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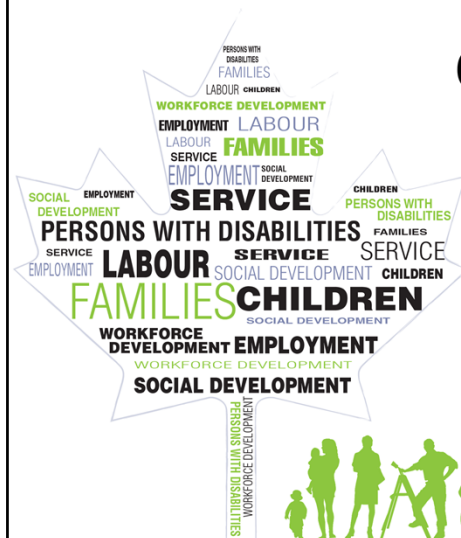
- Job openings are positions that need to be filled due to:
  - expansion demand (new jobs generated through economic growth)
  - replacement demand (any existing jobs which have been vacated and that require to be replaced)

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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 current exercise uses the 2016 NOC, which is the most up-to-date version of the classification, and covers the period 2017 to 2026.*

- *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, 292 occupational groupings were obtained. Occupations that were grouped are marked with an asterisk (*).*

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For more information on the 292 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)

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Over the next 10 years, economic growth is expected to generate about 1.6 million new jobs (160,000 on average every year), which represent an annual average growth rate of 0.9%. The weaker growth, compared to previous decades, will be due to the slower growth in the labour force (see document Macroeconomic Projections).

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

- Automation is already well underway in many sectors of the economy and is expected to accelerate with new applications enabled by technological progress.

- In general, automation affects 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.

- Predictions that automation will make human workers redundant have been made before, but technology has ended up creating more jobs in the long-run than it destroys in the short-run.

- This is because technology tends to reallocate jobs at the industrial and occupational levels.

- Industries and occupations involving routine tasks are generally more are at risk of being automated and experience lower employment growth than those involving cognitive tasks.

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Employment growth by industry reflects the future trends anticipated in production and labour productivity for each of the 42 industries covered by COPS. The performance of an industry in terms of production is heavily influenced by macroeconomic and demographic factors (consumption, investment, exports, interest rates, exchange rates, import penetration, population growth, population aging, etc.), while the performance in terms of productivity mostly reflects technology adoption and labour quality.

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.

In recent years, there has been an increasing interest in understanding how technology will impact the labour market, as the automation of the production process is expected to accelerate considering the speed of technological developments.

In general, automation affects 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 ended up creating more jobs than it 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.
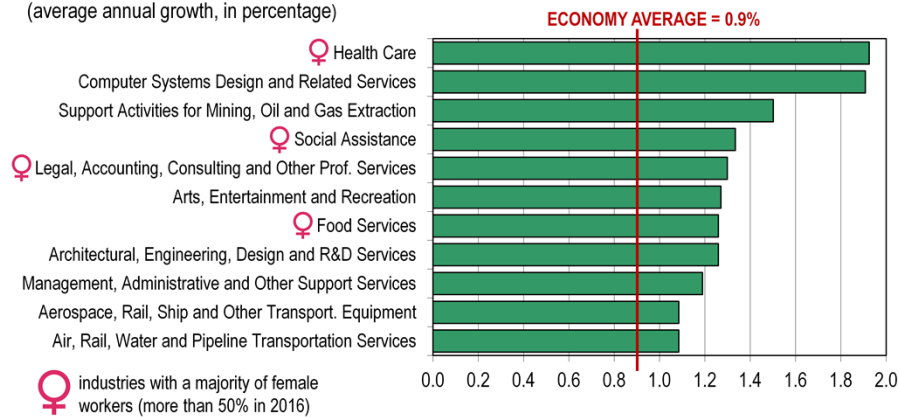
Most experts agree that automation is not expected to destroy a large number of jobs over the next 10-20 years, as specific tasks rather than entire occupations are most likely to be automated. For instance, the introduction of computers sped up some aspects of jobs, enabling workers to do the other tasks better. Rather than destroying occupations, computers redefined them. But this process required workers to learn new skills.

The literature also suggests that industries and occupations involving routine tasks are generally more at risk of being automated and experience lower employment growth than those involving cognitive tasks. Indeed, automation tends to restrain labour demand since an increasing part of production growth is being met by productivity growth.

Industries that are projected to post the <u>strongest growth</u> in employment are listed below.

Employment Growth by Industry, Projections 2017-2026
(average annual growth, in percentage)

ECONOMY AVERAGE = 0.9%

Industry	
♀ Health Care	
Computer Systems Design and Related Services	
Support Activities for Mining, Oil and Gas Extraction	
♀ Social Assistance	
♀ Legal, Accounting, Consulting and Other Prof. Services	
Arts, Entertainment and Recreation	
♀ Food Services	
Architectural, Engineering, Design and R&D Services	
Management, Administrative and Other Support Services	
Aerospace, Rail, Ship and Other Transport. Equipment	
Air, Rail, Water and Pipeline Transportation Services	

0.0 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0

♀ industries with a majority of female workers (more than 50% in 2016)

Source: ESDC 2017 COPS industrial scenario.

Employment and Social Development Canada
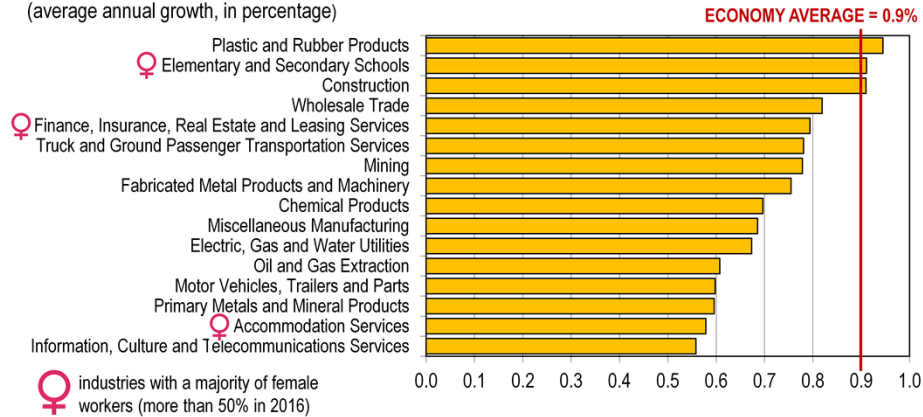Emploi et Développement social Canada

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Most of the industries projected to post the strongest growth in employment (i.e. above 1.0% annually) are also those projected to post the strongest growth in production. Below are some of the key drivers expected to support output and job creation in those industries:

- Growing demand for health care due to population aging;

- Rapid technological innovations and the need for businesses to continuously upgrade their IT infrastructure to remain competitive;

- The gradual pickup anticipated in crude oil prices and energy-related investment;

- Growing demand for social assistance, particularly child day-care and family services due to additional growth in youth population (aged 0-17), as well as elderly care and social services for senior citizen due to population aging;

- Increased demand for professional advice on planning, logistics, mergers, acquisitions, environmental regulation and implementation of new technologies;

- The rising number of retired baby-boomers that are expected to have more time to spend on leisure activities, including arts, entertainment and recreation services;

- Growing demand for food services, particularly from health care institutions and tourism activity;

- Faster growth in non-residential building and engineering construction; and renewed growth in corporate profits, manufacturing production, M&E investment, and R&D spending;

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

- Global demand for commercial and business aircraft, particularly from the emerging markets, and sustained demand for transit systems (including rail) as a result of increased road congestion and environmental concerns;

- Growing demand for the transportation of goods by water and rail due to the faster pace of growth anticipated in international trade and stronger demand for air transportation, particularly from American travellers visiting Canada (low Canadian dollar and strong U.S. labour market).

Most of the industries projected to post average or moderate growth in employment (i.e. between 0.6% and 1.0% annually) are also those projected to post average or moderate growth in production.

This group includes six manufacturing and six commercial services industries. It also includes elementary and secondary schools; construction; mining; and oil and gas extraction industries.
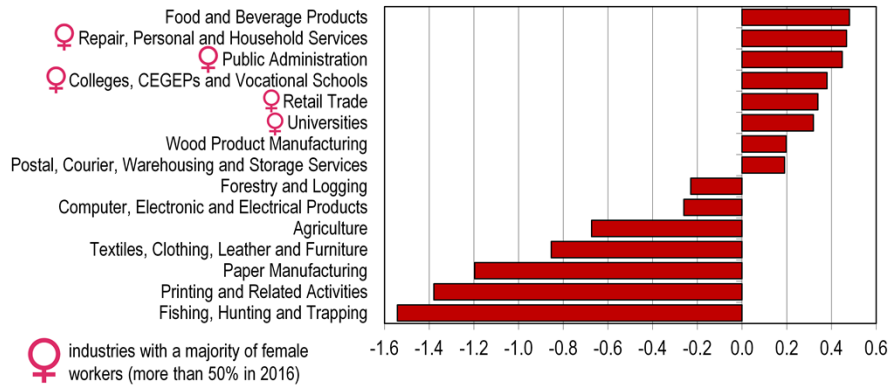
In addition to moderate growth in production, job creation in those industries is expected to be restrained by the following factors:

- The need to lower labour costs and increase productivity in manufacturing industries in response to the intensification of global competition;
- The need to find new ways of delivering services and replace labour by capital wherever possible in response to the gradual weakening anticipated in labour force growth in Canada;
- Structural changes in construction activity, more specifically the shift in the composition of housing starts from single-unit homes to multiple-dwellings which are more capital intensive and require less labour by unit of output;
- The fact that several mining projects are moving from the construction to the production phase;
- The fact that production capacity in oil sand is increasing while becoming less labour intensive;
- Increased automation and rapid advances in digital and cognitive technologies.

Industries that are projected to post the <u>weakest growth or declines</u> in employment are listed below.

Employment Growth by Industry, Projections 2017-2026
(average annual growth, in percentage)

Industry	
Food and Beverage Products	
♀ Repair, Personal and Household Services	
♀ Public Administration	
♀ Colleges, CEGEPs and Vocational Schools	
♀ Retail Trade	
♀ Universities	
Wood Product Manufacturing	
Postal, Courier, Warehousing and Storage Services	
Forestry and Logging	
Computer, Electronic and Electrical Products	
Agriculture	
Textiles, Clothing, Leather and Furniture	
Paper Manufacturing	
Printing and Related Activities	
Fishing, Hunting and Trapping	

-1.6 -1.4 -1.2 -1.0 -0.8 -0.6 -0.4 -0.2 0.0 0.2 0.4 0.6

♀ industries with a majority of female workers (more than 50% in 2016)

Source: ESDC 2017 COPS industrial scenario.

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Most of the industries projected to post the weakest growth or declines in employment (i.e. below 0.5% annually) are also those projected to post the weakest growth in production.

This group is largely composed of manufacturing and non-mineral primary industries that have experienced a stagnation or a declining trend in output and/or employment over the past several years, such as wood products, textiles, clothing, furniture, paper, printing, agriculture, forestry and fishing. Such industries are expected to face similar challenges than those experienced in the last decade, including:

- the intensification of foreign competition and the shift in production to low-cost producers;
- lower demand for paper and printed materials due to the growing use of electronic media;
- timber and fish supply constraints (allowable annual cuts and quotas on fish species);
- the end of the softwood lumber agreement with the U.S. (imposition of new tariffs);
- difficulties to attract workers in agriculture and out-migration from rural/fishing communities.

Output and employment growth is also projected to be weak in a number of commercial and non-commercial services industries. The main factors expected to weigh on those industries are:

- additional pressures on public finance due to demographic changes (public administration);
- significant declines projected in population aged 18-25 (colleges and universities);
- slower pace of growth anticipated in the consumption of goods (retail trade);
- growing use of e-mail, electronic billing and online advertising (postal/courier services).

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
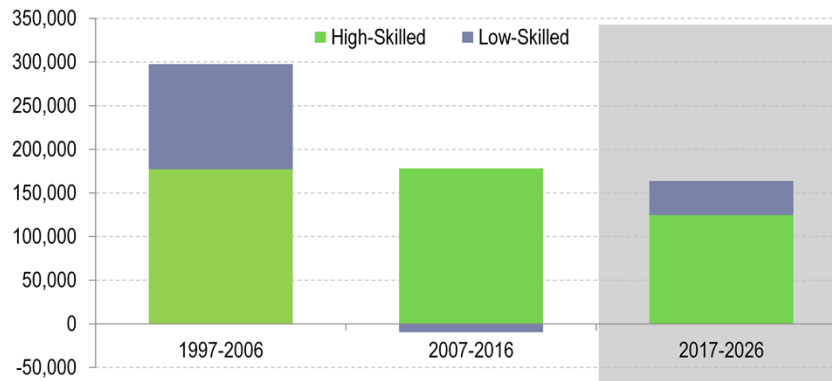*htpp://occupations.esdc.gc.ca/sppc-cops/*

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Over the next ten years, new job openings due to economic growth are projected to be mainly in high-skill positions.

High- and Low-skilled Average Annual Employment Change, 1997-2026

High-skill group is composed of Management, Skill Levels A and B
Low-skill group is composed of Skill Levels C and D

The shaded area represents the projection period.
Sources: Statistics Canada (historical) and ESDC 2017 COPS Projections

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About 76% of the projected employment growth over the next 10 years is expected to be in high-skill occupations. As a comparison, high-skill occupations accounted for all of new job creation during the preceding decade (106%), while jobs among low skilled occupations declined. This was largely due to the recession that mostly impacted employment in low-skill occupations. However, this projected trend 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. High-skill occupations represented 63.4% of total employment in 2016.

The demand for low-skill jobs is also projected to grow. The expected demand in health; mining and oil extraction; accommodation and food services; as well as the recovery of some manufacturing industries that had been suppressed for a lengthy time, will boost employment growth in low-skill occupations that are concentrated in these industries.

The strong employment growth in high-skill occupations is mostly due to those that usually require university education.

Distribution of Expansion Demand by Skill Level, 2017-2026
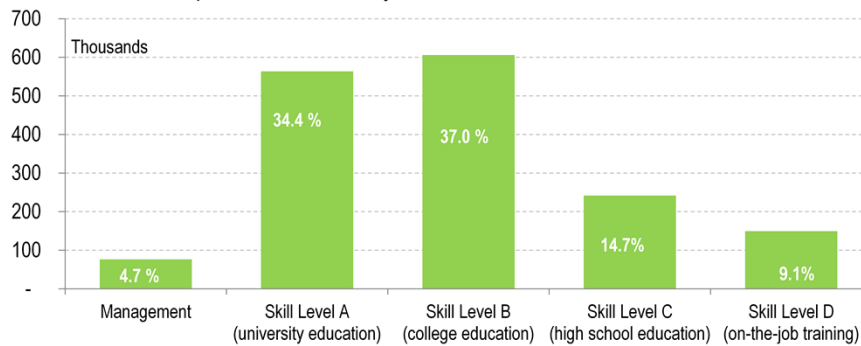
|	Management	Skill Level A (university education)	Skill Level B (college education)	Skill Level C (high school education)	Skill Level D (on-the-job training)
Employment (AAGR*)	0.5%	1.5%	0.9%	0.5%	0.7%
2016 Employment Distribution	8.9%	20.1%	34.3%	25.8%	10.8%

Source: Statistics Canada (historical) and ESDC 2017 COPS Projections.
*AAGR: Annual Average Growth Rate

In 2016, the largest share of employment could be found in occupations that usually require a college education or apprenticeship training (skill level B), followed by those that usually require high school education (skill level C). Occupations that usually require a university education (skill level A), only on-the-job training (skill level D), and management occupations ranked third, fourth and fifth, respectively.

Over the projection period, the largest share of new job openings as a result of economic growth (employment growth) is expected to be in occupations that usually require a college education or apprenticeship training (skill level B), mostly due to the employment size of this group. However, occupations that usually require a university education (skill level A) are expected to have the fastest overall employment growth. This is mostly as a result of strong growth expectations in occupations related to professional services in health, as well as the information and technology sectors.

This will result in a slight increase in the share of high-skill occupations within total employment.

Distribution of Employment by Skill Level
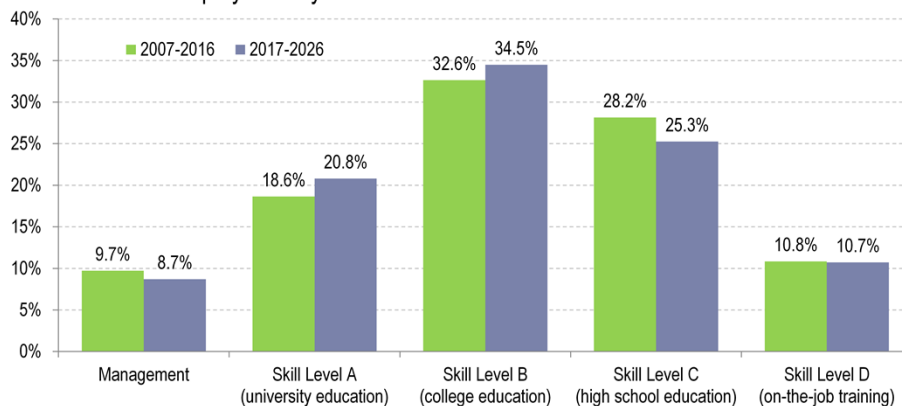
Sources: Statistics Canada (historical) and ESDC 2017 COPS Projections

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As about 76% of the employment growth is expected to be in high-skill occupations over the period 2017-2026, the projected proportion of high-skill jobs in total employment is expected to increase to 64.0% on average over the projection period, up from 61.0% of total employment on average over 2007-2016.

Employment growth is expected to be faster in high-skill occupations, and slower in low-skill and some management occupations

2-Digit Occupational Groupings by Projected Annual Average Growth Rate, 2017-2026 (average annual growth)

Growth above 1.3%*	Growth below 0.5%*
Professional occupations in health (except nursing)	Office support occupations
Professional occupations in nursing	Senior management occupations
Assisting occupations in support of health services	Workers in natural resources, agriculture and related production
Technical occupations in health	Middle management occupations in retail and wholesale trade and customer services
Professional occupations in natural and applied sciences	Distribution, tracking and scheduling co-ordination occupations
Paraprofessional occupations in legal, social, community and education services	Processing and manufacturing machine operators and related production workers
Professional occupations in business and finance	Labourers in processing, manufacturing and utilities
Professional occupations in law and social, community and government services	Middle management occupations in trades, transportation, production and utilities

*Annual growth rate for total employment is 0.9%. Boundaries were set at plus and minus 4 percentage points of this growth rate.
Source: ESDC 2017 COPS Projections.

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The growing demand for healthcare and the structural change towards a more knowledge-based economy are expected to push the demand for high-skill occupations up over the projection period. Indeed, employment growth is expected to be faster among technical and professional services in health and natural and applied sciences occupations.

With the exception of senior management occupations, growth for management occupations is projected to be about average, but employment in highly skill management positions (for example managers in health, technology and engineering) is expected to register stronger growth. 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 the agriculture, forestry, logging, fishing, hunting and trapping, as well as in some manufacturing sector such as paper, printing, textile and clothing manufacturing, is expected to limit employment growth in low-skill occupations that are related to these industries.

Finally, 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.

Most of the 10 detailed occupational groupings with the strongest projected employment growth are in the health and IT sectors.

	Top 10 4-Digit Occupations with the Strongest Annual Average Employment Growth, 2017-2026		
NOC	**Occupations**	**Employment (2016)**	**Growth Rate (2017-2026)**
3111	Specialist physicians	58,100	2.8
3112	**General practitioners and family physicians** ♀	**81,000**	**2.8**
2172	Database analysts and data administrators	40,500	2.4
3232*	**Practitioners of natural healing; Massage therapists & Other technical occupations in therapy and assessment** ♀	**52,700**	**2.4**
0213	Computer and information systems managers	79,000	2.2
3142	**Physiotherapists** ♀	**35,200**	**2.2**
3413*	**Nurse aides, orderlies and patient service associates & Other assisting occupations in support of health services** ♀	**335,800**	**2.2**
3012	**Registered nurses and registered psychiatric nurses** ♀	**353,200**	**2.2**
3120*	**Optometrists, chiropractors and other health diagnosing and treating** ♀	**36,100**	**2.2**
3011	**Nursing co-ordinators and supervisors** ♀	**35,100**	**2.2**

♀: Occupations where at least 50% of their workers were women in 2016
Source: ESDC 2017 COPS Projections.

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At a more detailed occupational level (4-digit NOC groupings), eight out of the ten occupations with the fastest projected employment growth are in the health sector (NOCs 3111, 3112, 3232, 3142, 3413, 3012, 3120 and 3011). This reflects the fact that the population is aging and with this, the need for healthcare professionals and healthcare related occupations is expected to increase. Another two occupations (NOCs 2172 and 0213) are related to the information and technology sector, mostly due to the strong outlook expected in this growing industry.

The strongest employment declines are expected in some occupations related to manufacturing, primary and administrative activities

Top 10 4-Digit Occupations with the Largest Annual Average Employment Decline Rates, 2017-2026

NOC	Occupations	Employment (2016)	Growth Rate (2017-2026)
1434*	**Banking, insurance and other financial clerks & Collectors ♀**	**38,500**	**-2.7**
1241	**Administrative assistants ♀**	**187,800**	**-1.8**
1422*	**Data entry clerks & Desktop publishing operators and related ♀**	**33,700**	**-1.8**
9470*	Printing equipment operators and related occupations	16,000	-1.8
7380*	Printing press operators and other trades and related occupations	21,100	-1.7
8260*	Fishing vessel masters and fishermen/women	10,800	-1.7
1411	**General office support workers ♀**	**135,300**	**-1.7**
8440*	Other workers in fishing and trapping and hunting occupations	2,600	-1.5
9441*	**Textile fibre and yarn, hide and pelt processing machine operators and workers; Weavers, knitters and other fabric making occupations; Fabric, fur and leather cutters & Inspectors and graders, textile, fabric, fur and leather products manufacturing ♀**	**6,600**	**-1.2**
9432*	Pulp mill machine operators; Papermaking and finishing machine operators& Paper converting machine operators	13,600	-1.2

♀: Occupations where at least 50% of their workers were women in 2016
Source: ESDC 2017 COPS Projections.

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On the other hand, some manufacturing, primary and administrative occupations are projected to post the strongest employment declines. Indeed, four (NOC 7380, 9432/9433/9435, 9470 and 9441) out of the top ten occupations that are expected to post declines over the next decade are associated with processing, manufacturing and utilities, largely affected negatively by technological advancements and weaker industrial outlooks. For instance, the increased popularity of digital imaging has come at the expense of printing press operators jobs.

The strongest employment decline is expected to be in banking, insurance and other financial clerks and collectors (NOC 1434). The fast introduction of computerization in the financial sector is largely responsible for this. As a result, this occupation has experienced strong job losses since 2009, a trend that is only expected to moderate over the projection period.

Computerization is also expected to have a strong impact on data entry clerks, and desktop publishing operators and related occupations (NOC 1422*). Machine learning and machine text reading are just some examples of technologies that are negatively impacting job opportunities in this occupation.

Two (NOC 8260 and 8440) out of these ten occupations are unique to the fishing sector. Both occupations are relatively small. Fish supply constraints and the various quotas and moratorium as well as productivity growth from the increased use of larger vessels are expected to continue to limit growth in fishing over the projection period.

Finally, the expected employment decline in Administrative assistants (NOC 1241) is due to ongoing office automation, which makes many of those positions redundant. In addition, the specialization of administrative tasks has transferred some of these jobs to more specialized administrative occupations. In fact, occupations related to general office support are also expected to have poor employment growth expectations.

Job Openings in Existing Positions
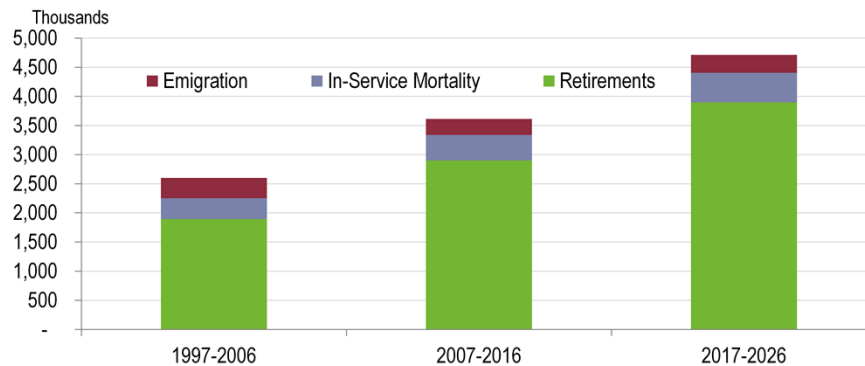## – Replacement Demand –

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Retirements represent an increasingly important source of replacement demand.

Sources of Replacement Demand over the Periods 1997-2006, 2007-2016 and 2017-2026

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: ESDC estimates (historical) and ESDC 2017 COPS Projections.

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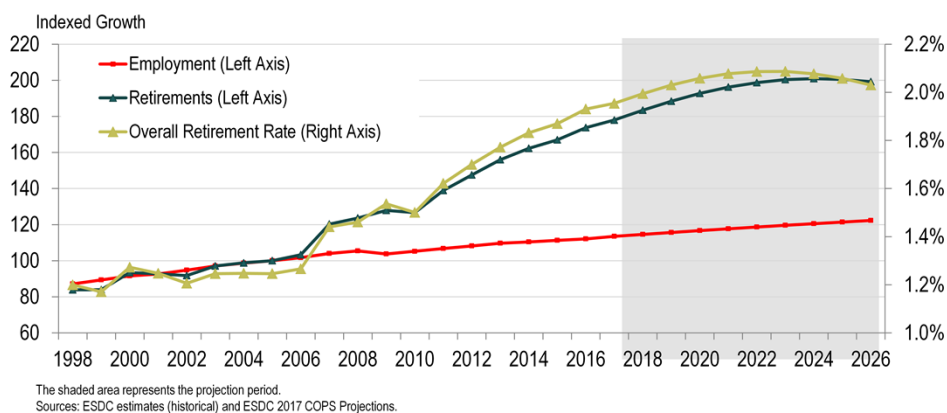
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Economic growth is not the only source of job openings. Replacement demand is the other major source of job openings. These openings are vacancies created by the following factors:

– Retirements: approximately 3.9 million positions are expected to open up due to retirements over the period 2017-2026. As the baby-boom generation retires, the replacement demand generated from this source is expected to rise rapidly. Over the coming decade, retirements are projected to represent 83% of replacement demand, as compared to 80% over 2007-2016 and 73% over 1997-2006;

– In-service mortality: about 511 thousand vacancies are expected to open up due to in-service mortality; and

– Emigration: nearly 306 thousand vacancies are expected to open up due to emigration.
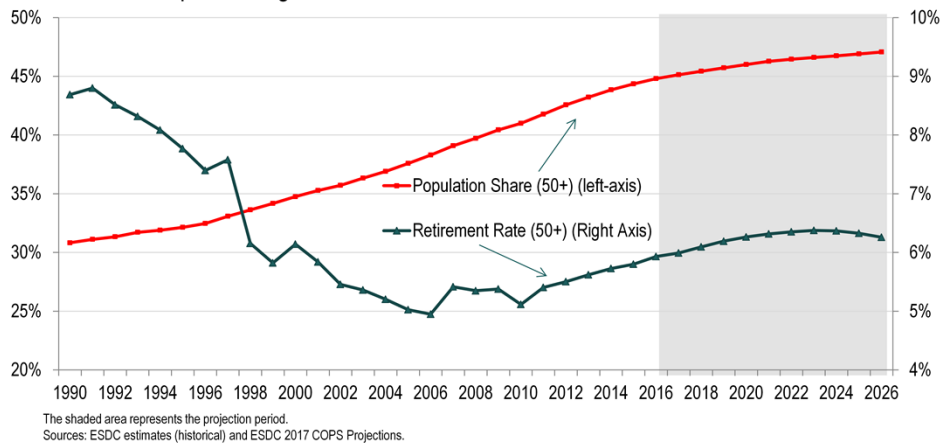
Retirement growth and employment growth were comparable prior to 2007, but the former started outpacing the latter as of 2007. As a result, the overall retirement rate, expressed as the number of retirees per employed worker, grew from 1.3% in 2006 to 1.9% in 2016.

This overall retirement rate is expected to surpass and remain above 2.0% in the early 2020s. Accordingly, an acceleration in the number of retirees is expected over the coming decade, with even larger numbers beyond the projection horizon (2026). The annual average number of retirements is projected to rise from 290,000 a year over the period 2007-2016, to an average of 390,000 a year over the projection period.

As a result, retirements are expected to account not only for the largest , but also an increasing source of the replacement demand and the total job openings.

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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 the Retirement Rate, 1990-2026

Population Share (50+) (left-axis)

Retirement Rate (50+) (Right Axis)

The shaded area represents the projection period.
Sources: ESDC estimates (historical) and ESDC 2017 COPS Projections.

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The expected continued rise in the number of retirements and the overall retirement rates is explained by the aging of the Canadian population.

As more and more members of the baby boom generation reach retirement age, the proportion of the population that are 50 years old or older is expected to continue to increase. Additionally, the upward trend in the retirement rates of these workers is expected to slowly continue, reaching 6.3% over the projection period, from 5.5% recorded over the period 2007-2016.

About two-thirds of projected retirements are in high-skilled occupations or in management.

Distribution of Retirements by Skill Level , 2017-2026

Thousands

- Management: 12%
- Skill Level A (university education): 19%
- Skill Level B (college education): 33%
- Skill Level C (high school education): 27%
- Skill Level D (on-the-job training): 9%

	Management	Skill Level A (university education)	Skill Level B (college education)	Skill Level C (high school education)	Skill Level D (on-the-job training)
Ave. Annual Retirement Rate	2.9%	1.9%	2.0%	2.2%	1.6%
10-Year Retirements	481,900	742,400	1,296,200	1,040,800	334,100

Source: ESDC 2017 COPS Projections.

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However, retirements are not evenly distributed amongst occupations. Indeed, high-skill occupations, which represented 63.4% of employment in 2016, are expected to represent 64.7% of the job openings generated by retirements.

Except for management occupations and those usually requiring only on-the-job training (skill level D), these proportions reflect the relative employment distribution between skill levels. Hence, the majority of the retirements are projected to be in the skill levels that have the largest proportions of employment. That is, they are expected to be in larger quantities in occupations usually requiring college education or apprenticeship certificate (skill level B) and in those usually requiring high school education (skill level C).

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

Therefore, projected retirement rates are the highest in management occupations and the lowest in occupations usually requiring on-the-job training (skill level D).

The distribution of retirements by skill level is projected to remain relatively stable over the period 2017-2026 when compared to the preceding decade.

Distribution of Retirements by Skill Level, 2007-2016 and 2017-2026
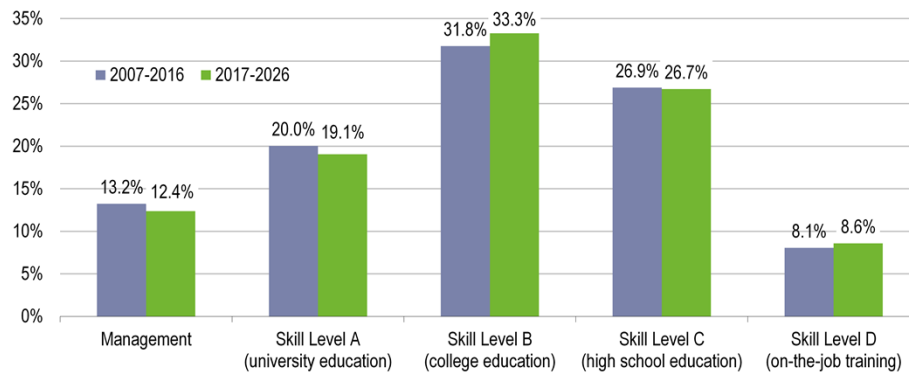
Source: ESDC 2017 COPS Projections (estimated retirements over the historical period obtained by using data from the Longitudinal Administrative Database (LAD) from Statistics Canada and Labour Force Survey).

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Yet, the distribution of retirements by skill level is projected to remain relatively stable over the period 2017-2026 when compared to the preceding decade.

Occupations with the largest number of retirements are projected to be in occupations typically large in employment size.

Top 10 4-Digit Occupations with the Largest Number of Retirements, 2017-2026

NOC	Occupations	Total Retirements	Retirement Rate
0621	Retail and wholesale trade managers	96,600	3.1%
6421	**Retail salespersons ♀**	**82,800**	**1.5%**
1221	**Administrative officers ♀**	**74,800**	**3.0%**
3012	**Registered nurses and registered psychiatric nurses ♀**	**68,600**	**1.9%**
3413*	**Nurse aides, orderlies and patient service associates & Other assisting occupations in support of health services ♀**	**68,100**	**2.0%**
7511	Transport truck drivers	68,000	2.1%
6731	**Light duty cleaners ♀**	**62,500**	**2.5%**
6733	Janitors, caretakers and building superintendents	60,200	3.1%
6411	Sales and account representatives – wholesale trade	57,600	2.0%
1411	**General office support workers ♀**	**56,100**	**4.1%**

♀: Occupations where at least 50% of their workers were women in 2016
Source: ESDC 2017 COPS Projections.

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Similarly, at the detailed occupational level (4-digit NOC groupings), occupations with the largest projected need to replace retirees are mostly due to their employment size. In fact, half of the top ten occupations have retirement rates that are similar to the average. However, retail and wholesale trade managers (NOC 0621), administrative officers (NOC 1221), janitors, caretakers and building superintendents (NOC 6733), and general office support workers (1411) have higher than average retirement rates. On the other hand, the occupation of retail salespersons (NOC 6421) is expected to have a below average retirement rate.

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Occupations with the strongest retirement pressures are expected to be concentrated in management.

Top 10 4-Digit Occupations with the Highest Retirement Rates, 2017-2026

NOC	Occupations	Total Retirements	Retirement Rate
1513	Couriers, messengers and door-to-door distributors	11,300	5.2%
0430*	Managers in public protection services	2,100	5.1%
0010*	Legislators and senior management	22,100	4.4%
0422	**School principals and administrators of elementary and secondary education** ♀	**10,600**	**4.2%**
1411	**General office support workers** ♀	**56,100**	**4.1%**
0421	Administrators - post-secondary education and vocational training	5,600	4.1%
9432	Pulp mill machine operators	5,500	4.1%
1511	**Mail, postal and related workers** ♀	**12,500**	**4.0%**
9441	**Textile fibre and yarn, hide and pelt processing machine operators and workers** ♀	**2,600**	**3.9%**
0311	**Managers in health care** ♀	**11,400**	**3.8%**

♀: Occupations where at least 50% of their workers were women in 2016
Source: ESDC 2017 COPS Projections.

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Occupations with the strongest projected retirement pressures (as per their retirement rates) are concentrated in management and in office administration occupations, reflecting an older workforce in those areas of the labour market. Five out of the ten occupations with the highest retirement rates are in management, where the workforce tends to be older and tend to retire at a similar or younger age than the average.

Occupations with the weakest projected retirement pressures are expected to be in sales and services, and occupations in art, culture, recreation and sport.

Top 10 4-Digit Occupations with the Lowest Retirement Rates, 2017-2026

NOC	Occupations	Total Retirements	Retirement Rate
6511	**Maîtres d'hôtel and hosts/hostesses ♀**	**2,700**	**0.4%**
4012	**Post-secondary teaching and research assistants ♀**	**4,000**	**0.5%**
6512	**Bartenders ♀**	**2,800**	**0.6%**
3213	**Animal health technologists and veterinary technicians ♀**	**1,300**	**0.7%**
6513	**Food and beverage servers ♀**	**13,600**	**0.7%**
5250*	Athletes, coaches, referees and related occupations.	10,800	0.7%
5222*	Film/video camera operator; Graphic arts technicians; Broadcast technicians; Audio/video recording technicians; Other tech. / co-ordinating occupations in motion picture broadcasting, arts & Support occupations in motion picture, broadcasting, photography and the performing arts	3,700	0.7%
6711	**Food counter attendants, kitchen helpers and related support occs. ♀**	**29,700**	**0.8%**
5241	Graphic designers and illustrators	6,900	0.8%
8410*	Underground mine service and support workers / oil and gas well drilling related workers and service operators	900	0.8%

♀: Occupations where at least 50% of their workers were women in 2016
Source: ESDC 2017 COPS Projections.

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On the other hand, four of the ten occupations with the lowest retirement rates are expected to be in sales and service occupations, which employ a younger workforce. Another three of the top ten will be in occupations in art, culture, recreation and sport, another area with a young workforce.
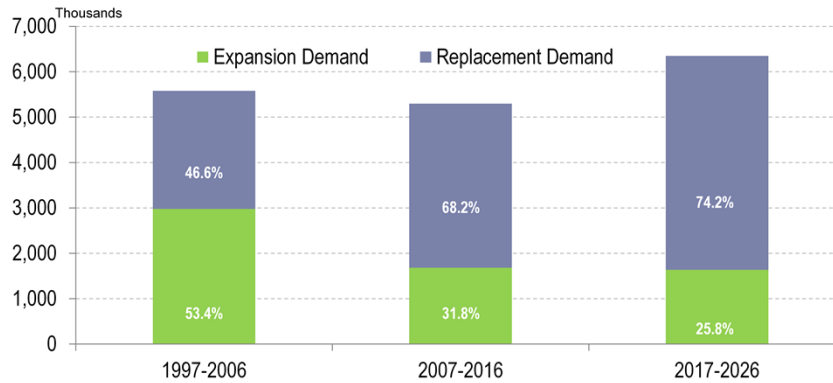
Total Job Openings

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Replacement demand is projected to represent nearly three quarters of all projected job openings over the coming decade.

Job Openings from Expansion Demand and Replacement Demand over the Periods 1997-2006, 2007-2016 and 2017-2026

Sources: Statistics Canada (historical) and ESDC 2017 COPS Projections.

A total of 6.3 million job openings (those due to economic growth plus those due to replacement needs) are expected over the projection period 2017-2026. About 1.6 million are projected to be new positions as a result of increasing economic activity (expansion demand or employment growth), while over 4.7 million from existing positions due to replacement needs (retirements will account for 3.9 million of the 4.7 million positions being vacated).

As a result, replacement demand (mainly from retirements) is expected to represent about 74% of all projected job openings over the period 2017-2026. Over the past two decades, replacement demand generated about 57% of all job openings.

Job Openings from Expansion and Replacement Demand by Skill Level, 2017-2026
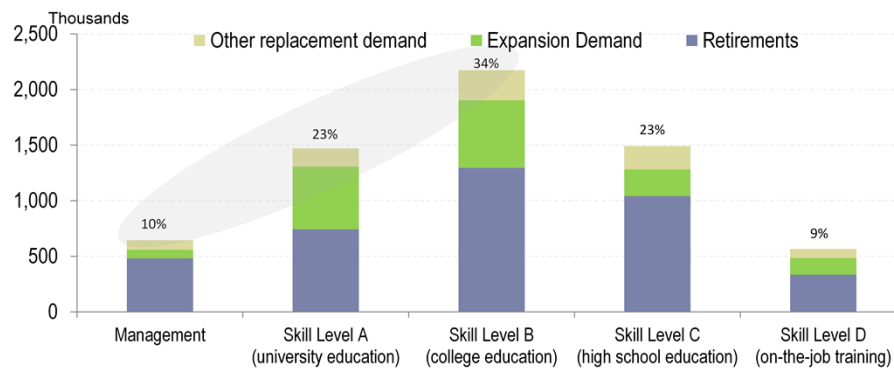
At the skill level, more than two-thirds (or about 4.3 million) of the job openings are expected to be in occupations that usually require postsecondary education (university, college or vocational) or in management occupations. In fact, 76% of new jobs created by economic expansion are projected to be in occupations generally requiring postsecondary education or in management, whereas 64.6% of job openings due to replacement are in these occupational groups, for a combined average of 67.6% (around 4.3 million).

Given that 76% of all new jobs are expected to be in high-skill occupations over the period 2017-2026, the proportion of high-skill jobs in total employment will continue to rise in the coming decade. Indeed, the share of high-skill occupations out of total employment has grown from 59.0% in 2006 to 63.4% in 2016, and it is expected to reach 64.4% of employment in 2026.

Over the next ten years, less than one-third of job openings (around 2 million) are expected to be in occupations usually requiring high school education or on-the-job training.

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

Top 10 4-Digit Occupations with the Largest Number of Job Openings, 2017-2026			
NOC	**Occupation**	**Employment (2016)**	**Job Openings (2017-2026)**
3012	**Registered nurses and registered psychiatric nurses ♀**	**312,800**	**157,100**
3413*	**Nurse aides, orderlies and patient service associates; and Other assisting occupations in support of health services ♀**	**297,300**	**155,400**
6421	**Retail salespersons ♀**	**543,700**	**120,500**
1221	**Administrative officers ♀**	**228,900**	**118,100**
7511	Transport truck drivers	304,000	114,700
0621	Retail and wholesale trade managers	318,100	101,900
6731	**Light duty cleaners ♀**	**237,400**	**101,800**
6411	Sales and account representatives - wholesale trade (non-technical)	273,300	101,300
4032	**Elementary school and kindergarten teachers ♀**	**299,000**	**100,300**
2171	Information systems analysts and consultants	196,200	100,100

♀: Occupations where at least 50% of their workers were women in 2016
Source: ESDC 2017 COPS Projections.

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At the more detailed occupational level, occupations that are projected to have the largest number of job openings are as a result of their large employment size, resulting in relatively large replacement needs. Indeed, employment in those 10 occupations (10 out of 292 occupations) accounted for about 23% of total employment in 2016. 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 the employment size, they also expect to have large volumes of retirements.
- Similarly, employment growth is expected to be above average for information systems analysts and consultants, which will generate a large volume of job openings.
- Four occupations (NOC 0621, 6411, 6421 and 6731) in sales and services and one (NOC 1221) occupation in business, finance and administrative services are present in this list, mostly as a result of their large employment size. A similar case occurs with Elementary school and kindergarten teachers (NOC 4032).
- Job openings for Truck drivers (NOC 7511) are large mostly because of the overall size of these occupations. In fact, their openings rate is not significantly different than the national average.
- Finally, women represented more than 50% of employment in 2016 in seven of these ten occupations.

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The highest ratios of job openings to employment are in management and health.

Top 10 4-Digit Occupations with the Highest Ratio of Job Openings, 2017-2026			
NOC	**Occupations**	**Employment (2016)**	**Job Openings (2017-2026) over 2016 Employment**
0632	Accommodation service managers	**61,200**	**61.3%**
3112	**General practitioners and family physicians ♀**	**69,000**	**60.9%**
0423	**Managers in social, community and correctional services ♀**	**41,500**	**60.5%**
0430*	Managers in public protection services	4,000	60.0%
3011	**Nursing co-ordinators and supervisors ♀**	**31,100**	**58.8%**
3111	Specialist physicians	49,500	58.8%
4151	**Psychologists ♀**	**29,000**	**56.9%**
3232*	**Practitioners of natural healing; Massage therapists; and Other technical occupations in therapy and assessment ♀**	**46,200**	**55.8%**
1222	**Executive assistants ♀**	**34,000**	**55.0%**
0112	**Human resources managers ♀**	**28,900**	**54.0%**

♀: Occupations where at least 50% of their workers were women in 2016
Source: ESDC 2017 COPS Projections.

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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 2016 was used. According to this indicator, nine out of ten occupations with the largest ratios of job openings to employment are projected to be in management and health occupations. This is not surprising as these occupations are expected to experience strong employment growth (expansion demand) and/or have an old workforce and a low retirement age (replacement demand).

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Occupations with the smallest ratios of job openings to employment are concentrated in the primary sector, as well as in sales, services and office occupations.

NOC	Occupations	Employment (2016)	Job Openings (2017-2026) over 2014 Employment
Top 10 4-Digit Occupations with the Smallest Ratio of Job Openings, 2017-2026			
1434*	**Banking, insurance and other financial clerks & Collectors ♀**	46,300	-0.2%
6621	Service station attendants	15,500	8.4%
8432	**Nursery and greenhouse workers ♀**	12,200	9.0%
6512	**Bartenders ♀**	42,700	9.8%
1241	**Administrative assistants ♀**	204,000	10.4%
7380*	Printing press operators and other trades and related occupations	23,500	11.1%
9470*	Printing equipment operators and related occupations	17,500	11.4%
8440*	Other workers in fishing and trapping and hunting occupations	2,700	14.8%
8611*	Harvesting labourers; Aquaculture and marine harvest labourers & Logging and forestry labourers	13,000	13.8%
1422*	**Data entry clerks & Desktop publishing operators and related ♀**	37,500	14.1%

♀: Occupations where at least 50% of their workers were women in 2016
Source: ESDC 2017 COPS Projections.

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On the other hand, occupations that are expected to face the lowest ratios of job openings over the projection period are related to the primary sector, as well as in sales and services and office related occupations. Retirement pressures for those occupations are low as workers are generally younger. Also, employment growth for many of those occupations over the projection period is expected to be below average or negative, heavily impacted by technology advancement.

Women accounted for more than 50% of the employment in 2016 in seven of the ten occupations with the largest ratios of job openings, but only in five with the lowest. This is also reflected in occupations with a substantially high concentration of female employment (where at least 80% of the employment were women in 2016).

Occupations where at least 80% workers were women in 2016 are expected to have in average higher ratios of job openings than in those where the concentration is below 20% because of relatively stronger job creation and a higher proportion of retirements

There were 42 occupations where at least 80% workers were <u>women</u> in 2016	*There were 91 occupations where at least 80% workers were <u>men</u> in 2016*
Employment in these 42 occupations represented about 20.5% of total employment.	Employment in these 91 occupations represented about 22.6% of total employment.
In average, job openings are expected to account for 37.1% of the 2016 employment over the projection period.	In average, job openings are expected to account for 34.1% of the 2016 employment over the projection period.
12 (or 29%) of the 42 occupations are expected to have a job opening ratio substantially above the average. • 23 (or 54.8%) are expected to have a job opening ratio above the average of all occupations (35.1%).	15 (or 16%) of the 91 occupations are expected to have a job opening ratio substantially above the average. • 31 (or 34.1%) are expected to have a job opening ratio above the average of all occupations (35.1%).
Of the 23 with above average job opening ratios: • 10 Health occupations • 7 In education, law and social, community and government • 6 Business, finance and administration occupations	Of the 31 with above average job opening ratios: • 12 Trades, transport and equipment operators and related • 9 Natural and applied sciences and related occupations • 3 Occupations in manufacturing and utilities • 6 Management occupations • 1 Sales and services

Sources: ESDC estimates (historical) and ESDC 2017 COPS Projections.

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In 2016, 42 occupations had a significantly high concentration of female workers, a number lower than the 91 with a substantially elevated proportion of males.

Total projected job openings among occupations with a significant concentration of female workers are expected to account for about 37% of their total 2016 employment. This is largely because 23 these occupations (54.8%) are projected to have ratios above the average of 35.1%. The larger employment size among these occupations, the relatively stronger job creation and their generally higher proportion of retirements, explain this. Those related to health as well as education, law and social, community and government represent the large majority of the occupations.

In comparison, job openings will represent about 34.1% of the 2016 employment among occupations with a substantially higher concentration of males. Only 31 (or 34.1%) of these occupations are expected to have above average job openings ratios. Those related to trades, transport and equipment operators, natural and applied sciences, management and manufacturing account for the majority of these occupations.