sections, includes the performance measure: health care spending as a percentage of GDP. Total health care expenditures as a percentage of GDP incorporates health care expenditures from all sources, including those of Provincial, Federal, and Municipal governments; expenditures by Workers Compensation Boards, private insurance companies, and out-of-pocket consumer expenses. The ratio of health care spending to GDP demonstrates how health care expenses consume much of the Province's wealth. Between 1997 and 1998, the percentage of New Brunswick's GDP devoted to health care remained relatively stable at approximately 11%. This stability was in contrast to the national average and the percentages in most other provinces, which increased slightly during the same time period. In 1998, New Brunswick had the lowest health care expenditures to GDP ratio of the four Atlantic Provinces, but the New Brunswick rate was still considerably higher than the national average of 9.3%.¹⁵

¹⁵ Province of New Brunswick Corporate Performance Measurement. July 2001. Goal 2, page 9.

4.7.2 Labour Costs

As discussed previously, wages, salaries, and benefits costs are the major cost or financial drivers in the health care industry, comprising more than 72% of the budget of New Brunswick hospitals in 2000-2001, and over 60% of the provincial health budget in 2000-2001. This cost component will continue to be even more of a cost driver as the scarcity of health care resources intensifies and wages used as a recruitment and retention tool.

Recruitment and retention of certain occupational groups is a challenge for New Brunswick, given intense inter-provincial competition for these scarce human resources. Within Atlantic Canada, announcements in 2001 by the Newfoundland government to reclassify certain health occupations, resulting in pay hikes in the range of 11 to 24%, is one example of this competitive environment. Pharmacists, physicians, and nurses are examples of occupational groups where there is significant national competition for the resource. In this environment of scarce health human resources, New Brunswick needs to understand its competitive position for these resources.

While outside the scope of Phase II, regular market studies should be conducted and associated wage/benefit adjustments be given due consideration in order for New Brunswick to recruit and retain many of the health professions. Recruitment strategies and incentives, such as those recently introduced for physicians and nurses may need to be given consideration to successfully compete for these scarce resources.

Government's efforts to continue to evolve an integrated provincial health plan for New Brunswick must acknowledge this phenomenon in planning for the delivery of services. The need to manage the rate of escalation of labour costs, while remaining competitive and ensuring appropriate access to services, requires strategies that address not only the distribution of services, but also the appropriate mix and utilization of health care providers.

4.7.3 Education Costs

The trend toward university education and specialization within many health occupational groups creates new costs for the health care system, as well as for students themselves. The move to baccalaureate education as a requirement for radiation and radiography technologists, and for health information management are examples of this phenomenon of "creeping credentialism". Medical Laboratory Technologists is another occupational group positioning to move to a bachelor degree as entry point to their profession by year 2010. As well, many of the professions are also evolving sub-specialties. Outside of medical practice, this is particularly evident in the field of radiation technology/therapy. In order for New Brunswick to draw such professionals, the critical mass of patients/clients needs to be sufficient to warrant creating full-time positions. That is often; however, not the situation, which poses recruitment, as well as retention challenges. The need is recognized therefore for population based planning with the requisite regional cooperation, in an effort to provide the complement of required provincial health services. The impact of better-educated practitioners on their respective scopes of practice and overall service mix warrants consideration as the Province moves toward collaborative practice service delivery models. It is patient/client need that should drive planning of service mix or service delivery models.

In recognition of the growth in demand for services, certain educational institutions are increasing the number of seats within their programs. For example, in September 2002, the Bachelor of Science in Pharmacy program at Dalhousie University (Halifax) began to increase its first year intake by 24 additional seats.

In the current environment of an established trend of short supply of certain professional groups, there is also a move to establish support or support level workers to maximize the utilization of these scarce professional resources. This will create new educational costs with the development/deployment of new programs. While quality of service and protection of the public are the key drivers for more rigorous support-level training programs, there is a concern that no standards are in place to guide the development and evaluation of these programs. In relation to that issue, the Canadian Society for Medical Laboratory Scientists is considering providing a national certificate for lab assistants.¹⁶ The confidence of health professionals who delegate some of their responsibilities to a support worker is greater, when the educational preparation of that support worker meets a known standard.

The critical limiting factor when considering the introduction of new programs or expansion of current programs is the availability of clinical training. This is becoming a significant issue and there is competition between programs for adequate clinical training time and space. This growing requirement also has a significant impact on the productivity of staff at the facilities providing the training. In many instances, the staff required to provide clinical preceptorship or supervision, are not supernumerary, and are within one of the occupational groups in short supply e.g. nurses, pharmacists, rehab professions, etc. A centralized system to coordinate clinical training placements should be given consideration.

4.8 Public Expectations

Consumers of health care services are becoming increasingly better informed as to their health and the availability of various treatment modalities. The aging baby boom generation is more sophisticated and exacting relative to their expectations from the health care system. They expect to be active participants in decisions relative to their health and health care including where and how they want to be able to access that care and the level of service that they expect. Society in general has adopted a customer service orientation as a key competitive differentiator. Consumers will expect no less from their health care system requiring the system to migrate from its current provider focus to a client/outcome focus. This will create pressures on the demand for health professionals, as well as changes to the current models of service delivery. Consumers will need to be active participants in shaping a system that meets their needs while being economically sustainable.

¹⁶ Report on Phase I of the Study of the Human Resources Situation for Medical Laboratory Technologists and Medical Radiation Technologists. August 1, 2001.

4.9 Health System Issues

There are structural, as well as operational issues that impact the requirement for, and utilization of, New Brunswick's health human resources, which factor significantly into any model for planning for a stable complement of resources for the future.

4.9.1 Strategic Directions

A number of initiatives are currently under development in New Brunswick, which, collectively, is expected to contribute to the creation of a new integrated provincial health care plan by January 2003. These include such initiatives as a review of public health and mental health services, updating of the 1997 Hospital Services Master Plan, a review of the provincial Rehabilitation Services Plan, and the establishment of a primary health care strategy. As planning for the vision of a new integrated health system for New Brunswick solidifies, it will better inform rational health human resources planning.

The following highlights some the initiatives that will require further definition to better determine the health human resource implications.

Premier's Health Quality Council

The Premier's Health Quality Council released its "Health Renewal" report with recommendations that have potentially significant change implications for the manner in which the system is currently structured and the way in which services are delivered. The Premier announced government's commitment to implementation of four recommendations from that report in this fiscal year. Of these initiatives, the one that has the greatest potential to impact health human resources is the introduction of Community Health Centres (CHCs) in the province. The intent is to introduce two such centres in the province in fiscal year 2002/2003, as an integral component of a larger Primary Health Care Strategy. There is a view to enlarging the CHCs network across the province as part of the government's transition to a new way of delivering patient focused health care. As the Primary Health Care Strategy takes on definition, the impact on the number, distribution, and utilization of health care providers will need to be determined.

Information Technology Strategy

The Hospital Corporation's Information Technology (HCIT) forum has a strategic plan that identifies shared directions and strategy across the network of the former Regional Hospital Corporations. This plan will now require integration across the continuum of services under the aegis of the new Regional Health Authorities (RHAs) as their mandate and span of control continues to evolve. Its impact on how the various stakeholders in the system access and transact information has the potential to impact where and how certain occupational groups are deployed and utilized. Government's investment in the development of a provincial infrastructure to support the adoption of a comprehensive portfolio of telehealth applications will also be a critical element of this strategy as it has the potential to significantly impact the demand for and efficient utilization of many health occupations.

Improved Utilization of Nurses

The Speech From the Throne during the Fall 2001 sitting of the Legislature announced the government's commitment to improving access to primary health care through better utilization of service providers, specifically maximizing the scopes of practice of RNs and LPNs in providing front line services. There is an appreciation for the time investment that will be required to upgrade those in the system who have not been utilizing skills they were trained for, or those who need to be brought up to the level of competency of today's graduates. The impact of these changes can be significant for the system and will need to be quantified and implemented over a defined period of time through a comprehensive change management strategy in order to achieve desired results.

Cancer Services Action Plan

There is action being taken on the part of Government to design and implement a new cancer treatment program for the province, to ensure reasonable and equitable access to appropriate and effective care. The 1998 Cancer Services Action Plan for New Brunswickers is in the very early stages of implementation and the results of this HHR Supply/Demand Study should help inform the HR impact analysis and HR planning required to realize New Brunswick's cancer strategy. Two cancer care consultants (one Anglophone and one Francophone) were recently hired by the Department to assist in moving this action plan forward.

Nationally, statistics reveal that 70% of new cases and 82% of deaths due to cancer occur in those 60 years of age and older which means that by 2015 the number of new cases (nationally) could be 70% higher than present.¹⁷ The need to ensure an adequate number of cancer care professionals is therefore compelling. From the perspective of this supply/demand study, the current worldwide crisis in oncology and related professionals poses significant challenges for New Brunswick in training, recruiting, and retaining a sufficient complement of professionals to meet the current, not to mention the future, cancer burden in this province. One of the five priorities for action outlined in the Canadian Cancer Control Strategy report includes the development of a national cancer workforce strategy. An essential element of this workforce strategy includes the development and monitoring of a national human resources database, designed to detail staffing needs and vacancies by discipline, geographic area, cancer program or centre among other parameters. This initiative, which is well underway, should focus efforts on more effective management of the supply and distribution of cancer care providers to support operational planning needs for cancer control in Canada.

Early Languages Program

An Early Language Program, targeted at 5 year olds, is being piloted under the aegis of the Department of Family and Community Services in two health regions in New Brunswick. Fourteen additional Speech Language Pathologists (SLPs) are required to staff the two pilot sites, which commenced in the Spring 2002. In the absence of an integrated HHR plan across government departments, this additional demand has already created negative pressure on other parts of the system employing SLPs. If these pilots are

¹⁷ Canadian Strategy for Cancer Control. January 2002

evaluated as having positive outcomes, an impact analysis will be required that quantifies the health human resource requirements to support this program provincially, considering the current supply challenges in this occupation.

4.9.2 New Policies/Legislation Impacting Health Human Resources

Regional Health Authorities

New legislation was introduced in December 2001, creating 8 new Regional Health Authorities (RHAs) throughout New Brunswick. The impact of this structural change, from a human resources planning perspective, will rest in the 3-year business plans that each RHA will be required to develop and implement, establishing the priorities for health services within their respective regions. There will be a critical requirement for these plans to incorporate a human resources impact analysis, particularly for those occupations where supply is a known issue.

Official Languages Legislation

The new Official Languages Act came into effect in New Brunswick on August 5, 2002. This legislation will have a significant impact on the planning and management of health human resources within New Brunswick. Those providing health care services in this province must ensure the public is able to communicate with, and receive services in, the official language(s) of their choice (Bill 64, Article 28). Subject to this obligation, any hospital or health care facility has the ability to choose to use one official language in the course of daily operations (Bill 64, Article 34). The ability of the RHAs to meet their obligations of this legislation will be further defined through Implementation Guidelines. To facilitate meeting these obligations some RHAs are hiring official language coordinators. For the purposes of health human resources planning each RHA will be required to establish language profiles for staffing of specific programs/services, in accordance with the Guidelines. Once finalized, this information will inform future iterations of the health human resources forecast model and provide government with information on supply requirements to meet the intent of the Official Languages legislation.

Clinical Program Design Planning

The work of the Clinical Program Design (CPD) group is nearing completion of its work of providing definition and configuration of clinical programs for the province, based on a population-based planning model. The CPD group is expected to make recommendations as to the number, type, and distribution of clinical facilities and programs to ensure equitable access, quality, and efficiency of health services for the province. In the absence of this work, the 1997 Hospital Services Plan, which is dated, remains the baseline against which to plan the demand for HHR.

Nurse Practitioner Legislation

Legislation recognizing the Nurse Practitioner (NP) as a regulated practitioner was introduced in the Legislature this Spring 2002, with 15 NP positions expected to be introduced into the system in

2002/2003. Associated changes have been made to other related Acts to accommodate the desired scope of practice of this new practitioner, as well as to maximize the utilization of the spectrum of nursing service providers. The classification and deployment of this new category of health provider is under development by Government and stakeholder partners.

4.9.3 Utilization Patterns

The New Brunswick Retrospective Review (January 2002) studied acute care bed utilization and showed that, comparable to other provinces in Canada that had conducted a similar study, there is substantial room for improving bed utilization.

Surgical waiting lists are increasing. From March 1998 to March 2001, the surgical waiting list in New Brunswick increased by over 12%. As is the trend generally in health care today, many people are now being treated successfully outside of hospital, earlier discharges are now the norm, and new technology is reducing the need for inpatient services. For example, day surgeries in New Brunswick hospitals increased by 20% between 1996-97 and 2000-01, and consequently total length of stay (days) decreased slightly (1.3%) over that same time period.

The impact of changes in health care utilization patterns on health human resources is currently difficult to measure. Some realignment of existing resources needs to occur, based on client care requirements. Funding models should be defined by the services delivered and not by their location. However, a move to collaborative practice models in New Brunswick is a critical requirement to ensure a sustainable system. Reconciling overlapping scopes of practice among professional groups is a quintessential first step toward achieving any new model of practice. This requires continued leadership on the part of the Government and willingness among the health professions to participate in shaping these new models of care for New Brunswick. Some changes have been made to existing legislation, and others may be required to authorize and/or legitimize subsequent changes in scope of practice across health professions/occupational groups to allow this to occur.

4.9.4 Human Resources Planning

Several clear actions have been taken in the past few years, which speak to a strong commitment by Government, to tackle the acute health human resources planning challenges in the province.

In October 2000, the Province created the position of Physician Recruitment and Retention Officer, vested with the primary responsibility to help address the issues associated with physician recruitment and the demand for physician services in New Brunswick. The hiring of a physician recruiter was one of 12 initiatives under the \$6.8 million Physician Recruitment and Retention Strategy announced in November 1999.¹⁸ In the Spring of 2002, the position became vacant. Subsequently, the character of the position and title was changed to Physician Resource Advisor. The Department of Health and Wellness is presently recruiting to fill this position.

¹⁸ Online New Release, Communications New Brunswick. October 26, 2000.

In April 2001, a three-year \$8 million Nursing Resource Strategy was announced, the aim being to increase the supply of nursing resources in New Brunswick, keep nursing resources in the province, and improve forecasting of provincial nursing resource needs. The strategy includes a variety of initiatives from reimbursing tuition of refresher programs for RNs and LPNs to eliminating legislative barriers that pose barriers to nurses fully using their nursing skills. This strategy is based on recruitment and retention strategies recommended by the Nursing Resources Advisory Committee to the Minister of Health and Wellness, the Nurses Association of New Brunswick, the New Brunswick Nurses Union, and the Federal/Provincial/Territorial Conference of Health Ministers.¹⁹

Integral to the Nursing Resource Strategy, was the establishment of a Nursing Resources Advisor, a position that was filled in November 2001 by the Department of Health and Wellness. A counterpart position, Allied Health Human Resources Advisor, has also recently been created and staffed, and the Department expects to be re-posting for a Health Information Management Consultant in the near future. These skilled and knowledgeable resources should form the core of the Health Human Resources Planning Unit. Furthermore, the move to undertake this health human resources supply and demand analysis also demonstrates a commitment by the Department of Health and Wellness to undertake rational human resources planning. The results of this study will provide some essential tools and a solid baseline from which to proceed with such planning.

4.10 Technological Issues

Technology is changing the manner in which health care is delivered, at an ever-increasing rate. New health diagnostic and treatment tools, along with information and communication technologies, are having significant impact on the New Brunswick health care system, like elsewhere across the western world. While new technology may enable more efficient service delivery in many instances, its introduction almost always means more time and effort on the part of health care providers. This is due, in part, to the need to adapt to new processes and the requisite training requirements needed to support the effective uptake of new technology.

As such, each technology opportunity will need to be assessed and its impact on health human resources and health outcomes determined. Training costs can be significant, but are an essential investment to maximize effective utilization and productivity. Development of a rigorous change management plan will be central to the successful introduction of new technology and the realization of anticipated benefits. The loss in productivity that accompanies any major change initiative should also be factored into human resource and budget planning.

The impact of technology on the number and mix of health professionals required to deliver services is difficult to predict. For example, the trend toward point-of-care systems in the field of laboratory technology, the use of robotics in pharmacy, and the potential utilization of telehealth systems in diagnostics and patient care each require their own business cases to demonstrate potential impact. Pilot studies, or adaptation of best practices from other jurisdictions, will serve to inform the human resources impact over time with the uptake of these new technologies.

¹⁹ Online New Release, Communications New Brunswick. April 9, 2001.

The investment in technology is multi-faceted and extends beyond mere capital costs. The impact of technology introduction on health care providers requires careful and thoughtful consideration and must be included as part of the budget planning process. Certain technologies provide opportunities to leverage scarce provider resources, assuming the due diligence on cost/benefit and intangible benefits have demonstrated their value. Similarly, certain new technologies give the Province a competitive edge and the ability to attract and retain new health care resources, as well as provide a better service to consumers.

The Department of Health and Wellness' stated principle of operation is early adoption of proven technologies. It is felt by some within the system that this principle is not being met and thus is negatively impacting the ability to attract physicians and other practitioners to the Province. Practitioners want to work with the tools they used in school, and in many cases New Brunswick is lagging behind on the availability of those tools, which negatively impacts recruitment and retention of a variety of health occupations.

Significant synergies are possible through creating a technology infrastructure across Atlantic Canada. The ability to share technologies across the Atlantic Provinces through such initiatives as Health Infrastructure Atlantic (HIA) should have a positive impact on recruitment and retention of some professions. Similarly, the Federal Government initiatives around primary care, focusing on combining the practice model with the latest technology tools, will support the recruitment and improved utilization of scarce resources.

Primary Care reform and development of Community Health Centers means significant technology issues and opportunities. In such an environment, there must be sharing of information across technology platforms, and utilizing proven technologies will be a recruitment incentive for health professionals to work in these new environments. There is also significant opportunity to leverage the utilization of health care professionals, particularly those in specialty practice or in short supply through the use of telehealth technologies.

4.10.1 Lack of Data

One of the major challenges facing the Department of Health and Wellness and many provincial governments across the country, is the paucity of consistent and reliable data required to conduct human resources planning. A lack of reliable, comprehensive data on the current supply of those working in the health and social services system creates a significant challenge in forecasting future needs. While professional/regulatory bodies capture varying levels of complete data for certain health professions, virtually no compiled data is available for the unregulated health occupations. Also, given that a number of health providers work part time, and may work for more than one employer, a mere headcount is not sufficient for effective planning purposes. There is a critical need for collaboration among the various organizations that are potential sources, as well as users of reliable data, to create common data elements (minimum dataset) and database structures, in an effort to support collaborative health human resource planning.

4.11 Health Care Provider Issues

4.11.1 Demographics of Provider Population

Maintaining an adequate supply of health care providers will be a major challenge in the coming years as New Brunswick experiences a significant demographic shift. The supply of health care professionals is decreasing. As the workforce ages, the number of people retiring increases and the supply of available graduates from health care programs declines. Given the fairly long lead time required to train many health care professionals, even increases in enrollment today will not bring new professionals into the workforce until well after the shortages have taken hold. The prospect of a decreasing per-capita supply of health care workers, in the face of an aging population with increased health care needs, presents a formidable challenge. The impact of this North America-wide phenomenon is fierce competition for scarce health human resources.

Generally in Canada, there is a trend to earlier retirement; the average age of retirement for men in Canada is 62, and for women the average age for retirement is 60.5.²⁰ This trend also impacts the supply of health care providers in New Brunswick. The increasing retirement rate of senior/experienced managers and health care providers will present a major challenge to the stability and continuity of the system generally. Many sectors will be left in a situation where it is now difficult to find trained, qualified, and experienced staff to hire. Diligent human resources succession planning is required to manage this reality.

Furthermore, an older workforce is not as likely to cope very well with the physical and emotional care demands of a larger population of higher acuity patients. An increase in sick leave and workers compensation cases, due to physical injury and stress and burnout, can be anticipated, given current service delivery and staffing models.

New managers and care/service providers will have to be trained and supported to work in an environment that will continue to change in the face of higher public expectations and demands. The emerging work force has different values and work ethics than those in the current system. The new generation of employees has been socialized to expect more involvement in decision-making. Education programs prepare their students to work in collaborative, team-based models. These new professionals entering the workforce are comfortable with technology and expect to have these tools necessary to enable their work. Successfully recruiting and retaining tomorrow's workforce will be dependent on changing the management model currently in place and in creating better working conditions.

4.11.2 Shortage of Supply

The Canadian health and social services system is encountering major shortages in the availability of several health care providers. National initiatives, such as the Agreement on Internal Trade (AIT), are an

²⁰ Statistics Canada. Perspectives on Labour and Income. February 2001, Vol. 2, No. 2.

attempt to address the free movement of health professions across provincial borders, by harmonizing education and scopes of practice through Mutual Recognition Agreements (MRAs). The impact of such initiatives, both as they relate to barriers or enticements to entry and/or leakage from some occupations, will be felt over the long term as opposed to short term.

There is some question as to whether the AIT and free movement of health professionals will help New Brunswick. For instance, in professions where rates of pay in New Brunswick are lower than other provinces, the majority of the workforce is casual as opposed to permanent, and there is an increasingly heavy workload placed on health care workers.²¹

We must understand the dynamics around the competition for health professionals. For example, there may be enough pharmacists in the province, but they are not willing to work in the hospitals because the conditions (pay, hours of work, and type of work) are more attractive in the private sector pharmacies.

From a provincial perspective, there is currently no comprehensive or easily accessible human resources database to guide planning and decision-making. Data collection is difficult because of the regional health structure and lack of integrated information systems. There is no standard, centralized mechanism to collect and store data critical to planning and decision-making.

The trend toward bachelor level university education for many health occupational groups, who previously were trained in undergraduate college programs, is a barrier to entry that potentially has an impact on both the number of graduates and rate of replenishment of these occupational groups. The impact of this phenomenon of “creeping credentialism” will need to be quantified and monitored and staffing policies modified accordingly. Availability of qualified health professionals in the education sector, as well as access to clinical placements, confounds the shortage and creates challenges when attempts are made to expand the number of seats in programs in an effort to produce greater output.

In preparation for predicted shortages among some occupational groups, there is a visible trend toward substitution of labour and the use of non-regulated support workers in occupations such as nursing, rehabilitation professions, and pharmacy. While support workers can be advantageous in optimizing the use of professional caregivers, there are often no standards of education and practice for these unregulated workers. Government will want to review this situation carefully to ensure that the quality of care is not compromised, while leveraging complementary scopes of practice.

4.11.3 Scope of Practice

Changing needs and increasing expectations by the patient/client and public generally, and the shortage of health care providers are driving the requirement to closely examine overlapping scopes of practice among health professional groups.

As mentioned previously in this report, the Government has taken steps to address scope of practice issues in the nursing profession by announcing the intention to “remove legislative, regulatory, and policy

²¹ Interview with Marilyn Evans-Born, Director Health Legislation and Professional Regulation. March 2002.

barriers that prevent nurses from fully using their nursing skills and that help improve cost-effective access to health services and reduce waiting times for primary care”.²² Specifically, in the Spring 2002 Legislative Session, the government introduced legislation to address barriers to effective utilization for registered nurses, Licensed Practical Nurses, and nurse practitioners. The Department of Health and Wellness has been mandated to begin an accelerated consultation process with the Nurses Association of New Brunswick (NANB) and other key health care professional associations “to develop strategies and legislation that will allow the system to more fully utilize the skills of nurses, LPNs, and nurse practitioners”.²³ In the case of LPNs, the barriers to full utilization of scope of practice appear to reside primarily in institutional/program operational policy. An overarching plan is required to ensure standardized and consistent utilization including the requisite skills upgrading that may be required for those currently working in the system.

A well-defined process will need to be developed to guide any discussion and decision-making with respect to scope of practice. The needs of the patient/client should drive any decision-making germane to new models of collaborative practice and not the physical location where the care/service is being delivered.

4.11.4 Recruitment and Retention

There are currently a number of general trends that exist across the country. The use of casual employment is an issue in many health occupations. This has contributed to a number of challenges in both recruitment and retention. Many casual employees are working full-time hours, contributing to an insufficient pool of casual employees from which to draw. Reliance on this staffing model contributes to a lack of coverage for vacations, maternity leave, and sick leave, resulting in inadequate staffing complements and staff burnout. Differences in wage scales between the public and private sectors are also creating competition and recruitment and retention challenges within the province itself.

Another important and unique challenge to consider in New Brunswick is the requirement for bilingual services, which adds another dimension to the recruitment challenge across all sectors.

Several professions consulted during this study identified current government policy as a significant barrier to successful recruitment of experienced professionals. The issue centers on an apparent lack of tangible recognition of clinical experience and expertise in current job classifications and salary scales. For example, there is one classification level of clinical psychologist, which is a PC-1. The Qualification is licensure with the College of Psychologists irrespective of the candidate’s educational credential (Master or Doctoral degree) and irrespective of the experience/expertise required for the position. If a position becomes vacant that requires an experienced clinician with specific clinical expertise, an employer is not able to be competitive in recruiting that level of experience, as the position is an entry-

²² Speaking notes for Premier Bernard Lord, delivered to the Nurses Association of New Brunswick Annual Meeting. May 2, 2001.

²³ Ibid.

level position. Promotions/career advancements are only possible if one wishes to assume supervisory or management roles. This scenario impacts clinician roles across most health care occupational groups.

4.11.5 Education

Education, training, and development issues loom large in the midst of the current health human resources challenges. Many policy decisions taken over the past decade, in part as a measure to curtail the growth/cost of health care, did not take into account the aging workforce factor. As a result, many health care professions and occupations are facing a shortage of supply at a time when public needs and expectations are escalating. In the New Brunswick context, with the exception of nurses, many of the social sciences and the technical occupations rely on getting access to seats in university and training institutions outside the province.

Furthermore, the trend toward university education and specialization within many health occupational groups creates new costs for the system, as well as for students themselves. The move to baccalaureate education is an issue that has a significant impact on the supply of health human resources in some occupations. This phenomenon of “creeping credentialism” is a national strategy on the part of several the professions of interest to this study including medical radiation technologists, health records practitioners, medical laboratory technologists, and psychologists. Inconsistent rates of implementation across the country impacts free mobility of labour between provinces and acts differentially as either a disincentive to practice, or a barrier to entry for some occupations. Many of the professions are also evolving sub specialties that require post basic certificate or diploma level education to practice. A natural evolution of a bachelor’s degree is graduate programs for those who wish to pursue further career opportunities.

Another equally important aspect of health provider education is ongoing professional education and skills development to ensure provider skills keep pace both with clinical competency, as well as with new technologies. The current environment of fiscal constraint and shortage of health care professionals in several occupations is significantly compromising discretionary continuing professional education. Lack of financial support for continuing education is compounded by lack of staff for replacement. This situation was underscored as a significant issue by all professional groups who participated in this study; an issue that has a compounding effect both on the quality of care and on job satisfaction. Employer support for continuing professional education was cited in several major occupational group studies as one of the top three recruitment/retention incentives.

4.12 Labour Market Analysis

Competition for human resources is influenced by numerous factors including wage differentials, available employment opportunities, budgetary restraint, as well as general economic and working conditions. These and other factors influence the mobility of health professionals in New Brunswick and the Atlantic Region as a whole. The Fujitsu consultants’ approach to dealing with these factors was to provide empirical estimates of the impact and influence of the multidimensional factors affecting the supply and demand of the health human resource base in New Brunswick.

Comparative wage data was collected for the following sample of health occupations as per the methodology outlined in Section 3.2.3 and is included in the analysis of these groups in the occupation specific subsections in Section 5.3: Registered Nurses, Licensed Practical Nurses, Social Workers, Physiotherapists, Occupational Therapists, Speech Language Pathologists, Audiologists, Medical Radiation Therapists, Medical Sonography Technologists, Medical Laboratory Technologists, Pharmacists, and Health Record Practitioners.

Overall, the conclusions from the labour analysis indicate that, for those employed in the institutional services sector, New Brunswick faces a weaker competitive position in terms of wage levels for the majority of occupations in the sample, when considering those workers with higher qualifications and considerable experience. It ranks first in only one category, (Social Workers) using data for experienced workers. However, it ranks first in four categories (Physiotherapists, Occupational Therapists, Speech Language Pathologists, and Audiologists) for new entries into the health care system. The signing of two recent collective agreements in August 2002 has had a significant positive impact on the Province’s overall standing in comparison to the other three Atlantic Provinces. Prior to the signing of these new agreements, New Brunswick ranked fourth in the Atlantic Region in six of the twelve occupational categories. It now has only two fourth place rankings for experienced workers and four fourth place rankings in categories for new entry workers.

Table 1 summarizes the Province’s competitive position in terms of public sector wages for the twelve occupational categories.

Table 1 – Public Sector Wage Ranking

Occupation	New Entry Ranking	Experienced Ranking
Registered Nurse	4	2
Licensed Practical Nurse	4	4
Social Worker	3	1
Physiotherapist	1	3
Occupational Therapist	1	3
Speech Language Pathologist	1	2
Audiologists	1	2
Medical Radiation Therapist	4	3
Medical Sonography Technologist	3	4
Medical Laboratory Technologist	4	3
Pharmacist	3	2
Health Records Technician	3	2

The most recent collective agreements for several occupational categories have improved New Brunswick’s standing among the four Atlantic Canadian provinces. It ranks first in four of the categories in terms of new entrants, but ranks first in only one category in terms of experienced workers. However, the Province’s standing for experienced workers has improved significantly, ranking second or third in nine of the remaining eleven categories throughout the Region. It is important to recognize that when competition for an occupation is high, there is more often than not negotiation between employee and employer for higher entry-level wages as one of the few incentives available to the public sector. This

may reduce the benefit somewhat of New Brunswick's competitive ranking for entry-level salaries for these occupational groups.

New Brunswick is least competitive in four categories of new entrants, namely Registered Nurses, Licensed Practical Nurses, Medical Radiation Therapists, and Medical Laboratory Technologists. Given the strategic importance of the nursing profession within the health care system and the projected future shortage of medical laboratory technologists, these occupations may require additional focus and priority over the medium to long term.

5. NEW BRUNSWICK HEALTH HUMAN RESOURCES INVENTORY DATABASE ANALYSIS

5.1 Introduction

National and provincial health care policy changes in the early 1990s had a significant impact on the many occupations within the health care workforce across Canada. Decisions that decreased the share of GDP devoted to health care caused the elimination of several positions within a variety of occupational groups coupled with the conversion of full-time positions to part-time and casual positions. During the intervening years, population growth has remained positive, the demographic increasingly weighted toward an aging population resulting in no concurrent reduction in demand for health care services. This phenomenon has resulted in increases to professional workloads, a requirement for existing staff to work more overtime to maintain adequate staffing patterns, and a visible trend toward substitution of labour with unregulated support workers. This work environment has led to frustration, job dissatisfaction, and burnout. New entrants to the health care workforce have only had part-time or casual employment and many were forced into situations of multiple employment. This environment impacted the ability to attract individuals into the health care occupations resulting in several educational institutions reporting an inability to fill their enrollment quotas, closure of some programs, and reduction of seats in others creating a reduced number of graduates. Meanwhile, the existing workforce for many occupations has continued to age. Collectively, these factors have contributed to an inadequate supply of several health occupations to meet the future health care needs of Canadians.

Generally, across the country, both in response to and in preparation for predicted shortages among some occupational groups, there is a visible trend toward substitution of labour and the use of non-regulated support workers in occupations such as nursing, rehabilitation professions, and pharmacy. While support workers can be advantageous in optimizing the use of professional caregivers, there are often no standards of education and practice for these unregulated workers. Government will want to review this situation carefully to ensure that the quality of care is not compromised, while leveraging complementary scopes of practice.

Recruitment and retention remains one of the top issues of concern for many of the occupational groups outlined in the following sections. With the exception of a provincial recruitment strategy for the nursing professions, no other occupational groups have been targeted by the New Brunswick government with such strategies. There are; however, certain Regional Health Authorities that have indicated they do offer specific discretionary incentives, dependent on the need for certain hard to recruit professions. These incentives range from relatively small financial incentives, in the order of \$1,500 to \$5,000, for an increasing number of years of return for service, in addition to limited financial relocation assistance, and the offer of full-time positions with flexible hours.

5.2 High-Level Inventory Database Analysis

The New Brunswick Health Human Resources (HHR) Inventory Database captures individuals in 27 occupational groups. The inventory database represents a snapshot of individuals within these groups,

working in New Brunswick as of March 2001 for some data sources, and April/May 2002 for the remainder. Individuals were brought into the database from three primary sources:

1. Government of New Brunswick databases:
 - Department of Health and Wellness Service Provider Database (SPD) – *2001 Final Data*
 - HRIS (Human Resources Information System) – *as of April 2002*
 - HRDB (Human Resources Database) – *as of May 2002*
2. Professional/Regulatory Association data and databases – *as of April-July 2002*
3. Private sector employers (via survey) – *July 2002*

There are three categories on which analysis is performed:

1. Unique individuals (employed and not employed)
2. Employees (working individuals)
3. Jobs (of which employees can have multiple)

The HHR inventory database contains **17,474 unique individuals**, some of whom work one job, two jobs, or are unemployed. As such, there are **16,078 employees (working individuals)** and **16,677 jobs** in the inventory database (given that an employee can work more than one job).

The largest occupational group in the database is Registered Nurses (RNs), which comprise 47% of the total, with 8229 individuals. The second largest group is Licensed Practical Nurses (LPNs), which make up 15% of the total, with 2701 individuals. The third largest group is Social Workers, of which there are 1281 individuals, comprising 7% of the total.

The following sections present a high-level overview analysis of all health human resources in New Brunswick (all 27 health occupations) for the primary data fields of interest to this study (the minimum dataset found in Appendix C).

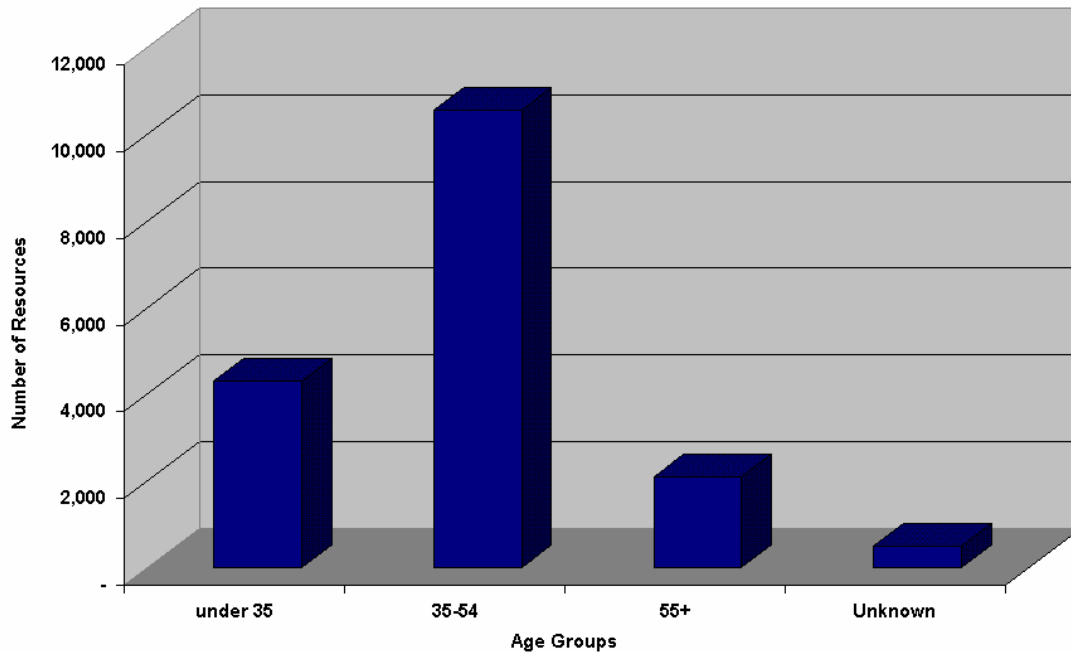
5.2.1 Gender and Age of Health Human Resources in New Brunswick

Of the 17,474 individuals contained in the inventory database, the majority are female (86%); however, there are several smaller occupational groups that are dominated by males: Medical Equipment Technicians (96%), Public Health Inspectors (72%), Ambulance Attendants/EMTs/Paramedics (66%), and Addiction Workers (64%).

The age group analysis reveals that the under-35 age group contains 4305 individuals, representing 25% of individuals in the database. The 35-54 age range contains 10,569 individuals, or 60% of individuals in the database, comprised as follows: 40-44 age group has 2774 individuals (16%), 45-49 has 2693 individuals (15%), and the 50-54 age group has 2263 individuals (13%). The 55+ age group contains 2091 individuals (12%). Please note that all percentages are calculated as the percentage of total (17,474

individuals). Age is unknown for 509 individuals in the database (3%). The following chart depicts the main age group breakdowns of New Brunswick's health human resources.

Figure 3 – Age of Health Resources in New Brunswick

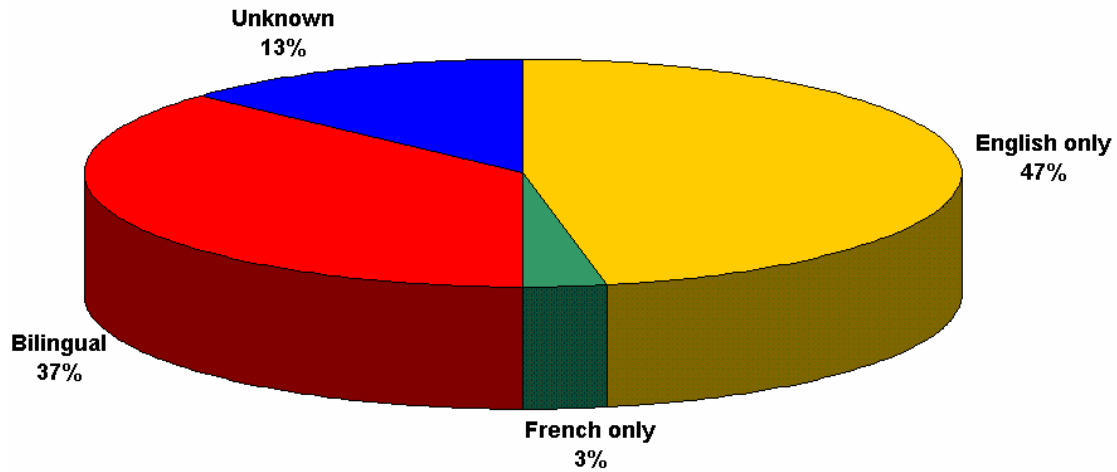


5.2.2 Language Ability

Information on each individual (where available) regarding language ability is captured as one of the following: English, French, English and French, and Unknown.

The language ability profile of New Brunswick's current inventory of health human resources (17,474 individuals) is as follows: 8284 (47%) have English-only language ability, 6445 (37%) have English & French ability, 528 (3%) have French-only ability, and for 2253 (13%) individuals, language ability is unknown. This language profile of New Brunswick's health human resources is represented by Figure 4.

Figure 4 – Language Profile of Current Health Care Workers



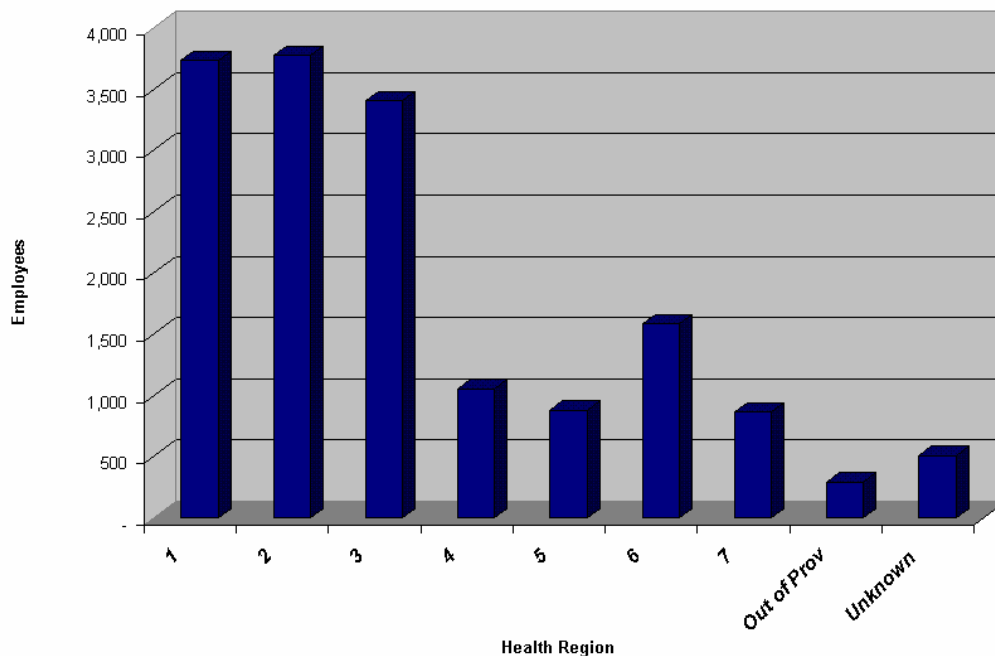
5.2.3 Health Region

Employees have been categorized according to the following Health Regions (Regional Health Authorities) and they are represented in a provincial map of New Brunswick Health Regions, which is in Appendix E.

1. Region 1 (total Region)
2. Region 1B
3. Region 1SE
4. Region 2
5. Region 3
6. Region 4
7. Region 5
8. Region 6
9. Region 7
10. Unknown
11. Out of Province

The Health Region analysis is based on employees (individuals with jobs). Of the 16,078 employees in the database, the majority (3773 or 23%) work in Region 2, 3734 (23%) work in Region 1 (Beauséjour, South East, and unspecified Region 1 combined), 3405 (21%) work in Region 3, 1585 (10%) work in Region 6, 1055 (7%) work in Region 4, 880 (5%) work in Region 5, and 866 (5%) work in Region 7. For 511 employees in the database (3%), health region is unknown and 296 (2%) employees in the database are employed outside of the province. The following chart depicts the regional breakdown of the health workforce in New Brunswick.

Figure 5 – Health Region of Employees



The breakdown of Region 1 is as follows: 1401 employees (9% of total) work in Region 1 – South East, 961 (6% of total) work in Region 1 – Beauséjour, and for 1372 employees (9%), South East or Beauséjour is not specified.

5.2.4 Employment Sector

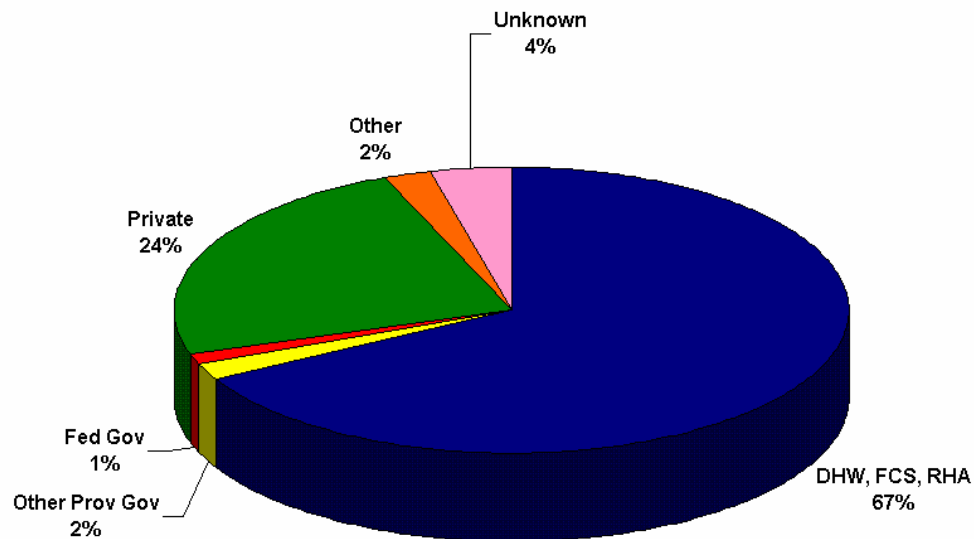
There are 6 Employment Sectors identified for purposes of this analysis:

1. Provincial Health and Community Services (New Brunswick Department of Health and Wellness, Family and Community Services, and Regional Health Authorities)
2. Provincial Government Other (other government departments, Crown Corporations, Workplace Health Safety and Compensation Commission of New Brunswick (WHSCC), Provincial Justice/Correction Services)
3. Federal Government

4. Private Sector
5. Other (includes out of province/country)
6. Unknown

The analysis by Employment Sector is based on employees. Of the 16,078 employee records in the database, 10,830 (67%) work in the provincial health and community services system, 3855 (24%) work in the private sector, 370 (2%) work in the “other” category, 250 (2%) work in provincial government other, 97 (1%) work in federal government and for 676 employees (4%) employment sector is unknown. The Employment Sector breakdown is depicted in the Figure 6.

Figure 6 - Employment Sector Breakdown



The occupational groups, which are primarily (> 50%) private sector are: Optometrists (100%), Pharmacists (82%), Licensed Practical Nurses (53%), and Prosthetists (100%)

Occupations in the inventory database which have workers employed in both the private and the public sector are: Addiction Workers, Ambulance Attendants/EMTs/Paramedics, Medical Lab Technologists, Respiratory Technologists, Licensed Practical Nurses (LPNs), Registered Nurses (RNs), Social Workers, Physiotherapists, Speech Language Pathologists, Audiologists, Occupational Therapists, Pharmacists, Pharmacy Assistants, Psychologists, Psychometrists, Dieticians, and Prosthetists.

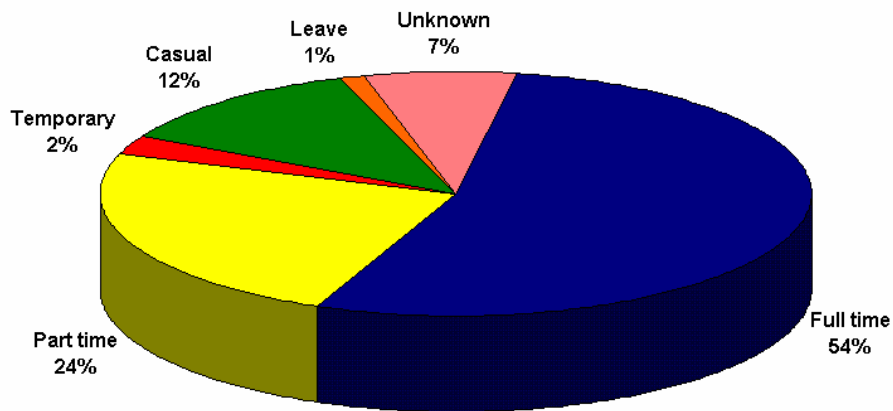
5.2.5 Employment Status

There are 6 categories in the database for Employment Status:

1. Permanent full-time
2. Permanent part-time
3. Permanent temporary
4. Casual
5. Leave of absence (with a reason)
6. Unknown

The Employment Status field is based on the employment records (jobs) in the inventory database, not on the employees (individuals). As such, out of 16,677 jobs in the inventory database, 8924 (54%) are permanent full-time, 3930 (24%) are permanent part-time, 2057 (12%) are casual, 1152 (7%) are unknown, 427 (2.5%) are permanent temporary, and 167 (1%) are on leave. Employment Status of New Brunswick health workforce is represented in Figure 7.

Figure 7 - Employment Status of New Brunswick Health Workforce



5.2.6 Occupation Status

To further articulate employment status, a field called “Occupation Status” is analyzed to present a finer level of detail with regard to those either not employed or employed outside their occupation. This analysis is based on individuals in the database. For this purpose, 12 types of occupation status are captured, where information is available:

1. Employed in occupation

-
2. Employed outside occupation and seeking employment in occupation
 3. Employed outside occupation and not seeking employment in occupation
 4. Employed outside occupation and is unknown whether seeking
 5. Unemployed and seeking employment in occupation
 6. Unemployed and not seeking employment
 7. Unemployed and unknown
 8. Seeking outside occupation
 9. Retired
 10. Student
 11. Unknown
 12. Seeking Refresher Course and seeking employment in occupation (LPN only)

The analysis by Occupation Status shows that of the 17,474 individuals in the database, the majority, 15,022 (86%) are employed in their occupation. Occupation Status is unknown for 1438 individuals (8%), and for the remainder of individuals in the database, Occupation Status is as follows: 294 (1%) unemployed and seeking employment in their occupation, 254 (1%) unemployed and not seeking employment, 134 (1%) retired, and 81 employed outside occupation.

5.2.7 Health Sector

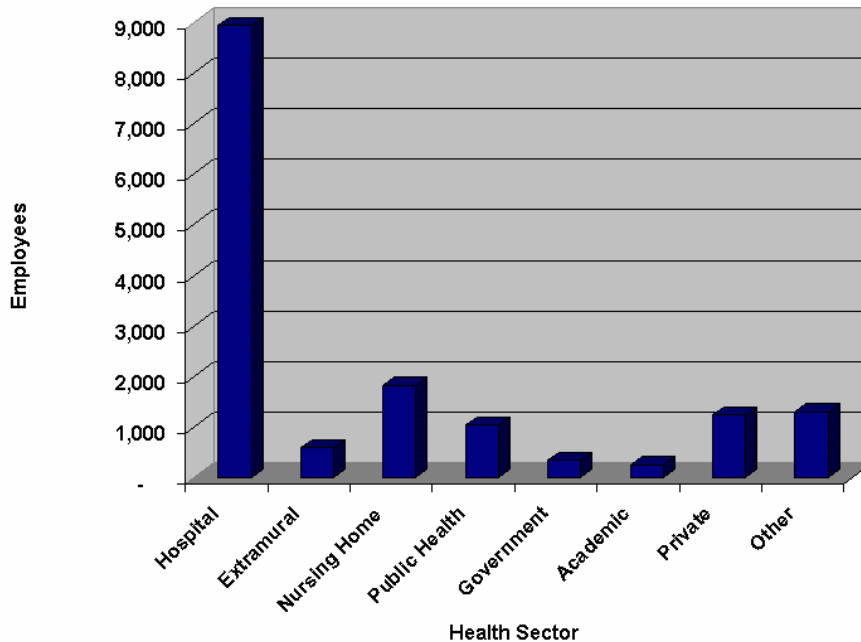
For the purposes of this study, 12 Health Sectors have been articulated as follows:

1. Hospital
2. Extramural
3. Nursing Home
4. Special Care Home
5. Physician's Office
6. Community Health Center
7. Mental Health Services
8. Public Health Services
9. Government
10. Academic
11. Private sector
12. Other

The Health Sector analysis is based on employees, of which there are 16,078. Of these, the majority, 8936 (56%), work in Hospitals, 1829 (11%) are in Nursing Homes, 1235 (8%) work in the Private Sector,

1290 (8%) work in “Other”, 1034 (6%) work in Public Health Services, 584 (4%) work in Extra Mural, 336 (2%) work in Government proper, and 246 (2%) work in an Academic setting. The remaining few percent are scattered between Physicians Offices, Special Care Homes, Mental Health Services, and Community Health Centers.

Figure 8 – Employees By Health Sector



5.2.8 Field of Practice

For the purposes of this study, five Fields of Practice were articulated for employed individuals.

1. Clinical
2. Education
3. Management
4. Research
5. Other

As expected, the majority (83%) of individuals in the inventory database are in the Clinical field of practice, 11% are in “Other” (which could include employment in consulting, sales, etc.), 4% are in Management, 2% are in Education, and the remainder (30 individuals) are in Research.

5.2.9 Registration Status

Registration status refers to individuals who are registered with a professional organization. This includes both voluntary membership, as well as mandatory membership, as a prerequisite to practice in New Brunswick. There are 5 types of Registration Status captured in the database, where information was available, as follows:

1. Active
2. Inactive
3. Temporary
4. Retired
5. Unknown

Of the 17,474 individuals contained in the inventory database, approximately 16,051 (92%) are registered with the professional organization relating to their occupation or to a closely related occupation for which they are eligible. Of the total individuals in the database, 15,131 (87%) are of active status with their registering body, 753 (4%) are inactive, 130 (1%) are retired, and 38 individuals have a registration status of temporary.

For 1,423 (8%) individuals, registration status is unknown, which most often means that they are in an occupation not represented by an association, licensing body, registering body, society, etc. This is the case for Addiction Worker, Medical Equipment Technician, Pharmacy Assistant/Technician, Rehab Assistant, and Psychometrist.

An unknown registration status may also mean that the representative body could not provide information to populate this field.

5.2.10 Employees with Multiple Jobs and Occupations

The inventory database has been designed to capture multiple occupations, multiple jobs within an occupation, and multiple jobs across an occupation, for each individual. An analysis of the number of jobs held by each employee; however, is limited because of the current data collection process. For example, the number of employees and jobs are the same for the Registered Nurses, because the Nurses Association of New Brunswick membership form captures only one job per member, thus any secondary jobs do not show up in the inventory database.

The ability exists within the database for reporting on the current number of individuals contained in the database with more than one job, but with the imperfect information available no confidence exists in the results of an analysis on multiple jobs per individual. This is a limitation to the analysis, and as such, for future data capture, it is recommended that more than one job be captured at an individual member level.

5.2.11 Full-Time Equivalent (FTEs)

The public sector utilizes a Full-Time Equivalent (FTE) methodology for purposes of determining staffing requirements, based on 1,950 hours worked per year. Presently, data on paid hours worked is captured in the HRDB for the public sector. The FTE methodology was applied to this data to support the analysis on how occupations in the public sector are currently working.

The HRDB was the data source for which there is a sufficient level of confidence as to data quality and integrity. In addition, the HRDB provided data on the largest portion of occupational groups in this study (24 groups). The other potential data source for FTE analysis is the SPD; however, the major limitation to using this data is that hours worked is self reported, which does not provide consultants with an equivalent level of confidence, and in addition, this data is only available for 8 occupational groups. In future, this data needs to be reconciled with employer data on paid hours worked to ensure consistent representation of hours worked, and hence FTEs, across all occupational groups.

As a result of the aforementioned data availability and limitations, the public sector portion of the workforce in the following groups are analyzed on an FTE basis.

1. Addiction Worker
2. Ambulance Attendant/EMT/Paramedic
3. Audiologist
4. Clinical Nurse Specialist
5. Diagnostic Medical Sonographer
6. Dietician
7. Dosimetrist
8. ECG Technician
9. EEG Technician
10. Health Records Technician and Administrator
11. LPN
12. Medical Equipment Technician
13. Medical Laboratory Technologist
14. Medical Radiation Technologist/Therapist
15. Occupational Therapist
16. Pharmacist
17. Pharmacy Assistant/Technician
18. Physiotherapist
19. Psychometrist
20. Registered Nurse

-
21. Rehab Assistant
 22. Respiratory Technologist/Therapist
 23. Social Worker
 24. Speech Language Pathologist

This analysis is reported in the following Section, by occupational group, according to following FTE groupings: 0-0.25; 0.26-0.50; 0.51-0.75; 0.76-1.0; >1.0

5.3 Occupational Group Analysis

This section presents a comprehensive analysis at the occupational group level of detail. Where the information is available, the fields, as presented on a summary level, are analyzed on an occupational group basis. The sub-sections (broad occupational groupings) are organized as per Appendix B.

The elements comprising the analysis include the following, and will be reported as such on an occupation specific basis, where information is available. Collectively, this information provides a deeper understanding of occupation-specific and New Brunswick-specific issues.

- An overview of the most current and pertinent occupation-specific trends and issues, identified through an environmental scanning exercise comprised of an extensive review of the literature, reports, and commissioned studies, as well as through surveys, interviews, and focus groups
- Identification of the most likely sources of labour supply from Atlantic Canadian/Canadian educational programs
- A comparative wage analysis conducted for 12 health occupations that articulates New Brunswick's relative competitive position within Atlantic Canada for these occupational groups
- An occupation specific analysis of the current workforce by age, gender, language ability, education level, health region, employment sector, field of practice, employment status, and occupation status
- Supply/Demand forecast model results describing shortages/surpluses in that occupation over the five-year forecast horizon (general approach articulated further in Section 5.3.1)

Occupational groups that will not be analyzed with respect to demographic information are those where the number of individuals in the group is small enough such that reporting on demographic information would not respect the privacy of the individuals in the group. These instances will be highlighted for the specific groups in question.

In considering impact on the supply and demand of health human resources, there are two key factors that have been considered in the age analysis. The first factor is the age of retirement, where the retirement zone of 55+ years of age has been selected as requiring attention for HR planning purposes. The second factor relates to the impact of a female dominated workforce where those of childbearing age (under 40) figure prominently in HR planning. New legislation supporting maternity leave of up to one year impacts the planning process as well. Often, fathers will share the parenting responsibilities and exercise the right to take paternity leaves. This study has not addressed the impact of paternity leaves on supply/demand, as it is more difficult to quantify.

5.3.1 Forecast Model Inputs, Assumptions and Limitations

The following sections of the report will also identify potential shortages/surpluses over the next five years for 20 of the health occupational groups, based on the outcome of the supply and demand analysis and the forecast model. These are the groups for which supply and/or demand was considered to be an issue as of September 2002, for which there were adequate numbers within the occupation, and sufficient data were available to populate the model. This is a good starting point from which New Brunswick can now build upon as the database is enriched with more information on other occupational groups. The specific challenges that will impact the retention and recruitment of new health professionals are outlined under the respective occupation in question.

All of the occupational group forecasts incorporate the following statistics:

Supply-side

- Current supply for the occupation by age group (based on database report 025)
- New entrants to the occupation based on intake, graduation, and attrition statistics from training institutions
- Current, age-specific, gender-specific migration rates for New Brunswick
- Non-retirement/non-death attrition from the workforce (maternity leave, lifestyle choices, continuing education) based on proxies used in PEI Health Human Resource Supply and Demand Analysis (proxy = 2.5% for all nursing, nursing-related and social sciences groups, 2.0% for rehab services and pharmacy professions, and 1% for all others, technical, non-frontline type occupations)
- Current age-specific, gender-specific mortality rates for New Brunswick
- Conservative retirement estimates

Demand-side

Recognizing that these numbers do not always accurately reflect immediate and/or current requirements, given the dynamic nature of job hiring and openings, the following immediate demand information is incorporated into the model:

- Public sector vacancies, planned new positions, and planned reduction in positions by occupational group (over the five-year forecast horizon) provided by the Regional Health Authority Human Resources Directors, Department of Health and Wellness HR Branch, and Department of Family and Community Services HR Branch (as of July 2002)
- Private sector postings by occupational group (as of August 2002)

It is a recognized limitation of the forecast model that in the absence of a Provincial Health Plan, there is no information available to articulate additional demand in the future for new program requirements, changes to programs, etc.

It is important to note that the shortages/surpluses reflect the reality of today, are cumulative over the forecast period, and do not incorporate actions being taken to redress the predicted shortages/surpluses.

5.4 Social Sciences

5.4.1 Addiction Worker/Counselor

Addiction Workers are largely classified as Addiction Attendants who work in the seven Detox Centres in the province.

Educational preparation required for this occupation is high school plus in-service/on-the-job-training. Due to the demands of the client population, new postings for these positions are requiring no less than six months clinical experience, which limits eligible candidates. Those with credentials as an Orderly or LPN are being hired in these positions, which are not necessarily funded for this level of worker.

Addiction Counselors, on the other hand, are largely staffed with Clinical Social Workers who provide service to chemically dependent clients in outpatient and community settings. Registered Nurses are also working in this capacity.

Data Analysis

There are 53 Addiction Workers in the inventory database, all of whom (100%) are employed in the profession, working in 54 Addiction Worker jobs. No professional association exists in New Brunswick for the Addiction Worker labour force.

Of the 53 Addiction Workers, the majority, 34 (64%), are male. An age group analysis shows that the average age of the Addiction Worker in the database is 46, and that, furthermore, within the five-year forecast horizon, half of this workforce will be in the potential retirement zone (55+) and, indeed, 30% are already there.

Of the 53 Addiction Workers, 49 (91%) work for the provincial health and community services system in a hospital setting, 3 work for the private sector, and 1 each work for the federal government and provincial government other.

A health region analysis shows that the majority of Addiction Workers work in Region 2 (15 or 28%), 8 (15%) work in Region 4, 7 (13%) are in each of Regions 5 and 6, 6 (11%) are in Region 1SE, and the remaining Addiction Workers, 5 and 4, work in Regions 3 and 7, respectively. Of the Addiction Worker labour force, 52 (98%) are in a clinical field of practice, the field of practice for the remaining Addiction Worker is “other”.

An analysis of “how” this workforce is working shows that of these 54 jobs, 34 (63%) are permanent full-time, 9 (17%) are permanent part-time, 9 (17%) are casual, 1 (2%) is permanent temporary, and 1 (2%) jobs are of unknown employment status. Furthermore, for the 91% of these workers who work for the public sector, FTE analysis reveals that the majority of them (41%) work in the 0.76-1.0 FTE range,

however, there is a high percentage (39%) who work >1.0 FTE, while 16% work less than 0.5 FTE, and 4% work between 0.51 and 0.75 FTE.

The language ability for 44 (83%) of the Addiction Workers is unknown; therefore, analysis of language for this workforce is not possible.

Gap Analysis

A formal gap analysis is not possible for this group due to unavailable information on the supply side on “new entrants” from training programs, in that, Addiction Workers are trained on-the-job and draw workers from a variety of backgrounds and educational preparations. However, taking into account only the demographics of this group and not accounting for additional demands for Addiction Worker services over the forecast period, it can be estimated that a shortage of up to 20 workers is possible by 2007.

In summary, Addiction Workers are predominantly male (64%) with an average age of 46 years, are employed largely on a permanent full-time or permanent part-time basis (80%), with a high percentage (39%) working as greater than 1.0 FTE. They work almost exclusively in the hospital setting. Due to on-the-job training and the “on demand” nature of Addiction Worker jobs it can be estimated that there will be a requirement to replenish this workforce with up to 20 workers by 2007 due to the demographics of the workforce (deaths, retirements, and general workforce attrition of 2.5%). It is important to recognize that the LPN workforce is potential supply for this occupation, and given the relatively stable position of the LPN workforce over the next five years, meeting the human resources needed to staff Addiction Worker positions should be possible. A risk factor however, is that currently this classification is not wage competitive with an LPN classification.

5.4.2 Clinical Psychologist

Trends and Issues

The current process in New Brunswick for licensure as a clinical Psychologist is a Masters degree in psychology plus four years of supervised experience, or Ph.D. with one year supervised experience plus successful completion of a written and an oral exam. The College of Psychologists of New Brunswick has indicated that a new licensure process will take effect sometime in the future, which requires that the prospective employee be a Ph.D. candidate. It is anticipated anyone in the process as of the implementation of the enhanced requirements will be grandfathered. As well, standard for success on the exam will be raised to 70% from the current 65%. This proposed change in education requirements to Ph.D. for entry to practice to this occupation, has the potential to impact supply.

Source of Supply

Education programs preparing Clinical Psychologists are offered in New Brunswick at both Master and PhD levels by the University of New Brunswick, both Saint John and Fredericton campuses, and by Université de Moncton. Dalhousie University in Nova Scotia is also another major source of supply for

this occupation through their Master/PhD. education programs in this discipline. Generally speaking, the graduate/post graduate level programming for Psychologists are becoming more integrated with no exit after a Master, only after completion of the entire program culminating in a Ph.D. credential. The duration of many of these programs is five years on average.

There are currently 21 New Brunswick residents enrolled in the UNB Master/PhD. program, out of a total of 35 students. Université de Moncton has 37 New Brunswick students out of 49 enrolled in their Master of Arts in Psychology program, some graduates of whom will feed the university's new Ph.D. in Psychology program which they began offering in 2000. There are 4 students currently enrolled in this post-graduate program, all of who are New Brunswick residents.

Data Analysis

The inventory database contains 279 Psychologists, of which it is not known what portion are employees (individuals with jobs), due to limited availability of employment information on this group. As such, an analysis related to employment is not possible at this time.

The registration status of the 279 Psychologists is as follows: 256 (92%) are active, 2 (1%) are inactive, and the registration status for 21 (8%) is unknown.

A demographic analysis by age reveals that age is unknown for 155 (56%) of the Psychologist workforce captured in the database. Average age of the remaining Psychologists (124 or 44%) is 46 years.

Analysis by gender indicates that 147 of the Psychologists are female (53%). However, due to the high percentage of unknown ages for the Psychologists in the inventory database, it is not possible to determine the number of female Psychologists under the age of 40, in the potential childbearing age range.

A look at the language ability of the Psychologist workforce shows that 114 (41%) of workforce have language ability in English only, while 89 (32%) have ability in English and French, 25 (9%) have French only ability, and for the remaining 51 (18%), the language ability is unknown.

An analysis of the employment sector for Psychologists reveals that 123 psychology employees, 79 (64%), work in the provincial government, which includes the Department of Health and Wellness, Family and Community Services, and the Regional Health Authorities, 26 (21%) work in the private sector, 15 (12%) work in provincial government other, and 2 (2%) work in "other" category, while 1 (1%) works with the federal government.

Health Region analysis shows that of the 123 of the Psychology employees, the majority, 29 (24%) are in Region 3, 26 (21%), are in Region 1 (6 Region 1SE, 6 Region 1B, 14 Region 1 unspecified), 21 (17%) are in Region 2, 7% are in each of Regions 4 and 5, 3 % are in each of Regions 6 and 7, for 19 (15 %) the Region is unknown, and the remaining 3 (2%) are out of province.

In an analysis by Health Sector, 42 (33%) of the 129 Psychologists jobs are in the government sector, 35 (27%) are in the hospital sector, 29 (22%) are in the private sector, 8 (6%) are in mental health services, 7 (5%) each are in the "other" and academic sectors, and the remaining 1 (1%) of the positions is in the

public health services sector. At a finer level of detail, the majority (67%) of Psychologists are in a clinical field of practice, 30 (25%) of Psychologists have indicated “other” as their field of practice, 6 (5%) are in management, and the remaining 4 (3%) are in education.

An analysis by Employment Status reveals that of the 129 Psychologists jobs, the majority (91 or 71%) are permanent full-time, while 19 (15%) are permanent part-time, and 3 (2%) are casual. The remaining jobs are divided equally among permanent temporary positions, unknown leave, and unknown status.

Occupation status is unknown for 154 (55%) of the 279 Psychologists in the inventory database.

In summary, just over half of Psychologists captured in the database are female, with an average age of 46 years (based on 44% of total), and 36% of this group is bilingual. The majority of this workforce (64%) works for the public sector on a permanent full-time or permanent part-time basis (86%). There are local sources of supply from two New Brunswick universities in French and English. Future outlook for this occupational group cannot be determined at this time due to the extent of unavailable demographic information, which limits the ability to forecast.

5.4.3 Psychometrist

Source of Supply

Education in the discipline of psychology is required for this occupation and many Psychometrists are on a career path for licensure as a Psychologist.

Data Analysis

There are 21 Psychometrists in the inventory database, all of whom are employees working in 22 jobs.

A demographic analysis by age reveals the average age of Psychometrists to be 37. The majority of Psychometrists are in the 25-40 age range (12 or 57%). There are 6 (29%) Psychometrists between 40 and 50, and 3 (14%) over the age of 50. There are currently no Psychometrists in the potential retirement zone (55+), and only 3 (14%) will enter the retirement zone within the five-year forecast horizon. This is a positive factor for workforce stability.

Analysis by gender indicates that 17 of the Psychometrists are female (81%), and 11 of them (52% of Psychometrist workforce) are under the age of 40, and considered within the childbearing age range. Although potential retirements over the five-year forecast are at a low percentage (3%), an important factor to consider is the high potential for fulfilling positions on a temporary basis due to maternity leaves.

A look at the language ability of the Psychometrist workforce shows that for the majority, the language ability is unknown (12 or 57%), while 6 (29%) have ability in English only, 2 (10%) indicated ability in English and in French, and the remaining 1 (5%) has French only ability. A further breakdown for health region shows that the Psychometrists with both English and French ability are all in Region 4.

Of the 22 Psychometrist jobs, 15 (68%) are in the provincial government, which includes the Department of Health and Wellness, Family and Community Services, and the Regional Health Authorities, 4 (18%) are in the private sector, and 3 (14%) are in provincial government other.

When looking at Health Region, of the 22 Psychometrist jobs, the majority, 6 (28%), are in Region 1 (3 Region 1SE, 3 1B), 5 (23%) are in Region 5, 4 (18%) in Region 3, and each of Region 2, 4, and 6 have 2 Psychometrists (9%). Health Region was unknown for 1 Psychometrist.

In an analysis by Health Sector, 12 (55%) of the 22 Psychometrist jobs are in the hospital sector, 4 (18%) are in the private sector, 2 (9%) are in each of the government, mental health services, and academic sectors. At a finer level of detail, the field of practice for 12 Psychometrists (57%) is indicated as other/unknown, 8 (38%) are in the clinical field of practice, and 1 (5%) is in education.

An analysis by Employment Status reveals that of the 22 Psychometrist jobs, the majority (15 or 68%) are permanent full-time, while 3 (14%) are permanent part-time, and 3 (14%) are casual. An FTE analysis reveals that a 50% of the public sector workforce work between 0.76-1.0 FTE, 25% work >1.0 FTE, and 25% work <0.75 FTE.

Occupation Status is based on the 21 individuals who are Psychometrists, and of these 100% are employed in their occupation.

In summary, the Psychometrist workforce is relatively young (average age 37 years) and predominantly female (81%), working in the provincial government (68%) in the hospital setting (55%), while nearly 20% of this workforce is in the private sector. This workforce works primarily on a permanent full-time or permanent part-time basis (82%), with 25% working >1.0FTE.

5.4.4 Social Workers

Trends and Issues

There are several key environmental and demographic changes that will have an impact on the demand for social services, nationally, in the coming decade. These are highlighted on pages 196-197, in the April 2001 report *“In Critical Demand: Social Work in Canada”*, prepared for the Social Work Sector Study Steering Committee, as follows:

- The rate of population growth is expected to slow over the coming decade. By itself, this slowing growth rate would suggest lower growth in employment in social services delivery.
- Children and youth services comprise a large component of current social services delivery. Looking ahead, we see there are significant changes in the age structure of the population, with the share of children and young persons declining. At first reading, this change would also suggest that demand for child-oriented social programming will fall somewhat.
- However, many economic and social problems that are linked to dependence on social services are not declining, but are, in fact, slowly increasing for many families. Young families have lost ground in terms of income from employment. Poverty remains a serious concern for many individuals and

groups in society. Family structures are continuing to change to emphasize less permanent relationships and single parent families are more frequent. So while the overall population growth slows, these trends are expected to keep increasing the demand for social services programming.

- The growth of the population over 65 years of age, and especially of those over 75 years of age is going to be substantial in the coming decades, which will place new demands on social services.

The New Brunswick report, *Children Come First*²⁴ that was released in January 2000 following an extensive collaborative and consultative process, proposed a redesign of the New Brunswick Child Welfare System. Collectively, the recommendations reflected a requirement for a significant amount of change to the way business is conducted and a need to increase the social worker labour pool in this province. Based on the business/operational practices at the time this study was conducted, a number of new social worker positions were recommended to redress the findings in the report.

Since the release of that report, the Department of Family and Community Services, who employ a large percentage of social workers, indicates that a number of changes have, or are in the process of being made, to improve and/or streamline business processes and resource utilization. In addition, 45 new social work positions have been created in the area of children's services.

From the perspective of social workers employed in the system, unrealistic caseloads remains one of the primary disincentives to job satisfaction and retention, particularly in the area of children's services. In a recent study commissioned by the Child Welfare League of Canada, the complexities of recruitment and retention nationally, to vacancies in the area of child welfare services, is explored. The following quote reflects the vicious circle that exists for many health occupations and sums up the sentiment expressed by social workers who participated in a focus group for this HHR study:

“There is a fundamental paradox in the relationship between recruitment and retention. Where there is a low retention rate, one needs a high recruitment rate. However, the factors that contribute to low retention also discourage effective recruitment. The result, is a decreased ability to replace departing staff with skilled new recruits, in a timely fashion. The hiring gap further exacerbates the stress in the work environment as remaining staff absorb the workload of staff who leave, which, in turn, contributes to overload and the further loss of staff.”

The previously cited 2001 study by CASW, *“In Critical Demand: Social Work in Canada”*, identifies that social work education programs are not well aligned with the growing demand for specialty areas of practice that confront new graduates. Leaving this type of educational programming in the realm of post basic professional development poses a conundrum when new graduates are immediately placed in specialty areas of practice, access to continuing education days is at a premium, and professional development is often treated as a discretionary expense. This is a disincentive to retention of a committed and highly skilled workforce.

²⁴ *Children Come First: Child Welfare Comprehensive Review and Redesign*, New Brunswick Department of Health and Community Services. January 2000

In an effort to begin to respond to this situation, New Brunswick's Department of Family and Community Services has injected \$1 million (annually) for the purpose of competency training for supervisors and front line social workers. This equates to about 12 days per year per social worker. This initiative has been initially targeted for those working in the area of Child Protection with a view to a wider rollout to other program areas.

In the focus group conducted with social workers for this study, low salaries and high caseloads were identified as the number one issue confronting this profession. As well the current approach to workload measurement was called into question in relation to giving appropriate consideration to the growing complexity of individual cases.

Other issues of concern to the profession that were raised in the focus group included the following:

- Trend toward substitution of labour, where jobs that are perceived to require a social worker knowledge and skillset are being advertised and filled with other professions at a lower rate of pay
- Movement of social workers away from front line client interface and into more administrative work
- Extensive use of extended contract work as opposed to full-time employment opportunities
- Movement of social programs requiring social worker knowledge and skills into the private sector

In looking at how competitive New Brunswick is within Atlantic Canada, relative to wages of professional social workers working in the hospital sector, it would appear New Brunswick ranks third in Atlantic Canada for new entrants into the profession and first for experienced social workers. It should be noted there is no significant wage differentiation across Atlantic Canada for the classifications of experienced social workers working in this sector. Wage comparisons were not done for social workers employed in the community sector due to the variability in classifications across provinces.

Source of Supply

In terms of educational preparation, there are two programs in the province offering educational programming for this occupation. St. Thomas University offers the only English language Bachelor of Social Work (BSW) program in New Brunswick, which can be accessed in one of two ways. A four-year BSW program is offered which accepts 25 full-time and 1-2 part-time students annually, who have successfully completed two years of Arts, following, which they complete two more years of study for the BSW. Twenty students per year are also accepted into a 13-month program post-degree BSW, designed for students who already have an undergraduate degree. There are currently 80 students enrolled across all programs as of September 2002. The attrition rate in these programs is negligible. Université de Moncton offers the only French language bachelor degree in social work in the province, which can be obtained in 2-3 years depending on the extent of the student's undergraduate credentials on admission. The first year intake capacity for this program is 50 students. Currently, 108 students are enrolled in this program as of September 2002, 102 of which are New Brunswick residents.

The Maritime School of Social Work at Dalhousie University, Nova Scotia also offers a Bachelor of Social Work (BSW) degree program, that is two years in duration, for students who already have an undergraduate degree. Students with 30 credit hours of university education can apply to take the program in three years. For students with an undergraduate degree, the BSW can be accessed through

Distance Education, with the normal course of study being three years. The total intake capacity for these programs is 80 students and the program is at capacity for September 2002 with 6 New Brunswick students accepted in year 1. There are currently 134 returning students enrolled across the rest of the program including 5 New Brunswick students. The attrition rate for this program is minimal at 3%. Dalhousie University also offers an 11-month Master of Social Work degree for those with a BSW and two years social work experience.

Data Analysis

There are 1281 Social Workers contained in the inventory database, 1123 of whom are employees working in 1233 jobs (an employee can work in multiple jobs). Of the Social Workers in the inventory database, 1185 (93%) hold an active membership with the New Brunswick Social Worker Registration Board, 49 (4%) have an inactive membership, 30 (2%) are retired, and 17 (1%) have a temporary membership.

A demographic analysis by age reveals the average age of Social Workers to be 42. The majority of Social Workers are in the under 40 age category (561 or 44%). There are 352 (27%) Social Workers between 40 and 50 years old, and 360 (28%) in the 50+ age category. There are currently 13% in the potential retirement zone (55+), and another 199 (16%) entering this zone within the five-year forecast horizon.

Analysis by gender indicates that of the Social Worker workforce, 1000 are female (78%), and 492 of them (38% of Social Worker workforce) are under the age of 40, and within the childbearing age range. This is an important statistic to consider in human resource planning, given the one-year maternity leave option and the challenges this brings to planning for filling temporary positions.

A look at the language ability shows that the majority of the workforce (721 or 56%) has language ability in both English and French, while 514 (40%) have language ability in English only, and 46 (4%) have French only ability. The table below provides an analysis of language ability by region for the Social Worker employees within the occupation. The numbers in the brackets indicate the percentage of all the Social Worker employees in the health region with the stated language ability

Table 2 – Social Worker Employees

Social Worker Employees	English	French	English and French	Region Total in Occupation
Region 1	33 (15%)		189 (85%)	222
Region 2	187 (87%)		29 (13%)	216
Region 3	187 (72%)		74 (28%)	261
Region 4		10 (10%)	88 (90%)	98
Region 5		3 (4%)	69 (96%)	72
Region 6	1 (<1%)	28 (17%)	140 (83%)	169
Region 7	32 (43%)		43 (57%)	75
Unknown Region	5 (50%)		5 (50%)	10
SW Totals	445 (40%)	41 (4%)	637 (57%)	1123

Of the 1123 employees, the employment sector breakdown is as follows: 871 (78%) work in the provincial government, 105 (9%) work in the private sector, 95 (8%) work in “other”, 26 (2%) work in provincial government other, and 24 (2%) work in federal government, while employment sector for 2 employees is unknown.

When looking at Health Region, of the 1123 social work employees, the majority, 261 (23%), are in Region 3), 222 (20%) are in Region 1 (23 are in Region 1SE, 11 are in 1B, and 188 are in Region 1 unknown), 219 (19%) are in Region 2, 169 (15%) are in Region 6, 98 (9%) are in Region 4, 75 (7%) are in Region 7, and 72 (6%) are in Region 5. Health Region was unknown for 10 (1%) of social work employees.

In an analysis by Health Sector, 738 (66%) of the 1123 Social Workers are in the “other” sector (which includes the community settings), 159 (14%) are in the hospital sector, 95 (8%) are in the mental health sector, approximately 4% are in the academic, private and government sectors, with the remaining 9 (1%) in special care homes. At a finer level of detail, 915 (81%) of the Social Workers are in clinical field of practice, 153 (13%) are in management, 55 (5%) are in “other”, and 13 (1%) are in education.

An analysis by Employment Status reveals that of the 1233 Social Worker jobs, the majority (864 or 70%) are permanent full-time, while 130 (11%) are permanent part-time, 125 (10%) are permanent temporary and the remaining 108 (9%) are casual positions. Further analysis by FTEs revealing “how” this workforce is working, shows that the majority (60%) work in the 0.76-1.0 FTE range, while a fairly high proportion (30%) are working >1.0 FTE.

Occupation Status is based on the 1281 individuals who are Social Workers, and of these 1122 (88%) are employed in their occupation, 44 (3%) are unemployed and not seeking work in the occupation, 36 (3%) are employed outside the occupation and seeking work in the occupation, 36 (3%) are unemployed and seeking work in the occupation, the occupation status for 24 (2%) is unknown, and 18 (1%) are employed outside the occupation and not seeking work in the occupation.

Gap Analysis

The forecast model estimates a shortage of Social Workers over the study period, gradually intensifying from 70 in 2002 to 130 in 2007. These estimates are based on the following assumption:

- Successful recruitment of a total of 67-68 Social Work graduates per year collectively from St. Thomas University, Dalhousie University, and the Université de Moncton

Furthermore, a focus group held with Social Workers identified the following supply and demand factors, which are perceived to have an impact on human resources in this profession in the five-year forecast horizon:

- Low wages in New Brunswick so students are leaving to work elsewhere (negative impact on supply)
- Other professions doing Social Work type jobs – lack of professional recognition is a negative on supply (recruitment and retention)
- Changing character of the work away from front-line counseling is a negative impact on supply
- The new technology-based service delivery mechanisms are inconsistent with practitioner expectations of the profession and is a negative on supply
- Widening gap between rich and poor means increased demand for services
- Increased demand for services with the elderly is a positive impact on demand

In summary, the Social Worker workforce is predominantly female (78%) with an average age of 42 years, has a high percentage of bilingual members (57%), and is employed largely on a permanent full-time or permanent part-time basis (>80%), mainly in the community setting. A fairly high proportion of this workforce (30%) work greater than 1.0 FTE. There are local sources of supply from two New Brunswick universities in both Official Languages. This occupational group is currently in a shortage position. The negative factors impacting supply (recruitment and retention), the projected retirements and workforce attrition, and the anticipated steady state of demand, all contribute to a gradual increase in the magnitude of this shortage over the next five-year period. There is a potential for this situation to be mitigated through such initiatives as continuing improvements to workforce processes, leveraging professional social work knowledge and skills with support personnel, and addressing New Brunswick's competitive position in the recruitment and retention of this workforce.

5.5 Rehabilitation Professions

The Provincial Rehabilitation Services Plan was released in 1994, and in the opinion of the Rehab professions, there are recommendations from that report have yet to be implemented, negatively impacting service delivery in the province.

The central policy thrust of this Rehab Plan is the provision of a coordinated regionalized rehab services delivery system. According to the rehab professionals who participated in this study, the ability for client self-referral, within this new delivery system, has created demand issues among all Rehab professions. In

October 2000, an evaluation of selected strategies within this report was tabled.²⁵ Among the recommendations was the need to introduce rehabilitation support workers and the need for a scientifically based resource allocation model to meet the service needs of the target population in New Brunswick, taking into consideration the unique service requirements from each of the professional rehabilitation occupations. The role of a support worker has not been clarified and there has not been any consensus reached on the education curriculum, delaying the ability to leverage scarce Rehab professions, thereby extending rehab services and assisting in the reduction of the current caseload and wait list.

In relation to the need to improve the means by which public funds are allocated for rehab services, a discussion paper entitled *Rehabilitation Resources: Funding Allocation Project* was subsequently completed in March 2002 outlining a series of issues, options, and recommendations on resource allocation methodologies for the rehab professions.²⁶ It was the opinion of this report that clinical FTE data is more sensitive and responsive than head count data to actual services provided to the public for both HHR planning and resources allocation purposes. While there are a number of valid arguments put forward supporting New Brunswick's move in this direction, it was recognized that lack of complete, consistent data and limitations to additional funding pose significant constraints to pursuing a needs-based approach to health human resource planning or resource allocation at this juncture. Presently, no specific action has been taken on the part of government to respond to the recommendations contained in this report. As the Department moves forward with plans to continue the establishment of a formal health human resources planning unit with the required staff expertise and information infrastructure, the level of sophistication in HHR and resources planning will become evident and the recommendations in this report should be given due consideration.

5.5.1 Audiology and Speech Language Pathology

Trends and Issues

The most pressing issue, identified by a combined focus group of these professionals was the retention of the current workforce within the public sector, due to a combination of factors including high stress and low job satisfaction and the profession's perception of non-competitive wages. A structural system of non-discipline specific management is viewed as compounding this phenomenon, as members of the profession feel the focus is more on wait list management than on professional, client-centred decision making and the quality of the health outcome for the client.

The profession's perception of non-competitive wages may in some instances be linked to the current classification system, which does not provide for any appreciable career progression opportunities for

²⁵ The Implementation and Evaluation of Selected Strategies of the Rehabilitation Services Plan in New Brunswick. October 2000.

²⁶ Rehabilitation Resources: Funding Allocation Project. Discussion Paper: Issues, Options and Recommendations. Management Dimensions. March 2002

clinicians, within the current salary levels. New Brunswick had previously ranked either third or fourth in Atlantic Canada in the new entry and experienced wage profiles. With the recent collective agreements, New Brunswick is now the most competitive province in the Atlantic region for new entries and the second most competitive for experienced Speech Language Pathologists and Audiologists in the hospital sector.

A review of the classification system was seen as a critical element by members of this profession, in any strategy to improve retention of experienced staff, with a focus on creative recruitment/retention incentives such as salary increments extending beyond the current six-year ceiling, recognition for specialty credentials, and improved career advancement opportunities.

The current level of dissatisfaction, expressed by a focus group representing this workforce, is creating leakage to newly established public sector programs, which are perceived to provide a better quality of worklife and more professional autonomy. Staffing of one program is therefore occurring at the expense of another, which collectively, is creating a system-wide supply deficit. For example, the newly established Early Language Program pilot projects in Health Regions 2 and 6 have created an exodus of 8 speech Language Pathologists from the Extra Mural Program.

Source of Supply

There are no local education programs for these occupations. Dalhousie University, Université de Montreal, and University of Ottawa are the programs within closest geographical proximity. The program at Dalhousie University is, traditionally, significantly oversubscribed with 200-300 applicants per year for 30 available seats. Typically, 22 of these seats are dedicated to Speech Language Pathology and 8 to Audiology students. As of September 2002, Dalhousie University had 23 students enrolled in the Audiology program (8 in each of years one and three and 7 in year two) with 4 students being from New Brunswick. The Speech Language program at Dalhousie University has 65 students enrolled (22 in year one, 23 year two and 20 year three) with 16 New Brunswick students (8 in year one, 2 in year two and 6 in year three).

Université de Montreal has 2 contract seats for French speaking New Brunswick students in both the SLP and the Audiology programs. Of the 4 Audiology students enrolled, one is from New Brunswick. Of the 37 SLP students enrolled, two are from New Brunswick.

University of Ottawa offers programming in French and has a capacity for 13 Audiology students per year. Currently, there are 14 students enrolled in total in the program (9 in year one and 5 in year two) of which 3 are New Brunswick students. They also have an intake capacity of 34 SLP seats with a current enrollment of 34 students (16 in year one and 18 in year two) of which 9 are New Brunswick students.

Université Laval offers an SLP program with 25 seats. Of the 46 students currently enrolled across this program, there is one New Brunswick student. Discussions are underway for 2 dedicated seats in this program for New Brunswick students.

Data Analysis - Audiologists

There are 41 Audiologists in the inventory database, 39 of whom are employees working in 48 jobs (an employee can work in multiple jobs). The registration status of the 41 Audiologists is as follows: 40 (98%) are active and 1 (2%) holds a temporary membership. The inventory database has no record of retired or inactive Audiologists.

A demographic analysis by age reveals the average age of Audiologists to be 37. A further age group analysis shows the majority of Audiologists 25 (61%) is in the 25-40-age group, there are 12 (30%) Audiologists in the 40-50-age group and 4 (9%) Audiologists over the age of 50. There is only one (2%) Audiologist over the age of 55, and another 3 (7%) Audiologists will enter this zone within the five-year forecast horizon. The inventory database indicates a total of 4 Audiologists who could retire in the next 5 years, representing 9% of the Audiologist workforce.

Analysis by gender indicates that 27 of the Audiologists are female (66%), and 19 of them (71%) are under the age of 40 and considered within the childbearing age range. This is an important statistic to consider in human resource planning, given the one-year maternity leave option and the challenges this brings to planning for filling temporary positions.

A look at the language ability of the Audiologist workforce shows that the majority, 22 (54%), has ability in English and French, while 19 (46%) have ability in English only. The inventory database for Audiologist does not indicate any members with French only language ability. A further breakdown for health region is shown below, which provides an analysis of language ability by region for Audiologist employees. The numbers in the brackets indicate the percentage of all the Audiologist employees in the health region with the stated language ability.

Table 3 – Audiologist Employees

Audiology Employees	English	English and French	Region Total in Occupation
Region 1	5 (45%)	6 (55%)	11
Region 2	8 (89%)	1 (11)	9
Region 3	2 (40%)	3 (60%)	5
Region 4		3	3
Region 5		2	2
Region 6		5	5
Region 7	1 (50%)	1 (50%)	2
Unknown Region	1 (100%)		1
Out of Province		1 (100%)	1
Audiologists Totals	17 (44%)	22 (56%)	39

Of the 39 Audiologist employees, the majority 27 (69%) work in the provincial government, which includes the Department of Health and Wellness, Family and Community Services, and the Regional Health Authorities, and 11 (28%) work in the private sector.

When looking at Health Region, of the 39 Audiologist employees, the majority, 11 (28%), are in Region 1 (3 Region are in 1SE, 4 are in 1B, and 4 are in Region 1 unknown), 9 (23%) are in Region 2, 5 (13%) are in each of Regions 3 and 6, 3 (8%) in Region 4, and 2 (5%) are in Regions 5 and 7. Health Region was unknown for 1 (3%) Audiologist.

In an analysis by Health Sector, 33 (69%) of the 48 Audiologist jobs are in the hospital sector, 14 (29%) are in the private sector. At a finer level of detail, 95% of the 48 Audiologist jobs are in the clinical field of practice, 2% are in management, and for 2% of the jobs the field of practice is unknown.

Of the 48 Audiologist jobs, the majority (27 or 56%) is permanent full-time, while 14 (29%) are permanent part-time, 1 (2%) is casual, 2 (4%) are permanent temporary, and 4 (8%) are on leave. Analysis on an FTE basis reveals that of the public sector Audiologists the majority (58%) work in the 0.76-1.0 FTE range, while 17% work >1.0 FTE, and 13% work <0.25 FTE. As expected, when factoring in Audiologists working in the private sector, the proportion of those working 0.76-1.0FTE and >1.0 FTE increases to 69% and 23%, respectively, while the proportion working <0.25 drops to 0%.

The vast majority of Audiologists in the inventory database (39 or 95%) are employed in their occupation, 1 individual (2%) has indicated she/he is unemployed and seeking work in the Audiology profession, while 1 individual (2%) has indicated she/he is working outside the Audiology profession. It is not known if the individual is seeking work within the occupation.

Gap Analysis

It is estimated that there will be a slight shortage of Audiologists over the five-year forecast horizon. The shortage fluctuates between 4 and 5 over the five-year period.

In addition to the general statistical data factoring into the model, this estimate is based on the following information:

- Successful recruitment of 1-2 students each year from each of the training schools: Dalhousie University, University of Ottawa, and University of Montreal.

In addition, this profession identified in a focus group a number of supply and demand factors that will impact their human resources within the study period:

- Quality of worklife issues is negative impact on supply (recruitment and retention).
- Rehab prevention programs identified as necessary in hospitals is a positive on demand for Audiology services.
- Rehab Plan identified community-based primary prevention needed, which would be a positive impact on demand.
- The age of infants for the Early Infant Hearing Screening Program has gone down, which is a positive impact on demand for services.

In summary, the Audiology workforce is predominantly female (66%) with an average age of 37 years, has a high percentage of bilingual members (54%), and is employed largely on a permanent full-time or permanent part-time basis (>85%), mainly in the hospital sector (69%). Approximately 23% of the workforce works greater than 1.0 FTE. Sources of supply are from outside New Brunswick from both English and French universities with contract seats at Université de Montréal. This occupational group is currently in a slight shortage position over the next five years, based on a modest estimation of demand, stemming from lack of information as to the extent of the implementation of recommendations from the Rehab Services Plan, and the magnitude of new programs that may be identified in a new Provincial Health Plan. Due to the demographics of this group, there is likely to be greater variability in the character of the shortages due to a higher probability for short-term leaves of absence, which contributes to significant recruitment challenges.

Data Analysis - Speech Language Pathologists

There are 148 SLPs contained in the inventory database, 135 of whom are employees working in 151 jobs (an employee can work in multiple jobs). The registration status of the 148 SLPs is as follows: 136 (92%) are active, 9 (6%) are inactive, 2 (1%) hold a temporary membership, and the membership for 1 (1%) of SLPs in the inventory database is unknown. The inventory database has no record of retired SLPs.

A demographic analysis by age reveals the average age of SLPs to be 39. A further age group analysis shows the majority of SLPs 87 (59%) are in the 25-40-age range, there are 48 (32%) SLPs in the 40-50-age range and 5 (3%) SLPs in the 50-54 age range. There are 8 SLPs over the age of 55 and thus currently in the potential retirement zone. The inventory database indicates a total of 13 SLPs who could retire in the next 5 years; this represents 8% of the SLP workforce.

Analysis by gender indicates that 136 of the SLPs are female (92%), and 85 of them (57%) are under the age of 40, and considered of childbearing age. This is an important statistic to consider in human resource planning, given the one-year maternity leave option and the challenges this brings to planning for filling temporary positions.

A look at the language ability of the SLP workforce shows that the majority of the workforce 93 (63%) have ability in English, 40 (27%) have language ability in both English and French, while 15 (10%) have ability in French only. Table 4 provides an analysis of language ability by region for the SLP employees within the occupation. The numbers in the brackets indicate the percentage of all the SLP employees in the health region with the stated language ability.

Table 4 - Speech Language Pathology Employees

Speech Language Pathology Employees	English	French	English and French	Region Total in Occupation
Region 1	13 (43%)	2 (7%)	15 (50%)	30
Region 2	32 (94%)		2 (6%)	34
Region 3	27 (73%)		10 (27%)	37
Region 4		2 (29%)	5 (71%)	7
Region 5	3 (50%)	1 (17%)	2 (33%)	6
Region 6		7 (70%)	3 (30%)	10
Region 7	5 (71%)		2 (29%)	7
Unknown Region		1 (100%)		1
Out of Province	2 (67%)	1 (33%)		3
SLP Totals	82 (61%)	14 (10%)	39 (29%)	135

Of the 135 SLPs employees, the majority 121 (90%) work in the provincial government, 9 (7%) work in the private sector, 3 (2%) work in the provincial government other sector and the remaining 2 (1%) work in “other”.

When looking at Health Region, of the 135 SLP employees, the majority, 37 (27%), are in Region 3, 34 (25%) in Region 2, 30 (22%) Region 1 (21 Region are in 1SE, 8 are in 1B, and 1 is in Region 1 unknown), and 10 (7%) are in Region 6. Regions 4 and 7 each have 7 (5%), Region 5 has 6 (4%) 3 (2%) are out of province, and Health Region for the remaining 1 (1%) is unknown.

In an analysis by Health Sector, 70 (46%) of the 151 SLP jobs are in the hospital sector, 53 (35%) are in Extra Mural, 21 (14%) are in the private sector, 3 (2%) are in the “other” sector and 1 (1%) are in each of academic, community health centre, government, and public health services. At a finer level of detail, 124 (89%) of the 139 SLP are in the clinical field of practice, 9 (6%) are in management, 2 (1%) are in education, and the remaining 4 (3%) have indicated “other” as their field of practice.

Of the 151 SLP jobs, the majority (88 or 58%) are permanent full-time, while 41 (27%) are permanent part-time, 7 (5%) are casual, 8 (5%) are permanent temporary, and the remaining 7 (5%) are on leave. An FTE analysis shows that the majority of this workforce (70%) are in the 0.76-1.0 FTE range, while 15% work >1.0 FTE, and 15% work <0.76 FTE.

The vast majority of SLPs in the inventory database (136 or 92%) are employed in their occupation, 1 individual (1%) has indicated she/he is unemployed and seeking work in the SLP profession, 2 (1%) are employed outside the occupation and not seeking work in the occupation, 1 each (1%) indicate a status of retired and unknown, while 3 (2%) have indicated working outside the SLP profession (it is not known if the individuals are seeking work within the occupation).

Gap Analysis

There is an anticipated shortage of SLPs over the five-year forecast horizon. The estimate of the current shortage is around 25 SLPs, which drops to under 20 in 2003, rises again to peak at just over 60 in 2004, and then the deficit gradually declines to under 50 by 2007.

These numbers were derived based on available information on:

- Successful recruitment of 1-3 grads from University of Montreal and Laval combined, and recruitment of 25% of Dalhousie University and University of Ottawa grads, which ranges from 4 to 6 per year each
- Recognition of the negative growth of the under 15 year old population over the five-year forecast horizon
- Provincial roll-out of the Early Language Program (ELP) is implemented in 2004 representing additional demand for approximately 45 SLPs

In addition, the following demand and supply issues were identified by the profession as impacting on human resources over the five-year forecast horizon:

- Poor retention due to quality of worklife is a negative impact on supply
- Increased demand for rehab (SLP) services in schools is a positive impact on demand
- Rehab prevention programs identified as necessary in hospitals is a positive for demand of SLP services

In summary, the Speech Language Pathologist workforce is predominantly female (92%) with an average age of 39 years, has a modest percentage of bilingual members (27%), and is employed largely on a permanent full-time or permanent part-time basis (>85%), mainly in the hospital and Extra Mural sectors (81%). Sources of supply are from outside New Brunswick, from both English and French universities with contract seats at Université de Montreal. This occupational group is currently in a shortage position, which fluctuates in magnitude over the five-year forecast horizon. Due to the demographics of this group there is likely to be greater variability in the character of the shortages due to a higher probability for short-term leaves of absence, which contributes to significant recruitment challenges. Lack of information as to the extent of the implementation of recommendations from the Rehab Services Plan, and the magnitude of new programs in a new Provincial Health Plan impact these projections. An FTE analysis shows that the majority of this workforce (70%) is in the 0.76-1.0 FTE range, while 15% work >1.0 FTE, and 15% work <0.76 FTE.

5.5.2 Occupational Therapy

Trends and Issues

Occupational Therapists (OTs) provide services to all age groups across the health care continuum involving the acute care, long-term care, and community health and education sectors in addition to private industry. Career opportunities for occupational therapists continue to broaden into non-traditional areas of practice. The number of OTs working full time in the private sector has increased; however,

private insurance coverage for OT services is not readily available which may constrain further growth in this area.

The profession reports that more OTs are also choosing to work part time, and leaves of absence are more common, predominantly maternity leaves within this largely female occupational group, all of which contribute to stress on the traditional health care system requirements. This phenomenon is supported by the fact that despite the approximately 27% increase in the number of the OTs employed in the province since 1996, the average number of hours worked in the public sector has decreased.²⁷ The length of time OTs tend to work in the profession is also another factor negatively impacting supply.

In considering demand for this health care occupation, Statistics Canada 1991 census data indicates that, whereas 15.5% of the Canadian population is classified as having been diagnosed with disabilities, that rate is 17.7% in New Brunswick, ranking New Brunswick as having among the highest rates of disabilities in Canada. This fact is compounded by the fact that New Brunswick has less OTs per 100,000 population (27.2) than the national average (30.9). Manitoba, which has one of highest ratios of OTs per 100,000 population at 36.8%, recently injected 66% additional seats in their provincial education program at the University of Manitoba.²⁸

There are currently no provincial incentive programs for recruitment/retention of occupational therapists; however, certain Health Authorities may provide discretionary incentives. When compared to their counterparts in Atlantic Canada, New Brunswick Occupational Therapists ranked highest for entry-level salaries and third for experienced level therapists.

Source of Supply

New Brunswick does not offer basic educational programming for this occupational group. Programs are offered through 12 universities across Canada. There are 3 universities providing seats for New Brunswick students. Dalhousie University in Nova Scotia offers an English language program where 9 out of 48 seats in the first year of the program are secured for New Brunswick students. Effective September 2002, the program is filled to capacity with 23 New Brunswick students enrolled across the program of the 27 potential reserved seats. Université Laval offers a French language program with 3 seats out of 65 designated for New Brunswick students. Effective September 2002, there were 5 New Brunswick students among the 183 enrolled in the program, 2 in each of year one and two and 1 in year three. Université de Montréal designates 2 seats out of a capacity of 100 for French speaking New Brunswick students. In September 2002, there were 4 New Brunswick students among the 278 enrolled; 2 in year one, none in year two, and 2 in year three.

²⁷ New Brunswick Association of Occupational Therapists Submission to the Health Human Resource Supply and Demand Study. June 28, 2002

²⁸ New Brunswick Association of Occupational Therapists Submission to the Health Human Resource Supply and Demand Study. June 28, 2002

These 14 secured seats for New Brunswick students have remained static for the past 6 years.

On average over the past 7 years, there has been a reported reduction in qualified applicants across Canadian OT programs, ranging between 30-75%. Dalhousie University has reported a slight, but steady increase in graduates between 1995 and 2000. Numbers of graduates are down at both Université Laval and Université de Montréal over the same period.²⁹ While these universities indicate a decrease in the number of qualified applicants for these programs, actual intake enrollment is at capacity at all three universities outlined above.

Clinical practicum is a significant component of this applied degree program and over the past four years in New Brunswick the number of student placements offered students by New Brunswick OTs has declined from 83 to 50. This situation seems to be fuelled by a combination of factors including unfilled maternity leaves and unfilled vacancies leaving the workplace short staffed and carrying heavy caseloads. This situation has lead several managers to the decision not to accept students. This situation further compounds predicted future supply shortages and compromises both training opportunities for those New Brunswick students who want to come home to do their clinical and gives a negative recruitment message

Successful completion of baccalaureate education and the national certification exam qualifies therapists for membership in the Canadian of Occupational Therapy Association and registration with the New Brunswick Association of Occupational Therapists (NBAOT). Effective 2008, the Canadian Association of Occupational Therapists will only grant academic accreditation to those OT programs that lead to a professional Master degree in OT as the entry to practice credential. NBAOT supports this direction of higher education for its practitioners. A similar move has occurred in the United States with a Master required for entry to the profession by 2006.

It is the opinion of those practitioners participating in focus groups for this study that there does not appear to be effective consistent approach to succession planning for rehab professions, which contributes to the long-standing vacancies in this occupational group.

Data Analysis

There are 216 Occupational Therapists (OT) contained in the inventory database, 94% of which are registered with the New Brunswick Occupational Therapy Association. There are 212 employees and 234 OT jobs.

A demographic analysis by age reveals the average age of OTs to be 35.

The majority of the OTs are in the 25 to 40 age range (163 or 75%), there are 42 (19%) OTs in the 40 to 50 age range, and the remaining 11 (5%) are in the 50+ category. This is a relatively young group with only 7 (3%) currently in the retirement zone, and another 4 entering the retirement zone in the next five years. This gives a total of 11 or 5% who could retire in the next five years.

²⁹ The Education, Supply and Distribution of Occupational Therapists in Canada. CAOT Publications ACE. Nov 22, 2001

Analysis by gender indicates that 206 of the 216 OTs are female (95%), and 155 of them (72% of the OT workforce) are under the age of 40, and considered to be within the childbearing age range. Given the predominance of young female workers in this occupation, the potential for maternity leaves must be a consideration when doing HR planning.

A look at the language ability of the OT workforce shows that the majority (127 or 59%) has language ability in both English and French, while 87 (40%) have language ability in English only, and 2 (1%) have French only ability. Table 5 provides an analysis of language ability by region for the OT employees within the occupation. The numbers in the brackets indicate the percentage of all the OT employees in the health region with the stated language ability.

Table 5 – Occupational Therapist Employees

Occupational Therapist Employees	English	French	English and French	Region Total in Occupation
Region 1	12 (24%)		39 (76%)	51
Region 2	36 (63%)		21 (37%)	57
Region 3	33 (65%)		18 (35%)	51
Region 4		2 (18%)	11 (82%)	13
Region 5			13 (100%)	13
Region 6			16 (100%)	16
Region 7	3 (30%)		7 (70%)	10
Unknown Region	1 (100%)			1
OT Totals	85 (40%)	2 (1%)	125 (59%)	212

Of the 212 OT employees, 159 (75%) work in the provincial government which includes the Department of Health and Wellness, Family and Community Services, and the Regional Health Authorities, 27 (13%) work in provincial government other, 24 (11%) work in the private sector, and the remaining 2 (1%) work in “other”.

When looking at Health Regions, the majority, 57 (27%), are in Region 2, 51 (24%) are in Region 1 (27 are in Region 1SE, 14 are in 1B, 10 are in Region 1 unknown), 51 (24%) are in Region 3, 16 (8%) in Region 6, and Regions 4, 5, and 7 each have 5-6%.

In an analysis by Health Sector, 108 (46%) of the 234 OT jobs are in the hospital sector, 56 (24%) are in Extra Mural, 33 (14%) are in the private sector, 25 (11%) are in government, 4 (2%) are in each of the mental health and public health sectors, 3 are in “other”, and 1 is in the academic sector. All of the OTs in the inventory database indicate “clinical” as their field of practice.

An analysis by Employment Status reveals that of the 234 OT jobs, the majority (153 or 65%) are permanent full-time, while 49 (21 %) are permanent part-time, and 31 (13%) are permanent temporary. A further look into “how” this occupation is working reveals that on an FTE basis, the majority of workers

(64%) are in the 0.76-1.0 FTE range, nearly 20% are working >1.0 FTE, and 7% are in each of the 0.26-0.50 and 0.51-0.75 FTE ranges, while only 3% work <0.25 FTE.

Occupation Status is based on the 216 individuals who are OTs, and of these 212 (98%) are employed in their occupation, while the occupation status of the remaining 4 individuals is unknown.

Gap Analysis

The forecast model estimates that there is a current shortage of approximately 25 OTs, which gradually increases in magnitude over the five-year forecast horizon to reach a deficit of over 40 OTs by the year 2007.

These estimates were derived based on the following assumptions:

- Successful recruitment of a total of 10-12 new grads per year over the forecast period, from 3 training institutions (Dalhousie University, Université de Montreal, and Laval)

As well, in the rehab focus group session, which included Occupational Therapists, the following supply and demand factors were identified as impacting human resources over the study period:

- Poor retention due to quality of worklife issues is a negative impact on supply
- Number of clinical placements for students has diminished due to workloads of mentors, which has a negative impact on supply, specifically recruitment
- Lack of professional mentoring and non-discipline specific management is a negative impact on supply, specifically retention
- Rehab prevention programs have been identified as necessary in hospitals which represents a positive impact on demand for OT services
- Provincial Rehab Services Plan promoting self-referral equates to an increase in demand for service
- High expectations from an aging population to stay active longer means increased demand for OT services

In summary, the Occupational Therapist workforce is predominantly female (95%) with an average age of 35 years, has a high percentage of bilingual members (59%), and is employed largely on a permanent full-time or permanent part-time basis (>86%), mainly in the hospital and Extra Mural sectors (70%). Twenty percent of this workforce are working greater than 1.0 FTE. Sources of supply are from outside New Brunswick, from both English and French universities with a total of 14 contract seats secured for New Brunswick students among Dalhousie University, Université de Montreal, and Université Laval. This occupational group is currently in a shortage, which increases gradually in magnitude over the five-year forecast horizon. Due to the demographics of this group, there is likely to be greater variability in the character of the shortages due to a higher probability for short-term leaves of absence, which contributes to significant recruitment challenges.

5.5.3 Physiotherapy

Trends and Issues

According to a brief submitted to the Minister of Health by the New Brunswick Physiotherapy Association³⁰, physiotherapists practice as both generalists, as well as specialists in a number of clinical areas, in the public and private sectors, that demand experience and skills at a more advanced level.

Physiotherapists who participated in a focus group for this study indicated that a concentration on delivery of services to the acute care, in-patient population has, in their opinion, effectively crippled access to public outpatient physiotherapy services. The model of service delivery within the public sector system (hospitals) is still seen as a “reactive” system as opposed to one that encourages illness prevention, wellness, and taking more responsibility for ones own health. This situation has arisen in large part due to growing demands for services and excessive workloads. As well, the scope and range of patient needs is growing and will continue to escalate due to an aging population and a shift to ambulatory and community services for acute care. Physiotherapy practitioners indicate that, anecdotally, Family Physicians are effectively no longer referring patients to their service due to the known emphasis on the acute inpatient population. This potentially places seniors, children, and those living with chronic conditions at a disadvantage in their ability to access publicly funded physiotherapy services. Those with the ability to pay, or those with third party coverage, are getting more timely access to services in the private sector. This in effect suggests there is a percentage of the population that is unserved or underserved.

There appears to be an increasing gap between the demand for physiotherapy services and the supply of Physiotherapists resulting in shortages of supply in some regions. The aging population is expected to exacerbate this situation. One of the factors compounding this situation includes the impact of maternity leaves from a largely female workforce on the vacancy rate. Few recruitment incentives were reported by RHAs, but those offering any incentives typically offer minimal relocation assistance (up to \$1,500) and return for service signing bonuses ranging from \$1,500 for one year to \$5,000 for 5 years.

Physiotherapists in the public health care system are generally paid similar rates in all four Atlantic Provinces. New Brunswick’s salary for new entrants to the profession is highest among the Atlantic Provinces and New Brunswick ranks third in the experienced physiotherapy category. This is an improvement in competitive position as both categories were ranked fourth prior to the newest New Brunswick collective agreement.

Retention in the public sector is an issue raised by the profession, with many leaving for private sector employment after 4-5 years of practice due to the dissatisfaction with working conditions and lack of full time positions. Lack of funding support for staff replacement has created what are often perceived to be intolerable workloads. The impact on patients includes being discharged without receiving in-hospital PT services, waiting increasingly long periods of time for outpatient or Extra Mural PT service, risking a compromised recovery, or experiencing longer lengths of stay in hospital while waiting for PT services.

³⁰ Public Sector Physiotherapy Services. New Brunswick Physiotherapy Association. September 2000

The impact on health outcomes as a result of early discharges with inadequate community based PT services needs to be considered in formulating a sustainable model for PT services for New Brunswick

The impact on the ability of institutions to offer clinical education for physiotherapy students is also affected by the shortage of Physiotherapists and the employment structure where many Physiotherapists work part-time, or in temporary and/or contract positions. There are significant mutual benefits to be derived from having students work within an organization ranging from improvements in overall productivity, knowledge sharing, increased job satisfaction, and increased likelihood of success in recruitment of new graduates.

A trend toward specialization with specific client populations adds another dimension to the recruitment challenges in the public sector, as does the trend toward growing percentage of private PT services. The current public/private practitioner mix in New Brunswick approximates 50%. The profession has proposed that Government explore new models of practice such as floating the public sector ambulatory case load to private sector PTs and using public/private partnership models to provide contract coverage to the public sector; or permanent locum models to provide for adequate and continuous coverage.

Source of Supply

Physiotherapists now enter practice equipped with a Bachelor Degree, which can be obtained in any of 13 such programs offered across Canada. Many entering Bachelor of Physiotherapy programs already have other university courses or undergraduate degrees. There is no degree program in New Brunswick; however, the province has an agreement with Dalhousie University for 15 seats annually (of 48 available) in their four-year program, which is comprised of one-year general arts/sciences and three years of professional study. New Brunswick has a number of facilities across all health regions that actively participate in the clinical education component of this program. The Dalhousie University program is oversubscribed at the rate of 9 applicants for every available seat. There are currently 44 New Brunswick students enrolled across all four years. Université Laval designates 5 of 70 seats for New Brunswick students and there are currently 17 New Brunswick students enrolled across the program. Similarly, Université de Montréal offers 4 seats for New Brunswick students. The position of the national physiotherapy association is that a Master in Physiotherapy will be required for entry to practice by 2010. The profession has proposed to introduce this requirement through a laddering model that would lessen the impact of the transition on market supply of practitioners.

Physiotherapists must be licensed with New Brunswick College of Physiotherapy to practice in New Brunswick.

Data Analysis

There are 417 Physiotherapists in the inventory database, 408 of whom are employees working in 454 jobs (an employee can work in multiple jobs).

The registration status of the 417 Physiotherapists is as follows: 388 (93%) are active and 29 (7%) are inactive. (Of those who are inactive, it was assumed that 15 are retired given that she/he is over the age of 55.)

A demographic analysis by age reveals the average age to be 37. The majority of Physiotherapists is in the 25 to 40 age range (260 or 62%). There are 106 (25%) Physiotherapists between 40 and 50, and 41 (10%) Physiotherapists over the age of 50. As such, there are currently 20 (5%) of the Physiotherapist workforce in the potential retirement zone (55+) and another 21 (5%) entering this zone within the five-year forecast horizon. A total of 41 (10%) could retire in the next five years.

Analysis by gender indicates that 351 of the Physiotherapists are female (84%), and 224 (54%) are under the age of 40, and considered to be within the childbearing age range. This is an important statistic to consider in human resource planning, given the one-year maternity leave option and the challenges this brings to planning for filling temporary positions.

A look at the language ability of the Physiotherapists workforce shows that about half of the workforce is English ability only (214 or 51%), while 200 (48%) have ability in English and French, and 3 (1%) have French only ability. Table 6 provides an analysis of language ability by region for the Physiotherapist employees within the occupation. The numbers in the brackets indicate the percentage of all the Physiotherapist employees in the health region with the stated language ability.

Table 6 – Physiotherapy Employees

Physiotherapy Employees	English	French	English and French	Region Total in Occupation
Region 1	33 (38%)		54 (62%)	87
Region 2	79 (76%)		25 (24%)	104
Region 3	71 (72%)		27 (28%)	98
Region 4		3 (9%)	20 (91%)	22
Region 5			19 (100%)	19
Region 6	4 (9%)	1 (2%)	38 (88%)	43
Region 7	9 (64%)		5 (36%)	14
Unknown Region	7 (58%)		5 (42%)	12
Out of Province	7 (78%)		2 (22%)	9
Physio Totals	210 (51%)	4 (1%)	195 (48%)	409

Of the 408 Physiotherapist employees, 205 (50%) work in the provincial government, which includes the Department of Health and Wellness, Family and Community Services, and the Regional Health Authorities, 156 (38%) work in the private sector, 24 (6%) work in provincial government other, and 23 (6%) work in “other”, which includes out of province positions.

When looking at Health Region, of the 408 Physiotherapist employees, the highest percentage, 104 (25%) are in Region 2, 87 (21%) are in Region 1 (of which 34 are in Region 1SE, 15 are in 1B, 38 are in Region 1 unknown), 98 (24%) in Region 3, 43 (11%) in Region 6, 22 (5%) in Region 4, 19 (5%) in Region 5, and 14 (3%) in Region 7. Health Region was unknown for 12 (3%) and 9 (2%) are employed outside of the province.

In an analysis by Health Sector, 207 (46%) of the 454 Physiotherapist jobs are in the private sector, 196 (43%) are in the hospital sector, 22 (5%) are in Extra Mural, the remaining 6% (29) jobs are distributed among academic, community health centre government, nursing homes, public health services, special care homes, and other. And at a finer level of detail, the significant majority 382 of the 408 Physiotherapists (93%) are in a clinical field of practice, followed by 19 (5%) in management, the remaining 8 (2%) are in education and other.

Analysis by Employment Status reveals that of the 454 physiotherapy jobs, the majority (281 or 62%) are permanent full-time, 131 (29%) are permanent part-time, 19 (4%) are permanent temporary, 11 (2%) are permanent where full/part time status is unknown, 7 (2%) are on leave, and the remaining 5 (1%) work on a casual basis.

A further analysis of how this workforce is working reveals that, of the public sector workforce in this occupation, the majority (64%) are in the 0.76-1.0 FTE range, 15% work >1.0 FTE, 12% are in the 0.51-0.75 range, 6% work between 0.26 and 0.50 FTE, while 3% work <0.25 FTE. When factoring in the private sector PT workforce, the proportion of the total PT workforce working 1.0 FTE and >1.0 FTE changes significantly. The proportion working >1.0 FTE increases to 30%, and the proportion of those working in the 0.76-1.0 FTE range drops to 53%. This reveals the extent to which this workforce is stretched, driven primarily by demand and workload from both the public and private sectors. This situation is neither desirable nor sustainable.

Occupation Status is based on 417 individuals who are Physiotherapists, and of these 408 (98%) are employed in their occupation, 4 (1%) have indicated they are unemployed and are seeking work in physiotherapy, 1 is employed outside the occupation, but seeking employment within the occupation, while for the remaining 4 (1%) the occupation status is unknown.

Gap Analysis

It is estimated that there will be a shortage of Physiotherapists over the five-year forecast horizon. The deficit begins at just over 40 PTs in 2002 and increases gradually to reach a shortage of over 60 PTs by the year 2007.

These estimates were derived based on the following assumption:

- Of the 4 New Brunswick seats at University of Montreal and 5 seats at Laval, it is estimated that New Brunswick gets 90% of these grads returning to work in the province. In addition, it is assumed that of the 15 seats contracted at Dalhousie University for New Brunswick students, that the majority return to work in New Brunswick.

In addition to the above data, representatives from the profession identified additional supply and demand factors that will impact their human resources in the five-year forecast horizon, as follows:

- Diminished quality of worklife is a negative impact on supply (both recruitment and retention)
- The Provincial Rehab Services Plan has identified that preventive rehab programs in hospitals are necessary which is a positive impact on demand

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- The Provincial Rehab Services Plan also promotes increased self-referrals which is a positive impact on demand for physiotherapy services
 - High expectations from the aging population to stay active longer is a positive impact on demand

In summary, the Physiotherapist workforce is predominantly female (84%) with an average age of 37 years, has a moderate percentage of bilingual members (48%), and is employed largely on a permanent full-time or permanent part-time basis (91%), equally split between the public (hospital and Extra Mural) and private sectors. Sources of supply are from outside New Brunswick, from both English and French universities with a total of 24 contract seats secured for New Brunswick students among Dalhousie University, Université de Montreal, and Université Laval. This occupational group is currently in a shortage position, which grows slowly over the five-year forecast horizon, and could be exacerbated if those leaving the workforce are working >1.0 FTE which is the case for between 15% (public sector) and 30% (public and private sectors) of the workforce. The high percentage of this workforce employed by the private sector (50%) has the potential to grow and place increasing stress on staffing the public sector in the absence of improvements in workload management and retention incentives. Due to the demographics of this group, there is likely to be greater variability in the character of the shortages due to a higher probability for short-term leaves of absence, which contributes to significant recruitment challenges.

5.5.4 Rehab Assistant

Trends and Issues

The shortage of rehabilitation professionals, as outlined in Sections 5.2.1-5.2.3 above, has been the driver for discussions within government for the establishment of a new category of health worker called a Rehabilitation Support Worker. The addition of support personnel to the rehabilitation services model has significant potential to increase public access to rehab services. Currently, there is no formal Rehabilitation Support Worker education program and no standards of practice established for this occupational group in New Brunswick. For the most part, individuals performing this function are trained on the job.

The Stan Cassidy Rehabilitation Centre, the tertiary rehab centre for the province, has used two models of rehab support worker for the past few years. These are individuals with an educational base as an Orderly and/or LPN who are on-the-job trained as a generic Rehab Assistant providing support to Physiotherapy, Occupational Therapy, Speech Language Therapy, and Recreation Therapy. Also in place are occupation specific rehab support workers, OT Assistant, and PT Assistant. These support workers are also employed in the hospital environment to a small degree.

Occupational Therapists indicate that many support workers to this profession have LPN or Orderly credentials and receive on-the-job training. Responses to a member survey conducted by NBAOT indicated that there was no uniformity to the type of work being performed by OT support personnel. Duties ranged from clerical and technical support to client interventions, under the supervision of a professional OT. Union contracts were cited by this profession as a constraint in the hiring practices for the best qualified support person, in light of the tendency to award competitions to those union members

with most seniority. In addition, after costly on-the-job training, these individuals may be “bumped” by a more senior union member from time to time.

In July 2002, a competency profile for 2 categories of physiotherapy support workers was released by the Canadian Alliance of Physiotherapy Regulators and the Canadian Physiotherapy Association. It is the position of this profession that “it is in the totality of the mix (between physiotherapists and physiotherapy support workers) that a physiotherapy support worker is competent. That is, work context, appropriate delegation and supervision, in combination with the requisite knowledge, skills, and attitudes are necessary and interrelated to the competence of a physiotherapy support worker”.³¹

Demands for this category of worker exist outside of the hospital services sector as well. Primary providers of rehabilitation services are currently made available to residents of New Brunswick nursing homes through referrals to the provincial Rehab Services Program operated under the aegis of the Extra Mural Program. In some Regions, a shortage of rehab professionals (PT, OT in particular) has resulted in reduced services being available to some nursing homes. There are no rehabilitation support personnel in nursing homes at this time.

A study conducted in 2001 by DMR Consulting Inc. (now Fujitsu Consulting) for Nursing Home Services Division of Family and Community Services³² revealed that on average, 17% of residents in nursing homes had been assessed by an Extra Mural Program rehabilitation professional, and had received a formal plan of care. Implementation of this plan of care required, on average, 2.7 hours/resident/week. Of the homes surveyed, only 4% indicated they were able to carry through with implementing these rehab plans. The majority of the homes cited concerns about the qualification of Resident Attendant and LPN staff to carry out these rehab plans independently. All homes (100%) stated they were not adequately staffed to take on the increasing demands for this function. To allow for the nursing home system to meet this resource requirement, this study recommended that 70 rehab support workers be trained to carry out this role. Details on the extent of training required remain to be determined.

Source of Supply

In 1999/2000, the Department of Health and Wellness and the Department of Training and Employment Development engaged in discussions with the rehab professions, a labour market study was completed, and a curriculum for a generic rehab support worker was developed. Since that time, with marked changes in the client population that are presenting themselves for treatment, it has been the position of some of the rehab professions that a generically prepared worker would be of less value than someone with rehab occupation-specific training.

³¹ Competency Profile: Essential Competencies of Physiotherapist Support Workers in Canada. July 2002. Canadian Alliance of Physiotherapy Regulators and the Canadian Physiotherapy Association. p.3

³² Nursing Home Services Resident Care Needs Project, DMR Consulting Inc. February 2002

In the absence of the Department quantifying the demand for this level of practitioner and the skillset requirements for various client populations across the continuum of health care, it is difficult to develop any curricula or identify the number to be produced to meet market requirements. The issues germane to supply of and demand for rehabilitation professionals, as outlined, underscore the need for an immediate strategy to improve public access to these services — a strategy that delineates appropriate professional-to-ancillary skill mix ratios for the various client populations accessing rehabilitation services.

There are educational models for rehab support workers that already exist in Canada. These include a 13 module, web-based, OT and PT assistant program with an additional 9 weeks of clinical practicum, offered by the College of the North Atlantic in Newfoundland, and three-year CEGEB programs in Quebec that prepare graduates as a *thérapeute en réadaptation physique* or TRP.

The Department of Health and Wellness has invited each of the 4 Rehab professions to identify their needs for a rehab support worker, including academic preparation. Three of the 4 groups have responded to date. The results of this study will serve to inform future discussions between the Department rehab professionals and the New Brunswick Community College to determine the type of rehab worker required, as well as the type of educational preparation needed in New Brunswick to meet this resource requirement.

Data Analysis

There are 70 Rehabilitation Assistants in the inventory database, all of whom are employees working in 72 jobs (an employee can work in multiple jobs). No professional association exists in New Brunswick for pharmacy assistant/technicians workforce.

A demographic analysis by age reveals the average age of Rehab Assistant to be 41. The age range shows that 27 (39%) of the workforce to be in the under 40 age group, 27 (39%) are between the ages of 40-50, and 15 (21%) are over the age of 50. Of those 15, 4 (6%) are over the age of 55 and currently eligible for retirement.

Analysis by gender indicates that 58 of the 70 Rehab Assistants (83%) are female. Twenty of them (29% of Rehab Assistant workforce) are under the age of 40, and considered to be within the childbearing age range.

A look at the language ability of the Rehab Assistant workforce shows that the language ability for 30 (43%) is unknown.

Of the 71 Rehab Assistant employees, 37 (52%) work in the provincial government, 5 (7%) work in the provincial government other, and the remaining 29 (41%) work in the private sector.

Analysis by Health Region shows that of the 71 Rehab Assistant employees, the majority, 22 (31%), are in Region 5, 13 (18%) are in Region 2, 12 (17%) are in Region 4, 8 (11%) are in Region 1, Regions 3 and 7 each have 4 (6%), Region 6 has 2 (3%), and the health region for the remaining 6 (8%) is unknown.

In an analysis by Health Sector, 35 (49%) of the 72 Rehab Assistant jobs are in the hospital sector, 28 (39%) are in the private sector, 5 (7%) work for government sector, and 3(4%) are in mental health

services. At a finer level of detail, the vast majority of rehab assistant workforce 66 (94%) work in clinical area, 1 (1%) is in education, and 3 (4%) indicated “other” as their field of practice.

An analysis by Employment Status reveals that of the 72 Rehab Assistant jobs, the majority (41 or 57%) are permanent full-time, while 14 (19%) are permanent part-time, 13 (18%) are casual, 3 (4%) are permanent temporary, and 1 (1%) is on leave. For the portion of this workforce who work in the public sector, an FTE analysis reveals that the majority (67%) work between 0.76, and 1.0 FTE, 18% works < 0.25 FTE, 9% work > 1.0 FTE, and the remaining 6% work in the 0.51-0.76 FTE range.

Gap Analysis

In the absence of known new entrants, due to the current lack of formalized training for rehab assistants, estimates are based solely on the demographics of this occupational group. Given the high probability that a rehab assistant program will be established a scenario was developed with the following assumption relative to demand for this occupation:

- A 1 to 4 ratio of rehab assistants to the total professional rehab workforce (Audiologists, SLPs, PTs, and OTs) was used as a proxy for demand, commencing in 2004. This ratio is incrementally employed over the five-year period (10% in 2004, 20% in 2005, 30% in 2006, and 40% in 2007), to reach the 100% implementation of the 1 to 4 ratio by 2007.

This scenario, combined with the demographics of the current rehab assistant workforce could result in a growing demand of upwards of 200 rehab assistants by the end of the forecast period. This demand would have to be addressed by the introduction of a Rehab Assistant training program in New Brunswick commencing in 2004.

In summary, Rehab Assistants are largely a female workforce (83%), average age 41, working fairly equally between the hospital sector (49%) and the private sector (39%). Based on a scenario forecast, it is probable that, should there be full implementation of the recommendations in the Provincial Rehab Services Plan, a shortage of these workers will be realized over the five-year forecast horizon.

5.6 Technical Groups

The growing use of technology across the system is creating new demands for the technical occupations. The application of many technology modalities is broadening and being adopted in emerging areas with a subsequent impact not only on costs, but also on the demand for skilled, specialized practitioners.

The aging population, which traditionally has higher health care utilization, is also anticipated to create a strain on timely access to these services.

An issue with many of the following occupational groups during the next five years is the recruitment of a sufficient number of qualified French speaking technicians/technologists. For many of the occupational groups, graduates of the education programs offered in Quebec do not meet the eligibility criteria to write national certification examinations, ensuring a minimum standard of competency to practice in New

Brunswick. Given this current environment, and a shortage within several of the technical occupations, in some instances, the Province of New Brunswick is waiving certification for employment thereby allowing the hire of Quebec graduates. In the minds of those in the respective occupations, this compromises the standard of practice and provides an unequal quality of service to New Brunswickers and jeopardizes New Brunswick's ability to look to Quebec as a continuing sources of labour supply.

5.6.1 Diagnostic Medical Sonographer

Trends and Issues

As an occupation this group is in the process of pursuing self regulatory status in Canada. The Provincial Society (NBSDMS/SEMDNB) has started the process to become self-regulated through introduction of a Private Members Bill, which has progressed to the point of being approved by the Department of Health and Wellness and at present is in pending approval by the Department of Justice for the Province of New Brunswick.³³

The Canadian Association of Registered Diagnostic Ultrasound Professionals (CARDUP) is in the process of developing a certification assessment process for all sonography education programs in Canada with hopes of having this in place by 2004.

Approximately 100 sonographers currently graduate each year in Canada. Subspecialization is evident in this occupational group, as reflected in the Draft Framework for New Practitioner Definitions (CARDUP, March 2002) that identifies three categories of registrants: General Sonography, Vascular Sonography, and Cardiac Sonography. The impact on training programs, market demand, and supply of these 3 subspecialities in New Brunswick will need to be determined, in relation to the generalist/specialist debate and the critical mass available to support this level of specialization in a small province.

New Brunswick ranks third among the Atlantic Canadian provinces in entry-level wages for Diagnostic Medical Sonographers and fourth for experienced workers in this occupation. Despite New Brunswick's relatively uncompetitive position, it should be noted that alternative career opportunities exist within the health care system for employees with these credentials to progress into other occupational categories and earn higher incomes.

Source of Supply

Ultrasonography training programs exist across Canada, the majority at a college, diploma, or post-diploma level. In Atlantic Canada, programs are offered at the Queen Elizabeth Health Sciences Centre (QEII)/Dalhousie University School of Health Sciences and the College of the North Atlantic, both of which are accredited by the Canadian Medical Association. The collaborative program offered by QEII/Dalhousie University is a four-year Bachelor of Health Science program with a diploma exit option after year three. There are currently 19 students enrolled (5 in each of years one through three, and 4 in

³³ Canadian Association of registered Diagnostic Ultrasound Professionals web site www.cardup.org. July, 2002

the final year of the program). The College of the North Atlantic offers a one-year advanced diploma program for 4 students annually. The program is filled and no New Brunswick students are currently enrolled.

Outside of Atlantic Canada, the University of Toronto/Michener Institute offers a 63-week diploma program that can be taken through full-time study or distance education plus clinical practicum. The Northern Alberta Institute of Technology offers a 30-month diploma program with an intake capacity of 12 students, which currently has 20 students enrolled (12 in year one and 8 in year two), none of whom are New Brunswick students.

Data Analysis

Data analysis of the current supply of Diagnostic Medical Sonographers is limited due to the fact that only one data source (HRDB) was available to provide details on this group.

There are 54 Diagnostic Medical Sonographers in the inventory database, and all 54 are employees (individuals who have a job) with each employee having only one job.

A demographic analysis by age reveals the average age of Diagnostic Medical Sonographers to be 42. The majority of Diagnostic Medical Sonographers are in the 40-50-age range (22 or 41%). There are 19 (35%) between the ages of 25 to 40, while the 50+ age grouping holds 13 (28%) of Diagnostic Medical Sonographers. There are currently (2) 4% of the Diagnostic Medical Sonographers workforce in the potential retirement zone (55+) and another 11 (20%) entering this zone within the five-year forecast horizon. Thus, there are a total of 13 who could retire in the next five years, which represents 28% of the Diagnostic Medical Sonographer workforce.

Analysis by gender indicates that 51 of the Diagnostic Medical Sonographers are female (94%), and 18 of them (36% of the Diagnostic Medical Sonographer workforce) are under the age of 40, and considered to be within the childbearing age range. This is an important statistic to consider in human resource planning, given the one-year maternity leave option and the challenges this brings to planning for filling temporary positions.

Analysis of the Diagnostic Medical Sonographers language ability is not possible as that information was not available through any of the inventory database sources for this group.

Analysis by employment sector shows that 100% of the Diagnostic Medical Sonographer workforce are employed in the hospital sector, and as such work for the provincial government. At a finer level of detail, 49 Diagnostic Medical Sonographers (91%) are in the clinical field of practice, and the remaining 5 (9%) have indicated other/unknown as their field of practice.

When looking at Health Region, of the 54 Diagnostic Medical Sonographers, the majority, 15 (28%), are in each of Regions 1 (8 are in Region 1SE, and 7 are in Region 1B) and Region 2, 11 (20%) are in Region 3, 5 (9%) are in Region 6, 4 (7%) are in Region 5, and 2 (4%) are in each of Regions 4 and 7.

An analysis by Employment Status reveals that of the 54 Diagnostic Medical Sonographer jobs, the majority (44 or 81%) are permanent full-time, while 6 (11%) are permanent part-time, 2 (4%) are casual.

An FTE analysis for this group shows that the majority (63%) work in the 0.76-1.0 FTE range, nearly 20% work >1.0 FTE, 11% work in the 0.51-0.75 FTE range, 6% work between 0.26 and 0.50 FTE, and the remainder (2%) work less than 0.25 FTE.

The Occupation Status for the 54 individuals who are Medical Diagnostic Sonographers indicates that 100% are employed in their occupation.

Gap Analysis

It is estimated that a slight shortage, of around 2 workers per year, will persist over the five-year forecast horizon, based on the following information and assumptions:

- Recruitment of 1-2 new entrants per year (note there is no in-province training program)

In addition the following supply and demand factors have been identified which impact this group:

- Non-competitive wages in New Brunswick versus Atlantic Canada and other provinces (wages are third lowest out of 4 provinces in Atlantic Canada)
- Competition for scarce resources coupled with low number of new grads each year is a negative impact on supply in New Brunswick

In summary, Diagnostic Medical Sonographers are predominantly female (94%), average age 42 years, working permanent full- or part-time (92%) employed only in the hospital sector. Nearly 20% of this entirely public sector workforce works >1.0 FTE. There is a slight shortage in the current workforce, which persists over the five-year forecast horizon.

5.6.2 ECG Technician

Trends and Issues

Individuals working in this occupational group are cardiology technologists. Over the past several years the scope of practice of this group has grown from one of primarily performing ECGs to one involving a more extensive range of diagnostic procedures, which has impacted training requirements. Effective September 2000, registration with the Canadian Society of Cardiology Technologists (CSCT) requires successful completion of a two-year diploma program accredited by the Canadian Medical Association Conjoint Accreditation Committee, that includes a clinical practicum and successful completion of the Certification Examination in Cardiology Technology. Maintenance of competence through continuing education is required to maintain registration status. To be employed in this field in New Brunswick, the job specifications for Cardiology Technologists require completion of courses recognized by the CSCT. Cardiology Technicians are also hired in the system and these individuals are not required to have formal education beyond high school or equivalent. There are inconsistencies in the qualifications of those practicing this occupation in New Brunswick hospitals.

The aging New Brunswick population would indicate the potential for an increasing demand on Cardiac Technologist services over the next decade, between 2002 and 2010, the 65+ population is expected to increase by a dramatic 35%. These population demographics coupled with the aging cardiology technology workforce in New Brunswick demands a solid succession plan.

Source of Supply

The British Columbia Institute of Technology (BCIT) offers a Cardiology Technology diploma program through distance education, with clinical practicum available here in New Brunswick through the Regional Hospitals in Saint John, Fredericton, and Moncton.

Mohawk College of Applied Art and Technology in Ontario also offers a CSCT endorsed certificate program of study that is 35 weeks duration. There is 1 New Brunswick student currently enrolled of 38 in the program. This program is heavily oversubscribed with approximately 300 applicants and a long waitlist. Comments from employers reveal concerns expressed by students that these programs are expensive and with regards to BCIT the four-hour time difference presents a challenge for students studying through a distance delivery modality.

Data Analysis

There are 109 ECG Technicians in the inventory database, 93 of whom are employees working in 96 jobs (an employee can work in multiple jobs). The registration status of the 109 ECG Technicians is as follows: 58 (53%) are active, 6 (6%) are inactive, 1 (1%) is retired, and 44 (40%) of the ECG Technicians status in the professional association is unknown.

A demographic analysis by age reveals the average age of ECG Technicians to be 40. The majority of ECG Technicians are in the under 40 age group (42 or 38%). There are 26 (24%) ECG Technicians between 40 and 50 years of age, 13 (12%) are in the 50- 54 age range, and another 16 (15%) are in the 55+ age range. The age for 12 (11%) of ECG Technicians in the inventory database is unknown. Not taking into consideration the unknown ages, there are currently 15% of the ECG Technicians workforce in the potential retirement zone (55+) and another 13 (12%) entering this zone within the five-year forecast horizon. This indicates a total of 29 (27%) ECG Technicians who could retire in the next five years.

Analysis by gender indicates that 107 of the ECG Technicians are female (98%), and 40 of them (37% of ECG Technicians workforce) are under the age of 40, and considered to be within the childbearing age range. It is important to note that the combination of potential retirements and maternity leaves over the five-year forecast horizon could potentially involve 63% of ECG workforce.

The language ability for 99 (91%) of the ECG Technician group is unknown, therefore, an analysis by ability and health region is not possible.

Of the 96 ECG Technician jobs, 100% are in the provincial government. Analysis by Health Region shows that the majority of ECG jobs, 24 (26%), are in Region 1 (11 are in Region 1SE, and 13 are in 1B), 22 (23%) are in Region 2, 16 (17%) are in Region 3, 13 (14%) are in Region 6, 9 (9%) are in Region 5, 7 (7%) are in Region 7, and 5 (5%) are in Region 4.

In an analysis by Health Sector, 95 of the 96 ECG Technicians jobs are in the hospital sector with only 1 individual indicating a health sector of “other”. At a finer level of detail, 91 of the employed ECG Technicians are in the clinical area, 2 (2%) are in management, and 1 (1%) indicates a field of practice as Other/Unknown.

An analysis by Employment Status reveals that of the 96 ECG Technicians jobs, the majority (52 or 54%) are permanent full-time, while 23 (24%) are casual, 16 (17%) are permanent part-time, 1 (1%) are permanent temporary, and the remainder, 4 (4%) are unknown. Analysis by FTE of this public sector workforce reveals that 43% are in the 0.76-1.0 FTE range, 32% work >1.0 FTE, 12% are in the 0.51-0.75 FTE range, 10% work <0.25 FTE, and the remaining 3% work in the 0.26-0.50 range.

Occupation Status is based on 109 individuals, of which 94 (86%) are employed in their occupation, 3 (3%) are employed outside the occupation and seeking work as an ECG Technician, 3 (3%) are employed outside the occupation and not seeking work as an ECG Technician, 1 (1%) is unemployed and not seeking work in the occupation, and the Occupation Status for the remaining 7 (6%) individuals is unknown.

Gap Analysis

The forecast model estimates that the ECG workforce is currently in a relative equilibrium state, but with the potential for a shortage of around 5 workers in 2003 to intensify to a shortage of just over 20 ECG Technicians by the year 2007.

These estimates are based on the following information and assumptions:

- Successful recruitment of and average of 5 students per year from training programs (Mohawk College in Ontario, and BCIT distance program with clinical practicum available in New Brunswick hospitals)
- One Regional Health Authority has identified that 3-4 new ECG Techs will be required per year over the forecast period for new developments and to replace turnover
- Recognition that the aging New Brunswick population will place additional demand on ECG services (65+ age group increases by 15% over five-year forecast horizon)

In summary, ECG Technicians in this province are almost all female (98%) with an average age of 40 years old. This workforce works exclusively in the public sector in the hospital setting, generally on a permanent full-time and permanent part-time basis (71%), though with a noticeably high percentage working on a casual basis (24%). In addition, over 30% of this workforce works greater than 1.0 FTE. The ECG Technician workforce is currently in relative equilibrium, but with the potential for shortages to be realized by the end of the five-year forecast horizon, given additional demands placed on these services by an aging population.

5.6.3 EEG Technician

Trends and Issues

Electroneurophysiology technology (ENPY) is the scientific field devoted to the recording and study of electrical activity of the brain and nervous system and includes both EEG and EMG technicians/technologists. EEG Technicians are the occupation of interest for purposes of this study.

The Canadian Board of Registration of Electroencephalography Technologists Inc. (CBRET) is responsible for conducting written, oral-practical examinations to assess competencies of individuals who wish to practice in this occupation.

In November 2001, the Maritime Association of Neurophysiology Technologists (MANT) presented a series of occupational issues to Department of Health and Wellness. Their concerns focused on 3 main areas: recruitment and retention of Electroneurophysiology Technologists, the maintenance of standards for the profession, and the need to explore options to secure better access to educational programs for these practitioners. In New Brunswick, there are 11 EEG technicians in New Brunswick. Of this number, 10 are certified by CBRET and 5 are dually registered as EEG/EMG technologists.

This occupational group is small in overall numbers nationally, and there is a national shortage of board certified, Registered Technologists. In New Brunswick, according to the job specifications effective August 2002, qualifications for practice as an EEG Technologist state completion of an accredited course for Electroneurophysiology Technologists, active registration with the Canadian Association of Electroneurophysiology Technologists, and registration with CBRET is preferred.

Ontario has demonstrated its support of the move to national standards. Effective 2004 in Ontario, only Registered Technologists will be able to perform EEGs in that province due to the College of Physicians and Surgeons recently published facility standards and clinical practice guidelines. This will create an expectation for those non-registered technologists, currently in positions in the smaller facilities to seek registration or more vacancies will likely be created, escalating the demand.

Source of Supply

Nationally, training is provided through two educational systems. Programs are a minimum of two years in length regardless of which system, with graduates having to successfully complete the CBRET examination to achieve status as Registered Technologist.

The first education option is through a formal college-based program, of which there are only 2 such programs in Canada. British Columbia Institute of Technology (BCIT) admits 8 students every second year for the two-year English language program that has a low attrition rate of about 12%. Discussions are underway at this college relative to increasing the program to an annual intake of students due to market demand. Newfoundland currently purchases 2 seats from the BCIT program. Collège Ahuntsic in Montreal, Quebec offers a three-year French language program, with an intake capacity of 60 students per year. According to the MANT, very few graduates have been recruited to New Brunswick from the Ahuntsic program. Collège Ahuntsic offers the only program of its kind in Quebec and the market demand in that province alone is significant.

The second educational option is through CBRET approved hospital-based training programs, which vary from 2-3 years in length. The number of these training programs has been reduced over the past few years due to the institutional sector financial cutbacks; however, many large hospitals that have Neurosciences medical residency programs are revisiting the need to train their own EEG technologists due to an inability to recruit from elsewhere. Currently, New Brunswick does not train locally.

In light of a growing shortage of this occupation, CBRET has proposed that regional satellite programs for BCIT and Ahuntsic Colleges be established across the country, which would meet national CBRET standards. Also under discussion is a collaborative college/hospital model for the shared didactic/practical elements of this program. An educational affiliation agreement between BCIT Electroneurophysiology program and the Moncton Hospital is under discussion for 10 weeks of clinical training; however, this agreement has not yet been signed.

Data Analysis

There are 11 EEG Technicians in the inventory database, all of who have one job and are employed by the provincial government in the clinical field of practice. The Maritime Association of Neuroelectrophysiology Technicians (MANT) is the professional association for EEG Technicians, but registration is not required to practice the profession in New Brunswick. The registration status of the 11 EEG Technicians is as follows: 10 (91%) are active and 1 (9%) is not an active member of the MANT.

A demographic analysis by age reveals the average age of EEG Technicians to be 43. The age group analysis for EEG technicians shows 4 (36%) of the EEG Technicians under the age of 40, 3 (27%) between 40 and 50, and 4 (36%) are in the 50+ age category. There are currently 18% of the EEG Technicians workforce in the potential retirement zone (55+) and another 2 (18%) entering this zone within the five-year forecast horizon. This shows 36% of EEG technicians in the inventory database could retire in the next five years. Analysis by gender indicates that 8 of the EEG Technicians are female (73%), and 4 of them (27% of EEG workforce) are under the age of 40, and considered within the childbearing age range.

A look at the language ability of the EEG Technicians workforce shows that the majority of the workforce is English ability, 8 (73%), while 2 (18%) have ability in English and French, and 1 (9%) has French only ability. A further breakdown for health region shows 1 (9%) EEG Technician in both Region 1 and Region 3 has language ability in both English and French.

All 11 (100%) of the EEG Technician employees work in the provincial government in the hospital sector. When looking at Health Region, of the 11 EEG Technician employees, the majority, 6 (54%), are in Region 1 (4 are in Region 1SE, and 2 are in 1B), 2 (18%) are in Region 2, 2 (18%) are in Region 3, and 1 (9%) are in Region 4. Regions 5, 6, and 7 do not have any EEG technicians.

An analysis by Employment Status reveals that of the 11 EEG Technicians jobs, the majority, 9 (82%) are permanent full-time, while 2 (18%) are permanent part-time. FTE analysis shows that the majority of EEGs work in the 0.76-1.0 FTE range, while 25% work >1.0 FTE, and 20% work <0.25 FTE.

A review of the Occupation Status indicates all 11 (100%) of the EEG Technicians are employed in their occupation.

In summary, the EEG workforce is small, predominantly female (73%) with an average of 43 years. They are 100% employed on a permanent full-time or part-time basis and concentrated in only 4 health regions in the province. Only a small percentage (18%) of this workforce is bilingual. Approximately 25% of this workforce works greater than 1.0 FTE. The combined impact of potential retirements and maternity leaves could create a supply crisis for this occupation group over the five-year forecast horizon.

5.6.4 Medical Equipment Technician/Technologist

Trends and Issues

Medical Equipment Technicians/Technologists (MET) are predominantly trained in the discipline of electronic technologies: electro-mechanical, biomedical, and telecommunications.

Competitive forces impacting supply of these graduates include higher wages in private sector and the option for technology oriented students to choose to pursue education and careers in the information technology sector.

Criteria for employment of this occupational group in New Brunswick, requires certification with the New Brunswick Society of Certified Engineering Technicians and Technologists (NBSCETT). Over 70% of those currently employed are certified and new employees are expected to become certified to be eligible for advancement.

Certified Engineering Technicians (Ctech), Certified Engineering Technologists (CET) and Certified Technicians or Applied Science Technologists (AscT) are symbols of achievement in engineering/applied science technology and are legally protected for use only by fully certified members. In New Brunswick, the designations CET and AscT are most commonly used.

A National Accreditation Program is used to evaluate applied science and engineering technology programs. Upon successful completion of a national accredited post-secondary, two- or three-year applied science or engineering technology program, the graduate in New Brunswick may join the Society as a "Technology Graduate In Training" (TGIT). Twenty-four months of relevant discipline-specific technical experience is also required for certified membership application.

A labour market survey was conducted in March 2002 by the Canadian Technology Human Resource Board (CTHRB), the Canadian Council of Technicians and Technologists (CCTT), Human Resources Development Canada (HRDC), and the Canadian Engineering Resources Board (CERB) of the Canadian Council of Professional Engineers (CCPE). With the cooperation of all associations and their members, the survey results are expected by Fall 2002.

A national Internet-based survey of engineering technicians and technologists³⁴ revealed this occupation is predominantly populated by males (84.5% nationally), over 90% have college level training as

³⁴ Trends in Engineering Work. ARA Consulting Group-a Division of KPMG. 1999

technicians/technologists, and over 75% of those employed in Atlantic Canada are under 45 years of age. Nationally, two thirds fall in the 26-45 year age bracket and this age group is also characterized as being the most mobile, with the greatest frequency of job changes. Atlantic Canada, the Prairie Provinces, and British Columbia experience the highest mobility.

One of the major organizational trends that is occurring in this occupational group is a significant reallocation of work from Professional Engineers and skilled trades to engineering technicians and technologists, driven chiefly by technology factors which facilitate greater trouble shooting and maintenance functions by technicians/technologists. This trend has the potential to drive demand for skilled technicians/technologists who have a solid foundation in math and various engineering software. The demand for METs with strong team related skills is another finding from this survey: interpersonal and communication skills, problem solving, and leadership skills.

Source of Supply

The College of the North Atlantic is the sole program in Atlantic Canada, and 1 of 4 programs in Canada preparing a market ready graduate for this occupational group. A three-year diploma program in Electronics Engineering Technology with a Biomedical stream is offered, which is accredited by the Canadian Technology Accreditation Board, under the mandate of the Canadian Council of Technicians and Technologists. The number of graduating students from this program varies; however, is typically less than 10 per year on average.

Another means for entry to this occupation is through successful completion of a regular Electronics program at the Community College level. However, graduates from this program may require a longer period on the job to become sufficiently integrated into medical technology know-how. The NBCC Saint John Campus offers an Electronic Information Systems Technology (EIST) program in English that prepares graduates with a foundation to work in this field. Fifty-three students are enrolled as of September 2002, 27 in year one, 18 in year two, and 8 in year three. There is a 58% attrition and typically 2-3 graduates per year enter the Medical Equipment Technology workforce. At one time (1989-1992), NBCC offered a Bio-Medical Electronics option just for this sector. Presently, one elective course in the EIST program is offered for those students who are interested in this field. The program is 80 weeks long with a co-op option that can extend the program by up to 12 months. After two years of experience, graduates are eligible for certification by the New Brunswick Society of Certified Engineering Technicians and Technologists.

Data Analysis

There are 74 Medical Equipment Technicians captured in the inventory database with the same number of jobs. The registration status for the Medical Equipment Technicians is unknown.

A demographic analysis by age reveals the average age of Medical Equipment Technicians to be 39. The majority of Medical Equipment Technicians are in the under 40 age category (38 or 51%). There are 28 (38%) Medical Equipment Technicians between the ages of 40 and 50, and 8 (11%) in the 50+ age category. As such, there are currently 3 (4%) of the Medical Equipment Technician workforce in the

potential retirement zone (55+) and another 5 (7%) entering this zone within the five-year forecast horizon that makes a total of 8 (11%) who could retire in the next five years.

Analysis by gender indicates that 71 (96%) of the Medical Equipment Technicians are male. As only 2 (3%) of the Medical Equipment Technician workforce are female and under the age of 40, the low potential for maternity leaves is not a factor for occupational stability of this group in the five-year horizon.

The language ability for the members of this group is unknown.

Of the 74 Medical Equipment Technicians, 100% work in the provincial government in the hospital sector, 100% are working in their occupation, and the field of practice for all 74 Medical Equipment Technicians is recorded as “other”.

When looking at Health Region, of the 74 Medical Equipment Technicians the majority, 30 (41%), are in Region 1 (11 are in Region 1SE, and 19 are in 1B), 13 (18%) are in Region 2, 9 (12%) are in Region 6, 8 (11%) are in Region 3, 6 (8%) each are in Regions 4 and 5, and 3 (7%) are in Region 7.

An analysis by Employment Status reveals that of 71 (96%) Medical Equipment Technician jobs are permanent full-time, while 2 (3%) are permanent part-time. Interestingly, an FTE analysis reveals that exactly half of these workers work in the 0.76-1.0 FTE range, and the other half work >1.0 FTE, which is second highest percentage in the public sector health workforce of those working >1.0 FTE (first is EMTs).

Gap Analysis

It is estimated that the Medical Equipment Technician workforce is currently in a minor shortage position, which moves to a relative equilibrium position by the end of the five-year forecast horizon.

These estimates are based on the following assumptions:

- Successful recruitment of 2 new grads per year from NBCC program, with no anticipated recruits from the College of the North Atlantic program in Newfoundland
- No additional demands on this occupation from status quo

In Summary, the Medical Equipment Technician/Technologist workforce is predominantly male (96%), and a relatively young group, with an average age of 39 years. They work exclusively in the public sector in the hospital setting, on a permanent full-time basis (96%), a very high percentage (50%) of them working greater than 1.0 FTE. This workforce is currently in a minor shortage position, which changes to relative equilibrium by the end of the forecast period, taking into account the assumption that a few graduates each year replace those leaving the workforce, and barring additional unforeseen demands for this service that would come from new programs, etc.

5.6.5 Medical Lab Technologist and Medical Lab Specialist

Trends and Issues

In an April 2001 report prepared by the Canadian Society for Medical Laboratory Science³⁵, the pending international labour shortages for MLTs is well documented. A 29% reduction in the MLT workforce between 1986-1997 as a result of health care reform, coupled with reductions in the supply sources, has created a vulnerable situation for this occupational group. The report identifies that nationally 44.4% of the MLTs will be eligible for retirement by 2015, assuming age 55 as a retirement option. This figure translates into 320 MLTs in New Brunswick or 52.6% of the current workforce.

The demand for MLTs is influenced by such factors as the growing volume of new diagnostic tests for both inpatient and outpatient populations, and this will continue to grow, fuelled in part due to public expectations. As well, there are increasing demands from an aging population, and higher acuity caseloads with faster throughputs demanding faster turn around on test results. The realignment of lab services and introduction of technology has the potential to moderate the demand for MLTs, if automated testing systems can be operated by assistants or technicians, leveraging the skills of the technologist. The trend toward a skill mix ratio of a larger percentage of technicians to technologists will likely be seen mostly in larger laboratory settings where there is ready access to the technologists/specialists. New Brunswick needs to give consideration to accommodating this trend in the face of a serious predictable shortage of medical laboratory technologists.

Recruitment and retention issues within this occupational group focus on the requirement for a flexible workforce, which translates into largely part-time and casual positions and the needs for generalist versus specialty skills, with the move toward concepts like “core labs”. Lack of full-time jobs is a disincentive for many. In addition, New Brunswick ranks fourth in compensation of new entrants to the occupation in comparison to the other Atlantic Provinces and third for more experienced workers. While individual Regional Health Authorities may offer recruitment incentives, there are no provincial financial incentives offered for this occupational group.

While less competitive in terms of wage levels, the existence of a training program for Medical Laboratory Technologists in the province is a very positive supply factor over the longer term. New Brunswick offers the only program of its kind in the Maritime Provinces. With pending labour shortages well documented, and aggressive recruitment strategies of other provinces targeting students in New Brunswick programs, New Brunswick’s recruitment strategy should be revisited. As well, there is an opportunity for New Brunswick to assess the enrollment capacity in the NBCC and NBCC/University collaborative programs, as well as the model for delivery of this program.

³⁵ Medical Laboratory Technologists National Human Resources Review: A Call for Action. Canadian Society for Medical Laboratory Science. April 2001

Source of Supply

Health care reform in the early to mid 1990s, the introducing of new technologies, and laboratory restructuring has contributed to a decline in the numbers of Medical Laboratory Technologists (MLTs) in the Canadian health system. In 1993, there were 21 MLT programs outside Quebec with an enrollment of 752 students. By 1998, this number was reduced to 8 programs with 164 students enrolled³⁶. No change occurred in Quebec during this period, which produced just under 200 graduates per year. There are currently 10 CEGEBs/Colleges in Quebec offering three-year Technologie de Laboratoire Medicale programs. There are no MLT programs in Nova Scotia, Prince Edward Island, or Manitoba. These numbers characterize the challenges to supply of new MLTs over the short- to medium-term, and in the long-term, in the absence of any intervention.

This supply situation is further compounded by the position of the Canadian Society of Medical Laboratory Scientists (CSMLS) to require a university degree as a minimum entry requirement to the profession by 2010. It is anticipated that this will create a two to three-year gap in graduates. Of additional concern is that 22% of the MLT workforce that will be eligible for retirement during this five-year forecast horizon. Given these factors, current enrollments are not sufficient for workforce replenishment.

A diploma is currently required for admission to practice as a medical laboratory technologist. In Atlantic Canada, MLT diploma level training is provided by the New Brunswick Community College (NBCC) and the College of the North Atlantic in Newfoundland. The NBCC English language program capacity is currently 20 students in the Saint John campus. In September 2002, there were 37 students enrolled in this 89-week program, 32 of whom are from New Brunswick (17 are in year one and 15 are in year two). NBCC has an agreement with Nova Scotia to provide 5 seats of the 20 available to students from that province, which no longer offers training locally. The demand for this program is on the rise, according to NBCC, due in large part to growing market demand for graduates and the impending retirement numbers. The attrition rate for this program is high however, approximately 50% in some years. In an effort to address this situation, NBCC is considering changing the entry requirements to require one full year of university sciences to be eligible for admission. There is high demand for the program with 3 people waiting for every 1 space in the NBCC program.

The University of New Brunswick Fredericton campus offers a Bachelor of Medical Laboratory Sciences Program. This program, which is in its sixth year of operation, accepts up to 10 articulated students per year from NBCC Saint John. As of 2001, there have been 3 graduates from this degree program, which has an attrition rate of 70%, due in some part to lowering the bar for admission into the Bachelor's program for mature students coming in through the diploma stream. Two additional students are expected to graduate from the University of New Brunswick's program in 2002 and three more in 2003. UNB predicts graduating 6 students per year thereafter.

A partnership French Language program between NBCC Campbellton campus, the Université de Moncton, and the Region 1 Beauséjour Health Authority has 12 students enrolled full time for 2002, 6 in

³⁶ An Environmental Scan of the Human Resource Issues Affecting Medical Laboratory Technologists and Medical Radiation Technologists. Assessment Strategies Inc., March 1999

each of years two and three of the four-year program. There are no full-time enrollments in year four of the program as students normally exit with a diploma from NBCC after year three and continue their degree through part-time study.

The three-year MLT program offered by the College of the North Atlantic in Newfoundland has a common first year program with other health technology students. Students apply to enter the program in year two with an intake capacity of 29 students. In September 2002, there are 29 students enrolled in year two and 19 students in year three. Currently, there are no New Brunswick students enrolled in this program.

The Canadian Society for Medical Laboratory Science (CSMLS) is the certifying body and professional association for MLTs in Canada. Those successfully completing MLT programs are eligible to write the national general certification examination. CSMLS also offers certification exams in diagnostic cytology and genetics. Certification at a higher level recognizes the increased depth and range of knowledge needed and qualifies individuals for more senior positions as Medical Laboratory Specialists.

Data Analysis

There are 653 Medical Laboratory Technologists (MLTs) in the inventory database, of which 644 are employees working in 653 jobs (an employee can work in multiple jobs).

The registration status of the 653 MLTs is as follows: 646 (99%) are active, 3 (less than 1%) are inactive, and 4 (1%) are retired.

A demographic analysis by age reveals the average age of MLTs to be 42. The majority of MLTs are in the 40 and under age group (258 or 40%). There are 243 (37%) MLTs in the 40 to 50 age range, and 148 (23%) in the 50+ age range. Extracting the 4 individuals who have indicated a retired status, there are currently 10% of the MLT workforce in the potential retirement zone (55+) and another 81 (12%) entering this zone within the five-year forecast horizon. Extracting those who indicated on their registration form that they are inactive and over the age of 55, will leave a total of 144 who could retire in the next five years, this represents 22% of the MLT workforce.

Analysis by gender indicates that 593 of the MLTs are female (91%), and 224 of them (34% of MLT workforce) are under the age of 40, and considered to be within the childbearing age range. This is an important statistic to consider in human resource planning, given the one-year maternity leave option and the challenges this brings to planning for filling temporary positions.

A look at the language ability of the MLT workforce shows that the majority of the workforce is English ability only (350 or 54%), while 293 (45%) have ability in English and French, and 10 (2%) have French only ability. Table 7 provides an analysis of language ability by region for the MLT employees within the occupation. The numbers in the brackets indicate the percentage of all the MLT employees in the health region with the stated language ability.

Table 7 – Medical Laboratory Technologist Employees

MLT Employees	English	French	English and French	Region Total in Occupation
Region 1	55 (36%)	1 (1%)	97 (63%)	153
Region 2	142 (77%)		42 (23%)	184
Region 3	117 (85%)		20 (15%)	137
Region 4	1 (3%)	3 (8%)	36 (92%)	39
Region 5	6 (18%)		28 (82%)	34
Region 6	4 (6%)	6 (9%)	56 (85%)	66
Region 7	19 (68%)		9 (32%)	28
Unknown Region	3 (100%)			3
MLT Totals	346 (54%)	10 (2%)	288 (45%)	644

Of the 644 MLT employees, 598 (93%) work in the provincial government which includes the Department of Health and Wellness, Family and Community Services, and the Regional Health Authorities, 12 (2%) work in the private sector, 12 (2%) work in provincial government other, and 22 (3%) work in “other”, which includes out of province positions.

An analysis of Health Region for the 644 MLT employees shows the majority, 184 (29%), are in Region 2 followed by Region 1 with 153 (24%) (of which 85 are in Region 1SE, and 68 are in 1B), 137 (21%) are in Region 3, 39 (6%) are in Region 4, 34 (5%) are in Region 5, 66 (10%) are in Region 6, and 26 (4%) are in Region 7. Health Region was unknown for only 3 (less than 1%) of MLT employees.

In an analysis by Health Sector, 601 (92%) of the 653 MLT jobs are in the hospital sector, 25 (4%) are in the sector defined as “other”, and 12 (2%) are in each of the academic and private sectors. At a finer level of detail, 521 of the 644 MLTs (81%) are in the clinical field of practice, 96 (15%) are in management, 1% are in education, 1% are in research, and 15 (2%) for whose field of practice is classified as other/unknown.

An analysis by Employment Status reveals that of the 653 MLT jobs, the majority (416 or 64%) are permanent full-time, while 121 (19%) are permanent part-time, 90 (14%) are casual, 25 (4%) are permanent temporary. Full-time Equivalent data provides a further look at “how” this workforce is working. The majority of MLTs work in the 0.76-1.0 FTE range, 20% work >1.0 FTE, 6% work in each of the 0.26-0.50 and 0.51-0.76 ranges, and 3% work <0.25 FTE.

Occupation Status is based on 653 individuals who are MLTs, and of these, 644 (99%) are employed in their occupation, 3 have indicated they are unemployed and seeking work in the MLT occupation, while occupations status for 6 (1%) individuals is unknown.

Gap Analysis

Given the supply and demand factors presented above, the forecast model estimates that there will be a shortage of MLTs ranging from just under 30 at current state to over 120 by 2007.

These numbers were derived based on available information on:

- Successful recruitment of between 85-90% of grads from the 3 New Brunswick programs (University of New Brunswick, NBCC Saint John, and NBCC Campbellton/Universite de Moncton)

These estimates are also based on the demand side information that was articulated by the profession in the focus group portion of this exercise:

- Increased public knowledge and demand for testing
- Increased acuity levels in hospitals and hence increased testing

In summary, the Medical Lab Technologist workforce is predominantly female (90%) with an average age of 42 years, has a moderate percentage of bilingual members (45%), and is employed largely on a permanent full-time or permanent part-time basis (83%), mainly in the hospital sector (92%). Nearly 20% work greater than 1.0 FTE. There are local sources of supply from 3 New Brunswick programs, at the college and university levels in English and French. This occupational group is currently in a small shortage, which increases by 15% over the five-year forecast horizon. The age group analysis of this workforce indicates the trend toward an increasingly dramatic shortage in the subsequent 5-10 year period. The introduction of technology may serve to mitigate forecast increases in demand for testing, due to public expectations and higher acuity. New Brunswick is the only source of supply for the Maritime Provinces for this group, and New Brunswick should therefore revisit the number of seats and its competitive position, to ensure adequate workforce replenishment. Also, the forecast bulge in retirements requires succession planning that gradually introduces new positions to the workforce to avoid gaps in service.

5.6.6 Medical Radiation Technologists / Therapists (Nuclear Medicine, Diagnostic Radiology, MRI, Radiation Therapists, and Dosimetrists)

Medical Radiation Technologists (MRTs) are regulated by a Provincial Act that controls the right of this occupation to practice. To be eligible to practice in New Brunswick, MRTs must be registered with the CAMRT and the New Brunswick Division of the CAMRT. The Association represents four disciplines:

- Radiological Technology (RTR) representing 80% of the New Brunswick MRT workforce
- Radiation Therapy (RTT) including Dosimetry representing 9% of the New Brunswick MRT workforce
- Nuclear Medicine (RTNM) representing 9% of the New Brunswick MRT workforce
- Magnetic Resonance (RTMR) representing 2% of the New Brunswick MRT workforce

Members can be registered in more than one discipline.

In looking at an education profile of this occupational group, 68% received their training in New Brunswick and 17% of CAMRT New Brunswick Division members have a degree.³⁷

³⁷ Demographic Profile, CAMRT New Brunswick Division, April 2002

Trends and Issues

Longer training programs, intense national competition for qualified technologists, and an aggressive, new national cancer control strategy are all factors that will contribute to a growing demand for this health occupational group.

Beginning in 2005, access to the Canadian Association of Medical Radiation Technologists (CAMRT) exam will require a bachelor's degree. Effective from 2001 onward, it will take four years to educate Medical Radiation Technologists. New Brunswick's position is similar to other Maritime governments in that any health programs that may be offered at a bachelor level also must have an option for a diploma exit. New Brunswick has not taken the position at this time to require a degree for employment in this field; however, the national trend is moving toward a baccalaureate degree as minimum entry. The deadline for degree as entry to practice has been extended in Ontario as the colleges and universities indicated they would not be ready with articulated programs in time to meet the 2005 deadline established by CAMRT.

In terms of future resource needs for Medical Radiation Therapists, in particular, the implementation of a new strategy for New Brunswick's cancer services program will require an as yet undetermined number of new cancer care professionals. In light of this demand, the following paragraph highlights the issues germane to Medical Radiation Therapists, or RTTs, as one MRT specialty that must be taken into consideration as New Brunswick finalizes the functional plan and human resource impact analysis associated with its new cancer control strategy.

There is currently a national shortage of the RTT group, whose numbers are about 1000 in Canada³⁸. According to a recent report from the Human Resources Planning Working Group For the Canadian Strategy for Cancer Control³⁹, a critical shortage of radiation therapists is not new to Canadian health care. In the past 25 years, Canada has experienced three crises in staffing of radiation therapists, caused primarily by expansion of services (new sites and/or extended hours due to increased demand), high attrition rates among therapists, and under-utilization of training capacity within the schools of radiation therapy. Given their small numbers however, any shocks to supply have a significant impact. A specialty within the RTT workforce is Dosimetry, and similar to the general RTT workforce, Dosimetrists are in extremely high demand in both Canada and the United States. New Brunswick's small Dosimetry workforce (4 individuals) is at great risk to the loss of any one of its members. The current environment highlights this risk, in that the United States is aggressively recruiting Dosimetrists to work in a variety of capacities, most particularly, consulting roles. New Brunswick has lost Dosimetrists to the US workforce in the past few years.

³⁸ *Human Resource Planning Issues Affecting Radiation Therapists*. Canadian Journal of Medical Radiation Technology. Summer 2000

³⁹ *Report of the Human Resources Planning Working Group of the Canadian Strategy for Cancer Control*. February 21, 2000.

Source of Supply

The supply of MRTs for New Brunswick is through a variety of programs, some of which offer a common first year of study followed by discipline specific streams, and others that are discipline specific.

In New Brunswick, NBCC Campbellton campus has a contractual agreement with CEGEB de Ste. Foy, Quebec for 4 seats in their three-year French language program, Technologie de radio-oncologie. Currently, there are 9 New Brunswick students enrolled in this program, 2 students in years one and three, and 5 students in year two of the program who are potential supply to the medical radiation therapy workforce.

The Bachelor of Health Sciences program offered conjointly by UNBSJ, NBCC, and designated Regional Hospitals has changed its delivery model for 2002 to a much more integrated program which positions students for the bachelor degree as entry to practice by 2005. This new delivery model creates a challenge; however, for those students who may want to exit with a diploma after three years. The specialty streams offered include radiation technology, radiation therapy, nuclear medicine, and respiratory technology. One year of general undergraduate science credits is required for admission by the appropriate partner organization to year two of this four-year degree program. The Radiation Technology stream has 6 students enrolled in year two, and 5 in year three of the program, with 9 part-time students enrolled in year four. Radiation Therapy has only 1 student enrolled in year two of the program and no students enrolled in either year three or four. Nuclear Medicine has 2 students in year two, one in year three and 1 part-time student in year four.

Université de Moncton and NBCC Campbellton campus collaborate in providing a four-year Bachelor of Science en techniques radiologiques program. Graduates supply the Radiation Technology labour force. Clinical placements are in affiliation with the Dr. Georges L. Dumont Hospital in Moncton (Regional Health Authority 1 Beausejour). This program begins with 1 year of university science credits followed by 2 years of didactic and clinical study after which students may continue with a fourth year of university credits or exit with a diploma granted by NBCC. There are currently 6 students enrolled in year two of this program and 5 students in year three. There are no students in year four currently as those who completed year three of the program in April 2002 also met the requirements for the degree due to having prior university credits. The first students to complete this program were in 2000 with 5 graduates followed by 6 graduates in both 2001 and 2002. Students may continue to exit this program with a diploma after year three until 2005 when the profession requires a degree to be eligible to write the national CMART certification exams. Prior to this program, New Brunswick students had to attend the three-year Quebec CEGEB program in Rimouski, through an agreement with NBCC where 4 seats were secured for New Brunswick students.

Outside of Atlantic Canada, the British Columbia Institute of Technology (BCIT), Red River College/CancerCare Manitoba, University of Toronto/Michener Institute, and 2 other CEGEBs in Quebec (Ahuntsic and Dawson) are primary sources of Canadian supply for this occupational group.

The University of Toronto/Michener Institute collaborative Bachelor of Radiation Sciences degree program has three specialty streams. It has reduced its admission capacity for the Radiology Technology stream of the program from 40 to 25 seats and reduced Nuclear Medicine seats from 40 to 30 seats. The capacity in the Radiation Therapy stream of this degree program remains at 75 seats per year with one

New Brunswick student enrolled in year one as of September 2002. There is a 10% attrition rate, on average, from this program, which has a Diploma in Health Science exit after three years. Effective September 2002, entry requirements into the program were modified. Students now require 1 year of university sciences, as opposed to the previous requirement of 2 years of university courses. Funding arrangements for the Bachelor of Radiation Sciences degree program dictate that admission preference is given to Ontario residents, followed by those provinces with whom the Program has formal agreements. New Brunswick does not have a contractual agreement for seats in this program and there are no New Brunswick students in the first year of the program in either Nuclear Medicine or Radiology Technology. (Nova Scotia and Newfoundland each contract with University of Toronto/The Michener Institute for 2 seats and Nova Scotia has had students completing the didactic part of the program over the past 3 years.) The limitation on enrollments is driven by access to clinical placements, which is usually completed in the home province for out-of-province students.

For those practitioners who wish to re-enter the workforce, refresher programs are now being operated by the specific training programs and not coordinated through the CAMRT, New Brunswick Division.

From a Medical Radiation Therapist supply perspective, New Brunswick does not produce, nor have agreements in place in sufficient numbers with other institutions to produce an adequate supply of therapists to meet the health care needs of New Brunswickers over the next five years.

Competition for these RTT graduates is fierce with many having signed letters of offers for employment prior to graduation with financial recruitment and retention incentives being offered by several provinces including certain Regional Health Authorities in New Brunswick. New Brunswick remains marginally less competitive than its Atlantic counterparts for both entry level, as well as experienced Medical Radiation Therapists and the wage difference among experienced therapists is not as significant as for new entrants. The Province of New Brunswick is currently offering a \$10,000 signing bonus as a recruitment incentive to compete for these scarce practitioners.

To qualify for the occupation of Dosimetrist, one must be qualified as a Radiation Therapist and be working in the specialty field of Dosimetry. After 2 years of dosimetry working experience, one is eligible to write the American certification exam. Dosimetrists work in the department of Medical Physics, and, to be classified as such, must be eligible to write the American certification exam. Discussions are underway concerning development of a Canadian certification exam.

Data Analysis

There are 463 MRTs in the inventory database (which includes 4 Dosimetrists, 42 Nuclear Medicine specialists, 30 Radiation Therapists, and 4 Dosimetrists), of which 440 are employees working in 441 jobs (an employee can work in multiple jobs). The registration status of the 463 MRTs is as follows: 455 (98%) are active, 1 (less than 1%) is inactive, 3 (1%) are retired, and the registration status of the remaining 4 (1%) is unknown.

A demographic analysis by age reveals the average age of MRTs to be 40. The majority of MRTs are in the 40 and under age group (237 or 47%). There are 104 (22%) MRTs in the 40 to 50 age range, and 89 (19%) in the 50+ age range. Age is unknown for 53 (11%) of the MRT workforce. Extracting the 3 individuals who have indicated a retired status, there are currently 32 (7%) of the MRT workforce in the

potential retirement zone (55+) and another 54 (12%) entering this zone within the five-year forecast horizon. This indicates a total of 86 who could retire in the next five years, which represents 19% of the MRT workforce.

Analysis by gender indicates that 393 of the MRTs are female (85%), and 180 of them (39% of MRT workforce) are under the age of 40, and considered within the childbearing age range. This is an important statistic to consider in human resource planning, given the one-year maternity leave option and the challenges this brings to planning for filling temporary positions.

Language ability for the MRT workforce was not provided.

Of the 440 MRT employees, 437 (99%) work in the provincial government, which includes the Department of Health and Wellness, Family and Community Services, and the Regional Health Authorities.

An analysis of Health Region for the 440 MRT employees shows the majority, 126 (29%), are in Region 2 followed by Region 1 with 116 (26%) (of which 55 are in Region 1SE, and 61 are in 1B), 74 (17%) are in Region 3, 44 (10%) are in Region 6, 34 (8%) are in Region 4, 23 (5%) are in Region 7, and 18 (4%) are in Region 5.

As expected, an analysis by Health Sector shows the vast majority 429 (98%) of the 440 MRT jobs are in the hospital sector and 8 (2%) indicate they work in a community health centre. And at a finer level of detail, 430 of the 441 MRTs (98%) are in the clinical field of practice, while 1% each are in management and education.

An analysis by Employment Status reveals that of the 441 MRT jobs, the majority (285 or 65%) are permanent full-time, while 99 (22%) are permanent part-time, and 53 (12%) are casual. Just over 50% of this exclusively public sector group work between 0.76 and 1.0 FTE, while 33% work >1.0 FTE, 7% are in the 0.51-0.76 range, 6% are in the 0.26-0.50 FTE range, and the remainder 2% work <0.25 FTE.

Occupation Status is based on 463 individuals, and of these, 439 (95%) are employed in their occupation, 15 have indicated they are employed outside the occupation, it is not known if they are seeking work in the occupation, 3 (1%) are retired, and occupation status for 6 (1%) individuals is unknown.

Of the total MRTs in the inventory database, there are 4 Dosimetrists; however, due to the small size of this group and resulting privacy concerns, demographic information is not contained in this report. However, from a retirement planning perspective, it can be stated that none of the Dosimetrists in the database are projected to enter the 55+-retirement zone within the five-year forecast period.

Gap Analysis – Medical Radiation Technologists (not including Therapists and Dosimetrists)

The Medical Radiation Technology workforce is currently estimated to be in a slight shortage position of less than 10 workers, which widens fairly significantly over the five-year forecast horizon to a shortage of over 80 MRTs by the year 2007.

These estimates are based on the following assumptions:

-
- Successful recruitment of 90% of graduates from the 3 New Brunswick training programs (NBCC/UdeM, NBCC/UNBSJ, and NBCC/CEGEB Ste Foy), which equates to an average of 13 MRTs per year in 2004, 2005, 2006, and 2007

In addition, a focus group was conducted with this occupation, which identified the following supply and demand factors that will impact their workforce in the coming five-year period:

- Competition for this occupation comes from other provinces and the United States is a negative impact on supply
- Increased public knowledge and demand for testing, and increased acuity level of patients in hospital represent a positive impact on demand for services
- Degree required as entry to practice by 2005 is a perceived negative on the supply side for this occupation

Gap Analysis – Medical Radiation Therapists

This occupation is currently estimated to be in a shortage position of approximately 5 Medical Radiation Therapists (17% of current supply), with the gap increasing slightly over the forecast period, to a shortage of 7 workers by 2007.

These estimates are based on the following information and assumptions:

- Recruitment of an average of 3 radiation therapists per year over the five-year forecast period, all from the 2 New Brunswick programs (NBCC/UNBSJ and NBCC/CEGEB)
- Implementation of a New Brunswick Cancer program is factored into a modest estimation of demand for this occupation (assumed to be in years 2004-2007), recognizing that an implementation plan for this program is not articulated

In addition, a focus group with this occupation identified supply and demand factors that are perceived to have an impact on this group and hence have been factored into the model results:

- Competition for this occupation comes from other provinces and the United States is a negative impact on supply
- The current \$10,000 signing bonus being offered by New Brunswick is a positive impact on supply (recruitment), and is assumed to continue for the forecast period
- High-turnover and burnout for this group are negative factors on supply (retention)
- Increased public knowledge and demand for testing, and increased acuity level of patients in hospital represent a positive impact on demand for services

In summary, the Medical Radiation Technology and Therapy workforce (which also includes Dosimetry, Nuclear Medicine, and MRI) is predominantly female (85%) with an average age of 40 years old. This group works almost exclusively in the hospital setting (98%), on a permanent full-time or permanent part-time basis (87%). Nearly 33% work greater than 1.0 FTE. Generally, workers in all specialties of the MRT group are anticipated to be in high demand over the forecast period and beyond, due to increased public knowledge and demand, increased acuity of patients in hospital, and aggressive competition from outside New Brunswick's borders for new graduates in these fields.

The MR Technologist portion of this workforce (including Nuclear Medicine) is currently estimated to be in a slight shortage position, which escalates over the forecast period to a significant shortage by the year 2007.

The MR Therapy group is currently estimated to be in a slight shortage position, which persists throughout the forecast period. However, these estimates only take into account modest recruitment efforts from New Brunswick programs. Additional demand stemming from implementation of a new cancer services program in New Brunswick, which, when further articulated by the Department of Health and Wellness, has the potential to have a significant positive impact on demand for MR Therapists and would escalate the shortage of these professionals beyond what is forecasted in the current scenario.

Dosimetrists are a very specialized group of radiation therapists who are in high demand in Canada and the United States. This group is at risk, given its small size in the province, and the fact that aggressive recruitment from the United States is the current environment.

5.6.7 Respiratory Technologist / Therapist (RT)

Trends and Issues

Between 1998 and 2002, the labour market situation for Respiratory Technologists/Therapists changed drastically. The situation switched reversed from RTs struggling to find employment, to respiratory therapy departments struggling to find people to fill vacant positions. As of a few years ago, Respiratory Therapy schools are reporting lower enrollments and an average drop out rate of about 28%.⁴⁰

On the demand side of respiratory therapy, the fastest growing segment of the population is people over the age of 75 years. In New Brunswick, over the five-year forecast period, this portion of the population is projected to grow by nearly 8%. The top Age/Disease Related Groups associated with a senior population include heart failure and shock, simple pneumonia, and pleurisy. The leading causes of death are cancer (with the highest mortality associated with lung cancer), heart disease and cardiovascular disease, and pneumonia and influenza.⁴¹ As most of these diseases require respiratory therapy expertise, the demand for respiratory therapists is anticipated to grow as the general population ages.

⁴⁰ The Coming RT Shortage. Miriam Sobel, Patrick Litwin, Cliff Seville, Cheryl Homuth. Winter 2000. The Canadian Society of Respiratory Therapists. Page 38

⁴¹ Ibid. pages 40-41

In the New Brunswick specific context, in a focus group held with Respiratory Therapists, it was identified that competition from outside New Brunswick is having a significant negative impact on supply of workers for this province. For example, of 11 RT graduates in New Brunswick last year, 6 went out of the province to work. The competitors are giving signing bonuses, paying off student loans, and offering a much higher wage than is offered by New Brunswick employers.

With respect to workload of the current RT workforce in New Brunswick, it was identified in the focus group that the current provincial initiative to collect detailed workload data on an individual level was significantly hampering clinical productivity and time with the patient, which in turn is negatively impacting the quality of worklife of the current workforce. Coupled with this factor, patient acuity is in the rise, which equates to increasingly more time spent with patients and more testing and therapy required by the current workforce.

Source of Supply

NBCC Campbellton Campus has historically had a contract with College Sainte-Foy in Quebec for 4 seats in their three-year Respiratory Therapy program (Techniques d'Inhalotherapie). This contract has been cancelled and there will be no intake of New Brunswick students in 2002; however, there is 1 student in year three of this program and 3 students in year two who will continue and graduate in 2003 and 2004 respectively. Graduates of the program are not eligible for national certification, which was the impetus behind canceling this contractual relationship. Discussions are underway between the NBCC Campbellton, the Université de Moncton, and the Beauséjour Regional Hospital in regards to launching an articulated Respiratory Therapy program in New Brunswick in 2003. No details were available on the numbers of students that will be admitted to this program.

NBCC Saint John Campus offers a 97-week diploma program in Respiratory Therapy. There are 27 students enrolled in this program of which there are 12 New Brunswick students in year one and 13 in year two.

The University of New Brunswick offers a Bachelor of Health Sciences four-year degree program, in collaboration with the NBCC Saint John Campus and the Saint John Regional Hospital, which has 12 students enrolled, 7 in year two, 1 in year three, and 4 part-time students in year four. There is a 15% attrition rate from this program. Enrollment in the degree program occurs after 1 year of university is completed and students have been accepted by NBCC. A diploma exit is possible after 3 years and students who wish to pursue a degree do so primarily in a part-time capacity.

Dalhousie University in Halifax also offers a four-year Bachelor of Health Science with a Respiratory Therapy stream and admits 15 students per year. There are currently 41 students enrolled, 15 in year one, 12 in each of years 2 and 3, and 2 in year four. A diploma exit is possible after year three.

Data Analysis

There are 193 Respiratory Therapists in the inventory database with the same number of employees and jobs. The registration status indicates that all 193 (100%) are active.

Of the 193 therapists, 128 (66%) are female. An age group analysis reveals that 130 (67%) Respiratory Therapists are under the age of 40, and the average age is 34. There are 14 (7%) of the group whose age range is unknown. There are 41 (21%) of the Respiratory Therapists in the 40-50 age range, 8 (4%) are in the 50+ age range, and only 2 (1%) of the Respiratory Therapists are over the age of 55. As such, there is 1% of the Respiratory Therapist workforce currently in the potential retirement zone and an additional 6 (3%) who will enter the retirement zone in the five-year forecast horizon. This leaves a total of only 4% who could retire in the next five years. This is a positive factor for workforce stability due to retirements. However, another important factor to consider is that 92 of the therapists (48%) are both female and within the childbearing age range (under 40 years of age). There is the potential that, in the five-year forecast horizon, positions will have to be filled on a temporary basis due to maternity leaves.

Language ability is unknown for this group.

Of the 193 Respiratory Therapist employees, 169 (88%) work in the provincial government, which includes the Department of Health and Wellness, Family and Community Services, and the Regional Health Authorities, 19 (10%) work in the private sector, and 5 (3%) work in provincial government other.

When looking at Health Region, of the 193 Respiratory Therapist employees, the majority, 63 (33%), are in Region 1 (43 Region are in 1SE, 12 are in 1B, and 8 are in Region 1 unknown), 52 (27%) are in Region 2, 23 (12%) are in Region 6, 22 (11%) are in Region 4, 20 (10%) are in Region 3, 9 (5%) are in Region 7, and 4 (2%) are in Region 5.

In an analysis by Health Sector, 147 (76%) of the 193 Respiratory Therapist jobs are in the hospital sector, 22 (11%) are in Extra Mural, 19 (10%) are in the private sector, and the remaining 5 (3%) are in the academic sector. At a finer level of detail, 175 of the 193 Respiratory Therapists (91%) are in the clinical field of practice, 10 (5%) are in management, and 7 (4%) are in the private sector.

Analysis by occupation status shows that all of the 193 Respiratory Therapists in the database (100%) are employed in their occupation.

An analysis by Employment Status reveals that of the 193 Respiratory Therapist jobs, the majority (170 or 88%) are permanent full-time, while 18 (9%) are permanent part-time, and 3 (2%) are on leave. An additional look at “how” this workforce is working reveals that there is a fairly even split between those working in the 0.76-1.0 FTE range (46%), and those working >1.0 FTE (43%). This represents a relatively large proportion of this group working >1.0FTE, and thus is an important consideration in future HR planning for this group.

Gap Analysis

It is estimated that there will be a shortage of workers in this occupation that fluctuates over the forecast period, from over 20 at current state, peaking at 37 in 2003, gradually declining to a shortage of around 30 therapists in 2005, and risking again to a deficit of just under 40 by 2007.

This forecast is based on the following assumption:

-
- Successful recruitment of 75% of New Brunswick program grads and 5% of Dalhousie University grads which equates to an average of 12-13 new entrants per year in the respiratory therapy/technology workforce (this does not include the potential grads from the NBCC Campbellton program that is not yet underway)

In addition, in a focus group with this occupation, the following supply and demand factors were identified as having an impact on this workforce within the five-year forecast period, and were factored into the forecast model:

- Provincial initiative to collect detailed workload information is taking time away from the patient and is perceived as a slightly negative impact on supply (retention)
- Competition for these workers with other provinces and the United States is a negative impact on supply (recruitment)
- Increased public knowledge and demand for service and increased acuity level of patients in hospital are positive impacts on demand for this occupations' services
- General impact of aging population, particularly the 75+ age group, will positively impact demand for respiratory therapy services

In summary, the Respiratory Technologist/Therapist workforce is a very young (average age 34) and predominantly female (66%) group, with a large percentage (48%) of this female workforce within the childbearing age range (<40 years old), which presents human resource planning challenges with respect to filling temporary leaves. The majority of this group (76%) work in the hospital setting on a permanent full-time basis (88%), with a high percentage working >1.0 FTE (43%). There is a current state shortage within this workforce (of 13% of this workforce), which widens slightly over the forecast period. These estimates do not take into account the potential for a NBCC training program coming onstream in 2003, but do take into account increasing demand from an aging population and associated conditions requiring respiratory therapy services.

5.7 Nursing Groups

This section addresses the occupational groups practicing within the field of nursing, which includes Licensed Practical Nurses (LPNs), Registered Nurses (RNs), Nurse Practitioners, and Clinical Nurse Specialists. While each occupational group is analyzed separately, there are issues that are germane to all occupational groups engaged in the practice of nursing. The needs of the respective patient/client populations that require nursing care are of prime consideration. Any changes to service delivery models, emanating from a new Hospital Services Master Plan will need to consider availability, skill mix requirements, and the impact on the scope of practice of each of these occupational groups.

5.7.1 Licensed Practical Nurses (LPNs)

Trends and Issues

Recent changes to the Licensed Practical Nurse Act has resulted in a change in the name of this occupational group to Licensed Practical Nurse or LPN, thereby placing New Brunswick more in line with the rest of Canada as relates to the title for this category of health worker.

As of a 2000 Licensed Practical Nurse Study⁴², the current demand for LPNs in 2000 and predicted demand in the next three years (2001, 2002, and 2003) exceeded the predicted number of graduates. In response to market demand, the LPN Association has seen a growth of approximately 47% in active members in the past decade, with a steadily increasing percentage of male graduates, that approximates 10% of overall membership.

The current shortage of Registered Nurses in acute care must also be factored into the demand for LPNs in this health sector, subject to the adoption of new models of practice. The increasing level of acuity of patients may; however, temper the utilization of LPNs in certain acute care settings.

When one looks at the employment of this occupational group, there are relatively few vacant positions available with guaranteed hours of work. Most new LPN graduates will therefore enter the system primarily as casual workers. An analysis of the New Brunswick data supports this fact in that LPNs constitute a casual workforce that is more than double the average (28%) than of the overall health care workforce (13%). These casual workers however, are, more often than not, working full-time hours, a phenomenon which creates stress on a casual pool that is essential to the system, due to the fact that LPNs who are absent must be replaced.

In an effort to redress this situation, one of the elements of the Nursing Resources Recruitment and Retention Strategy, announced by Government in 2001, provided \$562,000 in funding to convert casual nursing positions (RNs and LPNs) in the nursing home and hospital sectors to full-time positions, at an annualized cost of \$5,000/LPN (\$8,000 per RN). In 2001-2002, there were 13 LPN positions converted in the hospital sector and another 9 positions in the nursing home sector. In 2002-2003, an additional 13 positions expect to be converted in the nursing home sector, for a total of 35 full-time positions.

From a retention perspective, the trend toward higher acuity of residents in nursing homes and other long-term care facilities is creating a number of issues for LPNs and other nursing staff in these facilities.

- More strenuous lifting for staff. Back injuries are claimed to be on the increase in this environment. An assessment of the technology available to deliver care to a heavier resident caseload may be required in relation to preventing or reducing the injury rates of workers. The extent to which workers receive training in proper body mechanics should be reviewed.

⁴² New Brunswick Community College Licensed Practical Nurse Study for Department of Training and Employment Development. Orion Marketing Research. December 2000.

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- A review of the provider to resident/patient population ratio and the associated skill mix may be warranted in light of increased acuity levels and the likely positive correlation with an increase in the hours of nursing care per resident per day.

Prior to the latest round of collective agreements in Atlantic Canada, LPNs was the only occupational category where New Brunswick was most competitive in the Atlantic Region for direct line classifications in the hospital sector. This was the case for both new entrants and experienced individuals. This position has now slipped to fourth place in the Region for both categories. While the resolution of pay equity issues for LPNs over the last two rounds of collective bargaining in New Brunswick has resulted in increased wage rates, it appears that this issue has been addressed in other jurisdictions as well, most recently in Newfoundland.

Source of Supply

According to the LPN Association, there is insufficient funding for an adequate number of education seats to supply demand for LPN services. Presently there are two programs offered to prepare LPNs — classroom and distance education delivery.

New Brunswick Community College offers four classroom style programs: two in English (Saint John and Moncton) and two in French (Campbellton and Dieppe). In addition, there are a number of contract courses that are offered based on market demand. The current climate of shortage has resulted in several of these being offered annually on a cost recovery basis. Some students are eligible for subsidies to offset the cost of this education; however, the differential tuition cost may serve as a disincentive for potential students.

The traditional program is 57 weeks in length, but delivered over 18 calendar months. In some sites, admissions are accepted for start up in September, as well as in January. The Saint John campus only offers one start up in September at present. Demand for these programs is high with approximately 680 qualified applications applying in 2002 for 154 seats. Enrollments for 2002 include 88 students in the regular and contract English programs and 68 students in the French programs. Attrition rates range between 23 and 30% for this program. NBCC also offers the program delivered in English, through distance education, that historically constitutes up to 20% of overall enrollments. Thirty-two (32) students have enrolled in this program in 2002. The distance education program, offered over 72 weeks, costs the student more than double the traditional program of study; however students can continue to live at home in their community and can work while they are studying in order to offset some of the cost of this education

LPNs reentering the workforce through refresher programs provide an alternate source of supply. The Moncton and Campbellton campuses of NBCC began to offer this program in 2000 by correspondence. Since that time, 32 LPNs have successfully completed the program and another 17 are currently in process of completing. The refresher program has an attrition rate of approximately 23%.

The LPN Association has repeatedly raised concerns about what is perceived to be the inconsistent and ineffective utilization of the knowledge and skills of its members in New Brunswick. The Nursing Utilization Strategy being implemented by Government is one means by which to address this concern as the strategy promotes optimizing the skills of all categories of nursing personnel. Anecdotal evidence

obtained through interviews and focus groups would support the premise of no consistent utilization of LPNs across the health care system. Hospital policies and differences in management practices influence the utilization of this occupational group and variability in utilization can often be seen across patient care units within the same facility. This practice also has an impact on the ability of LPN students to obtain a comprehensive clinical experience in their education program, to position them to successfully complete the national LPN competency based exam, required for licensure.

As the LPN education program in New Brunswick has increased in length and content depth, LPNs graduate with a minimum set of competencies to practice, measured through a process of national registration examinations. In consideration of a provincial strategy to optimize the scope of practice of nursing personnel, a strategy is required to establish more uniform/enhanced utilization of the LPN workforce across the system. A system-wide assessment of the acuity, stability, and predictability of health outcomes of the various patient populations served by the public health care system should drive the RN to LPN staffing mix. A review and subsequent adjustment of the current RN to LPN staffing mix may ensue as a result of such a systematic review.

LPNs are also a mobile workforce. In 2001, LPN Association data reveals that for the 41 LPNs who moved out of province to practice in other jurisdictions, only 16 practitioners from other provinces were registered to practice in New Brunswick. A fact that creates further dilution to the supply of LPNs is the wide range of career options available to those with this credential. With what is often minimal additional education and training, individuals with an LPN credential are sought as a source of supply for such other occupations as cardiology technology, orthopedic technician, operating room technician, rehab assistant, Ambulance Attendant/EMT, etc. Changes in demand for any of these occupational groups should therefore be considered in determining demand/supply for LPNs.

Data Analysis

It must be noted that the analysis of this occupational group has a higher margin for error than other groups included in this study. The New Brunswick Association of Licensed Practical Nurses did not wish to provide names of their membership, which limited the consultants' ability to properly determine the extent of duplicates/cross-over with other occupations, as well as to supplement individual records with supplementary data gathered from other sources to enrich the existing LPN membership data. This inability to cross-reference and supplement data was particularly important for this group in that they work in a variety of occupations including Rehab Assistants, Addiction Workers, EMT, EEG, ECG, and Medical Equipment Technicians. As such, the LPN Association did do a reverse cross-reference for individuals they know to be working in these occupations, and these records were supplemented with additional job information.

There are 2701 LPNs in the inventory database, 2269 of whom are employees working in 2587 jobs (an employee can work in multiple jobs). Given limited ability to crosscheck employees with multiple jobs, this analysis is not considered complete. It was determined however, that 2075 employees (approximately 80%) work in one job, and 321 employees (approximately 20%) work in two jobs.

The registration status of the 2701 LPNs is as follows: 2523 (93%) are active and 178 (7%) are inactive. Of those who are inactive, it was assumed that 11 are retired given that they are over the age of 55.

A demographic analysis by age reveals the average age of LPNs to be 43. The majority of LPNs are in the 45-49 age range (483 or 18% or 2701). There are 971 (36%) LPNs under the age of 40, 405 (15%) between 40 and 44, 399 (15%) are in the 50-54 age group, and 443 (16%) over the age of 55. As such, there are currently 16% of the LPN workforce in the potential retirement zone (55+) and another 483 (15%) entering this zone within the five-year forecast horizon. Extracting those who indicated on their registration form that they are inactive and over the age of 55, will leave a total of 832 LPNs who could retire in the next five years, this represents 31% of the LPN workforce.

Analysis by gender indicates that 2455 of the 2701 LPNs are female (91%), and 846 of them (31% of LPN workforce) are under the age of 40, and considered within the childbearing age range. This is an important statistic to consider in human resource planning, given the one-year maternity leave option and the challenges this brings to planning for filling temporary positions.

A look at the language ability of the LPN workforce shows that the majority of the workforce is English ability only (1522 or 56%), while 1061 (36%) have ability in English and French, and 116 (4%) have French only ability. Adding further detail, on a health region basis, the table below provides an analysis of language ability by region for the 2269 LPN employees within the occupation. The percentage in brackets is the percentage of all LPN employees in the region with the stated language ability.

Table 8 - Licensed Practical Nurse Employees

LPN Employees	English	French	English and French	Unknown Language Ability	Region Total in Occupation
Region 1	268 (46%)	7 (1%)	307 (53%)	1 (<1%)	583
Region 2	478 (91%)	(0%)	49 (9%)	1 (<1%)	528
Region 3	400 (87%)	1 (<1%)	57 (14%)		458
Region 4	1 (1%)	23 (16%)	117 (83%)		141
Region 5	17 (13%)	2 (2%)	107 (85%)		126
Region 6	5 (2%)	63 (23%)	205 (75%)		273
Region 7	105 (72%)	1 (1%)	39 (27%)		145
Unknown Region	4 (100%)				4
Out of Province	11 (100%)				11
Totals	1,289 (57%)	97 (4%)	881 (39 %)	2 (<1%)	2269

Of the 2269 LPN employees, 1205 (53%) work in the private sector, and 1038 (46%) work in the provincial government, which includes the Department of Health and Wellness, Family and Community Services, and the Regional Health Authorities.

When looking at Health Region, of the 2269 LPN employees, the majority, 583 (26%), are in Region 1 (157 are in Region 1SE, 110 are in 1B, and 316 are in Region 1 unknown), 528 (23%) are in Region 2,

458 (20%) are in Region 3, 273 (12%) are in Region 6, 145 (6%) are in Region 7, 141 (6%) are in Region 4, and 126 (6%) are in Region 5. Health Region was unknown for 4 (less than 1%) of LPN employees.

In an analysis by Health Sector, 1171 (45%) of the 2587 LPN jobs are in the nursing home sector, followed closely by the hospital sector with 1156 (45%) of the jobs, 116 (6%) are in the private sector, 59 (2%) are in special care homes and 36 (1%) are classified as “other”. The remaining 4 jobs (less than 1%) are in the academic sector.

Field of Practice for the majority (97%) of LPN employees is the clinical area.

An analysis by Employment Status reveals that of the 2587 LPN jobs, 1035 (40%) are permanent full-time, 797 (31%) are permanent part time, 730 (28%) are casual, 15 (1%) are on leave, and 10 (less than 1%) are unknown. A further analysis to show “how” this workforce is working reveals that in the public sector 48% of LPNs are working in the 0.76-1.0 FTE range, 21% are working greater than 1.0 FTE, 16% are working in the 0.51-0.76 range, and 15% are working less than 0.50 FTE. Factoring in private sector LPNs the FTE breakdowns are roughly consistent.

Gap Analysis

The forecasting exercise shows that there will be a fluctuating shortage/surplus of LPNs over the five-year forecast horizon. Beginning in 2002, the system is estimated to be experiencing a deficit of over 60 LPNs, which diminishes to within the 30 range in 2003, then turns into a slight surplus in 2004, and then there is a forecast shortage of upwards of 30 LPNs in the system in 2005 which rises to a shortage of around 90 by 2007.

These numbers were derived based on available information and assumptions on:

- Successful recruitment of 100% of New Brunswick graduates from the NBCC LPN programs
- No recruitment of LPN grads from NSCC or Holland College
- Successful recruitment back into the LPN workforce of 50% (in both 2002 and 2003) of registered LPNs who indicate they are either unemployed and seeking work as an LPN, or are employed outside the occupation and are seeking work as an LPN

Furthermore, supply and demand side impacts on the occupation were identified in the focus group exercise, and include the following:

- Limited scope of practice is a negative impact on supply (recruitment and retention)
- Insufficient funding for training seats is a negative impact on supply
- LPN grads supply other occupations (such as Rehab Assistants, EMTs, ECG Technician, Addiction Workers).
- Skill mix ratio adjustment of LPN to RNs is a positive impact on demand for LPNs

In summary, the Licensed Practical Nurse workforce is predominantly female (91%) with an average age of 43 years, has a low to moderate percentage of bilingual members (36%), and is employed largely on a permanent full-time or permanent part-time basis (70%), equally split between the nursing home and hospital sectors. Nearly 20% of this workforce work greater than 1.0 FTE. There are local sources of supply in both Official Languages. There is currently a slight shortage in this workforce, which fluctuates between slight surplus followed by another slight shortage over the forecast period. This shortage has the potential to be exacerbated depending on the timing and extent to which changes in RN to LPN skill mix ratios are implemented, as well as the rate at which LPNs supply other occupations.

5.7.2 Registered Nurses (RNs)

Trends and Issues

The registered nursing workforce in Canada has been the subject of several studies in the last decade. Newly released studies by the Canadian Institute of Health Information (the Supply and Distribution of Registered Nurses in Canada, 2001) and the Canadian Nurses Association (Planning for the Future: Nursing Human Resource Projections, June 2002) clearly indicate a significant shortage of this professional group. Nationally, there was a modest increase of 1.2% of Registered Nurses (RNs) over the past five years, but this number has not kept pace with population growth with 74.3 RNs employed for every 100,000 Canadians in 2001 as compared to 76.0 in 1997. New Brunswick exceeds this national average with 97.6 RNs per 100,000 population.⁴³

Those RNs working in the system currently are, on average, a middle-aged workforce. The national average age of RNs employed in nursing in 2001 was 43.7 years, slightly older than the mean age of 42.4 years in New Brunswick. It is expected that over the next fifteen years in Canada, half of the current nurses will exit the workforce. Data from the 2001 CIHI Registered Nurses database indicate that for New Brunswick, the percentage of nurses eligible for retirement is as follows:

Table 9 – RNs Retirement Eligibility

Age	Currently Eligible	Eligible in Next 10 years
55+	10.6% (14.4%)	42.4 % (49.4%)
60+	2.8% (4.5%)	24.9% (30.7%)
65+	0.4% (0.8%)	10.6% (14.4%)

(National statistics in brackets)

Proposed introduction of a phased-in retirement plan for nurses has the potential of creating a compounding effect on what is already a significant challenge in planning for adequate replacement for an aging nursing workforce.

⁴³ Supply and Distribution of Registered Nurses in Canada, 2001. Canadian Institute for Health Information.

Add to this picture the fact that New Brunswick has a significant reduction in the number of graduates over the past five years, which has not been adequate to replenish supply at a rate comparable to demand. In 1997, the province's five diploma school programs were no longer offered with the transition to baccalaureate education. Between 1990-1997, the number of graduates annually from diploma and university programs exceeded 330 on average. According to statistics compiled annually by the Nurses Association of New Brunswick, in 1998, the first year in which only graduates from the university programs were eligible to write national registration exams, there were only 103 nursing graduates coming into the workforce. In 1999 this number increased to 211, in year 2000 there were 205 graduates, and in 2001 there were 271 graduates. The cumulative impact of the past five years has been a net supply deficit of approximately 530 graduates from provincial programs.

Nurses coming into New Brunswick from other provinces and other countries is also a source of supply. In the five-year period between 1997-2001, there was an average of 66 new entrants from other provinces seeking registration endorsement in New Brunswick and less than 2 per year from out of country.⁴⁴

The cumulative impact of these changes to health policy, associated reductions in jobs, migration to a higher educational standard, and reductions in output, has created a real shortage of RNs in New Brunswick and across Canada. According to the Nurses Association of New Brunswick registration statistics, there has been a 3.9% cumulative decrease in the numbers of nurses registered in all categories of membership between 1997-2001. This translates into 141 fewer nurses registered to actively practice in the province since 1997.

As of 2001/2002, 380 funded seats are available in the two university programs in the province: 230 at the four University of New Brunswick campuses/satellite sites and 150 at three Université de Moncton campuses. It must be noted that the UNB Saint John Campus has accepted considerably less students over the past two years than the 80 seats for which they were funded when the transition to an all baccalaureate education occurred. In 2001, only 60 students were admitted to this campus and in 2002 admissions were down to 40 students. There was no shortage of qualified applicants for these seats; however, the UNB Saint John BN program cites faculty to student ratio and faculty workload as the reason for reducing its student intake. In a time of shortage of RN resources, this situation requires urgent attention in light of the fact that Saint John is home to the largest regional, tertiary clinical facility in the province and the Regional Health Authority 2 reports a shortage of 57 permanent and 50 temporary RN positions as of July 2002, or 20% of the provincial RN shortage. The number of students enrolled in New Brunswick registered nursing education programs for 2002 are as follows:

Table 10 – Students Enrolled in RN Programs

University	Year 1	Year 2	Year three	Year 4	Total
University of New Brunswick	234	182	182	134	732
Université de Moncton	159	161	133	95	548
Total	393	343	315	229	1280

⁴⁴ Registrar, Nurses Association of New Brunswick, June 2002

There is currently a strong interest in the nursing programs across the province with wait lists of qualified applicants at both universities. This situation can largely be attributed to the market demand and promise of jobs in this profession.

Given the quotas for funded seats, current attrition rates averaging 24% over the past five years, current enrollment levels, and the rate of retirements and non retirement/death related attrition from the workforce, the rate of replenishment of the workforce will still fall short of market demand for replenishment of this workforce.

A recently released report by the Canadian Nursing Advisory Committee⁴⁵ that was commissioned by the national Advisory Committee on Health Human Resources identified the need to increase the numbers of nurses entering the workforce as one of the Committee's three recommended priorities for action. Specifically, the Committee report recommends that governments support the preliminary recommendations of the Senate Standing Committee on Social Affairs, Science, and Technology (Volume 5, 2002) to ensure nursing education programs receive additional funding to expand their enrollments. The Canadian Nursing Advisory Committee recommends that, as part of a coordinated national nursing education strategy that the number of new, first year seats in schools of nursing for RNs be increased by 25% commencing September 2004. This represents an additional 1100 new seats across the country, and would translate into an additional 95 seats in New Brunswick. The Committee further recommended that nursing seats continue to be increase by 20% per year over the subsequent four years. Further recommendations from this report acknowledge the need to increase graduate level education programs to prepare adequate numbers of nursing professors to accommodate this increase in enrollments.

Implementing this recommendation requires close inspection of the current faculty profile here in New Brunswick. The inventory database reveals 94 nurses who are employed in the university education sector. Of this number, 43 (46%) are between 45-54 years of age and 32% are in the retirement zone of 55+. The requirement for Ph.D. qualification to teach is impacting the capacity of many faculty members who are presently Masters prepared and are pursuing doctoral studies part time while carrying faculty workload or are on educational leaves to fulfill this requirement. Currently, 8.5 % of all university nurse educators in the database state Ph.D. as their highest level of education with 72% citing Master's education as the highest attained. The pool of Ph.D. prepared nurses across Canada is limited at present and the process to increase that complement over time is a slow one given the demand for faculty.

Funding support for graduate nursing education is therefore also required not only for faculty, but also to ensure adequate numbers of Master prepared nurses to assume clinical leadership roles such as Clinical Nurse Specialists and Nurse Practitioners.

Funding support for graduate nursing education is also required to ensure adequate numbers of Master prepared nurses to assume clinical leadership roles such as Clinical Nurse Specialists and Nurse Practitioners.

Graduates from the Refresher Program are also a source of supply of RNs who are interested in returning to the workforce. The following table highlights the activity in this area over the last four years.

⁴⁵ Our Health, Our Future: Creating Quality Workplaces for Canadian Nurses. Final Report of the Canadian Nursing Advisory Committee. September 2002

Government announced payment of refresher tuition fees as part of its three-year nursing recruitment strategy that may have contributed to the marked increase in admissions during 2000. This is a six-month modular program that has a self-directed-learning structure with a clinical component. Intake can occur at any time in a calendar year, therefore, the “number completed” in the following table cannot be compared to the numbers admitted in the same year as a means of determining success rates. The completion rate however is very high for this program, with only 9 not completing, for a variety of reasons, out of the 106 admitted over the past four years.

Table 11 – RNs Completing Refresher Course

Calendar Year	Number admitted	Number Completed
2001	18	12
2000	51	31
1999	32	14
1998	5	8
TOTAL	106	65

Staffing Models

The ability to recruit nurses to New Brunswick is hampered due to a number of factors including the lack of available full-time positions. In an effort to redress this situation, one of the elements of the Nursing Resources Recruitment and Retention Strategy, announced by Government in 2001, provided \$562,000 in funding to convert casual nursing positions (RNs and LPNs) in the nursing home and hospital sectors to full time positions, at an annualized cost of \$8,000 per RN (\$5,000/LPN). In 2001-2002, 46 RN positions were converted in the hospital sector and 4 positions in the nursing home sector. In 2002-2003 an additional 6 RN positions expect to be converted in the nursing home sector for a total of 56 full-time positions. There continues to be significant room for improvement in this area as employers struggle to maintain stable staff complements in an industry that operates 24 hours a day, 7 days a week. The shortage of workers has depleted the availability of staff who are available to work on a casual basis as these individuals are working at least full-time hours filling temporary vacancies created from a growing number of staff off on leaves due to sickness, long term disability, or maternity. There is an urgent requirement for a different staffing model to ensure safe practice and to prevent the continued burnout of increasingly fatigued and aging workforce.

Scope of Practice

On May 8, 2002, the Government introduced a Bill in the Legislature that allows registered nurses to expand their scope of practice. In some instances, this enabling legislation serves merely to legitimize the practice of many rural registered nurses, in particular. Details about the expanded role are expected to be finalized by an implementation committee over the Summer 2002; however, it is expected that nurses will be given legislated authority to assess, treat, and release patients with minor ailments in emergency rooms, order restraints for patients in nursing homes, and, with further training, provide a more advanced level of assistance in operating rooms. The intent of expanding the role of nurses in the health care

system is to provide consumers with appropriate, timely access to the right level of services by the most appropriate health care provider. It is expected that this will reduce waiting times for services where nurses' scope of practice has been expanded. It is also anticipated to improve nurses' job satisfaction.

The Government's strategy to optimize the utilization of all categories of nursing personnel also involves Licensed Practical Nurses (LPNs). Implementing the intent of this strategy has the potential to impact the demand for both RNs and LPNs across the health system as the respective scopes of practice become better articulated and understood and skill mix ratios are subsequently reviewed in the various service sectors. In all instances the acuity and stability of the patient and the predictability of their response to treatment is most often the criteria by which appropriate allocation of resources is determined, in conjunction with the service delivery model employed in the sector. These patient-centric criteria should be applied irrespective of patient location across the continuum of service.

Competitive Forces

There is still considerable competition for nursing resources across North America. In particular, border communities in New Brunswick are not able to compete with U.S. employer job offers, and anecdotally, there are reports of considerable leakage of New Brunswick nurses across the border. The informed opinion of nurses that participated in focus groups indicates many new nurse graduates are working out their return for service agreements associated with any bursary support and then leaving the province due to a variety of reasons: attractive employment offers of full-time employment with incentives, promises of better working conditions with more reasonable workloads, an opportunity to travel and experience new things, etc.

Nurses constitute one of the largest occupational groups in the health care systems of Atlantic Canada and supply and demand issues have become increasingly competitive in terms of recruitment activity both from within the Region and from other jurisdictions in Canada and the United States. In light of newly negotiated collective agreements in Newfoundland and Prince Edward Island, New Brunswick currently ranks fourth in Atlantic Canada for new entries to the workforce and second for experienced workers. This places the province at a distinct disadvantage not only within the Atlantic Region, but also within the larger North American marketplace in terms of attracting new entrants to the province's workforce. Despite the strong position for experienced nurses, this should be cause for some concern given the importance of the profession to the overall well being of the health care system and the future demand for this occupational group.

Data Analysis

There are 8259 Registered Nurses (RNs) in the inventory database, 7872 employees (individuals with jobs), and 7872 jobs. The number of employees and jobs are the same for this occupation, different than most others, because the Nurses Association of New Brunswick membership form captures only one job per member, thus any secondary jobs do not show up in the database. This is a limitation to the analysis, and as such, for future data capture, it is recommended that more than one job be captured at an individual member level. The registration status of the 8229 RNs is as follows: 7700(94%) are active, 451 (5%) are inactive, and 78 (1%) are retired.

A demographic analysis of this group reveals that the majority, 7930 or 96%, of RNs are female and the average age of this occupation is 43 years (excluding retired RNs). A further age group analysis shows that this group is fairly evenly split between the 25-40 age group (37%) and the 40-50 age group (34%), while the 50+ age grouping holds 29% of RNs. The majority of those in the 50+ age group are in the 50-54 range (15% of the total), while 10% are in the 55-59 range and 4% are over 60. This analysis incorporates retired members as well.

To determine number of RNs in the potential retirement zone, currently and within the five-year forecast horizon, the retired portion of this group must be removed from the analysis. In total, 78 RNs have indicated on their membership form that they are “retired”. As such, 34 of the 348 RNs who are over 60 have indicated they are retired, similarly, 28 of 787 are in the 55-59 age group, 10 of 1226 are in the 50-54 age group, and 6 others under the age of 50 have indicated they are retired. Extracting these RNs from the analysis reveals that 1072 RNs (13% of the total) are currently in the potential retirement zone (55+), and another 1216 (15% of the total) will enter this zone within the five-year forecast horizon. Thus in total, 2288 RNs (28% of total non-retired RNs) are in or will be in the potential retirement zone in within the five-year forecast horizon of this study. As of work done in 2001, the average age of RNs at retirement in Canada is currently 56 years of age.⁴⁶

In addition to zeroing in on retirements, the recent legislative change extending allowable maternity leave from six months to one year greatly impacts a workforce such as nursing which is predominantly female. The proportion of female workforce in childbearing age range is an important statistic when commenting on the fluctuating stability of the workforce. The impact is more temporary in nature than retirements, but nevertheless provides human resource planning challenges. A combined gender/age analysis to determine portion of this group who are in the maternity leave zone reveals that in the 25-40 age grouping there are 2872 RNs, this comprises 36% of the total female RNs, and 35% of the occupation in total.

Further demographic analysis shows that of the 8229 RNs in the database, 4477 (54%) are English language ability only, 3556 (43%) have both English and French ability, and 225 (3%) are French only language ability. The table below provides an analysis of language ability by region for the 7872 RN employees within the occupation. The numbers in the brackets indicate the percentage of all RN employees in the health region with the stated language ability.

⁴⁶ Dussault, G. et al. “The Nursing Labour Market in Canada: Review of Literature: Report Presented the Invitational Roundtable of Stakeholders in Nursing.” 2001.

Table 12 – RNs Language Ability

RN Employees	English	French	English and French	Region Total in Occupation
Region 1	832 (44%)	39 (2%)	1024 (54%)	1895
Region 2	1664 (90%)	2 (<1%)	191 (10%)	1857
Region 3	1306(74%)	11 (1%)	459 (26%)	1776
Region 4	6 (1%)	92(18%)	416 (81%)	514
Region 5	30 (7%)	14 (3%)	396 (90%)	440
Region 6	20 (3%)	53 (7%)	657 (90%)	730
Region 7	266 (68%)	1 (<1%)	126 (32%)	393
Unknown Region	13 (36%)	0	23 (64%)	231
Out of Province	130 (56%)	2 (1%)	99 (43%)	231
RN Totals	4267 (54%)	214 (3%)	3391 (43%)	7872

The level of training information contained in the database shows that 6439 RNs (78%) have a diploma/certificate as entry to practice, while 1789 RNs (22%) have a Baccalaureate Degree, and 1 RN has a Masters Degree. To further articulate the educational preparation of our RN workforce, an additional data field, “highest level achieved” shows that 939 RNs (11%) have a Baccalaureate as their highest level achieved, 579 (7%) have highest level as a diploma/certificate, 123 (1.5%) have a Masters as their highest level, and 12 RNs have a Doctorate as highest level, and 451 RNs (5.5%) have some other degree as their highest level achieved.

Analysis by Health Region shows that of the 7872 RN employees/jobs, the majority are in Regions 1 and 2, with 1895 (24%) and 1857 (24%) employees, respectively. Region 1 is broken down by 823 (43%) in South East (1SE), 28% in Beauséjour (1B), and 253 (28%) for which 1SE or 1B is not identified or not applicable. The rest of the regional breakdown is as follows: Region 3 has 1776 (23%) of RN employees/jobs, Region 6 has 730 (9%), Region 4 has 514 (7%), Region 5 has 440 (6%), and Region 7 has 393 (5%).

Employment Sector analysis shows that of the 7872 RN employees/jobs in the database, 6209 (79%) are in the provincial government, which includes the Department of Health and Wellness, Family and Community Services, and the Region Health Authorities. The next highest number of employees/jobs are in the private sector (1281 or 16%), and then 189 (2%) in the “other” category, which also includes out of province/country. There are 119 (2%) in provincial government other, and 65 jobs with the Federal Government.

Health Sector analysis reveals that of the 7872 RNs employees/jobs, the majority (5355 or 68%) are in the hospital setting, 739 (9%) are in a nursing home, 413 (5%) are with Extra-Mural, 250 (3%) are in the private sector, 238 (3%) are with public health services, 189 (2%) are in the “other” category, 185 (2%) are in a physician’s office, 151 (2%) are in an academic setting, 154 (2%) are with government, and the remainder are in mental health services and community health centers.

At a Field of Practice level of detail, the database shows that 7041 of the 7872 RN employees (90%) work in the clinical area, 320 (4%) are in management, 243 (3%) are in “other”, 222 (3%) are in education, and

23 are in research. The “other” category may include those working in consultant roles, sales roles, and also includes those RNs for which Field of Practice was not known.

There are two database elements that describe “how” the workforce is working. These are “Employment Status” which is populated for all employed individuals and “Occupation Status” which is populated for all individuals whether they are employed or not. The following analysis paints the picture of “how” RNs are working by analyzing both of these elements.

Of the 7872 RN employees/jobs, the majority (4491 or 57%) are permanent full-time, while 2228 (28%) are permanent part-time, 838 (11%) are casual, 177 (2%) are permanent temporary, 118 (1%) are on leave, and the remainder, 21, are unknown.

Analysis of FTEs reveals that 48% of RNs indicate they are in the 0.76-1.0 FTE range, 26% indicate they are >1.0 FTE, 16.5% are in the 0.51-0.75 range, 5.3% are in the 0.26-0.50 range, and 4% are >0.25 FTE. These FTE breakdowns are roughly equivalent between SPD data and HRDB data.

Occupation Status is based on 8229 individuals who are RNs, and of these 7871 (95%) are employed in their occupation, 106 (1%) are retired, 101 have indicated they are unemployed and not seeking work in the RN occupation, while 88 individuals have indicated they are unemployed, but seeking work within the RN occupation. Additionally, 20 RNs have indicated they are seeking a refresher course and seeking work within the RN occupation, and 9 are working outside the RN occupation but seeking work within the occupation. This information extremely useful in human resource planning, considering there are potentially a total of 108 RNs who are either unemployed and seeking a job as an RN (88), or are seeking a refresher course to work as an RN (20).

Gap Analysis

Given the supply and demand factors presented in the analysis above, it is apparent that a significant shortage of registered nurses will be experienced over the five-year forecast horizon. Beginning in 2002 with an estimated deficit in the system well over 400 RNs, the shortage rises dramatically in 2003 thru 2007 with shortages ranging from over 900 in 2003 to over 1000 in 2007.

These numbers were derived from available information on:

- Successful recruitment of a realistic percentage of outputs from nursing programs in Atlantic Canada (a total of 244-283 grads per year entering the New Brunswick system)
- Assumption that 50% of 117 RNs who have indicated they are seeking work as an RN, will come back into the workforce in 2003 and add to “current stock”
- Assumption that beginning in 2004, the nursing supply skill mix ratio changes to incorporate a higher ratio of LPNs to RNs, through a 1% reduction of the RN workforce per year, in years 2004, 2005, and 2006 (which equates to roughly a 70 RN reduction or position conversion each year)

These estimates also incorporate the following supply side information as articulated by the profession in the focus group portion of this exercise:

- Workload/quality of worklife as a negative impact on supply (retention)

-
- Disconnect with new grad work readiness and employer expectations is a negative impact on supply (recruitment)
 - Lack of full-time positions for new grads is a negative impact on supply (recruitment)

These estimates do not take into account the proposed Phased-In Retirement Program for Part III RNs.

In summary, the Registered Nurse workforce is predominantly female (96%) with an average age of 43 years, has a moderate percentage of bilingual members (43%), and is employed largely on a permanent full-time or permanent part time basis (85%), the majority working in the hospital sector. Nearly 26% of this workforce work greater than 1.0 FTE. There are local sources of supply in both Official Languages. There is currently a shortage in this workforce, which doubles over the forecast period. Given this magnitude of shortage and the rate of entry of new supply, New Brunswick will be challenged to ensure adequate replenishment of this workforce in the absence of targeted strategies.

5.7.3 Clinical Nurse Specialist

Nurses working as Clinical Nurse Specialists in New Brunswick provide advanced nursing knowledge and skills acquired through considerable experience and Master of Nursing level educational preparation. They serve as mentors, providing professional practice leadership and contributing to advancing nursing practice and clinical nursing research in the workplace.

Data Analysis

There are 27 Clinical Nurse Specialists in the inventory database, 27 employees and 27 jobs/positions with 100% of the Clinical Nurse Specialist workforce employed in their occupation. The registration status of the 27 Clinical Nurse Specialist is as follows: 26 (98%) are active and 1 (4%) is inactive.

A demographic analysis by age reveals the average age of Clinical Nurse Specialists to be 45. All 27 Clinical Nurse Specialists in the inventory database are female. Only 6 (22%) are under the age of 40, 15 (56%) are in the 40-50 age range, 6 (22%) are over the age of 50, and thus could retire in the five-year forecast horizon.

A look at the language ability of the Clinical Nurse Specialist workforce shows that 15 (56%) have ability in English and French, while 12 (44%) have English ability only.

Of the 27 Clinical Nurse Specialist employees, 21 (78%) work in the provincial government, which includes the Department of Health and Wellness, Family and Community Services, and the Regional Health Authorities, 2 (7%) work in the private sector, and 4 (15%) work in “other”, which includes out of province positions

When looking at Health Region, of the 27 Clinical Nurse Specialist employees, the majority, 11 (41%), are in Region 1 (with 7 in Region 1SE, and 4 in 1B), 6 (22%) are in Region 2, 4 (15%) are in Region 3, Regions 5 and 6 have 2 (7%) each, and Regions 4 and 7 have 1 (4%) each.

In an analysis by Health Sector, 17 (63%) of the 27 Clinical Nurse Specialist jobs are in the hospital sector, 2 (7%) are in mental health services, 1 (4%) in each of academic, extra mural, physician offices, and public health services and 4 (15%) indicate “other” as Health Sector. And at a finer level of detail, 20 of the 27 Clinical Nurse Specialists (74%) are in the clinical field of practice, 4 (15%) are in management, and 3 (11%) are in education.

An analysis by Employment Status reveals that of the 27 Clinical Nurse Specialist jobs, the majority (22 or 81%) are permanent full-time, while 2 (7%) are permanent part-time, 2 (7%) are permanent temporary, and the remaining 1 (4%) is casual. An FTE analysis of this group shows that the majority (57%) work in the 0.76-1.0 FTE range; however, a relatively large percentage work >1.0 FTE (31%), while 9% work in the 0.51-0.75 range, and 3%, or 1 worker, working <0.25 FTE.

5.7.4 Nurse Practitioner (NP)

There is no analysis of Nurse Practitioners (NPs) at this time as there are currently none in the New Brunswick health care system that are working in this capacity, as yet. However, the Government recognizes that there is a critical need to develop a strong, community-based infrastructure of primary health care services designed to ensure equitable access to essential primary care for all citizens. As part of the effort to respond to this requirement, a series of Bills were passed in the Spring 2002 sitting of the New Brunswick Legislature, which resulted in the introduction of Nurse Practitioners as a new category of health professional in New Brunswick.

NPs are prepared with advanced nursing education with a specific focus on assessment, diagnosis and health care management and have the knowledge, skills, and authority to order certain diagnostic tests and prescriptions for certain drugs. The implementation strategy for this new health professional is under development by the Department of Health and Wellness with an anticipation that 15 positions will be converted from existing RN positions in 2002/2003. It is expected that these positions will be established in five settings over the next year: Nursing Homes, newly established Community Health Centres, Emergency Departments, Community Mental Health Clinics, and Doctors Offices. NPs will work in a collaborative delivery model with physicians and other health professionals. It is expected that these will be salaried positions.

Future demand for, and uptake of Nurse Practitioners in the province is difficult to predict at this stage pending an assessment of the utilization of this new service by New Brunswickers. As consumers and health team colleagues become more familiar with the role and comfortable with the competencies of the NP, the demand for service from this health care provider may increase. Each province in Canada that has introduced this new health care provider has indicated among the criteria central to success are the development of an appropriate education program with adequate and sustainable funding, and a commitment of funding of NP positions outside hospitals.

There is an issue as to the source of supply of Nurse Practitioners to support their introduction in New Brunswick. The minimal educational requirement for employment of NPs in New Brunswick is under discussion. Currently, the University of New Brunswick Fredericton Campus (UNBF) offers a part-time Nurse Practitioner program as part of their Master in Nursing program. Presently, there are 24 students enrolled part time in this program with only two expected to graduate in 2002/2003. The Faculty of Nursing at UNBF have submitted a proposal to Government outlining a requirement for additional

resources to ensure sustainability of this program in addition to providing a full-time study option, in an effort to supply sufficient NPs to meet anticipated demand. The Université de Moncton has plans to offer Master level NP education with both a full-time (complete in 2 years) and a part-time (complete in 5 years) study option. This proposal will be presented to Université de Moncton's Senate in September 2002 with anticipated startup commencing in September 2003. Considerable interest exists from potential students and intake is set at six students for each of years 1 and 2, eight students in year three, and ten students per year thereafter.

In the absence of locally produced NPs, out of province recruitment will be required for Government to be realize its initial objective of 15 NPs in this current fiscal year. Data available from the 2001 CIHI report on the Supply and Distribution of Registered Nurses in Canada indicates that there are currently 620 NPs in Canada, as reported in data obtained from Newfoundland and Labrador, Ontario, Alberta, and the Yukon. Since this CIHI report was produced, new or amended legislation allows for the practice of NPs in Nova Scotia, Manitoba, Saskatchewan, and now also New Brunswick. Other jurisdictions are working on implementing similar legislation.

There is currently no educational standard for the preparation of NPs across the country, with some jurisdictions offering post-graduate diploma programs and others post graduate, Master level programs. With the introduction of this new health care provider, there will be a need for a mechanism, such as a national examination for the NP, to establish competency standards for the consumer of the services and for purposes of reciprocity facilitating interprovincial mobility.

Ontario currently has 467 registered primary health care NPs not all of who are employed full time. However, the province is challenged in their ability to recruit nurse practitioners to rural communities in that province where the need is the greatest. In response to rural demand for this practitioner, the Ontario Government recently announced \$3 million in new funding, to create additional primary health care nurse practitioner positions, as first points of contact in communities who have a chronic shortage of local physicians. Ontario may be source of supply initially for some parts of New Brunswick; however, the demand for this practitioner is growing.

Nova Scotia has 4 primary health care pilot projects underway involving 4 licensed nurse practitioners. Recent announcements by that province indicate an additional 8 NPs are being hired in 2002 to support primary health care service requirements.

Dalhousie University offers a Primary Health Care Nurse Practitioner program through distance education. The number of seats in this program will be impacted by market demand with 8 NP positions to be funded by government next year. There is also a Specialty NP stream offered in Dalhousie University's Master in Nursing Program. The latter program is designed for NPs working in acute care environments and several extended role nurses who work in areas such as emergency departments are pursuing Specialty NP education.

5.8 Dental Groups

The original RFP included the dental groups as part of the health occupations to be studied, analyzed, and forecasted. This occupation is primarily private sector, with The New Brunswick Dental Society (NBDS) being the Registrar for Dentists, Dental Hygienists, and Dental Assistants. The Executive Director of the

NBDS indicated that a long-term, four-part project is being conducted by Human Resources Development Canada (HRDC), and the Canadian Dental Association (CDA), in cooperation with the provincial dental associations/societies to analyze and forecast health human resource requirements for the dental occupations. A series of meetings/discussions with NBDS, HRDC, and the College of Dental Surgeons of British Columbia were conducted to discuss inclusion of these groups in the HHR inventory database. The NBDS did not feel this current study would provide sufficient benefit over and above the Canadian study to warrant the effort on the part of the society and its membership (dentist, dental hygienists, and dental assistants) for data collection. They chose not to provide information at the individual level. After the meetings and discussions with HHR Steering Committee, the decision was reached not to include dental occupations in the study at an individual level.

The following information on the numbers of individuals in the dental occupations in the province is included for review. These numbers are not included in the total 17,474 individuals in the inventory database as no individual information was provided. The NBDS provided the following information to Fujitsu Consulting.

- 272 practicing Dentists in New Brunswick, 247 (91%) of the Dentists are male
- 241 Dental Hygienists
- 328 Dental Assistants

NBDS indicated there is shortage of supply and a high demand for Dental Hygienists in New Brunswick and across Canada. In some cases, vacant positions have been advertised for up to six months.

There is a strong steady demand for Licensed Dental Assistants in New Brunswick, but there also seems to be an adequate supply at present.

5.9 Other Occupations

5.9.1 Ambulance Attendant / EMT / Paramedic

Trends and Issues

In New Brunswick Ambulance Attendants/EMTs/Paramedics is not a regulated occupational group and currently there is no uniform entry to practice standard to the occupation. At the time of publication of this report, Alberta is the only province in Canada where paramedics are self-regulated. Nova Scotia, Ontario, and Saskatchewan are moving toward similar legislation. In New Brunswick, the New Brunswick Paramedic Association has indicated it has plans to introduce a Private Bill to Legislative Assembly.

Key service delivery issues were identified for this occupational group:

- Significantly different demands for urban versus rural practice settings. The low number and level of acuity of calls in several rural communities and remote areas make recruitment and retention an issue

for these communities. EMTs/Paramedics are not able to get full-time work and are challenged to maintain their competencies/skills due to the nature of the services they are called upon to provide.

- Lack of trained French-speaking EMT/Paramedics. The Maritime Medical School of Paramedicine stated there are difficulties filling the seats in the French Program in Bathurst. Of the 22 seats available at this site, only 8 were filled last year and 6 are registered for September 2002.
- Discussions surrounding introducing a new standard that requires two qualified EMTs/Paramedics per call have not been implemented due to the current staffing and credential profile of the respective ambulance services across the province.
- The impact of introducing new standards for both entry to practice and for practice on the current volunteer versus paid staff.
- The scope of practice of this occupational group is extremely variable across the country and the Agreement on Internal Trade is challenged to harmonize the various provincial practices.

Nationally, the scope of paramedics' practice continues to evolve from one of reactive emergency response to a more proactive emergency health service. As the acute care hospital sector continues to be rationalized, the need for a solid, acute care, out-of-hospital system becomes more critical. In consultation with a wide range of key provincial and national stakeholders, the Paramedic Association of Canada has developed a National Occupational Competency Profile, which has become the national benchmark for education and clinical standards.⁴⁷ New Brunswick however has not yet adopted these standards. The impact of doing so on those currently practicing in the system will need to be determined, particularly for those who work in a voluntary capacity. A transition strategy that encompasses prior learning assessment and a means by which to ensure the minimum standard of competency is met will be necessary.

Source of Supply

In New Brunswick, the Maritime School of Paramedicine, owned and operated by Saint John Ambulance, offers a Primary Care Paramedicine (PCP) program that is distributed through program sites in Saint John, Fredericton, Moncton, and Bathurst. This is the first year for this program, which has recently received accreditation status by the Canadian Medical Association (CMA).

New Brunswick Community College previously offered a similar program in the province, and the most recent graduates came into the system in the Spring of 2001. Previously, Saint John Ambulance offered EMT Level I training programs in the province, which were approximately 350 hours in length and were largely subsidized by the provincial government. The current PCP program is 1258 hours in length over 40 continuous weeks, for a tuition fee of \$11,000, the cost of which is borne by the student. This change has negatively impacted the number of applicants to some degree. Graduates of this program have a higher level of qualification (PCP) than is currently required by the Province, who currently require only and EMT Level I to practice. This may have a potentially negative impact on retention of graduates in

⁴⁷ The Need for Quality Health Care by Paramedics: Canada's Front Line of Emergency Medical Services. Paramedic Association of Canada submission to the Romanow Commission. April 2002.

New Brunswick. In addition to the need for New Brunswick to address the minimum qualifications for practice in this profession is the need to address the value of adding an advanced care paramedic classification into the health care delivery system in this province.

While programs are offered on a market demand basis, the Maritime Paramedicine School currently has a capacity of 22 students per site and had approximately a 17% attrition rate for the initial year of operation of this program. In 2001/2002, 66 students were enrolled in 4 sites and 55 students graduated. Students are primarily from New Brunswick with some seats going to Nova Scotia residents (3 in 2002 and 4 in 2001). Graduates have to register with the New Brunswick Paramedic Association to be granted a provincial “attendant number”, that is required for practice. Follow up graduate surveys that measure the employment rates of graduates are done by the School, but were not available at the time of writing.

Holland College also offers programs in Primary Care Paramedicine and Advanced Care Paramedicine. Holland College and the Nova Scotia Community College offer a part-time Advanced Care Paramedicine program for those who wish to continue working while upgrading their skills. Thirty students per year is the capacity for the ten-month PCP program. In September 2002, there were 33 students enrolled of which one was a New Brunswick resident. There is an attrition rate of only 2% from this program. The Advanced Paramedicine program is 13 months in duration, has an intake of 15 students and boasts a nominal attrition rate of about 2%. Fourteen students from all across Canada were enrolled in September 2002; however, there were no known New Brunswick students enrolled. The majority of these students return to their province of residence to practice.

Graduates from these programs work in ground and air ambulance jobs, emergency rooms in triage functions, emergency communication positions (911 dispatchers), and in offshore jobs.

Data Analysis

It is important to note that data for this group was received from multiple sources, which did not fully populate the MDS. In addition, bringing together these various data sources was challenging and problematic due to lack of completeness of each data source and lack of data standards. The New Brunswick Paramedic Association is aware of the data concerns and is revising their data collection and integrity process.

There are 1096 Paramedics in the inventory database, 951 of whom are employees working in 988 jobs (an employee can work in multiple jobs).

The registration status of the 1096 Paramedics is as follows: 998 (91%) are active, 17 (2%) are inactive, and the association status for 81 (7%) is unknown

A demographic analysis by age reveals the average age of Paramedics to be 37. The majority of Paramedics are under age 40 (565 or 52%). There are 242 (22%) in the 40 to 50 age range, 72 (7%) in the 50-54 age group, and 51 (5%) over the age of 55. This shows a total of 123 Paramedics who could retire in the next five years this represents 11% of the Paramedics workforce.

Analysis by gender indicates that 722 of the Paramedics are male (66%). Of the 371 (34%) who are female, 177 or 16% of the total Paramedic workforce are female and within the childbearing age range

(under 40), and as such, retirements and maternity leaves are not as large an issue for this group as for most others.

Analysis of language ability reveals that 686 Paramedics (63%) English only language ability, 231 (21%) have ability in English and French, and 57 (5%) have French only ability. A further breakdown for health region is shown in the table below. Table 13 provides an analysis of language ability by region for the 951 Paramedic employees within the occupation. The numbers in the brackets indicate the percentage of all the Paramedic employees in the health region with the stated language ability.

Table 13 – Paramedic Language Ability

Paramedic Employees	English	French	English and French	Unknown Language Ability	Region Total in Occupation
Region 1	72 (44%)	2 (1%)	67 (41%)	21 (13%)	162
Region 2	238 (85%)	(0%)	8 (3%)	33 (12%)	279
Region 3	203 (84%)	(0%)	19 (8%)	21 (9%)	243
Region 4	4 (7%)	25 (43%)	26 (45%)	3 (5%)	58
Region 5	13 (33%)	(0%)	20 (51%)	6 (15%)	39
Region 6	3 (4%)	27 (40%)	27 (40%)	11 (16%)	68
Region 7	56 (62%)	0	23 (25%)	12 (13%)	91
Unknown Region	9 (82%)	1 (9%)		1 (9%)	11
Out of Province					
Totals	598 (63%)	54 (6%)	191 (20%)	108 (11%)	951

For 660 (69%) of the 951 Paramedics employees, the employment sector is unknown, 282 (30%) of the Paramedic workforce are in the private sector, and 9 (1%) work in provincial government.

When looking at Health Region, of the 951 Paramedics employees, the majority, 279 (29%), are in Region 2, 243 (26%) are in Region 3, 162 (17%) are in Region 1, 91 (10%) are in Region 7, 68(7%) are in Region 6, 58(6%) are in Region 4, and 39 (4%) are in Region 5. Health Region was unknown for 11 (1%) of Paramedic employees.

In an analysis by Health Sector, 785 (80%) of the 988 Paramedics jobs are identified as being in public health services, for 183 (19%) of this workforce the health sector is identified as “other”, and 15 (2%) are in the academic sector. At a finer level of detail, 955 of the 983 Paramedics (97%) are in the clinical field of practice, 14 (1%) are in management, and 14 1% work in education.

Due to the large volunteer component of this group, the Employment Status for the majority of the 988 Paramedic jobs 689 (70%) is unknown, 132 (7%) are casual positions, 83 (8%) are permanent full-time, while 74 (7%) are permanent part-time, and 7 (1%) are permanent temporary. An FTE analysis of the public sector portion of this group (259 individuals) shows that the majority work >1.0 FTE (57%), which is the highest percentage within the public sector health care occupations. The remainder of the group are broken down on an FTE basis as follows: 17% of workers are in the 0.76-1.0 FTE range, 11% in the <0.25 FTE range, 7 % in the 0.51-0.76 range, and 8% in the 0.26-0.50 range.

Occupation Status is based on 1096 individuals who are Paramedics, and of these 296 (27%) are employed in their occupation, 1 individual is unemployed and seeking work in the occupation, while the occupation status for the remaining 799 (73%) is unknown.

Gap Analysis

It is estimated that there is a current shortage of less than 10 Ambulance Attendants/EMTs/Paramedics, which increases to a shortage of around 15 in 2003, and then changes to a slight surplus in 2004, and widening to a surplus of upwards of 80 workers in 2007.

These estimates are based on the following assumptions:

- Successful recruitment of 55 out of potentially 73 grads per year from the Maritime School of Paramedicine in Saint John, Fredericton, Moncton, and Bathurst
- No changes in the current method of service delivery or standards of competency are factored into these estimates, and as such, if there are legislative changes which prohibit the voluntary workers within this occupation, the estimated surplus would be an overstatement and could potentially be a shortage

In summary, the Ambulance Attendant/EMT/Paramedic group is relatively young (average age 37 years) and predominantly male (66%), with a low percentage of bilingual ability (20%). This workforce is currently in a minor shortage position, which widens slightly, then narrows and changes to a surplus by the end of the five-year forecast period. If changes to legislation and practice standards come into play within this forecast period, the large volunteer component of this workforce may be impacted and hence the estimated surplus could potentially be taken up by the system.

5.9.2 Dietician

Source of Supply

Education programs preparing dietitians are offered in four Atlantic Canadian universities. Graduates are eligible to apply for the one-year Canadian Dietetics internship program. Université de Moncton offers a four, to four and half year Baccalauréat en science (nutrition), the only French language program in the region. There are 7 new co-op stream students admitted annually and of the 46 students enrolled across the program in 2002, 36 were New Brunswick residents. Acadia University and Memorial University offer a collaborative Bachelor's program. Memorial students take 2 years in Newfoundland and the remaining two years at Acadia. Acadia reports 99 students enrolled across the program in September 2002, 13 of who are from New Brunswick. St Francis Xavier's Bachelor program has an intake capacity of 50 students. There are currently 100 students enrolled (30 in year one, 20 in each of years 2 and 3, and 12 in year four plus 12 transfer and 6 part-time students enrolled across the program). No students from New Brunswick reported. University of Prince Edward Island has 5 New Brunswick students out of 42 enrolled across its four-year Bachelor of Food and Nutrition program.

Data Analysis

There are 279 Dieticians in the inventory database, 254 of whom are employees working in 259 jobs (an employee can work in multiple jobs).

The registration status of the 279 Dietician is as follows: 252 (90%) are active, 11 (4%) are retired, 6 (2%) are inactive, 9 (3%) are temporary, and the registration status for 1 individual is unknown.

A demographic analysis by age reveals the average age of Dietician to be 39. A further analysis of the age range for Dieticians suggests that the majority 85 (30%) are in the 35-44 age range; however, the age for 78 individuals (28%) is unknown therefore detailed analysis on age is limited.

Analysis by gender indicates almost all the Dieticians are female (98%) and approximately 106 of them (39% of Dietician workforce) are known to be under the age of 40, and thus are considered to be within childbearing age range. One would expect this number to be higher if all unknown ages were distributed across the age groups. This is an important statistic to consider in human resource planning, given the one-year maternity leave option and the challenges this brings to planning for filling temporary positions.

A look at the language ability of the Dietician workforce shows that of the 279 Dieticians in the inventory database the language ability is unknown for 268 (96%). It follows that a meaningful analysis of language by health region is not possible given the available information.

Of the 254 Dietician employees, 169 (67%) work in the provincial government, 64 (25%) work in the private sector, and the remaining 21 (8%) are distributed among the provincial government other, federal government, “other”, and unknown.

When looking at Health Region, of the 254 Dietician employees, the highest percentage, 67 (26%), are in Region 1 (15 are in Region 1SE, 15 are in 1B, 37 are in Region 1 unknown), 50 (20%) are in Region 2, 49 (19%) are in Region 3, 30 (12%) are in Region 6, Regions 4, 5, and 7 have approximately 5% each, and of the remaining 9 Dieticians (4%) are out of province and the Health Region for 5 of them (2%) is unknown.

In an analysis by Health Sector, 104 (40%) of the 259 Dietician jobs are in the hospital sector, 34 (13%) are in public health services, 33 (13%) are in the nursing home sector, Extra Mural has 22 (8%), 16 (6%) are other, and the remaining 27 (10%) are distributed among academic, community health centres, government, and mental health services. And at a finer level of detail, 183 of the 256 dieticians (71%) are in the clinical field of practice, 32 (12%) are in management, 32 (12%) are in other, 6 (2%) are in education, and the remaining 3 (1%) are in research.

An analysis by Employment Status reveals that of the 259 Dietician jobs, the majority (160 or 62%) are permanent full-time, while 69 (27%) are permanent part-time, 12 (5%) are casual, 8 (3%) are permanent temporary, 1 (less than 1%) is on leave, and the employment status for the remaining 9 (3%) is unknown. A public sector FTE analysis reveals that the majority of dieticians (63%) work in the 0.76-1.0FTE range, while roughly 10% each work in the >1.0, 0.26-0.50, and 0.51-0.76 FTE ranges.

Occupation Status is based on 279 individuals, and of these 253 (91%) are employed in their occupation and 11 (4%) are retired. The remaining 15 (5%) are employed outside their occupation, unemployed, or unknown.

In summary, Dietitians are a predominately female workforce (98%) with an average age of 39 years old (based on only 70% of ages populated). This occupational group works primarily for the Provincial Government (67%), though spread across a variety of settings, such as hospitals (40%), public health services (13%), nursing homes (13%), and extra-mural (8%). The dietitian workforce works primarily on a permanent full-time and permanent part-time basis (89%), with a relatively low percentage working greater than 1.0 FTE. Given this picture, it would seem the greatest risk to this workforce with respect to HR planning is the high percentage of young female workers who are in within the childbearing age range. Thus, the potential for one-year maternity leaves are a concern given the difficulty in staffing short-term leaves of a temporary nature.

5.9.3 Public Health Inspector

Source of Supply

Individuals entering this occupation must obtain their education outside of New Brunswick. The University College of Cape Breton is the closest sources of supply and offers a four-year Bachelor of Technology (Environmental Health) Co-op that is approved by the national Board of Certification of Public Health Inspectors. Students may exit after 2.5 years and be eligible to write the national Canadian Public Health Inspector Institute examination, a process that includes a 12-week practicum.

Ryerson Polytechnical University in Toronto also offers an approved four-year Applied Science degree in Occupational and Public Health along with a two-year fast track program that has a combined intake capacity of 85 students per year and currently has 159 students enrolled across the programs (year one has 27 students, year two 15, year three 58, and year four 59). The four-year program has 20% attrition rate as opposed to the 5% attrition for the fast track program. Typically, 85% of graduates enter the marketplace immediately and 15% progress to graduate studies in this field. There has not been however, any New Brunswick residents enrolled in this program over the last several years.

The other approved programs in Canada are offered at BCIT, Concordia University College of Alberta, and the Saskatchewan Indian Federated College in Regina.

The Certificate in Public Health Inspection (Canada), CPHI(C), is granted by the Canadian Institute of Public Health Inspectors (CIPHI) to those candidates who fulfill the requirements set forth in the Regulations Respecting the Certificate in Public Health Inspection (Canada) and Governing the Board of Certification of Public Health Inspectors.

This Certificate is a certificate of qualification and is intended to meet the needs of the provinces, municipalities, federal government, and other employers of qualified Public Health Inspectors.

The New Brunswick Branch of the CIPHI is the agency that specifically represents the interests of Public Health Inspectors and the field of Environmental Health in the province of New Brunswick.

CIPHI Is currently conducting a national salary study that will be completed and posted on their website in January 2003.

Data Analysis

There are 46 Public Health Inspectors contained in the inventory database, 40 of whom are employees working in 40 jobs

The registration status of the 46 Public Health Inspector indicates that all the Public Health Inspectors (100%) in the inventory database have active membership in the professional association.

A demographic analysis by age reveals the average age of Public Health Inspectors to be 42. The majority of Public Health Inspectors are in the 25 to 40 age range (23 or 50%). There are 9 (19%) Public Health Inspectors between the ages of 40 and 49, and 12 (26%) in the 50-54 age range. There are 2 (4%) are in the 55+ age category and thus are currently eligible for retirement. Another 12 (26%) enter the retirement zone within the five-year forecast horizon, which leaves a total of 14 (30%) who could retire in the next five years.

Analysis by gender indicates that 33 (72%) Public Health Inspector are male. Further demographic analysis reveals that 12 (26%) are female and under the age of 40, and considered to be in the childbearing age range. Although the majority of this workforce is male, this is still an important statistic to consider in human resource planning, given the one-year maternity leave option and the challenges this brings to planning for filling temporary positions.

An analysis of language ability for the Public Health Inspector workforce is not possible as that information was not provided.

The provincial government is the employer for 100% of the Public Health Inspector workforce contained within the database. When looking at Health Region, of the 40 Public Health Inspector employees, the majority, 9 (22%), are in Region 2, Regions 1 and 3 each have 8 (20%), 5 (12%) are in Region 6, 4 (10%) are in Region 4, and 3 (8%) are in each of Regions 5 and 7.

In an analysis by Health Sector, all 40 (100%) of the Public Health Inspector jobs are in the government sector. The Field of Practice for all 40 of the Public Health Inspector employees in the database is recorded as Other/unknown.

An analysis by Employment Status reveals that of the 40 Public Health Inspector jobs, the majority (39 or 98%) are permanent full-time, while 1 (2%) is on leave. Data on FTEs for this group was not available for analysis.

Occupation Status is based on 46 individuals who are Public Health Inspector, and of these 40 (87%) are employed in their occupation, and the employment status of the remaining 6 (13%) is unknown.

Gap Analysis

It is estimated that this occupation will remain in relative equilibrium over the forecast period, as based on the following information and assumptions:

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- Successful recruitment of 1-2 students per year from one of the five training institutions in Canada (University College of Cape Breton is the closest supply source, but graduate information was unavailable; however, Ryerson alone graduates potentially between 50-60 students per year).
 - No new program requirements or additional demand in the system is included over the five-year forecast period

In summary, the Public Health Inspector workforce is predominantly male (72%), average age 42 years, working exclusively in the provincial government on a permanent full time basis. This workforce is currently in equilibrium and remains so over the forecast period. The potential for this situation to change is impacted by increased demand as a result of new and/or more rigorous public health/environmental standards and programs.

5.9.4 Health Records

Trends and Issues

It is evident that there will be a role for the Health Record Practitioner for the foreseeable future. The demand for the qualified technical skills offered by this occupation continues, while the supply is dwindling. Currently, it is the intent of the Canadian Health Records Association (CHRA) to transition to one type of health information professional, so that by 2010, only graduates from CHRA-recognized degree programs will be eligible for designation with the Association. However, due to the current market conditions, in March 2002 members of the CHRA voted overwhelmingly in support of the Association continuing to certify graduates of diploma programs that meet the new Learning Outcomes for Health Record Education (LOHRE) standards and that CHRA continue to accept proposals for implementation of new LOHRE programs.

Current coding backlogs in many hospitals across the province and initiatives such as the transition to ICD-10 standards are key drivers of demand for practitioners and have contributed to the present vacancy rate of 5 permanent positions reported the end of July 2002 by the Regional Health Authorities. A proposal to implement Emergency Department coding across the province will drive significant additional demand however, in the magnitude of 34 new positions. This demand may be tempered over the longer term however, through the evolution of new technologies in areas such as such as abstracting, which may improve productivity of health record technicians.

Currently, New Brunswick ranks third in Atlantic Canada in terms of wage rates for new entrants to this workforce and second for experienced workers. It should be noted however, that in Newfoundland, who rank fourth in both categories for this occupational category, contracts are currently under review.

Source of Supply

Health Records Practitioners are currently educated outside New Brunswick. The Canadian Health Records Association (CHRA) delivers a two-year certificate program through distance education. One hundred and forty students are currently enrolled, 3 of who are from New Brunswick.

George Brown College Ontario offers a two-year Diploma of Health Information Management with an intake capacity of 40 students and a current enrollment of 86 in the program; 56 in year one and 30 in year two with no New Brunswick students enrolled.

In September 2002, Dalhousie University launched a new four-year Bachelor of Health Information Management program that is recognized by the CHRA. The program has an intake capacity of 30 students with only 6 students enrolled in 2002.

In 1999, Learning Outcomes for Health Record Education (LOHRE), the new education standards for health record practitioner education program curricula, were adopted to reflect a blending of the former health record technician and health record administrator programs and to reflect the evolving demands for information technology within the profession. In 1995, there were 16 HRA/HRT programs recognized by CHRA. Education reform initiatives in several provinces, as well as individual college fiscal restraints, lead to the closure of 6 of these programs in the late 1990s. There are currently 5 LOHRE-recognized diploma programs, and 2 non-LOHRE-recognized diploma programs, still running outside Quebec. Five other diploma programs, 3 of which are in Quebec, decided not to apply for CHRA recognition.

The supply of graduates from these programs; however, is proving to be insufficient to meet the demands of the health industry. Several members from the Alliance of Health Record Associations in Canada have expressed concerns and recommendations regarding the CHRA's Education Reform. Stakeholders have expressed concern that the closure of college programs is negatively affecting the supply of coders, at a time when the industry indicates an increased need for this type of expertise, in particular, which is an outcome of a diploma program.

In the Spring of 2001, the CHRA received correspondence from 2 colleges (1 in New Brunswick and 1 in Ontario), stating their intent to establish HRP programs. They have requested CHRA recognition. However, the issue of a 2010 end date is a concern to them. Negotiations to establish a program in New Brunswick were still preliminary at the time of writing this report so there will be no local graduates in the foreseeable future.

Data Analysis

There are 69 Health Records Technicians, and 47 Administrators listed in the inventory database for a total of 116 in the health record occupations. For the 116 individuals, there are 60 Health Record Technician employees/jobs and 43 Health Record Administrator employees/jobs. The professional association registration indicates that 81 (70%) of the total group hold an active registration while the registration status for the remaining 35 (30%) is unknown. Because of like results and similarity in roles, the analysis for the Health Records Technicians and Administrators is presented as a group. For a finer analysis, the occupations listed separately in the database reports.

An age group analysis reveals the average age for both groups is over 40. The average age for the Health Record Technician is 41 while for Health Record Administrators the average age is 45. Of the 116 individuals, 34 (29%) are in the under 40 age group, 52 (45%) are in the 40-50 age group, and 30 (26%) are in the 50+ age category. There are 14 (12%) of the Health Record professionals over the age of 55+ and as such considered in the eligible retirement zone. In the five-year forecast horizon, there are 30 (26%) Health Records Technicians and Administrators who will come within potential retirement zone.

Of the 116 individuals in the Health Records Group, 114 (98%) are female. Furthermore, there are 33 (28%) of the Health Record Technician and Administrator workforce who are female and under the age of 40, and thus the potential for maternity leave is a factor with this group and must be considered in health human resources planning.

Information on language ability is not available for this group.

The provincial government is the employer for 100% of the Health Record Technician and Administrator workforce contained within the database. When looking at Health Region, of the 113 Health Record Technician and Administrator employees, the majority, 27 (24%), are in Region 2, Region 3 has 25 (22%) Region 1 has 21 (19%) (of which 11 are in Region 1 SE and 10 are in Region 1B), Region 6 has 12 (11%) Region 4 has 9 (8%), Region 7 has 7 (6%), and 5 (4%) are in Region 5.

In an analysis by Health Sector, 101 (98%) of the Health Record Technician and Administrator jobs are in the hospital sector. The Field of Practice for all 60 Health Record Technicians is recorded as “other”. For Health Record Administrators 34 (79%) of the 43 employees recorded “other” as their field of practice while the remaining 9 (21%) are in management.

An analysis by Employment Status reveals that of the 103 Health Record Technician and Administrator jobs, the majority (94 or 91%) are permanent full-time, 6 (6%) are permanent part time, and the remaining 3 (3%) are permanent temporary. Broken down on an FTE basis, the majority of both Administrators and Technicians are in the 0.76 to 1.0 FTE range, 77% and 70%, respectively. A similar percentage within each group work >1.0 FTE (20%), while only 4% of Administrators work <0.50 FTE, 10% of Technicians work <0.50 FTE.

Occupation Status is based on 116 individuals who are Health Record Technicians and Administrators, and of these, 103 (89%) are employed in their occupation, while the employment status of the remaining 13 (11%) is unknown.

Gap Analysis

The forecast model estimates a very slight shortage of Health Record Technicians and Administrators over the years 2002, 2003, and 2004. In 2005, this shortage widens to around 25 workers, which increases to a shortage of roughly 45 (or 43% of the Health Records workforce) by the end of the forecast period.

These estimates are based on the following information and assumptions:

- Successful recruitment of between 3 and 4 new graduates per year from three training programs (CHRA, George Brown College, and Dalhousie University), but no inclusion of graduates from an as yet unestablished New Brunswick training program
- Recognition of additional demand stemming from transition to new coding standards over the forecast period
- Scenario that new Emergency Room coding requirements will mean demand for an additional 10 workers per year in 2005, 2006, and 2007

In summary, Health Records Technicians and Administrators are predominantly a female workforce (98%), with average age of technicians being 41 years old, and administrators 45 years old. This group works exclusively in the public sector in the hospital setting, on a permanent full-time basis (91%). There is approximately 20% of the workforce working greater than 1.0 FTE. This workforce is currently in a relatively equilibrium state, but with significant potential over the five-year forecast horizon to be in a shortage position due to new coding requirements and a proposal to implement emergency department coding across the province.

5.9.5 Optometrist

Trends and Issues

In Canada, there are now three provinces (Alberta, New Brunswick, and Saskatchewan) and one territory (Yukon) where certified optometrists can prescribe topical medications to treat eye diseases, and remove foreign bodies from the eye. A key issue of concern for this occupational group is the desire to have their legitimate scope of practice recognized by the Province of New Brunswick and the ability to have a prescribed list of medically necessary treatments/services covered by Medicare, in the same fashion as these treatments/services are covered for family physicians and ophthalmologists.

Source of Supply

Optometrists require a minimum of five years of post-secondary education to obtain their professional designation, Doctor of Optometry (OD).

There are two Canadian university programs that are accredited by the Canadian Examiners in Optometry and Canadian Optometric Regulatory Authorities to prepare optometrists: the University of Waterloo and the Université de Montréal. According to the University of Waterloo website, this university has a contract with New Brunswick to provide 1 seat annually for a New Brunswick student. Université de Montréal contracts to provide 2 seats to New Brunswick students annually. Upon completion of the course in Optometry, the graduate is required to satisfy the provincial board requirements where the practice is to be established. Licensure by the provincial or territorial governing body is required. These requirements ensure the public receives the highest standards of optometric care.

Data Analysis

There are 94 Optometrists in the inventory database, all of whom are employed in their occupation with one job, all working in the private sector in the clinical field of practice. The 94 Optometrists hold an active registration with their association.

A demographic analysis by age reveals the average age of Optometrists to be 41. The majority of Optometrists are in the 25-40 age range (40 or 43%). There are 35 (37%) between 40 and 50, 6 (6%) in between the ages of 50-54, and 8 (9%) over the age of 55. The age for 5 of the Optometrists is unknown.

There are currently 8 (9%) of the Optometrist workforce in the potential retirement zone (55+) and another 6 (6%) entering this zone within the five-year forecast horizon. That leaves a total of 14 (15%) who could retire in the next five years.

Analysis by gender indicates that 56% of the Optometrists are male. There are 26 (28%) of the Optometrist workforce who are both female and under the age of forty. Although the majority of Optometrists are male, consideration must still be given to the one-year maternity leave option during human resource planning.

An in-depth review of the language ability of the Optometrist workforce is not possible because the language ability is unknown for 70 (74%) of the workforce. The remaining individuals indicated language ability as follows: 12 (13%) English only ability, 10 (11%) have indicated English and French ability, while 2 (2%) have indicated language ability in French only. It follows that a meaningful analysis of language by health region is not possible given the available data.

When looking at Health Region, of the 94 Optometrist employees, the majority, 25 (27%), are in Region 1, 21 (22%) are in Region 3, 16 (17%) are in Region 2, 15 (16%) are in Region 6, 8 (9%) are in Region 4, 5 (5%) are in Region 5, and 4 (4%) are in Region 7.

In an analysis by Health Sector, all of the 94 Optometrist jobs are in the private or other sectors.

An analysis by Employment Status reveals that of the 94 Optometrist jobs, the majority (90 or 96%) are permanent full-time, while the remaining 4 (4%) are permanent part-time. Given the private sector nature of this group, data on FTEs was not available for analysis.

Gap Analysis

The forecast model estimates that there is currently equilibrium between the supply and demand of Optometrists; however, this is estimated to change to a minor shortage position of up to 7 Optometrists by the end of the five-year forecast period.

These estimates are based on the following assumptions:

- Successful filling of a total of 3 New Brunswick contract seats at University of Waterloo and University of Montreal, and recruitment back to New Brunswick
- The aging population will lead to slightly increased demand for Optometry services over the forecast period

In summary, Optometrists are predominantly a male workforce (56%), average age 41, working exclusively in the private sector on a permanent full time basis (96%). This occupation is currently in an equilibrium state, but has the potential to experience slight shortages over the forecast period due to increased demand from an aging population. In addition, if a list of medical necessary optometry services were to be articulated and covered by Medicare within the next five years, this could exacerbate the shortage.

5.9.6 Pharmacist

Trends and Issues

A November 2001 survey conducted by Ipsos-Reid⁴⁸ found that Canada is short more than 2000 pharmacists, which equates to a 10 percent vacancy rate across the country. The survey found that half of the pharmacies surveyed with existing vacancies were unable to fill these openings and 83 percent cited the lack of available pharmacists as the reason. Almost half of respondents said this has been a problem for at least two years. Pharmacists surveyed are feeling the strain, with 76% of pharmacists employed by a pharmacy with a vacant position having to work overtime to compensate for staff shortages, and 14% of pharmacies reporting that shortages have affected pharmacy services. In a 1999/2000 national pharmacy survey⁴⁹, the Atlantic Provinces and Manitoba reported the longest vacancy durations, ranging from 6 months to 1 year. This information points to the traditional signs of labour shortage, such as increased numbers of vacancies, longer times to fill vacancies, increases in overtime hours, and wages rising in excess of cost of living⁵⁰, which indicate a tightening of the labour market created by the failure of labour supply to keep pace with growing demand.

As identified in a recent Pharmacy Manpower Shortage Survey, within the pharmacy profession there are several trends impacting both the supply-side and demand-side⁵¹. On the demand-side, public expectations are for increased cognitive/clinical counseling services in addition to merely dispensing medications, at the same time as demand is increasing due to the aging population and an ever-increasing array of drug therapies. Elderly patients account for a large proportion of prescriptions and with the leading edge of the baby boom currently in their mid-50s; many believe the next 20 years will see rapid growth in demand for prescription drugs.

On the supply-side, as with most occupations, there is a “graying of the workforce” occurring, at the same time, as there is static enrollment in pharmacy schools. There are increasing demands for Pharmacists in non-traditional settings such as government and industry, as well as the trend to open “big box” pharmacies in grocery and department stores has extended.

According to a recent study by Human Resources Development Canada⁵², nearly 4 out of every 5 Pharmacists in Canada work in community pharmacies, another 15% in hospital or institutional

⁴⁸ “Pharmacist Shortages: A Warning Signal for Canadians (Wave II)”. Canadian Association of Chain Drug Stores / Ipsos-Reid. November 2001.

⁴⁹ Hospital Pharmacy in Canada Survey 1999/2000 – Pharmacy Staffing and Drug Costs. Eli Lilly Canada. 2001.

⁵⁰ Ibid. Page ii.

⁵¹ National Association of Pharmacy Regulatory Authorities. Pharmacist Manpower Shortage Survey. November 2000.

⁵² Human Resources Development Canada. A Situational Analysis of Human Resource Issues in the Pharmacy Profession in Canada. Final Draft. May 2001.

pharmacies, and the remainder in associations, pharmaceutical companies, and consulting firms. In New Brunswick, the study reports that there are 32 pharmacies, 97 community Pharmacists, 3.0 Pharmacists per pharmacy (compared to 2.6 for Canada), 4313 people per pharmacy (similar to the Canadian average), and 1423 people per Pharmacist (compared to 1652 for Canada). The study estimates that there are currently 2000 vacant pharmacy positions in Canada, making recruitment intensely competitive.

The study also reports on recent data on prescriptions. It shows a substantial increase in the growth rate in prescriptions. Through most of the 1990s the annual increase was 2-3%, and jumped to 5.4% in 1998, 6.3% in 1999, and 7.6% in 2000.

Two major issues dominate the human resource literature in pharmacy. The first concerns the current shortage of pharmacists in many parts of Canada; the second concerns the future role of pharmacists within the Canadian health care system. Driving both issues are the key demand and supply factors for pharmacists, both professional and business-related, which include⁵³:

Demand

- Increased prescription demand (CIHI Drug Expenditures in Canada 1997-2000)
- Increased complexity associated with new drugs and multiple prescriptions
- Increased demand for counseling services from a better-informed public
- Restrictions on the role and use of pharmacy technicians
- Increased demand for health care system pharmacists
- Strains elsewhere in the health care system (including shortages of nurses and physicians)
- Increased number of pharmacies (most growth in food and department stores)
- Increased hours that pharmacies are open
- Increased time to deal with third party payers/adjudicators

Supply

- Some reduction in the number of graduates due to increased program length (temporary)
- Anticipated reduced availability of foreign pharmacists
- Increased incidence of those wanting to work only part-time
- Reduced willingness to work overtime, especially females with families
- Increased opportunities for pharmacists outside pharmacies (drug companies, consulting firms, etc.)
- Earlier age of retirement

⁵³ “A Situational Analysis of Human Resource Issues in the Pharmacy Profession in Canada”. Peartree Solutions Inc. for Human Resources Development Canada and the Canadian Pharmacists Association. July 2001. Page 30.

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- An increased emphasis on continuing education, which may lead some to retire earlier from the profession

A study commissioned by the Pharmacy Association of Nova Scotia (PANS) showed that between 2000 and 2005, the number of pharmacy positions in the 4 Atlantic Provinces would increase 12%.

The issue of the role of pharmacists in the health care system is central to developing a longer-term outlook on the demand for pharmacists. If pharmacists were confined to the role of dispensing medication and their role continually being encroached upon by improving dispensing technologies and the expanded role of pharmacy technicians, then demand for their services in the future could well be seen to decline. However, the more likely scenario is that pharmacists will be increasingly demanded in the health care system in an expanded, value-added consultative role.

There is a move nationally by the pharmacy profession to expand their role in the health care system. The Canadian Pharmacists Association states, “There is an urgent need for a redefined and expanded role for pharmacists within the health care team that would bring about better care for Canadians. We have to break down existing barriers to pharmacists and other health care professionals practicing to the fullest extent of their skills.”⁵⁴

According to a January 2001 study released by the Government of New Brunswick and the Canadian Association of Drug Store Chains (CACDS), ongoing pharmacist counseling and services contribute to patient health and well being, reduce physician visits, and result in health care resources being used more efficiently. The study, called the Fredericton Pharmacy Initiative (FPI)⁵⁵, provided the first measurement of the benefits of ongoing pharmacist services. The year-long project included all 21 local pharmacies in the Fredericton-Oromocto area and studied 262 patients. Pharmacists provided advice, education on drug use and lifestyle related to their disease states, and ongoing follow-up. An overwhelming 95% of participants were satisfied, and a significant majority said they would like to see this type of care included in their drug plan benefits. Furthermore, the study found that visits to Family Physicians and specialists decreased over the study period by between 9% and 47%. Emergency room visits decreased by more than 80% as well.

The Minister of Health and Wellness responded to the study by saying, “The results demonstrate conclusively that pharmacists play a very important role in delivering quality health care cost-effectively. We look forward to building on this initiative to maximize the role of the pharmacist in the delivery of community health care.”

April 2002 Canadian Institute for Health Information (CIHI) statistics on drug expenditures in Canada show spending on drugs in Canada is second only to spending on hospital services. The Canadian Pharmacists Association (CPhA) states this proves the need for an expanded role for pharmacists to ensure the best possible outcomes from drug therapy. They state, “there is a great deal of evidence to

⁵⁴ CPhA News Release – “Pharmacists Tell Romanow: Let us fill the gaps in health care”. November 5, 2001.

⁵⁵ Pharmacists Shortages – A Warning Signal for Canadians”. Ipsos-Reid. November 2001.

show pharmacists' involvement in drug therapy yields better results for patients and reduces health care costs."⁵⁶

The CPhA has made submissions to the Romanow Commission and to the Kirby Committee, in which they presented the case that scope of practice of pharmacists must change in order to improve effectiveness and efficiency of the health care system. Examples given are to permit pharmacists to take blood and give vaccinations. Other examples include allowing pharmacists to do more to promote wellness and prevent illness, through such areas as smoking cessation counseling, asthma, diabetes education, and monitory. Among the solutions, they propose:

- Develop primary care teams, including pharmacists, to ensure optimum drug use, with each member contributing to the care of the patient according to his/her knowledge and skills.
- Develop and fund consultative pharmacy services that are widely accessible through community pharmacies or other venues.
- Develop a National Drug Use Management Centre to develop policy and implement programs in collaboration with the provinces.
- Do not allow direct to consumer advertising of prescription drugs in Canada.

There are; however, barriers to the expanding role of pharmacists, including the current fee structure used to compensate community pharmacists (no compensation for cognitive services - activities beyond traditional dispensing), acceptance by other health professionals for pharmacists to provide cognitive services, and lack of standards and certification for pharmacist technicians.

The 2000 CADS Membership survey⁵⁷, reports that the shortage of pharmacists has led to many chains to investigate and implement labour-saving technologies, such as integrated voice response (IVR) prescription filling, central prescription filling locations, and robotics in the dispensary.

The current shortage of pharmacists in the public sector, as reported in July was 15 permanent and 3 temporary vacancies. To counter a chronic pharmacist shortage, one Regional Health Authority has proposed the use of robotics and bar codes⁵⁸. This technology is also seen as a solution to reducing the cost of wastage from discarding unlabelled drugs, when a patient is discharged earlier than was anticipated on admission. This cost translates into between \$200,000 to \$400,000 per year for one large Regional Health Authority. When considered on a provincial basis, these costs are considerable.

In addition to labour and reduced drug waste cost savings, these barcode/robotics technologies provide a higher level of accuracy with considerably lower error rates than manual systems. American studies indicate manual systems carry an average error rate of 3 per 100 drug administrations. This includes everything from giving the wrong drug, the wrong dose, or giving it at the wrong time. Using robotics

⁵⁶ CPhA News Release – “CIHI Findings Confirm Need for Expanded Role for Pharmacists”, April 26, 2002.

⁵⁷ Canadian Association of Chain Drugstores 2000 Membership Survey. Page 2.

⁵⁸ “Region 3 pharmacies urged to use robots”. Telegraph Journal. May 10, 2002.

makes the odds of making a mistake climb to one in 37 million. Early estimates put the investment at well over \$1 million for one Regional Health Authority. The economies of scale that may be realized through provincial adoption of such technologies is yet to be explored.

Employers in the public sector face increasing competition for pharmacists from market pressures generated by the private sector. However, current wage rates place New Brunswick in third position for new entrants and second for experienced professionals as a result of the most recent collective agreements when compared to other provinces in Atlantic Canada. This is a significant improvement in the experienced category where the Province has risen from fourth to second in terms of wages.

An experienced pharmacist in the public sector of New Brunswick earns approximately \$59,495 annually. Full-time Retail Pharmacists in the private sector in Nova Scotia currently earn \$59,773.⁵⁹ The public sector in Nova Scotia; however, is significantly less competitive than New Brunswick's public sector, paying \$53,430 per annum for a senior pharmacist in the mid-range.

Private sector information from 2001 for pharmacists in New Brunswick and Prince Edward Island indicates full-time Retail Pharmacists earn on average \$58,880⁶⁰ and \$57,663⁶¹, respectively. Over the past decade, there has been significant growth in the private sector with new dispensaries in large grocery chains such as Sobeys Stores Ltd. and Atlantic Superstores. Clearly, competitive pressures generated by this growth will be continue to influence wages rates in both the private sector and public sector throughout Atlantic Canada.

Source of Supply

Educational preparation for pharmacists is completed outside of New Brunswick. Dalhousie University is the closest source of supply for an English language program and Université de Montréal and Université Laval for French language programs. Dalhousie University had an intake capacity of 78 students in 2002. This will increase over the next two years to 90 students per year by 2004. In September 2002, there were 63 New Brunswick students among the 302 enrolled across the four-year Bachelor of Science in Pharmacy degree program. Over the past five years, there have been 62 New Brunswick students graduate from this program, which has a negligible attrition rate.

Université de Montréal has 7 New Brunswick students among the 550 enrolled in the Baccalauréat en science en santé (Pharmacie) program. The intake capacity is 170 per year among which 3 contract seats per year are reserved for New Brunswick students. The Université Laval Baccalauréat en pharmacie program has 13 New Brunswick students among the 530 currently enrolled. In 2000, the number of seats available in this program increased by 20 to 140 per year.

⁵⁹ 2002 Wage and Benefit Survey Results, Pharmacy Association of Nova Scotia, p.1

⁶⁰ 2001 New Brunswick Wage and Benefit Survey, New Brunswick Pharmacists' Association, Inc., p. 1

⁶¹ 2001 Prince Edward Island Wage and Benefit Survey, PEI Pharmacists' Association, p.1

Data Analysis

The analysis for Pharmacists is incomplete due to the low response rate from the employer survey, and hence incomplete data for this group. This occupation is primarily private sector, so it was necessary to supplement Pharmaceutical Society of New Brunswick data with information captured from the workplace via survey. The response rate was only 15% and this limited the ability to populate many of the data elements of interest to this study. As such, a cursory analysis will be carried out based on available data.

There are 567 Pharmacists contained in the inventory database. The registration status is unknown for 553 (98%) of the Pharmacists, and the remaining 14 (2%) are actively registered.

A demographic analysis by age reveals the average age of Pharmacists to be 40. The majority of Pharmacists are in the 40 and under age group (302 or 53%). There are 172 (30%) Pharmacists in the 40 to 50 age range and 42 (7%) in the 50 to 54 age range. There are currently 49 (9%) Pharmacists in the potential retirement zone (55+), and another 42 (7%) are entering this zone within the five-year forecast horizon; this represents 16% of the Pharmacist workforce who could retire within the five-year forecast period.

Analysis by gender indicates that 357 of the Pharmacists are female (63%), and 216 of them (38% of Pharmacist workforce) are under the age of 40, and considered within the childbearing age range. This is an important statistic to consider in human resource planning, given the one-year maternity leave option and the challenges this brings to planning for filling temporary positions.

For 489 (86%) of the Pharmacists in the inventory database, the language ability is unknown.

Of the 567 Pharmacy employees in the database, 469 (83%) work in the private sector and the remaining 98 Pharmacist employees (17%) work in the provincial government which includes the Department of Health and Wellness, Family and Community Services, and the Regional Health Authorities.

An analysis by Health Region for Pharmacists cannot be conducted with any degree of confidence because the Health Region for 395 (70%) of Pharmacist employees is unknown.

An analysis by Employment Status reveals that of the 653 Pharmacist jobs, the majority (416 or 64%) are permanent full-time, while 121 (19%) are permanent part-time, 90 (14%) are casual, 25 (4%) are permanent temporary, and 1 individual is on leave. An FTE analysis of Pharmacists in the public sector reveals that there is a fairly equal split of pharmacists working in the 0.76-1.0 FTE range (39%), and the >1.0 FTE range (37%), while 14% are in the 0.51-0.75 range, and 9% work <0.25 FTE.

Occupation Status is unknown for 399 (69%) of the Pharmacists employees, while 133 (23%) are known to work full time.

Gap Analysis

A shortage of pharmacists ranging from just over 40 in 2002 to just over 200 by 2007 is estimated by the forecast model based on the following available information:

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- Successful recruitment of a total of 14-18 students per year from the 3 training institutions (Dalhousie University, University of Montreal, and Laval)

In addition, this profession identified several key supply and demand factors that will impact human resources in pharmacy over the five-year forecast horizon, as follows:

- Quality of worklife (poor working conditions, not using full skillset, etc.) is a negative impact on supply, both recruitment and retention in New Brunswick
- Widened scope of practice for pharmacists (consulting, sales, etc.) means a positive impact on demand for pharmacists
- More private sector sites opening*, an increase in prescriptions, etc. equates to an increase in demand for pharmacy services

* If the 20-30% rate of increase per year in New Brunswick of new private sector pharmacy openings continues over the forecast period, the pharmacist shortage will be under represented by these estimates.

In summary, the Pharmacist workforce is predominantly female (63%), with an average age of 40 years. They are largely a private sector workforce (83%) working primarily permanent full-time or part-time (83%). Nearly 37% of Pharmacists in the public sector workforce work greater than 1.0 FTE. This occupation is currently in a shortage that intensifies dramatically over the forecast period. Continued growth in the private sector will place strain on the public sector, given the nature of the work, expanding scope of practice and alternative employment opportunities outside the traditional workforce. The magnitude of the gap in this workforce will require a combination of an aggressive recruitment/retention strategy and alternative models of practice to ensure a stable workforce.

5.9.7 Pharmacy Assistant / Technician

Trends and Issues

Pharmacists are by law the only professionals permitted to dispense prescription medications and sell selected medications without a prescription. In both community and hospital settings; however, Pharmacists may be assisted by pharmacy aides or technicians.⁶² Current literature suggests that technicians can play an important role in alleviating the current excess demand for pharmacists. For example, in many hospitals, where there are fewer barriers on the use of pharmacy technicians, much of the dispensing function has been given over to technicians, freeing pharmacists to take a more active role in the health care team and advising on appropriate drug therapies.⁶³

⁶² A Situational Analysis, page 5.

⁶³ A Situational Analysis, page 44.

Occupational definitions for pharmacy technicians are not as well defined as those for pharmacists, so there is no national source of data from which to generate a profile of this occupation. There is no single occupational classification for pharmacy technicians in the Standard Occupational Code (SOC) system used by Statistics Canada. Instead, pharmacy technicians, aides, and assistants are included within a group of health care system technicians under the SOC code D313 – Other Aides and Assistants in Support of Health Services.

As stated in the Canadian Pharmacy Association’s Submission to the Romanow Commission on the Future of Health Care in Canada⁶⁴, before pharmacists can move into a more consultative patient-focused role, a number of changes are needed within the profession and the health care system. The pharmacists of the future must minimize involvement in the dispensing of medications. Pharmacy technicians should be encouraged to assume many of these functions. However, for pharmacists to feel comfortable with an expanded pharmacy technician role, a national standard for pharmacy technicians should be developed with appropriate regulatory processes in place.

The role of pharmacy technicians is expanding and becoming more formalized as various provinces move toward mandatory training and/or certification. Now; however, practices in the training, certification, and use of pharmacy technicians appear to vary significantly across jurisdictions and practice settings.⁶⁵

Work done at a national level indicates that hospital pharmacies (public sector) tend to lose pharmacists to jobs in the community pharmacy (private sector) that generally pay more.⁶⁶ According to the HRDC July 2001 report⁶⁷; Pharmacy Technicians are offered higher rates of pay in the hospital setting (public sector) due to collective bargaining, which means that they much prefer working in hospitals versus community pharmacies.

Source of Supply

Education programs for this occupational group exist across the Maritimes. New Brunswick Community College offers a 40-week Pharmacy Technician certificate program in both English and in French. There are 20 students enrolled in the English program and 22 in the French program as of September 2002. The CompuCollege School of Business also offers a 49-week Pharmacy Technician Diploma with an intake capacity of 35 students. This program opened in 2001 and had 17 graduates its first year of operation. Thirty-four New Brunswick students were enrolled in the Fredericton Campus of this college in September 2002. A similar program of 52 weeks is offered in Prince Edward Island, which takes in 20

⁶⁴ October 2001

⁶⁵ A Situational Analysis, page 44.

⁶⁶ “A Situational Analysis of Human Resource Issues in the Pharmacy Profession in Canada”. Peartree Solutions Inc. for Human Resources Development Canada and the Canadian Pharmacists Association. July 2001. Page 14.

⁶⁷ Ibid, page 15

students per year and Nova Scotia Community College offers a one-year certificate for 22 students per year.

Data Analysis

There are 202 Pharmacy Technicians in the inventory database, all of whom are employees working in 203 jobs. All Pharmacy Assistant/Technicians are employed in their occupation.

No professional association exists in New Brunswick for the Pharmacy Assistant/Technician workforce.

A demographic analysis by age reveals the average age of Pharmacy Assistants/Technicians to be 35. The majority of Pharmacy Assistants/Technicians are under age 40 (135 or 67%). There are 38 (19%) Pharmacy Assistants/Technicians between 40 and 50, 22 (11%) are over the age of 50. There are currently 6 (3%) of the Pharmacy Assistants/Technicians workforce in the potential retirement zone (55+) and another 16 (8%) entering this zone within the five-year forecast horizon. There are a total of 22 (11%) who could retire in the next five years. The age for 7 (3%) of the Pharmacy Assistant/Technician workforce is unknown.

Analysis by gender indicates that 189 of the 202 Pharmacy Assistants/Technicians (94%) are female and 128 of them (63% of Pharmacy Assistants/Technicians workforce) are under the age of 40, and considered within the childbearing age range. This is an important statistic to consider in human resource planning, given the one-year maternity leave option and the challenges this brings to planning for filling temporary positions.

An in-depth review of the language ability of the Pharmacy Assistant/Technician workforce is not possible because the language ability is unknown for 149 (74%) of the workforce. The remaining individuals indicated language ability as follows: 38 (19%) English only ability, 9 (4%) have indicated language ability in both English and French, while 6 (3%) have indicated language ability in French only. It follows that a meaningful analysis of language by health region is not possible given the large percentage of unknown language ability.

Of the 202 Pharmacy Assistant/Technician employees, 145 (72%) work in the provincial government and the remaining 57 (28%) work in the private sector.

When looking at Health Region, of the 202 Pharmacy Assistant/Technician employees, the majority, 58 (29%), are in Region 2, 48 (24%) are in Region 1 (24 Region are in 1SE, 20 are in 1B, and 4 are in Region 1 unknown), 33 (16%) are in Region 3, 24 (12%) are in Region 6, 15 (7%) are in Region 4, and Regions 5 and 7 have 12 (6%) respectively.

In an analysis by Health Sector, 145 (71%) of the 203 Pharmacy Assistant/Technician jobs are in the hospital sector, and 56 (28%) are in the private sector, the remaining 1 job is classified as “other”. And at a finer level of detail, 199 the 202 Pharmacy Assistant/Technicians (99%) work in the clinical area.

An analysis by Employment Status reveals that of the 203 Pharmacy Assistant/Technician jobs, the majority (132 or 65%) are permanent full-time, 38 (19%) are permanent part-time, 18 (9%) are casual, 8 (4%) are permanent temporary, and the employment status for 6 (3%) is unknown. An analysis by FTEs

is possible for the public sector portion of this group. Such an analysis reveals that the majority (64%) work in the 0.76-1.0 FTE range, 23% work >1.0 FTE, and less than 5% each work in the <0.25, 0.26-0.50, and 0.50-0.75 ranges.

Gap Analysis

It is estimated that this occupation, which is currently in an equilibrium position, will gradually move to a large surplus of workers, in the area of 200, over the five-year forecast horizon.

These estimates are based on the following assumption:

- Retain 80% of New Brunswick graduates (from 2 English and 1 French training programs), which equates to roughly 50 new entrants per year into this occupation

In addition, several key demand factors have been identified as having a positive impact on demand over the forecast period:

- Modest demand impact of increased use of pharmacy assistants/technicians in pharmacies over the next five years, due to pharmacist shortage and widened scope of practice of pharmacists to a more cognitive and less technical role
- Negative demand effect in final two years of forecast period (2006 and 2007) of the increase in the use of technology/robotics in the hospital sector, which could replace some amount of the human component pharmacy assistant/technician work

In summary, Pharmacy Technicians/Assistants are young (average age 35) and predominantly a female workforce (94%). The workforce is employed primarily permanent full-time and part-time (84%) and 71% work in the hospital sector with 23% working greater than 1.0 FTE. This occupation is currently in a relatively stable position with a significant cumulative surplus predicted over the five-year period, partially attributed to an increase in private sector education programs in the region. Changes to models of pharmacy practice and standards of education practice may increase utilization of this worker, and in turn could be expected to moderate this surplus to some extent.

5.9.8 Prosthetists

Source of Supply

This occupational group is educated outside of New Brunswick and the closest source of supply is George Brown College in Ontario, which offers a two-year technical diploma program and a two-year clinical methods diploma in the field of Prosthetics and Orthotics. BCIT also offers a two-year clinical diploma program. Certification is provided by the Canadian Board for Certification of Prosthetists and Orthotists after a candidate completes an approved program, a 22-month internship and successfully completed a national exam. This occupation requires mandatory continuing education of its certified members.

George Brown College's Clinical Methods program accepts 8 students per year and currently has 8 enrolled in each year of the program, but no New Brunswick students. The school claims a 0% attrition rate from this program.

Data Analysis

Analysis on this group is limited both due to privacy concerns resulting from the small size of this group and the fact that there is no provincial registering body, and information residing with the national association was not received despite repeated attempts. Furthermore, also due to the small size of this group and related privacy concerns, detailed demographic information is not presented in this report.

There are 4 Prosthetists captured in the inventory database, all working in their occupation. It is important to note that the average age of this group is 47 years old, so retirements within this workforce will be an important HR planning consideration in the next 5-10 years.

The inventory database indicates that 100% of the Prosthetists in the inventory database have English only language ability.

Employment sector analysis indicates that 2 (50%) each work in provincial government other and the private sector. Health Region for 2 (50%) of the group is unknown, 1 Prosthetist are in each of Regions 2 and 3.

Gap Analysis

The forecast model could not be used due to the small size of this group. However, based on retirement projections, there is the potential that this group could lose 2 (50%) of its members within the five-year forecast horizon and slightly beyond.

5.10 Summary of Human Resource Impacts

The following tables show the human resource impact, by occupational group, resulting from the forecast model, and in addition, the groups that could not be exposed to the forecast model due to insufficient information or small numbers of individuals in the group.

It is important to recognize that the shortages/surpluses are cumulative in nature, in that, if nothing is done to redress a shortage/surplus at time t (2002), then this shortage/surplus is the base of the next year's forecast and so on, taking into account all positive and negative supply and demand factors each year of the forecast period (2002-2007).

The occupational groups are presented in order of descending magnitude based on the human resource gap (shortage or surplus) as a percentage of forecast demand in 2007, as calculated in the final column of the table: "% (Shortage)/Surplus". Note, all figures in the table in brackets indicate a shortage. A dash (-) represents relative equilibrium within that occupation's workforce at the end of the forecast period, which equates to a forecast shortage or shortage of less than 3%.

Table 14 – Health Human Resources Shortage/Surplus

OCCUPATION	2007 SUPPLY FORECAST	2007 DEMAND FORECAST	ESTIMATED HR (SHORTAGE)/ SURPLUS IN 2007	% (SHORTAGE)/ SURPLUS
Health Records Technicians/ Administrators	105	152	(47)	(30%)
Pharmacists	529	739	(210)	(28%)
Speech Language Pathologists	179	226	(47)	(21%)
ECG Technicians	90	111	(21)	(19%)
Medical Radiation Technologists	414	500	(86)	(17%)
Medical Laboratory Technologists	689	816	(127)	(16%)
Occupational Therapists	238	279	(41)	(15%)
Medical Radiation Therapists*	41	48	(7)	(15%)
Respiratory Therapists/ Technologists	243	280	(37)	(13%)
Registered Nurses (RNs)	7047	8125	(1078)	(13%)
Physiotherapists	457	521	(64)	(12%)
Social Workers	1189	1319	(130)	(10%)
Audiologists	52	56	(4)	(7%)
Public Health Inspectors**	43	41	(2)	(5%)
Diagnostic Medical Sonographer	53	55	(2)	(3%)
Licensed Practical Nurses (LPNs)	2591	2682	(91)	(3%)
Medical Equipment Technicians/ Technologists**	77	78	(1)	-
Optometrists**	97	94	3	-
Ambulance Attendants/EMTs/ Paramedics	1181	1101	80	7%
Pharmacy Assistants/Technicians	417	230	187	81%

**Not taking into account full impact of new cancer services program in the province, due to as yet undetermined implementation plan and human resource impact*

*** relative equilibrium = impact of <3% of workforce*

Table 15 shows the occupational groups that could not be exposed to the forecast model, with accompanying reasons why, and estimations based on demographic information only (projected retirements, migration, deaths, workforce attrition). These estimations are limited in that they do NOT factor in “new entrants” to the workforce due to unavailable information.

Table 15 – Data Limitations for Forecasting

Occupation	DATA LIMITATIONS AND/OR ESTIMATES OF HR IMPACT BASED ON DEMOGRAPHICS (shortage/surplus and % of workforce)
Addiction Workers	<ul style="list-style-type: none"> ▪ Due to unavailable supply-side data re: “new entrants” (there is no formalized training program for this group) the forecast model could not be utilized ▪ 50% of workforce will be in 55+ potential retirement zone within the five-year forecast period
Clinical Nurse Specialists	<ul style="list-style-type: none"> ▪ Due to unavailable supply-side data re: “new entrants” the forecast model could not be utilized ▪ 22% of workforce will be in 55+ potential retirement zone within the five-year forecast period
Dieticians	<ul style="list-style-type: none"> ▪ Due to insufficient population of dates of birth for this group, the forecast model could not be utilized and retirements cannot be projected
Dosimetrists	<ul style="list-style-type: none"> ▪ Due to the small size of this group (4 in database), the forecast model could not be utilized ▪ There are no Dosimetrists that are in or will come into the potential retirement zone within the forecast period; however, the small size of group and “in high demand” nature means large HR impact if even one Dosimetrist exits the New Brunswick workforce
EEG Technicians	<ul style="list-style-type: none"> ▪ Due to the small size of this group (11 in database), the forecast model could not be utilized ▪ 36% of this group will be in the 55+ potential retirement zone within five-year forecast period
Psychologists	<ul style="list-style-type: none"> ▪ Due to insufficient population of dates of birth for this group, the forecast model could not be utilized
Psychometrists	<ul style="list-style-type: none"> ▪ Due to the small size of this group (21 in database), the forecast model could not be utilized ▪ 14% of this group will be in the 55+ potential retirement zone within five-year forecast period
Prosthetists	<ul style="list-style-type: none"> ▪ Due to the small size of this group (4 in database), the forecast model could not be utilized ▪ 50% of this group will be in the 55+ potential retirement zone within five-year forecast period
Rehab Assistants	<ul style="list-style-type: none"> ▪ Due to unavailable supply-side data re: “new entrants” (there is not yet a formalized training program for this group), the forecast model was only utilized in a scenario-based way, with the following assumption:

	<ul style="list-style-type: none">▪ Movement toward a 1 to 4 ratio of Rehab Assistants to the total population of rehab professionals (Audiology, SLP, OT and PT) by 2007 = demand in the system for over 200 Rehab Assistants by 2007
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6. RECOMMENDATIONS

Health Human Resources (HHR) planning is a complex and challenging enterprise, as is the development of policies guiding supply, deployment, utilization, and movement in and out of the workforce. The results of this study and the project deliverables do not constitute an HHR plan; however, they do provide the Ministry of Health and Wellness with information, data, and tools to use to develop a solid HHR plan that will support the various components of the Government's pending Provincial Health Plan, and help ensure a stable complement of Health Human Resources for New Brunswick.

There is no single recommendation to remedy the current supply shortages among several of the health occupations and ensure stability in the workforce. Effective management of HHR requires multiple strategies working synergistically. The challenges associated with current supply shortages did not arise overnight and they will not be solved overnight. Government alone will not be able to successfully undertake the effective planning and management of New Brunswick's health care workforce. This will require the active involvement of employers, health care providers, professional associations and regulatory bodies, unions, and educators in a collaborative process.

The recommendations, which follow, comprise a package that, collectively, is designed to address a broad based solution, which, with the commitment of the parties, can be implemented incrementally over a predominantly short, to medium time horizon. Together, these recommendations represent a plan of action that will require significant long-term investment on the part of the Government, as well as other health care stakeholders. There will be a financial investment, an investment of time and human resources, as well as willingness on the part of all parties to work more collaboratively, and even differently, to make the best use of every one of the resources available. This is a solid beginning, a baseline against which the Department and key stakeholders can build a framework for integrated health human resources planning in New Brunswick.

Recommendations for action, not sequentially prioritized, are presented within six categories:

- Health Human Resources Planning
- Data/Data Sources/Data Management
- Labour Supply
- Utilization
- Recruitment and Retention
- Supply and Demand Forecasting

6.1 Health Human Resources Planning

New Brunswick is facing short-, to medium-term shortages in several key health occupations, and several clear actions have been taken by Government in the past few years, which speak to a strong commitment to tackling health human resources challenges provincially, as well as regionally and nationally through New Brunswick's participation the Maritime HHR Advisory committee, as well as a national Advisory

Committee on HHR planning. Provincially, there appears to movement toward a more collaborative and integrated model of health services delivery and the New Brunswick Department of Health and Wellness has begun to establish a formalized Health Human Resources Planning Unit. This approach will be central to effective and efficient integrated HHR planning. Momentum in this area will need to escalate however, and priority attention be given by this Government to ensuring New Brunswick has a health care workforce sufficient to sustain appropriate access to a mix of services necessary to meet the health care needs of New Brunswickers in the future. **It is therefore recommended that:**

1. The New Brunswick Department of Health and Wellness continue with the establishment of a formalized Health Human Resources Planning Unit that is appropriately resourced and vested with the ownership and responsibility for management of the Health Inventory Database that is a product of this study. Additional staff requirements for this Unit should build on existing positions in this area (i.e., Nursing Resources Advisor and Allied Health Resource Advisor). At minimum, this unit should contain a combination of skills represented by the following disciplines: health economics, health policy analysis, programming/data analysis, epidemiology, and statistical analysis. Furthermore, it will be necessary to have access to researchers with various areas of expertise who may be drawn upon to provide support to the Unit according to the focus of inquiry. This Unit should have overall and ongoing responsibility for:
 - Building/solidifying relationships with those organizations that represent the interests of the various occupations in support of cooperative HHR planning.
 - Collection and management of data central to planning New Brunswick's health care workforce, including the development and updating of datasets for research purposes, data access and security, and data linkage, in addition to being the access point for researchers outside the Unit who wish to request access to data for research purposes.
 - Research studies relevant to health workforce planning and management issues.
2. The New Brunswick Department of Health and Wellness establish a collaborative Health Human Resources Advisory Committee (HHRAC), composed of representatives from the major health professions' regulatory bodies, unions, and professional associations, as well as representatives from the major health employer groups (RHAs, Family and Community Services), and health educators, as key contributors to collaborative HHR planning. The mandate of this committee may be accomplished through the establishment of occupation specific working groups. The mandate and composition of the current Nursing Resources Advisory Committee (NRAC) and Rehab Services Advisory Committee (RSAC) should, therefore, be reviewed in the context of their role and contribution to an overarching HHRAC.
3. Government, in collaboration with those organizations representing the various health professions, jointly fund the development and implementation of a comprehensive marketing campaign to promote health care as a positive career choice that targets students, parents, educators, and the community as a whole.

The New Brunswick Department of Health and Wellness is expected to release a new Provincial Health Plan in 2003. In addition, Regional Health Authorities will be developing three-year business plans as a

requirement for funding. In recognition of the shortage that exists in many health occupations, **it is therefore recommended that:**

4. Consistent criteria be established and adopted across Government Departments through which to assess and quantify the impact of all proposed program/policy/legislation changes on health human resources requirements, including changes in training requirements.
5. The New Brunswick Departments of Health and Wellness and Family and Community Services adopt a planning framework that ensures health human resources planning is integral to strategic planning efforts at the provincial, as well as regional levels ensuring that:
 - All public sector employers undertake a health human resources impact analysis as integral to any planned new program or service, or changes to same, at a provincial or regional level, and this information is captured and maintained at a provincial level.
 - Health human resources are reconciled to the care/service needs of the population, as supported by current New Brunswick population health research/statistics, with the most efficient mix of resources required to provide the service.
 - A process of succession planning is integral to the operational planning of all employers across the system and should have both a regional, as well as a provincial focus. As RHAs expand their mandate this process should become more integrated.
 - The language profiles of staff required for the various programs/services in a health region be kept current and serve as an annual input to the Health Human Resources Planning Unit to inform the health human resources forecast model and provide government with information on supply requirements to meet the intent of the Official Languages legislation.

New Brunswick does not appear to be capitalizing on the strategic use of enabling technology, which would have the potential to lessen the growing health human resource shortages, by improving New Brunswick's competitive position in recruiting and retaining scarce resources, and in offsetting the demand through improved productivity, and/or leveraging labour with technology. The cost of these investments is significant. **It is therefore recommended that:**

6. Government proceed immediately to develop a long-term, integrated technology investment strategy that is designed to support the Provincial Health Plan, expected to be released in 2003. The value cases for these investments must be measured within a portfolio of all technology opportunities, accounting for both tangible, as well as intangible returns on the investment.

Examples include opportunities ranging from common client registries and systems improving the flow of information across the health care system, to introducing robotics in central dispensing for pharmacy departments across all RHA regional facilities, point-of-care technologies for laboratory medicine, and continued expansion of New Brunswick's current use of telehealth technologies, within the context of an overall provincial strategy.

7. The temporary loss in productivity that accompanies any major change initiative be factored into human resource and budget planning and associated change management plans be routinely

established to ensure successful introduction of new technology and the realization of anticipated benefits.

6.2 Data/Data Sources/Data Management

Comprehensive health human resources planning is currently not done in New Brunswick. Data collection is difficult because of the regional health structure and lack of integrated information systems. There is no standard, centralized mechanism to collect and store data critical to planning and decision-making.

Comprehensive HHR planning must be based on sound data. The manner in which data is currently captured in New Brunswick does not provide the ability to track individuals from application through to graduation and into the workforce to retirement. This places limitations on the reliability and utility of the data. Associations/regulatory bodies representing occupational groups that have a requirement for registration or licensure to practice are a key source of information for human resource planning purposes. By virtue of their mandate, these organizations have a requirement to update information on their membership on an annual basis. **It is therefore recommended that:**

8. The New Brunswick Department of Health and Wellness take a leadership role through the HHR Unit in the development of a systematic approach to standardized data collection that addresses provincial human resources planning information requirements and respects the evolving national framework for health human resources planning.
9. The New Brunswick Department of Health and Wellness, through the HHR Unit, work in collaboration with the provincial organizations representing the various health occupations to establish consensus on a standardized dataset of health human resource information, common database structure, and collection processes/tools for ongoing HHR planning purposes. A process should be established to have employer validation of membership self-reported data relative to how the occupation is working (hours of work).
10. The New Brunswick Department of Health and Wellness develop a transition plan in collaboration with those professional associations/regulatory bodies vested with responsibility for collecting membership data, to achieve standardized data, processes, and tools, and the eventual regular, electronic upload from common data platforms and that this transition plan include the investment required on the part of all parties involved in the acquisition and submission of required data.

Supply-side information is not routinely captured at a sufficient level of detail in any central registry at either the university or community college educational program levels in Atlantic Canada or Canada. To ensure consistency of data definitions in updating and interpreting this database and to ensure the ability to maintain an efficient and dynamic HHR forecast model it is recommended that:

11. The HHR Unit drive collaboration between Government, the Atlantic Community College Consortium, and Atlantic Association of Universities to develop a framework to collect a defined minimum dataset integral to HHR planning for defined occupations that includes, but is not limited to:

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- Aggregate level: program intake capacity, length of program in months, enrollments by year, difficult to fill seats, number of actual/expected graduates by year, program attrition rate, graduate employment rates, and locations
 - Individual level: date of birth, place of home residence, mother tongue, and language ability
 - Clinical placement/practicum/residency issues
 - Faculty Information: Faculty demographics, vacant positions, education leaves, and succession plans

In recognition of the fact that education for some health occupations is only available in select Canadian education institution, the Department, through its representation on the national Advisory Committee on Health Human Resources, should promote action be taken to establish a national central registry of this data, that is maintained current to support national, regional, and provincial level HHR planning.

There is considerable intra-provincial, inter-regional, and inter-provincial competition for scarce HHR resources. In an effort to target recruitment efforts to ensure a stable workforce and maintain the public's access to services, **it is recommended that:**

12. Regional Health Authorities, Department of Health and Wellness, Family and Community Services, and the Office of Human Resources collaborate to supply data on a regular basis to a provincial, "difficult to fill" vacancies database that is developed and actively maintained by the HHR Unit.

6.3 Labour Supply

This section addresses recommendations dealing with issues arising out of this study that are centered predominantly around policies/actions germane to labour supply.

One of the immediate solutions to remedy a shortage situation may be to increase the labour supply. While this appears to be one facet of a solution, it too has its own issues, which must be taken into consideration. When a health occupation is in a shortage situation, it may be difficult to recruit adequate qualified faculty to teach in a program. An aging faculty workforce may compound this. As well, competition for clinical placements is at a premium in an environment where already stretched professional staff is challenged to accept preceptoring roles. The physical space for many education programs is limited, especially where simulated laboratory environments are integral to the curriculum. Increasing supply therefore requires careful planning, and for those occupations that require lengthier basic education programs, this is not a short-term solution to the shortage situation, but a medium- to longer-term solution to maintaining a stable workforce.

In the **near term**, New Brunswick has urgent labour requirements for certain health occupational groups, which are forecast to be in a significant shortage position over the next five years. In an effort to ensure adequate replenishment for a stable workforce, over the planning horizon and beyond, Government must take immediate action on several fronts as outlined in the following set of recommendations.

One of the primary deficits across several of health occupations of interest to this study is the ability for New Brunswick to meet its language requirements in the delivery of health services. **It is therefore recommended that:**

13. Government prepare a business case for expanding French language education programs in New Brunswick that would decrease dependency on the Province of Quebec and meet national standards for certification in the respective occupations. It is further recommended that New Brunswick actively market these programs nationally.

New Brunswick currently has a significant shortage of approximately 300 **Registered Nurses (RNs)** and a five-year forecast indicates a supply shortage in the magnitude of 1078 RNs, or 15% of the workforce by 2007. Immediate and sustained action is warranted on several fronts to address this shortfall and to mitigate against its steady rate of escalation. These include increasing the number of nurses entering the labour force, and retaining those nurses already in the workforce by improving working conditions and the quality of their professional practice environments. **It is therefore recommended that:**

14. Government assess the situation driving reduced enrollments into the basic Bachelor of Nursing program at the University of New Brunswick Saint John Campus and take immediate action to bring provincial enrollments up to the maximum capacity of 380, as was established with the transfer of all nursing education to the university sector.
15. Government collaborate with the Maritime Provinces Higher Education Commission (MPHEC), the University of New Brunswick, and the Université de Moncton to establish a plan of action that allows for an immediate increase in enrollments in the Bachelor of Nursing programs at both New Brunswick universities. At minimum, the plan should be consistent with the recommendations in the Canadian Nursing Advisory Committee 2002 report: 25% increase commencing in 2004, increasing incrementally by 20% per year over each of the next five years. This plan must account for the additional requirements for qualified faculty resources.

(It should be noted that, factoring in attrition rates, this increase in enrollments would moderate the forecast supply shortage by approximately 50% by 2007, leaving a shortage of approximately 500 RNs as opposed to over 1000 predicted.)

Given the demographic of this workforce, there will continue to be significant depletion of RNs due solely to retirements in the next 10-15 years. **It is therefore recommended that:**

16. Within the context of an overarching HHR marketing strategy, the Department take action to increase the public profile of the current three-year Nursing Resource Strategy, evaluate the Strategy's impact annually over the remaining two year life of the strategy, and ensure that action is taken to increase and extend the investment in the various recruitment incentives outlined in the Strategy over the next five years to ensure adequate enrollments in basic and refresher programs. (This Nursing Resource Strategy is complementary to the achievement of Recommendation #15.)
17. Immediate action be taken to implement the changes to nursing skill mix through the Department of Health and Wellness' Nursing Utilization Strategy that focuses on optimizing the scope of practice of the various nursing occupational groups.

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18. Government, employers, and the nursing profession collaborate to articulate the attributes of a quality workplace and specific outcomes that would improve the work environment, and together develop and implement a comprehensive change management strategy to incrementally achieve these outcomes over the next 2-3 years. These actions are necessary to retain nurses and other professions currently in the workforce, as well as improve the outcome of recruitment efforts.
 19. The Department of Health and Wellness, the University of New Brunswick, and the Université de Moncton collectively take the action necessary to secure an appropriate number of qualified faculties to provide full-time nurse practitioner education programming, in order to produce adequate numbers of nurse practitioners to support the implementation of a provincial primary health care strategy.

New Brunswick is the only source of supply in the Maritime Provinces for **Medical Laboratory Technologists (MLTs)**, and New Brunswick should therefore revisit the number of seats available and its competitive position, to ensure adequate workforce replenishment. Nationally, there is a significant competition for this occupational group and New Brunswick is not wage competitive within Atlantic Canada. The forecast bulge in retirements for this occupation requires urgent attention to prevent gaps in service delivery. **It is therefore recommended that immediate steps be taken to increase the supply from Medical Laboratory Technology programs and moderate the forecast shortage by:**

20. Revisiting the entry requirements at New Brunswick Community Colleges with a view to “raising the bar” for admission as a predictor for success in the program thereby improving the attrition from this program.
21. Reviewing the current program delivery model at New Brunswick Community College Saint John campus to make it possible to increase intake capacity to this English language program commencing in 2004. The program capacity is currently constrained due to physical space limitations for the simulated (in-house) laboratory model.
22. Increasing the number of seats at the collaborative French language program offered by New Brunswick Community College, the Université de Moncton, and the Region 1 Beauséjour Health Authority, commencing in 2004.

(The constraints on supply of this occupational group across the country pose challenges in securing instructional personnel in adequate numbers to significantly increase enrollments and maintain an acceptable student to teacher ratio. An attempt should be made however, to increase enrollments in both New Brunswick’s basic education programs by 50%, commencing in 2004, in an effort to moderate the predicted shortfall of over 120 MLTs by 65%, to approximately 40, by 2007.)

23. Pursuing partnerships with other provinces to offer the didactic portion of the program at New Brunswick Community Colleges and the clinical component of the program back in a student’s home province.
24. Ensuring succession plans allow for the introduction of new positions, as required, to accommodate new entries to the system, gradually over the forecast period, in preparation for the forecast bulge in retirements. This is in recognition of the current character of this workforce, which is largely comprised of full-time positions, and the impact of large-scale exits from the workforce due to forecast retirements over the 5-10 years.

As with other occupational groups, Laboratory Medicine is utilizing support workers as part of the Medical Laboratory technology team. There is currently no consistency in the scope of practice of these support workers or lab assistants across the country. The Canadian Society of Medical Laboratory Science has established a competency profile for Medical Laboratory Assistants and a national certification exam will become available for these practitioners in June 2003. **It is therefore recommended that:**

25. New Brunswick implement a sustainable model of practice for this occupational group using an appropriate ratio of certified Medical Laboratory Technologists and Medical Laboratory Assistants, who meet the Canadian Society of Medical Laboratory Science standards of competence.

In light of the small and/or declining numbers in the Canadian workforce and the risk for shortage in these occupational groups, impacting service delivery, **it is recommended that:**

26. Government ensure adequate replenishment of EEG technologists by pursuing negotiations with the British Columbia Institute of Technology and College d'Ahuntsic to be a satellite location for Electroneurophysiology diploma programs, or, that Government develop a New Brunswick hospital-based program that meets CBRET standards and the supply needs of New Brunswick and possibly other Maritime provinces.
27. New Brunswick take steps to increase the complement of Health Records Practitioners by launching a Canadian Health Records Association approved diploma level program in New Brunswick by 2003, with sufficient capacity to moderate the forecast shortage of upward to 43% this workforce by 2007.
28. Efforts be redoubled in an attempt to fill all available seats in programs, for those occupations in short supply, both within New Brunswick based programs, and those with whom New Brunswick has contractual agreements, with particular attention being given to Medical Radiation Therapists and Speech Language Pathologists.
29. The number of contract seats available to New Brunswick students, in out of province programs, in Physiotherapy, Occupational Therapy, and Speech Language Pathology be reevaluated in light of the predicted supply shortages in each of these occupations over the next five years.

The following series of recommendations address **longer-term** strategies that Government can undertake to mitigate future supply crises while supporting the career development of the workforce and retention of a skilled labour force in New Brunswick. **It is recommended that:**

30. Government actively encourage the education sector to work cooperatively with health occupations to develop new educational models that give recognition to prior learning and provide the opportunity to articulate to higher levels of education or change career paths.

The Post Secondary Affairs Branch of the Department of Education has a mandate to address Prior Learning Assessment Recognition, or PLAR, and has staff dedicated to develop and operationalize this mandate. Maritime Provinces Higher Education Commission also has policies in place to evaluate submissions from educational programming that incorporates articulated education programs. Examples of this concept are gaining momentum in response to high market demand for a skilled workforce including accelerated programs such as the Advanced Standing Programs in

nursing that recognize previous university credits, and NBCC laddering of nurse affiliate programs. University of British Columbia is in the process of developing a business plan for a 20-24 month program for a Bachelor of Pharmacy degree for those entering the program with a Bachelor of Science. This program can also be used as an upgrading program for foreign graduates.

31. Government prepare a business case for the viability of introducing training programs here in New Brunswick for specialized disciplines, which capitalizes on the Province's ability to attract students from other provinces. Partnership models may also be explored.

This is in recognition of the number of health occupations educated outside New Brunswick, the competition for limited seats in many of these specialized education programs, which are highly oversubscribed, the need for clinical placements, and the challenges of recruiting these occupations in a tight market. There is an opportunity for New Brunswick to invest in "growing its own workforce" to meet the increasing demands for health care service, while providing additional capacity for students from other provinces.

32. Government and the rehabilitation professions come to a consensus on the role for a rehab support worker and an educational model that will meet the diverse needs of the patient populations across the continuum of health care services, and of the respective rehab professions, and that this program be developed and launched no later than 2004.

33. The Department of Health and Wellness take a leadership role in working with professional organizations and educational institutions to establish minimum standards of education for support workers that meet the competencies required for practice and certification in the respective disciplines. This will help ensure patient safety and professional comfort in delegating to these workers.

Models currently under development include the establishment of a national, voluntary accreditation program for pharmacy technician programs, being spearheaded by the Canadian Council of Accreditation of Pharmacy Programs and a national certification exam for Medical Laboratory Assistants to be launched June 2003 by the Canadian Society for Medical Laboratory Science. More information should be obtained on these programs. In addition, several of the rehab professions have developed national competency profiles for support workers in their respective professions.

New Brunswick requires a well-established, responsive ground ambulance system as a critical support to an effective provincial health plan. Currently, there is variability in qualifications, staffing, and deployment of qualified personnel supporting this system. **It is therefore recommended that:**

34. New Brunswick move toward adoption of the standards for education and practice for paramedics as outlined in the Paramedic Association of Canada's National Occupational Competency Profile, and establish a transition plan to implement these new standards over the next five-year period. The impact of doing so on those currently practicing in the system will need to be determined, particularly for those who work in a voluntary capacity. The ability for New Brunswick to be competitive in recruiting and retaining new graduates will be negatively impacted if the province does not offer a standard consistent with the trend across the country.

A number of occupational groups are in various stages of planning for changes to their entry to practice educational requirements over the next one to eight years. These include, but are not limited to,

Psychologists, Medical Radiation Technologists, Medical Laboratory Therapists, Health Records Practitioners, Occupational Therapists, and Physiotherapists. These changes to entry requirements have the potential to increase the time to market for many occupations, create gaps in output during the transition, and further exacerbate existing and predicted work force shortages. The conundrum for New Brunswick is to be able to remain competitive in recruiting and retaining individuals working in these occupations while continuing to meet service delivery requirements. **It is therefore recommended that:**

35. Government convene a series of meetings with the various professional organizations representing the self-regulated occupational groups, and employers, to jointly participate in planned changes in entry to practice requirements, identify factors driving any proposed changes, achieve consensus on the anticipated impact on health outcomes of the populations served, and determine the means through which to provide a stable complement of the occupation over the short-, medium- and long-term. Given this is not a provincial, but rather a national issue, it is critical that national discussions on planned entry to practice changes involve a similar level of participation and cooperative dialogue and planning.

While outside the scope of this study, it is recognized that it is critical for health professionals to be able to maintain competencies required to do their jobs. There is a need in New Brunswick therefore to develop an inventory of Continuing Professional Education programs available to the various health occupations to adequately support the development of the workforce to meet evolving technologies and patient care needs.

6.4 Utilization

In light of the challenges cited in this report that confront Government and employers in ensuring a stable workforce, effective utilization of the health care workforce has never been more critical. Any strategies and/or policies impacting utilization must give due consideration to the fact that the health care labour force is predominantly female. There is a need therefore to be more flexible in work schedules/hours of work/job sharing, etc. in recognition that women are also the predominant caregivers of children and aging parents.

Recognition must also be given to the fact that the current labour force is stretched, with an average of 26% of the public sector health care workforce working greater than 1 FTE (1950 hours per year). This is not sustainable and requires immediate action to bring relief to a tired and aging labor force. In light of this environment, **it is recommended that:**

36. Urgent consideration be given by the RHAs and community sector health care employers to implementing innovative staffing models to ensure safe practice and to prevent the continued burnout of an increasingly fatigued and aging workforce.

Technology and a shift in the utilization of new skill mix of professional to support workers are strategies that need to be considered to leverage the scarce professional resources across the health sector workforce. There is a compelling need for innovative thinking in these areas. The pharmacy profession presents with the greatest predicted shortage over the next five years by percentage of its workforce and RNs by volume of workers. **It is therefore recommended that:**

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37. Government collaborate with the Pharmacy profession and RHA employers to establish a “model pharmacy practice” in the hospital setting that gives recognition to and leverages the specialized skills of a clinical pharmacist through optimizing the utilization of pharmacy technicians and technology. That this model be evaluated according to its clinical, financial, and operational impacts and rolled out across the province pending successful evaluation.
 38. In the development and execution of an overarching plan for improved utilization of the nursing workforce, as identified in Recommendation #17, the Department of Health and Wellness articulate the complementary scopes of practice for nursing (RN/LPN/NP) that promote standardized and consistent utilization of the nursing workforce.
 39. The Department of Health and Wellness, in collaboration with public sector employers, develop and execute a coordinated plan of action over the next two years to upgrade nursing personnel currently working in the system, as required, to the competencies established to optimize their respective scopes of practice.

The demand for rehabilitation occupations has been documented in Section 5.5 of this report, where it has been identified that, in the absence of an articulated Provincial Health Plan, no new positions have been identified to respond to growing wait lists which are in the vicinity of two years for some rehab occupations. In the absence of provincial wait list standards, it is also difficult to establish a direct relationship to predict additional demand. It is entirely possible that the shortages for rehab professions may be understated in this report. **It is therefore recommended that:**

40. Government take action to establish a sustainable model for Rehabilitation Therapy services over the next three to five years that:
 - Utilizes an appropriately staffed, professional-to-support worker skill mix, as dictated by the health needs of the patient/client population.
 - Provides for equitable delivery of services across the continuum of acute, rehabilitation, and continuing care, regardless of location.
 - Incorporates new models of practice such as public/private partnerships for those rehab occupations working actively in both sectors.

There is an expectation on the part of employers that new graduates in many of the health occupations are prepared to work as experienced practitioners, in what may be a specialized area of practice, or to work as a permanent float staff, requiring expertise developed in several clinical areas. This is not a realistic expectation for many new graduates and does not permit the opportunity to consolidate skills. It has been indicated by the professions affected that this practice negatively impacts retention of graduates who feel at risk in these environments, contributing to the high mobility rate within some occupations. The opportunity for satisfactory orientation programs and access to more experienced staff mentors is seen as a luxury by many working in the Health Care Sector. **It is therefore recommended that:**

41. The Department of Health and Wellness recognize the importance and provide adequate funding for appropriate public sector employer orientation programs for new graduates in the health professions.

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42. A series of occupation-specific round table discussions on *Welcoming New Graduates to the Public Sector Health Care Workforce* be convened by the Departments of Health and Wellness and Family and Community Services, as the largest public sector employers of health occupations, for the purpose of launching cooperative discussions between the education sector and employers on expectations of today's graduates and improving their integration and retention in the workforce.
 43. Government promote employer incentive programs for experienced clinicians to become actively involved in preceptor programs.

6.5 Recruitment and Retention

New Brunswick is competing on many fronts for several of the health occupations. There is not only inter-provincial, national, and international competition, but there is also intra-provincial competition among public sector employers, as well as with the private sector. Currently, the nursing occupations are the only groups for which there is a provincial recruitment and retention strategy that was introduced in April 2001 for a period of three years. In addition, the Province is offering a \$10,000 signing bonus for Medical Radiation Therapists, including Dosimetrists, who agree to work in New Brunswick. There are individual Regional Health Authorities who also offer discretionary incentives for difficult to recruit occupations. There are a number of initiatives however that can be undertaken, in tandem, to improve New Brunswick's competitive position, and proactively manage the required complement of health care workers. **It is recommended that:**

44. To remain competitive, New Brunswick commit resources to a portfolio of initiatives aimed at ensuring supply to those health occupations identified as being in high demand and short supply. Complementary to other recommendations contained in this section of the report, these initiatives should include the purchase of seats from targeted out-of-province education programs; in addition to bursary programs, student debt reduction programs, and hiring bonuses, each with associated return for service agreements. Over the five-year forecast period the following occupations should be the targeted recipients of these investments.
 - Pharmacists, to moderate the predicted shortage of 40% of this workforce by 2007.
 - ECG Technicians, to moderate the gap that will be felt by 2007 with a potential shortfall of over 20% of this small workforce. There are Cardiology Technology Programs offered at only two Canadian educational institutions — Mohawk College and BCIT. Therefore, New Brunswick may wish to give consideration to growing its own ECG workforce as identified in Recommendation #31.
 - Medical Radiation Technologists, based on demand by sub-specialty, to reduce the impact of a predicted shortfall of 17% of this workforce.
 - Speech Language Pathologists, in recognition of the current, as well as projected shortage due in part to increased demand that will be created as a result of a provincial rollout of the Early Language Program.

It should be noted that Government has already committed resources to a Nursing Recruitment Strategy and recruitment bonuses for Medical Radiation Therapists, including Dosimetrists, all of which should continue.

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45. To avoid gaps in service from the loss of even one of this small pool of highly sought after health care workers, the Department of Health and Wellness articulate the requirements for new Dosimetrist positions as a result of its new Cancer Strategy and actively promote and support the development of certified Dosimetrists from within the current Medical Radiation Therapy workforce, ensure that New Brunswick offers a competitive Canadian wage for this occupational group and continue to offer the \$10,000 incentive bonus over the next three to five years.
 46. Aggressive recruitment strategies expand to focus on years 1 and 2 of targeted education programs to more effectively compete in recruiting graduates to the New Brunswick labour force. These strategies should include those such as are outlined in Recommendation #44.
 47. Renewed focus be given to strengthening the clinical internship/residency programs, for occupations trained outside New Brunswick (e.g. rehabilitation professions, pharmacy, etc.) as a key recruitment strategy. These programs are the most fertile ground to recruit new graduates and should be aggressively supported for all occupations for which these apply. Where at all possible, mentors/preceptors for clinical practicum should be supernumerary to the regular staff complement.
 48. The Office of Human Resources track data nationally on compensation and benefits, by professional discipline and geographic location, for comparative purposes to provide the HHR Unit with timely information needed for the Government to ameliorate competitive recruitment pressures.
 49. The public sector restructure work schedules to allow for more full-time positions, as a strong attraction to new graduates and retention of valued employees.
 50. Confidential exit interviews become a routine source of valuable information for employers to use to improve retention rates.
 51. Employer/employee forums be established in the workplace for input into how to improve working conditions and working environment.
 52. A systematic assessment of management development requirements should be conducted and a plan developed to ensure effective models of both leadership and management are in place that are conducive to the recruitment and retention of tomorrow's workforce.
 53. Retention incentives should target retaining older workers in the labour force as close to national retirement age standards as possible.
 54. Classification schemes for professionals in clinician roles be re-evaluated across the public service, to ensure that there are progressive career steps that recognize additional training and specialty skills for clinical practitioners, demonstrating their value as fundamental and essential to a stable health care system.

6.6 Supply and Demand Forecasting

Accurately forecasting workforce supply and demand must be based on sound data and quantitative analysis, but must take into consideration as well, the future design of the health care system in New

Brunswick, health technologies, clinical practice and variations in staff mix ratios, and how staff are deployed across the continuum of services. The particular mix of these variables will yield different results. Therefore, as New Brunswick solidifies its Provincial Health Plan, and enriches its supply of information/data, so too will the information value of the results of future HHR forecasts be enriched.

To ensure accurate and defensible demand and supply forecasting is conducted, **it is recommended that:**

55. Responsibility for management and utilization of the forecast model be vested with a core team of Department of Health and Wellness staff within the Health Human Resources Planning Unit, knowledgeable about the model's development, use of model inputs, and in human resource planning methodologies, and broader Department policy directions.
56. The Department of Health and Wellness adopt the forecasting model presented as a tool to support and enrich future human resource planning, and modify/adapt the model based on future human resource planning needs, new data that becomes available, and development of provincial staffing standards.
57. In the absence of provincial staffing standards and recommended provincial provider-to-population ratios in the various health sectors, the Department of Health and Wellness, in consultation with relevant stakeholders, identify acceptable proxies for each occupational group that will be consistently applied in future supply and demand forecasting.
58. The Department of Health and Wellness establish a process for regular environmental scanning/labour market analysis to understand the impacts on supply and demand for high-risk occupations. The health human resources forecasting model will need to accommodate any such perceived impacts.

APPENDIX A – STEERING COMMITTEE

The following individuals were members of the New Brunswick Health Human Resources Supply and Demand Analysis Study Steering Committee.

Name	Organization
Joanne Fletcher	DHW Project Manager (Chair)
Lyne St. Pierre Ellis	Allied Health Resource Advisor, DHW
Alice Theriault	Nursing Resource Advisor, DHW
Clare Brennan	Database Manager, DHW
Yvon Pitre	Information Systems, DHW
Emely Poitras	Communications Rep, DHW
Kelly Rodgers-Sturgeon	Labour Market Analysis, TED
Margo Dower-Vincent	Representative, Office of Human Resources
Pascal Robichaud	Post Secondary Education Rep (Education)
	Fujitsu Consulting Team

APPENDIX B – (HEALTH AND WELLNESS) OCCUPATION GROUPS

The following health occupations are included in the study:

SOCIAL SCIENCES

Addiction Worker / Counsellor

Psychologist (Clinical)

Psychometrist

Social Worker

REHABILITATIVE OCCUPATIONS

Audiologist

Occupational Therapist

Physiotherapist

Prosthetist

Rehab Assistant

Speech Language Pathologist

TECHNICAL GROUPS

Diagnostic Medical Sonographer

ECG Technician

EEG Technician

Medical Equipment Technician

Medical Lab Technologist

Medical Lab Specialist

Medical Radiation Technologist / Therapist (Nuclear Medicine, X-ray, MRI, Dosimetrist)

Respiratory Technologist / Therapist

NURSING

Licensed Practical Nurse

Registered Nurse

Clinical Nurse Specialist

OTHER OCCUPATIONS

Ambulance Attendant / EMT / Paramedic

Dietician

Public Health Inspector

Health Records Technician

Health Records Administrator

Optometrist

Pharmacist

Pharmacy Assistant (Technician)

APPENDIX C – MINIMUM DATASET

DATA ELEMENT	DESCRIPTION
INDIVIDUAL	
First Name	Not directly used in the analysis; however, these fields are required as a means to identify information that is obtained from different sources as being for the same individual. Without this information, it is possible that the same individual will be counted numerous times, especially when information comes from both the public and private side.
Last Name	
Middle Initial	
Previous Names	Name changes such as maiden name. There may be more than one for each individual. If available, this data will help prevent the same person from being counted with both old and new names.
Home Address (address, city, province/state, postal code, country)	Where available, this was used to determine what health region the individual lives in (as opposed to the health region in which they are employed).
Year of Birth	YYYY
Language <ul style="list-style-type: none"> ▪ Language Proficiency ▪ Preference (English/French) 	English French English and French Other Unknown
Gender	Male/Female
Occupation	An individual may have more than one occupation. Occupation information is captured based on the occupational groups that Department of Health and Wellness has defined and also by the occupation groupings that Training and Employment Development requires (NOC definitions).
Entry to Practice Qualification Origin of training (school, province/state, country)	For each occupational group, where available.
Highest Level of Education Achieved in Occupation <ul style="list-style-type: none"> ▪ Origin of training (school, province/state, country) ▪ Year of grad 	For each occupational group, where available.
Credential	Description/name of credential received for each occupation.
Certified	Indicates whether the person is certified for each occupation (yes or no).
Name of Registering/Licensing Body	For each occupation the individual may have one or more registrations.
Registration #	For each registration with a professional/regulatory body.
Registration Status	Indicates active, inactive, temporary, retired for each registration.

DATA ELEMENT	DESCRIPTION
Field of Practice <ul style="list-style-type: none"> ▪ Primary field of practice ▪ Secondary field of practice 	Clinical, Management, Education, Research, Other For each occupation a primary and secondary field of practice will be captured. A secondary field is optional.
Working in Occupation	Indicates whether the individual works in the occupation.
Unemployed	Indicates if a person is unemployed (yes or no).
Seeking	Indicates if a person is seeking employment in their occupation (yes or no).
EMPLOYER	Information for each employer a health resource works for.
Employer's Name/Place of Employment	An employer may be associated with more than one address.
Employer's Address	
Employer's City	
Employer's Postal Code	
Health Sector	The health sector associated with each of an individual's employment. (An individual may have two part-time jobs, one in a hospital and one in a nursing home, for example.) Possible Values are: <ul style="list-style-type: none"> ▪ Hospital ▪ Extra-mural ▪ Nursing home ▪ Special care home ▪ Physician's office ▪ Community health center ▪ Mental health services ▪ Public health services ▪ Government ▪ Academic ▪ Private ▪ Other
Health Region	Associated with each of the Employer's addresses.
FTE – Public Sector	Will be captured for physicians only. Additional fields may be identified based on definition of the calculation.
Employment Sector	For each employer, employment sector will be captured. Possible values are: <ul style="list-style-type: none"> ▪ Provincial health & community Services (DHW, FCS) ▪ Provincial government other (other government departments, crown corporations, WHSCC, justice & corrections) ▪ Federal Government ▪ Private

DATA ELEMENT	DESCRIPTION
	<ul style="list-style-type: none"> ▪ Other (out of province/country) ▪ Unknown
Employment Status	<p>For each employment position an individual fills, their employment status is required.</p> <p>Possible values are:</p> <ul style="list-style-type: none"> • Permanent <ul style="list-style-type: none"> a. Full time b. Part time c. Temporary • Casual • Leave of absence (with reason)
SUPPLY DATA	Data describing the educational programs for health professionals in the Atlantic provinces and Quebec and centres of excellence in the rest of Canada. A centre of excellence for purposes of this study may be considered to be the only program providing this education in Atlantic Canada / Canada.
Entry to practice requirements	
Inventory of training programs	Selective outside Atlantic Canada, i.e. centres of excellence or those programs identified by the occupation/employers as being preferred training sites.
Program Entry Requirements	Prerequisites required by the educational institution for admission to the program.
Program Duration	Expressed in weeks, months, or years
Language of program	English or French
Enrollment Capacity of program	Year one intake capacity
Total Capacity of program	All years of the program
Graduation Credential	Include proposed changes
Entry Year Number enrollments	Actual enrollments for the most recent year recorded
All Years Number enrollments	Actuals
Entry Year Number NB students currently enrolled	Where this information is accessible from individual programs.
All Years Number NB students currently enrolled	As above
Number NB purchased seats	Government agreements with out of province educational institutions
Number grads over last 10 years	For each year
Recruitment incentives	Include who is offering the incentives.

APPENDIX D – FOCUS GROUP PARTICIPANTS / STAKEHOLDER INTERVIEWS

The following interviews and focus groups informed the environmental scan, and the supply and demand forecast model definition and inputs for this study.

Interviews
New Brunswick Department of Health and Wellness
Executive Management Team
Andrée Robichaud, Executive Director, Planning and Evaluation Division
Joanne Fletcher, Director of Strategic Planning and Health Policy
Alice Theriault, Nursing Resources Advisor
Pam Mitchell, Nursing Utilization
Lyne St. Pierre Ellis, Advisor Allied Health Professions and Physicians
Ron Durelle, Assistant Deputy Minister Administration and Finance
Marilyn Evans-Born, Director Health Legislation and Professional Regulation
David Cowperthwaite, Director Information Systems
Michelle Rousell, Rehabilitation Clinical Education Consultant
Paula Dubé, Administration Support Rehabilitation Clinical Programs
Stephanie Smith, Consultant, Hospital Clinical Services
Karen Carvell, Utilization Management, Hospital Clinical Services
John Boyne, Program Analysis and Evaluation
Regional Health Authority Human Resource Directors
Verna Morrissey, Human Resources Advisor, Human Resources Branch
Bronwyn Davies, Official Languages Coordinator
New Brunswick Department of Family and Community Services
Senior Managers as a Group Interview
David Easby, Assistant Deputy Minister Planning and Corporate Services
Carolyn MacKay, Assistant Deputy Minister Program Delivery
André LePine, Director, Adults with Disabilities and Senior Services
Barbara Burnett, Director Nursing Home and Residential Services
Lisa Doucette, Director Human Resource Services
Education Related Interviews
Mireille Duguay, CEO, Maritime Provinces Higher Education Commission (MPHEC)
Louise Boudreau, Director Post Secondary Programs, Department of Education
Pascal Robichaud, Policy Advisor, Post Secondary Education, Department of Education
Kelly Rodgers-Sturgeon, Director Labour Market Analysis, Training and Employment Development (TED)
Bernard-Marie Theriault, Acting Director Francophone Colleges, NBCC, TED
Richard Corey, Director College Services, NBCC, TED
Brenda McCavour, Educational Consultant, College Services NBCC, TED
Cheryl Gibson, Dean Faculty of Nursing UNB Fredericton, and selected Faculty members
Keith DeBell, Dean Health Sciences, UNB Saint John (telephone interview)

Cynthia Baker, Dean, École des Infirmières et Infirmiers, Université de Moncton (telephone interview)
Other Organizations
Tom Mann, Executive Director, New Brunswick Public Employees Association
Gérène Gautreau, Director of Education and Communication Services, Nurses Association of New Brunswick
Debbie McGraw, President, New Brunswick Nurses Union
Frances Ward, Vice President, New Brunswick Special Home Care Association Inc.
Executive Director, The New Brunswick Dental Society
Jocelyn Johnstone, Executive Director, College of Dental Surgeons of British Columbia
Dr Benoit Soucy, Canadian Dental Society
Paul Stoll, Labour Market Analyst Human Resource Development Canada
Focus Group Participants
Social Worker Focus Group
Linda Turner, Professor, St. Thomas University
Paul Cartwright, Regional Manager, River Valley Health SW
Brenda McPherson, DHW
Suzanne McKenna, Executive Director, NBASW
Vicki Coy, Executive Assistant, NBASW
Jean, Social Worker (retired)
Registered Nursing Assistants (now Licensed Practical Nurses – LPN)
Kevin Symes, Executive Director, Association of NB Licensed Practical Nurses (ANBRNA)
Wayne Brown, Secretary, Association of NB Licensed Practical Nurses (ANBRNA) (RNA at Spencer Nursing Home)
Anita Boucher, President, Association of NB Licensed Practical Nurses (ANBRNA) (RNA at Northern Carleton Hospital)
Combined Rehabilitation Groups
Karen Candy, NBAOT
Wendy Hills, NBAOT
Patrick Lynch, Executive Director, NBAOT
Andre Lafargue, NBASLPA
Anne Gallagher, NBSLPA
Katherin Puder, NBSLPA
Laura Garland, NBSLPA
Ann Connolly, NBPA
Marilyn Rowan, CPNB
Sandra Simms, President, NBAOT
Pharmacists
Hugh Ellis – Shoppers Drug Mart, Moncton (Government Relations)
Bill Veniot – Registrar, New Brunswick Pharmaceutical Society
Peter Hogan – President, New Brunswick Pharmacy Association (Pharmacist, Saint John NB)
Jeanne Collins Beaudin – Keswick Pharmacy Owner
Andree Hachey – Miramichi Pharmacy Owner
Faith Louis – Region 3 Director of Pharmacy Services (Now River Valley Health Authority)

Combined Technical Group
Michel Doucette – President Canadian Association of Medical Radiation Technologists (works at George Dumont)
Lin (Linda) Richardson – representing Maritime Association of Electroneurophysiology Technologists (Manager/Technologists with Region 3)
Janet Kingston – ED Medical Laboratory Technologists (MLT)
Edna Smith – President of MLT
Mariraine Dein – MRT Regional Manager
Elaine Dever – Program Director, Saint John School of Radiological Technology (AHSC)
Kathy Kowalski – Region 3 - Regional Respiratory Therapy Manager
Bill Koval – President of New Brunswick Association of Respiratory Therapists
Registered Nurses
Karen Brine, RHA 1SE (HR Employment Coordinator)
Marise Auffrey, RHA 1B (DON Long Term Care)
Dorothy Arseneau, RHA 2 (Nurse manager)
Doug Wilson, RHA 3 (Veterans Health)
Linda LeBlanc RHA 4 (DON)
Kristin Gauvin RHA 5 (DON)
Debbie Gammon, RHA 6 Debbie Gammon (DON)
Kerry Kennedy, RHA 7 (Recruitment and Resource Analyst Nursing) - not a nurse
Ann Johnson, Administrator, Drew Nursing Home, Moncton
Lucie Marteau, Villa Sormany (Administrator)
Ruth Rogers – NANB
Heather Kane – NBNU

APPENDIX F – GENERIC CONFIDENTIALITY AGREEMENT (ASSOCIATIONS)

The New Brunswick Department of Health and Wellness, Fujitsu Consulting, and representatives from each of the Associations representing Health Occupations signed the following confidentiality agreement.

This Agreement made the _____ day of _____, 2002.

Between:

(hereinafter called the “Association”)

-and-

HER MAJESTY THE QUEEN in Right of the
Province of New Brunswick as represented by the
Minister of Health and Wellness
(hereinafter called the “Minister”)

-and-

Fujitsu Consulting (Canada) Inc., a company
duly incorporated under the laws of Canada, having
its head office at 1000 Sherbrooke Street West,
Suite 1600, Montreal, Quebec, H3A 3R2
(hereinafter called Fujitsu)

1 **WHEREAS** the Association collects and maintains information with respect to its membership;
AND WHEREAS the Minister is desirous of obtaining this information for the purpose of
conducting a supply and demand analysis of health human resources in New Brunswick and for
purposes of health human resources planning on an ongoing basis;

AND WHEREAS Fujitsu will perform the said supply and demand analysis;

NOW THEREFORE it is agreed among the parties that:

1. The Association shall provide Fujitsu with a copy of its membership database (hereinafter called “Confidential Information”) for its most recent year of complete and accurate data with respect to all members of the Association. To ensure data accuracy for the analysis, the Association shall provide Fujitsu with the name of each individual member, as that member’s unique identifier. Name information, as the unique identifier, is essential to prevent an individual from being double counted, especially when information about the individual comes from more than one source such as the Association and the individual’s employer.
2. “Confidential Information” shall not include information that:
 - a) is already known to Fujitsu at the time it is disclosed;
 - b) is or becomes publicly known through no wrongful act of Fujitsu;
 - c) is rightfully received from a third party without restriction on disclosure and without breach of this Agreement;
 - d) is independently developed by Fujitsu;
 - e) is approved for release by written authorization of the Association; or
 - f) is disclosed by Fujitsu as required by law.

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3. Fujitsu shall treat the Confidential Information that the Association provides in a confidential manner and use it solely for the purpose of conducting a supply and demand analysis of health human resources in New Brunswick.
 4. Fujitsu shall not disclose the Confidential Information in any form to any person or body other than Fujitsu employees or agents on a “need to know” basis and the Minister as set out in this Agreement.
 5. For purposes of the supply and demand analysis, Fujitsu shall create two health human resource inventory databases. The first database will contain all information initially. After data quality has been assured and duplicate information has been removed, the table containing a list of individual names will be removed to a separate database where it will be password protected. Only Fujitsu employees responsible for data integrity will have access to individual names. Unique identifiers will be used throughout the database to join tables and information that is related. If additional data is imported into the database in the future, the unique identifier for an individual will enable utilization of the “Individual Name” table at a later point in time.
 6. Upon completion of the analysis, Fujitsu shall provide the Minister with the two databases and shall not retain any copies of the Confidential Information. The Minister shall ensure that access to the databases is restricted to authorized personnel.
 7. The Minister shall not use the Confidential Information provided by Fujitsu for any purpose other than for health human resource planning. The prior written consent of the Association shall be obtained by the Minister where the information is used for any other purpose.
 8. The Minister shall provide the Association with a summary of the results of the supply / demand analysis of the health occupation to which the Association’s membership belongs.
 9. Data provided by the Association for purposes of this Agreement shall only be reported, by Fujitsu and the Minister, at the aggregate level.

IN WITNESS WHEREOF this contract has been executed by the Parties on the date above.

Witness

Signatories to this Agreement

Association

Minister of Health and Wellness

Fujitsu Consulting (Canada) Inc.

APPENDIX G – GENERIC CONFIDENTIALITY AGREEMENT (EMPLOYER)

Department of Health and Wellness, Fujitsu Consulting, and representatives from employers providing information on individuals working in the Health Occupations signed the following confidentiality agreement.

This Agreement made the _____ day of _____, 2002.

Between:

(hereinafter called Employer)

-and-

HER MAJESTY THE QUEEN in Right of the Province of New Brunswick as represented by the Minister of Health and Wellness

(hereinafter called the “Minister”)

-and-

Fujitsu Consulting (Canada) Inc., a company duly incorporated under the laws of Canada, having its head office at 1000 Sherbrooke Street West, Suite 1600, Montreal, Quebec, H3A 3R2

(hereinafter called Fujitsu)

1 WHEREAS the Employer collects and maintains information with respect to its membership;

AND WHEREAS the Minister is desirous of obtaining this information for the purpose of conducting a supply and demand analysis of health human resources in New Brunswick and for purposes of health human resources planning on an ongoing basis;

AND WHEREAS Fujitsu will perform the said supply and demand analysis;

NOW THEREFORE it is agreed among the parties that:

1. The Employer shall provide Fujitsu with a copy of its membership database (hereinafter called “Confidential Information”) for its most recent year of complete and accurate data with respect to all members of the Employer. To ensure data accuracy for the analysis, the Employer shall provide Fujitsu with the name of each individual member, as that member’s unique identifier. Name information, as the unique identifier, is essential to prevent an individual from being double counted, especially when information about the individual comes from more than one source such as the Employer and the individual’s employer.

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2. “Confidential Information” shall not include information that:
 - g) is already known to Fujitsu at the time it is disclosed;
 - h) is or becomes publicly known through no wrongful act of Fujitsu;
 - i) is rightfully received from a third party without restriction on disclosure and without breach of this Agreement;
 - j) is independently developed by Fujitsu;
 - k) is approved for release by written authorization of the Employer; or
 - l) is disclosed by Fujitsu as required by law.
 3. Fujitsu shall treat the Confidential Information that the Employer provides in a confidential manner and use it solely for the purpose of conducting a supply and demand analysis of health human resources in New Brunswick.
 4. Fujitsu shall not disclose the Confidential Information in any form to any person or body other than Fujitsu employees or agents on a “need to know” basis and the Minister as set out in this Agreement.
 5. For purposes of the supply and demand analysis, Fujitsu shall create two health human resource inventory databases. The first database will contain all information initially. After data quality has been assured and duplicate information has been removed, the table containing a list of individual names will be removed to a separate database where it will be password protected. Only Fujitsu employees responsible for data integrity will have access to individual names. Unique identifiers will be used throughout the database to join tables and information that is related. If additional data is imported into the database in the future, the unique identifier for an individual will enable utilization of the “Individual Name” table at a later point in time.
 6. Upon completion of the analysis, Fujitsu shall provide the Minister with the two databases and shall not retain any copies of the Confidential Information. The Minister shall ensure that access to the databases is restricted to authorized personnel.
 7. The Minister shall not use the Confidential Information provided by Fujitsu for any purpose other than for health human resource planning. The prior written consent of the Employer shall be obtained by the Minister where the information is used for any other purpose.
 8. The Minister shall provide the Employer with a summary of the results of the supply / demand analysis of the health occupation to which the Employer’s membership belongs.
 9. Data provided by the Employer for purposes of this Agreement shall only be reported, by Fujitsu and the Minister, at the aggregate level

IN WITNESS WHEREOF this contract has been executed by the Parties on the date above.

Witness

Signatories to this Agreement

Employer

Minister of Health and Wellness

Fujitsu Consulting (Canada) Inc.

APPENDIX H – REFERENCES (RESOURCE MATERIAL)

The following documents/literature informed the environmental scan, and the supply and demand forecast model definition.

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APPENDIX I – LIST OF DELIVERABLES

The following deliverables were provided to the Department of Health and Wellness as part of the study.

- Microsoft Access 2000 Inventory Database with two subsystems: Inventory of 27 Occupational Groups and Inventory of Education programs
- Sample Reports, by multiple data elements, from the Inventory database subsystem
- Technical Documentation supporting database development and population
- Electronic Copy (Microsoft Word 2000), 7 bound copies, and 1 unbound copy of the Final Report in English
- Microsoft Excel 97 HHR Forecast Model
- Labour Market Analysis