Canadian Occupational Projection System 2022 Projections

Job Openings 2022-2031

Employment and Social Development Canada — Emploi et Développement social Canada

Service Canada

NOTE: *The current COPS projections were completed in spring 2022, i.e. before expectations about the risk of an eventual recession in 2023. However, the focus of the COPS projections is on long-term trends in industrial and occupational labour markets, not on short-term developments. These long-term trends are not expected to be affected markedly by an eventual recession as its impacts are expected to be temporary and of short duration.*

Sources of job openings

- Job openings are positions that need to be filled due to:
  - expansion demand (new jobs generated through economic growth)
  - replacement demand (any existing jobs which have been vacated and that require to be replaced)

Job openings are comprised of two primary components: expansion and replacement demand.

- Expansion demand corresponds to the job creation generated by economic growth. It can be understood as "required employment" - that is, the number of people required to reach a certain level of production, given a specific level of productivity.

- Replacement demand corresponds to any existing jobs which have been vacated due to retirements, deaths and emigration.

About the occupational groupings used to assess labour market conditions

- The 2022 COPS exercise was developed using the 2016 version of the National Occupational Classification (NOC).

- The 2016 NOC has 500 occupations. However, many of these occupations are small in terms of employment. Such occupations were combined into broader groupings according to the specific tasks of each occupation. By grouping small occupations with similar tasks together, 293 occupational groupings were obtained.

- Although NOC already has a more recent version (2021), the model's input data were only available in the 2016 version of the NOC at the time of the development of the projections. The projection results using the 2021 NOC will be available at a later date.

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For more information on the 293 occupational grouping used in COPS, please visit:
http://occupations.esdc.gc.ca/sppc-cops/l.3bd.2t.1ilshtml@-eng.jsp?lid=59&fid=1&lang=en

Job Openings
due to Economic Growth
– Expansion Demand –
(Employment Growth)

Over the next 10 years, economic growth is expected to generate about 2.8 million new jobs (284,000 on average every year), which represent an annual average growth rate of 1.4%. In the long term, job creation will become increasingly constrained by the slower pace of growth anticipated in the labour force (see the document Macroeconomic Outlook).

Occupational employment is driven by the degree to which the various occupations are utilized in each industry (occupational effect) and by the economic growth of the industries that employ them (industrial effect).

The occupational effect impacts occupational employment via the productivity and utilization levels of each of the occupations in the economy encompassed by technological advances. This effect sometimes leads to job losses in some occupations, but also to job growth in some others or even the creation of new occupations.

> *While expansion demand is primarily driven by macroeconomic and demographic factors, technology progress is also reallocating jobs at the industrial and occupational levels.*

- Technological progress is already well underway in many sectors of the economy, specially in the form of **automation** and the instruction of **Artificial Intelligence (AI)**. It is expected to accelerate with new applications enabled by technological progress.

- In general, they affect employment in two opposing ways:
    - Negatively: by directly displacing workers from tasks they were previously performing.
    - Positively: by increasing the demand for labour in other jobs or industries.

- Most experts agree that **automation** is not expected to destroy a large number of jobs over the next 10-20 years, as specific tasks rather than entire occupations are most likely to be automated.

- Recent literature indicates that the impact of **AI** could spread into all occupations, including those requiring high levels of education and those containing a relatively high proportion of non-routine, cognitive and interpersonal tasks.

In recent years, there has been an increasing interest in better understanding how technological progress will impact the labour market, as the **automation** of the production process and the stronger introduction of **Artificial Intelligence (AI)** are expected to accelerate, considering the speed of technological developments.

In general, these two developments affect employment in two different ways. By displacing workers from tasks they were previously performing, labour market disruptions occur over the transition period. But eventually, the increase in real wages resulting from higher productivity leads to the creation of new jobs to produce the goods and services that people want to buy with their extra income.

Historical evidence suggests that technology has ended up creating more jobs than it has destroyed, as jobs have been reallocated at the industrial and occupational levels. For example, the Canadian economy has evolved from agriculture to manufacturing to services over the past century.

Most experts agree that **automation** is not expected to destroy a large number of jobs over the next 10-20 years, as specific tasks rather than entire occupations are most likely to be automated. This process is expected to be concentrated on occupations with a high content of repetitive and routine tasks, which are at a higher risk to be at least partially automated. Most of these occupations tend to require low levels of education and are concentrated in the lower range of the pay scale. For instance, the introduction of computers sped up some aspects of jobs, enabling workers to do the other tasks better. Rather than destroying occupations, computers redefined them. But this process required workers to learn new skills.

Recent literature on the impact of **AI** indicates that a broader range of occupations could potentially be impacted by its spread, including those involving non-routine, cognitive and interpersonal tasks. The AI's interactivity, adaptability and processing capabilities could now impact occupations that were first thought to be more immune to the technological shock. For example, some forms of AI can now write reports using advance language proficiency or improve costumer support services by providing workers with accurate simple language to better respond to costumers needs. However, some experts argue that AI would continue being complementary to workers and might even have an equity positive impact, as low- and middle-skilled workers might see relatively larger gains in their work performance when AI becomes a tool for their work, compared to high-skilled workers (Noy and Zang, 2023; as well as Brynjolfsson et al, 2023).

Occupations with a high content of routine and interpersonal tasks were more severely impacted by the pandemic, but all three types of tasks could potentially be impacted by technological changes, largely driven by stronger utilization of AI.

Employment Growth by Type of Tasks
(indexed Growth; 2019=100)
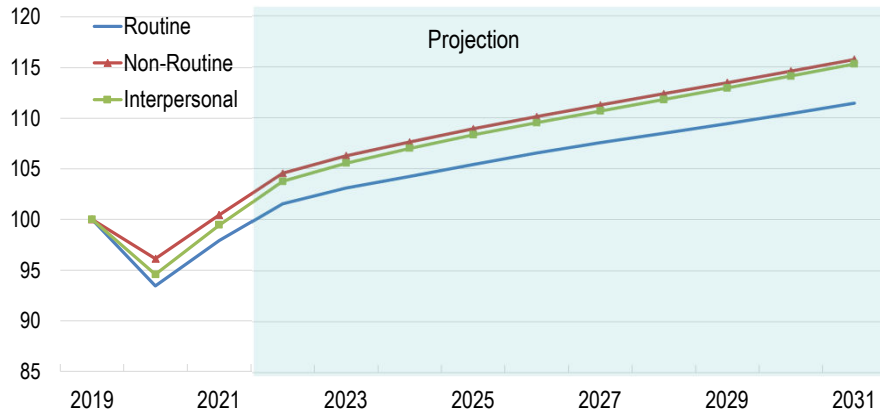
Sources: Statistics Canada (historical data) and ESDC 2022 COPS Projections.

This figure shows that occupations with a high content of routine and interpersonal tasks were more severely impacted during the pandemic, due mostly to the restrictions imposed on businesses that are characterised by close contact and high degree of in-person interaction. As AI becomes a bigger part of the technological progress, its impact is expected to be more evenly spread out among all occupations, regardless of their tasks concentration.

The industrial effect influences occupational employment growth according to the performance of the industry where they are employed. In principle, occupations directly linked to industries that are expected to have strong employment growth will benefit from a positive outlook. The reverse occurs for occupations linked to industries with weak employment growth.
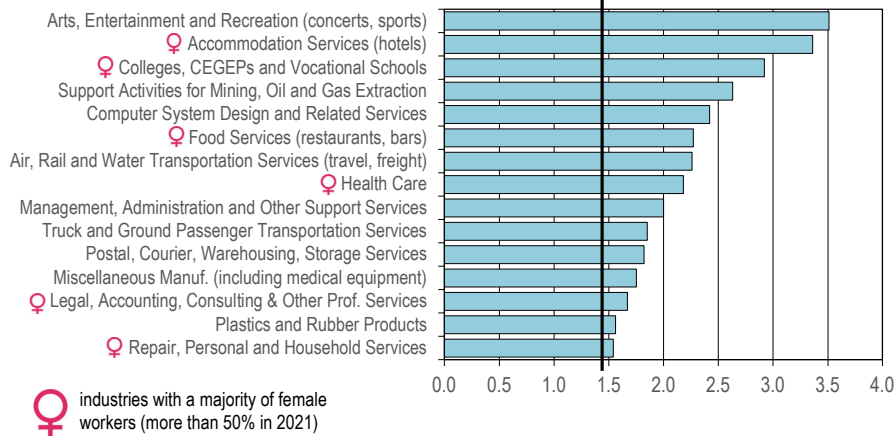
Employment growth by industry reflects the future trends anticipated in production and labour productivity for each of the 42 industries covered by COPS.

Industries that are projected to experience the <u>strongest growth</u> in employment.

Employment Growth by Industry, Projection 2022-2031
(average annual growth, in percentage)

ECONOMY AVERAGE = 1.4%

- Arts, Entertainment and Recreation (concerts, sports)
- ♀ Accommodation Services (hotels)
- ♀ Colleges, CEGEPs and Vocational Schools
- Support Activities for Mining, Oil and Gas Extraction
- Computer System Design and Related Services
- ♀ Food Services (restaurants, bars)
- Air, Rail and Water Transportation Services (travel, freight)
- ♀ Health Care
- Management, Administration and Other Support Services
- Truck and Ground Passenger Transportation Services
- Postal, Courier, Warehousing, Storage Services
- Miscellaneous Manuf. (including medical equipment)
- ♀ Legal, Accounting, Consulting & Other Prof. Services
- Plastics and Rubber Products
- ♀ Repair, Personal and Household Services

0.0   0.5   1.0   1.5   2.0   2.5   3.0   3.5   4.0

♀ industries with a majority of female workers (more than 50% in 2021)

Source: ESDC 2022 COPS industrial projections. Figures with 2 decimals were used to obtain a more accurate ranking.
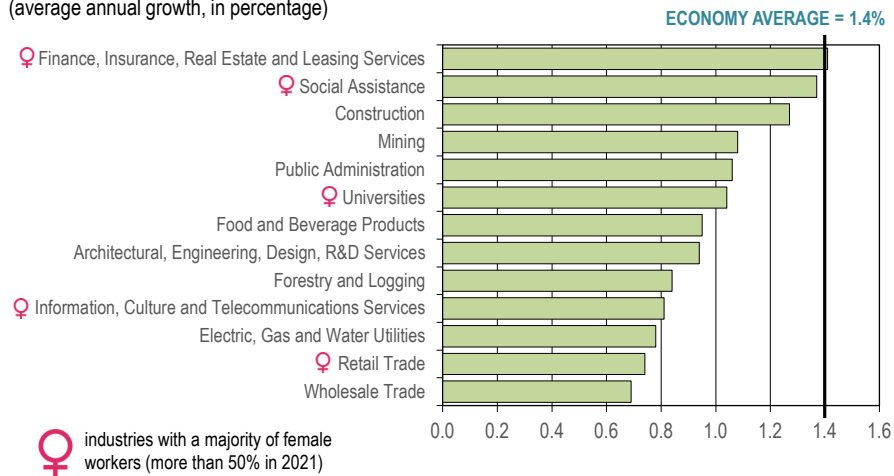
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- Industries projected to experience the strongest growth in employment (i.e. above 1.5% annually) are also those projected to experience among the strongest growth in output or those that are characterized by a high degree of labour intensity and human-centric jobs (low productivity growth). Below are some of the key factors expected to support output and job creation in those industries:

    - The accumulation of a large amount of pent-up demand for hard-to-distance services during the pandemic: arts, entertainment and recreation (concerts, theaters, museums, casinos, sport events, gyms); hotels, restaurants and bars; travel and tourism; personal and household services.

    - The return of foreign students to Canada and the positive impacts of domestic demographics on enrollment rates in colleges, CEGEPs and vocational schools.

    - Renewed growth in support activities for mining/oil/gas (such as drilling and exploration) in response to higher oil prices (short-term) and to the federal government's critical mineral strategy (long-term).

    - Rapid innovations in information and communication technologies (ICT) and the need for businesses to continuously upgrade their ICT infrastructure to remain secure and competitive (computer systems).

    - Strong demand for health care, stimulated by population aging, the recovery from the backlog in "non-essential" treatments caused by the pandemic, and the universal dental care program.

    - The growing number of firms across the economy that choose to outsource administrative and support functions in order to remain focused on their core activities and increase operation efficiency.

    - The faster pace of growth anticipated in manufacturing shipments (truck transportation) and additional investment in public and urban transit systems (ground passenger transportation).

    - Continued growth in e-commerce and the associated demand for postal, courier, warehousing and storage services (although a large part of the unfulfilled demand took place during the pandemic).

    - Increased demand for skilled workers in the design and production of medical equipment and the positive impact of the acceleration projected in manufacturing activity on plastics and rubber products.

    - Growing demand for professional advice on planning, logistics, mergers, acquisitions, environmental regulation and implementation of new technologies (legal, accounting and consulting services).

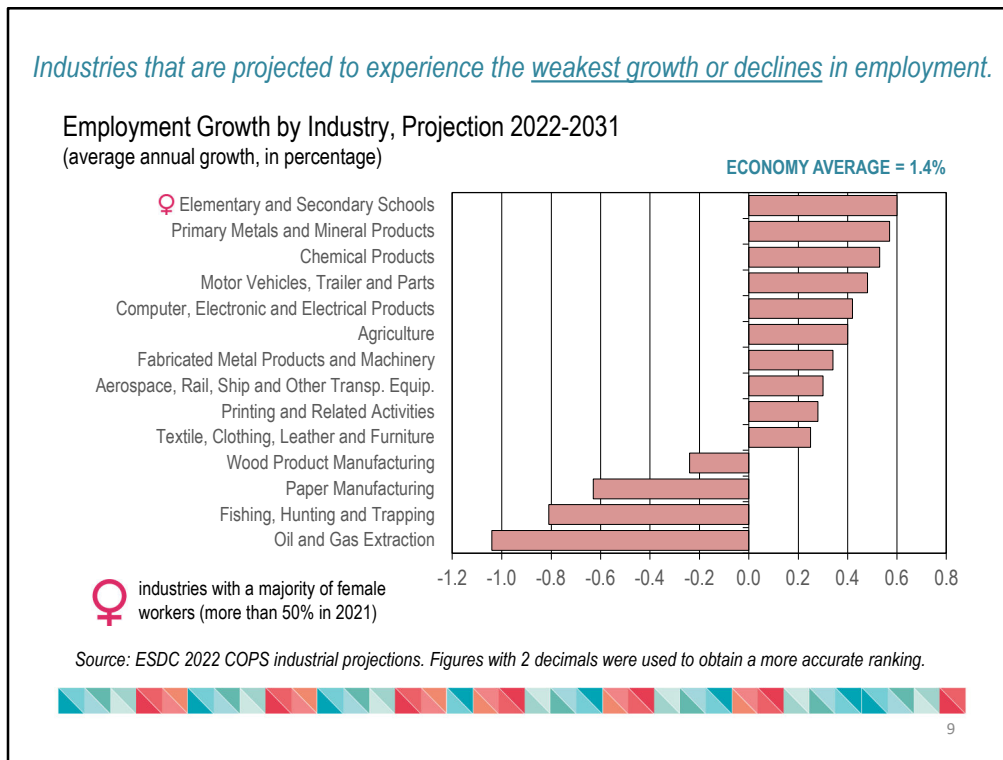Industries that are projected to experience _moderate growth_ in employment.

Employment Growth by Industry, Projection 2022-2031
(average annual growth, in percentage)

ECONOMY AVERAGE = 1.4%

♀ Finance, Insurance, Real Estate and Leasing Services
♀ Social Assistance
Construction
Mining
Public Administration
♀ Universities
Food and Beverage Products
Architectural, Engineering, Design, R&D Services
Forestry and Logging
♀ Information, Culture and Telecommunications Services
Electric, Gas and Water Utilities
♀ Retail Trade
Wholesale Trade

0.0   0.2   0.4   0.6   0.8   1.0   1.2   1.4   1.6

♀ industries with a majority of female workers (more than 50% in 2021)

Source: ESDC 2022 COPS industrial projections. Figures with 2 decimals were used to obtain a more accurate ranking.

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- Industries projected to experience moderate growth in employment (i.e. between 0.7% and 1.4% annually) are also among those projected to experience moderate growth in output and/or those where productivity growth is expected to account for a significant part of real GDP growth.

- This group includes several industries that performed relatively well in terms of output and employment growth during the pandemic, such as finance, insurance and real estate; construction; public administration; information, culture and telecommunications services; retail trade; and wholesale trade. Such industries benefited from a booming housing market; the development and implementation by public servants of various government pandemic-related support programs; a more intensive use of telework and streaming services by businesses and households; and a shift in consumption patterns toward goods and online shopping.

- However, those industries are projected to grow at a more moderate pace, on average, over the next decade. Indeed, lower purchasing power resulting from high inflation along with rising interest and mortgage rates and large government deficits are some of the key factors expected to affect growth in consumer spending (notably for goods), residential investment and government expenditures, particularly in the short- to medium-term.

- For most industries listed on the chart, moderate output growth is expected to limit employment growth. Relevant examples are forestry, public administration, mining and construction which are projected to experience the weakest growth rates in output among the group.

- In many other industries, productivity growth is expected to account for a significant share of the modest pace of growth anticipated in output, restraining employment growth further, particularly in industries providing commercial services (such as wholesale and retail trade; information, culture and telecommunication services; and finance, insurance and real estate) or non-commercial services (e.g. universities and social assistance). This situation reflects increased automation and rapid advances in digital and cognitive technologies. It also reflects new ways of delivering services and replace labour by capital wherever possible in response to demographic pressures on labour supply in Canada.

Industries that are projected to experience the _weakest growth or declines_ in employment.

Employment Growth by Industry, Projection 2022-2031
(average annual growth, in percentage)

ECONOMY AVERAGE = 1.4%

⚲ Elementary and Secondary Schools
Primary Metals and Mineral Products
Chemical Products
Motor Vehicles, Trailer and Parts
Computer, Electronic and Electrical Products
Agriculture
Fabricated Metal Products and Machinery
Aerospace, Rail, Ship and Other Transp. Equip.
Printing and Related Activities
Textile, Clothing, Leather and Furniture
Wood Product Manufacturing
Paper Manufacturing
Fishing, Hunting and Trapping
Oil and Gas Extraction

-1.2 -1.0 -0.8 -0.6 -0.4 -0.2 0.0 0.2 0.4 0.6 0.8

⚲ industries with a majority of female workers (more than 50% in 2021)

Source: ESDC 2022 COPS industrial projections. Figures with 2 decimals were used to obtain a more accurate ranking.

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- Industries projected to experience the weakest growth or declines in employment (i.e. below 0.6% annually) are also those projected to experience among the weakest growth in output and/or those where productivity growth is expected to account for a large part (or the totality) of real GDP growth.

- This group is essentially composed of manufacturing and primary industries, with the exception of elementary and secondary schools. Many of those industries have experienced a stagnation or a declining trend in output and/or employment over the past several years, such as agriculture, printing, textiles, clothing, furniture, wood products, paper and fishing. This group of industries is expected to face similar challenges than those experienced in the past as well as new challenges, including:

  - The intensification of foreign competition from low cost-producers in the manufacturing sector;

  - Lower demand for paper and printing due to the growing use of electronic media and telework;

  - Limited demand for wood, bricks, windows, furniture, appliances and other manufactured products due to the gradual slowdown projected in residential investment in North America;

  - Timber and fish supply constraints (allowable annual cuts and various quotas on fish species);

  - Difficulties to attract workers in agriculture and out-migration from rural/fishing communities;

  - Environmental regulation and limited production and pipeline capacity in oil and gas extraction.

- Productivity growth is expected to account for a large share (or the totality) of output growth in most industries listed on the chart, restraining employment growth (or resulting in employment declines) over the projection period. This reflects the fact that employment in those industries is largely composed of routine tasks that can be increasingly automated with new applications enabled by technological progress. The solid pace of growth anticipated in investment related to machinery and equipment (M&E) is expected to increase the amount of capital and technology available per worker, boosting productivity. For example, advanced robotics, augmented reality, 3D printing and internet of things (IoT) are among the most innovative technologies that are expected to transform manufacturing operations and improve productivity over the forecast horizon. Significant job losses in oil and gas extraction reflects the fact that the exploitation of oil sands has become less labour intensive due to advancements in extractive technologies and modular facility design. Additional job losses in fishing and paper primarily reflects further declines in output.
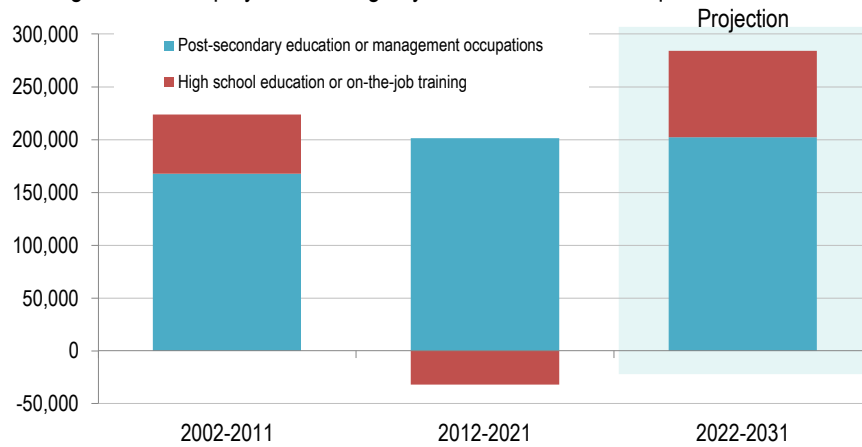
Industrial Summaries

For more details on the historical and future performance of the 42 industries covered by COPS, including key drivers of GDP, employment and productivity growth, please consult the Industrial Summaries available on the COPS website htpp://occupations.esdc.gc.ca/sppc-cops/

Over the next ten years, new job openings arising from economic growth are projected to be mainly in management positions and in those that usually require post-secondary education.

Average Annual Employment Change by Usual Educational Requirements

Projection

- Post-secondary education or management occupations
- High school education or on-the-job training

| | 2002-2011 | 2012-2021 | 2022-2031 |

Sources: Statistics Canada (historical data) and ESDC 2022 COPS Projections.

About 71% of the projected employment growth over the next 10 years is expected to be in occupations that usually require post-secondary education (university, college or vocational) or in management occupations. As a comparison, those occupations accounted for all new job creation during the preceding decade, as employment in occupations usually requiring high school education or on-the-job training was significantly impacted during the pandemic and had not fully recovered by 2021. However, the projected trend for the next decade is a continuation of what has been observed over the past 20 years as the Canadian economy became more knowledge-intensive, automatized and with stronger health care needs. Occupations that usually require post-secondary education (university, college or vocational) or in management occupations accounted for 65.7% of total employment in 2021.

The demand for jobs in occupations usually requiring high school education or on-the-job training is also projected to grow, but at a lower rate. The expected demand in health and its assisting occupations; and the continuing recovery of sectors that were highly impacted by the pandemic like accommodation and food services; art, entertainment and recreation; and tourism related services, will support employment growth in occupations usually requiring high school education or on-the-job training that are concentrated in these industries.

In 2021, the largest share of employment was in occupations that usually require a college education or apprenticeship training, followed by those that usually require high school education. Occupations that usually require a university education, only on-the-job training, and management occupations ranked third, fourth and fifth, respectively.

Over the projection period, occupations that usually require a university education are expected to have the strongest overall employment growth, contributing also to the largest number of jobs created among all educational requirement levels. This is mostly the result of strong growth expectations in occupations related to professional services in health, as well as in the natural and applied sciences fields, especially among the information technology sector.

Occupations that usually require a college education or apprenticeship training are projected to have the second largest contribution in terms of job creation.

Stronger employment growth among occupations that typically require post-secondary education is largely explained by a more limited impact of technological progress and the strong labour requirements in the health care sector as a result of population aging.

On the other hand, occupations that typically require only high-school education or less and on the job training have a higher content of routine and manual tasks that can be more easily automated, which partially limits their employment growth.

This situation will result in a slight increase in the share of occupations that usually require post-secondary education within total employment.

Distribution of Employment by Usual Educational Requirement

Legend:
- 2012-2021
- 2022-2031

Category	2012-2021	2022-2031
Management occupations	9.1%	8.6%
University education	20.3%	23.5%
College/apprenticeship education	33.6%	34.0%
High school education	26.4%	24.2%
On-the-job training	10.6%	9.6%
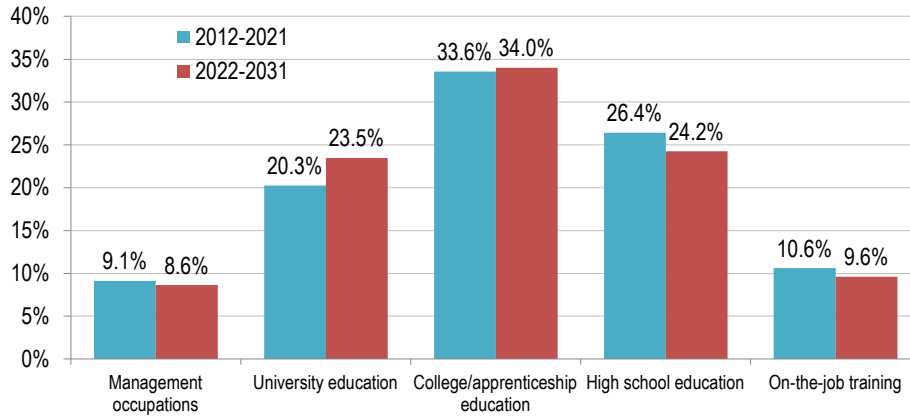
Sources: Statistics Canada (historical data) and ESDC 2022 COPS Projections.

As about 65% of the employment growth is expected to be in occupations that usually require post-secondary education (university, college or vocational) over the period 2022-2031, their projected proportion among total employment is expected to increase to 57.5% on average over the projection period, up from 53.8% of total employment on average over 2012-2021.

2-Digit NOC Occupational Groupings by Projected Employment Growth, 2022-2031
(average annual growth)

Growth above 1.9%*	Growth below 0.8%*
Assisting occupations in support of health services	Office support occupations
Professional occupations in nursing	Processing and manufacturing machine operators and related production workers
Harvesting, landscaping and natural resources labourers	Workers in natural resources, agriculture and related production
Service supervisors and specialized service occupations	Trades helpers, construction labourers and related occupations
Technical occupations in art, culture, recreation and sport	Assemblers in manufacturing
Professional occupations in health (except nursing)	Middle management occupations in retail and wholesale trade and customer services
Technical occupations in health	Senior management occupations
Paraprofessional occupations in legal, social, community and education services	Care providers and educational, legal and public protection support occupations
	Labourers in processing, manufacturing and utilities

*Annual growth rate for total employment is 1.4%. Boundaries were set at plus and minus 5 percentage points of this growth rate.

Source: ESDC 2022 COPS Projections.

The growing demand for healthcare is expected to stimulate the demand for a number of professional and technical health-related occupations over the projection period.

Occupations related to sectors that were highly impacted by the pandemic, such as art, culture and tourism, are going to benefit from the ongoing recovery that will support employment growth during the first few years of the projection period.

Growth in harvesting, landscaping and natural resources labourers comes mostly from landscaping and grounds maintenance labourers which has been growing at a healthy pace over the past decades. This is expected to continue over the projected period as their services will be needed to assist in the construction of landscapes and related structures, and to maintain lawns, gardens, athletic fields, golf courses, cemeteries, parks, landscaped interiors and other landscaped areas.

With the exception of some occupations, growth for management occupations is projected to be close the aggregate average. Yet, employment in senior management occupations has declined since 2004, mostly because of the budget deficits reduction initiatives recorded by the various levels of government and because of the financial crisis. This situation is expected to continue at a slower pace over the projection period as austerity measures ease.

A weaker economic outlook in forestry and fishing, as well as in some manufacturing industries such as wood, paper, printing, textile and clothing, is expected to limit employment growth in occupations usually requiring high-school education or less that are related to these industries.

Occupations related to office and clerical work are expected to also have below average employment growth. This is mostly due to the constant introduction of technologies that continue to transform secretarial work, leading to the specialization of administrative duties.

Top 10 Occupational Groupings with the Strongest Annual Average Employment Growth, 2022-2031			
NOC	Occupations	Employment (2021)	Growth Rate (2022-2031)
6522	Pursers and flight attendants ♀	6,200	7.1%
3011	Nursing co-ordinators and supervisors ♀	29,800	3.7%
6321	Chefs	49,600	3.6%
6511	Maîtres d'hôtel and hosts/hostesses ♀	41,000	3.5%
5250*	Athletes, coaches, referees and related occupations ♀	112,800	3.4%
6530*	Tourism and amusement services occupations	7,500	3.3%
6720*	Support occupations in accommodation, travel and amusement services	44,100	3.3%
0510*	Managers in art, culture, recreation and sport ♀	11,300	3.2%
1226	Conference and event planners ♀	20,400	3.2%
6523*	Airline ticket and service agents & Ground and water transport ticket agents, cargo service representatives and related clerks ♀	11,300	3.1%

♀: Occupations where at least 50% of their workers were women in 2021.

Sources: Statistics Canada (historical data) and ESDC 2022 COPS Projections.

With the exception of nursing co-ordinators and supervisors (NOC 3011), all the other occupational groupings in the top 10 of strongest employment growth are concentrated in sectors that were highly impacted by public health measures introduced by governments to reduce the spread of COVID-19 cases. All those occupational groupings recorded substantial employment losses in 2020, and while some recovery occurred in 2021, they remained well below pre-pandemic level.

In the short-term, these occupational groupings are expected to record strong employment growth, given that all pandemic related restrictions have been removed across the country. The pent-up demand will drive growth during the first years of the projections.

Over the medium-term, employment growth is expected to be more modest and return to more sustainable trend among these occupations, in line with population growth and fueled by discretionary spending by a population that is ageing. However, employment in some of these occupational groupings is still expected to remain below their pre-pandemic level by the end of the projection period.

Other occupations with strong long-term growth, but not in this list, are related to the health care sector, the technology progress (ICT occupations, for example) and the transition to the green economy (some construction trades, such as electricians, for example).

The strongest employment declines are expected in some occupations related to fishing, wood and paper manufacturing and services.

NOC	Occupations	Employment (2021)	Growth Rate (2022-2031)
Top 10 Occupational Groupings with the Largest Annual Average Employment Decline Rates, 2022-2031
6621	Service station attendants	8,300	-6.6%
6521	Travel counsellors ♀	9,800	-3.3%
7272	Cabinetmakers	3,600	-1.2%
9614	Labourers in wood, pulp and paper processing	16,200	-1.1%
8260*	Fishing vessel masters and fishermen/women	12,400	-0.8%
9432*	Pulp mill machine operators; Papermaking and finishing machine operators& Paper converting machine operators	19,600	-0.8%
8440*	Other workers in fishing and trapping and hunting occupations	4,200	-0.7%
4168*	Program officers unique to government & Other professional occupations in social science, n.e.c. ♀	10,400	-0.7%
0811	Managers in natural resources production and fishing	16,700	-0.7%
7281	Bricklayers	10,400	-0.5%

♀: Occupations wh GGEE[0 ast 50% of their workers were women in 2021.

Sources: Statistics Canada (historical data) and ESDC 2022 COPS Projections.

The two occupations (NOC 6621 and 6521) that are expected to face the largest job losses are occupations for which employment has been on a declining trend for a number of years. In both cases, this trend is expected to continue. Fuel service stations attendants will continue to be less and less needed, while the continued popularity of airline tickets and trip packages sales on the Internet and the decrease in commissions paid to travel agencies by air carriers will lower demand for travel counsellors.

Cabinetmakers (NOC 7272) employment has been on a downward trend for several years. Cabinetmakers have competed with an increasing use of prefabricated cabinets, which have become progressively cheaper and a viable option for renovators and homebuilders. This trend is expected to continue over the projected period, leading to a further decline in employment for cabinetmakers.

Two other occupations (NOC 8260 and 8440) are unique to the fishing industry. Both occupations are relatively small. Fish supply constraints and the various quotas and moratorium as well as productivity growth from the increased use of more efficient fishing boat equipment are expected to continue to lower employment in the fishing industry over the projection period.

Technological advancements and the increased use of digital imaging has come at the expense of labourers in wood, pulp and paper processing (NOC 9614) and printing press operators (NOC 9432).

GGEE[0   It sucks to have the bricklayers here. I took at look at their employment graph, and they had losses in 2021 (not 2020, like everyone else), and we never brought them back up. I checked the existing 2022 data, and they recovered about 50% of the loss. In general, the -0.5% just reflects that it would stay basically flat, but I hate that it is in the bottom 10! And that we have to say in the title "some trades". Maybe we can delete that last part and end the sentence with ... "and services".
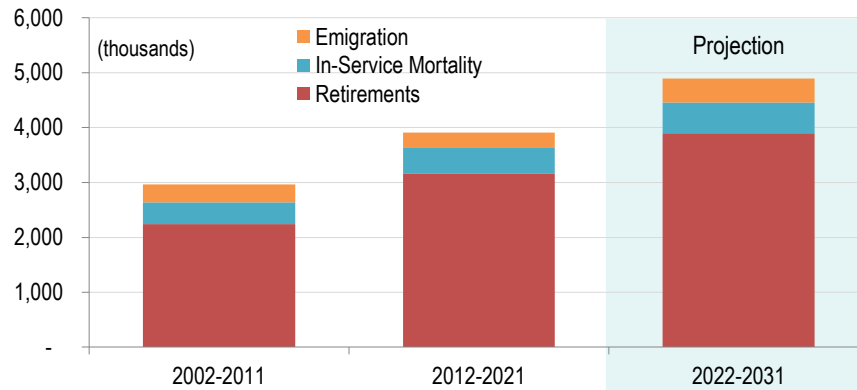
Gomez Gomez, Erwin E [NC], 2023-05-02T17:57:48.911

Job Openings
in Existing Positions
– Replacement Demand –

Retirements will continue to represent the most important source of replacement demand.

Sources of Replacement Demand

Note: Historical retirements are constructed using data from the Longitudinal Administrative Database (LAD). Retirement is defined as a complete and permanent withdrawal from the labour market.

*Sources: Statistics Canada (historical data) and ESDC 2022 COPS Projections.*

Economic growth is not the only source of job openings. Replacement demand is the other major source of job openings. These openings are created by the following factors:

- Retirements: approximately 3.9 million positions are expected to open up due to retirements over the period 2022-2031. As the baby-boom generation continues to retire, the replacement demand generated from this source is expected to continue to rise. Over the coming decade, retirements are projected to represent 80% of replacement demand, about the same as over the period 2012-2021, and compared to 76% over the period 2002-2011;

- In-service mortality: about 560 thousand jobs are expected to open up due to in-service mortality; and

- Emigration: nearly 436 thousand jobs are expected to open up due to emigration.

Retirements are expected to increase at a faster rate than employment in the first half of the projected period before slowing down once all the Baby boomers have retired.

Overall Retirement Rate and Indexed Growth of Retirements and Employment
(indexed Growth; 2008=100)
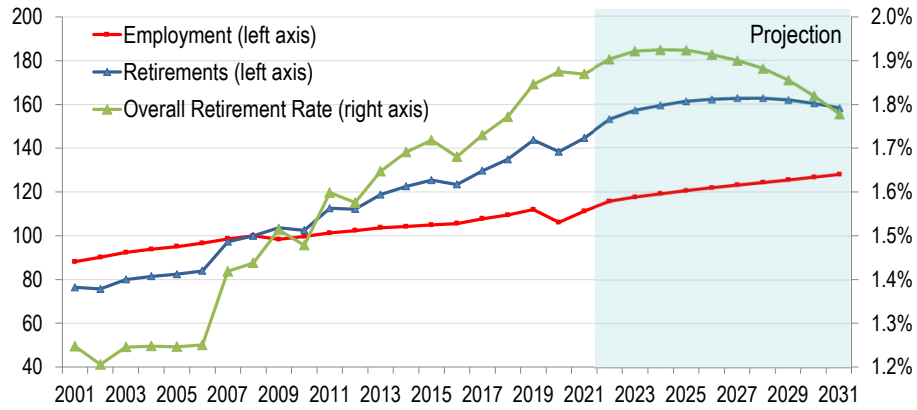
Sources: ESDC Estimates (historical data) and ESDC 2022 COPS Projections.

Retirement growth and employment growth were comparable prior to 2007, but the former started outpacing the latter as of 2007. As a result, the overall retirement rate, expressed as the number of retirees per employed worker, grew from 1.3% in 2006 to 1.9% in 2021.
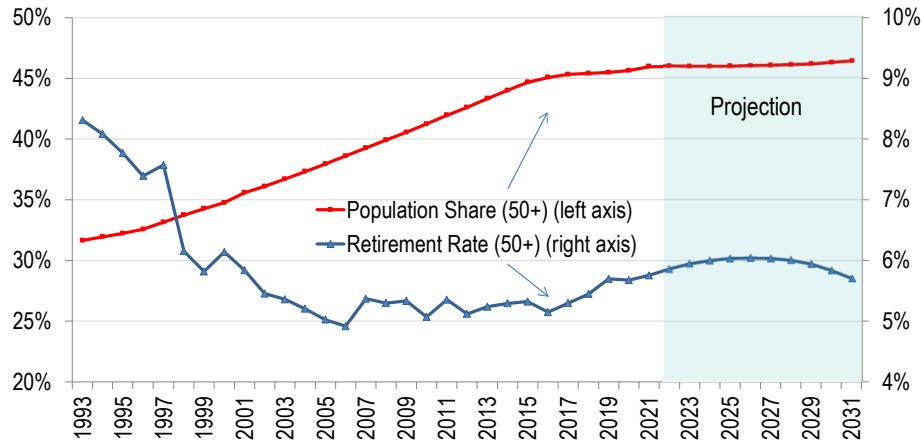
This overall retirement rate is expected to peak in the mid-2020s. Accordingly, the acceleration in the number of retirees seen since 2008 is expected to continue, at least over the first half of the coming decade. However, as all baby boomers will be over 65 years old by 2030, the volume and rate of retirements will reach a plateau towards the middle of the projection period before declining in the second half and beyond 2031.

The number of retirements is projected to rise from an annual average of 315,000 over the period 2012-2021 to 390,000 annually over the period 2022-2031.

Retirements are expected to account for the largest source of job openings, but its share in total job openings is expected to slightly decline over the next ten years.

The projected increase in the number of retirements is primarily due to the ageing of the large baby boom cohort.

Share of the Population Aged 50 and Over and its Retirement Rate

Projection

Population Share (50+) (left axis)
Retirement Rate (50+) (right axis)

Sources: ESDC Estimates (historical data) and ESDC 2022 COPS Projections.

The expected continued rise in the number of retirements and the overall retirement rate, at least over the first half of the projection period, is explained by the aging of the Canadian population.

More members of the baby boom generation will reach retirement age. The proportion of the population that are 50 years old or older is expected to continue to increase, but at a much slower pace. The upward trend in the retirement rate of these workers is projected to continue gradually, but it is expected to reach a plateau in the mid 2020s as all baby boomers will be 65 years old or older, and most of them would have retired before the end of the projection period.

About two-thirds of projected retirements are in occupations that usually require post-secondary education or in management occupations.

Distribution of Retirements by Usual Educational Requirement, Projection 2022-2031
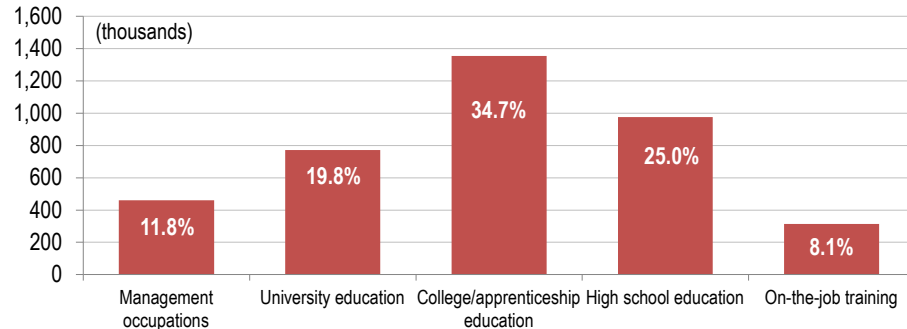
	Management	**University education**	**College/apprenticeship education**	**High school education**	**On-the-job training**
Ave. Annual Retirement Rate	2.6%	1.6%	1.9%	1.9%	1.6%
10-Year Retirements	459,600	770,800	1,354,400	975,000	314,300

Source: ESDC 2022 COPS Projections.

However, retirements are not evenly distributed amongst occupations. Indeed, occupations that usually require post-secondary education (university, college or vocational) or in management occupations, which represented 65.4% of total employment in 2021, are expected to account for 66.4% of the job openings generated by retirements over the projection period.

The majority of the retirements are projected to be in occupations that have the largest proportions of employment. That is, they are expected to be in larger quantities in occupations that usually require college education or apprenticeship certificate and in those that usually require high school education.

Retirements will generate a disproportionately larger number of job openings in management occupations as these workers tend to be significantly older than average, despite tending to retire at a slightly older age. On the other hand, workers in occupations that usually require on-the-job training tend to be younger than average and tend to retire at a similar age than the all-occupations average, translating into a lower volume of retirements.

Concerning occupations that usually require university education, the strong employment growth in recent years as well as during the projection period means that retirement will represent a lower share relative to their employment share.

Therefore, projected retirement rates are the highest in management occupations and the lowest in occupations that usually require university education and on-the-job training.

The distribution of retirements by usual educational requirement is projected to remain relatively stable over the period 2022-2031 when compared to the preceding decade.

Distribution of Retirements by Usual Educational Requirement
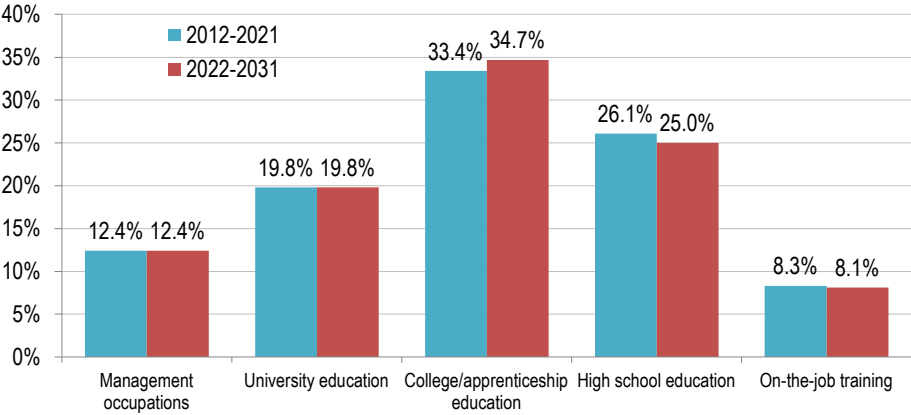
Sources: Statistics Canada (historical data) and ESDC 2022 COPS Projections.

Yet, the distribution of retirements by usual educational requirement is projected to remain relatively stable over the period 2022-2031 when compared to the preceding decade.

Top 10 Occupational Groupings with the Largest Number of Retirements, 2022-2031			
NOC	**Occupations**	**Total Retirements**	**Retirement Rate**
0621	Retail and wholesale trade managers	99,400	3.2%
7511	Transport truck drivers	85,100	2.5%
6421	Retail salespersons ♀	78,900	1.4%
3413*	Nurse aides, orderlies and patient service associates & Other assisting occupations in support of health services ♀	70,300	1.7%
1311	Accounting technician and bookkeepers ♀	66,100	2.9%
6731	Light duty cleaners ♀	65,900	2.8%
4032	Elementary school and kindergarten teachers ♀	62,500	1.6%
1241	Administrative assistants ♀	61,000	2.7%
2171	Information systems analysts and consultants	59,600	1.8%
6733	Janitors, caretakers and building superintendents	59,400	3.2%

♀: Occupations where at least 50% of their workers were women in 2021.
Source: ESDC 2022 COPS Projections.

Similarly, at the detailed occupational level (COPS NOC groupings), occupations with the largest projected need to replace retirees are mostly due to their employment size. In fact, four of the top ten occupations have retirement rates that are lower the average (1.9%). Retail and wholesale trade managers (NOC 0621), and janitors, caretakers and building superintendents are projected to have the highest retirement rates among the top 10. On the other hand, the occupation of retail salespersons (NOC 6421) is expected to have the lowest retirement rate.

NOC	Occupations	Total Retirements	Retirement Rate
	Top 10 Occupational Groupings with the Highest Retirement Rates, 2022-2031		
7272	Cabinetmakers	1,500	4.7%
0010*	Legislators and senior management	23,800	4.1%
0430*	Managers in public protection services	2,200	4.0%
0632	Accommodation service managers	25,500	3.9%
6521	Travel counsellors ♀	3,000	3.9%
7512	Bus drivers, subway operators and other transit operators	37,200	3.7%
4154	Professional occupations in religion	11,900	3.6%
8241	Logging machinery operators	4,500	3.6%
7513	Taxi and limousine drivers and chauffeurs	17,400	3.6%
4412	Home support workers, housekeepers and related occupations ♀	24,500	3.5%

♀: Occupations where at least 50% of their workers were women in 2021.

Source: ESDC 2022 COPS Projections.

Occupations with the strongest projected retirement pressures (as per their retirement rates) includes management occupations, as they tend to be older than average.

Other occupations with relatively old workforce, such as bus drivers and taxi and limousines drivers, as well as professional occupations in religion are also expected to have higher retirement rates. The drivers occupations tend to employed workers over 25 years old due to insurance cost, making them older in average.

Finally, occupations such as cabinetmakers and travel counsellors have high retirement rates because employment is expected to decline over the projected period, while workers will continue to retire. As a result, their retirements will represent an increasing share relative to employment.

Occupations with the weakest projected retirement pressures are mostly concentrated in service industries

	Top 10 Occupational Groupings with the Lowest Retirement Rates, 2022-2031		
NOC	**Occupations**	**Total Retirements**	**Retirement Rate**
3213	Animal health technologists and veterinary technician ♀	800	0.3%
4012	Post-secondary teaching and research assistants ♀	4,000	0.4%
3132	Dietitians and nutritionists ♀	1,000	0.6%
6511	Maîtres d'hôtel and hosts/hostesses ♀	3,000	0.6%
6311	Food service supervisors ♀	5,400	0.6%
2175	Web designers and developers	2,700	0.7%
5250*	Athletes, coaches, referees and related occupations ♀	10,100	0.7%
8614*	Mine labourers & Oil and gas drilling, servicing and related labourers	600	0.7%
6513	Food and beverage servers ♀	9,900	0.7%
2152*	Landscape architects; Urban and land use planners & Land surveyors	1,200	0.7%

♀: Occupations where at least 50% of their workers were women in 2021.
Source: ESDC 2022 COPS Projections.

Three of the ten occupations with the lowest retirement rates are expected to be in sales and services, which tend to employ a younger workforce.

Almost all occupations with the lowest retirement rates are related to the service industry and are characterized by a relatively young workforce. The only exception is Landscape architects; Urban and land planners and Land surveyors (NOC 2152/2153/2154). This occupation has a workforce of similar age than the average, but they retire much later in their career.
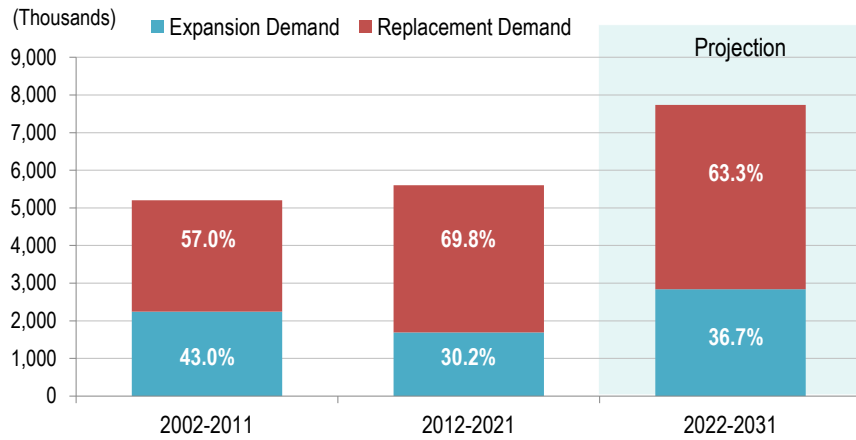
Only Mine labourers and Oil and gas drilling, servicing and related labourers are related to the goods-producing industry. This occupation usually requires on-the-job training and employs a high share of younger workers and the workforce tend to retire at a relatively advanced age.

Total Job Openings

Job Openings from Expansion and Replacement Demand

(Thousands) ■ Expansion Demand ■ Replacement Demand

	2002-2011	2012-2021	2022-2031 (Projection)
Replacement Demand	57.0%	69.8%	63.3%
Expansion Demand	43.0%	30.2%	36.7%

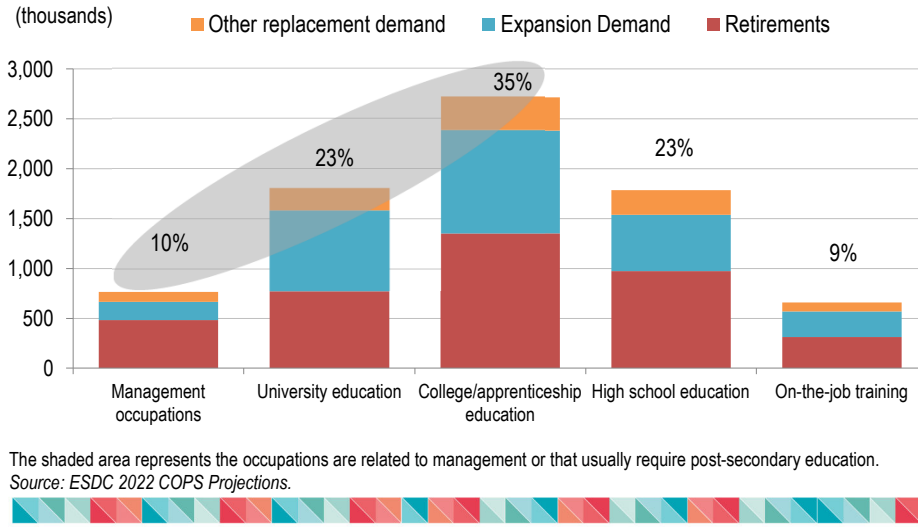*Sources: Statistics Canada (historical data) and ESDC 2022 COPS Projections.*

A total of 7.74 million job openings (those due to economic growth plus those due to replacement needs) are expected over the period 2022-2031. About 2.8 million are projected to be new positions as a result of increasing economic activity (expansion demand or employment growth), while over 4.9 million are projected to be existing positions being vacated due to replacement needs (retirements will account for 3.9 million of the 4.9 million positions being vacated).

As a result, replacement demand (mainly from retirements) is expected to represent 63.3% of all projected job openings over the period 2022-2031, down from 69.8% in 2012-2021, but up from 57.0% in 2002-2011.

The main reason why the share of replacement demand amongst total job openings during the projected period is lower than the last decade is because of the strong expansion demand expected in 2022 and 2023 as part of the labour market recovery from the impact of the COVID-19 pandemic. Beyond 2023, the share of replacement demand will be closer to 70%.

Job Openings from Expansion and Replacement Demand by Usual Educational Requirement, Projection 2022-2031

The shaded area represents the occupations are related to management or that usually require post-secondary education.
Source: ESDC 2022 COPS Projections.

Looking at the minimum typical educational and/or training level required, more than two-thirds (or about 5.3 million) of the job openings are expected to be in occupations that usually require post-secondary education (university, college or vocational) or in management occupations. In fact, 71% of new jobs created by economic expansion are projected to be in occupations generally requiring post-secondary education or in management occupations, whereas 66.7% of job openings due to replacement will be in these occupational groups, for a combined average of 67.9% (around 5.3 million).

Given that 71% of the new jobs are expected to be in occupations that usually require post-secondary education (university, college or vocational) or in management occupations over the period 2022-2031, their proportion among total employment will continue to rise in the coming decade. Indeed, the share of occupations that usually require post-secondary education (university, college or vocational) and management occupations out of total employment has grown from 60.5% in 2011 to 65.7% in 2021, and it is expected to reach 66.4% in 2031.

Over the next ten years, less than one-third of job openings (around 2.4 million) are expected to be in occupations usually requiring high school education or on-the-job training.

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Two healthcare occupations are in the top three of the list of occupations with the largest number of job openings.

	Top 10 Occupational Groupings with the Largest Number of Job Openings, 2022-2031		
NOC	**Occupation**	**Employment (2021)**	**Job Openings (2022-2031)**
3413*	Nurse aides, orderlies and patient service associates & Other assisting occupations in support of health services ♀	347,400	190,900
7511	Transport truck drivers	315,600	161,700
3012	Registered nurses and registered psychiatric nurses ♀	327,000	155,500
6421	Retail salespersons ♀	527,900	149,200
2171	Information systems analysts and consultants	288,100	143,600
4032	Elementary school and kindergarten teachers ♀	353,600	125,300
6731	Light duty cleaners ♀	213,000	121,700
0621	Retail and wholesale trade managers	302,400	117,700
1311	Accounting technician and bookkeepers ♀	206,500	116,500
6711	Food counter attendants, kitchen helpers and related support occupations ♀	337,900	110,000

♀: Occupations where at least 50% of their workers were women in 2021.

Sources: Statistics Canada (historical data) and ESDC 2022 COPS Projections.

At the more detailed occupational level, occupations that are projected to have the largest number of job openings usually have a large employment size, resulting in relatively large replacement needs. Indeed, employment in those 10 occupations (10 out of 293 occupations) accounted for about 17.1% of total employment in 2021. They can be summarized as follows:

- Two healthcare occupations are in the top three of the list of occupations with the largest number of job openings. Registered nurses and registered psychiatric nurses (NOC 3012) as well as Nurse aides, orderlies and patient service associates & Other assisting occupations in support of health services (NOC 3413/3414) are expected to have above average employment growth over the projection period. Given their large employment size, they are also expected to have large volumes of retirements. As the Canadian population ages, the demand for health services and consequently the need for healthcare professionals are projected to increase. Moreover, the commitment made by some provinces to reduce wait times at emergency rooms as well as for surgical procedures and specialized treatments is expected to contribute to the increase of labour demand for workers in these occupations.

- Similarly, employment growth is expected to be above average for Information systems analysts and consultants (NOC 2171), which will generate a large volume of job openings. Demand for workers in this occupation is expected to be supported by technological changes. Indeed, rapid innovation will continue to encourage firms to adapt quickly and upgrade their IT infrastructure to remain digitally safe and competitive. The increasing popularity of data science and analytics, involving predictive analysis, machine learning as well as artificial intelligence, will provide numerous opportunities to work as information systems analysts and consultants. Finally, the rising number and complexity of cyber attacks is expected to boost demand for workers with specific skills related to cyber security.

- Four occupations in sales and services (NOCs 6421, 6731, 0621 and 6711) are also part of the top 10 occupations where we expect the largest number of job openings, but mostly as a result of their large recovery in 2022 and their employment size. A similar case occurs with Elementary school and kindergarten teachers (NOC 4032).

- Similarly, job openings for Truck drivers (NOC 7511) are large mostly because of the overall size of this occupation. In fact, its openings rate is not significantly different than the national average. Although workers in this occupational group tend to be older than the average, they also tend to retire at a later age, resulting in a retirement rate that is similar to the average rate of all occupations.

- Finally, women represented more than 50% of workers in seven of these ten occupations in 2021.

The highest ratios of job openings to employment are in health related occupations as well as occupations related to the tourism sector that were severely impacted by the pandemic.

Top 10 Occupational Groupings with the Highest Ratio of Job Openings, 2022-2031			
NOC	Occupations	Employment (2021)	Job Openings (2022-2031) over 2021 Employment
6522	Pursers and flight attendants ♀	6,200	145.2%
0430*	Managers in public protection services	4,400	95.5%
6530	Tourism and amusement services occupations	7,500	82.7%
0632	Accommodation service managers	56,100	80.9%
6523*	Airline ticket and service agents & Ground and water transport ticket agents, cargo service representatives and related clerks ♀	11,300	78.8%
3011	Nursing co-ordinators and supervisors ♀	29,800	77.5%
0510	Managers in art, culture, recreation and sport ♀	11,300	76.1%
4151	Psychologists ♀	27,600	68.8%
6321	Chefs	49,600	68.3%
3111	Specialist physicians	45,400	65.9%

♀: Occupations where at least 50% of their workers were women in 2021.

Sources: Statistics Canada (historical data) and ESDC 2022 COPS Projections.

To assess the size of labour demand in each occupation, the ratio of the projected number of cumulative job openings to the actual level of employment in 2021 was used. According to this indicator, the ten occupations with the largest ratios of job openings to employment are projected to be in healthcare occupations, as well as occupations related to the tourism sector. Concerning health care occupations, it is not surprising as these occupations are expected to experience strong employment growth (expansion demand). For those related to the tourism sector, this reflects the severe impact of the pandemic on these occupations. By 2021, most of these occupations still experienced significant employment deficit relative to their respective pre-pandemic level. Several of these occupations are expected to record strong employment growth in 2022 and 2023 as the tourism sector slowly recovers. However, in some cases, employment is not expected to return to its pre-pandemic level by the end od the projection period.

	Top 10 Occupational Groupings with the Smallest Ratio of Job Openings, 2022-2031		
NOC	Occupations	Employment (2021)	Job Openings (2022-2031) over 2021 Employment
6621	Service station attendants	8,300	-34.9%
6521	Travel counsellors ♀	9,800	5.1%
9614	Labourers in wood, pulp and paper processing	18,100	10.5%
8614*	Mine labourers & Oil and gas drilling, servicing and related labourers	8,300	13.3%
2141*	Industrial and manufacturing engineers & Metallurgical and materials engineers	25,300	15.0%
9432*	Pulp mill machine operators; Papermaking and finishing machine operators& Paper converting machine operators	19,600	15.8%
2152*	Landscape architects; Urban and land use planners & Land surveyors	15,900	17.6%
7610*	Trades helpers and labourers	100,700	17.7%
7281	Bricklayers	10,400	19.2%
2250*	Technical occupations in architecture, drafting, surveying, geomatics	16,100	12.6%
♀: Occupations where at least 50% of their workers were women in 2021.			

Sources: Statistics Canada (historical data) and ESDC 2022 COPS Projections.

On the other hand, occupations that are expected to face the lowest ratios of job openings over the projection period are those related to sales and services (service station attendants and travel counselors), some manufacturing occupations, fishing, mining/oil/gas, and a couple of trades. Retirement pressures for most of those occupations are low as workers are generally younger. Also, employment growth for some of these occupations is expected to be below average or negative, as they are heavily impacted by technology advancement among other factors.

In 2021, women accounted for more than 50% of employment in five of the ten occupations with the largest ratios of job openings, but only in one with the lowest ratios. This is also reflected in occupations with a substantially high concentration of female employment (where at least 80% of the employment were women in 2021).

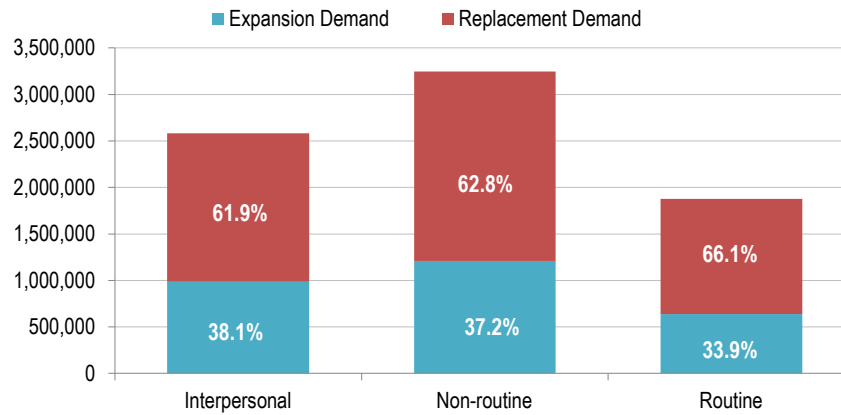| *Occupations where at least 80% of workers were women in 2021 are expected to have on average a slightly higher ratios of job openings than for those where the concentration was below 20% because of relatively stronger job creation and a higher proportion of retirements.*	
There were 39 occupations where at least 80% workers were <u>women</u> in 2021	**There were 92 occupations where at least 80% workers were <u>men</u> in 2021**
Employment in these 39 occupations represented about 18.1% of total employment.	Employment in these 92 occupations represented about 23.6% of total employment.
On average, job openings in these occupations are expected to account for 41.9% of the 2021 employment over the projection period.	On average, job openings in these occupations are expected to account for 38.9% of the 2021 employment over the projection period.
10 (or 25.6%) of the 39 occupations are expected to have a job opening ratio substantially above the average. • 15 (or 38.5%) are expected to have a job opening ratio above the average of all occupations (41.0%).	15 (or 16.3%) of the 92 occupations are expected to have a job opening ratio substantially above the average. • 39 (or 42.4%) are expected to have a job opening ratio above the average of all occupations (41.0%).
Of the 15 with above average job opening ratios: • 5 Health occupations • 4 Business, finance and administration occupations • 4 In education, law and social, community and government	Of the 39 with above average job opening ratios: • 21 Trades, transport and equipment operators and related • 7 Natural and applied sciences and related occupations • 5 Natural resources, agriculture and related occupations • 3 Occupations in manufacturing and utilities
Sources: ESDC estimates (historical data) and ESDC 2022 COPS Projections.	

In 2021, 39 occupations had a significantly high concentration of female workers, a number lower than the 92 with a substantially elevated proportion of males.

The sum of the projected job openings of all the occupations with a significant concentration of female workers is expected to represent about 41.9% of their cumulative 2021 employment level. Of these, 15 occupations (38.5%) are projected to have ratios above the average of 41.0%. The larger employment size among these occupations, the relatively stronger job creation and their generally higher proportion of retirements, explain this situation. Occupations related to health; business, finance and administration; as well as education, law and social, community and government services represent the large majority of such occupations.

In comparison, job openings will represent about 38.9% of the 2021 employment among occupations with a strong concentration of males. Of these, 39 occupations (42.4%) are expected to have above average job openings ratios. Occupations related to trades, transport and equipment operators, natural and applied sciences, natural resources and agriculture, as well as manufacturing account for the majority of such occupations.

Job Openings from Expansion and Replacement Demand by Type of Tasks, Projection 2022-2031

■ Expansion Demand   ■ Replacement Demand

	Interpersonal	Non-routine	Routine
Replacement Demand	61.9%	62.8%	66.1%
Expansion Demand	38.1%	37.2%	33.9%

Source: ESDC 2022 COPS Projections.

Out of the 7.74 million projected job openings (those due to economic growth plus those due to replacement needs), a little more than 3.2 million of those job openings (42.1%) are expected to have a high content of non-routine tasks. About 1.2 million (37.2% of them) are projected to be new positions resulting from increasing economic activity (expansion demand or employment growth), and about 2.0 million are projected to be existing positions being vacated due to replacement needs (retirements will account for 1.6 million of the 2.0 million positions being vacated).

A little less than 2.6 million of the job openings are expected to have a high content of interpersonal tasks. This type of tasks will have the highest share of job openings resulting from expansion demand (or employment growth), accounting for a little less than 1 million openings (38.1%). The need to replace some 1.6 million existing positions will still represent about 62% of job openings (of which 1.27 million will be from retirements).

Occupations with overall high shares of interpersonal and non-routine cognitive tasks are expected to have the largest proportion of job openings.

Finally, occupations with a high content of routine tasks are expected to account for about 1.9 million of job openings. About two-thirds of those openings will come from replacement needs (about 1.24 million, of which, 1 million are from retirements), while the remaining 640,000 openings are projected to be new positions as a result of increasing economic activity.