N.W.T. Labour Market Information Resource Module 6

Occupational Demand Scenarios

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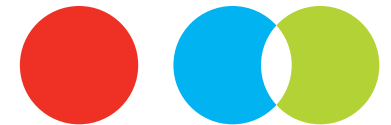
Key Findings

- This module presents corresponding occupational demand scenarios based on the forecasting assumptions and economic outlooks reviewed in Module 5.

- The scenarios refer to job openings based on two complementary concepts: replacement demand and expansion demand.

- Across the scenarios, more than half of future job openings in the territory typically require a post-secondary education.

- The three most in demand jobs represent education and healthcare professionals, including elementary school and kindergarten teachers, registered nurses, and secondary school teachers. Close behind is a variety of service industry jobs including retail and wholesale trade managers, administrative assistants, janitors, cashiers, and salespersons.
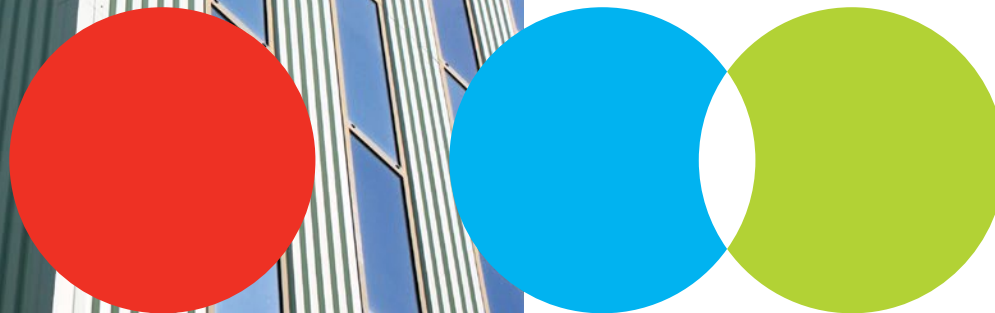
This module reviews the occupational demand scenarios that correspond with our forecasting assumptions and economic outlooks presented in Module 5. For the period 2021 to 2040, it presents the top 50 occupations by employment and job openings, and by their associated skill level grouping under the National Occupational Classification (NOC) system.

The reader should note how the occupational demand scenarios address changes in total employment in each major occupational category. The scenarios refer to job openings based on two complementary concepts: replacement demand and expansion demand. Replacement demand consists of three components: retirement, in-service mortality, and migration. Employees who retire, die, or migrate to a different territory, province, or country need to be replaced, which creates job openings. The number of these openings is referred to as the replacement demand. By comparison, expansion demand presents the real growth in an industry by focusing on the creation of new jobs. (See "Defining Replacement Demand, Expansion Demand, Job Openings, and Employment.")
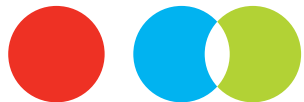
Defining Replacement Demand, Expansion Demand, Job Openings, and Employment

Replacement demand: Replacement demand represents positions that employers need to fill to replace workers who have retired, died, or migrated out of the territory.

Expansion demand: Expansion demand represents positions that need to be filled due to economic expansion, such as the opening of a new mine. Expansion demand creates new jobs in the economy, but when the economy contracts, existing jobs may also be lost (which is reflected in negative expansion demand).

Job openings: Job openings represent the combination of replacement demand and expansion demand.

Employment: Employment represents the overall number of employed persons in a given occupation or industry at a given time.

As the estimation of replacement demand involves more data components, it requires additional explanation. To estimate and forecast replacement demand by occupation, we relied on several data sources. Using The Conference Board of Canada's economic model (introduced in Module 5), we first developed an employment-by-industry forecast for the territory, dividing the economy into distinct industry groups. Using detailed information from Statistics Canada, we then broke down employment in each industry by occupation and by age group. A forecast for the number of occupations by age group was then developed using a custom model that incorporates the projected demographic changes in the N.W.T., factoring in important changes, such as the aging of the population (as discussed in Module 5).

Replacement demand attributable to in-service mortality was estimated using historical mortality rates by age group in the territory from Statistics Canada's Vital Statistics Death Database. Similarly, data from Statistics Canada's Labour Force Survey was used to estimate and project retirement demand. Due to a lack of reliable data for the N.W.T., we assumed that there was a base 65 age retirement rate across industries. We also assumed that these 65-year-olds had an employment rate of 53.1 per cent, which is the national average employment rate for 60-to-64-year-olds.

We then used The Conference Board of Canada's population forecast to obtain the number of 65-year-olds. Finally, we determined the share of retiring 65-year olds based on an age breakdown and NOC by NAICS breakdown from the Census and other labour market information from Statistics Canada.[1] Migration rates (both international and in Canada) were estimated using the Conference Board's detailed population forecast, which has projections that extend to the year 2050 for births, deaths, and international and interprovincial immigration and emigration for all provinces and territories in Canada. These were determined based on industry sizes and employment rates.

Total replacement demand was then calculated for each occupation as the sum of employee retirements, deaths, and migrations. This approach allowed for a detailed and unique forecast for replacement demand by occupation in the territory, driven by each occupation's age profile and the outlook for the one or more industries with which it is associated.

1   NOC is an abbreviation for the National Occupational Classification system. NAICS is an abbreviation for the North American Industry Classification System.

How Are Skill Levels Classified?

As discussed in Module 2, the NOC system includes categories for skill levels to provide further information on the requirements of an occupation. For the purpose of our occupational demand scenarios, we applied the following categories:

- **Skill level A occupations:** These occupations can be classified as either "management occupations" or "professional occupations."

  – Management occupations are characterized by a high level of responsibility, accountability, and subject matter expertise. Expertise can be acquired either through formal education or extensive subject matter expertise.

  – Professional occupations require a university degree (i.e., a bachelor's, master's, or doctorate).

- **Skill level B occupations:** These occupations usually require two to three years of post-secondary education at a college.

- **Skill level C occupations:** These occupations usually require secondary school or occupation-specific training (up to two years).

- **Skill level D occupations:** These occupations usually revolve around on-the-job training.

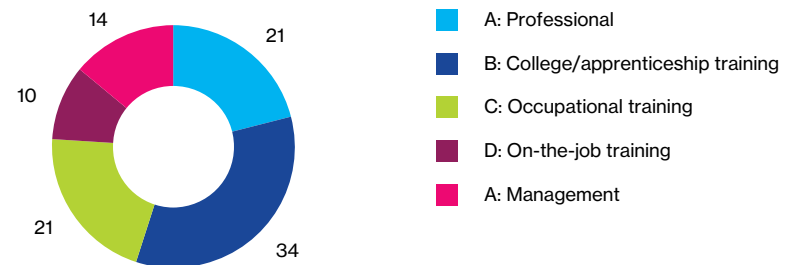# Forecast Results by Top Occupations

Base Case Scenario

The top 50 occupations by employment are varied across sectors and skill levels in the base case. By top occupations, we are referring to the highest number of active jobs per year, summed from 2022 to 2040. The Northwest Territories has over half of its occupations concentrated in jobs that typically require post-secondary education. 21 per cent of jobs mainly require secondary school with occupation-specific training (level C), while another 10 per cent mainly require on-the-job training (level D). The remaining 14 per cent are management jobs. (See Chart 1, as well as Chart 1(6) in the data download.)

Chart 1
Skill Level Distribution in the Base Case
(per cent of skill levels for occupations, from 2022 to 2040)

- A: Professional — 21
- B: College/apprenticeship training — 34
- C: Occupational training — 21
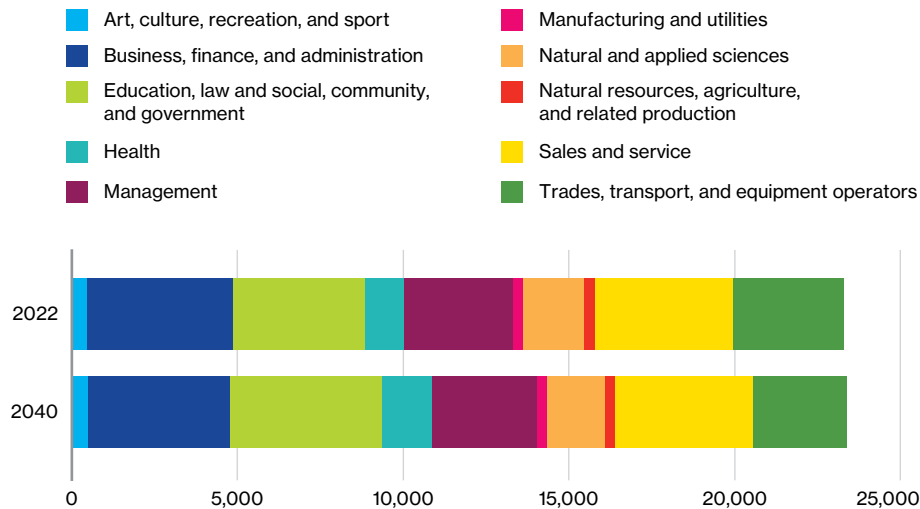- D: On-the-job training — 10
- A: Management — 14

Sources: Statistics Canada; The Conference Board of Canada.

In Chart 2, we see that the NOC distribution of the overall territory does not change much between 2022 and 2040. (See also Chart 2(6) in the data download.)

The chart breaks down the distribution of occupations by one-digit NOC classifications. We see that the top three classifications in both 2022 and 2040 are the business, finance, and administration occupations; the education, law, and social, community, and government occupations; and the sales and service occupations.

Chart 2
Little Change in Distribution of Occupations Over Base Case Forecast Period
(one-digit NOC breakdown of occupations; top bar 2022; bottom bar 2040)

- Art, culture, recreation, and sport
- Business, finance, and administration
- Education, law and social, community, and government
- Health
- Management
- Manufacturing and utilities
- Natural and applied sciences
- Natural resources, agriculture, and related production
- Sales and service
- Trades, transport, and equipment operators

Sources: The Conference Board of Canada; Statistics Canada.

The top 50 occupations vary in terms of industries as well. (See Table 1(6) in the data download.) However, there are a few critical industries that stand out. Four of the top 50 occupations come from the education sector, including the top occupation in demand—elementary school and kindergarten teachers. The employment and retention of teachers will be a necessity in the coming years. With the large number of occupations that are centred on the education sector, there will be a need to employ and retain people who have attended post-secondary education outside of the territory.

The forecast also anticipates in-demand health care and social assistance positions, from nurse aides to registered nurses to social workers. (See Table 1(6) in the data download.) As the territorial population ages, these positions will be important to maintain and expand. Of the three NOC codes that are specifically related to health care and social assistance, two of them (registered nurses and registered psychiatric nurses, and social and community workers) require post-secondary education, while the third (nurse aides, orderlies, and patient service associates) requires high school and some on-the-job training.

The Northwest Territories will need a variety of skills in the future. First, we look at the number of job openings by skill level. In Chart 3, we see that over 7,000 job openings will require post-secondary education from 2022 to 2040. (See also Chart 3(6) in the data download.)

Chart 3

Base Case Forecast of Job Openings, by Skill Level

(number of job openings by skill level from 2022 to 2040)
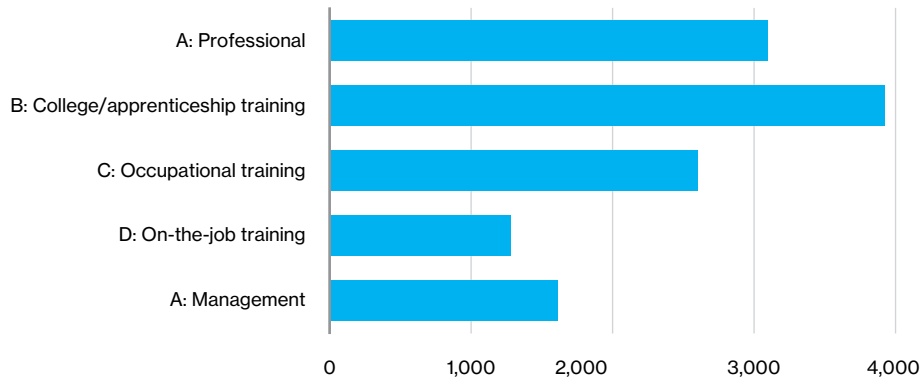
Sources: The Conference Board of Canada; Statistics Canada.

This is followed by over 2,600 job openings that mainly require secondary school and occupation-specific training (level C); and almost 1,300 jobs that mainly require on-the-job training (level D). Lastly, we see over 1,600 management positions, which leads to a total of more than 12,500 jobs to be filled from 2022 to 2040.

The top 50 occupations represent over 62 per cent of the total job openings from 2022 to 2040, indicating a high concentration of occupations. (See Table 2(6) in the data download.) They are varied, from elementary school teachers to financial managers. The three most in demand jobs represent education and healthcare professionals, including elementary school and kindergarten teachers, registered nurses, and secondary school teachers. Close behind is a variety of service industry jobs including retail and wholesale trade managers, administrative assistants, janitors, cashiers, and salespersons.

The strong demand for educators speaks to the need to serve and support the territory's large youth population at primary, secondary, and post-secondary levels. (See our analysis in Module 4.)

The top 50 job openings include a variety of occupations from skill levels C and D. For example, janitors, caretakers, and building superintendents and cashiers are the sixth and eighth most in-demand jobs. These typically require only on-the-job training. While many professional and technical jobs will be in demand, jobs at skill levels C and D will also be crucial for maintaining the economy's essential services.

Replacement and Expansion

Replacement demand accounts for 96 per cent of the net job openings within the forecast from 2022 to 2040. By comparison, net expansion demand is much smaller due to the impact of economic contractions that weaken the economy. As such, there is a net of 45 job openings from expansion demand, while there is a net of 12,473 job openings due to replacement demand. Even if we were to look only at the forecast years that feature positive economic growth and no contractions, we find that expansion demand has only 1,126 job openings. Clearly, the main driver of job openings remains replacement demand. The top occupations for both replacement and expansion follow closely with the occupations outlined in the total job openings.

Alternative Scenarios

The overall composition of the different scenarios does not change much. Most of the top occupations are the same, with only slight changes in their ordering and magnitude. This is the same with the breakdown of skill levels presented earlier. (See Tables 3(6) and 4(6) in the data download.) The greatest difference between the base case and alternative scenarios is in the total demand for jobs, with lesser employment in the low scenario and higher employment in the high scenario. (See Module 5.) In summary, we see that there are larger differences between scenarios in the first decade of the forecasts, with greater convergence in the final 2031 to 2040 period.

Appendix A

Methodology

This research project applied a mixed-methods approach that includes qualitative analysis, cross-sectional data analysis, historical time series, and forecasting.

Our analysis of factors shaping the contemporary Northwest Territories labour market combined quantitative and qualitative research activities. These activities included a collaboration with the Northwest Territories Bureau of Statistics and engagement with Education, Culture, and Employment and other Government of the Northwest Territories (GNWT) stakeholders to access relevant internal reports and administrative data. Specific research activities included:

• A review of academic and grey literature (public policy, industry, etc.) on key labour market issues in the territory and Northern economies. The review included over 400 documents from academic, public (federal, territorial, and Indigenous governments), and private sector sources.

• A review of data sources, including databases maintained by Statistics Canada and relevant federal and territorial government departments.

– An exploratory analysis of data sets from Statistics Canada, including custom data from the National Household Survey, Census, Aboriginal Peoples Survey, Labour Force Survey, and Canadian Business Patterns.

– An exploratory analysis of custom data sets from the Northwest Territories Bureau of Statistics (linked to the N.W.T. Community Survey), as well as program data from ECE.

The Conference Board of Canada's Territorial Forecasting Model (TFM) was used to produce three sets of economic forecasts up to the year 2040. The model relies on a core set of consistent assumptions formed from our global, Canadian, and provincial forecasts, in addition to ongoing monitoring of international, national, and territorial events. Specific territorial forecasting assumptions were then developed through engagement with the GNWT, industry experts, and through research of publicly available information on the status of project plans and capital investments in the territory. The forecasts were completed on June 15, 2021.

Definitions

National Occupational Classification System (NOCs) 2016 Version 1.0 Classification System

NOCs Skill Level Criteria

Each skill level represents the type and/or amount of education or training required to enter into and work in an occupation.

Skill level	Education/training required
Skill level A:	These occupations can be classified as either "management occupations" or "professional occupations."
Management occupations	These occupations are characterized by a high level of responsibility, accountability, and subject matter expertise. Expertise can be acquired either through formal education or extensive subject matter expertise.
Professional occupations	These occupations require a university degree (i.e., a bachelor's, master's, or doctorate).
Skill level B: College/apprenticeship training	These occupations usually require college education or apprenticeship training.
Skill level C: Occupational training	These occupations usually require secondary school and/or occupation-specific training (up to two years).
Skill level D: On-the-job training	These occupations usually revolve around on-the-job training.

NOCs Skill Type

Each skill type refers to the type of work performed in an occupation or the field of study needed to enter into an occupation.

Skill type	Description
Management occupations	These occupations are considered to be at the top of the organizational hierarchy of workplaces or businesses. Decision-making that affects the organization as a whole, or departments within organizations, is undertaken by management.
Business, finance, and administration occupations	This category contains occupations that are concerned with providing financial and business services, administrative, and regulatory services and clerical supervision and support services.
Natural and applied sciences and related occupations	This category contains professional and technical occupations in the sciences, including physical and life sciences, engineering, architecture, and information technology.
Health occupations	This category includes occupations concerned with providing health care services directly to patients and occupations that provide support to professional and technical staff.
Occupations in education, law, and social, community, and government services	This skill-type category includes a range of occupations that are concerned with law, teaching, counselling, conducting social science research, developing government policy, and administering government and other programs.
Occupations in art, culture, recreation, and sport	This skill-type category includes professional and technical occupations related to art and culture, including the performing arts, film and video, broadcasting, journalism, writing, creative design, libraries, and museums. It also includes occupations in recreation and sport.

(continued…)

NOCs Skill Type

Skill type	Description
Sales and service occupations	This skill-type category contains sales occupations, personal and protective service occupations, and occupations related to the hospitality and tourism industries.
Trades, transport and equipment operators, and related occupations	This skill-type category includes construction and mechanical trades, trades supervisors and contractors, and operators of transportation and heavy equipment. These occupations are found in a wide range of industrial sectors, with many occurring in the construction and transportation industries.
Natural resources, agriculture, and related production occupations	This category contains supervisory and equipment operation occupations in the natural resource-based sectors of mining, oil and gas production, forestry and logging, agriculture, horticulture, and fishing. Most occupations in this category are industry specific and do not occur outside of the primary industries.
Occupations in manufacturing and utilities	This category contains supervisory and production occupations in manufacturing, processing and utilities.

Appendix B

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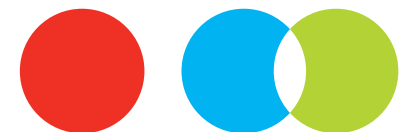
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