

# LABOUR MARKET INFORMATION FOR ONTARIO'S FOOD AND BEVERAGE PROCESSING INDUSTRY

## Final Report

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Díaz Pinsent Mercier Research Inc.



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## 1. SECTOR PROFILE

### OVERVIEW

*Ontario's food and beverage processing (FBP) sector is the largest in Canada – accounting for 37% of the industry's revenue in the country. The sector has more than 4,000 establishments in the province, employing over 95,000 people. More than 90% of its establishments employ fewer than 100 people and one quarter is located in rural communities.*

*There are several aspects that provide the Ontario food & beverage processing industry with a competitive advantage, including a rich agricultural base, a large consumer base, an educated workforce, adequate infrastructure, competitive costs, and a cluster of research and innovation opportunities in the sector.*

*The FBP industry is the second largest manufacturing industry in Ontario, both in terms of employment and contribution to GDP. It contributes 2% of the provincial GDP, and the sector has been experiencing faster growth than Ontario's GDP over the five past years and close to double the growth rate of the real GDP of the manufacturing sector. The largest subsector, in terms of contribution to GDP, is meat processing (representing 21% of the food processing sector GDP), followed by beverages (19%), other (13%) and bakeries (12%).*

*The food and beverage processing industry is either the largest or 2nd largest employer in the manufacturing industry for most regions. Core food and beverage processing hubs are found in Cornwall and Hastings (Ottawa region), Belleville (Kingston-Pembroke), Guelph (the leading center for food research and innovation), Brantford (Hamilton-Niagara region), Toronto and London. Between 2013 and 2017, there has been a reduction in employment of approximately 8% in the province, compared to a decrease of 3% for the same industry in Canada as a whole. The top three sub-industries in terms of employment are meat processing, bakeries & tortilla processing and beverage processing that together employ 58% of individuals working in this sector in Ontario.*

*Ontario's food and beverage processing industry is primarily directed to the domestic market. Nonetheless, export growth is strong, having increased by 31% since 2013, reaching close to \$10 billion in 2017. The largest trading partner is the United States: 88% of 2017 exports by this industry in Ontario were shipped south of the border. Japan and China are the other top countries where exports are shipped. Imports in the sector have increased by 27% since 2013, reaching close to \$19 billion in 2017.*

*Ontario's FBP sector is closely integrated with a complex system of agriculture and agri-food, both as a purchaser and a supplier of goods. It is reported that the Ontario food processing sector purchases 65% of Ontario's farm products. In addition, integration is observed during the manufacturing, marketing, and distribution processes because of*

*facility management activities, innovation, sales and marketing, and transportation. As a result, growth in this industry has a ripple effect throughout the economy.*

*Being a necessity, food is less affected by cyclical fluctuations in the economy. Nonetheless, there are several factors that impact the outlook for this industry. Although no information specifically regarding projected Ontario GDP growth for FBP was found in our search of secondary data sources, studies in the area note that the sector is expected to continue capitalizing on innovation – spearheaded by changing consumer preferences that open the door to diverse products and technology improvements—as well as increased supply chain integration. Increasing exports as a result of developing new products and markets (e.g., Asia) are also expected to drive future growth, although it may be mitigated by changes in the value of the Canadian dollar and by any risks associated with trade agreement renegotiations with the US – the major trading partner of the FBP sector.*

*Figures at the Canadian level suggest that GDP from the FBP industry will increase by 1.3% annually between 2017 and 2026 and that employment will increase by 0.5%. Ontario-level forecasts concur with the observation that increases in labour productivity will be a major driver for real GDP growth, with its annual growth rate expected to be greater than that of employment and of the labour force. Estimating employment growth at slower rates than projected industry growth is explained by underlying assumptions regarding technology, innovation and productivity growth that are expected to continue as per historical trends.*

*Other studies suggest that industry growth has been driven primarily by an increase in the availability of inputs as opposed to productivity. On one hand, this stresses the importance of integration with other players and industries in the supply chain. On the other hand, it suggests caution regarding productivity growth projections. For instance, industry representatives indicate that some productivity improvements cannot be adopted due to the uniqueness of the products and to cost barriers faced by small and medium sized enterprises (SMEs). As a result, the projections based on assumptions of continued productivity growth should be interpreted with caution and modulated by the barriers the industry is facing. These projections also have an impact on expected labour shortages resulting in a mismatch on the forecasted needs as derived from the Canadian Occupational Projection System (COPS) projections and the industry's views (See Employment Gaps (demand vs supply).*

## 1.1. INDUSTRY DESCRIPTION

### **HIGHLIGHTS**

*Ontario's food and beverage processing (FBP) industry has more than 4,000 establishments in the province. More than 90% of its establishments employ fewer than 100 people and one quarter is located in rural communities.*

The food and beverage processing industry provides an essential link from the farm to the consumer's table, comprising establishments that transform raw agricultural commodities and semi-processed food products into a broad range of food and beverage products ready for consumption, (by animals or humans) or for further processing. The following ten subsectors are included in the industry:

- Animal food manufacturing
- Grain and oilseed milling
- Sugar and confectionary product manufacturing
- Fruit and vegetable preserving and specialty food manufacturing
- Dairy product manufacturing
- Meat product manufacturing
- Seafood product preparation and packaging
- Bakeries and tortilla manufacturing
- Beverage manufacturing
- Other food manufacturing

As of 2016, there are more than 4,000 food and beverage processing establishments throughout the province, representing approximately 37% of all establishments in Canada (Agriculture and Agri-food Canada [AAFC], 2017). Approximately 40% of these establishments do not maintain an employee payroll but may have a workforce which consists of contracted workers, family members or business owners, or include employers who did not have employees in the last 12 months. The number of establishments in Ontario excluding those without payroll in 2016 is approximately 2,400 (ISED, 2018).

More than a quarter of those establishments in Ontario are for bakery and tortilla manufacturing (AAFC, 2017) and almost one quarter are in rural communities (Labour Market and Socio-economic Information Directorate [LMSID], 2017). Among those establishments with employees in Ontario, 91.3% are considered either micro or small – with fewer than 100 employees per establishment (Table 1).

**Table 1: Distribution of establishments by employment size (2016)**

	MICRO (1-4 EMPLOYEES)	SMALL (5-99 EMPLOYEES)	MEDIUM (100-499 EMPLOYEES)	LARGE (500+ EMPLOYEES)
Ontario	28.5	62.8	7.9	0.7
Canada	26.5	64.2	8.5	0.8

Source: Adapted from ISED (2018).

An analysis of the number of business in Toronto found that the number of food processing businesses in the city has increased by approximately 20% over the past 10 years. There has been a movement from larger processing firms towards smaller ones over the past decade, a “movement that reflects changing consumer tastes towards local produced fresh foods, and a desire for a broader diversity of cultural and artisan foods” (Toronto Workforce Innovation Group [TWIG], 2017, p.5).

#### **Data Gaps**

- *Data regarding the number of establishments does not align with counts from other sources (e.g. FPSC, City of Toronto). The difference may be the unit of analysis, with establishment data being public but data on locations not being publicly available. Information regarding the number of establishments by location and employment size is updated annually by Statistics Canada, Canadian Business Counts – formerly known as the Canadian Business Registry and is available for purchase. Data from Statistics Canada can also provide counts at the six-digit NAICS level.*

## **1.2. INDUSTRY REVENUES**

### **HIGHLIGHTS**

*The food and beverage processing sector in Ontario generated \$43 billion in revenues in 2016, a 6.2% increase in revenues since 2012. Excluding beverage manufacturing, Ontario is the largest food processing industry in Canada, representing 37% of total Canadian revenues. The food & beverage processing industry is the second largest manufacturing industry in Ontario, surpassed only by transportation.*

The food and beverage processing sector in Ontario generated \$43 billion in revenues in 2016, a 6.2% increase in revenues since 2012.<sup>1</sup> Of these total revenues, approximately 91% (or \$39.1 billion) correspond to revenue generated from goods manufactured in the

<sup>1</sup> Between 2012 and 2016, Statistics Canada did not report beverage revenues statistics on its own with the objective to protect confidentiality. Revenues for this sector have been estimated using the average proportion of Ontario's contribution to Canada's GDP from tobacco manufacturing between 2013 and 2017 (26.4%). This share is then applied to total Ontario beverage and tobacco manufacturing revenues to estimate those associated with the beverage industry only.



sector (this excludes revenues from other non-manufacturing factors such as sale of equipment or assets) (Table 2).

Excluding beverage manufacturing, Ontario accounted for the largest share of the Canadian food processing sector in 2016 with approximately 37% of revenues generated, followed by Quebec with approximately 25% of total Canadian revenues in the sector. The food & beverage processing industry is the second largest manufacturing industry in Ontario, surpassed only by transportation equipment (which includes motor vehicle manufacturing).

**Table 2: Revenues of the Ontario food and beverage processing sector (\$B)**

	2012	2013	2014	2015	2016
<b>Total revenue</b>	40.5	42.0	42.4	41.8	43.0
<b>Revenue from goods manufactured</b>	36.3	37.6	38.3	37.8	39.1

Source: Adapted from Statistics Canada. Table 16-10-0117-01 Principal statistics for manufacturing industries, by North American Industry Classification System (NAICS).

\* Total revenues include other non-manufacturing factors (e.g. sale of equipment, distribution business, sales of assets, etc.). Revenue from goods manufactured excludes those factors.

### 1.3. CONTRIBUTION TO GDP

#### **HIGHLIGHTS**

*The FBP industry is the second largest manufacturing industry in Ontario, contributing 2% of the provincial GDP. Over the past five years, the sector has been experiencing faster growth than Ontario's GDP. The largest subsector, in terms of contribution to GDP, is meat processing (representing 21% of the food processing sector GDP), followed by beverages (19%), other foods (13%) and bakeries (12%).*

In 2017, Ontario's GDP was \$830.5 billion with the real GDP (in 2007 \$ dollars) estimated at \$651.9 million. The manufacturing sector, with a real GDP value of approximately \$82 billion, contributes 12.6% of the total provincial GDP. Real GDP by the FBP sector is estimated at approximately \$13 billion (in 2007 \$ dollars) contributing to 2% of total real GDP in the province.

The FBP industry's real GDP increased by 16.1% between 2013 and 2017 (Table 3), faster growth than the 11.1% observed in total real Ontario GDP over the same period and almost double the growth rate of the real GDP of the manufacturing sector (8.4%). In addition to its direct GDP contribution, an economic impact analysis for the sector determined that this contribution would double once indirect and induced output impacts are considered (MNP LLP, 2015b).

**Table 3: FBP contribution to real Ontario GDP (billions, 2007 \$) \***

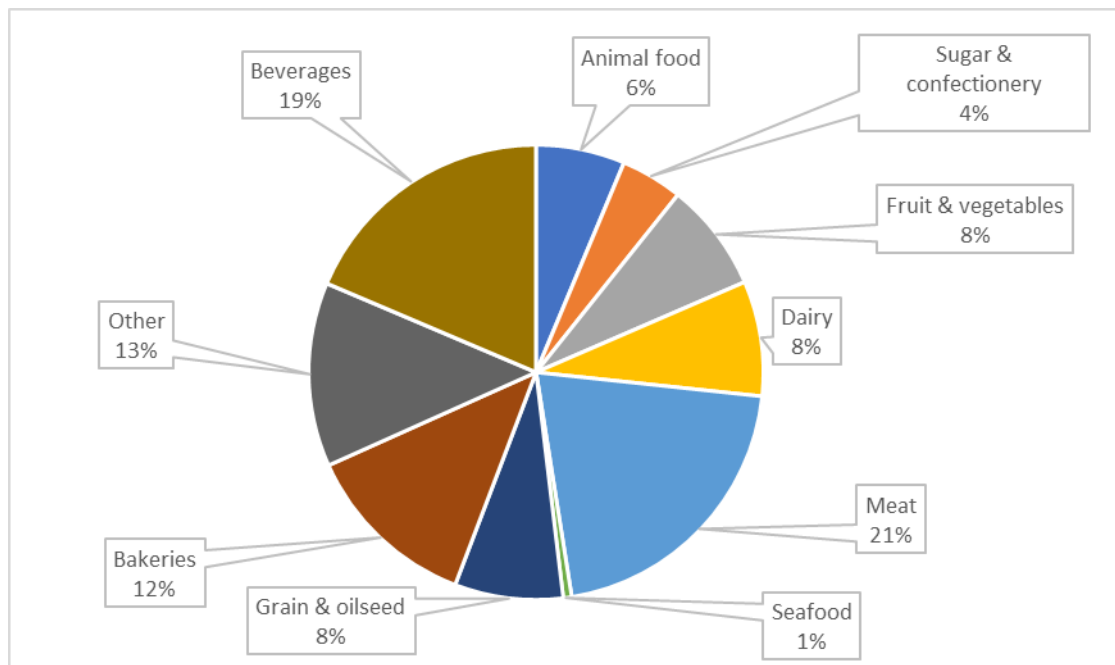
	2013	2014	2015	2016	2017	5-YEAR GROWTH
Ontario real GDP	586.9	601.3	618.1	634.3	651.9	11.1%
Ontario manufacturing real GDP	75.8	78.1	79.4	81.0	82.2	8.4%
Ontario food & beverage processing sector real GDP	11.2	11.8	12.0	12.4	13.0	16.1%
% Food & beverage processing / Ontario GDP	1.9%	2.0%	1.9%	2.0%	2.0%	

Source: Adapted from Statistics Canada. Table 36-10-0402-01 Gross domestic product (GDP) at basic prices, by industry, provinces and territories (x 1,000,000).

\*Information for the beverage industry is included in this table as reported by Statistics Canada (not an estimate).

In terms of their contribution to GDP, the largest subsector is meat processing (representing 21% of the food processing sector GDP), followed by beverages (19%), other (13%) and bakeries (12%) (Figure 1).

**Figure 1: Contribution to Ontario GDP by FBP subsector\***



Source: Adapted from Statistics Canada. Table 36-10-0402-01 Gross domestic product (GDP) at basic prices, by industry, provinces and territories (x 1,000,000).

\*Information for the beverage industry in this chart is as reported by Statistics Canada (not an estimate).

## 1.4. EMPLOYMENT

### HIGHLIGHTS

*The Ontario FBP sector employed approximately 95,000 people in 2017, representing 36% of total jobs in this sector in Canada. Ontario's FBP is the second largest employer across the manufacturing industry after motor vehicle and parts production. Between 2013 and 2017 there has been a reduction in employment of approximately 8% in the province, compared to a decrease of 3% for the same industry in Canada as a whole. The top three sub-industries in terms of employment are meat processing, bakeries and tortilla processing, and beverage processing that together employ 58% of individuals working in this sector in Ontario.*

Ontario's FBP is the second largest employer across the manufacturing industry after motor vehicle and parts production, employing approximately 95,000 people in 2017, and representing 36% of total jobs in this sector in Canada (Table 4).<sup>2</sup> Between 2013 and 2017, employment in this sector in Ontario has decreased by 8.2%, compared to a decrease of 3% for the same industry in Canada as a whole (LMISD, 2017).

**Table 4: Employment in the Food and Beverage\* Processing Sector**

	2013	2014	2015	2016	2017
Ontario – FBP sector	103,575	102,435	93,115	90,615	95,105
Canada – FBP sector	269,811	264,076	250,041	252,376	261,741

Source: Adapted from Statistics Canada. Table 36-10-0480-01: Labour productivity and related measures by business sector industry and by non-commercial activity consistent with the industry accounts (Annual).

\*Information for the beverage industry is included in this table as reported by Statistics Canada (not an estimate).

The top three sub-industries in terms of employment are meat processing, bakeries and tortilla processing, and beverage processing that employ 58% of individuals working in this sector in the province. Seafood product manufacturing, and grain and oilseed milling have the fewest number of employees. While most sub-industries have experienced a decline in the number of employees, animal food manufacturing

<sup>2</sup> The number of employed individuals in the Ontario FBP sector varies according to the source, as some figures exclude self-employed individuals or may differ in their methodology. The data presented here has been extracted from the *Statistics Canada Table 36-10-0480-01: Labour productivity and related measures by business sector industry and by non-commercial activity consistent with the industry accounts (Annual)*, which compiles information from different sources (including the Labour Force Survey) and presents time series. Using this source, total Canadian employment in the FBP industry is reported at 252,376, a figure that falls between a low of 246,000 employees (AAFC, 2016a) and a high of 285,000 jobs (AAFC, 2017). According to the 2016 Census, total employment in this industry is 251,670, which is approximately the same figure presented above. At the Ontario level, the 2016 figure above is also very close to the Census figure (89,305 employees, or a difference of approximately 1,300 workers). For consistency purposes, data from *Table 36-10-0480-01* will be used in this report to present trends. For the analysis of the workforce's composition, we use 2016 Census data.

increased employment by 11% over the five-year period and seafood processing increased by 45% over the same period. The largest decreases in employment were observed in grain and oil seed manufacturing (-35%), fruit and vegetable processing (-25%) and sugar and confectionery processing (-22%) (Table 5).

**Table 5: Employment in the Food and Beverage Processing Sector by Sub-industry**

	2013	2014	2015	2016	2017
Animal Food	4,680	5,020	4,845	5,100	5,200
Grain & Oilseed Milling	3,360	2,935	2,940	2,045	2,180
Sugar & Confectionery Products	6,585	5,505	5,540	5,165	5,120
Fruit & Vegetable Foods	9,035	8,375	6,750	6,415	6,755
Dairy Products	8,550	7,730	7,925	8,190	8,385
Meat Products	20,350	21,355	19,320	18,780	19,825
Bakeries & Tortilla	22,770	22,440	19,350	19,620	20,580
Seafood Products	435	605	605	620	630
Other Foods	13,780	14,110	12,370	10,990	11,465
Beverages*	14,030	14,360	13,470	13,690	14,965
<b>TOTAL</b>	<b>103,575</b>	<b>102,435</b>	<b>93,115</b>	<b>90,615</b>	<b>95,105</b>

Source: Adapted from Statistics Canada. Table 36-10-0480-01: Labour productivity and related measures by business sector industry and by non-commercial activity consistent with the industry accounts (Annual).

\*Information for the beverage industry is included in this table as reported by Statistics Canada (not an estimate).

An employment figure of approximately 130,000 workers in the Ontario food and processing beverage industry is often quoted. This figure comes from a 2015 economic impact study of the industry that measures *direct jobs* (MNP LLP, 2015b), which differ from employment. Employment figures presented in this report reflect the number of individuals employed by the industry proper. Direct jobs as those estimated by MNP LLP (2015b) consider in addition to workers in the industry, the impact that production of food and beverage processing products has on primary suppliers. That is, it takes into account the “spending that processors make when purchasing good and services from their suppliers [...thus] supporting a certain number of jobs” (MNP LLP, 2015b, p.32). Therefore, the employment figure of 130,000 includes employment generated both by the industry as well as that supported by the industry due to their demand primary suppliers in the initial round of spending. Direct jobs are calculated using input-output models that estimate the degree of integration across industries and multiplier coefficients to estimate the number of additional jobs created as a result of producing \$1 million in output. Input-output models and multipliers are developed by Statistics Canada.

### Data Gaps

- *Employment figures must be interpreted with caution, as there are different sources, and the figures may represent the number of workers employed by the industry or the direct employment generated by the industry defined as the impact on both the industry and primary suppliers.*
- *To illustrate the economic footprint of the sector and to calculate direct, indirect and induced jobs created, Statistics Canada offers an economic impact analysis service at cost recovery.*

## 1.5. INTERNATIONAL TRADE

### HIGHLIGHTS

*Ontario's food and beverage processing industry is primarily directed toward the domestic market. Nonetheless, export growth is strong, having increased by 31% since 2013, reaching close to \$10 billion in 2017. The largest trading partner is the United States: 88% of 2017 exports by this industry in Ontario were shipped south of the border. Japan and China are among the top three countries where exports are shipped. Imports in the sector have increased by 27% since 2013, reaching close to \$19 billion in 2017.*

The Canadian food & beverage processing industry is primarily directed toward domestic markets. In 2011, it was estimated that 23% of direct jobs in food and beverage manufacturing were export-dependent (Montel, 2016), and a similar emphasis on the domestic industry is observed in Ontario. Nonetheless, exports by the FBP industry in Ontario have increased from \$7.6 billion in 2013 to approximately \$10 billion in 2017, a 31% increase over the five-year period, and represent 2% of all exports by the province. Ontario total exports in 2017 are estimated at approximately \$200 billion, with \$171 billion (or 86%) having been produced by the manufacturing industry. Imports of products in the FBP industry have increased from \$14.9 billion in 2013 to approximately \$19 billion in 2017 – a 27% increase over the five-year period (Table 6).

**Table 6: International trade in the Ontario food & beverage processing industry (\$ M)**

	2013	2014	2015	2016	2017
Domestic Exports*	7,586.6	8,088.9	9,142.7	9,705.1	9,971.4
Imports	14,897.8	16,247.9	18,241.7	18,607.8	18,951.8

Source: Adapted from Trade Data Online (July 2018 update).

\*Domestic exports consist of the exports of all goods grown, produced, extracted or manufactured in Ontario, leaving Canada through customs for a foreign destination; it includes exports of imported merchandise which has been substantially enhanced in value. Domestic exports exclude "re-exports" which refers to the export of goods that have previously entered Canada and are leaving in the same condition as when first imported.

In 2017, 26.8% of exports were from the bakeries and tortilla sector, followed by meat processing (14.3%), sugar and confectionary manufacturing (12.7%) and other food product manufacturing (12.7%). Detailed statistics by subindustry are presented in Section 1.6: Overview of Subsectors. The main trading partner is the United States, where 88% of exports by this sector – valued in \$8.8 billion -- were shipped in 2017, followed by Japan and China, with 1.5% of exports shipped to each of these countries respectively (Table 7). Given that the largest trading partner is the US, it is expected that local producers may continue to benefit from stronger economic activity in that country and from a lower Canadian dollar (LMISD, 2017), barring any risks associated with trade agreement negotiations.

**Table 7: Domestic exports by industry and country of destination, 2017 (\$ M)**

	USA	JAPAN	MEXICO	SOUTH KOREA	VIETNAM	HONG KONG	CHINA	PHILIPPINES	UK	AUSTRALIA	TOTAL*
Animal Food	226.8	20.8	19.7	14.5	8.3	6.6	4.1	3.9	3.8	2.3	376.8
Grain & Oilseed Milling	1,051.6	0.5	11.5	4.4	0.5	1.8	5.0	0.0	4.5	1.0	1,110.9
Sugar & Confectionery Products	1,199.1	4.6	15.3	2.4	0.1	3.8	1.7	0.9	1.3	8.8	1,264.4
Fruit & Vegetable Foods	872.0	0.4	1.6	0.6	0.1	1.3	1.2	0.5	5.5	6.7	908.1
Dairy Products	157.4	0.3	1.9	5.6	2.9	0.0	0.8	8.2	0.4	0.6	223.2
Meat Products	954.0	111.6	54.6	16.7	2.0	37.5	112.1	17.6	0.0	3.2	1,421.8
Seafood Products	73.0	4.0	-	0.2	0.5	1.5	2.3	0.1	0.0	0.0	86.8
Bakeries & Tortilla	2,581.7	2.2	3.7	1.3	-	0.3	0.3	1.5	44.3	12.1	2,671.4
Other Foods	1,142.6	4.9	0.4	2.7	0.7	1.8	4.1	14.3	3.5	8.9	1,269.9
Beverages	546.7	1.0	2.1	2.2	38.1	0.8	14.9	0.3	3.1	4.2	638.1
<b>Total</b>	<b>8,804.8</b>	<b>150.3</b>	<b>110.9</b>	<b>50.7</b>	<b>53.4</b>	<b>55.4</b>	<b>146.5</b>	<b>47.2</b>	<b>66.6</b>	<b>47.7</b>	<b>9,971.4</b>
Share of top 10 destinations	92.4%	1.6%	1.2%	0.5%	0.6%	0.6%	1.5%	0.5%	0.7%	0.5%	
Share of total exports	88.3%	1.5%	1.1%	0.5%	0.5%	0.6%	1.5%	0.5%	0.7%	0.5%	

Source: Adapted from Trade Data Online (July 2018 update).

\*Total figures include other export destinations in addition to the top 10.

## 1.6. OVERVIEW OF INDUSTRY SUBSECTORS

### **HIGHLIGHTS**

*Bakeries and tortilla manufacturing, meat processing, and beverage processing are the province's largest sectors in terms of employment and contribution to GDP. The smallest sector is seafood processing; however, its revenues have increased by 70% between 2013 and 2016.*

*Bakeries and tortilla manufacturing rank first in terms of employment (22% of the provincial total) and exports (27%), and third in terms of their contribution to GDP (12%). Over the past four to five years, both increases in the number of employees and revenues are observed.*

*Meat processing ranks first in terms of its contribution to GDP (21%), second in terms of employment (21%) and second in terms of exports (21%). Over the past four to five years, both revenues and employment have decreased.*

*The beverage processing industry ranks third in terms of its contribution to employment (16%) and second in terms of its contribution to GDP (19%). The number of employees has remained relatively constant and revenues are increasing.*

*Although the grain and oilseed industry is the second smallest in terms of employment and has experienced a downward trend in both employment and revenues, it ranks third in the province in terms of its contribution to exports (13%).*

*Between 2013 and 2017, exports have grown faster in fruit and vegetable processing (45% growth), sugar and confectionery processing (45% growth) and bakery and tortilla manufacturing (55% growth). Although the dairy industry is primarily domestic, exports have increased by 28% over the past five years.*

### **1.6.1 Bakery & tortilla manufacturing**

The Bakery and Tortilla subsector consists of establishments that are primarily engaged in manufacturing baked goods, including “retail and commercial bakeries, cookie and cracker manufacturing, and pasta production” (TWIG, 2017). There are 1,195 establishments of this kind in Ontario (ISED, 2018). Among those establishments that reported payroll in 2016, 28% are micro (1-4 employees) and 66% are small (5 to 99 employees) (ISED, 2018). In terms of the regional distribution of establishments, the



three most important locations are the Toronto CMA (62% of all establishments), the Ottawa-Gatineau CMA (7%) and Hamilton (5%) (Statistics Canada, 2016a).<sup>3</sup>

In terms of employment, this sector ranks first in the province within the food processing industry, with more than 20,000 employees in 2017, and ranks third in terms of contribution to GDP. The total number of employees has increased between 2013 and 2017 by approximately 2,000 workers (or 9.6%), this sector has experience growth in revenues of 10.5% between 2013 and 2017 and exports have increased by close to \$1 billion (or 55%) reaching \$2.7 billion in 2017 (Table 8). The top three countries where goods are exported are the United States, the United Kingdom, and Australia. Imports of products in this sector reached approximately \$1.3 billion in 2017.

**Table 8: Key Statistics for Bakery & Tortilla Manufacturing**

	2013	2014	2015	2016	2017
Total # employees	22,770	22,440	19,350	19,620	20,580
Revenues*	5,012.3	4,845.5	5,166.2	5,539.8	
Revenues from good manufactured*	4,342.4	4,316.8	4,602.6	5,179.5	
Domestic Exports	1,707.7	1,920.8	2,416.8	2,647.2	2,671.5
Imports	967.0	1095.6	1266.8	1305.2	1308.2

Sources: Adapted from Statistics Canada. Table 16-10-0117-01 Principal statistics for manufacturing industries, by North American Industry Classification System (NAICS); Trade Data Online (July 2018 update); Statistics Canada, Table 36-10-0480-01: Labour productivity and related measures by business sector industry and by non-commercial activity consistent with the industry accounts (Annual).

\*Revenue data is only available until 2016.

Due to a change in demands from a health-conscious customer base, there are opportunities for growth in this sector with the resurgence of fresh, artisanal, unpackaged items. In addition, the diversity in products has increased with the development of specialty foods, including gluten-free options, flat breads, whole grain items, added fibre, and ethnically diverse offerings (AAFC, 2016b).

### 1.6.2 Meat product manufacturing

The meat product manufacturing industry consists of establishments that are primarily engaged in manufacturing meat products, and the slaughtering, rendering and processing of beef, hogs, poultry and other livestock. Canada's meat processing companies manufacture a wide variety of meat products ranging from fresh and frozen meat to processed, smoked, canned and cooked meats, as well as sausage and deli meats. About 70% of processed meats in Canada, such as sausages or cold cuts, are

<sup>3</sup> The Ottawa-Gatineau CMA includes establishments located in the Quebec portion of this region.

made with pork. Meat product manufacturing is by far the largest subsector of food and beverage manufacturing, accounting for 25% of the total revenue from goods manufactured. It is also the largest food and beverage subsector in terms of employment and value-added products (AAFC, 2016c).

The number of establishments in Ontario in 2016 was 357 (ISED, 2018). Among those establishments that reported payroll in 2016, 21% are micro (1-4 employees) and 63% are small (5 to 99 employees) (ISED, 2018). In terms of the regional distribution of establishments, the three most important locations are the Toronto CMA (56% of all establishments), the Hamilton CA (8%) and the area of Kitchener-Cambridge-Waterloo (5%) (Statistics Canada, 2016a).

It is one of the largest food processing industries in the province, with employment hovering around 20,000 individuals between 2013 and 2017. There is a slight decrease in employment figures (3%) and revenues (3.5%) during the analyzed period, with revenues of approximately \$8.5 billion in 2016 (Table 9). The sector exported \$1.4 billion in goods in 2017 and the top three countries where goods are exported are the United States, China and Japan. Imports of products in this sector reached approximately \$2.8 billion in 2017.

**Table 9: Key Statistics for Meat Product Manufacturing**

	2013	2014	2015	2016	2017
<b>Total # employees</b>	20,350	21,355	19,320	18,780	19,825
<b>Revenues*</b>	8,865.3	8,789.6	8,657.5	8,554.6	
<b>Revenues from good manufactured*</b>	8,487.0	8,289.2	8,173.2	8,138.7	
<b>Domestic Exports</b>	1,135.5	1,343.2	1,303.7	1,346.4	1,421.8
<b>Imports</b>	2613.0	2781.1	2983.5	2808.6	2779.1

Sources: Adapted from Statistics Canada. Table 16-10-0117-01 Principal statistics for manufacturing industries, by North American Industry Classification System (NAICS); Trade Data Online (July 2018 update); Statistics Canada, Table 36-10-0480-01: Labour productivity and related measures by business sector industry and by non-commercial activity consistent with the industry accounts (Annual).

\*Revenue data is only available until 2016.

### 1.6.3 Beverage manufacturing

Beverage manufacturing comprises the production of soft drinks, bottled water and ice; beer (including ale, malt liquors, and non-alcoholic beer); wine (including brandy); and distilleries producing, blending or mixing beverage spirits (excluding brandy) as well as alcoholic eggnog, potable ethyl alcohol, alcoholic mixed drinks, and whisky. There are 696 establishments producing these products in Ontario in 2016 (ISED, 2018). Among those establishments that reported payroll in 2016, 39% are micro (1-4 employees) and 56% are small (5 to 99 employees) (ISED, 2018). In terms of their regional distribution,

the three most important locations are the Toronto CMA (40% of all establishments), the St-Catherine's- Niagara CA (15% of all establishments) and the Ottawa-Gatineau CMA (7%) (Statistics Canada, 2016a).<sup>4</sup>

Table 10 outlines the key statistics for beverage manufacturing. The number of employees has fluctuated over the period between 2013 and 2017, with approximately 14,000 in 2013, falling to approximately 13,500 in 2015 and increasing again to close to 15,000 by 2017. Revenues in the sector have been steadily increasing from \$4.8 billion in 2013 to \$5.2 billion by 2016 – a 7.4% increase. This sector exported \$638 million in 2017 and the top three countries where goods are exported are the United States, Vietnam and China. Imports of products in this sector reached approximately \$2.3 billion in 2017.

**Table 10: Key Statistics for Beverage Manufacturing**

	2013	2014	2015	2016	2017
<b>Total # employees</b>	14,030	14,360	13,470	13,690	14,965
<b>Revenues*</b>	4,855.8	4,885.0	4,799.0	5,214.7	
<b>Revenues from good manufactured*</b>	4,545.8	4,566.8	4,558.7	4,850.7	
<b>Domestic Exports</b>	576.4	501.9	605.1	670.2	638.1
<b>Imports</b>	1,796.6	1,902.7	2,136.7	2,210.8	2,275.7

*Sources:* Adapted from Statistics Canada. Table 16-10-0117-01 Principal statistics for manufacturing industries, by North American Industry Classification System (NAICS); Trade Data Online (July 2018 update); Statistics Canada, Table 36-10-0480-01: Labour productivity and related measures by business sector industry and by non-commercial activity consistent with the industry accounts (Annual).

\*Revenue data is only available until 2016.

Looking into the beverage manufacturing industry as a whole, there are a number of notable points to highlight: Some of Canada's competitive advantages in making world-class beers include proximity to high quality malt barley and a large fresh water supply; there is an opportunity to produce innovative markets that cater to consumer demand for healthier beverage products, such as ready-to-drink low calorie beverages, vitamin and coconut water products; and the wine industry generates both direct and indirect employment through agricultural production, manufacturing and tourism. A flagship product of Canadian wine exporters is ice wine – a high-quality luxury item (AAFC, 2016d).

<sup>4</sup> The Ottawa-Gatineau CMA includes establishments located in the Quebec portion of this region.

#### 1.6.4 Dairy manufacturing

Dairy manufacturing comprises processed dairy products (e.g., beverages, yogurts, butter, ice cream, spreads and frozen desserts) as well as dairy substitutes, except for margarine and cheese-based salad dressing manufacturing.

In 2016, there were 165 dairy manufacturing establishments in Ontario (ISED, 2018), with approximately 8,400 employees in 2017. Among those establishments that reported payroll in 2016, 15% are micro (1-4 employees) and 67% are small (5 to 99 employees) (ISED, 2018). In terms of the regional distribution of establishments, the three most important locations are the Toronto CMA (51% of all establishments), the Ottawa-Gatineau CMA (9%) and the area of St. Catherine's-Niagara (5%) (Statistics Canada, 2016a).

There have been some fluctuations in employment during the period analyzed, but it has remained much more stable than in other food processing sub-industries. Revenues in this sector increased by approximately 15% since 2013, reaching more than \$6.1 billion in 2016 (Table 11). Compared to other sectors, dairy production appears to be primarily for domestic consumption, with exports of no more than \$223 million in 2017. The top three countries where goods are exported are the United States, the Philippines and South Korea. Imports of products in this sector reached approximately \$548 million in 2017.

**Table 11: Key Statistics for Dairy Manufacturing**

	2013	2014	2015	2016	2017
Total # employees	8,550	7,730	7,925	8,190	8,385
Revenues*	5,401.0	5,793.3	5,555.5	6,189.1	
Revenues from good manufactured*	4,719.2	5,128.8	4,878.2	5,357.6	
Domestic exports	174.4	172.4	140.0	171.3	223.3
Imports	364.3	450.7	471.0	524.7	547.9

Sources: Adapted from Statistics Canada. Table 16-10-0117-01 Principal statistics for manufacturing industries, by North American Industry Classification System (NAICS); Trade Data Online (July 2018 update); Statistics Canada, Table 36-10-0480-01: Labour productivity and related measures by business sector industry and by non-commercial activity consistent with the industry accounts (Annual).

\*Revenue data is only available until 2016.

A number of aspects that contributed to the growth in this industry include the demand for convenience products such as flavoured spreads and powdered dairy by-products. Also, healthier dairy products remain a key trend with consumer's continued interest in probiotic yogurts and beverages (AAFC, 2016e).

### 1.6.5 Fruit and vegetable preserving and specialty food

Establishments in this industry are primarily engaged in manufacturing frozen fruit and vegetables, frozen entrées and side dishes (except seafood), as well as fruits and vegetables preserved by pickling, canning, dehydrating or similar processes.

In 2016, there were 241 establishments located in Ontario producing these types of goods (ISED, 2018), with approximately 6,750 employees in 2017. Among those establishments that reported payroll in 2016, 31% are micro (1-4 employees) and 59% are small (5 to 99 employees) (ISED, 2018). In terms of the regional distribution of establishments, the three most important locations are the Toronto CMA (62% of all establishments), the area of St. Catherine's-Niagara (7%) and Hamilton (5%) (Statistics Canada, 2016a).

The number of employees decreased by 25% between 2013 and 2017, dropping from close to 9,000 employees to 6,750 (Table 12). A less dramatic decrease was also observed in revenues that fell to \$2.5 billion in 2015 and 2016, after having reached approximately \$3 billion in 2013. Exports, on the other hand, have been steadily increasing over the five-year period, and reached \$908 million in 2017 – an increase of approximately 45%. The top three countries where goods are exported are the United States, Australia and the United Kingdom. Imports of products in this sector reached approximately \$2.8 billion in 2017.

**Table 12: Key Statistics for Fruit & Vegetable Preserving**

	2013	2014	2015	2016	2017
<b>Total # employees</b>	9,035	8,375	6,750	6,415	6,755
<b>Revenues*</b>	2,991.4	2,959.3	2,510.2	2,510.7	
<b>Revenues from good manufactured*</b>	2,647.6	2,605.6	2,178.5	2,191.0	
<b>Domestic Exports</b>	624.1	659.6	746.2	801.5	908.1
<b>Imports</b>	2137.4	2422.0	2813.6	2832.4	2799.7

*Sources:* Adapted from Statistics Canada. Table 16-10-0117-01 Principal statistics for manufacturing industries, by North American Industry Classification System (NAICS); Trade Data Online (July 2018 update); Statistics Canada, Table 36-10-0480-01: Labour productivity and related measures by business sector industry and by non-commercial activity consistent with the industry accounts (Annual).

\*Revenue data is only available until 2016.

Consumer interest in healthier food products is contributing to opportunities for growth in the industry, noted in an increased consumption of some categories of fresh and processed fruits and vegetables. In addition, technology and innovation have contributed to improvements in food quality as well as the development of value-added innovative product formats (AAFC, 2016f).

### 1.6.6 Sugar and confectionery product manufacturing

This manufacturing sector produces sugar and confectionery goods (e.g., chewing gum, cough drops, granola bars, chocolate bars, liquorice, and hard candy). Sugar and confectionery manufacturing is key to the overall food and beverage manufacturing, as the majority of sugar production is used as an ingredient in further processing, included in bread and bakery products, breakfast cereals and ice cream, among many other products. Areas of innovation in sugar and confectionary include the increased use of natural ingredients, the creation of unique flavours, as well as offering portion-controlled products (AAFC, 2016h).

In 2016, there were 180 establishments dedicated to this sub-industry in Ontario (ISED, 2018), with employment exceeding 5,000 people. Among those establishments that reported payroll in 2016, 24% are micro (1-4 employees) and 62% are small (5 to 99 employees) (ISED, 2018). In terms of the regional distribution of establishments, the three most important locations are the Toronto CMA (65% of all establishments), the Ottawa-Gatineau CMA (9%) and the Hamilton area (7%) (Statistics Canada, 2016a).

Both revenues and the number of employees have decreased over the past few years by 22% and 23% respectively (Table 13). Revenues in 2016 were estimated at approximately \$2 billion. Exports, on the other hand, have increased from \$857 million in 2013 to approximately \$1.3 billion in 2017 – an increase of approximately 45%. The top three countries where goods are exported are the United States, Mexico & Australia. Imports of products in this sector reached approximately \$1.8 billion in 2017.

**Table 13: Key Statistics for Sugar & Confectionery product manufacturing**

	2013	2014	2015	2016	2017
Total # employees	6,585	5,505	5,540	5,165	5,120
Revenues*	2,533.9	2,709.2	2,740.1	1,957.0	
Revenues from good manufactured*	2,248.7	2,493.6	2,419.3	1,815.1	
Domestic Exports	857.5	977.1	1,132.7	1,239.7	1,264.4
Imports	1374.3	1351.9	1572.9	1662.9	1818.9

Sources: Adapted from Statistics Canada. Table 16-10-0117-01 Principal statistics for manufacturing industries, by North American Industry Classification System (NAICS); Trade Data Online (July 2018 update); Statistics Canada, Table 36-10-0480-01: Labour productivity and related measures by business sector industry and by non-commercial activity consistent with the industry accounts (Annual).

\*Revenue data is only available until 2016.

### 1.6.7 Grain and oilseed milling

This industry is comprised of establishments primarily engaged in milling grains and oilseeds, refining and blending fats and oils, and making breakfast cereal products. It plays a key role in the food supply chain, as companies convert grain into food ingredients often used by secondary processors such as bakeries and snack food manufacturers.

There were 74 establishments producing these products in Ontario in 2016 (ISED, 2018). Among those establishments that reported payroll in 2016, 20% are micro (1-4 employees) and 67% are small (5 to 99 employees) (ISED, 2018). In terms of the regional distribution of establishments, the top most important locations are the Toronto CMA (46% of all establishments), and the area of St. Catherine's-Niagara (11%) (Statistics Canada, 2016a).

The total number of employees has decreased by 35% between 2013 and 2017, from more than 3,300 employees to approximately 2,200 (Table 14). Revenues in the sector also decreased during the same period and are estimated at \$3.4 billion in 2016, down from \$4.5 billion in 2013. Exports, on the other hand, have remained somewhat stable, hovering around \$1.1 billion during the five-year period. The top three countries where goods are exported are the United States, Mexico & China. Imports of products in this sector reached approximately \$2.3 billion in 2017.

**Table 14: Key Statistics for Grain & Oilseed Milling**

	2013	2014	2015	2016	2017
Total # employees	3,360	2,935	2,940	2,045	2,180
Revenues*	4,504.3	4,284.5	3,130.3	3,389.8	
Revenues from good manufactured*	3,891.1	3,779.8	3,091.7	3,172.6	
Domestic Exports	1,140.3	1,051.2	1,135.3	1,143.9	1,110.9
Imports	1,744.4	1,928.1	2,166.6	2,338.3	2,313.6

Sources: Adapted from Statistics Canada. Table 16-10-0117-01 Principal statistics for manufacturing industries, by North American Industry Classification System (NAICS); Trade Data Online (July 2018 update); Statistics Canada, Table 36-10-0480-01: Labour productivity and related measures by business sector industry and by non-commercial activity consistent with the industry accounts (Annual).

\*Revenue data is only available until 2016.

The interactions between different sectors of the food processing industry has had a direct benefit on grain and oilseed milling. It is noted that, "Canadian oilseed producers and crushers have benefitted from the increased demand for their inputs due to the popularity of salad dressings in the North American marketplace" (AAFC, 2016g, "Linkages to agriculture").



### 1.6.8 Other food manufacturing

Other food manufacturing includes snack products (e.g., salting, roasting, drying, cooking or canning nuts; processing grains or seeds into snacks; manufacturing peanut butter; manufacturing potato chips, corn chips, popped popcorn, hard pretzels, pork rinds and similar snacks); coffee & tea; flavouring syrups; seasoning and dressings and any other products not classified elsewhere. The seasoning and dressing manufacturing industry produces salad dressings and mixes, prepared mustards, mayonnaise, dips (except cheese and sour cream-based), food colourings, malt extract, syrups, flavouring extracts (except meat and coffee), dry gravy mixes, sandwich spreads (except salad dressing-based), soy sauce, vinegar, Worcestershire sauce, and table salt and spice grinding. Not included in this industry are ketchup and other tomato-based sauces, canning gravy, bouillon, and salad dressing mixes made by dehydrating ingredients.

As of 2016, there are 898 establishments in this industry (ISED, 2018). Among those establishments that reported payroll in 2016, 33% are micro (1-4 employees) and 60% are small (5 to 99 employees (ISED, 2018). In terms of their regional distribution, the three most important locations are the Toronto CMA (69% of all establishments), the Ottawa-Gatineau CMA (7%) and Hamilton (4%) (Statistics Canada, 2016a).<sup>5</sup>

The total number of employees has decreased from 13,780 in 2013 to 11,465 in 2017—close to a 17% decrease (Table 15). On the other hand, revenues have increased by 27% between 2013 and 2016, from \$4.5 billion to \$5.7 billion. This sector exported \$1.3 billion in 2017 and the top three countries where goods are exported are the United States, the Philippines & Australia. Imports of products in this sector reached approximately \$3.3 billion in 2017.

**Table 15: Key Statistics for Other Food Manufacturing**

	2013	2014	2015	2016	2017
<b>Total # employees</b>	13,780	14,110	12,370	10,990	11,465
<b>Revenues*</b>	4,458.7	4,757.2	5,109.5	5,674.7	
<b>Revenues from good manufactured*</b>	4,096.7	4,430.6	4,837.5	5,327.2	
<b>Domestic Exports</b>	1,034.4	1,084.4	1,272.0	1,274.0	1,269.9
<b>Imports</b>	2503.8	2744.0	3178.4	3224.6	3284.3

*Sources:* Adapted from Statistics Canada. Table 16-10-0117-01 Principal statistics for manufacturing industries, by North American Industry Classification System (NAICS); Trade Data Online (July 2018 update); Statistics Canada, Table 36-10-0480-01: Labour productivity and related measures by business sector industry and by non-commercial activity consistent with the industry accounts (Annual).

\*Revenue data is only available until 2016.

<sup>5</sup> The Ottawa-Gatineau CMA includes establishments located in the Quebec portion of this region.



The snack industry has been responsive to preferences for convenience, increased flavour, and healthier products with the development of products featuring new ingredients (such as hemp seeds, grains, and pulses), less salt, reduced fat, new flavours, and gluten-free options. Furthermore, the industry has been responsive to consumer's demand for new ethnic tastes, and for a variety of healthier products, which has resulted in a rapid increase of product offerings (AAFC, 2016g).

#### 1.6.9 Animal food manufacturing

Companies in this industry manufacture food for livestock and for pet animals, using grains, proteins, vitamins, and other ingredients. In 2016, there were 206 establishments producing animal feed in Ontario (ISED, 2018), with employment estimated at 5,200 individuals in 2017 (Table 16). Among those establishments that reported payroll in 2016, 20% are micro (1-4 employees) and 73% are small (5 to 99 employees) (ISED, 2018). In terms of the regional distribution of establishments, the top most important locations are the Toronto CMA (48% of all establishments), and the area of Kitchener-Cambridge-Waterloo (8%) and London (7%) (Statistics Canada, 2016a).

The sector's revenues are estimated at \$3.6 billion in 2016 and approximately \$320 million in product was exported that same year. Exports have increased by close to 40% between 2013 and 2017. In 2017, the top three countries where animal feed goods were exported was the United States, Japan & Mexico. Imports of products in this sector reached approximately \$800 million in 2017 (Table 16).

**Table 16: Key Statistics for Animal Food Manufacturing (\$ millions)**

	2013	2014	2015	2016	2017
Total # employees	4,680	5,020	4,845	5,100	5,200
Revenues*	3,265.1	3,329.8	3,489.2	3,587.5	
Revenues from good manufactured*	2,509.2	2,540.3	2,601.2	2,737.8	
Domestic Exports	269.7	304.2	312.4	321.1	376.8
Imports	628.6	673.1	731.3	760.9	797.6

Sources: Adapted from Statistics Canada. Table 16-10-0117-01 Principal statistics for manufacturing industries, by North American Industry Classification System (NAICS); Trade Data Online (July 2018 update); Statistics Canada, Table 36-10-0480-01: Labour productivity and related measures by business sector industry and by non-commercial activity consistent with the industry accounts (Annual).

\*Revenue data is only available until 2016.

#### 1.6.10 Seafood product preparation and packaging

This industry consists of establishments that are primarily engaged in canning seafood, including smoking, salting and drying seafood; preparing fresh fish by removing heads,

fins, scales, bones and entrails; shucking and packing fresh shellfish; processing marine fats and oils; freezing seafood; and soup products.

Despite being a small industry in Ontario, with 44 establishments (ISED, 2018) employing 630 individuals, it has experienced growth over the past few years. The number of employees has increased by 200 or 45% since 2013, which has been coupled with an increase of revenues of 70% (Table 17). Among those establishments that reported payroll in 2016, 32% are micro (1-4 employees) and 68% are small (5 to 99 employees) (ISED, 2018). In terms of the regional distribution of establishments, the three most important locations are the Toronto CMA (56% of all establishments), the Leamington CA (10%) followed by both the Ottawa-Gatineau CMA and the Chatham-Kent CA with 7% of establishments each (Statistics Canada, 2016a).<sup>6</sup>

This sector exported \$86 million in 2017 and the top three countries where goods are exported are the United States, Japan & China. Imports of products in this sector reached approximately \$1.0 billion in 2017 (Table 17).

**Table 17: Key Statistics for Seafood Product Preparation & Packaging**

	2013	2014	2015	2016	2017
Total # employees	435	605	605	620	630
Revenues*	124.5	175.7	199.4	211.8	
Revenues from good manufactured*	118.3	170.4	184.9	202.0	
Domestic Exports	66.63	74.10	78.51	89.87	86.76
Imports	768.4	898.6	921.1	939.4	1026.8

Sources: Adapted from Statistics Canada. Table 16-10-0117-01 Principal statistics for manufacturing industries, by North American Industry Classification System (NAICS); Trade Data Online (July 2018 update); Statistics Canada, Table 36-10-0480-01: Labour productivity and related measures by business sector industry and by non-commercial activity consistent with the industry accounts (Annual).

\*Revenue data is only available until 2016.

## 1.7. REGIONAL PROFILES

### HIGHLIGHTS

*The food and beverage processing industry is among the largest or 2nd largest employers in the manufacturing industry for most regions. Core food and beverage processing hubs are found in Cornwall and Hastings (Ottawa region), Belleville (Kingston-Pembroke), Guelph (the leading center for food research and innovation), Brantford (Hamilton-Niagara region), Toronto and London.*

<sup>6</sup> The Ottawa-Gatineau CMA includes establishments located in the Quebec portion of this region.

Regional profiles produced for the food and beverage processing industry by economic region (LMISD, 2017) are summarized below (Table 18). The importance of the industry is highlighted in the table, as food and beverage processing accounts as either the largest or 2<sup>nd</sup> largest employer in the manufacturing industry for most regions. Those regions where it is the largest employer include Toronto, Kingston-Pembroke, and Kitchener-Waterloo-Barrie.

In addition to Toronto, some of the core food and beverage processing hubs that are identified include Cornwall and Hastings outside of Ottawa, Belleville in the Kingston-Pembroke region, Guelph (the leading center for food research and innovation), Brantford in the Hamilton-Niagara region, and London.

**Table 18: Characteristics of the industry by economic region**

REGION	EMPLOYMENT	KEY CHARACTERISTICS	MAJOR PROCESSORS
Ottawa	FBP processing is the 2 <sup>nd</sup> largest employer in manufacturing industry in the region	Several manufacturers are located outside the city of Ottawa in areas like Cornwall and Hastings	Olymel, Ivanhoe Cheese, granoVita Canada
Kingston-Pembroke	FBP processing is the largest employer in the manufacturing industry in this region	Belleville is a core hub for food processing in Ontario	Parmalat Canada, Saputo, Dairy Products Canada, Vantage Foods, Kellogg Canada, Nestlé Canada (there are also several smaller companies in dairy and meat processing)
Muskoka-Kawarthas	FBP processing is the 2 <sup>nd</sup> largest employer in manufacturing industry in the region		PepsiCo Canada, Minute Maid Company Canada, Weetabix of Canada, Weston Bakeries
Toronto	FBP processing is the largest employer in the manufacturing industry in this region	Toronto has the largest cluster of food processing companies in Ontario and one of the biggest across North America Toronto serves as headquarters for several major companies in the industry The region is a leader in specialty foods, particularly ethnic and fusion goods because of its diverse population	Campbell Company of Canada, Cargill Limited, Fiera Foods Company, George Weston Limited, Nestlé Canada
Kitchener-Waterloo-Barrie	FBP processing is the largest employer in the manufacturing industry in this region with key centres in Guelph, Kitchener and Cambridge	Guelph is the leading centre for food research and innovation in the province	Dare Foods, Conestoga Meats Packers, Brick Brewery, Cargill Limited, Sleeman Breweries, Nestlé Waters Canada, PepsiCo Canada
Hamilton-Niagara	FBP processing is the 2 <sup>nd</sup> largest employer in manufacturing industry in the region with key centres in Brantford and Hamilton	Brantford is one of the core food manufacturing hubs in Ontario and has been able to attract global companies over the past few years	Ferrero Canada, Maple Leaf Foods, Mondelēz Canada, Western Waffles, ARYZTA, Normerica, Piller's Fine foods, NutraBlend Foods

REGION	EMPLOYMENT	KEY CHARACTERISTICS	MAJOR PROCESSORS
London		Niagara-on-the-lake is the heart of the provincial wine and icewine industry. The area features estates, mid-size establishments and small niche wineries.	
	FBP processing is the 2 <sup>nd</sup> largest employer in manufacturing industry in the region	London is a core hub for food processing with many national and global players	Cargill Limited, McCormick Canada, Labatt Breweries of Canada, Nestlé Canada, Inovata Foods, Sofita Foods
Windsor-Sarnia	FBP processing is a significant employer in the Windsor-Sarnia region	The area has a rich agricultural base that allows some producers to work directly with farmers Several manufacturers are in smaller communities throughout the region	Hiram Walker & Sons Limited, Highbury Canco Corporation, Dainty Foods, Diageo, Cavendish Farms, Bolthouse Farms, ConAgra Foods, Bonduelle, Thomas Canning
Stratford-Bruce Peninsula	FBP processing is the 2 <sup>nd</sup> largest employer in manufacturing industry in the region	Several small and mid-size food manufacturers are in rural communities throughout the region	Solis Foods Corporation, Sofina Foods, Gay Lea Foods Co-operative Ltd.

Source: Adapted from LMISD (2017).

## 1.8. LINKS TO OTHER SECTORS

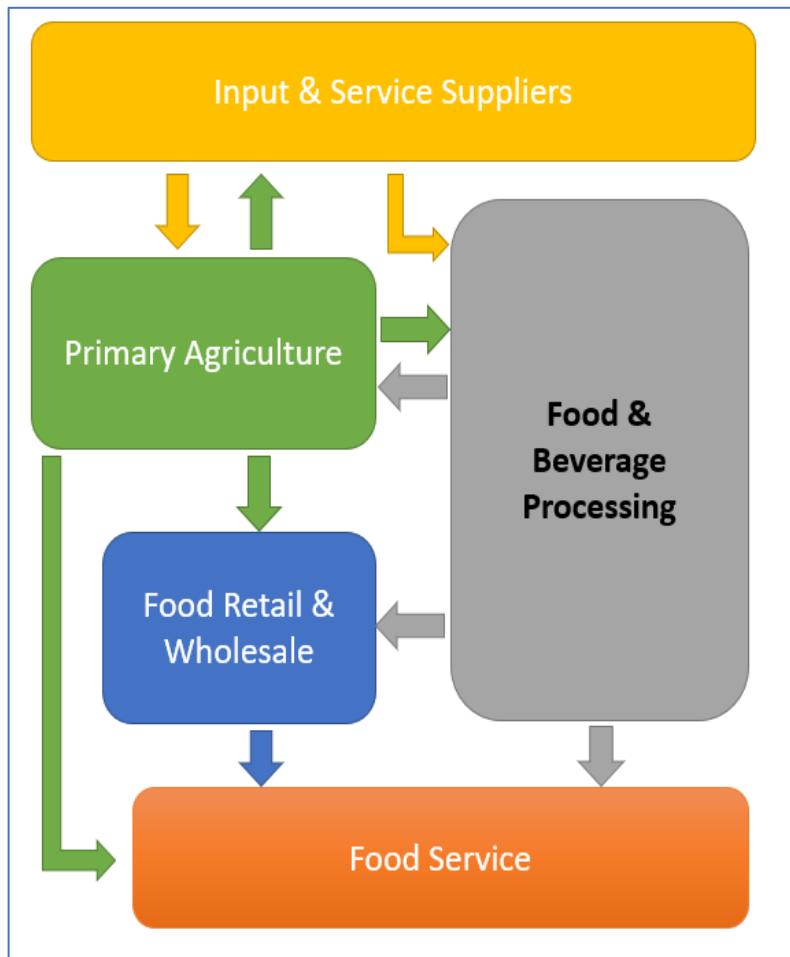
### **HIGHLIGHTS**

*Ontario's FBP sector is closely integrated within a complex system of agriculture and agri-food products, both as a purchaser and a supplier of goods. It is reported that the Ontario food processing sector purchases 65% of Ontario's farm products. In addition, there is integration with manufacturing, marketing and distribution processes as a result of facility management activities, innovation, sales and marketing and transportation. As such, growth in this industry has a ripple effect throughout the economy.*

Within the complex system of agriculture and agri-food, the food processing industry is closely integrated with other sectors, providing inputs to primary producers, and manufacturing products for food retailers and wholesalers, as well as for food service providers, both in the domestic and international markets (AAFC, 2017). Inputs include, in addition to agricultural commodities, other raw materials, utilities, packaging supplies and equipment and machinery; as well as accounting, legal, and travel services, among others (MNP LLP, 2015b). The degree of integration in Ontario is high, with agriculture being a major supplier of the Ontario food and beverage processing industry. It has been estimated that “the Ontario agri-food processing sector purchases 65 percent of Ontario’s farm food products” (MNP, 2016, p.20). The food & beverage industry also provides inputs to the agriculture sector (e.g., animal feed, grains, and oils). Figure 2 shows how the FBP sector interacts with others within this complex system.

During the manufacturing, marketing, and distribution processes, there are additional interactions with other economic sectors. These interactions are a result of facility management activities (e.g., construction, renovation, rentals), innovation (e.g., technology and research centers), sales and marketing (e.g., advertising to specific industries via print, television or social media, among others) and distribution, storage and transportation services (MNP LLP, 2015b). As such, “growth in this industry has a ripple effect in the economy because it supports activities across multiple industries, such as transportation, packaging, retail and food services and food science” (LMISD, 2017, p.1). Figure 2 illustrates links to other sectors in the Agriculture and Agri-food system.

**Figure 2: Links to other sectors in the Agriculture & Agri-food System**



Source: Adapted from AACF (2017).

The interaction between the sectors is not only the result of the production process itself. Regulations and guidelines regarding food safety are established at all stages of the production chain to ensure healthy and safe food products. For instance, supply management systems play a role in modulating the interaction between agriculture and food processing, as supply management is established with the objective to balance supply and demand so farmers do not produce more than is needed at any given time. In the dairy sector, only processors licensed by the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) can purchase unpasteurized milk. As well, all unpasteurized milk in the province must be purchased from *Dairy Farmers of Ontario* (DFO), which purchases directly from producers (Ontario Ministry of Agriculture, Food and Rural Affairs [OMAFRA], 2015).

Another example is found in the animal feed industry that meets these regulations to control risk in feed processing and participates in the establishment of traceability systems in collaboration with participants in different stages of the food chain. Ontario's

feed manufacturers have adopted Good Manufacturing Practices (GMP) and Hazard Analysis Critical Control Point (HACCP) programs to meet the needs and requirements of both producers and processors. More than 50 Ontario facilities are HACCP-certified (MNP LLP, 2016).

Integration also impacts the profitability of the industry. In particular, the price of raw materials, such as agricultural commodities, energy, and the steady increase in labour costs, are putting pressure on the food & beverage processing industry (AACF, 2017). Being the main input in the industry, the steady rise in the cost of agricultural products is putting pressure on profit margins (LMISD, 2017). One reason behind increasing costs is the consolidation of both retail and primary sectors, increasing input costs and squeezing the profit of the food processing industry (MNP LLP, 2015b).

Another observation is that the “lines between retail, food manufacturing and e-commerce are becoming increasingly blurred particularly as it relates to bakeries, prepared foods and breweries” (TWIG, 2017, p.7). That is, an increasing number of companies list as part of their activities both retail and manufacturing processes, particularly “small-batch food producers “when faced with product placement costs of major retailers, look towards direct service and retailing opportunities” (TWIG, 2017, p.7).

## 1.9. ANTICIPATED FUTURE GROWTH/OUTLOOK

### HIGHLIGHTS

*Being a necessity, food is less affected by cyclical fluctuations in the economy. Nonetheless, there are several factors that impact the outlook for this industry. Although no information regarding projected Ontario GDP growth for FBP was found, studies in the area note that the sector is expected to continue capitalizing on innovation, spearheaded by changing consumer preferences that open the door to diverse products and technology improvements, as well as increased supply chain integration. Increasing exports due to development of new products and markets (e.g., new markets in Asia) are also expected to drive future growth, although it might be mitigated by changes in the value of the Canadian dollar and by any risks associated with trade agreement renegotiations with the US, the major trading partner of the FBP sector.*

*Figures at the Canadian level suggest that GDP from the FBP industry will increase by 1.3% annually between 2017 and 2026 and that employment will increase by 0.5%. Ontario-level forecasts agree with the observation that labour productivity increases will be a major driver for real GDP growth, with its annual growth rate expected to be greater than that of employment and the labour force.*



*Estimating employment growth at slower rates than projected industry growth is explained by underlying assumptions regarding technology, innovation and productivity growth that are expected to continue as per historical trends.*

*Other studies suggest that industry growth has been driven primarily by an increase in the availability of inputs as opposed to productivity. On one hand, this stresses the importance of integration with other players and industries in the supply chain. On the other hand, it suggests caution regarding productivity growth projections. For instance, industry representatives indicate that some productivity improvements cannot be adopted due to the uniqueness of the products and to cost barriers faced by small and medium sized enterprises (SMEs). As a result, the projections based on assumptions of continued productivity growth should be interpreted with caution and modulated by the barriers the industry is facing. These projections also have an impact on expected labour shortages resulting in a mismatch on the forecasted needs as derived from the Canadian Occupational Projection System (COPS) projections and the industry's views (See Section 3.5 Employment Gaps (demand vs supply).*

#### **1.9.1 GDP & employment outlook**

Food is generally less affected by cyclical fluctuations in the economy because it is a necessity (Employment and Social Development Canada [ESDC], 2017a). The food processing industry has remained a main player in the Canadian manufacturing industry as it capitalizes on “technology improvements, developing new processes and products, and increasing supply chain integration” (AAFC, 2017, p.77). Production is anticipated to continue growing and even accelerate as a result of foreign demand and a low Canadian dollar. Also, the Canadian FBP sector has a reputation for both high food quality standards and safety standards, which help build an international consumer base (LMISD, 2017).

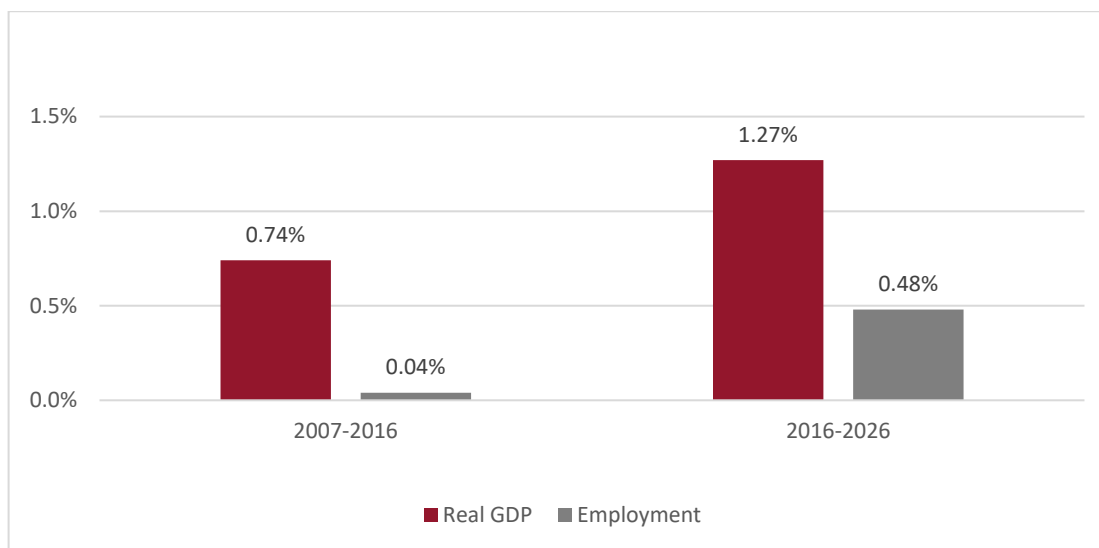
Regarding the domestic market, demand for products in this sector is expected to align with the anticipated slower growth in consumer demand, primarily due to an ageing population. ESDC (2017a) explains the benefits of having an export market as the primary driver of expected growth:

The export-oriented segment of the industry is expected to benefit from a stronger U.S. economy and new market opportunities resulting from the gradual implementation of the Canada-European Union Comprehensive Economic and Trade Agreement (CETA). Exports of food products are also expected to benefit from rising incomes and the growing middle class in emerging markets. (par. 3)

However, trade agreement renegotiations present a risk for this positive outlook (ESDC, 2017a) and regulations specify less stringent requirements on imports of food processing products into Canada than for exports (MNP LLP, 2015b).

Projections from the Canadian Occupational Projection System (COPS) expect that the continued growth for the FBP sector will be partially absorbed by productivity gains resulting from technological innovations, particularly in the form of increased automation. This projection is in line with the observation that technology- boosted productivity resulted in relatively stable employment over the 2007-2016 period (ESDC, 2017a). As a result, COPS projections estimate that Canadian GDP and employment levels in the sector (including tobacco processing) will increase between 2017 and 2026 on average annually by 1.3% and 0.5% respectively (Figure 3).

**Figure 3: Real GDP and Employment Average Annual Increase in the Food & Beverage Manufacturing Industry, \* Canada**



Source: Adapted from ESDC (2017a).

\*Includes the tobacco processing industry, representing approximately 3% of this sector's revenues in Canada.

Ontario-level forecasts concur with the observation that increases in labour productivity will be a major driver for real GDP growth, with its annual growth rate expected to be greater than both growth rates for employment and of the labour force (Table 19). Between 2021-2025 real GDP growth in Ontario is projected at 2% annually. Labour force and employment numbers are expected to increase by 0.8% while labour productivity is expected to increase by 1.2% annually. That is, "the rate of productivity growth is key to determining Ontario's long-term potential output. Particular importance is placed on this factor since growth in the working-age population is expected to decline over the forecast horizon" (Ontario Ministry of Finance, 2017, p.49).

**Table 19: Ontario Long-Term Projections, Projected Annual Growth (%) \***

	2016-20	2021-25	2026-30	2031-35
Real GDP	2.2	2.0	2.0	2.0

	2016-20	2021-25	2026-30	2031-35
Labour Force	1.0	0.8	0.8	0.8
Employment	1.2	0.8	0.8	0.8
Labour Productivity	1.0	1.2	1.2	1.2

Source: Adapted from Ontario Ministry of Finance (2017).

\*Base case scenario projections.

On the other hand, based on data between 1961-2013, Agriculture and Agri-Food Canada has concluded that positive, steady growth in the industry (2% annually over the period) has resulted primarily from input growth (1.9% growth annually) as opposed to productivity growth, estimated at 0.2% annually (AACF, 2017). Therefore, projections based on an expectation of continued productivity growth must be interpreted with caution and validated against recent productivity growth in the sector. The food processing sector is material intensive and has not observed the same level of technological improvements as the rest of the manufacturing industry (AACF, 2017). Furthermore, “despite the innovations in automation for processing, packaging and inventory management, more investments in these areas is required to remain competitive; and smaller companies are trailing larger ones that are making these investments” (MNP LLP, 2015b).

Qualitative interviews with employers in the sector also indicate that productivity improvements that can be made in manufacturing as a whole cannot be replicated throughout the FBP sector due to the uniqueness of the product and the existing cost barriers for SMEs that cannot afford the machinery for those areas where automation has been developed, such as packaging (TWIG, 2017). As a result, these barriers the industry is facing should modulate the interpretation of projections that are based on assumptions of continued productivity growth. These projections also have an impact on expected labour shortages that result in mismatched forecasted needs derived from COPS projections and the industry’s views (see Section 3.5. Employment Gaps (demand vs supply)).

#### **Data Gap**

- *Projected Ontario GPD growth for the food and beverage processing industry is unavailable in the sources consulted for this report.*

#### **1.9.2 Consolidation and closures**

In recent years, one topic of concern in Ontario is high-profile closures. Generally, closures are partially explained by integration and consolidation by industry players trying to remain competitive in the global market as they face greater competition (ESDC, 2017a). As such, closures are more commonly observed among large, multinational companies, particularly when the site is no longer competitive (LMISD,

2017). In Ontario, however, one main reason behind closures has been out-dated plants (Charlebois, 2018).

On the other hand, the sector has observed plant expansions and the opening of new plants in different regions in the province (MNP LLP, 2015b). These moves are motivated by investments to open, expand or upgrade processing facilities or to replace older, less efficient plants with newer facilities (LMISD, 2017). In addition, “smaller companies are more likely to invest and open facilities, which often use advanced technologies and result in lower production costs” (LMISD, 2017, p.4). In fact, some might interpret consolidation in the industry as a strength; high valuation indicates that the investment community perceives the sector to have significant growth opportunities (Blakes, Cassels & Graydon LLP, 2015).

### *1.9.3 Shifting consumer preferences*

Changing consumer preferences provides other growth possibilities, as these translate into opportunities for product development and expanding markets, keeping in mind greater competition and additional considerations in product development. That is, “there are also new avenues for food manufacturers to fill niche markets and satisfy consumer preferences for local and sustainable food” (LMISD, 2017, p.2).

For instance, there are new opportunities for innovation resulting from the buy-local movement, changing demographics, or trends in healthier products with a “push for organic, natural and sustainable food options” (LMISD, 2017, p.4). Healthier foods include products with reduced levels of sugar, fat and/or sodium, the provision of gluten-free or zero trans-fat options, as well as the addition of new ingredients such as prebiotics and biotics (MNP LLP, 2015b; Canadian Food Innovators [CFI], 2017). Other opportunities include innovations for time-saving solutions in food preparation and packaging innovations that extend shelf life and enhance safety and quality (MNP LLP, 2015b; CFI, 2017). Shifting demographics create a population that is less homogenous, providing opportunities for customized products and diverse ethnic foods to serve multicultural communities in the province (AACF, 2015; MNP LLP, 2015b; CFI, 2017).

In addition, consumers now expect more product information and the use of environmentally responsible practices (e.g., clean technologies, pesticide use, food waste, carbon footprint, organic product options) that requires innovations in the production process. These changes have a direct impact on packaging and labelling, either in reducing its use or in expanding the use of biodegradable or fully recyclable packaging (AACF, 2015; LMISD, 2017; CFI, 2017). Clean labels would work to highlight foods with minimal ingredients and outline all food’s contents (AACF, 2015; CFI, 2017). As a whole, consumers look for evidence of economic, social, and environmental sustainability efforts that can be reflected in marketing and sales opportunities (MNP LLP, 2015b).

#### 1.9.4 Genomics

Genomics provides an opportunity to introduce innovations and new technologies beyond manufacturing and packaging equipment engineering. Examples such as crop diversification, that consists of developing the same species for different food uses, or the introduction of new species, are expected to expand in Ontario. Diversifying crop and livestock products and Incorporating traits into crops that makes them better suited to innovative processing systems, is expected to have a direct impact on and further strengthen the food and beverage processing industry. Genomics Ontario (2018) explains that:

Genomics can play an important role in several areas of food processing, including fermented foods, food spoilage, food safety, and food authentication. The detection, manipulation and control of microorganisms can improve the productivity and profitability of fermented food production, as well as increase the shelf life and food safety of packaged and fresh foods. (p.48)

Yet, while there are a number of advantages to genomics technologies, public acceptance, regulatory processes for new products, knowledge transfer to stakeholders, and available funding pose potential barriers to its adoption (Genomics Ontario, 2018).

### 1.10. ONTARIO'S COMPETITIVE ADVANTAGE

#### **HIGHLIGHTS**

*There are a number of aspects that provide the Ontario food & beverage processing industry with a competitive advantage, including the rich agricultural base, the large consumer base, an educated workforce, adequate infrastructure, competitive costs and a cluster for research and innovation in the sector.*

**Agriculture:** The province has a rich agricultural base that directly provides inputs the food manufacturing industry. Ontario holds more than half of all of Canada's class 1 farmland, contains two of the best agroclimatic zones in Canada, has a diverse primary agricultural production and has access to abundant water sources (Ontario Genomics, 2017). Ontario food and beverage processing businesses are close to the producers of 200 agricultural commodities (MNP LLP, 2015b) and Ontario purchases 65% of all production from the agricultural sector in the province (MNP, 2016).

**Population:** There is a large customer base located in Ontario itself and the proximity to the US market provides businesses with large potential markets: there are more than 14 million Ontario residents and 150 million people within a day's drive (Ontario Genomics, 2018).

**Infrastructure:** In addition, due to its location, the industry is near key distribution routes and major packaging companies. International transportation infrastructure is also efficient, connecting businesses to markets around the world. Proximity and integration can reduce industry transportation costs (LMISD, 2017).

**Toronto & GTA cluster:** The Toronto region's food & beverage sector is the third largest in North America (TWIG, 2017) with annual sales exceeding \$21 billion. It is also the second largest manufacturing employer in the region (Toronto Global, n.d.). Although it might be costly to operate in an urban center, particularly the GTA where manufacturers face expensive land costs, high commercial property tax, and high cost of utilities (MNP LLP, 2015b), among major global cities (with populations of \$2 million or greater) Toronto ranks fourth according to the business cost index (KPMG, 2016).

**Research & Development:** Ontario is considered a research hub and a leader in food technology and innovation (LMISD, 2017). Given the location of several research institutions in the Toronto-Guelph corridor, it has been argued that it "could become the first agri-food cluster in the continent". More details on these initiatives are included in Section 4.9 Research & Innovation.

## 2. SKILLS

### OVERVIEW

*There are a wide variety of occupations in the food and beverage processing sector, ranging from front line positions to management positions in areas as diverse as production, human resources, and research and development. Occupations can be classified according to their responsibilities such as executive, management, supervisory, and operational. Each area of responsibility will have different requirements in terms of qualifications, credentials, training, skills, and responsibilities.*

*Food Processing Skills Canada (FPSC) has identified 39 occupations in the food and beverage processing industry. These occupations can be categorized according to (i) the sub-industry in which these are most commonly observed; and (ii) the main function that they have in the company, e.g., technical operations, facility operations & maintenance, production. Except for a few positions that are quite specific to a sub-industry (e.g., bakers, meat cutters), the vast majority of positions are relevant to all food and beverage sub-industries.*

*To guide the analysis in this report, we have identified among the 39 occupations in the industry, those that are considered key. These include the eight most frequently performed occupations within the industry and/or occupations that are highly concentrated in the industry (without necessarily being frequent occupations), as well as an additional five occupations that are generally observed in the manufacturing industry.*

*There are different approaches to classifying an occupation according to the skill level required. FPSC has developed levels of responsibilities associated with careers ladders, showing the potential progression path for workers in some key areas of food processing. In addition, FPSC has developed detailed skill profiles following the nine Essential Skills by Employment and Social Development Canada. Finally, skills levels are associated with each code in the National Occupational Classification System (NOC).*

*The skill levels associated with each position in the food processing industry are quite diverse, but organizing these skills forms the basis for identifying skill gaps and associated training needs.*

*Credential and certification requirements depend on the level of responsibility of the position and may range from entry-level positions where primarily on-the-job-training will be provided to more complex levels of training and certification. For example, senior executive level positions often require university education and numerous years of industry experience. Management positions may require college education or a university degree in an area such as food science. Supervisory positions usually require a high school education, and sometimes specialised post-secondary training, as well as*



*experience. High skill level positions consider high school diplomas an asset, in addition to 1-2 years of experience, while intermediate positions require slightly less experience, such as from 6 months to a year. Finally, foundational skill level positions do not always require high school education or experience.*

*Specific working conditions vary across the industry, depending on the occupation and the production facility. Nonetheless, employees at many plants endure repetitive tasks and spend a great deal of time of time standing and carrying out manual tasks. They may be exposed to high levels of noise and work environments with poor temperatures control.*

## **2.1. OCCUPATIONS IN FOOD & BEVERAGE PROCESSING**

### **HIGHLIGHTS**

*There are a wide variety of occupations in the food and beverage processing sector, ranging from front line positions to management positions, in areas as diverse as production, human resources, and research and development. Occupations can be classified according to their responsibilities such as executive, management, supervisory, and operational. Each area of responsibility will have different requirements in terms of qualifications, credentials, training, skills and responsibilities.*

*Food Processing Skills Canada (FPSC) has identified 39 occupations in the food and beverage processing industry. These occupations can be categorized according to (i) the sub-industry in which these are most commonly observed; and (ii) the main function that they have in the company, e.g., technical operations, facility operations & maintenance, production. Except for a few positions that are quite specific to a sub-industry (e.g., bakers, meat cutters), the vast majority of positions are relevant to all food and beverage sub-industries.*

Positions in the food and beverage processing sector are varied and range from workers in front line positions to higher-level management positions, in areas as diverse as production, human resources, and research and development. The general structure of a company in the food and beverage processing sector is presented in Figure 4, which illustrates the diversity in functions across a plant. In an organization there may be linkages across positions and job titles will vary depending on the size of the company, the number of products manufactured, and regulatory requirements, among other considerations. Within each functional area, there are varying levels of responsibility for executive, management, supervisory, and operational positions. Each area of responsibility will have different requirements in terms of qualifications, credentials, training, skills, and responsibilities (FPHRC, 2017a):



- **Executives** typically have significant experience (10+ years) within the industry. They are responsible for managing the organization and providing strategic direction. As a result, skills in business administration and organizational management are critical.
- **Management** workers typically have five years of supervisory experience and leadership is considered an asset. Post-secondary education may be required or considered an asset, and management training is often required. Other training (e.g., food safety) might also be required.
- **Supervisory** workers include both supervisors and lead hands.
  - **Supervisors** usually have 2-3 years of experience in their area and may have training in supervision and employee management. A secondary school diploma is required, and post-secondary education is considered an asset.
  - **Lead hands** (high skill level) have at least one-year experience. A secondary school diploma is considered an asset and additional training for supervising workers may be offered in-house (e.g., food safety).
- **Operational** positions include entry-level positions and intermediate skill level workers.
  - **Intermediate skill** workers typically have 6 months to one-year experience. A secondary school diploma is preferred but it is not a requirement. On-the-job training is provided, including food safety training.
  - **Foundational** skill workers are often entry-level positions that require no prior experience. A secondary school diploma might be preferred but is not required. On-the-job training and job shadowing is key for these positions.

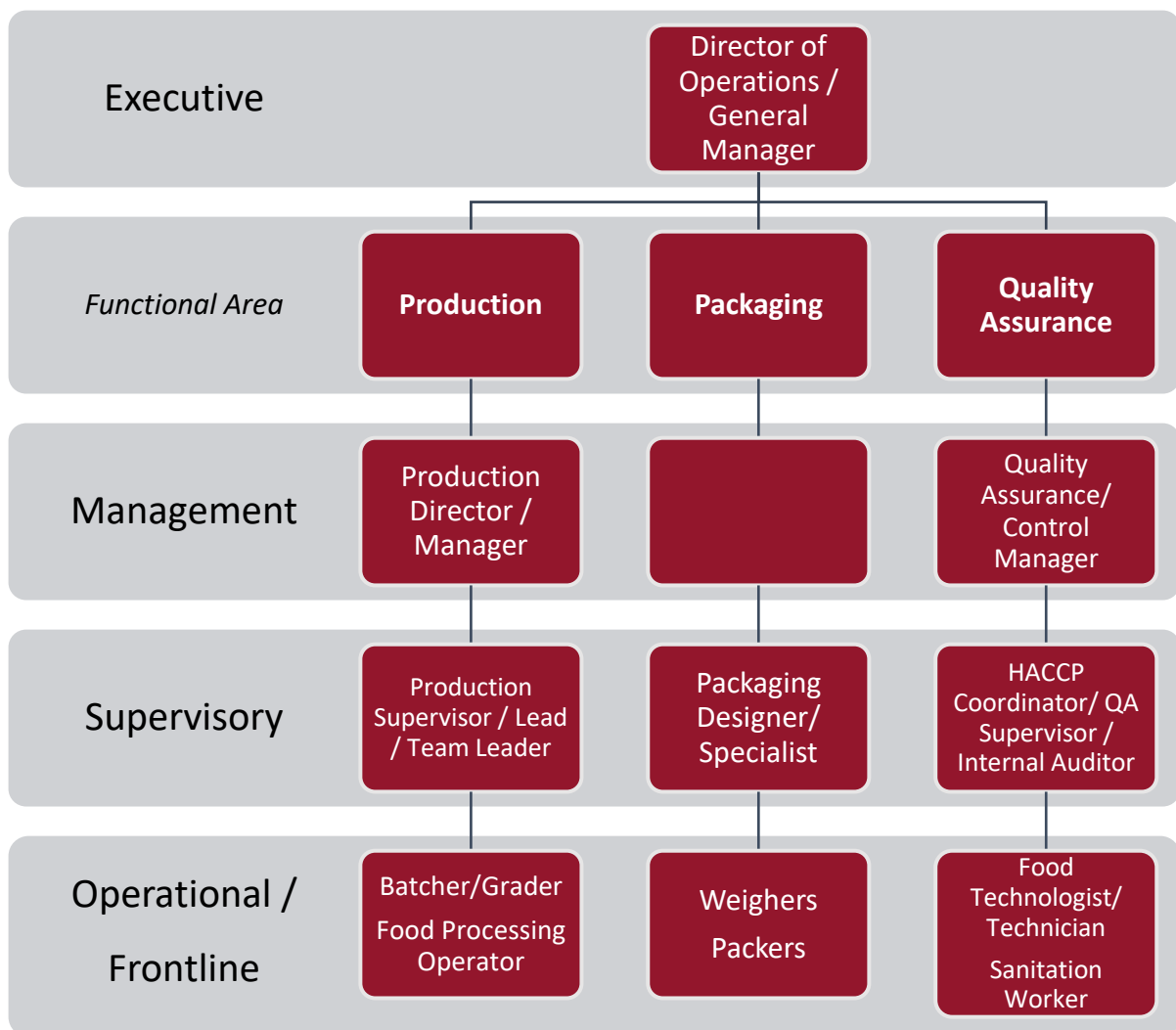
Figure 4: Structure of a Food & Beverage Processing Company



Source: Adapted from FPHRC (2017d).

To illustrate the different levels of responsibility, an example of the responsibilities for different positions in operations is presented in Figure 5. Operations include production, packaging, and quality assurance. Production, in turn, is subdivided between a number of activities that are performed in a food processing plant. In the example below, a general description of “food processing operator” is used rather than listing the many specific position titles that may apply for the production occupations for each of the food processing sub-industries.

**Figure 5: Levels of Responsibility in Operations**



Source: Adapted from FPHRC (2017d).

Food Processing Skills Canada (FPSC) has identified 39 occupations in the food and beverage processing industry. These professions are categorized according to (i) the sub-industry in which these are most commonly observed (Table 20); and (ii) the main function that they have in the company, (e.g., technical operations, facility operations & maintenance, production) (Table 21).

These occupations are organized by the level of responsibility equivalent to those presented in

Figure 5. In this case, operational positions are classified as front-line, with supervisory and management positions also indicated. Some position titles, depending on the organization, size of the establishment and level of responsibility associated, may be classified as either frontline, supervisory, or management positions.

The list is organized by the 2016 National Occupational Classification (NOC) code. NOC is a classification system for occupations. It allocates a four-digit code for each occupation and it may include a wide variety of position titles. For instance, Coffee-blending Machine Feeder and Potato-peeling Machine Tender are both job titles within the *NOC 9617 Labourers in food and beverage processing*. Except for a few positions that are quite specific to a sub-industry (e.g., bakers, meat cutters), the vast majority of positions are relevant to all food and beverage sub-industries. For reference, the definition of each NOC code included here is presented in Appendix B: Occupational Codes (NOC) definitions

Table 20: 39 Common Food Processing Sector Occupations by Sub-Industry

NOC CODE	EXAMPLES OF POSITION TITLES	ANIMAL FOOD	GRAIN & OIL SEED	SUGAR & CONFECTION- NARY	FRUIT & VEGETABLE PRESERV.	DAIRY PRODUCTS	MEAT & POULTRY	FISH & SEAFOOD	BAKERY	BEVERAGE	OTHER
FRONTLINE POSITIONS											
0621	Livestock Dealer; Cattle Dealer						√				
1241	Secretary	√	√	√	√	√	√	√	√	√	√
1411	General Office Clerk; Administrative Support Clerk	√	√	√	√	√	√	√	√	√	√
1431	Account Payable/Receivable Clerk; Freight-rate Clerk; Tax Return Preparer	√	√	√	√	√	√	√	√	√	√
1432	Benefits Officer; Pay and Benefits Administrator; Payroll Officer; Salary Administration Officer	√	√	√	√	√	√	√	√	√	√
1511	Mail Room Clerk; Mail Sorter; Mailing Machine Operator	√	√	√	√	√	√	√	√	√	√
1521	Shipping/Receiving Clerk	√	√	√	√	√	√	√	√	√	√
2121	Food Scientist	√	√	√	√	√	√	√	√	√	√
2171	Business Analyst; Software QA analyst; Systems Security Analyst	√	√	√	√	√	√	√	√	√	√
2174	Application Programmer; Graphical User Interface Designer; Programmer analyst	√	√	√	√	√	√	√	√	√	√
6222	Hog Buyer; Livestock Buyer; Cattle Buyer; Meat Buyer						√				
	Assistant Buyer; Buyer-retail; Buyer-Wholesale	√	√	√	√	√	√	√	√	√	√
6332	Grocery Store Baker; Head Baker-retail; and other titles								√		
6411	Grain Broker/Dealer/Merchandiser; Livestock Broker; Commission Agent; Liquor Sales Representative		√				√			√	

NOC CODE	EXAMPLES OF POSITION TITLES	ANIMAL FOOD	GRAIN & OIL SEED	SUGAR & CONFECTION- NARY	FRUIT & VEGETABLE PRESERV.	DAIRY PRODUCTS	MEAT & POULTRY	FISH & SEAFOOD	BAKERY	BEVERAGE	OTHER
6552	Order Clerk; Customer Service Agent	√	√	√	√	√	√	√	√	√	√
7242	Plant Electrician; Plant Maintenance Electrician; Mill Electrician	√	√	√	√	√	√	√	√	√	√
7313	Cooler/Refrigeration Technician	√	√	√	√	√	√	√	√	√	√
7452	Shipment Assembler; Forklift Operator; Warehouse Worker	√	√	√	√	√	√	√	√	√	√
7511	Transport Drivers	√	√	√	√	√	√	√	√	√	√
9461	Hydrogenation Operator & many other titles	√	√	√	√	√	√	√	√	√	√
9462	Shackle Hoist Operator; Poultry Plucker Tender						√				
9463	Filleting or Skinning Machine Setter; Fish Cutting Machine Setter; Fish Dryer & Grinder Tender; Fish Stick or Fish-processing Machine Tender; and other titles							√			
9465	Feed Tester	√		√	√	√			√	√	
9617	Coffee-blending Machine Feeder; Potato-peeling Machine Tender; Centrifuge Tender; Singeing Machine Tender; Meat-rolling / Meat Press Machine Tender; Linking Machine Tender		√	√	√	√	√		√	√	√
9618	Fish Weigher; Fish Sorter; and other titles							√			
<b>SUPERVISORY OR FRONTLINE</b>											
1215	Warehouse Supervisor; Shipping and receiving supervisor; Warehouse foreman/woman; Planner/Scheduler	√	√	√	√	√	√	√	√	√	√
2211	Chemical Technologist; Food Technologist; Quality Control Technician	√	√	√	√	√	√	√	√	√	√
6733	Building Superintendent, Sanitation Supervisor; Building Services Worker; Industrial Plant Cleaner	√	√	√	√	√	√	√	√	√	√

NOC CODE	EXAMPLES OF POSITION TITLES	ANIMAL FOOD	GRAIN & OIL SEED	SUGAR & CONFECTION- NARY	FRUIT & VEGETABLE PRESERV.	DAIRY PRODUCTS	MEAT & POULTRY	FISH & SEAFOOD	BAKERY	BEVERAGE	OTHER
<b>SUPERVISORY</b>											
2132	Mechanical Engineer; Mechanical Maintenance Engineer	√	√	√	√	√	√	√	√	√	√
2133	Electrical Engineer	√	√	√	√	√	√	√	√	√	√
9213	Team Supervisor - flour milling; Feed Milling Foreman/woman; and other titles	√	√	√	√	√	√	√	√	√	√
<b>MANAGEMENT OR SUPERVISORY</b>											
0112	Director of HR Management; Benefits Manager; Administrator HR	√	√	√	√	√	√	√	√	√	√
<b>MANAGEMENT</b>											
0111	Director of Finance	√	√	√	√	√	√	√	√	√	√
0113	Purchasing/Procurement Manager	√	√	√	√	√	√	√	√	√	√
0124	Director of Public Relations/Communications; Advertising/Marketing Manager	√	√	√	√	√	√	√	√	√	√
0213	Communications Systems Design Manager; Data Centre Manager; Computer Applications Manager; Systems Operations Manager	√	√	√	√	√	√	√	√	√	√
0601	Sales Manager	√	√	√	√	√	√	√	√	√	√
0714	Warehouse Manager; Facilities Manager; Operations Manager	√	√	√	√	√	√	√	√	√	√
0731	Director of Logistics and Transportation	√	√	√	√	√	√	√	√	√	√
0911	Director of Operations	√	√	√	√	√	√	√	√	√	√

Source: Adapted from FPSC (n.d.-i).

**Table 21: 39 Common Food Processing Sector Occupations by Function**

NOC CODE	EXAMPLES OF POSITION TITLES	BUSINESS, FINANCE & ADMINISTRATION	TECHNICAL OPERATIONS	FACILITY OPERATIONS & MAINTENANCE	QUALITY CONTROL/ ASSURANCE	PRODUCTION	INPUTS & OUTPUTS	RESEARCH & DEVELOPMENT
<b>FRONTLINE</b>								
0621	Livestock Dealer; Cattle Dealer	√						
1241	Secretary	√						
1411	General Office Clerk; Administrative Support	√						
1431	Account Payable Receivable Clerk; Freight-rate Clerk; Tax Return Preparer	√						
1432	Benefits Officer; Pay and Benefits Administrator; Payroll Officer; Salary Administration Officer	√						
1511	Mail Room Clerk; Mail Sorter; Mailing Machine Operator	√						
1521	Shipping/Receiving Clerk						√	
2121	Food Scientist							√
2171	Business Analyst; Software QA analyst; Systems Security Analyst	√						
2174	Application Programmer; Graphical User Interface Designer; Programmer analyst	√						
6222	Hog Buyer; Livestock Buyer; Cattle Buyer; Meat Buyer; Assistant Buyer; Buyer-retail; Buyer-Wholesale	√						
6332	Grocery Store Baker; Head Baker-retail; and other titles					√		
6411	Grain Broker-wholesale; Grain Dealer; Grain Merchandiser; Livestock Broker; Commission Agent - Livestock; Liquor Sales Representative	√						
6552	Order Clerk; Customer Service Agent	√						
7242	Plant Electrician; Plant Maintenance Electrician; Mill Electrician			√				



NOC CODE	EXAMPLES OF POSITION TITLES	BUSINESS, FINANCE & ADMINISTRATION	TECHNICAL OPERATIONS	FACILITY OPERATIONS & MAINTENANCE	QUALITY CONTROL/ ASSURANCE	PRODUCTION	INPUTS & OUTPUTS	RESEARCH & DEVELOPMENT
7313	Cooler/Refrigeration Technician						√	
7452	Shipment Assembler; Forklift Operator; Warehouse Worker						√	
7511	Transport Drivers						√	
9461	Hydrogenation Operator & many other titles		√			√		√
9462	Shackle Hoist Operator; Poultry Plucker Tender		√			√		
9463	Filleting Machine Setter; Skinning Machine Setter; Fish Cutting Machine Setter; Fish Dryer and Grinder Tender; Fish Stick Machine Tender; Fish-processing Machine Tender; and other titles		√			√		
9465	Feed Tester				√			
9617	Coffee-blending Machine Feeder; Potato-peeling Machine Tender; Centrifuge Tender -meat packing plant; Singeing Machine Tender; Meat-rolling Machine Tender; Meat Press Tender; Linking Machine Tender;		√			√		
9618	Fish Weigher; Fish Sorter; and other titles					√		
<b>SUPERVISORY OR FRONTLINE</b>								
1215	Warehouse Supervisor; Shipping and receiving supervisor; Warehouse foreman/woman; Planner/Scheduler						√	
2211	Chemical Technologist; Food Technologist; Quality Control Technician-food processing				√			√
6733	Building Superintendent, Sanitation Supervisor; Building Services Worker; Industrial Plant Cleaner			√			√	
<b>SUPERVISORY</b>								
2132	Mechanical Engineer; Mechanical Maintenance Engineer			√				
2133	Electrical Engineer			√				

NOC CODE	EXAMPLES OF POSITION TITLES	BUSINESS, FINANCE & ADMINISTRATION	TECHNICAL OPERATIONS	FACILITY OPERATIONS & MAINTENANCE	QUALITY CONTROL/ ASSURANCE	PRODUCTION	INPUTS & OUTPUTS	RESEARCH & DEVELOPMENT
9213	Team Supervisor; Feed Milling Foreman/woman; and other titles					√		
<b>MANAGEMENT OR SUPERVISORY</b>								
0112	Director of Human Resources Management; Benefits Manager; Administrator Human Resources	√						
<b>MANAGEMENT</b>								
0111	Director of Finance	√						
0113	Purchasing/Procurement Manager						√	
0124	Director of Public Relations or Director of Communications; Advertising Manager; Marketing Manager	√						
0213	Communications Systems Design Manager; Data Centre Manager; Computer Applications Manager; Systems Operations Manager	√	√					
0601	Sales Manager	√					√	
0714	Warehouse Manager; Facilities Manager; Operations Manager			√		√	√	
0731	Director of Logistics and Transportation						√	
0911	Director of Operations	√		√	√	√	√	

Source: Adapted from FPSC (n.d.-i).

## 2.2. KEY OCCUPATIONS

### **HIGHLIGHTS**

*Among the 39 occupations in the industry, we have identified those that are considered key for the analysis in this report. These include the eight most frequent occupations within the industry and/or occupations that are highly concentrated in the industry (without necessarily being frequent occupations):*

- *Process control and machine operators, food and beverage processing (NOC 9461)*
- *Labourers in food and beverage processing (NOC 9617)*
- *Supervisors, food and beverage processing (NOC 9213)*
- *Industrial butchers & meat cutters, poultry preparers & related workers (NOC 9462)*
- *Bakers (NOC 6332)*
- *Testers and graders, food and beverage processing (NOC 9465)*
- *Fish and seafood plant workers (NOC 9463)*
- *Labourers in fish and seafood processing (NOC 9618)*

*An additional five occupations that are generally observed in the manufacturing industry are selected for the analysis for a total of 13 key occupations:*

- *Manufacturing managers (NOC 0911)*
- *Material handlers (NOC 7452)*
- *Shippers and receivers (NOC 1521)*
- *Transport truck drivers (NOC 7511)*
- *Industrial electricians (NOC 7242)*

To facilitate the analysis of essential skills, credential and training requirements, salaries and wages, and employment outlooks, we identified which positions are key to provide an overview of the industry. This will help guide both the analysis and the presentation of statistics, which are often only available by occupation and are not disaggregated by industry.

To guide the identification of key positions, we have followed the industry definitions proposed by the Canadian Occupational Projection System (COPS), where these include either “the largest occupations within the industry and/or occupations that are highly concentrated in the industry (without necessarily being large occupations)” (ESDC, 2017b, “Key Occupations by Industry”). As such, key occupations may be listed in more than one industry. Two criteria were used when including occupations:

- Include those occupations that account for the largest shares of total employment in the industry (for instance, Carpenters (NOC 7271) account for 8% of total employment in the construction industry), or
- Occupations for which the industry accounts for a significant share of total employment in the occupation (for example, the construction industry employs 92% of Bricklayers (NOC 7281) although this occupation accounts for less than 1% of total employment in the industry (ESDC, 2017a).

According to ESDC (2017a), the eight occupations that meet one of the two conditions outlined above for the food processing and beverage industry in Canada are:

- Process control and machine operators, food and beverage processing (NOC 9461)
- Labourers in food and beverage processing (NOC 9617)
- Supervisors, food and beverage processing (NOC 9213)
- Industrial butchers & meat cutters, poultry preparers & related workers (NOC 9462)
- Bakers (NOC 6332)
- Testers and graders, food and beverage processing (NOC 9465)
- Fish and seafood plant workers (NOC 9463)
- Labourers in fish and seafood processing (NOC 9618)

In addition to the occupations meeting the conditions outlined above, the COPS also mention a few occupations that are commonly observed in the manufacturing industry. Those positions common to the industry that were identified both in the COPS and FPSC lists are added to the eight occupations in food and beverage, for a total of 13 key positions in the industry. The additional five occupations are:

- Manufacturing managers (NOC 0911)
- Material handlers (NOC 7452)
- Shippers and receivers (NOC 1521)
- Transport truck drivers (NOC 7511)
- Industrial electricians (NOC 7242)

Information from a Census 2016 custom tabulation (Statistics Canada, 2016b) allows to validate the relative importance of the 13 key occupations selected for the FBP industry according to the share these represent of the industry's employment, as well as the share these represent of Ontario's employment in that occupation (Table 22). It is noted that all occupations selected by the COPS for the food and beverage industry meet the requirement that a large percentage is employed by the sector.

In the case of the additional occupations generally important in the manufacturing industry, it is noted that the percentage employed by the Ontario food and beverage processing industry ranges between 12% for Manufacturing managers and 2% for Transport truck drivers. However, in Section 3.1.2 on employment by occupation we present data that shows that these are occupations found among the top five in terms of employment in most subindustries of the sector, which confirms the selection.

Definitions of the 13 key occupations are presented in Table 23. These 13 occupations will be the focus of skills profiling by position throughout the remainder of this section and will be used again to discuss employment conditions in Section 3. In the analysis of wages and vacancies, it will be important to consider that some of these occupations have a smaller share of workers in the Food and beverage processing industry, and that as a result, the data are representative of the occupations for all industries as a whole, not specifically for the FBP industry.

**Table 22: Key Occupations & their share of employment**

	% OF OCCUPATION EMPLOYED BY THE INDUSTRY	OCCUPATION SHARE OF TOTAL INDUSTRY EMPLOYMENT
<i>OCCUPATIONS SELECTED BY THE COPS TO ANALYZE FBP</i>		
Process control and machine operators, food and beverage processing (NOC 9461)	76%	12%
Labourers in food and beverage processing (NOC 9617)	66%	21%
Supervisors, food and beverage processing (NOC 9213)	75%	4%
Industrial butchers & meat cutters, poultry preparers & related workers (NOC 9462)	87%	3%
Bakers (NOC 6332)	32%	6%
Testers and graders, food and beverage processing (NOC 9465)	61%	1%
Fish and seafood plant workers (NOC 9463)	59%	0.2%
Labourers in fish and seafood processing (NOC 9618)	37%	0.2%
<i>ADDITIONAL OCCUPATIONS OFTEN OBSERVED IN MANUFACTURING</i>		
Manufacturing managers (NOC 0911)	12%	4%
Material handlers (NOC 7452)	4%	3%
Shippers and receivers (NOC 1521)	5%	2%
Transport truck drivers (NOC 7511)	2%	2%
Industrial electricians (NOC 7242)	6%	1%

Source: Adapted from Statistics Canada (2016b). 2016 Census – Cross tabulation of four-digit NAICS code and four-digit NOC code [Custom tabulation].

**Table 23: Definitions of 13 Key Occupations in Food and Beverage Processing**

**KEY OCCUPATIONS IN FOOD & BEVERAGE PROCESSING**

**Process control and machine operators, food and beverage processing (NOC 9461)**

Operate multi-function process control machinery and single-function machines to process and package food and beverage products. They are employed in fruit and vegetable processing plants, dairies, flour mills, bakeries, sugar refineries, meat plants, breweries, & other food and beverage processing plants.

*Common titles: Hydrogenation Operator & many other titles*

**Labourers in food and beverage processing (NOC 9617)**

Labourers in this unit group perform material handling, clean up, packaging, and other elemental activities related to food and beverage processing. They are employed in fruit and vegetable processing plants, dairies, flour mills, bakeries, sugar refineries, meat plants, breweries & other food and beverage processing and packaging plants.

*Common titles: Coffee-blending Machine Feeder; Potato-peeling Machine Tender; Centrifuge Tender; Singeing Machine Tender; Meat-rolling Machine Tender; Meat Press Tender; Linking Machine Tender*

**Supervisors, food and beverage processing (NOC 9213)**

Supervise and co-ordinate the activities of workers who operate processing and packaging machines, and workers who grade food & beverage products. They are employed in fruit and vegetable processing plants, dairies, flour mills, bakeries, sugar refineries, fish plants, meat plants, breweries & other food and beverage processing establishments.

*Common titles: Team Supervisor - flour milling; Feed Milling Foreman/woman; and many other titles*

**Industrial butchers and meat cutters, poultry preparers and related workers (NOC 9462)**

Workers in this unit group prepare meat and poultry for further processing or for packaging for wholesale distribution. They are employed in meat and poultry slaughtering, processing and packing establishments.

*Common titles: Shackle Hoist Operator; Poultry Plucker Tender*

**Bakers (NOC 6332)**

Prepare bread, rolls, muffins, pies, pastries, cakes and cookies in retail and wholesale bakeries and dining establishments. They are employed in bakeries, supermarkets, catering companies, hotels, restaurants, hospitals, and other institutions, or may be self-employed. Includes those who are supervisors.

*Common titles: Grocery Store Baker; Head Baker-retail*

#### **Testers and graders, food and beverage processing (NOC 9465)**

Employees test or grade ingredients and finished food or beverage products to ensure conformance to company standards. They are employed in fruit and vegetable processing plants, dairies, flour mills, bakeries, sugar refineries, fish plants, meat plants, breweries & other food and beverage processing plants.

*Common titles:* Feed Tester

#### **Fish and seafood plant workers (NOC 9463)**

Includes fish & seafood plant machine operators who set up and operate machinery to process and package fish and seafood products, and fish and seafood plant cutters and cleaners who cut, trim and clean fish or seafood by hand. Fish and seafood plant workers are employed in fish & seafood processing plants.

*Common titles:* Filleting Machine Setter; Skinning Machine Setter; Fish Cutting Machine Setter; Fish Dryer and Grinder Tender; Fish Stick Machine Tender; Fish-processing Machine Tender; and other titles

#### **Labourers in fish and seafood processing (NOC 9618)**

Labourers in this unit group perform clean-up, packaging, material handling, and other elemental activities related to fish and seafood processing. They are employed in fish and seafood processing and packaging plants.

*Common titles:* Fish Weigher; Fish Sorter; and other titles

### **KEY OCCUPATIONS IN MANUFACTURING**

#### **Manufacturing managers (NOC 0911)**

Manufacturing managers plan, organize, direct, control and evaluate the operations of a manufacturing establishment or of a production department within a manufacturing establishment, under the direction of a general manager or other senior manager. They are employed by manufacturing companies.

*Common titles:* Director of Operations

#### **Material handlers (NOC 7452)**

Includes workers who handle, move, load and unload materials by hand or using a variety of material handling equipment. They are employed by transportation, storage and moving companies, and by a variety of manufacturing and processing companies and retail and wholesale warehouses.

*Common titles:* Shipment Assembler; Forklift Operator; Warehouse Worker

### **Shippers and receivers (NOC 1521)**

Shippers and receivers ship, receive and record the movement of parts, supplies, materials, equipment and stock to and from an establishment. They are employed in the public sector and by retail and wholesale establishments, manufacturing companies, and other commercial and industrial establishments.

*Common titles:* Shipping/Receiving Clerk

### **Transport truck drivers (NOC 7511)**

Transport truck drivers operate heavy trucks to transport goods and materials over urban, interurban, provincial and international routes. They are employed by transportation, manufacturing, distribution and moving companies, and trucking employment service agencies, or they may be self-employed. This unit group also includes drivers of special purpose trucks and shunters who move trailers to and from loading docks within trucking yards or lots.

*Common titles:* Transport Drivers

### **Industrial electricians (NOC 7242)**

Industrial electricians install, maintain, test, troubleshoot and repair industrial electrical equipment and associated electrical and electronic controls. They are employed by electrical contractors and maintenance departments of factories, plants, mines, shipyards and other industrial establishments.

*Common titles:* Plant Electrician; Plant Maintenance Electrician; Mill Electrician

*Source:* Adapted from Statistics Canada (2017).



## 2.3. SKILLS PROFILE

### **HIGHLIGHTS**

*While there are different approaches to classifying an occupation according to the skill level required, FPSC has developed career ladders that illustrate the different levels of responsibility for a range of positions, showing the potential progression path for workers in some key areas of food processing. In addition, FPSC has developed detailed skill profiles following the nine Essential Skills by Employment and Social Development Canada. Skills levels are also associated with each code in the National Occupational Classification System (NOC).*

*The skill levels within each position in the food processing industry are quite diverse, and a taxonomy will act as the basis for identifying any skill gaps and associated training needs.*

### **2.3.1 Key occupations by level of responsibility**

The FPSC has developed “career ladders” (FPHRC, 2017a; FPHRC, 2017b) illustrating the possible progression path for workers in food and beverage processing, from occupations ranging from the foundational skill level to executive management levels. These career ladders show the skill level for eight of the 13 key occupations in food and beverage processing that have been identified (Figure 6: Skill level for key occupations: FPSC classifications).

Three occupations require foundational skill levels, namely, Labourers in food and beverage processing (NOC 9617), Labourers in fish and seafood processing (NOC 9618), and Testers and graders, food and beverage Processing (NOC 9465). Labourers are generally referred to as “Front Line Workers” and they generally follow standard operating procedures and formulas or recipes to produce the final packaged product that meets the organization’s specification. Their tasks are interdependent on the successful ongoing completion of tasks by other workers. They report to a supervisor or manager and do not supervise others (FPSC, n.d.-a).

Three more of the key occupations require intermediate skill levels, including: Industrial butchers and meat cutters, poultry preparers and related workers (NOC 9462), Process control and machine operators, food and beverage processing (NOC 9461), and Fish and seafood plant workers (NOC 9463). Process control and machine operators do not supervise others, reporting to a supervisor or manager. They are responsible for operating multi-function process control machinery and fulfilling their tasks, using the raw ingredients and in-process products to complete the final packaged product that meets the specifications of the organization. Their tasks are interdependent on the

successful ongoing completion of tasks by others (FPSC n.d.-b). However, not all positions classified as Process control and machine operators lack supervising responsibilities. For instance, cheesemakers may have more technical or specialized skills, such as determining and monitoring yield, packaging, labelling, and the storage of finished cheese products. They may be responsible for the creation of new cheese products and may be responsible for supervising staff (FPSC n.d.-c).

Supervisors in food and beverage processing (NOC 9213) require a supervisory skill level. Among some of their responsibilities, Production team leaders develop and lead teams in optimizing the production process, supervise food production personnel, and provide leadership and direction to the team. They contribute to the organization's planning, from high level strategic planning to on-the-ground scheduling of equipment and resources and are accountable for the performance of their entire team or department (FPSC n.d.-d).

Manufacturing managers (NOC 0911) require Management skills. The other five key occupations have not been classified in the career ladders.

**Figure 6: Skill level for key occupations: FPSC classifications**



Source: Adapted from FPHRC (FPHRC, 2017a; FPHRC, 2017b).

### 2.3.2 Key occupations by level skill level according to NOC codes

An understanding of the level required for the five key occupations that have not been classified in the career ladders can be inferred from their NOC codes, which contain

information about the skill level associated with each position. In the 2016 NOC taxonomy, there are four skill levels, which are indicated by the second digit of the NOC code, summarized below in Figure 7.

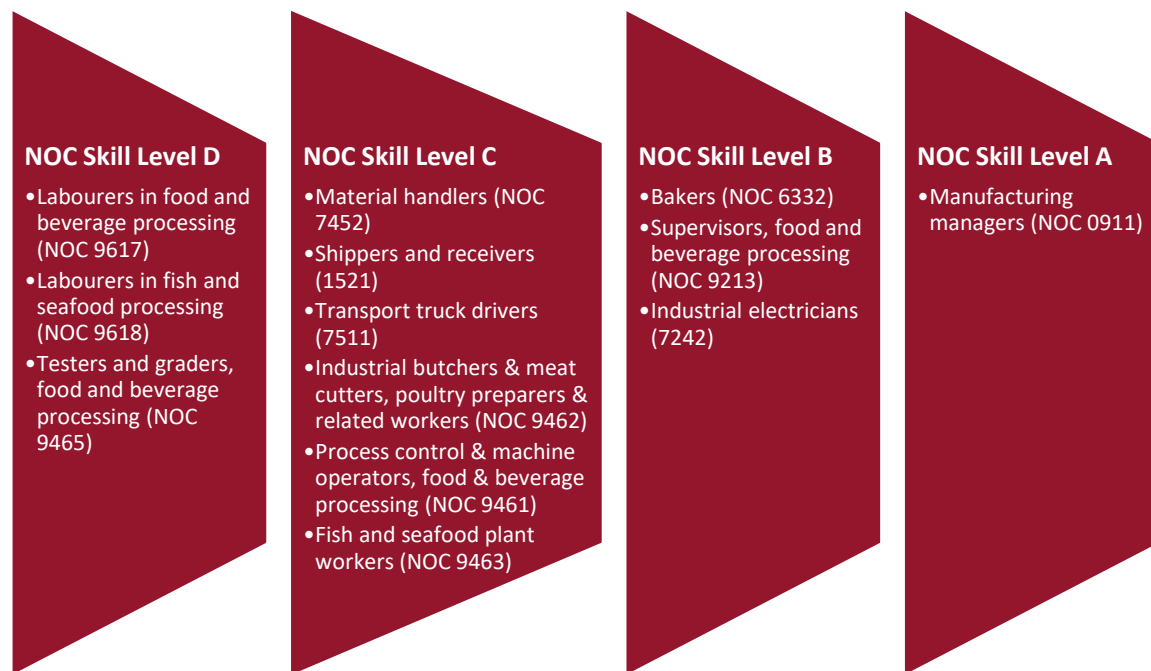
**Figure 7: Skill level for key occupations (NOC codes)**

<b>Skill Level A</b>	<ul style="list-style-type: none"> <li>• Professional occupations, usually requiring a university degree</li> <li>• The second digit of the NOC code is 1, or the occupation is classified as a management occupation</li> </ul>
<b>Skill Level B:</b>	<ul style="list-style-type: none"> <li>• Technical, paraprofessional and skilled occupations, usually requiring college or apprenticeship, and supervisory positions</li> <li>• The second digit of the NOC code is 2 or 3</li> </ul>
<b>Skill Level C:</b>	<ul style="list-style-type: none"> <li>• Intermediate occupations, usually requiring secondary school and some experience or training</li> <li>• The second digit of the NOC code is 4 or 5</li> </ul>
<b>Skill Level D:</b>	<ul style="list-style-type: none"> <li>• Labouring and elemental occupations, usually with no formal education requirements</li> <li>• The second digit of the NOC code is 6</li> </ul>

Source: Adapted from ESDC (2018c), “Skill Level”.

The NOC classification skill levels for the 13 key occupations are shown in Figure 8. Canada’s immigration and foreign worker programs often use these NOC skill level designations to establish the eligibility of applicants and employment positions. The skill level classification using the NOC codes provides some insight regarding the skill level requirements of occupations that were not classified in the career ladders. For instance, Bakers (NOC 6332) and Industrial electricians (NOC 7242) are considered skill level B according to the National Occupational Classification due to the technical and skilled knowledge required, and they may or may not have supervisory responsibilities (FPSC, n.d.-d). Material handlers (NOC 7452), Shippers and receivers (NOC 1521) and Transport truck drivers (NOC 7511) are classified at skill level C. These positions generally report to a supervisor and do not supervise others (FPSC, n.d.-f, FPSC, n.d.-g).

**Figure 8: NOC skill level for key occupations**



### **2.3.3 Essential skills: Definition, assessment and key occupations**

Another way of assessing the skills requirements of given occupations is to look at the type and level of “essential skills.” Essential Skills, sometimes referred to as “Necessary Skills” (U.S) or “Core Skills” (U.K.), is a concept that refers to the skills which are necessary for people to have to navigate both work and everyday life. As the Government of Canada defines, essential skills “are needed for work, learning and life; are the foundation for learning all other skills; and help people evolve with their jobs and adapt to workplace change” (ESDC, 2018d, par.1). Identifying these skill levels can help job seekers determine what jobs are a match for their skills or what skills they may need to acquire to obtain a more advanced position. For employers, this can help identify what skills are needed, or when a lack of certain skills among employees may be a barrier to their business functions, identifying where training and essential skills development may be required. A discussion of training initiatives is presented in Section 4.2: On-the-job Training.

ESDC identifies nine essential skills summarized below.

- **Reading:** Refers to the skills needed to understand and apply information found in sentences and paragraphs. At work, people use reading skills to locate and use information from memos, emails, manuals, reports, proposals and other written material.

- **Document Use:** Refers to the skills needed to find, enter and use letters, numbers, symbols and images in electronic and paper formats. At work, people use document use skills to find and enter information in electronic and paper visual displays, such as forms, lists, tables, graphs, maps and drawings.
- **Writing:** Refers to the skills needed to compose handwritten or typed text to communicate information and ideas. At work, people use writing skills to compose texts, such as notes, memos, bulletins, email messages, instructions, procedures and reports.
- **Numeracy:** Refers to the skills needed to make sense of and apply mathematical concepts and information. At work, people use numeracy skills to tally costs, create budgets, calculate lengths and volumes, analyze data, estimate times and manage the other mathematical demands of different situations.
- **Oral communication:** Refers to the skills needed to exchange thoughts and information with other people by speaking, listening and using non-verbal cues, such as body language. At work, people use oral communication skills to talk to customers, discuss products with suppliers, explain work procedures to co-workers, participate in virtual sales meetings with clients, and other activities that involve verbal exchanges.
- **Thinking:** refers to the skills needed to solve problems, make decisions, think critically, plan, remember details, and find information. At work, people use thinking skills to do tasks, such as solving electronic equipment problems, assessing the safety of a jobsite, deciding who to hire, planning meetings, memorizing passwords, and finding the information needed to estimate the cost of a project.
- **Digital technology:** Refers to the skills needed to understand and use digital systems, tools and applications, and to process digital information. At work, people use digital technology skills to input, access, analyze, organize, create and communicate information and ideas using computers, software, point-of-sale equipment, email, podcasts, web applications, smart phones and other digital devices.
- **Working with others:** Refers to the skills needed to interact with other people (one or more). At work, people work with others in pairs and in small and large groups to coordinate tasks, share resources, plan, make decisions, negotiate, solve conflicts and complete other activities that involve teamwork.
- **Continuous learning:** Refers to the skills needed to continually develop and improve one's skills and knowledge in order to work effectively and adapt to changes. At work, people use continuous learning skills to identify and develop the knowledge and skills they need to perform well, build careers, prepare for and adapt to changes in processes, technology, regulations, employer demands, etc.

Source: Adapted from ESDC (2015).

Each skill is classified into different levels of complexity on a scale of 1 to 5, where 1 represents the lowest complexity, and 5 the highest. For instance, an industrial butcher position may require a level 2 skill in reading, whereas a job as a food technologist may need to possess a level 5 skill in reading, required for reading academic reports. The complexity required for each skill for each occupation may be different according to the task in question. For example, a baker needs level 1 reading skills to read product labels but requires level 4 reading skills to read food handling regulations.

The level of complexity for each of the nine essential skills is assessed as follows:

### **Reading**

- The level of difficulty of reading tasks ranges between being able to read short texts to find a single piece of information (complexity Level 1), to being able to understand and use long and complicated texts, like contracts or reports (complexity Level 5).
- The ability to read at a complexity Level 3 is essential for most jobs - even for those that do not require a college diploma, university degree or specialized training. For example, this level of reading is needed for workers to succeed in job-specific training and read safety-related information.

### **Document use**

- The document use complexity scale ranges from Level 1 to Level 5 based on the number, type and structure of documents; how information is found and entered (and whether or not the information is modified in order to be used); and the worker's thought process and their previous knowledge of the content.
- In some cases, tasks that require document use skills may also require other essential skills. For example, reading skills might also be required for a document that includes a paragraph of text (e.g. on a label). In a similar way, writing skills might be needed when a document requires the entry of words, phrases, sentences and paragraphs.

### **Writing**

- The writing complexity scale is organized into themes, which explain the complexity requirements of writing tasks: length and purpose, style and structure, and content.
- Writing tasks may range from writing short and informal notes (complexity Level 1) to writing longer, technical documents based on many different sources of information and adapted to a specific audience (complexity Level 5).

### **Numeracy**

- The level of difficulty of a numeracy task is determined by the math task performed, as well as the knowledge needed to perform the task properly. There is a difference between a worker's ability to work with numbers and their understanding of when they should use certain types of math. For example, a worker can take a number from a computer printout and put it in a report without knowing how it was calculated. Also, some numeracy tasks require workers to make sense of mathematical information found in text or media and not just simply perform mathematical operations.
- Numeracy example tasks are assessed across four (estimation) to five (calculation) levels of difficulty and depend on many factors, such as:
  - the number, type and difficulty of mathematical operations needed to find a solution to a problem;
  - the amount of information available and the level of accuracy required; and,
  - the consequence of making a mistake.

### **Oral communication**

- The level of difficulty related to oral communication tasks is based on four factors:
  - the range and complexity of oral communication required from giving basic instructions (Level 1) to carrying out complicated negotiations (Level 4);
  - the range and complexity of information communicated from a familiar, simple topic (Level 1) to complex, highly detailed technical information (Level 4);
  - the range and complexity of the communication context from communicating with one person at a time in an everyday situation (Level 1) to communicating with a new and challenging audience in an unfamiliar setting (Level 4); and,
  - the risks involved with not being able to communicate properly from minor inefficiencies (Level 1) to the loss of life or serious injury (Level 4).

### **Thinking**

- The 4 levels of complexity for various thinking-related activities are based on these factors:
  - the steps involved in problem solving, from identifying a problem to finding and assessing a solution;
  - what is involved in decision making, i.e. the consequence of making a mistake, the extent to which information is available, procedures are explained, similar examples exist and judgment is needed to make a decision;
  - the criteria, assessment and effects of critical thinking processes;
  - to what extent workers need to plan and organize their own tasks and the impact this might have on the total efficiency of a project; and
  - the difficulty of finding, selecting, understanding and processing information.

### **Digital technology**

- Digital skills are currently being assessed against levels defined for computer use. As complexity levels are defined through digital skills research, both the methodology and the profiles will be updated as needed.

### **Working with others**

- Complexity levels are not assigned to this essential skill.

### **Continuous learning**

- Complexity levels are not assigned to this essential skill.

*Source:* Adapted from ESDC (2015).

The essential skills framework incorporates primarily, but not solely, “hard skills” or tangible skills, like numeracy and reading. However, discussion among employers and career counsellors today often considers the importance of “soft skills”. These are also often referred to as “employability skills,” or “life skills.” These are skills such as

attitude, accountability, motivation, and adaptability, that still pertain to the workplace but that may not be addressed in conventional employment skills training. Appendix C provides a full list of the nature of the essential skills required for each of the 13 key occupations in food and beverage processing.<sup>7</sup> To illustrate the required skills progression associated with higher levels of responsibility, a summary is presented in Table 24 for four key positions with different levels of responsibility. For the case of “Reading”, increasing skill levels required are noted as follows:

- Labourers in food and beverage processing (NOC 9617) are required to read at level 1 or 2 most of the time, when they have to read notes from coworkers about tasks to do, for example. Sometimes they may need more advanced reading skills at levels 2-3, such as when they may have to read a user manual when cleaning equipment and machinery.
- Comparatively, Process control and machine operators (NOC 9461) have to read at slightly higher levels, regularly at level 1-3. Sometimes tasks require reading at a level 3, such as CFIA regulations on critical control points of equipment.
- Supervisors in food and beverage processing (NOC 9213) are regularly required to read at level 3 when they have to read and interpret export and border security documents, and sometimes at levels 4-5 when they read and interpret sections of government regulations to evaluate conformance of company policies and procedures.
- Manufacturing managers (NOC 0911) regularly read at levels 2-3, verifying labels on finished products and interpreting CFIA regulations to ensure internal processes are compliant.

**Table 24: Comparative Essential Skill Level Requirements**

POSITION	LABOURERS (9617)	PROCESS CONTROL (9461)	SUPERVISORS (9213)	MANAGERS (0911)
1. WRITING	Level 1 to 2	Level 1 to 2	Level 2 to 4	Level 2 to 4
2. READING TEXT	Level 2 to 3	Level 1 to 3	Level 3 to 5	Level 2 to 3
3. DOCUMENT USE	Level 1 to 2	Level 1 to 3	Level 1 to 3	Level 2 to 3
4. NUMERACY	Level 1 to 2	Level 1 to 2	Level 1 to 3	Level 2 to 3
5. ORAL COMMUNICATIONS	Level 1 to 3	Level 1 to 2	Level 2 to 4	Level 2 to 4
6. THINKING	Level 1 to 2	Level 1 to 2	Level 1 to 4	Level 2 to 4
7. WORKING WITH OTHERS	Level 2	Level 2	NA	Level 3

<sup>7</sup> Furthermore, a profile of the essential skills required for each occupation, according to its NOC code, can be found on the federal Job Bank website at [https://www.jobbank.gc.ca/es\\_all-eng.do](https://www.jobbank.gc.ca/es_all-eng.do).



POSITION	LABOURERS (9617)	PROCESS CONTROL (9461)	SUPERVISORS (9213)	MANAGERS (0911)
8. DIGITAL TECHNOLOGY	Level 1	Level 1	Level 1 to 3	Level 2 to 3
9. CONTINUOUS LEARNING	Level 1	Level 1	NA	Level 3

Source: Adapted from FPSC Skills Library and ESDC Job Bank (see Appendix C for details).

## 2.4. CREDENTIALS/CERTIFICATION REQUIREMENTS

### HIGHLIGHTS

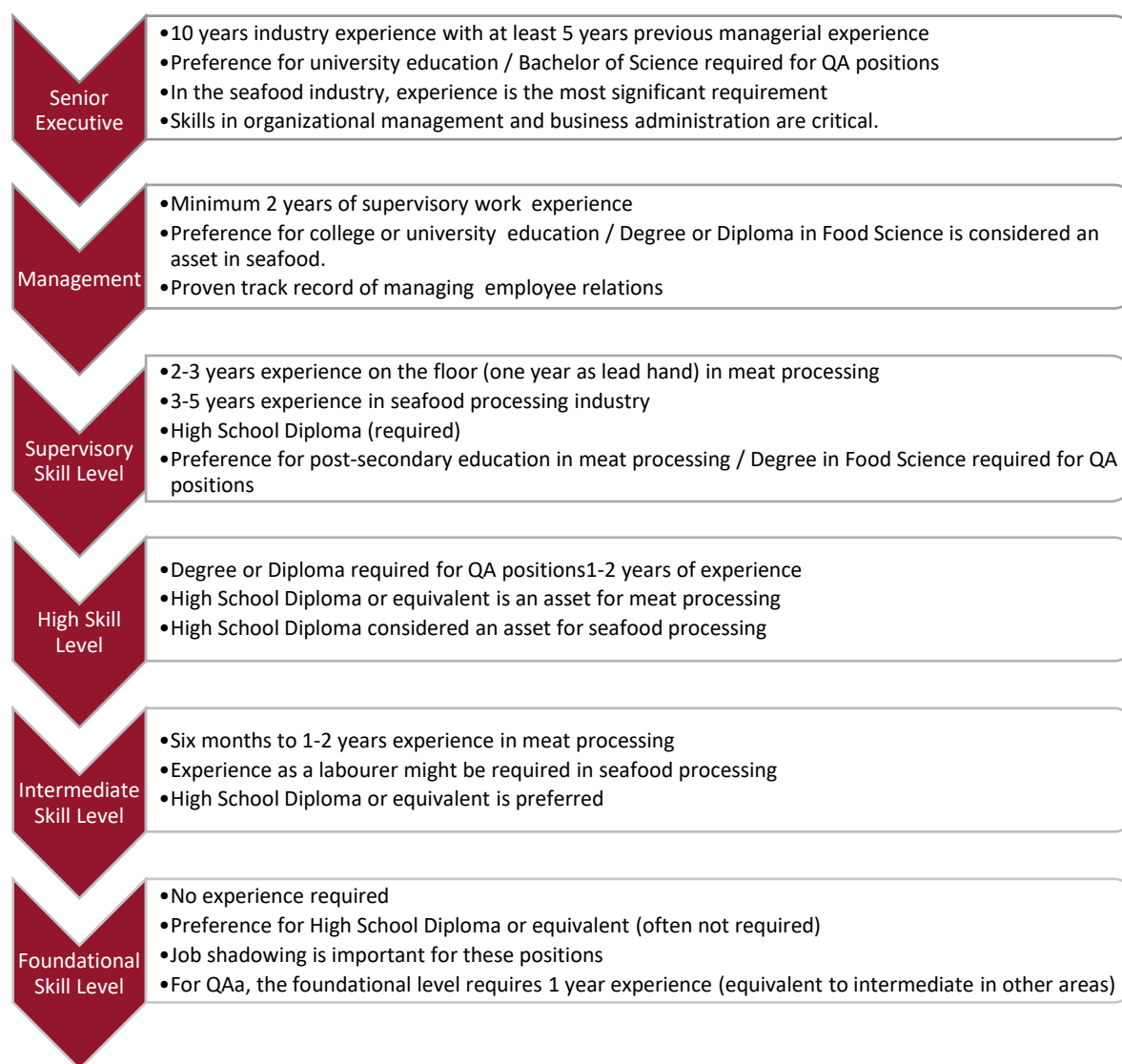
*Credential and certification requirements depend on the level of responsibility of the position and may range from entry-level positions where primarily on-the-job-training will be provided to more complex levels of training and certification.*

*For example, senior executive level positions often require university education and numerous years of industry experience. Management positions may require college education or a university degree in an area such as food science. Supervisory positions usually require secondary school education, and sometimes specialised post-secondary training, as well as experience. High skill level positions consider secondary school diplomas an asset, in addition to 1-2 years of experience, while intermediate positions require slightly less experience, such as from 6 months to a year. Finally, foundational skill level positions do not always require secondary school education or experience.*

As mentioned above, FPSC has developed career ladders for a few occupations in the sector, and these are helpful to illustrate the experience and credentials that are required at the different skill levels. Examples in Figure 9 are drawn from positions in meat, fish, and seafood, and quality assurance/control positions.

Credential and certification requirements depend on the level of responsibility of the position and may range from entry-level positions, where primarily on-the-job-training will be provided, to more complex levels of training and certification. For example, senior executive level positions often require university education and numerous years of industry experience. Management positions may require college education or a university degree in an area such as food science. Supervisory positions usually require a secondary school education and sometimes specialised post-secondary training, as well as experience. High skill level positions consider secondary school diplomas an asset, in addition to 1-2 years of experience, while intermediate positions require slightly less experience, from 6 months to a year, for example. Finally, foundational skill level positions do not always require secondary school education or experience.

**Figure 9: Credential Requirements by Skill Level**



Source: Adapted from FPHRC (FPHRC, 2017a; FPHRC, 2017b; FPHRC, 2017c).

Table 25 gives more detailed information about the nature of the credential and experience requirements for the 13 key occupations, as well as a few select other occupations in the industry. These reflect similar requirements as outlined below:

- Manufacturing managers (NOC 0911) require a college or university education, while Labourers in food and beverage processing (NOC 9617) do not necessarily require secondary school completion.
- Some positions do require specific credentials. For example, Supervisors (NOC 9213) in quality assurance positions may require Hazard Analysis Critical Control Point (HACCP) certification and several years of experience in quality assurance of food production.

- Workplace Hazardous Materials Information System (WHMIS) training (which includes the Globally Harmonized System of Classification and Labelling of Chemicals (GHS)) is required of Supervisors (NOC 9213) and Industrial butchers and meat cutters, poultry preparers and related workers (NOC 9462). These two occupations usually also require food safety training, while Supervisors (NOC 9213) and Managers (NOC 0911) must undertake Food Safety Management System training.
- Managers and Supervisors are also likely to need computer skills with programs such as Microsoft Word and Excel.
- For industrial meat cutters, completion of a program in industrial meat cutting or experience as an industrial butcher is required.
- Bakers (NOC 6332) must often complete an apprenticeship program or other certification program in baking or have several years of commercial baking experience. Trade certification is available, but voluntary, in Ontario.
- Shippers and receivers (NOC 1521) may require a forklift certificate and/or driver's license.
- Transport truck drivers (NOC 7511) must complete an accredited driver training course of up to three months in duration through a vocational school or community college. In Ontario, they must also obtain a special class license to operate a commercial vehicle.
- Industrial electricians (NOC 7242) must complete a four or five-year apprenticeship program or have a combination of over five years of work experience in the trade and secondary school, college or industry courses in industrial electrical equipment. Trade certification for industrial electricians is compulsory in Ontario. Red Seal endorsement is also available to qualified industrial electricians. In addition, membership with the Ontario College of Trades is required for most electricians working in construction and maintenance, and the domestic and rural areas.

**Table 25: Credentials & Educational Requirements**

POSITION	CREDENTIALS
<b>POSITIONS AT THE FOUNDATIONAL SKILL LEVEL</b>	
Labourers in food and beverage processing (9617)	<ul style="list-style-type: none"> <li>• Some secondary school education may be required.</li> <li>• May require Essential Skills testing (i.e. TOWES) (FPHRC, 2017a)</li> </ul>
Labourers in fish and seafood processing (NOC 9618)	<ul style="list-style-type: none"> <li>• No experience required (FPHRC, 2017b)</li> <li>• Some secondary school education may be required.</li> </ul>
Testers & graders, food & beverage processing (NOC 9465)	<ul style="list-style-type: none"> <li>• Completion of secondary school is usually required.</li> <li>• Experience as a machine operator or labourer in the food or beverage processing industry may be required.</li> <li>• On-the-job training is usually provided.</li> </ul>
<b>POSITIONS AT THE INTERMEDIATE SKILL LEVEL</b>	

POSITION	CREDENTIALS
Process control and machine operators, food and beverage processing (NOC 9461)	<ul style="list-style-type: none"> <li>• Completion of secondary school may be required.</li> <li>• On-the-job training is provided.</li> <li>• Experience as a machine operator in food or beverage processing is usually required for industrial process control operators.</li> <li>• Experience as a labourer in food or beverage processing may be required for machine operators.</li> </ul>
Industrial butchers and meat cutters, poultry preparers and related workers (NOC 9462)	<ul style="list-style-type: none"> <li>• Completion of secondary school may be required.</li> <li>• For industrial meat cutters, completion of a program in industrial meat cutting or Experience as an industrial butcher is required.</li> <li>• On-the-job training is provided for industrial butchers, meat cutters and poultry preparers.</li> <li>• WHMIS • Food Safety training (FPRHC, 2017a)</li> </ul>
Fish and seafood plant workers (NOC 9463)	<ul style="list-style-type: none"> <li>• Some secondary school education may be required.</li> <li>• On-the-job training is required.</li> </ul>
Material handlers (NOC 7452)	<ul style="list-style-type: none"> <li>• Some secondary school education may be required.</li> <li>• Physical strength is required for manual material handlers who work with heavy materials.</li> </ul>
Shippers and receivers (NOC 1521)	<ul style="list-style-type: none"> <li>• Completion of secondary school is usually required.</li> <li>• Experience in a related clerical occupation or as a warehouse worker may be required.</li> <li>• A forklift certificate may be required.</li> <li>• A driver's licence may be required.</li> </ul>
Transport truck drivers (NOC 7511)	<ul style="list-style-type: none"> <li>• Completion of secondary school is usually required.</li> <li>• On-the-job-training is provided.</li> <li>• Completion of an accredited driver training course of up to three months duration, through a vocational school or community college, may be required.</li> <li>• In Ontario, a Class A, B, C, D, E or F licence from Drive Test is required to operate a commercial vehicle such as a tractor-trailer, truck, bus, or ambulance. The licence type depends on the vehicle type.</li> </ul>
<b>POSITIONS AT THE SUPERVISORY OR HIGH SKILL LEVEL</b>	
Supervisors, food and beverage processing (9213) – Production Team Leaders	<ul style="list-style-type: none"> <li>• Completion of secondary school is usually required.</li> <li>• Post-secondary education in microbiology or chemistry may be required for some positions in this group.</li> <li>• Several years of experience in the food or beverage processing industry are required.</li> <li>• Hazard analysis critical control point (HACCP) co-ordinators require HACCP certification and several years of experience in quality assurance of food production.</li> <li>• WHMIS training</li> <li>• Food safety training</li> <li>• Food Safety System training</li> <li>• May require computer skills, e.g. MS Word, MS Excel (FPHRC, 2017a)</li> </ul>
Bakers (NOC 6332)	<ul style="list-style-type: none"> <li>• Completion of secondary school is usually required.</li> <li>• Completion of a three- or four-year apprenticeship program for</li> </ul>

POSITION	CREDENTIALS
<b>Industrial electricians (NOC 7242)</b>	<ul style="list-style-type: none"> <li>• bakers or Completion of a college or other program for bakers or several years of commercial baking experience is usually required.</li> <li>• On-the-job training may be provided.</li> <li>• Trade certification is available, but voluntary, in Ontario.</li> </ul>
	<ul style="list-style-type: none"> <li>• Completion of secondary school is usually required.</li> <li>• Completion of a four- or five-year industrial electrician apprenticeship program or a combination of over five years of work experience in the trade and some high school, college or industry courses in industrial electrical equipment is usually required</li> <li>• Trade certification for industrial electricians is compulsory Ontario.</li> <li>• Red Seal endorsement is also available to qualified industrial electricians upon successful completion of the interprovincial Red Seal examination.</li> <li>• In Ontario, membership with the Ontario College of Trades is required (with some exceptions) for electricians in: <ul style="list-style-type: none"> <li>○ Construction and maintenance</li> <li>○ Domestic and rural</li> </ul> </li> </ul>
<b>POSITIONS AT THE MANAGEMENT LEVEL</b>	
<b>Manufacturing managers (NOC 0911)</b>	<ul style="list-style-type: none"> <li>• Completion of a college or university program in engineering or business administration is usually required.</li> <li>• Five to ten years of supervisory experience in manufacturing are required.</li> <li>• Food Safety Management System training; Computer skills, including Word, Excel (FPHRC, 2017a).</li> </ul>

Source: Adapted from MTCU (n.d.). *Ontario's Labour Market* [Online Database] unless otherwise specified.

There are some demographic trends that may be having a direct impact on the credential levels observed in the industry, that are independent of requirements. For instance, a study of the Toronto food and beverage processing sector notes that:

...while most food processing production occupations do not often require post-secondary education, in [several] occupations (e.g. supervisors and machine operators), it is becoming increasingly more common [...] although some of the changes in the formal education of workers may also reflect changing demographics in the Toronto CMA. College and University educated individuals now make up over half the food and beverage manufacturing workforce. This is a statistically significant change from a decade ago when high school graduates and those without high school attainment were more common in the industry (TWIG, 2017, p. 13).

While this section speaks to certification requirements for positions within the industry, Section 4:

Current Sources of Training and Skill Development outlines available training resources aimed to address these requirements and identify gaps in certification training programs.

## 2.5. WORKING CONDITIONS

### **HIGHLIGHTS**

*Specific working conditions vary across the industry, depending on the occupation and the production facility. Nonetheless, employees at many plants endure repetitive tasks, spend a great deal of time of time standing and carrying out manual labour, might be exposed for high levels of noise and environments with poor temperatures control. Also, some companies required shift work.*

Table 26 describes working conditions for most of the key occupations in food and beverage processing, although specific working conditions vary across the industry, depending the occupation and the production facilities (TWIG, 2017). The descriptions indicate that many of the positions require a great deal of manual labour. Many front-line workers spend a lot of time of time standing and carrying out tasks such as stirring mixtures or lifting bags. These highlight some of the physical skills required such as “multiple limb co-ordination to perform tasks such as stirring, mixtures or lifting bags, as well as operating heavy machinery is common [and] eye-hand co-ordination required to operate processing equipment, such as meat slicers, separators or mixers” (FPSC, n.d.-a, “Work Environment”). Furthermore, “while not all production facilities would be considered unpleasant, employees at many of these firms have to endure repetitive tasks; standing in place for extended periods, high levels of noise, and environments with poor temperature control [...] and some environments require shift work” (TWIG, 2017, p.17-19).

Industrial Meat Cutters can have a particularly physically challenging job, slaughtering animals or cleaning carcasses in a fast-paced environment while working in refrigerated rooms between 2 and 4 degrees Celsius. Fish and seafood plant workers also work in wet, damp, and refrigerated rooms for extended periods of time. Many of the occupations involve working in a fast-paced, automated environment on an assembly line. The challenging nature of the working conditions of some of these positions has contributed to recruitment and retention problems for some occupations in the food and beverage industry (FPSC, n.d.-h, “Work Environment”).

The working conditions for administrative positions (e.g., clerks, human resources) or research & development positions are similar to those that would be observed in other industries, with challenges being associated with a fast-paced environment and sitting for long periods of time.

**Table 26: Working Conditions by Position**

POSITION	WORKING CONDITIONS
<b>KEY OCCUPATIONS IN FOOD &amp; BEVERAGE PROCESSING<sup>8</sup></b>	
<b>Labourer in food and beverage processing (9617) – Front Line workers</b>	Front Line Workers stand or sit at work stations to perform their tasks throughout their shifts. They are required to lift and move heavy items such as cartons of product, tubs of full product or bags of finished product. They may use their hearing to identify changes in pitch that may indicate machinery faults. Front Line Workers in food and beverage processing should be alert, patient and attentive to detail. They should be able to carry out repetitive tasks with a positive attitude and be able to adapt to working in areas that are extremely hot or cold.
<b>KEY OCCUPATIONS AT THE INTERMEDIATE SKILL LEVEL<sup>9</sup></b>	
<b>Process control and machine operators, food and beverage processing (NOC 9461)</b>	Process Control and Machine Operators spend most of their time standing behind a machine. They may walk from workstation to workstation to check valves, tanks and other equipment. They bend and stretch to adjust products or to clean equipment. They may also climb up and down ladders to reach the top of large vats, and control equipment may be located on different floors; and may be required to enter confined spaces. They may lift heavy bags of product, as well as lift hoses and pumps.
<b>Industrial butchers and meat cutters, poultry preparers and related workers (NOC 9462)</b>	Industrial Meat Cutters work in a fast-paced, physically demanding, and high production setting, where there is a level of automation and time frame requirements. While working in various stages of processing from slaughtering the animals, cleaning the carcasses, cutting carcasses to specialized cuts to meet organizational and customer specifications they also maintain a sanitary work environment. Working in refrigerated rooms between 2 to 4 degrees Celsius for extended periods is common.
<b>Material handlers (NOC 7452)</b>	Material handlers stand and walk to carry out their tasks. They also bend, stoop, kneel and crouch to lift, move and stack objects: they may be required to lift cartons or crates of products weighing upwards of 20 kg.
<b>Shippers and receivers (NOC 1521)</b>	Shippers/Receivers are on their feet for most of the day. They stand, walk, bend and stoop to load and unload orders. They use multiple limb coordination to handle materials, use machinery and climb ladders. They use medium strength to lift boxes, cartons and packages and may handle loads weighing up to 25 kg.

<sup>8</sup> Detailed information on the working conditions of Labourers in fish and seafood processing (NOC 9618) and Testers and graders, food and beverage processing (NOC 9465) is not available in FPSC's Job Description Series for Food Manufacturing.

<sup>9</sup> Detailed information on the working conditions of Transport truck drivers (NOC 7511) is not available in FPSC's Job Description Series for Food Manufacturing.



POSITION	WORKING CONDITIONS
Fish and seafood plant workers (NOC 9463)	Fish Workers work in a fast-paced, physically demanding, and high production setting, where there is a level of automation and time frame requirements. They spend almost all their time on their feet performing repetitive tasks and may be required to lift heavy loads. It is common for a Fish Worker to work in wet, damp, and refrigerated rooms for extended periods of time.
<b>KEY OCCUPATIONS AT THE SUPERVISORY OR TECHNICAL SKILL LEVEL<sup>10</sup></b>	
Supervisors (9213) – example for a HACCP Coordinator	HACCP Coordinators stand or sit at work stations to perform their tasks and often walk to other parts of the factory or facility. They do frequent walks and inspections of the facility.
Bakers (NOC 6332)	A Baker works in a fast-paced and high production setting where there is a high level of automation and time frame requirements. During a shift they can be expected to stand and/or scoop for long periods of time and may be required to climb ladders. Bakers are to be able to lift and move up to 50 lbs. of ingredients and equipment. Appropriate protective equipment is required, as workers will be using sharp and powerful processing tools. Noise levels can be quite high.
<b>KEY OCCUPATIONS AT THE MANAGERIAL SKILL LEVEL</b>	
QA managers (NOC 0911)	Quality Assurance Managers may have to wear appropriate protective equipment while in a food processing facility because they will be working around dangerous machinery and high levels of noise.
<b>OTHER OCCUPATIONS IN THE SECTOR</b>	
Production team lead (9213)	Production Team Leaders work in a fast-paced, high production setting, with strict time frame requirements. They display a high-level of attention and responsibility as safety and productivity of their team reflects on their ability to lead. Production Team Leaders require strong work ethic, excellent organization, and prioritization skills to better ensure efficiency and safety.
Sanitation worker (7621)	Sanitation Workers spend almost all their time on their feet and moving. Additionally, they may find themselves hanging from rigging or using ladders to reach high areas. Significant strength is required for many cleaning operations. Sanitation Workers must be able to control high-pressure hoses (e.g. 250 psi is common), lift heavy containers of chemicals, and empty trash receptacles around production. They could be expected to lift loads of 50 pounds or more in a single motion.
Cheesemaker (9461)	Cheese Makers most commonly work in large processing plants or cheese making shops that operate at a comfortable temperature. They spend almost all their time on their feet and may be required to lift products weighing upwards of 50 lbs. Appropriate protective equipment is required as workers usually work in a wet environment and are exposed to strong cleaning chemicals and mechanical noise.

Source: Adapted from FPSC's *Job Description Series for Food Manufacturing* available from FPSC's Skills Library.

<sup>10</sup> Detailed information on the working conditions of Industrial electricians (NOC 7242) is not available in FPSC's *Job Description Series for Food Manufacturing*.



## 2.6. SKILL GAPS & FUTURE NEED

### **HIGHLIGHTS**

*Skill gaps are identified due to the impact of advancements in technology, food safety requirements, and the need to further develop essential skills. Increased collaboration across governments, employers and training institutions is recommended to support these needs.*

#### **2.6.1 Impact of technology advancements**

As the industry changes, the skill requirements for workers are expected to change as well. As processing lines become more automated and as more advanced technology and science may be used in relation to food, there is likely to be a need for more education among employees, greater technical knowledge, more required training (Food Agriculture Communities Environment, 2014), and increased comfort using technology.

Advances in technology help processes become computerized; with this there is an indication that requirements for some positions may be changing: “With the move to advanced manufacturing, job seekers with experience in robotics, computer-controlled equipment and manufacturing software may fare better in the labour market. In addition, those with post-secondary courses in agriculture, food science and culinary arts may have an edge” (LMISD, 2017, p.3). A number of post-secondary programs reflect this trend toward science and food. For instance, Section 4.5: Universities lists Food Science Technology programs at Centennial College and Brescia College at Western University, which may help facilitate the growing need for increased scientific and technical knowledge among industry employees.

Among other future skills includes the need to keep up with social media platforms and trends in ‘big data’ analytics for sales and marketing professionals (Food Agriculture Communities Environment, 2014). As we noted in Section 1.9.3: Shifting consumer preferences, consumers look for efforts in social sustainability, for example, in marketing and sales opportunities (MNP LLP, 2015b) and having a strong skillset in media and data analytics could work towards addressing this consumer expectation.

#### **2.6.2 Impact of food safety requirements**

There is also likely to be increased demand for Canadian Food Inspection Agency (CFIA) inspection officers, as there is a growing emphasis on food safety. A 2014 report indicated that it may be necessary to enhance Ontario’s post-secondary offerings in food science and related fields in order to ensure that enough people are trained to

meet these employment needs (Food Agriculture Communities Environment, 2014). Section 4.8 looks into this potential need in more detail.

### ***2.6.3 Further development of essentials skills***

Evidence from literature in Canada indicates that many employers across industries feel that there is a need for improved essential skills and soft skills among their employees (ESDC, 2017c, “3.1 Continued Need for the Program”; Futureworx Society, 2018). Employers cannot always easily identify which skills are needed and how to address these needs. Yet, for example, if an employee is underperforming, an employer may not be aware that it is because they cannot adequately read and understand written job instructions. Therefore, there is a need for employers, government, and individuals to consider further development of essential skills by providing or undertaking training to ensure access to a skilled and capable workforce.

The need to develop higher order skills (in communication and mathematics, for example) is also driven by changes in technology, health and safety regulations, and the increase in international trade that requires cross-cultural communications (TWIG, 2017; Food Agriculture Communities Environment, 2014).

Furthermore, there are differing views as to the degree to which the nine essential skills framework incorporates soft skills, with some believing that these are effectively incorporated, and others pointing out gaps (Futureworx Society, 2018). Some of the soft skills that employers do consider important, as a whole, include a positive attitude, reliability and punctuality, as well as a willingness to learn on the job (TWIG, 2017). A 2018 Canadian survey asked respondents which soft skills were most important to their organization and the responses received included (in decreasing order of importance) communication, teamwork, analytical skills, time management, adaptability/flexibility, motivation, accountability, work ethic, emotional regulation/personal management, confidence, willingness to learn, and conflict resolution, among others (Futureworx Society, 2018).

### ***2.6.4 Increased collaboration and investment***

Collaboration across governments, employers, and educational institutions is key to increasing workplace training opportunities. Furthermore, “strategies for building the kind of sustainable workforce that will enable manufacturing to grow and thrive” are needed (MNP, n.d., p.10). One aspect of this collaboration is employer investment for training:

Studies show that employers in Canada invest less per capita in workplace training than international competitors such as the United States. According to the Conference Board of Canada, Canadian employers’ spending on per-employee

learning and development decreased from \$1,249 in 1993 to \$800 in 2015, although there has been a slight upward trend in recent years (Ontario Ministry of Finance, 2017, p.69).

In addition, employers may not be aware of existing relevant education and training opportunities, although efforts do exist (See Section 4.8). In that regard, “information updates about changes or expansions in related educational and training offerings would be welcome” by the industry (TWIG, 2017, p.19).

### 3. OVERVIEW OF EMPLOYMENT

#### OVERVIEW

*The food and beverage processing industry in Ontario employed approximately 95,000 workers in 2017. In Ontario, 58% of the industry's employees are male. The proportion of male workers ranges from 47% in the Bakery and tortilla processing industry to 72% in the Grain & oilseed producing industry. Half of food and beverage processing employees in Ontario are 45 years and older, with 20% approaching their retirement years, being between 55 to 64 years old.*

*The three regions with the highest levels of employment for the Ontario food and beverage processing industry, are Toronto (51% of employment), Hamilton-Niagara Peninsula (13%) and Kitchener-Waterloo-Barrie (12% of employment).*

*In the first quarter of 2018, average hourly wages in the FBP industry in Ontario were \$1.1/hour higher than the Canadian average but lagged behind the Ontario manufacturing industry average by approximately \$3/hour. Ontario average hourly wages exceed the Canadian equivalent in the following occupations: Supervisors in food and beverage processing (NOC 9213), Process control and machine operators in FBP (NOC 9461), Labourers in FBP (NOC 9617), Testers and graders (NOC 9465), Industrial butchers and related workers (NOC 9462). The average hourly wages of Shippers and receivers (NOC 1521) and Material Handlers (NOC 7452) are practically on par between Ontario and Canada. The average salary for Transport truck drivers (NOC 7511) in Canada exceeds the Ontario average. There is not enough information to compare wages for Bakers (NOC 6332), Fish and seafood workers (NOC 9463) or Labourers in fish processing (NOC 9618).*

*Wage increases between 2017 and 2018 (first quarter) range between \$1.4 and \$1.85/hour for occupations with foundational skill levels and between \$0.55 and \$1.3/hour for those intermediate skill jobs for which there is information available. Average hourly wages for Supervisors in FBP have decreased by \$3/hour at the Canadian level, but no comparable information is available for Ontario.*

*The job vacancy rate in the food processing sector during the first quarter of 2018 was 3.5%, on par with the Canadian rate in the same period. The job vacancy rate in Canada for the food processing sector has increased in the past year from 3.1% to 3.5%, whereas in Ontario it has experienced a slight decrease from 3.7% to 3.5%. Job vacancy rates in the food processing sector exceed those of the manufacturing industry (data below includes food processing in the calculation of manufacturing) which are estimated at 2.5% and 2.7% for Ontario and Canada respectively.*

*Job vacancy rates by occupation are available for Canada, Ontario and specific economic regions; however, these are inclusive of all occupations regardless of the industry in*

*which the jobs are located. There are over 3,000 vacancies in Canada for Labourers in FBP (NOC 9617) at any given time, with a peak observed in the third quarter of the year due to the seasonality of some of the production. Ontario's job vacancies for the sector represent more than one third of the vacancies observed nationally, which aligns with the share of the FBP industry in Ontario.*

*Job vacancies for Process control and machine operators in FBP (NOC 9461) are reported at 900 nationally, of which 275 (or 30%) are in Ontario, and 105 of these are located in Toronto. In the first quarter of 2018, there were close 1,200 vacant positions for Industrial butchers and equivalent positions (NOC 9462) of which 200 were in Ontario. Given the small size of the Fish and seafood processing industry, there is no significant demand for employees in that occupation in Ontario, although there is demand elsewhere in the country.*

*Projections of future demand for the key occupations are published on the Ontario Labour Market website and indicate the job outlook in terms of employment stability and availability for job seekers. For most occupations, the job outlook is undetermined. In the case of Bakers (NOC 6332) and Shippers & Receivers (NOC 1521) it is expected that job conditions will deteriorate relative to other occupations; in the case of Transport truck drivers (NOC 7511) it is expected that employment conditions will improve relative to other occupations.*

*Most job openings projected in the five-year period between 2017 and 2021 consist of replacement jobs, that is, job openings due to retirement, death, and emigration, particularly in the case of Process control & machine operators (NOC 9461), Material handlers (NOC 7452) and Shippers & receivers (NOC 1521) where the share of replacement jobs is between 90% and 100%. The following openings by occupation are projected:*

- Between 4,001 and 5,000 for Labourers in FBP (NOC 9617)*
- Between 401 and 500 for Testers & graders (NOC 9465).*
- Between 2,000 and 3,000 positions for each Process control & machine operators (NOC 9461) and for Bakers (NOC 6332).*
- Between 800 to 900 job openings are predicted for Industrial butchers (NOC 9462).*
- Between 1000 and 2000 new job openings are expected for supervisors in the food and beverage industry (NOC 9213)*
- Much greater pressure is expected in the case of Shippers & Receivers (NOC 1521) with job openings projected in the range of 6,000 to 7,000; for Material handlers (NOC 7452) with openings projected in the range of 7,000 to 8,000; and for Transport truck drivers (NOC 7511) where a staggering 20,000 job openings is projected between 2017 and 2021.*

*Expected job openings for Manufacturing managers (NOC 0911) may reach 7,000 in total between 2017 and 2021. Although this figure is for the manufacturing sector, it suggests greater competition across industries; in particular, 84% of these openings are resulting from replacement jobs. This will put pressure in the training of individuals, who as illustrated in Section 2, require more than 10 years of professional experience in the industry to progress to the manager level.*

*Ontario's population growth rate is expected to be moderate and to slow down from 1.3% annually between 2016 to 2021 to 1% annually by 2031, translating into an increase of \$14 million people in 2016 to approximately \$16.4 million by 2031. Population aging is expected to continue having a detrimental impact on the availability of labour as the core working age group (ages 15-64) is expected to represent a smaller share of the population. Immigration is expected to be a major driving force of population growth, which is expected to remain stronger in GTA compared to other Ontario regions.*

*Although Canada-wide projections by COPS indicate that future labour demand and supply are expected to be balanced for most occupations key to the food and beverage processing industry, employers in the manufacturing industry describe challenges finding an adequate supply of employees. Some of the reasons behind the shortages result from demographic changes, such as the retirement of an aging population that will require replacing both experience and acquired skillsets. The challenges can result in increased reliance on immigrant workers and the need to develop strategies to attract young workers and underrepresented groups. However, a lack of awareness by potential employees of the opportunities available in the sector (e.g., range of jobs and employment settings, benefits and job security), and competition with other industries that might have a more attractive profile, result in challenges to attract new workers to the industry.*

### **3.1. CURRENT EMPLOYMENT**

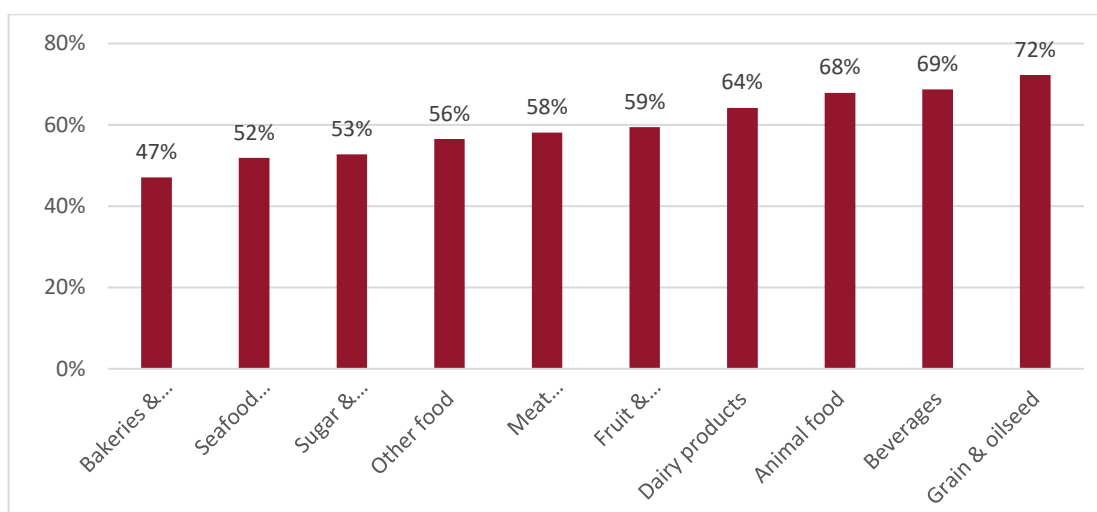
#### **HIGHLIGHTS**

*The food and beverage processing industry in Ontario employed approximately 95,000 workers in 2017. In Ontario, 58% of the industry's employees are male. The proportion of male workers ranges from 47% in the Bakery & tortilla processing industry to 72% in the Grain & oilseed producing industry. Half of food and beverage processing employees in Ontario are 45 years and older, with 20% approaching their retirement years as they are in the 55 to 64 years old group. The three regions with the highest levels of employment for the Ontario food and beverage processing industry as illustrated in Figure 12, are Toronto (51% of employment), Hamilton-Niagara Peninsula (13%) and Kitchener-Waterloo-Barrie (12% of employment).*

### 3.1.1 Employment by industry

The food and beverage processing industry in Ontario employed approximately 95,000 workers in 2017. Key demographic characteristics of employees in the industry from the 2016 Census are presented in this section. In Ontario, 58% of employees in the industry are male – a similar proportion as the 60% observed for the same industry in Canada. The proportion of male workers ranges from 47% in the Bakery and tortilla processing industry to 72% in the Grain and oilseed producing industry (Figure 10).

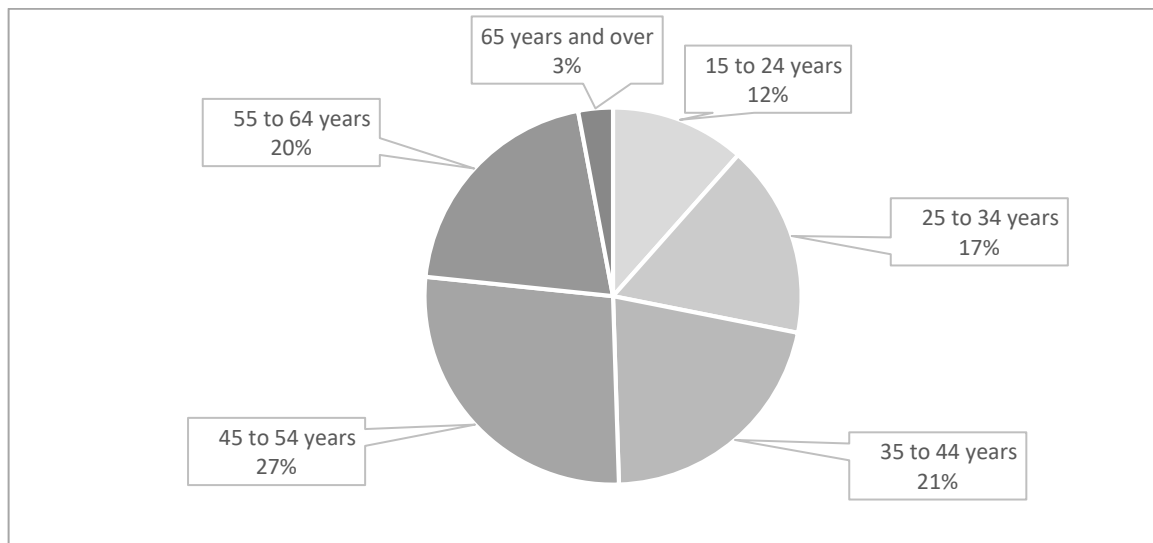
**Figure 10: Proportion of male workers by sub-industry (2016)**



Source: Adapted from Statistics Canada, 2016 Census of Population, Statistics Canada Catalogue no. 98-400-X2016292.

Half of food and beverage processing employees in Ontario are 45 years and older, with 20% between 55 and 64 years old approaching their retirement years (Figure 11).

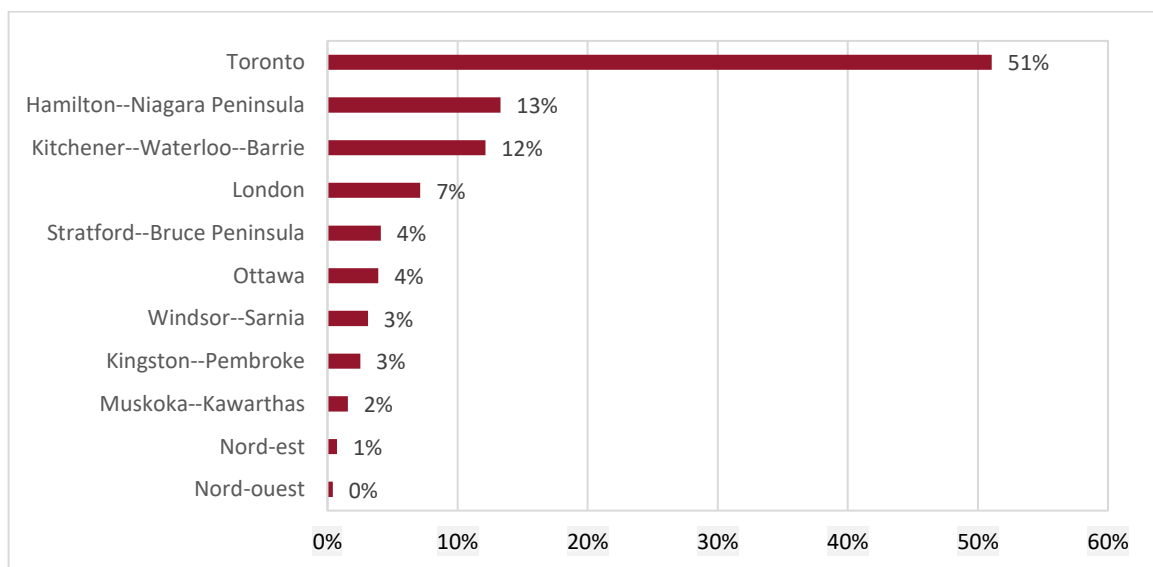
**Figure 11: Age distribution in the FBP industry, Ontario (2016)**



Source: Adapted from Statistics Canada, 2016 Census of Population, Statistics Canada Catalogue no. 98-400-X2016292.

The three regions with the highest levels of employment for the Ontario food and beverage processing industry as illustrated in Figure 12 are Toronto (51% of employment), Hamilton-Niagara Peninsula (13%) and Kitchener-Waterloo-Barrie (12% of employment).

**Figure 12: Employee distribution by economic region in Ontario (2016)**



Source: Adapted from Statistics Canada, 2016 Census of Population, Statistics Canada Catalogue no. 98-400-X2016292.



**Data Gap**

- *Information from the 2016 Census provides a snapshot of employment without offering the possibility of analyzing trends. It may be possible to analyze trends with a custom tabulation from the Labour Force Survey (Statistics Canada); however, there may be limitations to the information available due to Statistics Canada suppression rules.*

**3.1.2 Employment by occupation**

According to 2016 Census data (Statistics Canada, 2016b), there are 236 different occupations represented across the Food and beverage processing industry, although in approximately 70% of these occupations, the number of employees in the industry is 100 or fewer workers. The occupations where more than 1,300 workers are employed in the food and beverage processing industry (equivalent to 2% of the Ontario workforce in that occupation) are listed below, including the share of total employment that they represent in this sector:

- 21% of workers in food and beverage processing in Ontario are Labourers in food and beverage processing (NOC 9617)
- 12% are Process control and machine operators, food and beverage processing (NOC 9461)
- 6% are Bakers (NOC 6332)
- 4% are Manufacturing managers (NOC 0911)
- 4% are Supervisors, food and beverage processing (NOC 9213)
- 3% are Material handlers (NOC 7452)
- 3% are Industrial butchers and meat cutters, poultry preparers, and related workers (NOC 9462)
- 3% are Retail persons (NOC 6421)
- 2% are Construction millwrights and industrial mechanics (NOC 7311)
- 2% are Transport truck drivers (NOC 7511)
- 2% are Food counter attendants, kitchen helpers and related support occupations (NOC 6711)

For each industry, the top five occupations according to the share of employment they represent as well as their rank, are indicated in Table 27. A few occupations are in the top five for all or most subindustries, such as Labourers in food and beverage processing (NOC 9617), Process control & machine operators in food and beverage processing (NOC 9461), Manufacturing managers (NOC 0911) and Material handlers (NOC 7452). Other occupations, not surprisingly, are specific to some industries such as Bakers (NOC 6332) or Industrial butchers and meat cutters (NOC 9462).

There is another set of occupations that are important in some subindustries but that are not as closely linked specific to the activities of the sector. These include:

- Retail salespersons (NOC 6421) are among the top five occupations in the Bakeries and tortilla industry and the Animal food industry.
- Closely related to sales, Food counter attendants (NOC 6711) are in the top five occupations in the Bakeries and tortilla industry and Sales and account representatives (NOC 6411) are in the top five occupations in the Beverage manufacturing industry.
- Shippers and receivers (NOC 1521) are among the top five in the Dairy product processing industry.
- Construction millwrights and industrial mechanics (NOC 7311) are among the top five occupations in the Grain and oilseed milling industry.
- Transport truck drivers (NOC 7511) are in the top five occupations in the Animal food and seafood products manufacturing industries.

This analysis suggests that some occupations could be considered as potential additions to the key positions for the industry in Section 2.2, including Retail salespersons (NOC 6421), Construction millwrights and industrial mechanics (NOC 7311) and Food counter attendants, kitchen helpers and related support occupations (NOC 6711), and Sales and account representatives (NOC 6411).

**Table 27: Top Occupations According to their Share of the FBP Industry Employment**

	BAKERIES & TORTILLA	MEAT PRODUCTS	BEVERAGES	DAIRY PRODUCTS	FRUIT & VEG. FOODS	GRAIN & OILSEED MILLING	SUGAR & CONF. PRODUCTS	ANIMAL FOOD	OTHER FOODS	SEAFOOD PRODUCTS
Labourers in food & beverage processing (NOC 9617)	19% (2)	30% (1)	8% (2)	22% (1)	23% (1)	15% (2)	20% (1)	13% (1)	22% (1)	8% (3)
Process control & machine operators, food & beverage proc. (NOC 9461)	19% (3)	8% (3)	13% (1)	18% (2)	16% (2)	18% (1)	20% (2)	10% (2)	15% (2)	
Manufacturing managers (NOC 0911)		3% (5)	7% (3)		3% (5)	5% (4)	4% (5)	4% (5)	6% (3)	5% (4)
Material handlers (NOC 7452)			6% (5)	5% (3)	5% (3)	6% (3)	4% (4)		3% (5)	
Supervisors, food & beverage processing (NOC 9213)		5% (4)		4% (4)	4% (4)		5% (3)		4% (4)	
Transport truck drivers (NOC 7511)								8% (3)		3% (5)
Retail salespersons (NOC 6421)	5% (4)							4% (4)		
Construction millwrights and industrial mechanics (NOC 7311)						4% (5)				
Shippers and receivers (NOC 1521)				4% (5)						
Industrial butchers & meat cutters, poultry preparers and related (NOC 9462)		14% (2)								
Bakers (6332)	23% (1)									
Food counter attendants (NOC 6711)	4% (5)									
Sales & account representatives (NOC 6411)			7% (4)							
Fish & seafood plant workers (NOC 9463)										17% (2)
Labourers in fish and seafood processing (NOC 9618)										21% (1)

Source: Adapted from Statistics Canada (2016b). 2016 Census – Cross tabulation of four-digit NAICS code and four-digit NOC code [Custom tabulation].

\*Rank within each subindustry is presented in brackets.

Figure 13 illustrates the number of employees in the manufacturing industry overall for the FBP key occupations, where:

- Close to 20,000 individuals are employed as Labourers in food and beverage processing (NOC 9617) and 3,600 individuals are employed as Supervisors, food and beverage processing (NOC 9213).
- Approximately 1,000 are employed as Testers and graders (NOC 9465).
- More than 11,000 work as Process control and machine operators (NOC 9461)
- There are approximately 2,800 Industrial butchers and meat processors (NOC 9462) and close to 5,300 Bakers (NOC 6332).

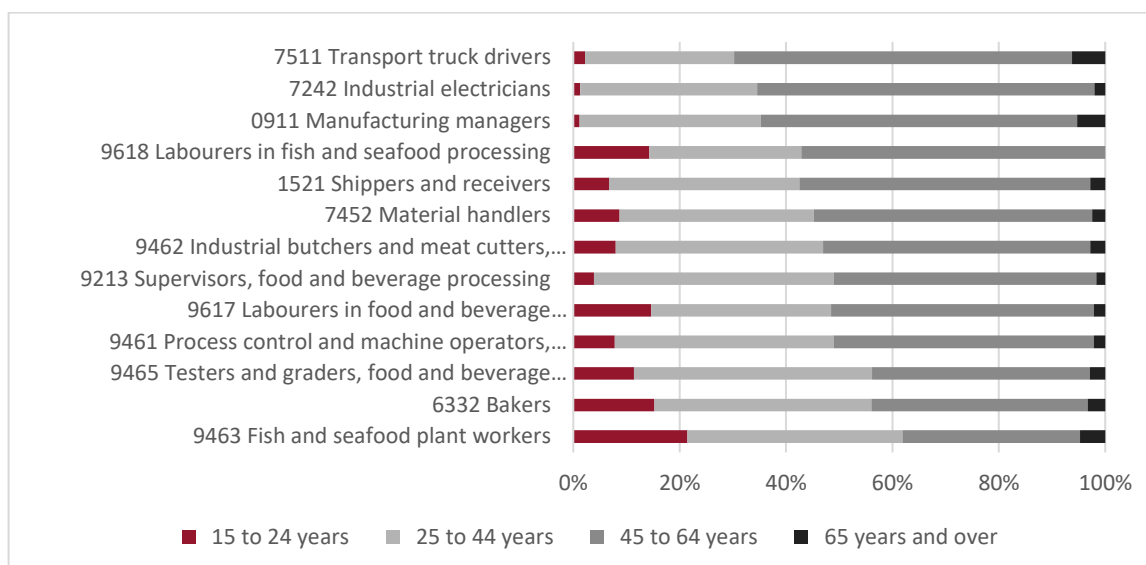
**Figure 13: Employment in the Ontario manufacturing industry, key occupations (2016)**



Source: Adapted from Statistics Canada, 2016 Census of Population, Statistics Canada Catalogue no. 98-400-X2016298.

The age distribution of workers in these occupations (Figure 14) in the manufacturing industry show that a large percentage is likely to start retiring over the next twenty years. Approximately 60% of individuals working as Transport truck drivers (NOC 7511), Industrial electricians (NOC 7242), Manufacturing managers (NOC 0911) and Labourers in fish and seafood processing (NOC 9618) are 45 years old or older. More than 50% of workers are 45 years or older in the following occupations: Shippers and receivers (NOC 1521), Material handlers (NOC 7452), Industrial butchers and meat cutters (NOC 9462), Supervisors, food and beverage processing (NOC 9213), Labourers in food and beverage processing (NOC 9617) and Process control and machine operators (NOC 9461). This ageing workforce drives some of the challenges highlighted throughout this report.

**Figure 14: Employment in the Ontario manufacturing industry by age group (2016)**



Source: Adapted from Statistics Canada, 2016 Census of Population, Catalogue no. 98-400-X2016298.

A custom tabulation of 2016 Census data (Statistics Canada, 2016b) allows for the identification of the share of these occupations that are employed by the food and beverage processing industry. The FBP industry is one of the major employers of individuals in the following occupations, as it employs:

- 87% of Industrial butchers and meat cutters, poultry preparers and related (NOC 9462)
- 75% of Process control and machine operators, food and beverage processing (NOC 9461).
- 75% of Supervisors in food and beverage processing (NOC 9213)
- 66% of Labourers in food and beverage processing (NOC 9617)
- 61% of Testers and graders, food and beverage processing (NOC 9465)
- 59% of Fish and seafood plant workers (NOC 9463)
- 37% of Labourers in fish and seafood processing (NOC 9618)
- 32% of Bakers (NOC 6332)
- 18% of Agricultural and fish products inspectors (NOC 2222)
- 12% of Manufacturing managers (NOC 0911)
- 10% of Chemical technologists and technicians (NOC 2211)

The distribution of these shares by sub-industry is presented in Table 28. Based on these shares, two potential candidates for add to the list of key positions in Section 2.2 are Agricultural and fish products inspectors (NOC 2222) and Chemical technologists and technicians (NOC 2211).

**Table 28: Top Occupations According to the Share Employed by the Industry**

	BAKERIES & TORTILLA	MEAT PRODUCTS	BEVERAGES	DAIRY PRODUCTS	FRUIT & VEG. FOODS	GRAIN & OILSEED MILLING	SUGAR & CONF. PRODUCTS	ANIMAL FOOD	OTHER FOODS	SEAFOOD PRODUCTS
Industrial butchers & meat cutters, poultry preparers and related (NOC 9462)		86%								
Process control & machine operators, food & beverage proc. (NOC 9461)	13%		11%	11%	6%	3%	8%	2%	10%	
Supervisors, food & beverage processing (NOC 9213)	15%	20%	8%	8%	5%	2%	6%	2%	9%	
Labourers in food & beverage processing (NOC 9617)	15%	22%	4%	7%	4%	1%	4%	2%	7%	
Testers and graders (NOC 9465)	10%	17%	7%	7%	6%	2%	3%	2%	7%	
Fish & seafood plant workers (NOC 9463)										59%
Labourers in fish and seafood processing (NOC 9618)										34%
Bakers (6332)	31%						1%			
Agricultural and fish products inspectors (NOC 2222)		13%		2%	1%				1%	1%
Chemical technologists and technicians (NOC 2211)		2%	1%	2%	1%	1%	1%	1%	2%	

Source: Adapted from Statistics Canada (2016b). 2016 Census – Cross tabulation of four-digit NAICS code and four-digit NOC code [Custom tabulation].

## 3.2. SALARIES, WAGES & BENEFITS

### HIGHLIGHTS

*In the first quarter of 2018, average hourly wages in the FBP industry in Ontario are \$1.1/hour higher than the Canadian average, but lag behind the Ontario manufacturing industry average by approximately \$3/hour. Ontario average hourly wages exceed the Canadian equivalent in the following occupations: Supervisors in food and beverage processing (NOC 9213), Process control and machine operators in FBP (NOC 9461), Labourers in FBP (NOC 9617), Testers and graders (NOC 9465), Industrial butchers and related workers (NOC 9462). The average hourly wages of Shippers and receivers (NOC 1521) and Material Handlers (NOC 7452) are practically on par between Ontario and Canada. The average salary for Transport truck drivers (NOC 7511) in Canada exceeds the Ontario average. There is not enough information to compare wages for Bakers (NOC 6332), Fish and seafood workers (NOC 9463) or Labourers in fish processing (NOC 9618).*

*Wage increases between 2017 and 2018 (first quarter) range between \$1.4 and \$1.85/hour for occupations with foundational skill levels and between \$0.55 and \$1.3/hour for those intermediate skill jobs for which there is information available. Average hourly wages for Supervisors in FBP have decreased by \$3/hour at the Canadian level, but no comparable information is available for Ontario.*

### 3.2.1 Average hourly wages for the industry

Average hourly wages for the food processing industry (excluding beverages) are published quarterly by Statistics Canada. The average hourly wage in the first quarter of 2018 was estimated at \$18/hour – an increase from \$16.9/hour since the first quarter in 2017 and more than \$1/per hour above the average hourly wage for the industry in Canada. Compared to the manufacturing industry, however, the food processing average hourly wage lags behind manufacturing by approximately \$3/hour, which has been the case despite increasing costs in labour (AAFC, 2017).

**Table 29: Average hourly wages – Food Processing & Manufacturing (\$)**

	2017_Q1	2017_Q2	2017_Q3	2017_Q4	2018_Q1
<i>Food Processing</i>					
Average hourly wage - Ontario	16.9	16.8	17.9	17.4	18.0
Average hourly wage - Canada	16.5	15.9	16.3	16.5	16.9
<i>Total manufacturing industry</i>					
Average hourly wage - Ontario	20.5	20.6	20.4	20.7	20.9

	2017_Q1	2017_Q2	2017_Q3	2017_Q4	2018_Q1
Average hourly wage - Canada	20.5	20.0	19.9	20.3	20.7

Source: Adapted from Statistics Canada. Table 14-10-0326-01. Job vacancies, payroll employees, job vacancy rate, and average offered hourly wage by industry sector, quarterly, unadjusted for seasonality.

Statistics Canada also produces information about average hourly wages by occupation and region. Unfortunately, these are not specific to the FBP industry, but it gives a good sense of how the wages in this sector compare to what is being offered on average in Canada. Average hourly wages presented below are organized following the different skill levels discussed in Section 2: Key occupations by level of responsibility (foundational, intermediate, high or supervisory and management levels).

### 3.2.2 Average hourly wages for positions with a foundational skill level

Average hourly wages for positions with foundational skills are presented below (Table 29). Although information is calculated at by economic region,<sup>11</sup> due to a number of reasons, breakdowns at the regional level are not available for all regions.<sup>12</sup> When data is unavailable, we simplify the tables by excluding breakdowns in the tables below. In the first quarter of 2018, average hourly wages for those positions with a foundational skill level are below the average of \$18/hour for Ontario FBP industry as a whole. The Ontario average for Labourers in FBP (NOC 9617) is \$15.15/hour and for testers and graders (NOC 9465) it is \$17.30/hour. Being such as a small industry, there is no reliable information for Labourers in fish processing (NOC 9618). Both in the case of labourers, and testers and graders, the Ontario average exceeds the Canadian average by \$0.5/hour and \$0.30/hour respectively.

Based on the information published, it is noted that the average hourly wages for Labourers in food and beverage processing (NOC 9617) are the highest in the Hamilton-Niagara Peninsula region (\$16.95/hour) and in the London region (\$16.3/hour). These wages are unadjusted for seasonality so any comparisons should be made using the same quarter as reference. Between 2017 and 2018, average wages in the first quarter of the year for Labourers in food and beverage processing increased by \$0.9/hour in Canada and \$1.4/hour in Ontario; for testers and graders, wages increased by \$2.7/hour in Canada and by \$1.85/hour in Ontario (Table 30).

<sup>11</sup> Statistics Canada's Geographical Classification identifies the following 11 economic regions in Ontario: Ottawa, Kingston-Pembroke, Muskoka-Kawarths, Toronto, Kitchener-Waterloo-Barrie, Hamilton-Niagara Peninsula, London, Windsor-Sarnia, Stratford-Bruce Peninsula, Northeast and Northwest.

<sup>12</sup> Statistics Canada might suppress data when unavailable for a specific reference period (".."); to meet the confidentiality requirements of the Statistics Act ("x") or when data are deemed unreliable for publication ("F").



**Table 30: Average Hourly Wages for positions with a foundational skill level**

	2017_Q1	2017_Q2	2017_Q3	2017_Q4	2018_Q1
<i>Labourers in food and beverage processing (NOC 9617)</i>					
Canada	13.75	13.45	13.85	13.80	14.65
Ontario	13.75	13.30	14.00	13.90	15.15
Ottawa	x	x	x	..	x
Kingston-Pembroke	F	F	F	F	x
Muskoka-Kawartha	x	x	F	x	F
Toronto	14.10	13.70	14.40	15.05	15.20
Kitchener-Waterloo-Barrie	14.45	13.85	15.20	14.60	14.75
Hamilton-Niagara Peninsula	13.05	14.60	x	x	16.95
London	13.85	14.80	14.25	x	16.30
Windsor-Sarnia	x	11.60	x	12.10	x
Stratford-Bruce Peninsula	F	x	F	15.50	F
Northeast	..	x	..	..	..
Northwest	..	..	..	..	..
<i>Testers and graders, food and beverage processing (NOC 9465)</i>					
Canada	14.30	16.40	16.15	F	17.00
Ontario	15.45	x	x	x	17.30
<i>Labourers in fish and seafood processing (NOC 9618)</i>					
Canada	12.35	12.70	12.60	13.25	13.40
Ontario	x	x	F	..	..

Source: Adapted from Statistics Canada. Table 14-10-0356-01. Job vacancies and average offered hourly wage by occupation (broad occupational category), quarterly, unadjusted for seasonality.

Notes: Data has been suppressed for the following reasons: it is unavailable for a specific reference period (".."); it is suppressed to meet the confidentiality requirements of the Statistics Act ("x") or data is deemed unreliable for publication ("F").

### 3.2.3 Average hourly wages for positions with an intermediate skill level

At the intermediate level, average hourly wages in Ontario and Canada compare as follows:

- Process control and machine operators in FBP (NOC 9461) report an average hourly wage \$1.9/hour greater in Ontario in Canada.
- Industrial butchers and related workers (NOC 9462) report an average hourly wage \$1/hour greater in Ontario than in Canada.
- There is not enough information to compare wages for Fish and seafood workers (NOC 9463).
- The average hourly wages of Shippers and receivers (NOC 1521) and Material Handlers (NOC 7452) are practically on par between Ontario and Canada.

- The average salary for Transport truck drivers (NOC 7511) is \$1.35/hour higher in Canada compared to the Ontario average.

All wages for these occupations appear to be on the rise, but there are many gaps in the information to depict a clear picture of the trends observed. For those salaries where information is available, average hourly wages increases between 2017 and 2018 (first quarter) range between \$0.55/hour to \$1.3/hour in Ontario (Table 31).

**Table 31: Average hourly wages for positions with an intermediate skill level**

	2017_Q1	2017_Q2	2017_Q3	2017_Q4	2018_Q1
<i>Process control and machine operators, food and beverage processing (NOC 9461)</i>					
Canada	16.15	16.40	15.90	16.55	15.90
Ontario	x	15.45	17.10	17.00	17.80
Ottawa	x	x	F	F	F
Kingston-Pembroke	x	F	x	..	F
Muskoka-Kawarthas	x	x	..	x	x
Toronto	18.60	x	x	x	17.10
Kitchener-Waterloo-Barrie	x	x	x	x	x
Hamilton-Niagara Peninsula	x	x	x	x	x
London	x	x	..	x	x
Windsor-Sarnia	12.90	x	x	x	x
Stratford-Bruce Peninsula	14.80	x	x	16.25	x
Northeast	..	..	..	..	x
Northwest	..	..	..	..	..
<i>Industrial butchers and meat cutters, poultry preparers and related workers (NOC 9462)</i>					
Canada	16.05	15.80	16.00	16.20	15.70
Ontario	16.10	x	16.35	x	16.70
<i>Fish and seafood plant workers (NOC 9463)</i>					
Canada	13.05	12.70	13.35	12.70	12.75
Ontario	x	x	x	..	..
<i>Shippers and receivers (NOC 1521)</i>					
Canada	15.40	15.00	14.80	15.45	16.25
Ontario	15.00	15.00	14.75	15.10	16.30
Ottawa	F	14.40	15.00	16.80	x
Kingston-Pembroke	x	15.25	x	16.65	F
Muskoka-Kawarthas	..	F	F	x	16.85
Toronto	15.25	15.05	16.70	15.25	16.30
Kitchener-Waterloo-Barrie	14.80	15.05	x	x	x
Hamilton-Niagara Peninsula	14.40	15.95	13.45	14.90	15.95

	2017_Q1	2017_Q2	2017_Q3	2017_Q4	2018_Q1
London	x	x	x	13.95	x
Windsor-Sarnia	14.05	14.20	14.25	16.80	x
Stratford-Bruce Peninsula	x	x	F	..	x
Northeast	F	F	12.35	x	F
Northwest	F	x	x	F	F
<i>Material handlers (7452)</i>					
Canada	14.50	14.40	14.70	14.90	15.35
Ontario	x	x	x	14.65	15.20
Ottawa	11.80	13.50	14.10	13.45	x
Kingston-Pembroke	x	12.60	x	14.60	x
Muskoka-Kawarths	x	14.00	x	15.75	x
Toronto	15.05	14.25	15.05	x	x
Kitchener-Waterloo-Barrie	14.10	13.50	14.30	14.15	16.45
Hamilton-Niagara Peninsula	x	x	15.55	14.65	x
London	13.70	13.80	x	x	16.10
Windsor-Sarnia	x	x	13.70	14.10	x
Stratford-Bruce Peninsula	15.60	14.60	13.80	16.70	14.90
Northeast	x	14.90	13.60	F	x
Northwest	..	F	x	F	F
<i>Transport truck drivers (7511)</i>					
Canada	21.95	21.50	21.90	22.15	21.65
Ontario	19.75	20.15	20.20	20.50	20.30
Ottawa	19.15	19.35	18.50	18.70	18.40
Kingston-Pembroke	16.90	18.15	21.40	18.25	19.80
Muskoka-Kawarths	x	15.65	x	x	F
Toronto	19.35	20.75	20.65	19.75	20.05
Kitchener-Waterloo-Barrie	20.25	20.20	21.00	23.40	21.75
Hamilton-Niagara Peninsula	x	20.55	20.75	x	20.30
London	19.05	20.10	x	19.80	20.45
Windsor-Sarnia	20.35	18.85	18.75	19.50	20.45
Stratford-Bruce Peninsula	21.90	20.05	19.65	23.35	22.45
Northeast	20.65	21.85	18.95	22.00	19.60
Northwest	x	21.15	18.35	21.50	20.25

Source: Adapted from Statistics Canada. Table 14-10-0356-01. Job vacancies and average offered hourly wage by occupation (broad occupational category), quarterly, unadjusted for seasonality.

Notes: Data has been suppressed for the following reasons: it is unavailable for a specific reference period (“..”); it is suppressed to meet the confidentiality requirements of the Statistics Act (“x”) or data is deemed unreliable for publication (“F”).

### 3.2.4 Average hourly wages for positions with a supervisory or high skill level

Average hourly wages at the supervisory level exceed the average for the food processing industry of \$18/hour (Table 32). Wages for supervisors in food and beverage processing (NOC 9213) appear to have similar averages at both the Canadian level and the provincial level. There is no information at the Ontario level to assess trends, but at the Canadian level, employees in this occupational group have seen their average hourly wages decrease by close to \$3/hour between the first quarter 2017 and 2018.

Average hourly wages for industrial electricians (NOC 7242) are presented below as an illustration of wage ranges for higher skilled job categories. Since these are not specific to the FBP industry, any conclusions would apply to the occupation across all industries and should be used with caution. There is not enough information to compare wages for Bakers (NOC 6332).

**Table 32: Average Hourly Wages for positions with supervisory or high skill level**

	2017_Q1	2017_Q2	2017_Q3	2017_Q4	2018_Q1
<i>Supervisors, food and beverage processing (9213)</i>					
Canada	26.50	24.15	23.55	23.10	23.75
Ontario	26.65	23.65	24.15	x	x
Ottawa	x	x	x	..	..
Kingston-Pembroke	x	x	..	x	x
Muskoka-Kawarthas	x	x	..	..	..
Toronto	29.25	F	29.95	x	21.75
Kitchener-Waterloo-Barrie	x	x	21.05	x	x
Hamilton-Niagara Peninsula	x	x	x	x	x
London	x	F	x	..	x
Windsor-Sarnia	16.70	x	x	F	x
Stratford-Bruce Peninsula	x	..	x	x	x
Northeast	..	..	..	..	..
Northwest	..	..	..	..	..
<i>Industrial electricians (7242)</i>					
Canada	30.55	30.90	29.45	30.50	31.30
Ontario	30.70	29.65	29.35	29.40	29.45
Ottawa	x	x	x	x	x
Kingston-Pembroke	x	x	F	27.90	29.40
Muskoka-Kawarthas	x	x	x	x	x
Toronto	30.45	31.70	30.55	29.05	29.30
Kitchener-Waterloo-Barrie	28.30	29.25	26.30	x	27.50

	2017_Q1	2017_Q2	2017_Q3	2017_Q4	2018_Q1
Hamilton-Niagara Peninsula	x	30.25	33.50	F	31.60
London	x	31.90	31.55	32.40	x
Windsor-Sarnia	x	x	22.00	30.85	x
Stratford-Bruce Peninsula	..	x	x	29.65	30.30
Northeast	x	22.65	27.25	x	30.15
Northwest	x	x	x	x	x
<b>Bakers (NOC 6332)</b>					
Canada	12.80	12.90	13.70	15.30	15.15
Ontario	12.40	12.75	13.45	17.60	x
Ottawa	14.50	12.95	x	x	F
Kingston-Pembroke	..	..	..	..	..
Muskoka-Kawarthas	x	..	..	x	..
Toronto	x	12.70	12.45	x	15.90
Kitchener-Waterloo-Barrie	x	x	x	11.80	F
Hamilton-Niagara Peninsula	x	F	12.70	F	x
London	F	..	F	x	..
Windsor-Sarnia	F	x	F	F	..
Stratford-Bruce Peninsula	x	x	..	x	F
Northeast	F	x	x	x	..
Northwest	x	F	..	x	x

Source: Adapted from Statistics Canada. Table 14-10-0356-01. Job vacancies and average offered hourly wage by occupation (broad occupational category), quarterly, unadjusted for seasonality.

Notes: Data has been suppressed for the following reasons: it is unavailable for a specific reference period (".."); it is suppressed to meet the confidentiality requirements of the Statistics Act ("x") or data is deemed unreliable for publication ("F").

### 3.2.5 Average hourly wages for positions with a management skill level

Average hourly wages for manufacturing managers (NOC 0911) are presented below as an illustration of wage ranges of management skilled job categories (Table 33), but since these are not specific to the FBP industry, any conclusions would apply to the occupation across all industries and should be used with caution. Nonetheless, it is noted that the average wage of manufacturing managers in Ontario exceeds the Canadian average by approximately \$3/hour. Moreover, the average hourly wage for manufacturing managers in Ontario ranges from a low of \$37.4/hour to a high of \$55.9/hour depending on the region.

**Table 33: Average Hourly Wages for positions with management skill level**

	2017_Q1	2017_Q2	2017_Q3	2017_Q4	2018_Q1
<b>Manufacturing managers (NOC 0911)</b>					

	2017_Q1	2017_Q2	2017_Q3	2017_Q4	2018_Q1
Canada	35.55	34.65	38.85	37.75	38.30
Ontario	38.35	34.45	40.80	39.85	41.35
Ottawa	x	50.00	47.10	x	55.90
Kingston-Pembroke	x	37.25	F	x	..
Muskoka-Kawarthas	x	x	x	x	x
Toronto	x	30.25	42.05	41.05	x
Kitchener-Waterloo-Barrie	x	x	46.85	x	47.45
Hamilton-Niagara Peninsula	40.75	x	32.45	x	37.65
London	36.20	40.45	34.00	x	37.40
Windsor-Sarnia	x	x	x	x	44.95
Stratford-Bruce Peninsula	x	x	F	x	x
Northeast	43.45	x	x	x	40.80
Northwest	x	..	x	x	..

Source: Adapted from Statistics Canada. Table 14-10-0356-01. Job vacancies and average offered hourly wage by occupation (broad occupational category), quarterly, unadjusted for seasonality.

Notes: Data has been suppressed for the following reasons: it is unavailable for a specific reference period (".."); it is suppressed to meet the confidentiality requirements of the Statistics Act ("x") or data is deemed unreliable for publication ("F").

#### **Data Gap**

- *For additional analyses, it may be of interest to obtain custom tabulations from the Labour Force Survey providing trends for industry wages as well as information regarding the number of employees by educational attainment and economic region.*
- *It may be of interest to also add analysis of median wages from ESDC's published data via the job bank.*

### 3.3. CURRENT & FUTURE DEMAND

#### **HIGHLIGHTS**

*The job vacancy rate in the food processing sector during the first quarter of 2018 was 3.5%, on par with the Canadian rate in the same period. The job vacancy rate in Canada for the food processing sector has increased in the past year from 3.1% to 3.5%, whereas in Ontario it has experienced a slight decrease from 3.7% to 3.5%. Job vacancy rates in the food processing sector exceed those of the manufacturing industry (data below includes food processing in the calculation of manufacturing) which are estimated at 2.5% and 2.7% for Ontario and Canada respectively.*

*Job vacancy rates by occupation are available for Canada, Ontario, and economic regions; however, these are inclusive of all occupations regardless of the industry in which the jobs are located. There are over 3,000 vacancies in Canada for Labourers in FBP (NOC 9617) at any given time, with a peak observed in the third quarter of the year due to the seasonality of some of the production. Ontario's job vacancies for the sector represent more than one third of the vacancies observed nationally – which aligns with the share of the Ontario FBP industry.*

*Job vacancies for Process control and machine operators in FBP (NOC 9461) are reported at 900 nationally, of which 275 (or 30%) are in Ontario, and 105 of these are located in Toronto. In the first quarter of 2018 there were close 1,200 vacant positions for Industrial butchers and equivalent positions (NOC 9462) of which 200 were in Ontario. Given the small size of the Fish and seafood processing industry, there is no significant demand for employees in that occupation in Ontario, although there is demand elsewhere in the country.*

*Projections of future demand for the key occupations are published on the Ontario Labour Market website and indicate the job outlook in terms of employment stability and availability for job seekers. For the vast majority of occupations, the job outlook is undetermined. In the case of Bakers (NOC 6332) and Shippers & Receivers (NOC 1521) it is expected that job conditions will deteriorate relative to other occupations; in the case of Transport truck drivers (NOC 7511) it is expected that employment conditions will improve relative to other occupations.*

*The majority of job openings projected in the five-year period between 2017 and 2021 consist of replacement jobs, that is, job openings due to retirement, death and emigration, particularly in the case of Process control & machine operators (NOC 9461), Material handlers (NOC 7452) and Shippers & receivers (NOC 1521) where the share of replacement jobs is between 90% and 100%. The following openings by occupation are projected:*

- Between 4,001 and 5,000 for Labourers in FBP (NOC 9617)
- Between 401 and 500 for Testers & graders (NOC 9465).
- Between 2,000 and 3,000 positions for each Process control & machine operators (NOC 9461) and for Bakers (NOC 6332).
- Between 800 to 900 job openings are predicted for Industrial butchers (NOC 9462).
- Between 1000 and 2000 new job openings are expected for supervisors in the food and beverage industry (NOC 9213)
- Much greater pressure is expected in the case of Shippers & Receivers (NOC 1521) with job openings projected in the range of 6,000 to 7,000; for Material handlers (NOC 7452) with openings projected in the range of 7,000 to 8,000; and for Transport truck drivers (NOC 7511) where a staggering 20,000 job openings is projected between 2017 and 2021.

Expected job openings for Manufacturing managers (NOC 0911) may reach 7,000 in total between 2017 and 2021. Although this figure is for the manufacturing sector, it suggests greater competition across industries. In particular, 84% of these openings result from replacement jobs. This will put pressure on training which as illustrated in Section 2, require more than 10 years of professional experience in the industry to progress to the manager level.

### 3.3.1 Job vacancy rates by industry

Job vacancy rates for the food industry in Ontario (excluding the beverage industry) are published quarterly by Statistics Canada (

Table 34). The job vacancy rate in the food processing sector during the first quarter of 2018 was 3.5%, on par with the Canadian rate in the same period. The job vacancy rate in Canada (unadjusted for seasonality) for the food processing sector has increased in the past year from 3.1% to 3.5%, whereas in Ontario it has experienced a slight decrease from 3.7% to 3.5%. Job vacancy rates in the food processing sector exceed those of the manufacturing industry (data below includes food processing in the calculation of manufacturing) which are estimated at 2.5% and 2.7% for Ontario and Canada respectively.

**Table 34: Job Vacancy Rates – Food Processing & Manufacturing (%)**

	2017_Q1	2017_Q2	2017_Q3	2017_Q4	2018_Q1
<i>Food Processing</i>					
Job vacancy rate - Ontario	3.7	3.0	3.7	3.5	3.5
Job vacancy rate - Canada	3.1	3.4	3.8	3.6	3.5
<i>Total manufacturing industry</i>					
Job vacancy rate - Ontario	2.2	2.4	2.5	2.3	2.5



	2017_Q1	2017_Q2	2017_Q3	2017_Q4	2018_Q1
<b>Job vacancy rate - Canada</b>	2.2	2.5	2.7	2.6	2.7

Source: Adapted from Statistics Canada. Table 14-10-0326-01. Job vacancies, payroll employees, job vacancy rate, and average offered hourly wage by industry sector, quarterly, unadjusted for seasonality.

### 3.3.2 Job vacancies for positions with a foundational skill level

Job vacancy rates by occupation are available for Canada, Ontario and economic regions; however, these are inclusive of all occupations regardless of the industry in which the jobs are located. Job vacancies by occupation are presented in Table 35, organized by the position's level.

There are over 3,000 vacancies in Canada for Labourers in FBP (NOC 9617) at any given time, with a peak observed in the third quarter of the year due to the seasonality of some productions. Ontario's job vacancies for the sector represent more than one third of the vacancies observed nationally which aligns with the share of the FBP industry in the province.

Demand for Testers and graders (NOC 9465) is much lower, reported at 90 positions in Ontario in the first quarter of 2018, although this includes all industries that employ this type of skill. There were no significant job vacancies for Labourers in fish and seafood processing (NOC 9618) given the limited size of this industry in Ontario.

**Table 35: Job vacancies for positions with a foundational skill level**

	2017_Q1	2017_Q2	2017_Q3	2017_Q4	2018_Q1
<b>Labourers in food and beverage processing (NOC 9617)</b>					
Canada	3,185	2,960	4,565	3,235	3,035
Ontario	1,615	1,030	1,525	1,245	1,190
Ottawa	x	x	x	..	x
Kingston-Pembroke	F	F	F	F	x
Muskoka-Kawarths	x	x	F	x	F
Toronto	865	180	F	F	F
Kitchener-Waterloo-Barrie	F	F	425	F	F
Hamilton-Niagara Peninsula	295	F	x	x	200
London	80	135	40	x	135
Windsor-Sarnia	x	F	x	425	x
Stratford-Bruce Peninsula	F	x	F	45	F
Northeast	..	x	..	..	..
Northwest	..	..	..	..	..
<b>Testers and graders, food and beverage processing (NOC 9465)</b>					

	2017_Q1	2017_Q2	2017_Q3	2017_Q4	2018_Q1
Canada	F	20	80	F	125
Ontario	15	x	x	x	90
<i>Labourers in fish and seafood processing (NOC 9618)</i>					
Canada	380	745	665	145	205
Ontario	x	x	F	..	..

Source: Adapted from Statistics Canada. Table 14-10-0356-01. Job vacancies and average offered hourly wage by occupation (broad occupational category), quarterly, unadjusted for seasonality.

Notes: Data has been suppressed for the following reasons: it is unavailable for a specific reference period (".."); it is suppressed to meet the confidentiality requirements of the Statistics Act ("x") or data is deemed unreliable for publication ("F").

### 3.3.3 Job Vacancies for positions with an intermediate skill level

Job vacancies for Process control and machine operators in FBP (NOC 9461) are reported at 900 nationally, of which 275 (or 30%) are located in Ontario, and 105 of these are located in Toronto.

In the first quarter of 2018 there were close 1,200 vacant positions for Industrial butchers and equivalent positions (NOC 9462) of which 200 were located in Ontario. Given the small size of the Fish and seafood processing industry, there is no significant demand for employees in that occupation in Ontario, although there is demand elsewhere in the country.

Figures for the other occupations below (Table 36) are for all industries and should be interpreted with caution, but these give a sense of the high demand for Shippers and receivers (NOC 1521), Material handlers (NOC 7452) and Transport truck drivers (NOC 7511) for which the total job vacancies across industries are staggering. In the first quarter of 2018, job vacancies for these three groups in Ontario exceeded 1,200 for Shippers and receivers, and close to 5,000 for Material handlers and Transport truck drivers each. This gives a sense of the potential competition across manufacturing industries to fulfill these positions.

**Table 36: Job vacancies for positions with an intermediate skill level**

	2017_Q1	2017_Q2	2017_Q3	2017_Q4	2018_Q1
<i>Process control and machine operators, food and beverage processing (NOC 9461)</i>					
Canada	1,030	630	595	1,065	905
Ontario	x	250	210	355	275
Ottawa	x	x	F	F	F
Kingston-Pembroke	x	F	x	..	F
Muskoka-Kawarthas	x	x	..	x	x

	2017_Q1	2017_Q2	2017_Q3	2017_Q4	2018_Q1
Toronto	F	x	x	x	105
Kitchener-Waterloo-Barrie	x	x	x	x	x
Hamilton-Niagara Peninsula	x	x	x	x	x
London	x	x	..	x	x
Windsor-Sarnia	F	x	x	x	x
Stratford-Bruce Peninsula	F	x	x	25	x
Northeast	..	..	..	..	x
Northwest	..	..	..	..	..
<i>Industrial butchers and meat cutters, poultry preparers and related workers (NOC 9462)</i>					
Canada	705	965	650	1,070	1,195
Ontario	145	x	105	x	210
<i>Fish and seafood plant workers (NOC 9463)</i>					
Canada	420	1,080	755	975	655
Ontario	x	x	x	..	..
<i>Shippers and receivers (NOC 1521)</i>					
Canada	2,210	2,125	3,230	2,775	2,735
Ontario	1,170	805	1,395	1,290	1,255
Ottawa	F	F	F	F	x
Kingston-Pembroke	x	F	x	15	F
Muskoka-Kawarths	..	F	F	x	F
Toronto	825	480	545	760	970
Kitchener-Waterloo-Barrie	165	F	x	x	x
Hamilton-Niagara Peninsula	F	35	160	F	F
London	x	x	x	F	x
Windsor-Sarnia	30	40	70	20	x
Stratford-Bruce Peninsula	x	x	F	..	x
Northeast	F	F	F	x	F
Northwest	F	x	x	F	F
<i>Material handlers (7452)</i>					
Canada	5,455	6,505	7,305	7,705	8,040
Ontario	x	x	x	4,550	4,785
Ottawa	F	90	165	95	x
Kingston-Pembroke	x	F	x	F	x
Muskoka-Kawarths	x	20	x	20	x
Toronto	1,785	1,725	1,680	x	x
Kitchener-Waterloo-Barrie	320	450	420	440	305
Hamilton-Niagara Peninsula	x	x	285	200	x
London	60	240	x	x	55

	2017_Q1	2017_Q2	2017_Q3	2017_Q4	2018_Q1
Windsor-Sarnia	x	x	100	90	x
Stratford-Bruce Peninsula	F	F	F	100	F
Northeast	x	35	F	F	x
Northwest	..	F	x	F	F
<i>Transport truck drivers [7511]</i>					
Canada	10,515	13,170	15,995	15,670	17,505
Ontario	3,705	4,055	5,055	4,225	5,150
Ottawa	170	485	240	F	300
Kingston-Pembroke	110	185	210	170	F
Muskoka-Kawarthas	x	F	x	x	F
Toronto	1,835	1,255	2,065	1,565	2,220
Kitchener-Waterloo-Barrie	485	725	800	650	695
Hamilton-Niagara Peninsula	x	535	F	x	545
London	225	255	x	190	330
Windsor-Sarnia	F	140	295	365	410
Stratford-Bruce Peninsula	150	140	170	155	130
Northeast	120	125	150	110	170
Northwest	x	105	100	95	100

Source: Adapted from Statistics Canada. Table 14-10-0356-01. Job vacancies and average offered hourly wage by occupation (broad occupational category), quarterly, unadjusted for seasonality.

Notes: Data has been suppressed for the following reasons: it is unavailable for a specific reference period (".."); it is suppressed to meet the confidentiality requirements of the Statistics Act ("x") or data is deemed unreliable for publication ("F").

### 3.3.4 Job Vacancies for positions with a supervisory skill level

There is little information available to provide a fair portrait of job vacancies in the Ontario food and beverage processing industry. Industrial electrician vacancies indicated below are for all industries, although the figures below might suggest competition that the sector might face in attracting workers to this occupation (Table 37). Figures regarding supervisory positions in the industry itself (NOC 9213) suggest that these fluctuate in Ontario between 50 and 80 vacancies at any given time and that a large share of these is located in the Toronto region. The demand for Bakers (NOC 6332) is closer to 470 positions nationally and figures available for Ontario suggest that it represents a large share that varies significantly from one quarter to another.

**Table 37: Job vacancies for positions with supervisory or high skill level**

	2017_Q1	2017_Q2	2017_Q3	2017_Q4	2018_Q1
<i>Supervisors, food and beverage processing [9213]</i>					
Canada	185	175	180	205	265

	2017_Q1	2017_Q2	2017_Q3	2017_Q4	2018_Q1
<b>Ontario</b>	80	50	60	x	x
<b>Ottawa</b>	x	x	x	..	..
<b>Kingston-Pembroke</b>	x	x	..	x	x
<b>Muskoka-Kawarthas</b>	x	x	..	..	..
<b>Toronto</b>	50	F	F	x	F
<b>Kitchener-Waterloo-Barrie</b>	x	x	F	x	x
<b>Hamilton-Niagara Peninsula</b>	x	x	x	x	x
<b>London</b>	x	F	x	..	x
<b>Windsor-Sarnia</b>	F	x	x	F	x
<b>Stratford-Bruce Peninsula</b>	x	..	x	x	x
<b>Northeast</b>	..	..	..	..	..
<b>Northwest</b>	..	..	..	..	..
<b><i>Industrial electricians [7242]</i></b>					
<b>Canada</b>	495	430	510	570	510
<b>Ontario</b>	210	230	245	235	245
<b>Ottawa</b>	x	x	x	x	x
<b>Kingston-Pembroke</b>	x	x	F	15	15
<b>Muskoka-Kawarthas</b>	x	x	x	x	x
<b>Toronto</b>	75	85	70	80	55
<b>Kitchener-Waterloo-Barrie</b>	45	35	40	x	70
<b>Hamilton-Niagara Peninsula</b>	x	45	35	F	30
<b>London</b>	x	10	35	20	x
<b>Windsor-Sarnia</b>	x	x	25	10	x
<b>Stratford-Bruce Peninsula</b>	..	x	x	10	10
<b>Northeast</b>	x	25	20	x	20
<b>Northwest</b>	x	x	x	x	x
<b><i>Bakers (NOC 6332)</i></b>					
<b>Canada</b>	795	965	595	760	470
<b>Ontario</b>	F	410	130	195	x

Source: Adapted from Statistics Canada. Table 14-10-0356-01. Job vacancies and average offered hourly wage by occupation (broad occupational category), quarterly, unadjusted for seasonality.

Notes: Data has been suppressed for the following reasons: it is unavailable for a specific reference period (".."); it is suppressed to meet the confidentiality requirements of the Statistics Act ("x") or data is deemed unreliable for publication ("F").

### 3.3.5 Job Vacancies for positions with a management level skill level

Job vacancies for Manufacturing managers (NOC 0911) are presented below (Table 38) as an illustration of demand for these skill job categories. Since these are not specific to the FBP industry, any conclusions would apply to the occupation across all industries

and should be used with caution. Nonetheless, it is noted that in the first quarter of 2018 there were approximately 950 job vacancies in manufacturing management, of which 35% were located in Ontario.

**Table 38: Job Vacancies for positions with a management skill level**

	2017_Q1	2017_Q2	2017_Q3	2017_Q4	2018_Q1
<i>Manufacturing managers (NOC 0911)</i>					
Canada	715	875	885	900	945
Ontario	275	445	360	385	335
Ottawa	x	35	40	x	25
Kingston-Pembroke	x	10	F	x	..
Muskoka-Kawarthas	x	x	x	x	x
Toronto	x	F	160	200	x
Kitchener-Waterloo-Barrie	x	x	55	x	50
Hamilton-Niagara Peninsula	20	x	30	x	15
London	15	20	15	x	F
Windsor-Sarnia	x	x	x	x	40
Stratford-Bruce Peninsula	x	x	F	x	x
Northeast	5	x	x	x	F
Northwest	x	..	x	x	..

Source: Adapted from Statistics Canada. Table 14-10-0356-01. Job vacancies and average offered hourly wage by occupation (broad occupational category), quarterly, unadjusted for seasonality.

Notes: Data has been suppressed for the following reasons: it is unavailable for a specific reference period (".."); it is suppressed to meet the confidentiality requirements of the Statistics Act ("x") or data is deemed unreliable for publication ("F").

### 3.3.6 Job postings for key occupations

The Ontario LMI website provides information about the number of job postings by occupation (Table 39). The number of job postings is somewhat aligned with the job vacancy data presented above. There were a greater number of postings for occupations experiencing labour gaps, but it suggests that recruitment mechanisms may be different or some positions it is easier to fill than others. For instance, in the case of Material handlers (NOC 7452), the figures below suggest that there are three times more job postings (approximately 15,000 in 2017) than job vacancies (approximately 4,500 in the last quarter of 2017).

**Table 39: Number of annual job postings in Ontario, by occupation**

	2013	2014	2015	2016	2017
<i>Management Level</i>					

	2013	2014	2015	2016	2017
<b>Manufacturing managers (0911)</b>	1,903	2,449	2,279	2,013	1,976
<i>Supervisory Level</i>					
<b>Industrial electricians (7242)</b>	62	71	120	91	83
<b>Supervisors, food and beverage processing (9213)</b>	NA	NA	NA	NA	NA
<i>Intermediate skill level</i>					
<b>Industrial butchers and meat cutters, poultry preparers and related workers (9462)</b>	57	94	92	55	78
<b>Process control &amp; machine operators, food and beverage processing (9461)</b>	139	255	220	216	216
<b>Fish and seafood plant workers (9463)</b>	NA	NA	NA	NA	NA
<b>Material handlers (7452)</b>	7,764	16,993	14,985	14,809	15,361
<b>Shippers and receivers (1521)</b>	1,378	2,527	2,184	2,197	2,301
<b>Transport truck drivers (7511)</b>	2,725	5,745	6,409	3,976	3,484
<b>Bakers (6332)</b>	435	1,033	1,095	1,314	1,155
<i>Foundational skill level</i>					
<b>Labourers in food and beverage processing (9617)</b>	0	6	1	4	3
<b>Testers &amp; graders, FBP (9465)</b>	NA	NA	NA	NA	NA
<b>Labourers in fish and seafood processing (9618)</b>	NA	NA	NA	NA	NA

Source: Adapted from Burning Glass Technologies, Labor Insight™, published in MTCU (n.d.). *Ontario's Labour Market* [Online Database].

### 3.3.7 Job outlook for key positions with a foundational skill level

On the Ministry of Training Colleges and Universities (MTCU) website on Labour Market Information (MTCU, n.d.), information is primarily geared towards individuals searching for employment and emphasis is placed on the job outlook from the perspective of employment stability or the availability of positions. The information presented below is developed based on the COPS and it has been adjusted for Ontario—looking at the projected job outlook in terms of estimated number of job openings that align with the job vacancies presented in previous sections.<sup>13</sup>

Regarding positions at the foundational skill level, the job outlook in terms of employment stability and availability is undetermined. The total projected number of job openings in the five-year period between 2017 and 2021 ranges between 4,001 and

<sup>13</sup> The information about job openings has been compiled from Ontario's Labour Market Information website. Confirmation as to the methodology used to adjust the figures for Ontario – as the original source is the Canada-wide occupational projections (COPS)—was not available from the secondary sources reviewed for this report.

5,000 for Labourers in FBP (NOC 9617) and between 401 and 500 for Testers and graders (NOC 9465). Most of these job openings (76% and 70% respectively) consist of replacement jobs, that is, job openings due to retirement, death and emigration. The data below (Table 40) indicates that employment opportunities in the Fish processing sector will be very small, as the creation of new jobs is not expected.

**Table 40: Job outlook for positions at the foundational level (2017-2021) \***

	LABOURERS IN FOOD & BEV. (NOC 9617)	TESTERS & GRADERS (NOC 9465)	LABOURERS IN FISH PROCESSING (NOC 9618)
Total projected number of job openings	4,001-5,000	401-500	<=100
Projected change in employment levels	4.1%-5%	5.1%-6%	<=0%
New jobs**	24%	30%	0%
Replacement jobs***	76%	70%	100%
Job outlook****	Undetermined	Undetermined	Undetermined

Source: Adapted from MTCU (n.d.). *Ontario's Labour Market* [Online Database].

\* Includes employment in this occupation across all industries.

\*\* Percentage of forecast job openings due to higher expected employment (net change in employment level). Negative values are shown as 0 (these represent a forecast decline in employment level).

\*\*\* Percentage of forecast job openings due to retirement, death, and emigration.

\*\*\*\* Ontario Jobs Future Rating (2017-2012). "Above average": Relative to other employment, there is better likelihood of finding stable employment in this occupation, and that employment prospects are attractive or improving; "Below average" more difficult to find employment and situation is deteriorating relative to other industries or occupations; lower likelihood of finding stable employment and lower potential for rising pay; "Average": employment situation is similar to that of other industries or occupations.

### 3.3.8 Job outlook for positions with an intermediate skill level

For most positions at the supervisory level, the job outlook for employment availability and stability is undetermined, except in the case of Bakers (NOC 6332), and Shippers and Receivers (NOC 1521). It is expected that job conditions will deteriorate relative to other industries or occupations. Yet, in the case of Transport truck drivers (NOC 7511) it is expected that employment conditions will improve relative to other industries.

The total number of projected job openings between 2017 and 2021 ranges between 2,000 and 3,000 positions for both Process control and machine operators (NOC 9461) and for Bakers (NOC 6332). An estimated 800 to 900 job openings are predicted for Industrial butchers (NOC 9462). Much greater pressure is expected in the case of Shippers and Receivers (NOC 1521) with job openings projected in the range of 6,000 to 7,000; for Material handlers (NOC 7452) with openings projected in the range of 7,000



to 8,000; and for Transport truck drivers (NOC 7511) where a staggering 20,000 job openings is projected between 2017 and 2021.

Most of the job openings projected result from replacement jobs due to retirement, death or emigration, particularly in the case of Process control & machine operators (NOC 9461), Material handlers (NOC 7452) and Shippers & receivers (NOC 1521) where the share of replacement jobs is between 90% and 100% (Table 41).

**Table 41: Job outlook for positions with an intermediate skill level (2017-2021) \***

	PROCESS CONTROL & MACHINE OPERATORS (NOC 9461)	INDUSTRIAL BUTCHERS & EQUIVALENT (NOC 9462)	BAKERS (NOC 6332)	FISH & SEAFOOD PLANT WORKERS (NOC 9463)	MATERIAL HANDLERS (NOC 7452)	SHIPPERS & RECEIVERS (NOC 1521)	TRANSPORT TRUCK DRIVERS (NOC 7511)
Total projected # of job openings	2,001-3,000	801-900	2,001-3,000	<=100	7,001-8,000	6,001-7,000	>20,000
Projected change in employment	<=0%	2.1%-3%	2.1%-3%	2.1%-3%	<=0%	1.1%-2%	6.1%-7%
New jobs**	0%	17%	23%	13%	0%	10%	31%
Replacement jobs***	100%	83%	77%	87%	100%	90%	69%
Job outlook****	Undetermined	Undetermined	Below average	Undetermined	Undetermined	Below average	Above average

Source: Adapted from MTCU (n.d.). *Ontario's Labour Market* [Online Database].

\* Includes employment in this occupation across all industries.

\*\* Percentage of forecast job openings due to higher expected employment (net change in employment level). Negative values are shown as 0 (these represent a forecast decline in employment level).

\*\*\* Percentage of forecast job openings due to retirement, death, and emigration.

\*\*\*\* Ontario Jobs Future Rating (2017-2012). "Above average": Relative to other employment, there is better likelihood of finding stable employment in this occupation, and that employment prospects are attractive or improving; "Below average" more difficult to find employment and situation is deteriorating relative to other industries or occupations; lower likelihood of finding stable employment and lower potential for rising pay; "Average": employment situation is similar to that of other industries or occupations.

### 3.3.9 Job outlook for key positions with a supervisory skill level

At the supervisory level, the outlook for industrial electricians in all manufacturing industries is average. In the case of supervisors in the food and beverage industry (NOC 9213), between 1000 and 2000 new job openings are expected between 2017 and 2021, 80% of which are replacements jobs (Table 42).

**Table 42: Job outlook for positions at the supervisory level (2017-2021) \***

	<b>SUPERVISORS FBP (NOC 9213)</b>	<b>INDUSTRIAL ELECTRICIANS (NOC 7242)</b>
<b>Total projected number of job openings</b>	1,001-2,000	1,001-2,000
<b>Projected change in employment levels</b>	4.1%-5%	7.1%-8%
<b>New jobs**</b>	21%	37%
<b>Replacement jobs***</b>	79%	63%
<b>Job outlook****</b>	Undetermined	Average

Source: Adapted from MTCU (n.d.). *Ontario's Labour Market* [Online Database].

\* Includes employment in this occupation across all industries.

\*\* Percentage of forecast job openings due to higher expected employment (net change in employment level).

Negative values are shown as 0 (these represent a forecast decline in employment level).

\*\*\* Percentage of forecast job openings due to retirement, death, and emigration.

\*\*\*\* Ontario Jobs Future Rating (2017-2012). "Above average": Relative to other employment, there is better likelihood of finding stable employment in this occupation, and that employment prospects are attractive or improving; "Below average" more difficult to find employment and situation is deteriorating relative to other industries or occupations; lower likelihood of finding stable employment and lower potential for rising pay; "Average": employment situation is similar to that of other industries or occupations.

### 3.3.10 Job outlook for key positions with a managerial skill level

Expected job openings for Manufacturing managers (NOC 0911) may reach 7,000 in total between 2017 and 2021. Table 43 presents an overview below. Although this figure is for the manufacturing sector as a whole, it suggests greater competition across industries. In particular, 84% of these openings are resulting from replacement jobs, which requires training individuals to be ready to work at these levels of responsibility, which, as illustrated in Section 2, requires often more than 10 years of professional experience in the industry.

**Table 43: Job outlook for positions with a managerial level (2017-2021) \***

	<b>MANUFACTURING MANAGERS (NOC 0911)</b>
<b>Total projected number of job openings</b>	6,001-7,000
<b>Projected change in employment levels</b>	3.1%-4%
<b>New jobs**</b>	16%
<b>Replacement jobs***</b>	84%
<b>Job outlook****</b>	Average

Source: Adapted from MTCU (n.d.). *Ontario's Labour Market* [Online Database].

\* Includes employment in this occupation across all industries.

\*\* Percentage of forecast job openings due to higher expected employment (net change in employment level). Negative values are shown as 0 (these represent a forecast decline in employment level).

\*\*\* Percentage of forecast job openings due to retirement, death, and emigration.

\*\*\*\* Ontario Jobs Future Rating (2017-2012). "Above average": Relative to other employment, there is better likelihood of finding stable employment in this occupation, and that employment prospects are attractive or improving; "Below average" more difficult to find employment and situation is deteriorating relative to other industries or occupations; lower likelihood of finding stable employment and lower potential for rising pay; "Average": employment situation is similar to that of other industries or occupations.

### 3.4. CURRENT & FUTURE SUPPLY

#### **HIGHLIGHTS**

*Ontario's population growth rate is expected to be moderate and slow down from a 1.3% increase annually from 2016 to 2021, to a 1% annual increase by 2031. This translates into an increase of \$14 million people in 2016 to approximately \$16.4 million by 2031. Population aging is expected to continue to have a detrimental impact on the availability of labour as the core working age group (ages 15-64) is expected to represent a smaller share of the population. Immigration is expected to be a major driving force of population growth and population growth is expected to remain stronger in the GTA compared to other Ontario regions.*

#### **3.4.1 Ontario's demographic trends**

In 2016, Ontario's population was close to \$14 million and it is expected to continue to increase, reaching \$15.6 million by 2026 and approximately \$16.4 million by 2031. The growth rate is expected to be moderate, slowing down from 1.3% annually between 2016 and 2021 to 1% annually by 2031. Population aging will continue with the share of the population 65 years old and more increasing from 16.4% in 2016 to 23.6% by 2031 (Ontario Ministry of Finance, 2017).<sup>14</sup> Population ageing has a direct impact on the core

<sup>14</sup> The Ontario Ministry of Finance produces low, medium and high projections. The results presented here correspond to the medium or base scenario projected (Ontario Ministry of Finance, 2017).

working age group (ages 15-64) and “from 2016 until the late 2020s, the passage of large cohorts of baby boomers into retirement age will be the main factor influencing the moderation of growth in the core working-age group” (Ontario Ministry of Finance, 2017, p.17).

**Table 44: Ontario Long-Term Demographic Projections (Base Case)**

	2016	2021*	2026*	2031*
<b>Population (millions)</b>	13.98	14.79	15.61	16.43
<b>Average Annual Growth**</b>	1.1	1.3	1.1	1.0
<b>Age Distribution (%)</b>				
0-14	15.9	15.8	15.7	15.7
15-64	67.8	65.6	63.0	60.7
65+	16.4	18.7	21.3	23.6

Source: Adapted from Ontario Ministry of Finance (2017).

\*Projections. \*\*Annual average growth from previous year listed (%)

Given projected low fertility rates and continued population aging, (Table 44), immigration is expected to be the main driver of population growth and “is expected to remain strong” (Ontario Ministry of Finance, 2017, p.13). Furthermore, “future growth of the core working-age group will come exclusively from net migration” (Ontario Ministry of Finance, 2017, p.18). Population growth in the GTA is expected to remain stronger than in other regions of the province (Ontario Ministry of Finance, 2017).

### 3.4.2 Ontario's labour force

With population aging and the slower growth expected for the core working-age group in Ontario, it is expected that Ontario's labour force will not increase as fast as in the past, likely contributing to a slower rate of GDP growth in the province. With this, “encouraging productivity growth can help mitigate the impact of slower labour force growth” (Ontario Ministry of Finance, 2017, p.24) and immigration of highly skilled workers will become more important. Policies “to help newcomers integrate smoothly into the labour market,” such as tuition-free language programs or support “in gaining their licence or certificate in their profession or trade,” (Ontario Ministry of Finance, 2017, p.26) will also be important.

Given the ageing population, policies to retain older workers and reduce barriers will also be important, including support for “flexible retirement plans such as the gradual reduction of working hours while contributing to pension plans; providing flexible work schedules; offering opportunities for older workers to upgrade skills; supporting work/life balance; and promoting the health and well-being of employees in the workplace” (Ontario Ministry of Finance, 2017, p.26). Youth unemployment also

remains high and support for this age group can also help boost the labour force, such as increasing participation rates in post-secondary education, providing experiential learning opportunities, and offering job-readiness training, job matching and job placements opportunities (Ontario Ministry of Finance, 2017). Opportunities for other groups, such as women, individuals with disabilities, and aboriginal communities can also help counteract the projected changes in the labour force.

### 3.4.3 Labour supply for Ontario's Food and beverage processing industry

#### **Data Gaps**

- *ESDC's Canadian Occupational Projection System produces labour supply information by occupation and, for Canada, there is no quantitative information describing the labour supply for Ontario food and beverage processing. The estimates produced by COPS are presented for illustrative purposes in Section 3.5 Employment Gaps.*
- *Most information regarding labour supply qualitatively describes the challenges employers face, which arise from the demographic trends presented above. These challenges are described in Section 3.5 Employment Gaps (demand vs supply).*

## 3.5. EMPLOYMENT GAPS (DEMAND VS SUPPLY)

#### **HIGHLIGHTS**

*Although Canada-wide projections by COPS indicate that future labour demand and supply are expected to be balanced for most occupations key to the food and beverage processing industry, employers in the manufacturing industry describe challenges finding an adequate supply of employees. Some of the reasons behind these shortages result from demographic changes, such as the retirement of an aging population that brings along the challenge of replacing experience and acquired skills. The challenges result in an increased reliance on immigrant workers and the need to develop strategies to attract young workers and underrepresented groups. However, lack of awareness by potential employees of the opportunities available in the sector (e.g., range of jobs and employment settings, benefits and job security), and competition with other industries that might have a more attractive profile, result in challenges attracting new workers to the industry.*

### 3.5.1 Outlook for employment in Canada

COPS has produced estimates of the employment outlook for all occupations relevant to the manufacturing industry at the Canadian level for 2017 to 2026. The results from these projections indicate that, for most occupations, it is expected that the outlook will be balanced; there is no shortage expected in the future. The only case where a shortage is expected is that of Transport Truck Drivers.

Projections are presented here for background information as these might guide some policy considerations by government officials. However, these quantitative findings seem to contradict the experience related by employers (section 3.5.2 Shortages in Labour Supply).

**Table 45: Summary of Job Outlook, Key Occupations, Canada**

OCCUPATION TITLE	EMPLOYMENT (2016)	PROJECTED JOB OPENINGS (2017-2026)	PROJECTED JOB SEEKERS (2017-2026)	RECENT OUTLOOK (2014-2016)	FUTURE OUTLOOK (2017-2026)
Managers in manufacturing and utilities	80,500	30,600	29,100	Balance	Balance
Longshore workers and material handlers	185,100	50,400	46,300	Balance	Balance
Shippers and receivers	113,700	29,100	25,900	Balance	Balance
Transport truck drivers	304,000	114,700	103,200	Balance	Shortage
Industrial electricians & Power system electricians	33,100	14,500	13,300	Balance	Balance
Process control and machine operators, food, beverage and related products processing; Fish and seafood plant workers & Testers and graders, food, beverage and related products processing	61,500	24,100	22,600	Balance	Balance
Labourers in food, beverage and related products processing & Labourers in fish and seafood processing	53,300	16,600	16,900	Balance	Balance
Supervisors, food, beverage and related products processing	20,200	8,400	7,900	Balance	Balance
Industrial butchers and meat cutters, poultry preparers and related workers	18,300	6,600	6,200	Balance	Balance
Bakers	40,600	14,300	13,500	Balance	Balance

Source: Adapted from ESDC (2018b).



### 3.5.2 Shortages in labour supply

Employers in the manufacturing industry, and more specifically in the food and beverage processing sector, describe challenges finding an adequate supply of employees for the positions they have available. Some of the reasons behind the shortages described echo the demographic changes noted above. For instance, the 2017 report *The Future of the Manufacturing Labour Force in Canada* notes that 86% of Canadian manufacturers “find it challenging to hire the skilled workers they need. This shortage is expected to worsen in the coming decade as manufacturers strive to replace more than 22% of their workforce due to retirement” (MNP, n.d., p.5). In addition to facing an aging workforce, several companies in the industry indicate their “inability to attract young workers” (TWIG, 2017).

The replacement of experienced workers also highlights the associated challenge that “replacing the ageing workforce will pose challenges in the replacement of experience and acquired skills” (TWIG, 2017, p. 9), which leads to the need to develop adequate training opportunities as highlighted in Section 4. These challenges are not specific to the food and processing industry but rather are considered pervasive and a growing challenge in Ontario. Employers cite that skills deficits in “competencies such as communication, emotional intelligence, creativity, design, interpersonal skills, entrepreneurship, technological skills and organizational awareness (OCC, 2017, p.4) can cause recruitment issues.

Other challenges impacting the labour supply in the FBP sector include reliance “on immigrants with low educational attainment to fill vacant positions. Changes to immigration policy and the characteristics of Canadian newcomers will limit future labour supply from this demographic” (TWIG, 2017, p. 9). In addition, a lack of awareness by potential employees of the opportunities available in the sector (e.g., range of jobs and employment settings, benefits, and job security), and competition with other industries that might have a more attractive profile, can result in challenges to attract new workers to the industry (TWIG, 2017).

To mitigate recruitment and retention problems, combined with an aging workforce, human resource professionals will need to develop innovative ways to attract employees from an increasingly diverse workforce (Food Agriculture Communities Environment, 2014). A report for the Intergovernmental Committee on Economic and Labour Force Development (ICE) in Toronto made the following recommendation:

Recognize and address systemic obstacles to improved recruitment and retention. Working conditions appear to be a significant contributor to recruitment challenges and poor employee retention. Production work can be physically demanding and repetitive, and working environments may include noise, temperature fluctuations and strong odours. These conditions, coupled with low wages, can make the work unattractive. Addressing systemic obstacles requires employer participation and, optimally, the backing of industry associations (TWIG, p.20).

## 4. CURRENT SOURCES OF TRAINING AND SKILL DEVELOPMENT

### **Overview**

*The credential and certification requirements for positions in the food and beverage processing industry are quite diverse, depending on the level of responsibility, the type of position, and the specific requirements of each sub-industry. Entry-level production jobs generally do not require any experience and may not require a secondary school diploma, but as the degree of specialization or knowledge required for the occupation increases, so do the expectations for specific training and education requirements. Program offerings in Ontario range from specialized secondary school programs, and apprenticeships, to college diplomas and certificates, and undergraduate university degrees.*

*Secondary school districts across the province offer specialized focus programs for upper-level students to receive skills training. For instance, both the Ontario Youth Apprentice Program (OYAP) and the Specialist High Skills Major (SHSM) allows students to earn credits toward their secondary school diploma while working toward specialization in a skilled trade. With this foundational training, students can go on to receive additional skills training through a post-secondary program or an apprenticeship.*

*28 school districts throughout Ontario offer the SHSM program and 40 districts offer the OYAP program to grade 11 and grade 12 students. While the education pathways may be different for each student, these programs offer training and hands-on experience relevant to positions in baking and culinary arts (NOC 6332/6322), food safety and sanitation (NOC 6711), food processing (NOC 9617), and a variety of entry-level manufacturing process operator positions (for example, NOC 9461).*

*Apprenticeships work to train and certify individuals in a skilled trade with a combination of on-the-job training and post-secondary education. There are currently 14 apprenticeships offered in Ontario in collaboration with 10 colleges. Among these apprenticeships, the main areas of focus include baking and culinary arts, and process operating in food processing.*

*17 colleges in Ontario offer a total of 75 diploma or certificate programs relevant to the food and beverage processing industry. Among those offered are food-based programs including, culinary innovation and food technology; operation leadership in food manufacturing; culinary management; and baking and pastry arts. These programs range from full-time advanced diploma certification, to part-time certificate programs, and are tailored to attract both students and industry professionals.*

*Across 5 universities in Ontario, 13 programs focus on areas of study related to the industry, including food technology and food science. A number of these programs offer both undergraduate and graduate pathways with options to specialize in a variety of food-based research topics.*

*Despite the large number of offerings overall, there is a lack of skills training targeted toward positions in food processing and manufacturing, instead offering a variety of culinary-based programs that do not satisfy the immediate skills needs of the industry. While state-of-the-art testing kitchens in post-secondary institutions offer much needed practical training and development space, a lack of awareness of training options and inconsistent enrolment numbers indicate that these resources may not be used to their full potential.*

## **4.1. SECONDARY SCHOOLS**

### **HIGHLIGHTS**

*Secondary school districts across the province offer specialized focus programs for upper-level students to receive skills training. For instance, both the Ontario Youth Apprentice Program (OYAP) and the Specialist High Skills Major (SHSM) allow students to earn credits toward their secondary school diploma while working towards specialization in a skilled trade. With this foundational training, students can go on to receive additional skills training through a post-secondary program or an apprenticeship. There are also a number of specific initiatives offer by some school boards that are relevant to the food and beverage processing industry, including competition, industry-specific course packs or training for manufacturing in general.*

*28 school districts throughout Ontario offer the SHSM program and 40 districts offer the OYAP program to grade 11 and grade 12 students. While the education pathways may be different for each student, these programs offer training and hands-on experience relevant to positions in baking and culinary arts (NOC 6332/6322), food safety and sanitation (NOC 6711), food processing (NOC 9617), and a variety of entry-level manufacturing process operator positions (for example, NOC 9461).*

There are a few programs offered in secondary schools across Ontario tailored to developing skills and encouraging exploration into skilled trades and careers in the food and beverage processing industry. While the education pathways may be different for each student, most programs foster skills in baking, culinary arts, and kitchen skills and offer training and hands-on experience relevant to positions in baking and culinary arts (NOC 6332; NOC 6322), food safety and sanitation (NOC 6711), and a variety of entry-level manufacturing process operator positions (for example, NOC 9461). Appendix D: Secondary Programs includes the full list of programs offered by school districts and details for each are provided below. Graduates of these programs will be well equipped to enter relevant training programs at post-secondary educational institutions.

### **4.1.1 Ontario Youth Apprentice Program (OYAP)**

High school students interested in specific training for a skilled trade may be eligible to participate in the Ontario Youth Apprentice Program (OYAP). Following the format of a co-

operative education program, students can earn credits toward their Ontario Secondary School Diploma (OSSD) while receiving skills training and hands-on workplace experience in a skilled trade. Interested students must be enrolled full-time in grade 11 or grade 12. Each secondary school has an OYAP program advisor that will assess student needs and eligibility and offer more information about specific apprenticeship placements. Students then enrol directly with the Ministry of Training, Colleges, and Universities (MTCU) to complete their apprenticeship placement. Among the list of trades offered by MTCU are several occupations related to the food processing industry:

- Baker (NOC 6332)
- Baker-pâtissier (NOC 6332)
- Cook (NOC 6322)
- Chef (NOC 6321)
- Process Operator- Food Manufacturing (NOC 9461)

Following graduation, students will have a good understanding of the theoretical and practical applications of a trade and may apply to college programs or apprenticeships specializing in that trade (Ontario Youth Apprenticeship Program [OYAP], 2018). In total, 40 out of 83 school districts across Ontario are registered to participate in this program through the Ministry of Training, Colleges, and Universities.

#### ***4.1.2 Specialist High Skills Major Program (SHSM)***

High school students who wish to take course credits in a specialized area of interest may participate in the Specialist High Skills Major (SHSM) program. Approved by the Ministry of Training, Colleges, and Universities (MTCU), the program allows grade 11 and grade 12 students to enrol in industry-focused courses and co-op placements tailored to a number of employment sectors (Specialist High Skills Major [SHSM], n.d.). Those specializations offered that are relevant to the food and beverage processing industry are:

- Food Processing
- Hospitality and Tourism
- Manufacturing

These areas of specialization provide courses and co-op placements tailored to careers in baking and culinary arts, food service, food processing, and product manufacturing. In total, 28 school districts across Ontario offer the SHSM program in one of these three specializations. Appendix D: Secondary Programs lists the school districts participating in the SHSM program.

Among these participating school districts, four secondary schools in particular offer a SHSM in Food Processing, including Mitchell DHS (in the Avon Maitland School District), École

Secondaire L'Académie de la Seigneurie (Conseil d'écoles publiques de l'Est de l'Ontario), St. Jean de Brebeuf Catholic Secondary School (in the Hamilton-Wentworth Catholic District School Board) and Fellowes High School (in the Renfrew County District School Board) (SHSM, n.d.). The SHSM stream in Food Processing is designed to give students the knowledge and skills needed to succeed in the food processing industry. Participating students will be equipped to pursue further education in an apprenticeship program or post-secondary institution or begin work in an entry-level industry position (SHSM, n.d.).

All students in the Food Processing SHSM program must complete four core industry training components: CPR, Food Safety, Standard First Aid, and WHMIS.<sup>15</sup> Students may then choose between a variety of sector-specific courses including Food Handler Certification, cleaning and sanitation in food processing, and supply chain management (SHSM, n.d.). As part of the program, students may also have the opportunity to participate in industry co-op placements, food processing plant tours, and industry skills competitions or trade shows (SHSM, n.d.).

Specializations within the Food Processing SHSM program also give students a chance to tailor course selections to their interests and career pathways. For instance, courses and work placements in food manufacturing may interest students hoping to participate in a Process Operator- Food Manufacturing apprenticeship (NOC 9461). A focus in food science, however, may suit students aiming to pursue post-secondary education in food technology or food science (SHSM, n.d.).

While the Food Processing SHSM stream is new for the 2018-2019 academic year for two school districts (Renfrew County DSB and Avon Maitland DSB), there have been efforts made to promote this program offering to other secondary schools in the province. For instance, the Taste Your Future campaign has partnered with the Ontario School Councillor's Association to promote industry-related programs and to encourage schools across the province to consider offering the SHSM-Food Processing program stream in their district (Food and Beverage Ontario, n.d.).

#### ***4.1.3 Special initiatives***

In addition to OYAP and SHMS, there are a number of special initiatives that are relevant to the food and beverage processing industry. For instance, the District School Board of Niagara offers the "DSBN Skills Challenge," a competition designed to encourage interest and reward skills and professionalism in industry-related careers. The baking and culinary arts section of the competition has students cook and display hot and cold dishes according to industry requirements and practices. The competition is an opportunity to showcase new culinary and baking trends and offers a chance for students to gain experience and recognition in a skilled trade (District School Board of Niagara [DSBN], n.d.).

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<sup>15</sup> WHMIS training offered is generic instruction and not site-specific (SHSM, n.d.).

Similarly, the Limestone District School Board offers course packs connected to post-secondary pathways in college, university, or through an apprenticeship. Among these are the “Baking and Business” program designed to teach students essential skills in baking and bakery management, and a “Cook’s Internship” program that focuses on food preparation and presentation (Limestone District School Board, 2018).

The Hamilton-Wentworth District School Board offers the ELATE III program. The program introduces students to basic manufacturing skills and provides participants with the experience to transition into a career in the manufacturing industry. Students learn basic technical skills over a 32-week period and are trained in manufacturing processes and safety protocol. While the program description does not offer a specific connection to food manufacturing, the skills students learn in this program would provide a foundation for work specifically in the food and beverage processing industry (Industry-Education Council [IEC], n.d.).

Other initiatives relevant to the industry include the School College Work Initiative (SCWI) in kitchen production and food preparation offered by the Grand Erie District School Board in collaboration with Fanshawe College (Grand Erie District School Board, 2018); the Catering with Class Program offered in the Trenton High School in Belleville (Hastings and Prince Edward District School Board, 2017); and the Dual Credit Program offered by St. Clair College through the St. Clair Catholic District School Board offering a Baking and Pastry Arts program (St. Clair Catholic District School Board, 2018). More details about these initiatives are listed in Other Initiatives in Appendix D.

## 4.2. ON-THE-JOB TRAINING

### HIGHLIGHTS

*On-the-job training for entry-level positions is frequently offered for a range of positions in the industry, as employers often have difficulty finding outside candidates who already possess the required training or experience in the field.*

As described in Section 2, the educational and skills requirements for positions in the food and beverage processing industry are quite diverse and depend on the type of position and the level of responsibility associated with that position. Overall, positions at different skill levels come with several training requirements, illustrating the expected skill progression workers will develop as they gain experience.

Table 46 illustrates the on-the-job training required by skill level for several key occupations in the industry. Training for Foundational Skill Level positions is most often performed on-site. Labourers in food and beverage processing (NOC 9617) do not typically require a secondary school diploma (although it is often preferred) and instead receive on-the-job training in the required workplace skills. Obtaining this experience and skills on-the-job is often the foundation to reach higher skill level positions as employers often have difficulty finding outside candidates who already possess the required training or experience in the field.



As workers in the Foundational Skill Level receive training and refine their skills, they may progress into Intermediate and High Skill Level positions in occupations such as industrial butchery, machine operations, or other supervisory roles (NOC 9213). For instance, a 2015 survey of employers in the cheese making industry highlighted that most survey respondents had never filled a cheese maker position with a candidate from outside their plant. Instead, on-the-job training is the main strategy for finding suitable internal candidates and filling higher skilled positions (Soucie & Farrar, 2015). The process is similar in poultry processing as employers typically hire entry-level positions and train workers to move from packing and sanitation to directly handling poultry processing, where specialized skills in meat cutting would require on-site training and development (FPHRC, 2017a).

While Foundational Skill Level positions may not require previous job experience or education, on-the-job training to reach higher skilled positions is crucial within processing plants and this skill level progression is common throughout the industry. Supervisory positions require additional skills training along with Workplace Hazardous Materials Information System (WHMIS) and food safety training.

**Table 46: On-the-job training by skill position**

<b>FOUNDATIONAL SKILL LEVEL</b>
<b>Labourers in food and beverage processing (NOC 9617)</b>
Training for foundational skill level jobs most often occurs on the job; job shadowing is important for these entry-level positions.
<b>INTERMEDIATE SKILL LEVEL</b>
<b>Industrial butchers and meat cutters, poultry preparers and related workers (NOC 9462)</b>
<b>Process control and machine operators, food and beverage processing (NOC 9461)</b>
Workers in this job class typically receive training on the job and also receive WHMIS, food safety and food safety management training. Workers who start in Foundational Skill Level Positions often progress into Intermediate Skill Level positions as they gain additional experience and training.
<b>HIGH &amp; SUPERVISORY SKILL LEVEL</b>
<b>Supervisors, food and beverage processing (NOC 9213)</b>
<b>(High-skill level)</b> Additional training related to supervising workers may be provided in-house. Workers receive WHMIS, food safety and food safety management system training. Workers in Intermediate Skill Level positions often advance to High Skill Level positions as they gain additional experience and training. <b>(Supervisory skill level)</b> Additional training in relation to production management, supervising and employee management may be required and provided by the company. It is typical for supervisors to begin at the Foundational Skill Level, and with experience and additional training, progress to supervisory roles. Supervisors must complete WHMIS, food safety and food safety management training.
<b>MANAGEMENT LEVEL</b>
<b>Manufacturing managers (NOC 0911)</b>
<b>No information – not pertinent.</b>

Source: Adapted from FPHRC (2017a), FPHRC (2017b), FPHRC (2017c)

While on-the-job skills training is unique to each position, all skill levels typically receive soft skills training aimed to encourage group mentorship and team building (Futureworx Society, 2018). This training can contribute towards improving some of the workplace essential skills discussed in Section 2 such as “working with others” or “oral communication.” For instance, group workshops, coaching and counselling support, and short talks or sessions run on an as-needed basis can offer soft skills support for employees. Some organizations offer their own structured training programs to address specific needs, while others provide training resources from another organization, including for instance:

- The Employability Skills Assessment Tools (ESAT), a framework used to assess individuals in 9 workplace-related skills: motivation, attitude, accountability, time management, stress management, presentation, teamwork, adaptability, and confidence (Futureworx Society, 2018); and
- The Employment Readiness Scale that works to assess strengths and challenges to employability, identifying helpful resources and predicting employment opportunities as a result of these aids (Futureworx Society, 2018; ERS Scale Inc., n.d.).

Although online learning programs are not commonly used, e-learning is being increasingly used for training in general health and safety measures across the foods industry (Toronto Food Sector, 2010). Specific online training programs have been designed to be accessible to those whose first language is not English, developing interactive, skill-based learning programs for ESL (English as a Second Language) employees. Industry organizations also offer training and education programming on-site, increasing accessibility to those plants that may not have otherwise had access to skills-based training (Toronto Food Sector, 2010).

### 4.3. APPRENTICESHIPS

#### **HIGHLIGHTS**

*Apprenticeships work to train and certify individuals in a skilled trade with a combination of on-the-job training and post-secondary education. There are currently 14 apprenticeships offered in Ontario in collaboration with 10 colleges. Among these apprenticeships, the main areas of focus include baking and culinary arts, and process operating in food processing.*

There are several occupations in the food and beverage processing industry that require advanced skills training under the supervision of a mentor or trainer where an apprenticeship is an appropriate pathway. An apprenticeship is a work-based training program designed for those interested in working in a skilled trade. Apprentices learn those training standards recognized as essential to their trade of interest, training between 2-5 years before receiving certification (Ontario College of Trades, 2015).

Apprenticeships in Ontario are regulated by the *2009 Ontario College of Trades and Apprentices Act*. The College awards members a Certificate of Qualification upon completing their training hours and maintains a register of its members including journeypersons, apprentices,



journey person candidates, tradespersons, and sponsor employers. Individuals who complete an apprenticeship receive a Certificate of Apprenticeship from the Ontario College of Trades. Apprentices can then apply for a Certificate of Certification in their trade, which qualifies them for membership in the College's Journey person Class. Some trades, such as cook, require a written examination before receiving the Certificate of Qualification. Following this certification, membership as a journey person in the College of Trades must be renewed each year (Ontario College of Trades, 2015). Several trades are also eligible for Red Seal certification in Ontario. This certifies the skilled worker to work in other provinces or territories without additional qualification tests or paperwork. In Ontario there are 50 trades, including general machinist, and cook, which are eligible for the Red Seal written examination (Ontario College of Trades, 2015).

As outlined by the Ontario College of Trades (2015), there are several steps that must be completed to become an apprentice:

- Those interested in receiving training as an apprentice must find a sponsor willing to provide hands-on training that meets the standards of the Ontario College of Trades and Apprentices. The sponsor may be a third-party sponsor, an individual trainer, or an employer.
- Interested apprentices must first register as members of the Ontario College of Trades and show proof of sponsorship by an employer.
- Once registered, apprentices receive 90% of their training by a skilled trainer in the workplace while the remaining hours are completed through in-school instructional training with a participating educational institution.
- In-school training may be available full-time, in evening classes, or through online programming. Training is delivered by a partnership with the Ministry of Training, Colleges, and Universities, and the Ontario College of Trades.
- The sponsor is required to sign off on accomplished training sections as the apprentice meets them.
- Apprentices are paid for their training time and wages increase as the apprentice gains skills and work experience.

The following trades relevant to the food and beverage processing industry have apprenticeships certified through the Ontario College of Trades: Baker/Baker-Pâtissier (NOC 6332), Institutional cook (NOC 6322), Assistant cook (NOC 6322), Cook (NOC 6322), and Process operator- food manufacturing (NOC 9461). While each apprenticeship requires both in-class training and on-the-job training, Table 47 presents an overview of the unique requirements for apprenticeships relevant to the sector, including the required number of in-class instruction hours and on-site skills training and experience. Requirements are specified both in required hours and in the average amount of time needed to complete both training components. A number of instructional components are specified for each apprenticeship and, regardless of the occupation, food safety training is a focus of many of the programs, including sanitation, food safety and security, and overall health and safety.

For instance, Process operator- food manufacturing (NOC 9461) includes training instruction in safety management, electricity and instrumentation, and mechanical techniques and tools. Taking an average of 2.5 years to complete, the apprentice must complete 480 hours of in-class instruction and an additional 4000 hours of on-site training before being eligible for a Certificate of Qualification from the Ontario College of Trades.

The number of required course credits and the program length varies depending on the apprenticeship program offered. There does not seem to be a link when comparing the program length data with the number of course credits required for each program. In all cases, required in-class training hours are determined by the College of Trades and institutions structure program offerings around these parameters.

**Table 47: Industry-related apprenticeships**

APPRENTICESHIP	COLLEGES OFFERED	RED SEAL	SAMPLE INSTRUCTIONAL COMPONENTS	REQUIRED TRAINING HOURS
Process operator-food processing (NOC 9461)	Conestoga College (5 credits)	N/A	-Food safety and security -Mechanical techniques and tools -Electricity and instrumentation -Safety management	4,480 hrs. (2.5 yrs.)  = 4,000 hrs. work experience+ 480 hrs. school instruction
Baker/ Baker-Pâtissier (NOC 6332)	George Brown College (13 credits)	Yes	-Workplace health and safety -Sanitation and baking equipment operation -Bakery Management -Calculations, ratios, inventory control	7,000 hrs. (3.5 yrs.)  = 6,130 hrs. work experience + 870 hrs. school instruction
Assistant cook (NOC 6322)	St. Lawrence College (11 credits)	No	-Applied safety procedures -Basic food theory -Basic numbers and basic calculations -Sanitation, safety, and equipment	3,000 hrs. (1.5 yrs.)  = 2,640 hrs. work experience+ 360 hrs. school instruction
Cook (NOC 6332)	Algonquin College (12 cr) Canadore College (17 cr) Conestoga College (7 cr) Fanshawe College (N/A) George Brown College (13 cr) Humber College (16 cr) Lambton College (16 cr) Niagara College (15 cr) St. Lawrence College (7 cr) Sault College (14 cr)	Yes	-Culinary techniques -Kitchen management -Communications and calculations -Bake and pastry theory	6,000 hrs. (3 yrs.)  = 5, 280 hrs. work experience+ 720 hrs. school instruction

Note: See Appendix E: College Programs for sources.

Most apprenticeship programs offered in Ontario colleges are culinary- based. While training in food safety and food handling is important for the food processing industry, skilled cooks do not necessarily work on the front lines in processing plants. However, the combination of culinary skills and food science technology is an emerging trend in food and beverage-related careers. College programs such as “Food science technology” at Centennial College or “Culinary innovation and food technology” at Niagara College prepare students for careers in food product development or food researchers in the food and beverage processing industry. Skilled apprenticeship training in an industry-related trade, such as baker or cook, would equip students with the practical culinary background to then focus on a science-based advanced diploma. Culinary apprenticeship training would also provide an excellent framework for further studies in winery and viticulture, such as the “Winery and viticulture technician” program or in brewery operations in the “Brew master and brewery operations manager” program, both at Niagara College.

With a clear connection to the industry, Conestoga College offers a “Process operator- Food manufacturing” apprenticeship. Comprised of 300 in-class hours, the program is designed to provide a balance of theoretical knowledge and hands-on training to students interested in a career in the food processing industry. The course covers food safety and security; food manufacturing and the environment; electrical and instrumentation techniques; mechanical techniques; communication and computer skills; and continuous quality improvement. The apprentice must also demonstrate completion of 4,000 hours of on-the-job training with a mentor before receiving a Certificate of Qualification and certification as a journeyperson with the Ontario College of Trades.

For those individuals interested in a skilled trade who lack previous workplace experience or educational requirements, a Pre-apprentice Training program is recommended. The program helps previously unemployed individuals gain skills and increase their eligibility for further apprentice training after graduation. While each program may offer a variety of components, participants usually receive academic upgrading, safety training, employment readiness training, and an 8 to 12-week work placement, at no cost to the participant. Eligible candidates are youth or adults not in high school or college or are currently enrolled or about to enter college. Interested individuals may search for the Pre-apprentice Training program in their area, typically offered by a college or community organization; a directory of programs and locations is unavailable through online government of Ontario resources. While the Pre-apprentice Training program offers valuable skills experience for workplace preparation, the lack of program and location documentation could result in low participation.

#### 4.4. COLLEGES

##### **HIGHLIGHTS**

*Seventeen colleges in Ontario offer a total of 75 diploma or certificate programs relevant to the food and beverage processing industry. Among those offered are food-based programs*

*including culinary innovation and food technology; operation leadership in food manufacturing; culinary management; and baking and pastry arts. These programs range from full-time advanced diploma certification, to part-time certificate programs and are tailored to attract both students and industry professionals.*

#### 4.4.1 Certificates and diplomas

Apprenticeships and secondary school training programs aim to develop the necessary skills for the industry; however, as manufacturing goes through consistent shifts there is still concern about how to match job seekers to the correct skillset needed for the position. Specialized training institutions in Ontario help encourage new students for careers within the industry with targeted programs and apprenticeship opportunities within the sector.

There are 17 colleges in Ontario that offer food-based certificate or diploma programs for students or industry professionals. Most of these institutions are located in southern Ontario, including a number of colleges in Toronto and Ottawa. Table 48 outlines the locations of these colleges.

**Table 48: Geographic Distribution of Ontario Colleges Offering Programs Relevant to Food & Beverage Processing**

LOCATION	INSTITUTION
Barrie	Georgian College
Belleville	Loyalist College
Kingston	St. Lawrence College
Kitchener	Conestoga College
London	Fanshawe College
Mississauga	Centennial College
North Bay	Canadore College
Oshawa	Durham College
Ottawa	Algonquin College La Cité collégiale
Peterborough	Fleming College
Sault St. Marie	Sault College
Thunder Bay	Confederation College
Toronto	Centennial College George Brown College Humber College
Welland	Niagara College

*Note:* See Appendix E: College Programs for sources.

As with the programs offered in secondary schools, 62 of the relevant programs offered by Ontario colleges focus in baking, culinary arts training, and food service. Students can choose between training as a cook, chef, or baker/pâtissier, or expand their skills toward culinary management or food and beverage management. Training provided in these programs equips students with the necessary skills and hands on experience to enter a variety of careers in food presentation and service, including the following occupations:

- NOC 6321 (Chef)
- NOC 6322 (Cook and general culinary skills)
- NOC 6332 (Baker, Baker-pâtissier)
- NOC 6711 (General food service worker)
- NOC 9213 (Food and beverage management)
- NOC 0631 (Culinary management)

The array of baking and culinary programs across Ontario colleges offers either a diploma or certificate, in some cases offering an advanced diploma or post-graduate certificate. Programs span a 1 to 2-year period and all but two are full-time programs (although in select programs, a part-time study option is available). For students interested in an advanced program who do not possess the necessary skills or prerequisites, they may enrol in a college certificate program and transition into advanced standing in a 2 or 3-year diploma program after graduation. For example, the “Culinary Skills-Chef Training” program at Canadore College offers students the option of applying for second year standing in the 2-year “Culinary Management” program upon completing the chef training program. In most instances, this option applies to culinary skills programs: students are able to transition into a culinary management program following completion of the skills program component. This allows students to gain more instruction and specialization throughout their education, with the option in some cases to extend their experience into a relevant apprenticeship program as well. Table 49 presents an overview of the available industry-related programs in colleges across Ontario.

In particular, Niagara College in Welland offers a variety of courses relevant to the industry, including a co-op program in “Culinary innovation and food technology.” Offered at the college’s Canadian Food and Wine Institute, the 3-year advanced diploma program includes courses in food chemistry, and production and process engineering. A co-op placement gives students experience in applied research and product development in the industry. The college also offers a 2-year program in winery and viticulture, focusing on wine chemistry and vineyard management. The Institute also targets trends in brew making with a diploma program in “Brew master and Brewery Operations Management.”

Centennial College in Toronto offers the advanced diploma in “Food Science Technology” with an optional co-op placement. The 3-year program is suited for those students interested in a career in product development and food safety or quality control and assurance. Students learn chemical and engineering strategies to preserve, process, package, and distribute healthy and

safe food products. Eligible students may also participate in a two-term co-op work placement to gain additional experience and direct hands-on training.

The Institute of Food Processing Technology (IFPT) at Conestoga College offers the “Operation Leadership in Food Management” program. This graduate certificate presents a unique opportunity for students with previous experience in science or engineering the chance to explore advanced studies in food manufacturing. The course looks closely at food safety and quality assurance, and total preventative maintenance, while teaching students to monitor operations from purchase to shipment. The 1-year program will give students the technical knowledge necessary to pursue an advanced role in the industry. The Institute also offers a variety of part-time certificate programs in areas such as “Food Processing Supervisor,” and “Food Processing Operations,” as well as a graduate certificate in “Food Safety and Quality Assurance-Food Processing.”

These institutes not only attract students to its programs but can also encourage the integration of students, faculty, and new and experienced food entrepreneurs (Economic Development and Culture [EDC], 2017). For example, the Food Innovation and Research Studio (FIRSt) opened in 2016 at George Brown College. The college offers its space to those in the Toronto area food industry looking for assistance with product testing or other resources. The studio holds state of the art facilities, an array of technical resources, and hosts events tailored for networking opportunities. It combines the expertise and talents of students, faculty, and members within the sector, showcasing opportunities for collaboration and innovation.

**Table 49: Overview of College Programs**

NOC CODE	INSTITUTION	PROGRAM	TYPE OF DEGREE	PROGRAM LENGTH
<b>UNDERGRADUATE</b>				
6332	Algonquin College	Baking and Pastry Arts	Certificate	1 Year
		Baking and Pastry Arts Management	Diploma	2 Years
		Cook (Apprenticeship)	Certificate	30 Weeks
	Centennial College	Baking and Pastry Arts Management	Diploma	2 Years
		Baking Skills	Certificate	1 Year
	Conestoga College	Cook I (Apprenticeship)	Certificate	40 Weeks
		Cook II (Apprenticeship)	Certificate	358 Hours
	Fanshawe College	Cook II (Apprenticeship)	Certificate	N/A
		Culinary Management	Diploma	2 Years
		Culinary Management (Optional apprenticeship)	Certificate	1 Year
	Fleming College	Culinary Management	Diploma	2 Years
	George Brown College	Baker/Patisserie Apprentice	Certificate	2-5 Years
		Baking and Pastry Arts Management	Diploma	2 Years
		Baking- Pre-employment	Certificate	1 Year
	Georgian College	Baking and Pastry Arts	Certificate	1 Year
	Niagara College	Baking	Certificate	N/A (Part-time)
		Baking and pastry Arts	Certificate	1 Year
6322	Algonquin College	Culinary Management	Diploma	2 Years
		Culinary Skills	Certificate	1 Year
	Canadore College	Cook Apprenticeship	Certificate	N/A
		Culinary Management	Diploma	2 Years
	Centennial College	Culinary Management	Diploma	2 Years
		Culinary Skills	Certificate	1 Year
	Conestoga College	Culinary Management	Diploma	2 Years
	Confederation College	Culinary Management	Diploma	2 Years



NOC CODE	INSTITUTION	PROGRAM	TYPE OF DEGREE	PROGRAM LENGTH
6321	Durham College	Culinary Management	Diploma	2 Years
		Culinary Skills	Certificate	1 Year
	Fanshawe College	Culinary Skills	Certificate	30 Weeks
	George Brown College	Culinary Management	Diploma	2 Years
		Culinary Skills	Certificate	1 Year
	Georgian College	Culinary Management	Diploma	2 Years
		Culinary Skills	Certificate	1 Year
	La Cité collégiale	Culinary Arts	Certificate	1 Year
		Culinary Management	Diploma	2 Years
	Lambton College	Culinary Management	Diploma	2 Years
	Loyalist College	Culinary Skills/ Culinary Management	Certificate	1-2 Years
	Niagara College	Culinary Management (Co-op)	Diploma	2 Years
	Sault College	Culinary Management	Diploma	2 Years
	St. Lawrence College	Culinary Management/ Cook Co-op Diploma Apprenticeship	Diploma	2 Years
		Culinary Skills	Certificate	1 Year
	Algonquin College	Patissier	Certificate	8 Courses (Part-time)
	Canadore College	Culinary Skills- Chef Training	Certificate	1 Year
	Conestoga College	Culinary Skills- Chef Training (Co-op)	Certificate	1 Year
	Sault College	Culinary Skills- Chef Training	Certificate	1 Year
	9213 Centennial College	Food and Beverage Management	Diploma	2 Years
	Fanshawe College	Food and Beverage Management (Optional co-op)	Diploma	2 Years
	Conestoga College	Food Processing Supervisor	Certificate	N/A (Part-time)
	2211 Centennial College	Food Science Technology (Optional co-op)	Diploma	3 Years
	Niagara College	Culinary Innovation and Food Technician (Co-op)	Diploma	3 Years
	9461 Conestoga College	Food Processing Operations	Certificate	N/A (Part-time)
		Process Operator- Food Manufacturing	Certificate	300 Hours
		Food Processing Technician (Co-op)	Diploma	2 Years
	Niagara College	Artisan Distilling	Certificate	1 Year

NOC CODE	INSTITUTION	PROGRAM	TYPE OF DEGREE	PROGRAM LENGTH
0911		Brew master and Brewery Operations Manager	Diploma	2 Years
	Niagara College	Wine Business Management	Certificate	1 Year
9641	Sault College	Winery and Viticulture Technician	Diploma	2 Years
6711		Food Service Worker	Certificate	N/A (Part-time)
	Humber College	General Arts and Science- Kitchen Workers	Certificate	1 Year
N/A	Conestoga College	Food Processing Advanced Sanitation Practices	Certificate	N/A (Part-time)
<b>GRADUATE LEVEL PROGRAMS</b>				
6332		Advanced Chocolate and Confectionery Artistry	Certificate	1 Year
	Humber College	Baking and Pastry Arts Management	Diploma	2 Years
6322		Culinary Management	Diploma	2 Years
	George Brown College	Culinary Skills	Certificate	1 Year
6321	Conestoga College	Advanced French Patisserie (Post-Graduate)	Certificate	3 Semesters
9213	Centennial College	Operation Leadership in Food Manufacturing	Certificate	1 Year
N/A		Food Media	Certificate	1 Year
N/A	Conestoga College	Food Safety and Quality Assurance- Food Processing	Certificate	1 Year

Note: See Appendix E: College Programs for sources.

#### 4.4.2 Co-op programs

The Co-op Diploma is designed so students pursuing post-secondary education may also receive hands-on experience in an occupation related to their field. In some cases, a co-op work placement is optional. Students are expected to secure work placements on their own, either paid or unpaid. In Ontario, there are 5 programs specifically offering co-op placements as part of its curriculum. These programs cover a range of degrees, including diplomas, certificates, and advanced diplomas and ranging from 1-3 years for program completion (Table 50).

**Table 50: Co-op diplomas offered by Ontario colleges**

INSTITUTION	LOCATION	PROGRAM	TYPE OF DEGREE	PROGRAM LENGTH
Centennial College	Toronto	Food Science Technology ( <i>Optional Co-op</i> )	Advanced Diploma	3 Years
Conestoga College	Kitchener	Culinary Skills-Chef Training	Certificate	1 Year
Fanshawe College	London	Food and Beverage Management ( <i>Optional Co-op</i> )	Diploma	2 Years
Niagara College	Welland	Culinary Innovation and Food Technology	Advanced Diploma	3 Years
		Culinary Management	Diploma	2 Years

*Note:* See Appendix E for sources.

While apprentices must already be employed with the organization where they receive their training, co-op students are not yet employed and instead are participants in a work term regulated by their educational institution. Following the co-op placement, students must return to complete the remaining components of their program.

#### 4.5. UNIVERSITIES

##### **HIGHLIGHTS**

*Across 5 universities in Ontario, 13 programs focus on areas of study related to the industry, including food technology and food science. A number of these programs offer both undergraduate and graduate pathways with options to specialize in a variety of food-based research topics.*

Universities throughout Ontario offer several programs tied to the industry. Concentrated in southern Ontario (London, Toronto, Niagara, Ottawa, and Guelph), these universities offer graduate and undergraduate programs related to food science (Table 51). For example, “Food and Nutrition” at Brescia College at Western University

instructs students in modern food technologies in food production, helping them gain insight into principles of food processing. Offering a variety of specializations within the program, including an “Honours in Food Management,” the program equips students with the theoretical knowledge and practical experience to pursue a career in the industry or continue to the MSc in Food and Nutrition program.

The University of Guelph is well known for their food-related programs and offers several relevant degrees, including “Food and Agriculture Business” and “Food Industry Management major.” The MSc program specializing in “Food Science” includes interdisciplinary studies in food chemistry, food microbiology, and food processing. Research areas including methods of food analysis are prominent in the faculty and students are encouraged to use apply scientific methods to improve the quality of a range of foods.

**Table 51: Industry-related programs by university**

INSTITUTION	LOCATION	PROGRAM NAME	DEGREE GRANTED
Brescia College at Western University	London	Food and Nutrition	Bachelor of Science, BSc
		Food and Nutrition	Masters of Science, MSc
		Food Science and Technology	Bachelor of Science, BSc
Brock University	Niagara	Oenology and Viticulture	Bachelor of Science, BSc
	Niagara	Grape and Wine Technology	Certificate
Carleton University	Ottawa	Food Science and Nutrition	Bachelor of Science, BSc
	Ottawa	Food Science	Masters of Science, MSc
Ryerson University	Toronto	Nutrition and Food	Bachelor of Applied Science, BASc
University of Guelph	Guelph	Food and Agriculture Business <i>(Co-op stream is also available)</i>	Bachelor of Commerce, BCom
	Guelph	Cheese Making Technology Short Course	NA
	Guelph	Food Science	Masters of Science, MSc
	Guelph	Food Industry Management major	Bachelor of Bio-Resource Management, BBRM
	Guelph	Food Science Certificate	Open Learning Program, Food Science Certificate

*Note:* See Appendix F for sources.

While these food-based programs offer a range of high-level research opportunities in food science and technology, these specializations may be better suited toward fields in food chemistry, or nutrition. Courses focused in biochemistry, genetics, and food biotechnology, although useful for advanced agri-food careers, do not necessarily help

meet the immediate needs of the industry. Filling skilled positions in food and beverage processing requires specialized skills and training that these programs do not address. This echoes the observations by the Toronto Workforce Innovation Group's 2017 labour market report, where it is highlighted that there seems to be a disconnect between academic programs offered and the skills expectations in the industry itself (TWIG, 2017).

Instead, courses like the one-week cheesemaking training course offered through Guelph University offers training unique to the industry; increasing course offerings from a range of universities across Ontario could help meet industry needs directly. However, while the 5-day training course delivers skills training for the cheesemaking occupation, the case study in Section 4.8 explains that, while this short course is useful, increased awareness and access to wider industry-specific skills programming is needed.

#### **4.6. OTHER CERTIFICATIONS**

While post-secondary education, apprenticeships, and skills and safety training provides workers with valuable credentials, other courses and programs offer certification for those interested in expanding their skills portfolio. The Canadian Institute of Food Science and Technology (CIFST) in Burlington offers certification as a Certified Food Scientist (CFS). For food science professionals, this certification “helps demonstrate the professions’ commitment to safe and nutritious food for customers” (Canadian Institute for Food Science and Technology, n.d., par.1). The assessment helps demonstrate proof of applied skills and knowledge of food science and helps employers reduce necessary on-the-job training.

Food Processing Skills Canada (FPSC) aims to educate and support the industry as a whole, offering Food Safety Certifications, industry training guides, and nationally recognized training. Partnering with the Canadian Food Processors Institute, they offer training programs specific to the industry, including a Gluten Free Auditing Certification (FPSC, 2018).

The Food and Beverage Sector Initiative at the Excellence in Manufacturing Consortium offers the Productivity Self-Diagnostic Tool for manufacturers and processors. The interactive survey provides feedback on 16 sector-based key performance indicators and allows organizations the chance to measure their performance against other participating companies with advice on how to improve their own productivity action plan (Excellence in Manufacturing Consortium [EMC], 2018).

## 4.7. ENROLMENT IN POSTSECONDARY EDUCATION PROGRAMS

### HIGHLIGHTS

*Enrolment in postsecondary programs in Canada related to the food and beverage industry reached approximately 6,500 students in the fall 2017. Of these students, 37% are enrolled in Ontario institutions.*

*In 2016-17, the three areas where larger enrolments are observed in Canada include Culinary arts/chef training with approximately 1,700 enrolments, followed by Baking and pastry arts with 1,080 enrolments and Food science with approximately 970 enrolments. In Ontario, the largest enrolments are also observed in these three areas. Programs in Viticulture and enology, as well as in Wine steward/sommelier, are only offered in Ontario and British Columbia.*

*In Ontario, the vast majority of the enrolments are in college programs. Also, most of the growth observed in the past five years has been driven by this type of institution.*

*In 2016, more than 1,200 students graduated from a program related to food and beverage processing in Ontario. Of these, approximately one-third was trained as a baker, pastry chef or another profession related to baking and pastry arts, and one-third was trained in the culinary arts or as a chef.*

According to data from Statistics Canada Postsecondary Student Information System (PSIS), enrolment at the postsecondary level in programs related to the food and beverage processing industry increased by 9% between 2012-13 to 2016-17, reaching approximately 6,500 students enrolled in related programs, both at the undergraduate and graduate level. With approximately 2,400 students, Ontario accounts for 37% of all enrollment in these programs and it is the province with the largest increases in enrolments in the past five years, followed only by Quebec (Table 52).

**Table 52: Enrolment in Postsecondary Education Programs by Province**

	2012-13	2013-14	2014-15	2015-16	2016-17
Newfoundland and Labrador*	93	6	114	123	81
Prince Edward Island	177	249	228	126	174
Nova Scotia	336	312	255	234	246
New Brunswick	81	78	75	63	78
Québec**	987	1,050	1,140	1,215	1,257
Ontario	2,106	2,187	2,328	2,184	2,409

	2012-13	2013-14	2014-15	2015-16	2016-17
Manitoba	330	342	354	447	312
Saskatchewan	240	186	198	231	234
Alberta	786	828	822	849	876
British Columbia	864	873	873	858	855
Yukon	0	9	3	0	0
Nunavut	6	9	0	0	
<b>Total**</b>	<b>6,012</b>	<b>6,120</b>	<b>6,387</b>	<b>6,333</b>	<b>6,528</b>

Source: Adapted from Statistics Canada (2019).

\*Variations year-over-year due to the College of the North Atlantic not being include in the report every year.

\*\* Includes Cégeps.

\*\*\*Totals may not add up due to rounding. All numbers are rounded to multiples of 3.

Institutions report their enrolment according to the Classification of Instructional Programs (CIP), which provides a standardized approach to classify postsecondary education programs. In Table 53, enrolments in 2016-17 are presented for each province by CIP program. Although the data must be analyzed with caution given that not all institutions interpret the categories in the same manner, and since some institutions may change the classification of their programs year over year, it is noted that the three areas where larger enrolments are observed in Canada include Culinary arts/chef training with approximately 1,700 enrolments, followed by Baking and pastry arts with 1,080 enrolments and Food science with approximately 970 enrolments. In Ontario, the largest enrolments are also observed in these three areas. Programs in Viticulture and enology, as well as in Wine steward/sommelier, are only offered in Ontario and British Columbia.

**Table 53: 2016-17 Postsecondary Program Enrolments by Type of Program (CIP) and Province**

	NFL	PEI	NS	NB	QC**	ON	MB	SK	AB	BC	YK	NV	TOTAL
Food science	9		9		264	381	111	111	30	54			969
Food technology and processing					102	276			57	84			519
Food science and technology, other					303								303
Agriculture and food product processing						60							60
Agricultural engineering					525					3			528
Dairy husbandry & production					57								57
Cooking and related culinary arts, general	66		9	45		21		63	348	318		3	873
Baking and pastry arts/baker/pastry chef	6	36	21			636	42		156	183			1,080
Culinary arts/chef training		138	204	36		750	159	60	204	171			1,722
Culinary arts and related services, other			3						30				33
Viticulture and enology						102				12			114
Wine steward/sommelier						42				9			51
Institutional food workers						135							135
Meat cutting/meat cutter								6	51				57
Food preparation/ professional cooking / kitchen assistant										18			18
<b>TOTAL</b>	<b>81</b>	<b>174</b>	<b>246</b>	<b>81</b>	<b>1251</b>	<b>2403</b>	<b>312</b>	<b>240</b>	<b>876</b>	<b>852</b>	<b>0</b>	<b>3</b>	<b>6,519</b>

Source: Adapted from Statistics Canada (2019).

\*Totals may not add up due to rounding. All numbers are rounded to multiples of 3.

\*\* Includes Cégeps.



In Ontario, the vast majority of the enrolments are in college programs. Also, most of the growth observed in the past five years has been driven by this type of institution (Table 54).

**Table 54: Ontario Enrolments by Type of Institution**

	2012-13	2013-14	2014-15	2015-16	2016-17
<b>College</b>	1,635	1,725	1,833	1,740	1,956
<b>University</b>	459	456	483	450	447
<b>Total*</b>	<b>2,094</b>	<b>2,181</b>	<b>2,316</b>	<b>2,190</b>	<b>2,403</b>

Source: Adapted from Statistics Canada (2019).

\*Totals may not add up due to rounding. All numbers are rounded to multiples of 3.

In 2016, more than 1,200 students graduated from a program related to food and beverage processing in Ontario. Of these, approximately one-third was trained as a baker, pastry chef or another profession related to baking and pastry arts, and one-third was trained in the culinary arts or as a chef.

**Table 55: Ontario Graduates by Type of Program, 2016**

	2016-17
<b>Food science</b>	96
<b>Food technology and processing</b>	75
<b>Agricultural and food product processing</b>	54
<b>Cooking and related culinary arts, general</b>	9
<b>Baking and pastry arts/baker/pastry chef</b>	459
<b>Culinary arts/chef training</b>	420
<b>Viticulture and enology</b>	12
<b>Wine steward/sommelier</b>	3
<b>Institutional food workers</b>	141
<b>Food preparation/professional cooking/kitchen assistant</b>	12
<b>TOTAL*</b>	<b>1,284</b>

Source: Adapted from Statistics Canada (2019).

\*Totals may not add up due to rounding. All are rounded to multiples of 3.

#### 4.8. IDENTIFIED GAPS IN TRAINING AND SKILL DEVELOPMENT

##### **HIGHLIGHTS**

*Despite the large number of programs offered overall, there is a lack of skills training targeted toward positions in food processing and manufacturing, instead offering a variety of culinary-based programs that do not satisfy the immediate skills needs of the industry. While state-of-the-art testing kitchens in post-secondary institutions offer much needed practical training and development space, a lack of awareness of training options and inconsistent enrolment numbers indicate that these resources may not be used to their full potential.*

As priorities and values shift in food and beverage processing organizations, food safety is emerging as a prominent trend. Perhaps due in part to the Global Food Safety Initiative, an industry-driven global food safety campaign, there is increased public awareness and concern over food safety practices (Food Agriculture Communities Environment, 2014). The Agri-food Workforce notes that “this culture change and regulatory modernization creates a larger demand for individuals trained in food safety, quality control and food science, and drives the need for training and education of all employees in food safety” (Food Agriculture Communities Environment, 2014). While increased awareness about food safety practices and protocol is notably a beneficial focus moving forward, there is a lack of specific food safety skills training available to match the demand in improved food safety handling and processing. For example, Loblaw now requires all suppliers to be trained in food safety at the Loblaw Academy at the University of Guelph. This requirement applies to all suppliers for all products, including artisanal sausage, cheese, and wine making, and will increase the need for food safety training across all sub-sectors. It is also possible that Loblaw could add this requirement to all vendors who export their products to Canada, resulting in an increase in international students participating in training at Canadian post-secondary institutions. While student enrolment may be increasing in post-secondary programs, as discussed in Section 4.5, a noted lack of classroom and lab space could limit this training expansion.

Many of the available post-secondary programs, both in food processing and culinary arts or food service, teach safety and sanitation practices, but there is a lack of documentation specifying what programs are available to those already employed in the industry who may lack formal post-secondary training and education. The job skill development section (Section 4.2: On-the-job Training) touched on the training provided for all skill level profiles, such as WHMIS, food safety, and food safety management training; however, many of these programs may not incorporate specific workplace skills training necessary for industry occupations.

According to the industry, there is a need to work to better align educational training and available programs with actual industry needs. Programs focusing on baking and culinary trends may be useful in terms of their training in safe food handling and preparation; however there seems to be a growing disconnect between programs offered and what jobs are actually available in food processing (TWIG, 2017). While programs closely tied to the tourism and hospitality industry may develop some of the skills needed for food and beverage processing, career pathways for these programs may not point to food processing and manufacturing. Despite the number of training programs available throughout Ontario, training for specific occupations in the industry is lacking. For a specific example, see more details about the Cheesemaking training experience in the case study below.

A 2014 study recommended the creation of new post-secondary college programs that combine culinary arts with food science (Food Agriculture Communities Environment, 2014). This would encourage skills development both in culinary arts and food processing practices. This could also address the over-reliance on promoting culinary-focused programs for the industry: by combining the popularity of culinary arts with new and innovative disciplines, such as food science and food technology, we could see an emergence of new product developers and research chefs beneficial to the industry.

#### *Training requirements in the cheesemaking industry: A case study*

The cheese manufacturing sector in Ontario undertook a series of efforts to assess the state of training offerings required for their industry and make recommendations for improvement. It is generally acknowledged that the cheese making industry in Ontario has the potential to experience significant growth, but a skilled workforce is essential going forward.

The assessment was based on a survey of cheese manufacturing plants in Ontario in 2014. This survey revealed that over 50% of training was conducted through a one-week course at Guelph University the “Cheesemaking Technology Short Course” that has been offered annually since 1956. However, over one-third of cheese makers had not received any sort of formal training at all. Although almost 90% of manufacturers knew of the training program in Guelph, the main training barrier was an awareness of other available programs. Apart from the Guelph course, there is a lack of formal training directed at cheese makers available in Ontario, either to upgrade skills training for existing cheese makers or to add to the number of fully trained cheese makers.

Adding to the lack of training availability, other challenges specific to the cheese maker occupation were identified:

- **Distribution of plants:** cheese manufacturing plants are widely distributed across Ontario, as such, a centralized training location (e.g., in a community college) is difficult to implement.
- **Wide range of needs:** cheese manufacturers have a diverse range of unique and individual needs that would require multiple, specialized and tailored training programs.
- **Required investment:** In most cases, training requires investment by the employer, the employee (or both) and results from skills training often require a long-term commitment

To solve the issues outlined, it was recommended to implement a cheese maker apprenticeship program. This option required industry commitment and direct involvement with the Ontario College of Trades but showed the highest approval rating across cheese manufacturers. This

recommendation was made despite having only 7.1% of survey respondents expressing support for a combination of classroom and on-site training: the basic training components of an apprenticeship. A preference was also expressed for module training, regardless of plant manufacturing size, progressing from “core” courses to “advanced” and “supplementary” courses when required. Structuring training in modules allows training sections to be completed in shorter amounts of time than the commitment of a full course. This is especially useful for smaller manufacturing plants unable to provide employees for training for long periods of time. Despite this recommendation, modular training programs are not currently offered, either for cheesemaking programs in particular, or for more general skills training.

**Source:** Needs Assessment: Skills Development and Standardized Training for Ontario Cheesemakers, 2015; A Framework for Cheesemaker Training in Ontario, 2016.

A lack of awareness of available training programs and a lack of industry-specific skills training options are prevalent challenges throughout the industry. Awareness has been a consistent issue among industry organizations and recommendations have been put forward to develop an inventory of existing training, education, and programming options available for food and beverage processors. For instance, lack of information available about specific training programs and locations was noted among cheese manufacturers in its 2015 survey. Among employers interested in participating in training, over 50% of cheese manufacturers surveyed indicated that a lack of awareness of these programs would become a barrier to participation (Soucie & Farrar, 2015). Furthermore, identifying critical training needs and priorities for new programming would help focus on areas for improvement for future training development (Food Industry Innovation Forum [FIIF], 2011).

In the analysis of training needs for cheesemakers, alternative delivery mechanisms that could improve access were also explored, and these might also be possible solutions to explore for a wider range of processing and manufacturing organizations across the industry (Soucie, 2016). These delivery solutions include:

- **Online training modules:** Online modules are presented as a training option, including also the possibilities for online skills testing. However, this kind of training received 0% approval rating from survey respondents in the cheesemaker training study (2015). Perhaps a more detailed understanding of the possibilities for enhanced skills training through computer modules would provide the necessary information for manufacturers to reconsider their position.
- **Internships:** Requiring less formal certification and approval than an apprenticeship, internships offer the opportunity for plants to participate in co-op placements with an Ontario college and develop necessary skills training for potential new cheese makers in the industry.
- **Visiting trainer:** As manufacturing facilities are widespread across Ontario, mobile training options could ensure that those plants unable to participate in local programs have access to skills upgrading and training.

Overall, regardless of the options implemented, training will need to be flexible enough to accommodate a diversity of needs and expectations from a range of plants. Training

options should also consider addressing the lack of skills from those already working in the industry that require skills upgrading (Soucie, 2016).

#### 4.9. RESEARCH & INNOVATION

##### **HIGHLIGHTS**

*With numerous research and innovation centers and efforts for collaboration between industry and post-secondary institutions, Ontario is considered a research hub and a leader in food technology and innovation. Increasing awareness of the resources available through programs and facilities like these across Ontario could increase training mobility, encourage continuous experimentation and innovation, and connect students, post-secondary faculty, apprentices, and production workers across the industry.*

Ontario is considered a research hub and a leader in food technology and innovation, owing to its research centres and noted collaboration between industry and post-secondary institutions (LMISD, 2017). Yet, increasing awareness of the resources available through programs and facilities like these across Ontario could increase training mobility, encourage continuous experimentation and innovation, and connect students, post-secondary faculty, apprentices, and production workers across the industry. Some main initiatives are highlighted below.

The Southwestern Ontario Food Innovation Collaborative (SOFIT) launched in 2015 with the objective to collaborate with industry members and increase the competitiveness of food processors. It is comprised of 25 partnerships including the University of Guelph, the University of Waterloo, Wilfred Laurier University, industry associations, and government. The group offers contract research on several key innovation areas for the industry, including equipment and technology, and food safety. For example, the Centre for Smart Manufacturing at Conestoga University will be a key participant in these services. They will then be able to use these research results to improve the capacity and productivity of food processors throughout Ontario (MNP LLP, 2015a).

The Agri-Technology Commercialization Centre (Guelph) is a collection of agricultural resources targeted for industry organizations across Ontario. Since 2008, the Centre has supported over 500 agri-food businesses in their efforts to maximize growth or develop ideas. With a core group of partners, the Centre offers a variety of resources, including:

- Agri-technology business services in partnership with BioEnterprise, a not-for-profit company that helps create, grow, and expand businesses in agricultural technology
- Research and development support with Ontario Agri-Food Technologies, which helps to develop and implement industry-related University research programs and local job opportunities for farmers and processors

- Bioscience assistance with Oilseed Innovation Partners, a company that helps to target innovative ideas in Canadian oilseeds
- Livestock and poultry research and findings with the Livestock Research Innovation Corporation
- Regulatory assistance for agri-businesses with AgRegKit, an educational resource to help agri-food businesses identify and understand regulations that apply to their operations (Agri-Technology Commercialization Centre, n.d.).

Similarly, Food Starter in Toronto is a not-for-profit facility that offers programs and training options, along with production space available for lease. Most notable is the “hands on” aspect of the space, allowing food entrepreneurs the opportunity to experiment and develop products themselves. With training levels seminars for all levels of food product developers, Food Starter offers training in three steps:

- Discovery: A 13-week program covering food safety, and company branding and positioning.
- Development: A 13-week program including quality assurance, product costing, and allergen handling.
- Market Start Up: A 26-week plan covering floor plan design, human resources, and facility options (IFAB, 2016).

Assisting over 1,500 companies each year, the Guelph Food Technology Centre provides training and, product development, packaging, consulting, and sustainability assistance (Guelph Food Technology Centre, n.d.). Meanwhile, the Harrow Research and Development Centre in Harrow (near Windsor, Ontario) houses one of the largest greenhouse research facilities in North America (AAFC, n.d.-a). Among its leading research areas is crop production and protection systems, currently undergoing research in protecting and preserving greenhouse and field crops. Agriculture and Agri-food Research Development Centres in London and Guelph specialize in crop protection and food research and development respectively (AAFC, n.d.-b; AAFC, n.d.-c).

For those organizations looking to secure funding for product or process development, the “Jobs and Prosperity Fund” is an effort to support businesses and entrepreneurs developing new products to compete in the global marketplace. Within this stream, the Food and Beverage Growth Fund provides project funding for initiatives that:

- Help create industry jobs
- Increase market access
- Enhance innovation and productivity
- Strengthen supply chains.

Projects that are expected to incur over \$5 million in eligible costs, and that fall within bioproduct or food and beverage processing, may be eligible to receive funding (Ministry of Economic Development, 2018).

## APPENDIX A: FOOD & BEVERAGE PROCESSING (NAICS)

<b>MANUFACTURING [31-33]</b>	<b>FOOD MANUFACTURING [311]</b>	Animal food manufacturing [3111]
		Grain and oilseed milling [3112]
		Sugar and confectionary product manufacturing [3113]
		Fruit and vegetable preserving and specialty food manufacturing [3114]
		Dairy product manufacturing [3115]
		Meat product manufacturing [3116]
		Seafood product preparation and packaging [3117]
		Bakeries and tortilla manufacturing [3118]
		Other food manufacturing [3119]
	<b>BEVERAGE &amp; TOBACCO MANUFACTURING [312]</b>	Beverage Manufacturing [3121]

Source: Adapted from Statistics Canada. North American Industry Classification System (NAICS) Canada 2017 Version 1.0. Classification Structure.



## APPENDIX B: OCCUPATIONAL CODES (NOC) DEFINITIONS OF COMMON FOOD PROCESSING SECTOR OCCUPATIONS

FPSC CATEGORIZATION	NOC CODE & TITLE	FPSC JOB TITLE	NOC DEFINITION
Frontline	0621- Retail and wholesale trade managers	Livestock Dealer; Cattle Dealer	Retail and wholesale trade managers plan, organize, direct, control and evaluate the operations of establishments that sell merchandise or services on a retail or wholesale basis. Retail and wholesale trade managers are employed by retail and wholesale sales establishments or they may own and operate their own store.
Frontline	1241- Administrative assistants	Secretary	Administrative assistants perform a variety of administrative duties in support of managerial and professional employers. They are employed throughout the private and public sectors.
Frontline	1411- General office support workers	General Office Clerk; Administrative Support Clerk	General office support workers prepare correspondence, reports, statements and other material, operate office equipment, answer telephones, verify, record and process forms and documents such as contracts and requisitions and perform general clerical duties according to established procedures. They are employed in offices throughout the public and private sectors.
Frontline	1431- Accounting and related clerks	Account Payable Clerk; Accounts Receivable Clerk; Freight-rate Clerk; Income Tax Return Preparer	Accounting and related clerks calculate, prepare and process bills, invoices, accounts payable and receivable, budgets and other financial records according to established procedures. They are employed throughout the private and public sectors.
Frontline	1432- Payroll administrators	Benefits Officer; Pay and Benefits Administrator; Payroll Officer; Salary Administration Officer	Payroll administrators collect, verify and process payroll information, determine pay and benefit entitlements for employees, maintain accurate payroll records, and provide payroll information within a department, company or other establishment. They are employed by payroll administration companies and by establishments throughout the public and private sectors.
Frontline	1511- Mail, postal and related workers	Mail Room Clerk; Mail Sorter; Mailing Machine Operator	This unit group includes workers who process and sort mail and parcels in post offices, mail processing plants and internal mail rooms, and clerks who serve customers and record transactions at sales counters and postal wickets. Mail, postal and related workers are employed by Canada Post Corporation, courier and parcel express companies and establishments throughout the public and private sectors.
Frontline	1521- Shippers and receivers	Shipping/Receiving Clerk	Shippers and receivers ship, receive and record the movement of parts, supplies, materials, equipment and stock to and from an establishment. They are employed in the public sector and by retail and wholesale establishments, manufacturing companies, and other commercial and industrial establishments.
Frontline	2121- Biologists and related scientists	Food Scientist	Biologists and related scientists conduct basic and applied research to extend knowledge of living organisms, to manage natural resources, and to develop new practices and products related to medicine and agriculture. They are employed in both laboratory and field settings by governments, environmental consulting companies, resource and utilities companies, chemical, pharmaceutical and biotechnical companies and health and educational institutions.

FPSC CATEGORIZATION	NOC CODE & TITLE	FPSC JOB TITLE	NOC DEFINITION
Frontline	2171 - Database analysts and data administrators	Business Analyst, computer systems; Software QA analyst; Systems Security Analyst	Database analysts design, develop and administer data management solutions using database management software. Data administrators develop and implement data administration policy, standards and models. They are employed in information technology consulting firms and in information technology units throughout the private and public sectors.
Frontline	2174 - Computer programmers and interactive media developers	Application Programmer; Graphical User Interface Designer; Programmer analyst	Computer programmers write, modify, integrate and test computer code for software applications, data processing applications, operating systems-level software and communications software. Interactive media developers write, modify, integrate and test computer code for Internet and mobile applications, computer-based training software, computer games, film, video and other interactive media. They are employed in computer software development firms, information technology consulting firms, and in information technology units throughout the private and public sectors.
Frontline	6222 - Retail and wholesale buyers	Hog Buyer; Livestock Buyer; Cattle Buyer; Meat Buyer	Retail and wholesale buyers buy merchandise for resale by retail or wholesale establishments and are usually responsible for the merchandising operations of retail or wholesale establishments. Retail and wholesale buyers who are supervisors and those who are assistants are included in this unit group.
Frontline	6332 - Bakers	Grocery Store Baker; Head Baker-retail; and other titles	Bakers prepare bread, rolls, muffins, pies, pastries, cakes and cookies in retail and wholesale bakeries and dining establishments. They are employed in bakeries, supermarkets, catering companies, hotels, restaurants, hospitals, and other institutions, or they may be self-employed. Bakers who are supervisors are included in this unit group.
Frontline	6411- Sales and account representatives – wholesale trade (non-technical)	Grain Broker-wholesale; Grain Dealer; Grain Merchandiser; Livestock Broker; Commission Agent - Livestock; Liquor Sales Representative	Sales representatives, wholesale trade (non-technical), sell non-technical goods and services to retail, wholesale, commercial, industrial, professional and other clients domestically and internationally. They are employed by establishments that produce or provide goods and services such as petroleum companies, food, beverage and tobacco producers, clothing manufacturers, motor vehicles and parts manufacturers, hotels, business services firms, and transportation companies. Auctioneers are included in this unit group. Sales representatives, wholesale trade who are supervisors are also included in this unit group
Frontline	6552 - Other customer and information services representatives	Order Clerk; Customer Service Agent	This unit group includes customer and information services representatives who answer enquiries and provide information regarding an establishment's goods, services and policies and who provide customer services such as receiving payments and processing requests for services. They are employed by retail establishments, contact centers, insurance, telecommunications and utility companies and other establishments throughout the private and public sectors.
Frontline	7242 - Industrial electricians	Plant Electrician; Plant Maintenance Electrician; Mill Electrician	Industrial electricians install, maintain, test, troubleshoot and repair industrial electrical equipment and associated electrical and electronic controls. They are employed by electrical contractors and maintenance departments of factories, plants, mines, shipyards and other industrial establishments.

FPSC CATEGORIZATION	NOC CODE & TITLE	FPSC JOB TITLE	NOC DEFINITION
Frontline	7313 - Heating, refrigeration and air conditioning mechanics	Cooler/Refrigeration Technician	Heating, refrigeration and air conditioning mechanics install, maintain, repair and overhaul residential central air conditioning systems, commercial and industrial refrigeration and air conditioning systems and combined heating, ventilation and cooling systems. They are employed by heating, refrigeration and air conditioning installation contractors, various industrial settings, food wholesalers, engineering firms and retail and servicing establishments. Transport refrigeration mechanics are included in this unit group.
Frontline	7452 - Material handlers	Shipment Assembler; Forklift Operator; Warehouse Worker	This unit group includes workers who handle, move, load and unload materials by hand or using a variety of material handling equipment. They are employed by transportation, storage and moving companies, and by a variety of manufacturing and processing companies and retail and wholesale warehouses.
Frontline	7511 - Transport truck drivers	Transport Drivers	Transport truck drivers operate heavy trucks to transport goods and materials over urban, interurban, provincial and international routes. They are employed by transportation, manufacturing, distribution and moving companies, and trucking employment service agencies, or they may be self-employed. This unit group also includes drivers of special purpose trucks and shunters who move trailers to and from loading docks within trucking yards or lots.
Frontline	9461 - Process control and machine operators, food and beverage processing	Hydrogenation Operator & many other titles	Process control and machine operators in this unit group operate multi-function process control machinery and single-function machines to process and package food and beverage products. They are employed in fruit and vegetable processing plants, dairies, flour mills, bakeries, sugar refineries, meat plants, breweries, and other food and beverage processing establishments.
Frontline	9462 - Industrial butchers and meat cutters, poultry preparers and related workers	Shackle Hoist Operator; Poultry Plucker Tender	Workers in this unit group prepare meat and poultry for further processing or for packaging for wholesale distribution. They are employed in meat and poultry slaughtering, processing and packing establishments.
Frontline	9463 - Fish and seafood plant workers	Filleting Machine Setter; Skinning Machine Setter; Fish Cutting Machine Setter; Fish Dryer and Grinder Tender; Fish Stick Machine Tender; Fish-processing Machine Tender; and other titles	This unit group includes fish and seafood plant machine operators who set up and operate machinery to process and package fish and seafood products, and fish and seafood plant cutters and cleaners who cut, trim and clean fish or seafood by hand. Fish and seafood plant workers are employed in fish and seafood processing plants.
Frontline	9465 - Testers and graders, food and beverage processing	Feed Tester	Testers and graders in this unit group test or grade ingredients and finished food or beverage products to ensure conformance to company standards. They are employed in fruit and vegetable processing plants, dairies, flour mills, bakeries, sugar refineries, fish plants, meat plants, breweries and other food and beverage processing plants.

FPSC CATEGORIZATION	NOC CODE & TITLE	FPSC JOB TITLE	NOC DEFINITION
Frontline	9617 - Labourers in food and beverage processing	Coffee-blending Machine Feeder; Potato-peeling Machine Tender; Centrifuge Tender -meat packing plant; Singeing Machine Tender; Meat-rolling Machine Tender; Meat Press Tender; Linking Machine Tender	Labourers in this unit group perform material handling, clean-up, packaging and other elemental activities related to food and beverage processing. They are employed in fruit and vegetable processing plants, dairies, flour mills, bakeries, sugar refineries, meat plants, breweries and other food and beverage processing and packaging plants.
Frontline	9618 - Labourers in fish and seafood processing	Fish Weigher; Fish Sorter; and other titles	Labourers in this unit group perform clean-up, packaging, material handling and other elemental activities related to fish and seafood processing. They are employed in fish and seafood processing and packaging plants.
Management	0111 - Financial managers	Director of Finance	Financial managers plan, organize, direct, control and evaluate the operation of financial and accounting departments. They develop and implement the financial policies and systems of establishments. Financial managers establish performance standards and prepare various financial reports for senior management. They are employed in financial and accounting departments in companies throughout the private sector and in government.
Management	0113 - Purchasing managers	Purchasing/Procurement Manager	Purchasing managers plan, organize, direct, control and evaluate the activities of a purchasing department and develop and implement the purchasing policies of a business or institution. They are employed throughout the public and private sectors.
Management	0124 - Advertising, marketing and public relations managers	Director of Public Relations or Director of Communications; Advertising Manager; Marketing Manager	Advertising, marketing, public relations and e-business managers plan, organize, direct, control and evaluate the activities of establishments and departments involved in commercial, industrial and e-business advertising, marketing and public relations. They are employed by commercial and industrial establishments, government departments, and advertising, marketing and public relations firms or consulting businesses.
Management	0213 - Computer and information systems managers	Communications Systems Design Manager; Data Centre Manager; Computer Applications Manager; Systems Operations Manager; C	Computer and information systems managers plan, organize, direct, control and evaluate the activities of organizations that analyze, design, develop, implement, operate and administer computer and telecommunications software, networks and information systems. They are employed throughout the public and private sectors.
Management	0601 - Corporate sales managers	Sales Manager	Corporate sales managers plan, organize, direct, control and evaluate the activities of establishments and departments involved in commercial, industrial, institutional, e-business and wholesale and retail sales. They are employed by commercial, industrial and wholesale and retail trade establishments.
Management	0714 - Facility operation and	Warehouse Manager; Facilities	Facility operation managers plan, organize, direct, control and evaluate the operations of commercial, transportation and recreational facilities and the included real estate. Facility operation managers are



FPSC CATEGORIZATION	NOC CODE & TITLE	FPSC JOB TITLE	NOC DEFINITION
Supervisory	9213 - Supervisors, food and beverage processing	Team Supervisor - flour milling; Feed Milling Foreman/woman; and many other titles	Supervisors in this unit group supervise and co-ordinate the activities of workers who operate processing and packaging machines, and workers who grade food and beverage products. They are employed in fruit and vegetable processing plants, dairies, flour mills, bakeries, sugar refineries, fish plants, meat plants, breweries and other food and beverage processing establishments.
Supervisory; Frontline	1215 - Supervisors, supply chain, tracking and scheduling co-ordination occupations	Warehouse Supervisor; Shipping and receiving supervisor; Warehouse foreman/woman; Planner/Scheduler	Supervisors in this unit group supervise and co-ordinate the activities of workers in the following unit groups: Shippers and Receivers (1521), Storekeepers and Parts persons (1522), Production Logistics Coordinators (1523), Purchasing and Inventory Control Workers (1524), Dispatchers (1525) and Transportation Route and Crew Schedulers (1526). They are employed throughout the public and private sectors.
Supervisory; Frontline	2211 - Chemical technologists and technicians	Chemical Technologist; Food Technologist; Quality Control Technician-food processing	Chemical technologists and technicians provide technical support and services or may work independently in chemical engineering, chemical and biochemical research and analysis, industrial chemistry, chemical quality control and environmental protection. They are employed by research and development and quality control laboratories, consulting engineering companies, in chemical, petrochemical, pharmaceutical and a variety of other manufacturing and processing industries, and by utilities, health, educational and government establishments.
Supervisory; Frontline	6733 - Janitors, caretakers and building superintendents	Building Superintendent, Sanitation Supervisor; Building Services Worker; Industrial Plant Cleaner	Janitors, caretakers and building superintendents clean and maintain the interior and exterior of commercial, institutional and residential buildings and their surrounding grounds. Building superintendents employed in large establishments are responsible for the operation of the establishment and may also supervise other workers. They are employed by office and apartment building management companies, condominium corporations, educational institutions, health care facilities, recreational and shopping facilities, religious, industrial and other establishments.

Source: Adapted from Statistics Canada (2017).



APPENDIX C: ESSENTIAL SKILLS FOR KEY OCCUPATIONS IN FOOD AND BEVERAGE PROCESSING

POSITIONS AT THE FOUNDATIONAL LEVEL

Table 56: Essential Skills for Labourers in food and beverage processing (Packers) – NOC 9617

ESSENTIAL SKILL	SKILL LEVEL	EXAMPLES
1. WRITING	<ul style="list-style-type: none"><li>• Most writing tasks require level 1.</li><li>• Complex tasks may require levels 1-2.</li></ul>	<ul style="list-style-type: none"><li>• Complete log book entries of completed tasks during shift (level 1).</li><li>• May write short memos to supervisors or lead hands specifying ingredient orders (level 2).</li></ul>
2. READING TEXT	<ul style="list-style-type: none"><li>• Most reading tasks require levels 1-2.</li><li>• Advanced reading required at levels 2-3.</li></ul>	<ul style="list-style-type: none"><li>• Read notes from coworkers with directions for tasks to be performed that day (level 1).</li><li>• May refer to user manuals for equipment and machinery when completing routine cleaning (level 3).</li></ul>
3. DOCUMENT USE	<ul style="list-style-type: none"><li>• Tasks require levels 1-2.</li><li>• Complex tasks require level 2.</li></ul>	<ul style="list-style-type: none"><li>• Scan labels on supplies to verify the correct item is being used (level 1).</li><li>• Refer to shift schedules and work orders to determine the locations and duties for their shifts (level 2).</li></ul>
4. NUMERACY	<ul style="list-style-type: none"><li>• Measurement and calculation math at levels 1-2.</li></ul>	<ul style="list-style-type: none"><li>• Weigh containers of product to ensure they meet packaging weight standards (level 1).</li><li>• May calculate and measure the amount of an ingredient to add to a product (level 2).</li></ul>
5. ORAL COMMUNICATIONS	<ul style="list-style-type: none"><li>• Most interactions require levels 1-2.</li><li>• Complex communication requires levels 2-3.</li></ul>	<ul style="list-style-type: none"><li>• May talk to maintenance workers to report mechanical functions and the circumstances surrounding equipment breakdowns (level 1).</li><li>• May participate in staff meetings to discuss improvements in safety related concerns or processes (level 2).</li></ul>
6.THINKING	<b>Problem Solving</b> <ul style="list-style-type: none"><li>• Problem solving required at levels 1-2.</li><li>• Complex tasks require level 2.</li></ul>	<b>Problem Solving</b> <ul style="list-style-type: none"><li>• When bags of product have been improperly labelled, they remove the bags from the line and send for relabeling (level 1).</li><li>• If a conveyor belt has shut down and is delaying production, they move products manually until a solution can be found (level 2).</li></ul>
	<b>Decision-Making</b> <ul style="list-style-type: none"><li>• Typical requirements are levels 1-2.</li><li>• Complex tasks require level 2.</li></ul>	<b>Decision-Making</b> <ul style="list-style-type: none"><li>• Decide where to store items and when to begin clean up tasks (level 1).</li><li>• Decide when to shut down machines that are not functioning properly to ensure worker safety and food quality (level 2).</li><li>• Decide when to request that additional materials be brought to the production area (level 2).</li></ul>

ESSENTIAL SKILL	SKILL LEVEL	EXAMPLES
	<b>Critical Thinking</b> <ul style="list-style-type: none"> <li>Typical tasks require level 2.</li> <li>Complex tasks require level 2.</li> </ul>	<b>Critical Thinking</b> <ul style="list-style-type: none"> <li>Assess the condition of products and conduct visual inspections (level 1).</li> <li>Assess the efficiency of the processes within their work stations, such as equipment layout, rate of processing, and enhancing existing methods (level 2).</li> </ul>
	<b>Job task planning/organizing</b> <ul style="list-style-type: none"> <li>Typical job tasks required at level 2.</li> </ul>	<b>Job task planning/organizing</b> <ul style="list-style-type: none"> <li>Their tasks are generally repetitive, and disruptions may occur. On days of heavy volume, it is important for them to be well organized so that orders are not mixed up.</li> </ul>
	<b>Significant use of memory</b> <ul style="list-style-type: none"> <li>N/A</li> </ul>	<b>Significant use of memory</b> <ul style="list-style-type: none"> <li>Remember operating procedures for machines, color coding for products and codes for computerized equipment.</li> </ul>
	<b>Finding information</b> <ul style="list-style-type: none"> <li>Tasks required at level 1.</li> </ul>	<b>Finding information</b> <ul style="list-style-type: none"> <li>Contact managers and quality control workers to obtain information about process improvements (level 1).</li> <li>Look at Standard Operating Procedures to verify steps required for completing a required work activity (level 1).</li> </ul>
7. WORKING WITH OTHERS	<ul style="list-style-type: none"> <li>Tasks require level 2.</li> </ul>	<ul style="list-style-type: none"> <li>They mainly work independently but sometimes work with partners to carry out tasks that require collaboration.</li> </ul>
8. DIGITAL TECHNOLOGY	<ul style="list-style-type: none"> <li>Tasks require level 1.</li> </ul>	<ul style="list-style-type: none"> <li>Use computerized equipment such as weight scales or labelling machines (level 1).</li> </ul>
9. CONTINUOUS LEARNING	<ul style="list-style-type: none"> <li>Tasks require level 1.</li> </ul>	<ul style="list-style-type: none"> <li>Front line workers learn continuously on the job. They take part in in-house training sessions to learn about new products or processes and have training in first aid, HACCP, and WHMIS.</li> </ul>

Source: Adapted from Food Processing Human Resources Council [FPHRC]. (2016). *Food Manufacturing Essential Skills Profile: Production Lead Hand*. [PDF File]. Available from the Food Processing Skills Library (<http://www.fpsc-ctac.com/skills-library/>).



**Table 57: Essential Skills Testers and graders, food and beverage processing – NOC 9465**

ESSENTIAL SKILL	SKILL LEVEL	EXAMPLES
1. WRITING	<ul style="list-style-type: none"> <li>Most tasks require level 1.</li> <li>Complex tasks require level 2.</li> </ul>	<ul style="list-style-type: none"> <li>Write notes to co-workers about delivery errors or a shortage of products to test or grade (level 1).</li> <li>Write memos and faxes to supervisors detailing the results of testing (level 2).</li> </ul>
2. READING TEXT	<ul style="list-style-type: none"> <li>Most tasks require levels 1-2.</li> <li>Complex tasks require level 3.</li> </ul>	<ul style="list-style-type: none"> <li>May scan e-mails from other departments in the plant regularly. These messages contain procedural or scheduling information (level 1).</li> <li>May read memos and letters from management about changes in policies and procedures (level 2).</li> <li>May read Material Safety Data Sheets (MSDS) for specific information about new products (level 3).</li> </ul>
3. DOCUMENT USE	<ul style="list-style-type: none"> <li>Most tasks require levels 1-2.</li> <li>Complex tasks require level 3.</li> </ul>	<ul style="list-style-type: none"> <li>May read production schedules to keep track of what "lines" are running (level 2).</li> <li>May enter numerical information about bottling, storage or dilution of beverages onto production and inventory tables (level 2).</li> <li>May plot product weight information on a graph. Variations beyond the norm indicate that equipment needs to be adjusted (level 3).</li> </ul>
4. NUMERACY	<ul style="list-style-type: none"> <li>Scheduling and accounting math at level 2.</li> <li>Measurement and Calculation Math at level 1.</li> <li>Data Analysis Math at levels 2-3.</li> <li>Numerical Estimation at levels 2-3.</li> </ul>	<ul style="list-style-type: none"> <li>May calculate the production cost associated with a special packaging request, such as "six-packs" with a double layer of shrink wrap (Scheduling and accounting math level 2).</li> <li>May record testing-results from a number of samples and check the standard deviation to see if the results are within an acceptable range (data analysis math level 3).</li> </ul>
5. ORAL COMMUNICATIONS	<ul style="list-style-type: none"> <li>Most tasks require levels 1-2.</li> <li>Complex tasks require level 3.</li> </ul>	<ul style="list-style-type: none"> <li>Contact suppliers to provide feedback regarding new materials or machines (level 1).</li> <li>Interact with quality control supervisors to discuss product specifications (level 2).</li> <li>May speak with government inspectors inspecting the plant, representatives at the head office and company auditors to inform them of procedures or present them with ideas. Formalities are necessary (level 3).</li> </ul>
6. THINKING	<b>Problem Solving</b> <ul style="list-style-type: none"> <li>Problem solving at level 1.</li> <li>Decision making at levels 1-3.</li> <li>Finding information at levels 1-2</li> </ul>	<b>Problem Solving</b> <ul style="list-style-type: none"> <li>May find that there is insufficient refrigerator space for storing the products, which have been graded. They contact the shipping department to hasten the expedition of products (problem solving level 1).</li> <li>Decide whether to shut down a production line if quality specifications, in regard to temperature or weight, are not being met (decision making level 3).</li> </ul>

ESSENTIAL SKILL	SKILL LEVEL	EXAMPLES
7. WORKING WITH OTHERS		<ul style="list-style-type: none"> <li>Consult with foremen, machine operators or packers to learn details of production runs (finding information level 2).</li> </ul>
	<b>Job task planning &amp; organizing</b>	<b>Job task planning &amp; organizing</b> <ul style="list-style-type: none"> <li>The tasks of testers and graders, food and beverage processing, are repetitive for the most part. A small amount of testers' time is spent accommodating requests for special tests. Their pace of work is determined by daily deliveries and the volume of production coming from the lines. Even though the schedule runs smoothly most of the time, testers and graders must be ready for occasional emergency situations such as rush runs or recalls of certain products (level 2).</li> </ul>
	<b>Significant use of memory</b>	<b>Significant use of memory</b> <ul style="list-style-type: none"> <li>Remember defects found on the previous day to determine if the problems causing the defects are temporary or persistent.</li> <li>Remember how specific computer problems were solved in the past.</li> <li>Remember procedures for rare tests and memorize company codes for defects.</li> </ul>
	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>Testers and graders, food and beverage processing, mainly work independently, coordinating their activities with a variety of employees such as production-line operators and packers. They may work with a partner to solve specific problems. They may work in a team, for example, one pulling a carton from a machine, another inspecting the packaging and a third inspecting the contents. The workers in the team change roles periodically.</li> </ul>
	<ul style="list-style-type: none"> <li>Most tasks require levels 1-2.</li> <li>Complex tasks require level 2.</li> </ul>	<ul style="list-style-type: none"> <li>Use other computer applications. For example, they may open and close computer operated valves (level 1).</li> <li>They may communicate by e-mail with analysts in other locations of the company (level 2).</li> </ul>
8. DIGITAL TECHNOLOGY		
9. CONTINUOUS LEARNING	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>Most of the training received by testers and graders, food and beverage processing, occurs at the work site. They learn from manuals and from occasional courses. Grading specifications are learned on the job.</li> </ul>

Source: Adapted from Employment and Social Development Canada [ESDC]. (n.d.) *Labour Market Information: Explore careers by essential skills*. Available from the Job Bank (<https://www.jobbank.gc.ca/essentialskills>).

**Table 58: Essential Skills Labourers in fish and seafood processing – NOC 9618**

SKILL (ESDC)	SKILL LEVEL	EXAMPLES
1. WRITING	<ul style="list-style-type: none"> <li>Most tasks require level 1.</li> <li>Complex tasks require level 2.</li> </ul>	<ul style="list-style-type: none"> <li>May write notes to co-workers to document problems, such as a machine breakdown and write notes to mechanics describing the circumstances of the breakdown (level 1).</li> <li>May write memos to managers to order equipment and give reasons why it is needed (level 2).</li> </ul>
2. READING TEXT	<ul style="list-style-type: none"> <li>Most tasks require levels 1-2</li> <li>Complex tasks require level 3.</li> </ul>	<ul style="list-style-type: none"> <li>Read memos posted on the bulletin board concerning changes in policies or dates of meetings, such as union meetings (level 2).</li> <li>May refer to manuals such as the forklift manual or the dangerous goods manual (level 3).</li> </ul>
3. DOCUMENT USE	<ul style="list-style-type: none"> <li>Most tasks require levels 1-2.</li> <li>Complex tasks require level 3.</li> </ul>	<ul style="list-style-type: none"> <li>May read labels on supplies such as paints and chemicals (level 1).</li> <li>May complete forms such as tally sheets to document information on different products (level 2).</li> <li>May read assembly drawings for machines, such as moulding machines (level 3).</li> </ul>
4. NUMERACY	<ul style="list-style-type: none"> <li>Money math at levels 1-3.</li> <li>Scheduling and accounting math at level 2.</li> <li>Measurement and calculation math at levels 1-3.</li> <li>Data analysis math at level 3.</li> <li>Numerical estimation math at levels 1-2.</li> </ul>	<ul style="list-style-type: none"> <li>May make small supply purchases for the company and receive change (money math level 1).</li> <li>May schedule the time required to complete different tasks or determine the costs of material for a budget (scheduling and accounting math level 2).</li> <li>May plot changes to readings of pH levels in order to see patterns that may indicate potential problems in water treatment (data analysis math level 3).</li> </ul>
5. ORAL COMMUNICATIONS	<ul style="list-style-type: none"> <li>Most tasks require levels 1-2.</li> <li>Complex tasks require level 2.</li> </ul>	<ul style="list-style-type: none"> <li>Interact with co-workers to exchange information about tasks and to co-ordinate work (level 1).</li> <li>May participate in staff meetings to discuss improvements in processes (level 2).</li> <li>Communicate with co-workers regarding safety issues such as methods for extinguishing fires (level 2).</li> </ul>
6.THINKING	<b>Problem Solving</b> <ul style="list-style-type: none"> <li>Problem solving at levels 1-3.</li> <li>Decision making at levels 1-2.</li> <li>Finding information at levels 1-2.</li> </ul>	<b>Problem Solving</b> <ul style="list-style-type: none"> <li>May find that conveyor belts shut down. They look for the source of the problem, such as broken parts or the accidental tripping of a switch. If the belts cannot be immediately restarted, they deal with products manually until repairs have been completed (problem solving level 2).</li> <li>May decide when to shut down machines that are not operating properly (decision making level 2).</li> <li>Refer to the index of catalogues to find information on products (finding information level 2).</li> </ul>
	<b>Job task planning &amp; organizing</b>	<b>Job task planning &amp; organizing</b> <ul style="list-style-type: none"> <li>Labourers in processing, manufacturing and utilities follow priorities set by supervisors and sequence their tasks within that framework. Their tasks are generally repetitive. Disruptions may occur, such as the</li> </ul>

SKILL (ESDC)	SKILL LEVEL	EXAMPLES
7. WORKING WITH OTHERS 8. DIGITAL TECHNOLOGY 9. CONTINUOUS LEARNING		introduction of rush orders that cause their tasks to be reprioritized. Utilities labourers often work outdoors and face additional adjustments in their daily planning because of adverse weather conditions. Job task planning and organizing is often affected by factors outside the workers' control (level 2).
	<b>Significant use of memory</b>	<b>Significant use of memory</b> <ul style="list-style-type: none"> <li>• May remember the processing time for a range of different products.</li> <li>• May remember measurements for a brief period of time until they can be recorded in logs.</li> <li>• May remember operating and lockout procedures for machines.</li> </ul>
	• N/A	• Labourers in processing, manufacturing and utilities mainly work independently. They sometimes work with partners to carry out tasks, which require co-operation, such as lifting heavy barrels or identifying the source of a gas leak. They are part of a larger team that includes operators and managers.
	• May require level 1.	• Use computerized equipment, such as weigh scales or labelling machines. They may also use computer-controlled equipment to monitor processes, such as casting (level 1).
	• N/A	• Labourers in processing, manufacturing and utilities learn continuously on the job. They take training in first aid and in the Workplace Hazardous Materials Information System (WHMIS). They take part in in-house training sessions to learn about new products or processes. They may also upgrade their knowledge through reading magazines related to their occupation or industry.

Source: Adapted from Employment and Social Development Canada [ESDC]. (n.d.) *Labour Market Information: Explore careers by essential skills*. Available from the Job Bank (<https://www.jobbank.gc.ca/essentialskills>).

# POSITIONS AT THE INTERMEDIATE LEVEL

Table 59: Essential Skills for Process control and machine operators, food and beverage processing – NOC 9461

SKILL	SKILL LEVEL	EXAMPLES
1. WRITING	<ul style="list-style-type: none"> <li>Writing requires levels 1-2.</li> <li>Complex tasks require level 2.</li> </ul>	<ul style="list-style-type: none"> <li>Write memos to maintenance department to request repairs (level 1).</li> <li>Write recipe sheets when changes are being made to ingredients (level 2).</li> </ul>
	<ul style="list-style-type: none"> <li>Requires levels 1-3.</li> <li>Complex tasks require levels 2-3.</li> </ul>	<ul style="list-style-type: none"> <li>Read notes about the types and quantities of products being processed that day (level 1).</li> <li>Read CFIA regulations on critical control points of equipment (level 3).</li> </ul>
2. READING TEXT	<ul style="list-style-type: none"> <li>Most tasks require levels 1-3.</li> <li>Complex tasks require levels 2-3.</li> </ul>	<ul style="list-style-type: none"> <li>Scan product codes and labels on ingredients (level 1).</li> <li>Scan production graphs to interpret production rates and efficiency over a period (level 2).</li> <li>May scan and interpret assembly drawings to understand machine cleaning (level 3).</li> </ul>
	<ul style="list-style-type: none"> <li>Measurement and calculation math at levels 1-2.</li> <li>Data analysis math at levels 1-2.</li> </ul>	<ul style="list-style-type: none"> <li>Measure quantities of liquid or dry ingredients for recipes (measurement and calculation math level 1).</li> <li>May calculate the average usage of ingredients over various time periods to verify if machine is performing consistently (data and analysis math level 2).</li> </ul>
3. DOCUMENT USE	<ul style="list-style-type: none"> <li>Typical communication at level 1-2.</li> <li>Complex interactions require level 2.</li> </ul>	<ul style="list-style-type: none"> <li>Interact with coworkers to manage the production process and rate (level 2).</li> <li>Clarify work instructions with supervisors or provide updates on production (level 2).</li> </ul>
	<b>Problem Solving</b> <ul style="list-style-type: none"> <li>Typical problems require levels 1-3.</li> <li>Complex problems require levels 1-3.</li> </ul>	<b>Problem Solving</b> <ul style="list-style-type: none"> <li>May change machine settings and run test batches to make sure machine issues is fixed (level 1).</li> <li>May experience a complete computer shutdown; they call maintenance immediately and perform small fixes while awaiting help, if needed (level 3).</li> </ul>
4. NUMERACY	<b>Decision making</b> <ul style="list-style-type: none"> <li>Typical requirements are levels 1-3.</li> <li>Complex tasks require level 3.</li> </ul>	<b>Decision making</b> <ul style="list-style-type: none"> <li>Decide whether to pull dented cans off the line (level 1).</li> <li>Decide when to change flavours in a production run (level 2).</li> <li>May decide how to modify a product to meet specifications outside the normal production run (level 3).</li> </ul>
	<b>Critical thinking</b> <ul style="list-style-type: none"> <li>Typical tasks require level 2.</li> </ul>	<b>Critical thinking</b> <ul style="list-style-type: none"> <li>Evaluate the integrity of packaging prior to starting up a production line (level 2).</li> </ul>
5. ORAL COMMUNICATIONS		
6. THINKING		

SKILL	SKILL LEVEL	EXAMPLES
7. WORKING WITH OTHERS		<ul style="list-style-type: none"> <li>Assess the operation of their machine by monitoring pressures, weights, etc. (level 2).</li> </ul>
	<b>Job task planning/organizing</b> <ul style="list-style-type: none"> <li>Plan and organize tasks at level 2.</li> </ul>	<b>Job task planning/organizing</b> <ul style="list-style-type: none"> <li>They organize their tasks with strict timelines in mind to respect the schedules of packaging and shipping personnel.</li> </ul>
	<b>Significant use of memory</b> <ul style="list-style-type: none"> <li>N/A</li> </ul>	<b>Significant use of memory</b> <ul style="list-style-type: none"> <li>Remember the steps of processes in sequence and remember production targets for a number of products.</li> </ul>
	<ul style="list-style-type: none"> <li>Tasks require levels 1-2.</li> </ul>	<ul style="list-style-type: none"> <li>Get information on syrup mixes from computer database (level 1).</li> </ul>
	<ul style="list-style-type: none"> <li>Tasks require level 2.</li> </ul>	<ul style="list-style-type: none"> <li>They orient new employees, demonstrate how tasks are performed, and have opportunities to make suggestions toward improving work processes.</li> </ul>
8. DIGITAL TECHNOLOGY	<ul style="list-style-type: none"> <li>Tasks require level 1.</li> </ul>	<ul style="list-style-type: none"> <li>Use computer-controlled production machinery programmed to automate the production process (level 1).</li> </ul>
9. CONTINUOUS LEARNING	<ul style="list-style-type: none"> <li>Tasks require level 1.</li> </ul>	<ul style="list-style-type: none"> <li>Learn on the job, supplemented by on-site training courses offered (ex. first aid, WHMIS, etc.). They may also attend trade shows.</li> </ul>

Source: Food Processing Human Resources Council [FPHRC]. (2016). *Food Manufacturing Essential Skills Profile: Process Control and Machine Operator*. [PDF File]. Available from the Food Processing Skills Library (<http://www.fpsc-ctac.com/skills-library/>).

**Table 60: Essential Skills for Bakers – NOC 6332**

SKILL (ESDC)	SKILL LEVEL	EXAMPLES
1. WRITING	<ul style="list-style-type: none"> <li>Most tasks require levels 1-2.</li> <li>Complex tasks require level 3.</li> </ul>	<ul style="list-style-type: none"> <li>Write brief notes in production logs, text entries in forms and comments on recipes, bake orders and production sheets (level 1).</li> <li>Write incident reports, e.g. complete incident reports to describe events leading up to accidents (level 2).</li> <li>May prepare job quotes and proposals, e.g. self-employed bakers and head bakers write job proposals that describe baked products, quality standards and service guarantees (level 3).</li> </ul>
2. READING TEXT	<ul style="list-style-type: none"> <li>Most tasks require levels 1-2.</li> <li>Complex tasks require levels 3-4.</li> </ul>	<ul style="list-style-type: none"> <li>Read instructions and other text entries on product labels, e.g. read instructions for storing and mixing concentrated color and flavor extracts (level 1).</li> <li>Read instructions in recipes, bakers' sheets and production sheets, e.g. follow instructions in production</li> </ul>

SKILL (ESDC)	SKILL LEVEL	EXAMPLES
3. DOCUMENT USE		<p>sheets and recipes to create products (level 2).</p> <ul style="list-style-type: none"> <li>Read food handling and food importing regulations, Acts and codes, e.g. read provincial food handling regulations to determine cleaning requirements for working surfaces (level 4).</li> </ul>
	<ul style="list-style-type: none"> <li>Most tasks require levels 1-2.</li> <li>Complex tasks require level 2.</li> </ul>	<ul style="list-style-type: none"> <li>Locate codes on colour swatches, e.g. use codes to locate mixing ratios for custom cake icing colours (level 1).</li> <li>Locate data in lists and tables, e.g. locate colours and mixing ratios on colour sheets (level 2).</li> </ul>
4. NUMERACY	<ul style="list-style-type: none"> <li>Most tasks require levels 1-2.</li> <li>Complex tasks require level 3.</li> </ul>	<ul style="list-style-type: none"> <li>Take measurements using weigh scales, graduated containers, tapes and digital thermometers, e.g. measure depths, heights, widths and lengths of finished products, such as cookies and cakes (measurement math level 1).</li> <li>May calculate costs for baked goods, e.g. calculate costs for ingredients needed for large production runs (calculations math level 2).</li> <li>May schedule the order of activities and tasks, e.g. head bakers establish production timelines and staffing requirements to meet weekly and seasonal baking orders (accounting and scheduling math level 3).</li> </ul>
5. ORAL COMMUNICATIONS	<ul style="list-style-type: none"> <li>Most tasks require levels 1-3.</li> <li>Complex tasks require level 3.</li> </ul>	<ul style="list-style-type: none"> <li>Discuss current work assignments and products with co-workers, e.g. speak with other bakers about current assignments to coordinate the use of equipment and space and to integrate baking tasks (level 2).</li> <li>May instruct apprentice bakers and new sales staff e.g. explains preparation and decorating procedures while demonstrating tasks (level 3).</li> <li>May negotiate contracts with suppliers, e.g. head bakers negotiate with suppliers to establish the costs for equipment, such as ovens (level 3).</li> </ul>
6. THINKING	<ul style="list-style-type: none"> <li>Most tasks require levels 1-2.</li> <li>Complex tasks require level 3.</li> </ul>	<ul style="list-style-type: none"> <li>Find that there are not enough baking supplies to complete customers' orders. They pay retail prices at other bakeries and grocery stores until wholesale purchases are delivered (problem solving level 1).</li> <li>Evaluate the quality of baking supplies, such as fresh fruit, cream, fillers and chocolates, using criteria such as freshness, appearance, taste, size and texture (level 2).</li> </ul>
7. WORKING WITH OTHERS	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>Bakers work independently to prepare, bake, assemble and decorate baked goods. They coordinate and integrate tasks with other bakers in order to share resources, such as ovens and workspaces.</li> </ul>
8. DIGITAL TECHNOLOGY	<ul style="list-style-type: none"> <li>Most tasks require levels 1-2.</li> <li>Complex tasks require level 3.</li> </ul>	<ul style="list-style-type: none"> <li>Use calculators to complete numeracy-related tasks, such as calculating material requirements (level 1).</li> <li>May use bakery management software to input costs and receivables and generate sales summaries and</li> </ul>

SKILL (ESDC)	SKILL LEVEL	EXAMPLES
9. CONTINUOUS LEARNING		<p>income and expense statements (level 2).</p> <ul style="list-style-type: none"> <li>May use advanced spreadsheet features to create budgets and track capital, staffing, leasing, inventory and operating costs (level 3).</li> </ul>
	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>Bakers learn continuously to keep up-to-date on new food and taste trends, to research new products and to improve their baking techniques. They learn through their daily work experiences, by observing other bakers and by reading cookbooks and industry publications, such as Bakers' Journal. In addition, they may attend baking seminars and courses offered by colleges and specialty baking and cooking schools. For example, they may participate in training seminars about blending flavours and using organic products.</li> </ul>

Source: Adapted from Employment and Social Development Canada [ESDC]. (n.d.) *Labour Market Information: Explore careers by essential skills*. Available from the Job Bank (<https://www.jobbank.gc.ca/essentialskills>).

**Table 61: Essential Skills for Industrial butchers and meat cutters, poultry preparers and related workers – NOC 9462**

SKILL (FPSC)	SKILL LEVEL	EXAMPLES
1. WRITING	<ul style="list-style-type: none"> <li>Most writing tasks require level 1.</li> <li>Complex tasks require level 2.</li> </ul>	<ul style="list-style-type: none"> <li>Write meat orders in a log book describing how carcasses are to be delivered (level 1).</li> <li>Write letters or accident reports for compensation claims (level 2).</li> </ul>
2. READING TEXT	<ul style="list-style-type: none"> <li>Most reading tasks require levels 1-2.</li> <li>Advanced reading required at level 2.</li> </ul>	<ul style="list-style-type: none"> <li>Read labels on meat packs to verify contents before starting shift (level 1).</li> <li>Read short reports related to safety procedures or Good Manufacturing Practices (GMPs) (level 2).</li> </ul>
3. DOCUMENT USE	<ul style="list-style-type: none"> <li>Tasks require levels 1-2.</li> <li>Complex tasks require level 2.</li> </ul>	<ul style="list-style-type: none"> <li>Scan ID tags on butchered animals and match number to master list (level 1).</li> <li>Refer to animal anatomy charts to identify muscle groups for cutting (level 2).</li> </ul>
4. NUMERACY	<ul style="list-style-type: none"> <li>Measurement and calculation math at levels 1-2.</li> <li>Data analysis math at levels 1-2.</li> <li>Numerical estimation at levels 1-4.</li> </ul>	<ul style="list-style-type: none"> <li>Weigh cuts of meat to determine if it falls within specifications (level 1- measurement and calculation).</li> <li>Weigh known meat quantities on scale to determine if scale is giving accurate readings (level 1-data analysis).</li> <li>Estimate by eye and feel to determine if meat cut weight meets customer requirements (level 1-numerical estimation)</li> </ul>



SKILL (FPSC)	SKILL LEVEL	EXAMPLES
5. ORAL COMMUNICATIONS		<ul style="list-style-type: none"> <li>Estimate how much consumable meat an animal may provide based on its weight (level 2-numerical estimation).</li> </ul>
	<ul style="list-style-type: none"> <li>Most interactions require levels 1-2.</li> <li>Complex communication requires level 2.</li> </ul>	<ul style="list-style-type: none"> <li>May receive customer orders in person or on the phone, receiving information about slaughter dates, cuts, and quantities required (level 1).</li> <li>Participate in pre-shift meetings to discuss production targets, safety protocols, and unique specifications (level 2).</li> </ul>
6. THINKING	<b>Problem Solving</b> <ul style="list-style-type: none"> <li>Problem solving required at levels 1-2.</li> <li>Complex tasks require level 3.</li> </ul>	<b>Problem Solving</b> <ul style="list-style-type: none"> <li>Change appropriate machinery parts when equipment breaks down (level 1).</li> <li>When an order has been cut incorrectly, they identify missing cuts and complete the order (level 2).</li> </ul>
	<b>Decision making</b> <ul style="list-style-type: none"> <li>Decision making required at levels 1-2.</li> <li>Complex tasks require level 3.</li> </ul>	<b>Decision making</b> <ul style="list-style-type: none"> <li>Decide which tools and equipment to use when filling an order (level 1).</li> <li>Decide is additional trimming is required to meet customer requirements (level 2).</li> </ul>
	<b>Critical thinking</b> <ul style="list-style-type: none"> <li>Typical critical thinking tasks completed at level 2.</li> </ul>	<b>Critical thinking</b> <ul style="list-style-type: none"> <li>Evaluate the quality of meat products during the packing process, verifying that standards have been met and identifying improper cuts or portions (level 2).</li> <li>Assess the best way to deal with out of specification products (ex. meat with too much fat), involving lead hands and inspectors for the final decision (level 2).</li> </ul>
	<b>Job task planning/organizing</b> <ul style="list-style-type: none"> <li>Typical job tasks required at level 1.</li> </ul>	<b>Job task planning/organizing</b> <ul style="list-style-type: none"> <li>Those employed in large facilities complete their tasks in set sequences. Those who work in smaller facilities may have more flexibility in planning their tasks.</li> </ul>
	<b>Significant use of memory</b> <ul style="list-style-type: none"> <li>N/A</li> </ul>	<b>Significant use of memory</b> <ul style="list-style-type: none"> <li>Remember weight specification from scale in one room to processing room.</li> <li>Remember details of order they are working on.</li> </ul>
	<b>Finding information</b> <ul style="list-style-type: none"> <li>Tasks required at level 1.</li> </ul>	<b>Finding information</b> <ul style="list-style-type: none"> <li>Ask manager or customer about specifics for an order (level 1).</li> <li>Retrieve information from inspector regarding carcass damage (level 1).</li> </ul>

SKILL (FPSC)	SKILL LEVEL	EXAMPLES
7. WORKING WITH OTHERS	<ul style="list-style-type: none"> <li>Requires tasks at level 2.</li> </ul>	<ul style="list-style-type: none"> <li>Participate in formal discussions about work processes or product improvement.</li> <li>Have opportunities to make suggestions on improving work processes.</li> </ul>
8. DIGITAL TECHNOLOGY	<ul style="list-style-type: none"> <li>Tasks required at level 1.</li> </ul>	<ul style="list-style-type: none"> <li>Read weights on computerized scales, enter weights manually on a computer (level 1).</li> <li>May use automated slicers and saws to portion large cuts of meat (level 1).</li> </ul>
9. CONTINUOUS LEARNING	<ul style="list-style-type: none"> <li>Tasks required at level 1.</li> </ul>	<ul style="list-style-type: none"> <li>Mostly learn through co-workers and on-the-job experience.</li> <li>Sometimes take courses provided by industry organizations or, when unionized, through their unions.</li> </ul>

Source: Food Processing Human Resources Council [FPHRC]. (2016). *Food Manufacturing Essential Skills Profile: Industrial Meat Cutter*. [PDF File]. Available from the Food Processing Skills Library (<http://www.fpsc-ctac.com/skills-library/>).

**Table 62: Essential Skills for Fish and seafood plant workers – NOC 9463**

SKILL (ESDC)	SKILL LEVEL	EXAMPLES
1. WRITING	<ul style="list-style-type: none"> <li>Most tasks require level 1.</li> </ul>	<ul style="list-style-type: none"> <li>May complete shipping sheets, consisting of the names of workers on the line who processed products, names of wholesaler companies and types of fish (level 1).</li> <li>May complete brief accident reports, for example, when they cut themselves (level 1).</li> </ul>
2. READING TEXT	<ul style="list-style-type: none"> <li>Most tasks require levels 1-2.</li> <li>Complex tasks require level 3.</li> </ul>	<ul style="list-style-type: none"> <li>May read logbook information to check what happened during prior shifts or verify information for accuracy (level 1).</li> <li>May read safety information on machinery (level 2).</li> <li>May refer to a manual for specific information, such as how to evaluate canning quality (level 3).</li> </ul>
3. DOCUMENT USE	<ul style="list-style-type: none"> <li>Most tasks require levels 1-2.</li> <li>Complex tasks require level 2.</li> </ul>	<ul style="list-style-type: none"> <li>Read safety and health signs posted at the workplace, such as reminders to use foot and hand dip troughs when moving from room to room (level 1).</li> <li>Read packaging specifications for a variety of products (level 2).</li> <li>Read computer generated graphs showing temperatures and lengths of cooking times (level 2).</li> </ul>
4. NUMERACY	<ul style="list-style-type: none"> <li>Money math at level 2</li> <li>Measurement and calculation math at levels 1-3.</li> <li>Data analysis math at level 1.</li> <li>Numerical estimation math at level 2.</li> </ul>	<ul style="list-style-type: none"> <li>May prepare bills and calculate taxes for customers, based on the weight of the fish (money math level 2).</li> <li>Weigh baskets and racks of fish, to sort them into weight ranges and by fish types (measurement and calculation math level 1).</li> <li>Monitor computer readouts of average "recovery" per fish (i.e. amount used minus the waste) (data</li> </ul>

SKILL (ESDC)	SKILL LEVEL	EXAMPLES
5. ORAL COMMUNICATIONS		analysis math level 1).
	<ul style="list-style-type: none"> <li>Most tasks require level 1.</li> <li>Complex tasks require level 2.</li> </ul>	<ul style="list-style-type: none"> <li>May shout instructions down the line (level 1).</li> <li>Receive work assignments from supervisors and charge hands and discuss with them production goals and changes in schedules (level 1).</li> <li>May participate in group discussions attended by production crews to discuss safety, procedures and goals, and may attend meetings with fishery inspectors to review evaluations of the plant's procedures and facilities (level 2).</li> </ul>
6. THINKING	<b>Problem Solving</b> <ul style="list-style-type: none"> <li>Problem solving at levels 1-2.</li> <li>Decision making at levels 1-2.</li> <li>Finding information at levels 1-2.</li> </ul>	<b>Problem Solving</b> <ul style="list-style-type: none"> <li>May encounter faulty fish-sorting sensors. They must test and readjust the sensors to sort fish properly (problem solving level 2).</li> <li>Decide when to contact maintenance about problems with equipment or machine breakdowns (decision-making level 1).</li> <li>May ask supervisors for details about procedures and schedules (finding information level 1).</li> </ul>
	<b>Job task planning/organizing</b>	<b>Job task planning/organizing</b> <ul style="list-style-type: none"> <li>Fish plant workers' schedules are set by supervisors, with work loads depending on how much fish the suppliers have brought in and how many orders there are to fill for the day. Tasks may be varied, such as operating the forklift or working on the assembly lines. Fish plant workers may have to adjust their work schedules when equipment breaks down or when rush orders arrive. Although they have little control over the reorganization of the schedule, they do short term planning to co-ordinate their work effectively with others on assembly lines. They may also have to plan the sequencing of activities, such as loading smokers and retorts.</li> </ul>
	<b>Significant use of memory</b>	<b>Significant use of memory</b> <ul style="list-style-type: none"> <li>Remember different grades of fish and how to recognize different species of fish by colour, eyes, size and shape.</li> <li>Remember a variety of procedures for cleaning, cutting, glazing and packing fish.</li> <li>Remember the order of steps when operating thermal processing equipment and when making adjustments to machines or turning them off.</li> </ul>
7. WORKING WITH OTHERS	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>Fish plant workers work independently as part of assembly teams, with each person responsible for certain parts of the process. They may work with a partner, with one cooking and the other filling</li> </ul>

SKILL (ESDC)	SKILL LEVEL	EXAMPLES
8. DIGITAL TECHNOLOGY		pouches. They often co-ordinate their tasks with others, such as when operating winches to lift racks and lower them into ice water, filling boxes of glazed fish or moving and weighing boxes.
	<ul style="list-style-type: none"> <li>May require level 1.</li> </ul>	<ul style="list-style-type: none"> <li>They may program a computerized weighing machine with various codes pertaining to different types of fish; they may use computer numeric control (CNC) to adjust the speed of conveyors and the number of units processed (level 1).</li> </ul>
9. CONTINUOUS LEARNING	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>Fish plant workers may learn how to operate new equipment, such as forklifts, or take courses on topics such as thermal processing, container evaluation or first aid.</li> </ul>

Source: Adapted from Employment and Social Development Canada [ESDC]. (n.d.) *Labour Market Information: Explore careers by essential skills*. Available from the Job Bank (<https://www.jobbank.gc.ca/essentialskills>).

**Table 63: Essential Skills for Shippers and receivers – NOC 1521**

SKILL (ESDC)	SKILL LEVEL	EXAMPLES
1. WRITING	<ul style="list-style-type: none"> <li>Most tasks require level 1.</li> <li>Complex tasks require level 2.</li> </ul>	<ul style="list-style-type: none"> <li>Write memos to the front office to inform staff of an incorrect shipment or bill of lading (level 1).</li> <li>Write short reports to carriers about damaged or missing goods (level 2).</li> </ul>
2. READING TEXT	<ul style="list-style-type: none"> <li>Most tasks require levels 1-2.</li> <li>Complex tasks require level 3.</li> </ul>	<ul style="list-style-type: none"> <li>Read customs forms for information about customs regulations, categories and duty numbers (level 1).</li> <li>Refer to Material Safety Data Sheets (MSDS) to learn whether goods coming into the plant are hazardous and how they should be handled (level 3).</li> </ul>
3. DOCUMENT USE	<ul style="list-style-type: none"> <li>Most tasks require levels 1-2.</li> <li>Complex tasks require level 2.</li> </ul>	<ul style="list-style-type: none"> <li>Interpret Workplace Hazardous Materials Information System (WHMIS) symbols and safety posters in the workplace (level 1).</li> <li>Use rate charts to determine the price of shipping a specific parcel (level 2).</li> <li>Read a schedule to monitor which employees are working on various jobs and to co-ordinate unloading the trucks (level 2).</li> </ul>
4. NUMERACY	<ul style="list-style-type: none"> <li>Money math at level 2.</li> <li>Scheduling and accounting math at levels 1-3.</li> <li>Measurement and calculation math at levels</li> </ul>	<ul style="list-style-type: none"> <li>May approve invoices by checking the calculations for accuracy (money math level 2).</li> <li>May keep track of how much money is collected by recording it in an accounting book (scheduling and accounting math level 1).</li> <li>May estimate how much inventory is available to fill an order (numerical estimate math at level 1).</li> </ul>

SKILL (ESDC)	SKILL LEVEL	EXAMPLES
5. ORAL COMMUNICATIONS	1-2	
	<ul style="list-style-type: none"> <li>Numerical estimation math at levels 1-3.</li> <li></li> </ul>	
6. THINKING	<ul style="list-style-type: none"> <li>Most tasks require levels 1-2.</li> <li>Complex tasks require level 2.</li> </ul>	<ul style="list-style-type: none"> <li>Interact with truck drivers to direct them to the appropriate docks and to verify that the shipment is received in good condition (level 1).</li> <li>Discuss the co-ordination of complex tasks and production schedules with co-workers (level 2).</li> <li>Participate in staff meetings to exchange information about policies and practices relating to areas such as material handling and safety (level 2).</li> </ul>
	<b>Problem Solving</b> <ul style="list-style-type: none"> <li>Problem solving at levels 1-2.</li> <li>Decision making at levels 1-3.</li> <li>Finding information at levels 1-2.</li> </ul>	<b>Problem Solving</b> <ul style="list-style-type: none"> <li>Receive payment slips that are incorrectly filled out. They consult with co-workers for information or contact clients and carriers to clarify the payment details (problem solving level 2).</li> <li>Decide how to redirect lost packages (decision making level 1).</li> <li>Refer to shipping company directories for information on rates and delivery areas (finding information level 2).</li> </ul>
	<b>Job task planning/organizing</b>	<b>Job task planning/organizing</b> <ul style="list-style-type: none"> <li>Shippers and receivers perform routine and repetitive tasks. While they work under the general direction of a supervisor, they make their own decisions on priorities and the order of tasks. They make adjustments for frequent interruptions and changing priorities caused by rush orders, production or shipping delays. Planning is sometimes done several weeks in advance to ensure that space will be available to place incoming products. When there are needs to refrigerate products, planning must take into account refrigeration capacity (level 2).</li> </ul>
	<b>Significant use of memory</b>	<b>Significant use of memory</b> <ul style="list-style-type: none"> <li>Remember shipping regulations.</li> <li>Remember which orders have priority.</li> <li>Remember the pickup and delivery times of various shipping companies.</li> <li>Remember how much of each product will fill a split load.</li> <li>May remember dimensions and weights of various products in order to estimate loads.</li> </ul>
7. WORKING WITH OTHERS	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>Shippers and receivers mainly work independently. They may work jointly with a partner or helper or as part of a team when loading or unloading large orders.</li> </ul>

SKILL (ESDC)	SKILL LEVEL	EXAMPLES
8. DIGITAL TECHNOLOGY	<ul style="list-style-type: none"> <li>Tasks require level 2.</li> </ul>	<ul style="list-style-type: none"> <li>They may access and record shipment information (level 2).</li> <li>They may enter load weights (level 2).</li> <li>They may print orders for their own information (level 2).</li> </ul>
9. CONTINUOUS LEARNING	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>Some shippers and receivers attend training seminars on topics relating to workplace safety, the use of new equipment, customs regulations and the handling of dangerous goods. This training may be mandatory.</li> </ul>

Source: Adapted from Employment and Social Development Canada [ESDC]. (n.d.) *Labour Market Information: Explore careers by essential skills*. Available from the Job Bank (<https://www.jobbank.gc.ca/essentialskills>).

**Table 64: Essential Skills for Material handlers – NOC 7452**

SKILL (FPSC)	SKILL LEVEL	EXAMPLES
1. WRITING	<ul style="list-style-type: none"> <li>Writing requires level 1.</li> <li>Complex tasks require level 2.</li> </ul>	<ul style="list-style-type: none"> <li>Write letters to suppliers that explain problems or request changes to shipping schedules (level 1).</li> <li>Write letters to customs officials to remedy a problem (level 2).</li> </ul>
2. READING TEXT	<ul style="list-style-type: none"> <li>Requires levels 1-2.</li> <li>Complex tasks require level 2.</li> </ul>	<ul style="list-style-type: none"> <li>Read notes from co-workers about special orders (level 1).</li> <li>Read notes from supervisors with instruction on how to handle customer inquiries (level 2).</li> </ul>
3. DOCUMENT USE	<ul style="list-style-type: none"> <li>Most tasks require levels 1-2.</li> <li>Complex tasks require level 2.</li> </ul>	<ul style="list-style-type: none"> <li>Read warning and direction signs posted inside the facility (level 1).</li> <li>Obtain information about drop-off locations from sketches drawn by customers (level 1).</li> <li>Refer to weight charts to verify the weight tolerances for forklifts (level 2).</li> </ul>
4. NUMERACY	<ul style="list-style-type: none"> <li>Scheduling and accounting math at levels 1-2</li> <li>Measurement and calculation math at levels 1-2</li> </ul>	<ul style="list-style-type: none"> <li>May measure for wood crate construction (measurement and calculation math level 1).</li> <li>May schedule product shipments, considering time for loading the shipment (Scheduling and accounting math level 2).</li> </ul>
5. ORAL COMMUNICATIONS	<ul style="list-style-type: none"> <li>Typical communication at level 1-2.</li> <li>Complex interactions require level 2.</li> </ul>	<ul style="list-style-type: none"> <li>Talk to customers to determine pickup and delivery options (level 1).</li> <li>Interact with supervisors to discuss problems or order shortages (level 2).</li> <li>May talk to maintenance workers about machine operation problems (level 2).</li> </ul>
6. THINKING	<b>Problem Solving</b> <ul style="list-style-type: none"> <li>Typical problems require levels 1-2.</li> </ul>	<b>Problem Solving</b> <ul style="list-style-type: none"> <li>May need to organize a search for missing pallets, using inventory listing to retrieve the pallets (level 1).</li> </ul>

SKILL (FPSC)	SKILL LEVEL	EXAMPLES
	<ul style="list-style-type: none"> <li>Complex problems require level 2.</li> </ul>	<ul style="list-style-type: none"> <li>May find they don't have enough product to complete a shipment; along with the supervisor they decide if they will delay the shipment or send the package with missing components (level 2).</li> </ul>
	<b>Decision making</b> <ul style="list-style-type: none"> <li>Typical requirements are levels 1-2.</li> <li>Complex tasks require level 3.</li> </ul>	<b>Decision making</b> <ul style="list-style-type: none"> <li>Decide how to store items in the most efficient way to conserve space (level 2).</li> <li>Decide how to position a load so its weight will be properly balanced (level 2).</li> </ul>
	<b>Critical thinking</b> <ul style="list-style-type: none"> <li>Typical tasks require level 1.</li> </ul>	<b>Critical thinking</b> <ul style="list-style-type: none"> <li>Assess the mechanical fitness of their forklifts by conducting pre-shift inspections to identify any issues (level 1).</li> <li>Assess the loading pattern of pallets in trailers (level 2).</li> </ul>
	<b>Job task planning/organizing</b> <ul style="list-style-type: none"> <li>Plan and organize tasks at level 2.</li> </ul>	<b>Job task planning/organizing</b> <ul style="list-style-type: none"> <li>They receive assignments from supervisors at the beginning of each shift and plan their sequence of tasks for the day. Some collaboration with co-workers may be needed to coordinate the movement of goods between warehouses.</li> </ul>
	<b>Significant use of memory</b> <ul style="list-style-type: none"> <li>N/A</li> </ul>	<b>Significant use of memory</b> <ul style="list-style-type: none"> <li>Remember where numerous items can be found in a warehouse and memorize stock numbers of common items.</li> </ul>
	<b>Finding information</b> <ul style="list-style-type: none"> <li>Tasks require levels 1-2.</li> </ul>	<b>Finding information</b> <ul style="list-style-type: none"> <li>Use catalogues, product lists, and computer databases to locate information on products (level 2).</li> </ul>
	<ul style="list-style-type: none"> <li>Tasks require level 1.</li> </ul>	<ul style="list-style-type: none"> <li>Workers mainly work independently to move and load products in food processing. They may work with a partner or helper to move products.</li> </ul>
7. WORKING WITH OTHERS		
8. DIGITAL TECHNOLOGY	<ul style="list-style-type: none"> <li>Tasks require levels 1-2.</li> </ul>	<ul style="list-style-type: none"> <li>Use computer-controlled equipment such as scanning equipment (level 1).</li> <li>May use spreadsheet software to obtain daily pick lists (level 1).</li> </ul>
9. CONTINUOUS LEARNING	<ul style="list-style-type: none"> <li>Tasks require level 1.</li> </ul>	<ul style="list-style-type: none"> <li>Workers learn on the job and may take training in WHMIS and first aid. They are often required to obtain a license to operate a forklift and participate in safe equipment training.</li> </ul>

Source: Food Processing Human Resources Council [FPHRC]. (2016). *Food Manufacturing Essential Skills Profile: Material Handler*. [PDF File]. Available from the Food Processing Skills Library (<http://www.fpsc-ctac.com/skills-library/>).

**Table 65: Essential Skills for Transport truck drivers – NOC 7511**

SKILL (ESDC)	SKILL LEVEL	EXAMPLES
1. WRITING	<ul style="list-style-type: none"> <li>Most tasks require levels 1-2.</li> <li>Complex tasks require level 3.</li> </ul>	<ul style="list-style-type: none"> <li>Write reminder notes to co-workers, e.g. write notes to warn drivers about faulty equipment (level 1).</li> <li>Write longer text entries in forms, such as logbooks, e.g. write logbook entries to describe unusual events that occur during trips (level 2).</li> <li>May write reports, e.g. write detailed descriptions of accidents for use by insurance adjusters and police (level 3).</li> </ul>
2. READING TEXT	<ul style="list-style-type: none"> <li>Most tasks require levels 1-2.</li> <li>Complex tasks require levels 3-4.</li> </ul>	<ul style="list-style-type: none"> <li>Read short notes from co-workers, e.g. read messages from dispatchers to learn about load drop-off locations (level 1).</li> <li>Read a variety of manuals and handbooks, e.g. read user manuals to learn how to operate vehicle systems and diagnose, troubleshoot and repair equipment faults (level 3).</li> <li>May read regulations, e.g. read regulations governing items, such as the transportation of dangerous goods, curfews, towing and requirements for pilot cars (level 4).</li> </ul>
3. DOCUMENT USE	<ul style="list-style-type: none"> <li>Most tasks require levels 1-2.</li> <li>Complex tasks require level 3.</li> </ul>	<ul style="list-style-type: none"> <li>Complete a variety of checklists, e.g. complete pre-trip and post-trip vehicle safety inspection checklists to record the operating condition of trucks (level 1).</li> <li>Locate information, such as telephone numbers, hours of operation and locations, in dealer directories (level 2).</li> <li>May study schematic drawings, e.g. scan wiring schematics to determine the location of fuses and to troubleshoot faults (level 3).</li> </ul>
4. NUMERACY	<ul style="list-style-type: none"> <li>Most tasks require levels 1-2.</li> <li>Complex tasks require level 2.</li> <li>Numeracy divisions were not specified for this occupation.</li> </ul>	<ul style="list-style-type: none"> <li>Record expenses incurred during travel against categories of budgets (level 1).</li> <li>Calculate expenses by adding the cost of meals, toll fees and other expenses incurred during travel (level 2).</li> <li>Estimate the sizes and weights of loads (level 3).</li> </ul>
5. ORAL COMMUNICATIONS	<ul style="list-style-type: none"> <li>Most tasks require levels 1-2.</li> <li>Complex tasks require level 2</li> </ul>	<ul style="list-style-type: none"> <li>Talk to shippers and other drivers as they load and unload freight (level 1).</li> <li>May talk to customers to respond to questions and provide details about shipping procedures and costs (level 2).</li> <li>Exchange technical information with repairers, e.g. provide descriptions of equipment faults to help truck mechanics troubleshoot faults (level 2).</li> </ul>



SKILL (ESDC)	SKILL LEVEL	EXAMPLES
6. THINKING	<ul style="list-style-type: none"> <li>Most tasks require levels 1-2.</li> <li>Complex tasks require level 3.</li> <li>Thinking divisions were not specified for this occupation.</li> </ul>	<ul style="list-style-type: none"> <li>Evaluate the safety of road conditions. They consider weather and road conditions, spaces between vehicles, speeds and the behaviors of other drivers (level 1).</li> <li>Decide how loads should be positioned for cartage. They consider weights, load distributions and centers of gravity (level 2).</li> <li>Decide if vehicles are safe to operate. They base their decision on the severity of equipment faults discovered during pre-trip, en-route and post-trip inspections (level 3).</li> </ul>
7. WORKING WITH OTHERS	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>Long-haul truck drivers generally drive alone, although sometimes they drive with a partner or helper who assists with unloading. They may work as members of a team when loading and unloading large cargoes. Short haul drivers have a considerable degree of interaction with customers and supervisors. Truck drivers may also work in a team with dispatchers, office and maintenance staff.</li> </ul>
8. DIGITAL TECHNOLOGY	<ul style="list-style-type: none"> <li>Most tasks require levels 1-2.</li> <li>Complex tasks require level 3.</li> </ul>	<ul style="list-style-type: none"> <li>Use global positioning systems (GPS) to locate travel routes and estimate travel times (level 1).</li> <li>May use fleet-management software to retrieve bills of lading and customer account information (level 2).</li> <li>May use hand-held and in-cab electronic logbook systems to track, email and fax information, such as load numbers, weights, locations, driving times, rest period requirements, hours of service and remaining drive times (level 3).</li> </ul>
9. CONTINUOUS LEARNING	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>Truck drivers continue to learn through their participation in a number of courses, such as Transportation of Dangerous Goods (TDG), Air Brakes Class 1, defensive driving and forklift training. They may also attend information sessions to learn about safety regulations and new machinery and trucks purchased by the company.</li> </ul>

Source: Adapted from Employment and Social Development Canada [ESDC]. (n.d.) *Labour Market Information: Explore careers by essential skills*. Available from the Job Bank (<https://www.jobbank.gc.ca/essentialskills>).

**POSITIONS AT THE SUPERVISORY OR HIGH SKILL LEVEL**

**Table 66: Essential Skills for Supervisors, food and beverage processing (HACCP, Food Supervisor) – NOC 9213**

SKILL (FPSC)	SKILL LEVEL	EXAMPLES
1. WRITING	<ul style="list-style-type: none"><li>• Most writing tasks require levels 2-3.</li><li>• Complex tasks may require level 4.</li></ul>	<ul style="list-style-type: none"><li>• May record minutes from meetings with HACCP team members (level 2).</li><li>• Write short, descriptive memos to co-workers describing procedures (level 3).</li><li>• May write short reports to supervisor evaluating new equipment or processes (level 4).</li></ul>
2. READING TEXT	<ul style="list-style-type: none"><li>• Most reading tasks require level 3.</li><li>• Advanced reading required at levels 4-5.</li></ul>	<ul style="list-style-type: none"><li>• Read short emails regarding plant issues from coworkers (level 1).</li><li>• Read memos from managers about upcoming plant activities (level 2). Read various sections of government regulations to evaluate conformance of company policies and procedures (level 4).</li><li>• May read and interpret export and border security documents (level 3).</li></ul>
3. DOCUMENT USE	<ul style="list-style-type: none"><li>• Tasks require level 3.</li><li>• Complex tasks require levels 4-5.</li></ul>	<ul style="list-style-type: none"><li>• Periodically review contracts to verify that suppliers are performing the job as required (level 2).</li><li>• Read and interpret blueprints and scale drawings to determine and verify product and employee traffic flow (level 3).</li><li>• Read, interpret, verify, and cross-reference the accuracy of a large number of records that require broad and specialized knowledge of the content (level 4).</li></ul>
4. NUMERACY	<ul style="list-style-type: none"><li>• Money math at level 1.</li><li>• Scheduling and accounting math at levels 1-3.</li><li>• Measurement and calculation math at levels 1-3.</li><li>• Data analysis math at levels 1-3.</li><li>• Numerical estimation at levels 2-3.</li></ul>	<ul style="list-style-type: none"><li>• May verify figures when reviewing invoices (money math level 1).</li><li>• Schedule work assignments for workers they supervise (scheduling and accounting level 2).</li><li>• Convert between imperial and metric measures (measurement and calculation math level 2).</li></ul>
5. ORAL COMMUNICATIONS	<ul style="list-style-type: none"><li>• Most interactions require levels 2-3.</li><li>• Complex communication requires level 4.</li></ul>	<ul style="list-style-type: none"><li>• Coordinate their work with other individuals and departments (level 2).</li><li>• Interact with operator and department leaders to ensure practices comply with HACCP standards (level 3).</li></ul>

SKILL (FPSC)	SKILL LEVEL	EXAMPLES
6. THINKING		<ul style="list-style-type: none"> <li>May make formal presentations to senior management to describe HCAAP system and make a case for changes or expenditures to comply with HCAAP (level 4).</li> </ul>
	<b>Problem Solving</b> <ul style="list-style-type: none"> <li>Problem solving required at level 1.</li> <li>Complex tasks require levels 3-4.</li> </ul>	<b>Problem Solving</b> <ul style="list-style-type: none"> <li>May identify instances of non-conformance of HCAAP procedures and check to ensure it was resolved according to proper procedures (level 1).</li> <li>May discover that a food hazard exists. The task of locating the source of the problem may involve considerable problem-solving efforts (level 3).</li> <li>When implementing procedures they may encounter interpersonal conflict that negatively affects the workplace. Handling these instances take considerable conflict resolution efforts (level 3).</li> </ul>
	<b>Decision making</b> <ul style="list-style-type: none"> <li>Typical requirements are levels 1-3.</li> <li>Complex tasks require level 4.</li> </ul>	<b>Decision making</b> <ul style="list-style-type: none"> <li>Decide among several suppliers and product options when purchasing supplies for the lab or processing area (level 1).</li> <li>Decide how to interpret and apply external regulations in the context of the plant (level 2).</li> <li>Have to quickly assess situations that may compromise food safety, determining the cause and extent of the problem, and how to rectify the situation (level 3).</li> </ul>
	<b>Critical thinking</b> <ul style="list-style-type: none"> <li>Typical tasks require level 2.</li> <li>Complex tasks require levels 3-4.</li> </ul>	<b>Critical thinking</b> <ul style="list-style-type: none"> <li>Assess the impact of removing a worker from the production line due to infractions in safe food handling (level 3).</li> <li>Weigh various factors if a product is placed on hold to decide if the product in question needs to be destroyed, altered to meet standards, or is fine to proceed as is (level 4).</li> </ul>
	<b>Job task planning/organizing</b> <ul style="list-style-type: none"> <li>Typical job tasks required at level 3.</li> </ul>	<b>Job task planning/organizing</b> <ul style="list-style-type: none"> <li>Plan routine tasks that must be completed each day, and monitor procedures throughout the plant on an hourly, daily, weekly, monthly, and yearly basis. May be responsible for planning work schedules of those they supervise and may need to coordinate their activities with changing production schedules.</li> </ul>
	<b>Significant use of memory</b> <ul style="list-style-type: none"> <li>N/A</li> </ul>	<b>Significant use of memory</b> <ul style="list-style-type: none"> <li>Remember passwords and codes that will access various parts of a computer information system and remember critical control points in the plant and their critical limits.</li> </ul>
	<b>Finding information</b> <ul style="list-style-type: none"> <li>Tasks require levels 1-2.</li> <li>Complex tasks require levels 3-4.</li> </ul>	<b>Finding information</b> <ul style="list-style-type: none"> <li>Seek information from supervisors and lead hands about production practices or new product lines (level 1).</li> </ul>

SKILL (FPSC)	SKILL LEVEL	EXAMPLES
7. WORKING WITH OTHERS	• N/A	<ul style="list-style-type: none"> <li>Refer to complex legal documents, government regulations or scientific research papers to understand if and how the content applies to their work context (level 3).</li> <li>They may interact with any and all employees of the plant, playing a key role in orientation training and ongoing instruction. Interpersonal skills are critical in ensuring the coordinated effort of all staff toward a safe, high quality product.</li> </ul>
8. DIGITAL TECHNOLOGY	• Tasks require levels 1-3.	<ul style="list-style-type: none"> <li>May use a digital camera to take photos of machines to confirm compliance of corrective action request from CFIA (level 1).</li> <li>Use a smartphone for text or email management (level 1).</li> <li>Use a spreadsheet to record statistical data (level 3).</li> </ul>
9. CONTINUOUS LEARNING	• N/A	<ul style="list-style-type: none"> <li>Must be knowledgeable to current and constantly changing food production regulations. They may learn HCAAP regulations from a workshop, university class, or self-study. They upgrade product knowledge through communication with coworkers and supervisors and learn about new technology.</li> </ul>

Source: Food Processing Human Resources Council [FPHRC]. (2016). *Food Manufacturing Essential Skills Profile: Production Lead Hand*. [PDF File]. Available from the Food Processing Skills Library (<http://www.fpsc-ctac.com/skills-library/>).

**Table 67: Essential Skills for Industrial electricians – NOC 7242**

SKILL (ESDC)	SKILL LEVEL	EXAMPLES
1. WRITING	<ul style="list-style-type: none"> <li>Most tasks require levels 1-2.</li> <li>Complex tasks require level 3.</li> </ul>	<ul style="list-style-type: none"> <li>Write reminder notes to co-workers, e.g. write notes to warn drivers about faulty equipment (level 1).</li> <li>Write longer text entries in forms, such as logbooks, e.g. write logbook entries to describe unusual events that occur during trips (level 2).</li> <li>May write reports, e.g. write detailed descriptions of accidents for use by insurance adjusters and police (level 3).</li> </ul>
2. READING TEXT	<ul style="list-style-type: none"> <li>Most tasks require levels 1-3.</li> <li>Complex tasks require level 4.</li> </ul>	<ul style="list-style-type: none"> <li>Read instructions and other short text in log books and on labels and packaging, e.g. read about electrical shock hazards on labels affixed to batteries (level 1).</li> <li>May read magazines and website articles, e.g. read trade magazines to broaden their knowledge of the trucking industry and stay current on new equipment and regulations (level 3).</li> <li>May read regulations, e.g. read regulations governing items, such as the transportation of dangerous goods, curfews, towing and requirements for pilot cars (level 4).</li> </ul>

SKILL (ESDC)	SKILL LEVEL	EXAMPLES
3. DOCUMENT USE	<ul style="list-style-type: none"> <li>Most tasks require levels 1-3.</li> <li>Complex tasks require level 3.</li> </ul>	<ul style="list-style-type: none"> <li>Complete a variety of checklists, e.g. complete pre-trip and post-trip vehicle safety inspection checklists to record the operating condition of trucks (level 1).</li> <li>Locate information, such as telephone numbers, hours of operation and locations, in dealer directories (level 2).</li> <li>May study schematic drawings, e.g. scan wiring schematics to determine the location of fuses and to troubleshoot faults (level 3).</li> </ul>
4. NUMERACY	<ul style="list-style-type: none"> <li>Most tasks require levels 1-2.</li> <li>Complex tasks require level 2.</li> <li>Numeracy divisions were not specified for this occupation.</li> </ul>	<ul style="list-style-type: none"> <li>Take a variety of measurements using basic tools, e.g. measure the width of loads using tape measures (level 1).</li> <li>Calculate expenses by adding the cost of meals, toll fees and other expenses incurred during travel (level 2).</li> <li>Estimate the sizes and weights of loads (level 2).</li> </ul>
5. ORAL COMMUNICATIONS	<ul style="list-style-type: none"> <li>Most tasks require levels 1-2.</li> <li>Complex tasks require level 2.</li> </ul>	<ul style="list-style-type: none"> <li>Listen to communication over two-way and citizen band radios (level 1).</li> <li>Talk to dispatchers, drivers and supervisors about a variety of topics, e.g. discuss work assignments and drop-off procedures with supervisors (level 2).</li> <li>Exchange technical information with repairers, e.g. provide descriptions of equipment faults to help truck mechanics troubleshoot faults (level 2).</li> </ul>
6. THINKING	<ul style="list-style-type: none"> <li>Most tasks require levels 1-2.</li> <li>Complex tasks require level 3.</li> <li>Thinking divisions were not specified for this occupation.</li> </ul>	<ul style="list-style-type: none"> <li>Select travel routes. They consider timelines, loads, speed limits and road conditions (level 1).</li> <li>Find that loads do not fit trucks. They adjust loads, try alternate loading methods and seek the assistance of co-workers. They request replacement vehicles if necessary (level 2).</li> <li>Decide if vehicles are safe to operate. They base their decision on the severity of equipment faults discovered during pre-trip, en-route and post-trip inspections (level 3).</li> </ul>
7. WORKING WITH OTHERS	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>Long-haul truck drivers generally drive alone, although sometimes they drive with a partner or helper who assists with unloading. They may work as members of a team when loading and unloading large cargoes. Short haul drivers have a considerable degree of interaction with customers and supervisors. Truck drivers may also work in a team with dispatchers, office and maintenance staff.</li> </ul>
8. DIGITAL TECHNOLOGY	<ul style="list-style-type: none"> <li>Most tasks require levels 1-2.</li> <li>Complex tasks require level 3.</li> </ul>	<ul style="list-style-type: none"> <li>May use fleet tracking software to send and record data, such as speeds, locations, routes and the status of equipment, such as auxiliary motors (level 1).</li> <li>May use browsers and search engines to learn about road conditions and access weather advisories (level 2).</li> </ul>

SKILL (ESDC)	SKILL LEVEL	EXAMPLES
9. CONTINUOUS LEARNING		<ul style="list-style-type: none"> <li>May use hand-held and in-cab electronic logbook systems to track, email and fax information, such as load numbers, weights, locations, driving times, rest period requirements, hours of service and remaining drive times (level 3).</li> </ul>
	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>Truck drivers continue to learn through their participation in a number of courses, such as Transportation of Dangerous Goods (TDG), Air Brakes Class 1, defensive driving and forklift training. They may also attend information sessions to learn about safety regulations and new machinery and trucks purchased by the company.</li> </ul>

Source: Adapted from Employment and Social Development Canada [ESDC]. (n.d.) *Labour Market Information: Explore careers by essential skills*. Available from the Job Bank (<https://www.jobbank.gc.ca/essentialskills>).

## POSITIONS AT THE MANAGERIAL LEVEL

**Table 68: Essential Skills for Manufacturing managers (Quality Assurance Manager) – NOC 0911**

SKILL (FPSC)	SKILL LEVEL	EXAMPLES
1. WRITING	<ul style="list-style-type: none"> <li>Writing requires levels 2-4.</li> <li>Complex tasks require level 4.</li> </ul>	<ul style="list-style-type: none"> <li>Write email messages to customers in response to their complains (level 2).</li> <li>Write Standard Operating Procedures (SOPs) for various tasks within the food processing cycle, outlining steps in the process and detailing instructions for each step (level 3).</li> <li>Write various reports; for example, write corrective action reports outlining strategies implemented to address issues noted in audits (level 4).</li> </ul>
2. READING TEXT	<ul style="list-style-type: none"> <li>Required levels 2-3.</li> <li>Complex tasks require level 3.</li> </ul>	<ul style="list-style-type: none"> <li>Read labels on finished products to verify that all labelling components satisfy CFIA requirements (level 2).</li> <li>Read and interpret CFIA regulations pertaining to all aspects of the food processing cycle to ensure internal processes comply with these regulations (level 3).</li> </ul>
3. DOCUMENT USE	<ul style="list-style-type: none"> <li>Most tasks require levels 2-3.</li> <li>Complex tasks require level 3.</li> </ul>	<ul style="list-style-type: none"> <li>Scan various quality assurance checklists to verify that processes are being followed (level 2).</li> <li>Review pest control program maps to identify locations and types of pest devices in the facility (level 2).</li> <li>Review schematic drawings of facility to gain understanding of process and product flow (level 3).</li> </ul>
4. NUMERACY	<ul style="list-style-type: none"> <li>Money math at level 1.</li> <li>Scheduling and accounting math at levels 1-3</li> <li>Measurement and calculation math at levels 2-3.</li> <li>Data analysis math at levels 2-3.</li> </ul>	<ul style="list-style-type: none"> <li>Prepare purchase orders for supplies and equipment required to conduct quality control testing (money math level 1)</li> <li>Schedule facility quality control inspections with CFIA (scheduling and accounting math level 2).</li> <li>Analyze statistical data directly from the production line to identify problems and recommend changes (data analysis math level 2).</li> </ul>
5. ORAL COMMUNICATIONS	<ul style="list-style-type: none"> <li>Typical communication at levels 2-4.</li> <li>Complex communication tasks require level 3.</li> </ul>	<ul style="list-style-type: none"> <li>Provide direction and guidance to quality control personnel (level 2).</li> <li>Communicate with customers experience issues with their products, providing with option on how to deal with the problem (level 2).</li> <li>Communicate with suppliers to obtain required product specifications and certificates of analysis (level 2).</li> </ul>
6. THINKING	<b>Problem Solving</b> <ul style="list-style-type: none"> <li>Typical problems require levels 2-3.</li> <li>Complex problems require level 3.</li> </ul>	<b>Problem Solving</b> <ul style="list-style-type: none"> <li>Find that a random sample from the processing line does not meet process parameters, such as temperature. They test a second sample and determine if the process batch is acceptable or if they will need to notify the production floor of the next steps (level 3).</li> </ul>

SKILL (FPSC)	SKILL LEVEL	EXAMPLES
7. WORKING WITH OTHERS  8. DIGITAL TECHNOLOGY  9. CONTINUOUS LEARNING	<b>Decision making</b> <ul style="list-style-type: none"> <li>Typical requirements are levels 2-3.</li> <li>Complex tasks require level 3.</li> </ul>	<b>Decision making</b> <ul style="list-style-type: none"> <li>Decide which packaging and modes of transportation to use when shipping products to customers (level 2).</li> <li>With the production supervisor, decide how to manage product that was affected by a deviation in process controls and parameters (level 3).</li> </ul>
	<b>Critical thinking</b> <ul style="list-style-type: none"> <li>Typical tasks require levels 3-4.</li> </ul>	<b>Critical thinking</b> <ul style="list-style-type: none"> <li>Evaluate final products prior to their release on the market, verifying all quality control parameters to meet regulations (level 3).</li> <li>Evaluate the severity of a product issue to determine the classification of a recall, number of products impacted, the issue presented, and the severity of health complications customers could experience (level 4).</li> </ul>
	<b>Job task planning/organizing</b> <ul style="list-style-type: none"> <li>Plan and organize tasks at level 3.</li> </ul>	<b>Job task planning/organizing</b> <ul style="list-style-type: none"> <li>Monitor their organization's quality control programs, with regular review and verification of processes and documentation. Frequently they have to modify their daily and weekly plans to respond to issues.</li> </ul>
	<b>Significant use of memory</b> <ul style="list-style-type: none"> <li>N/A</li> </ul>	<b>Significant use of memory</b> <ul style="list-style-type: none"> <li>Remember steps required for tests, and key regulations pertaining to food and beverage processing.</li> </ul>
	<b>Finding information</b> <ul style="list-style-type: none"> <li>Tasks require level 2.</li> </ul>	<b>Finding information</b> <ul style="list-style-type: none"> <li>Find information about product recalls on CFIA website (level 2).</li> <li>Find information about trends and innovations regarding food safety at tradeshow and conferences (level 2).</li> </ul>
	<ul style="list-style-type: none"> <li>Tasks require level 3.</li> </ul>	<ul style="list-style-type: none"> <li>They must develop working relationships with all level of the organization, from upper management to operations.</li> </ul>
	<ul style="list-style-type: none"> <li>Tasks require levels 2-3.</li> </ul>	<ul style="list-style-type: none"> <li>Use word processing software to develop reports (level 2).</li> <li>Use database software and statistical analysis software (level 2).</li> </ul>
	<ul style="list-style-type: none"> <li>Tasks require level 3.</li> </ul>	<ul style="list-style-type: none"> <li>Required to participate in formalized and self-directed learning opportunities as food safety continues to evolve. They may participate in CFIA courses (about regulations) or third-party training.</li> </ul>

Source: Food Processing Human Resources Council [FPHRC]. (2016). *Food Manufacturing Essential Skills Profile: Quality Assurance Manager*. [PDF File]. Available from the Food Processing Skills Library (<http://www.fpsc-ctac.com/skills-library/>).



## APPENDIX D: SECONDARY PROGRAMS

### ONTARIO YOUTH APPRENTICESHIP PROGRAM

The Ontario Youth Apprenticeship program gives students the opportunity to start receiving training in a skilled trade while earning credit toward an Ontario Secondary School Diploma (OSSD). Relevant trades offered include: Baker, Baker/pâtissier, Chef, and Cook.

Link: <https://oyap.com/splash/>

PARTICIPATING SCHOOL DISTRICTS	
Algonquin and Lakeshore Catholic District School Board Avon Maitland District School Board Bluewater District School Board Brant Haldimand Norfolk Catholic District School Board Catholic District School Board of Eastern Ontario Conseil des écoles publiques de l'Est de l'Ontario Conseil scolaire catholique Mon Avenir Conseil scolaire catholique Providence Conseil scolaire de district du Nord-Est de l'Ontario District School Board of Niagara Dufferin-Peel Catholic District School Board Durham Catholic District School Board Grand Erie District School Board Hamilton-Wentworth Catholic District School Board Hastings & Prince Edward District School Board Huron Perth Catholic District School Board Keewatin-Patricia District School Board Lambton Kent District School Board Limestone District School Board London District Catholic School Board	Near North District School Board Northeastern Catholic District School Board Peel District School Board Peterborough Victoria Northumberland and Clarington Catholic District School Board Rainbow District School Board Rainy River District School Board Renfrew County Catholic District School Board Renfrew County District School Board Simcoe County District School Board Simcoe Muskoka Catholic District School Board St Clair Catholic District School Board Superior-Greenstone District School Board Thames Valley District School Board Thunder Bay Catholic District School Board Toronto Catholic District School Board Upper Canada District School Board Waterloo Catholic District School Board York Catholic District School Board York Region District School Board

## SPECIALTY HIGH SKILLS MAJOR (SHSM) PROGRAM

The Specialist High Skills Major (SHSM) program is a Ministry-approved program for grade 11 and 12 students. Participants enroll in industry-focused courses and co-op placements tailored toward a number of employment sectors. The following chart presents the school districts offering the Hospitality and Tourism, Food Processing, or Manufacturing specializations and specifies the participating secondary schools when the information is available. The three streams are:

- Hospitality and Tourism: Includes elective certifications as cook/ line cook; tailored for those interested in future apprenticeships
- Manufacturing: Includes elective certifications as a manufacturing technologist or in production quality and control
- Food Processing: Includes elective specializations in food science or food manufacturing; designed for those interested in post-secondary education or apprenticeships

PARTICIPATING SCHOOL DISTRICTS	PARTICIPATING SCHOOLS (IF AVAILABLE)	SHSM STREAM OFFERED			
		TOURISM & HOSPITALITY	MANUFACTURING	FOOD PROCESSING	N/A*
Algonquin and Lakeshore Catholic District School Board	St. Theresa Catholic Secondary School	√			
Avon Maitland District School Board				√	√
Brant Haldimand Norfolk Catholic District School Board		√			
Catholic District School Board of Eastern Ontario	St. Francis Xavier CHS	√			
	St. John CHS	√			
	St. Joseph CSS	√			
	St. Luke CHS	√			
	St. Matthew CSS	√			
	St. Michael CHS	√			
Conseil des écoles publiques de l'Est de l'Ontario				√	√
Conseil scolaire catholique Providence		√			
Conseil scolaire de district catholique des Grandes Rivières		√			

PARTICIPATING SCHOOL DISTRICTS	PARTICIPATING SCHOOLS (IF AVAILABLE)	SHSM STREAM OFFERED			
		TOURISM & HOSPITALITY	MANUFACTURING	FOOD PROCESSING	N/A*
Conseil scolaire de district du Nord-Est de l'Ontario					√
Durham Catholic District School Board	Father Leo J. Austin Catholic SS Monsignor John Pereyema Catholic SS Monsignor Paul Dwyer Catholic HS	√ √ √			
Grand Erie District School Board	Hagersville Secondary School McKinnon Park Secondary School Tollgate Technological Skills Centre Brantfort Collegiate Institute & Vocational School Cayuga SS Dunnville SS	√ √ √	√ √ √		
Hamilton-Wentworth Catholic District School Board				√	√
Hastings & Prince Edward District School Board	Trenton High School	√	√		
Keewatin-Patricia District School Board					√
Lambton Kent District School Board		√	√		
Limestone District School Board					√
London District Catholic School Board	Catholic Central (CCH) John Paul II (JP II) St. Joseph's St. Mary's SS	√ √ √	√ √		
Near North District School Board	Parry Sound High School Northern Secondary School	√ √			
Ottawa Catholic District School Board	St. Patrick's High School All Saint's HS Notre Dame HS	√ √ √	√ √		
Peel District School Board	Louise Arbour HS Rick Hansen HS Turner Fenton HS West Credit HS	√ √ √ √			

PARTICIPATING SCHOOL DISTRICTS	PARTICIPATING SCHOOLS (IF AVAILABLE)	SHSM STREAM OFFERED			
		TOURISM & HOSPITALITY	MANUFACTURING	FOOD PROCESSING	N/A*
	Chinguacousy HS Clarkson HS Port Credit HS		√ √ √		
Rainbow District School Board	Confederation Secondary School		√		
Rainy River District School Board	Atikokan High School Fort-Francis High School	√	√		
Renfrew County District School Board	Offered in 7 schools; not specified.			√	√
Simcoe County District School Board	Collingwood C.I Innisdale SS Nantyr Shore SS Twin Lakes SS	√ √ √ √			
Simcoe Muskoka Catholic District School Board	Jean Vanier Catholic High School Patrick Fogarty Catholic Secondary School St. Dominic Catholic Secondary School St. Theresa's Catholic High School	√ √ √ √			
Upper Canada District School Board	Almonte DHS Cornwall C&VS Gananoque SS Smiths Falls District CI South Grenville DHS St. Lawrence SS Thousand Islands SS Tr. Leger	√ √ √ √ √ √ √	√     √		
Waterloo Catholic District School Board	Monsignor Doyle SS Resurrection SS St. Benedict SS St. David SS St. Mary's SS	√ √ √ √ √	√  √  √		
York Catholic District School Board	St. Maximillian Kolbe SS	√	√		
York Region District School Board	Dr. J.M. Denison SS Huron Heights SS	√ √	√		

PARTICIPATING SCHOOL DISTRICTS	PARTICIPATING SCHOOLS (IF AVAILABLE)	SHSM STREAM OFFERED			
		TOURISM & HOSPITALITY	MANUFACTURING	FOOD PROCESSING	N/A*
	Stephen Lewis SS Tommy Douglas SS	√ √			

Source: <http://www.edu.gov.on.ca/morestudentsuccess/SHSM.html>

\* N/A refers to those school districts that offer an SHSM program but where the specific streams are not indicated in the documentation reviewed for this study, as well as those districts where a Food Processing stream was recently announced but the documentation available for this study did not specify what other program streams are offered in addition to those specified here.

## OTHER INITIATIVES

<b>Program name:</b> DSNB Skills Challenge	<b>Program location:</b> Niagara College of Canadian Food and Wine Institute
<b>School board:</b> District School Board of Niagara	<b>Region:</b> Niagara
<b>Language offered:</b> English <b>Link:</b> <a href="http://teched.dsbni.org/skills">http://teched.dsbni.org/skills</a>	<b>Skills performed:</b> Baking, Culinary Arts
PROGRAM SUMMARY	
<ul style="list-style-type: none"> <li>Skills competition designed to evaluate skills and prepare students for employment and further study in industry-related careers</li> <li>Recognizes outstanding students for professionalism and achievements in baking</li> <li>Students cook and simply hot and cold dishes that adhere to trade practices and requirements</li> <li>Opportunity to showcase new culinary trends</li> <li>Dates and locations are provided from the 2018 competition and have not yet been announced for the upcoming 2019 school year.</li> </ul>	

<b>Program name:</b> SWAC- School College Work Initiative	<b>Program location:</b> Fanshawe College
<b>School board:</b> Grand Erie District School Board	<b>Region:</b> Simcoe
<b>Language offered:</b> English <b>Link:</b> <a href="http://granderie.ca/board/secondary/programs/swacdual-credit">http://granderie.ca/board/secondary/programs/swacdual-credit</a>	<b>Skills performed:</b> Basic kitchen production, Food preparation/service
<b>PROGRAM SUMMARY</b>	
<ul style="list-style-type: none"> <li>• Offers a variety of programs combining academic preparation and hands-on work experience</li> <li>• Collaboration with the Council of Ontario District of Education and the Committee of College Presidents</li> <li>• Increases opportunities for student academic success and school-work transitions</li> <li>• Food Preparation &amp; Service and Basic Kitchen Production I &amp; II are offered</li> </ul>	

<b>Program name:</b> ELATE III	<b>Program location:</b> Industry-Education Council of Hamilton
<b>School board:</b> Hamilton-Wentworth District School Board	<b>Region:</b> Hamilton
<b>Language offered:</b> English <b>Link:</b> <a href="https://www.iechamilton.ca/elate-iii">https://www.iechamilton.ca/elate-iii</a>	<b>Skills performed:</b> Manufacturing
<b>PROGRAM SUMMARY</b>	
<ul style="list-style-type: none"> <li>• Offered through the Industry-Education Council of Hamilton</li> <li>• 32-week transition program designed to help students transition toward employment in the manufacturing industry</li> <li>• Students learn basic technical skills applied in the sector</li> <li>• Trained in manufacturing processes and applying safe and effective operations</li> </ul>	

<b>Program name:</b> Catering with Class Program	<b>Program location:</b> Trenton High School
<b>School board:</b> Hastings and Prince Edward District School Board	<b>Region:</b> Belleville
<b>Language offered:</b> English	<b>Skills performed:</b> Food service
<b>PROGRAM SUMMARY</b>	
<ul style="list-style-type: none"> <li>• 3-credit course to develop skills and knowledge of various sectors of hospitality and tourism industry</li> <li>• Students learn to prepare and present food, evaluate facilities, and control inventory</li> <li>• Explore marketing and management for events</li> <li>• Develop awareness of Health and Safety standards</li> <li>• Explore cultural and economic trends in tourism</li> </ul>	

<b>Program name:</b> Focus Programs	<b>Program location:</b> N/A
<b>School board:</b> Limestone District School Board	<b>Region:</b> Kingston
<b>Language offered:</b> English <b>Link:</b> <a href="http://www.limestone.on.ca/programming/expanded_opportunities/focus_programs">http://www.limestone.on.ca/programming/expanded_opportunities/focus_programs</a>	<b>Skills performed:</b> Baking & Business, Cook's Internship
<b>PROGRAM SUMMARY</b>	
<ul style="list-style-type: none"> <li>• Course packs connected to post-secondary pathways (college, university, apprenticeships, workforce)</li> <li>• Combines academic instruction and work-related experience</li> <li>• Programs include: <ul style="list-style-type: none"> <li>• <b>Baking &amp; Business</b> (Bayridge Secondary School) <ul style="list-style-type: none"> <li>○ Develop essential skills in local bakeries and restaurants</li> <li>○ Receive sector-specific certification</li> </ul> </li> <li>• <b>Cook's Internship Program</b> <ul style="list-style-type: none"> <li>○ Focus on food preparation and presentation</li> </ul> </li> </ul> </li> </ul>	

<b>Program name:</b> Dual Credit	<b>Program location:</b> St. Clair College
<b>School board:</b> St. Clair District School Board	<b>Region:</b> Chatham and Windsor
<b>Language offered:</b> English <b>Link:</b> <a href="http://www.ucdsb.on.ca/programs_initiatives/school_programs_k-12/dual_credit">http://www.ucdsb.on.ca/programs_initiatives/school_programs_k-12/dual_credit</a>	<b>Skills performed:</b> Baking and Pastry Arts Level 1
<b>PROGRAM SUMMARY</b>	
<ul style="list-style-type: none"> <li>• Students given opportunity to participate in free apprenticeship courses and post-secondary training</li> <li>• Receive dual credit towards both secondary school requirements and college credits</li> <li>• Allows students to easily transition to college programs and get a head start on post-secondary learning credits</li> </ul>	



## APPENDIX E: COLLEGE PROGRAMS

### TRAINING DIMENSION: CULINARY ARTS

<b>Program name:</b> Baking and Pastry Arts		<b>Campus location:</b> Ottawa Campus
<b>Institution:</b> Algonquin College		<a href="http://www.algonquincollege.com/hospitalityandtourism/program/baking-and-pastry-arts/">http://www.algonquincollege.com/hospitalityandtourism/program/baking-and-pastry-arts/</a>
<b>Location:</b> Ottawa		<b>Program length:</b> 1 Year
<b>Degree granted:</b> Ontario College Certificate		<b>Target group:</b> Students
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Receive practical and hands-on training in baking, sanitation, and shop management</li><li>• Program includes a mandatory field placement (40 hours)</li><li>• Courses include cake decorating techniques, shop management and entrepreneurship, and wine, food, and culture</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or eligibility by academic achievement testing English at Grade 12 level (ENG4C) or equivalent</li></ul>	\$5676.22  Additional fees may apply
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training with work placement.	

<b>Program name:</b> Baking and Pastry Arts Management	<b>Campus location:</b> Ottawa Campus	
<b>Institution:</b> Algonquin College	<a href="http://www.algonquincollege.com/hospitalityandtourism/program/baking-and-pastry-arts-management/">http://www.algonquincollege.com/hospitalityandtourism/program/baking-and-pastry-arts-management/</a>	
<b>Location:</b> Ottawa	<b>Program length:</b> 2 Years	
<b>Degree granted:</b> Ontario College Diploma	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Students will integrate effective business practices into pastry and bakery operations</li><li>• Produce and present a variety of baking and pastry products</li><li>• Produce financial and business-related documents</li><li>• Courses include shop management and sanitation, cake decorating techniques, and baking theory</li><li>• Program includes a field placement</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or eligibility by academic achievement testing English at Grade 12 level (ENG4C) or equivalent</li></ul>	\$3544.06  Additional fees may apply
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training with work placement.	

<b>Program name:</b> Culinary Skills	<b>Campus location:</b> Ottawa Campus	
<b>Institution:</b> Algonquin College	<a href="http://www.algonquincollege.com/hospitalityandtourism/program/chef-training/">http://www.algonquincollege.com/hospitalityandtourism/program/chef-training/</a>	
<b>Location:</b> Ottawa	<b>Program length:</b> 1 year	
<b>Degree granted:</b> Ontario College Certificate	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Prepares students for employment as professional cooks</li><li>• Students study baking techniques, food preparation, computer applications, food cost control, safety/sanitation</li><li>• Includes 40-hour field placement each semester in a certified food preparation establishment</li><li>• Courses also include introduction to applied culinary and butchery techniques</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or eligibility by academic achievement testing</li><li>• English at Grade 12 level (ENG4C) or equivalent</li></ul>	\$3730.20  Additional fees may apply
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training	A part-time study option is available on campus.

<b>Program name:</b> Culinary Management	<b>Campus location:</b> Ottawa Campus	
<b>Institution:</b> Algonquin College	<a href="http://www.algonquincollege.com/hospitalityandtourism/program/culinary-management/">http://www.algonquincollege.com/hospitalityandtourism/program/culinary-management/</a>	
<b>Location:</b> Ottawa	<b>Program Length:</b> 2 years	
<b>Degree granted:</b> Ontario College Diploma	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Prepares students for employment as professional cooks</li><li>• This program includes advanced culinary skills</li><li>• Students study baking techniques, food preparation, computer applications, food cost control, safety/sanitation</li><li>• Includes 40-hour field placement each semester in a certified food preparation establishment</li><li>• Farm to Fork course introduces students to the food service industry in Canada</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or eligibility by academic achievement testing</li><li>• English at Grade 12 level (ENG4C) or equivalent</li></ul>	\$3730.20  Additional fees may apply
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training	

<b>Program name:</b> Cook (Apprenticeship)	<b>Campus Location:</b> Ottawa Campus	
<b>Institution:</b> Algonquin College	<a href="http://www.algonquincollege.com/hospitalityandtourism/program/cook/">http://www.algonquincollege.com/hospitalityandtourism/program/cook/</a>	
<b>Location:</b> Ottawa	<b>Program Length:</b> 30 weeks	
<b>Degree granted:</b> Ontario College Certificate	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Receive training in professional food preparation</li><li>• 15-week on-site school training followed by 1 year (approx.) working in the industry and a final 15-week advanced on-site training</li><li>• Upon completion, students receive 720-hour credit towards the 6,000-hour Red Seal Certification</li><li>• Advanced courses also cover food and beverage management and labour operations</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or eligibility by academic achievement testing</li><li>• English at Grade 12 level (ENG4C) or equivalent</li></ul>	<p>\$600 per level</p> <p>Additional fees may apply</p>
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training	

<b>Program name:</b> Pâtissier	<b>Campus Location:</b> Ottawa Campus	
<b>Institution:</b> Algonquin College	<a href="http://www.algonquincollege.com/ccol/program/patisserie-part-time-on-campus/">http://www.algonquincollege.com/ccol/program/patisserie-part-time-on-campus/</a>	
<b>Location:</b> Ottawa	<b>Program Length:</b> 8 Courses (Part-time)	
<b>Degree granted:</b> College-Approved Certificate	<b>Target group:</b> Industry professionals	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Program incorporates coursework necessary to become professional pâtissier</li><li>• Courses include introduction to baking and pastry, plated desserts, chocolate works, sugar work, petit fours and specialty cookies, and specialty cakes</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or eligibility by academic achievement testing</li><li>• Or mature student status</li></ul>	Fees are charged for each program on a course-by-course basis. Contact the Registrar's Office for more information.
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training	Upon completion of the courses, it is the student's responsibility to contact the Registrar's Office to obtain their certificate.

<b>Program name:</b> Cook Apprenticeship	<b>Campus location:</b> College Drive Campus	
<b>Institution:</b> Canadore College	<a href="https://www.canadorecollege.ca/programs/cook-apprenticeship">https://www.canadorecollege.ca/programs/cook-apprenticeship</a>	
<b>Location:</b> North Bay	<b>Program Length:</b> N/A	
<b>Degree granted:</b> Certificate	<b>Target group:</b> Apprentices	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Program allows students to receive classroom training while they work in the industry</li><li>• Students learn food preparation, culinary skills, food/beverage/kitchen management, and production standards and market form</li></ul>	<ul style="list-style-type: none"><li>• Must be registered as a Cook Apprentice with the Ministry of Training, Colleges, and Universities (Ontario College of Trades) to be eligible for program</li></ul>	Contact program coordinator for applicable fees.
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training	

<b>Program name:</b> Culinary Skills- Chef Training	<b>Campus location:</b> College Drive Campus	
<b>Institution:</b> Canadore College	<a href="https://www.canadorecollege.ca/programs/culinary-skills-chef-training">https://www.canadorecollege.ca/programs/culinary-skills-chef-training</a>	
<b>Location:</b> North Bay	<b>Program Length:</b> 1 year	
<b>Degree granted:</b> Ontario College Certificate	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Prepares students for employment as professional cooks</li><li>• Students study food preparation and presentation, kitchen management, and food/beverage management, along with baking and pastry arts</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or eligibility by academic achievement testing</li><li>• English at Grade 12 level (ENG4C) or equivalent</li></ul>	\$4876.50  Additional fees may apply
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training	Program graduates may apply for 2nd-year standing in the Culinary Management program.



<b>Program name:</b> Culinary Management	<b>Campus location:</b> College Drive Campus	
<b>Institution:</b> Canadore College	<a href="https://www.canadorecollege.ca/programs/culinary-management">https://www.canadorecollege.ca/programs/culinary-management</a>	
<b>Location:</b> North Bay	<b>Program Length:</b> 2 years	
<b>Degree granted:</b> Ontario College Diploma	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Students learn facility design and equipment design, cooking and international cuisine for work as an executive chef, food and beverage manager, or a catering chef</li><li>• Courses include safety and sanitation, applied culinary skills, cost control, and business development</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or eligibility by academic achievement testing</li><li>• English at Grade 12 level (ENG4C) or equivalent</li></ul>	Year 1= 4876.50 Year 2= 4351.50  Additional fees may apply.
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training	Students can apply to spend one semester on an international academic exchange.

<b>Program name:</b> Baking and Pastry Arts Management	<b>Campus location:</b> Progress Campus	
<b>Institution:</b> Centennial College	<a href="https://www.centennialcollege.ca/programs-courses/full-time/baking-pastry-management/">https://www.centennialcollege.ca/programs-courses/full-time/baking-pastry-management/</a>	
<b>Location:</b> Scarborough	<b>Program Length:</b> 2 Years	
<b>Degree granted:</b> Diploma	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Program builds on pastry and baking fundamental skills and focuses on planning and execution, purchasing, and menu design</li><li>• Program includes a variety of hands-on learning opportunities</li><li>• Courses include culinary skills, principles of nutrition, and cake and bread skills</li><li>• Includes a field placement in the final semester</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or equivalent, or mature student status (19 years or older)</li><li>• English Grade 12 level or successful completion of Centennial College language testing</li></ul>	\$4648.50  Additional fees may apply.
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
<ul style="list-style-type: none"><li>• Culinary Tourism Alliance (Feast On Certification) Feast On is a certification for sourcing local food and beverage products to be used in academic programs. Centennial College is the first school to receive this certification from the Culinary Tourism Alliance.</li></ul> <a href="#">Feast On</a>	On-campus classroom training and a field placement.	

<b>Program name:</b> Baking Skills	<b>Campus location:</b> Progress Campus	
<b>Institution:</b> Centennial College	<a href="https://www.centennialcollege.ca/programs-courses/full-time/baking-skills/">https://www.centennialcollege.ca/programs-courses/full-time/baking-skills/</a>	
<b>Location:</b> Scarborough	<b>Program Length:</b> 1 Year	
<b>Degree granted:</b> Certificate	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Program builds on pastry and baking fundamental skills and decorating and finishing skills, and large quantity production techniques</li><li>• Program includes a variety of hands-on learning opportunities</li><li>• Courses include culinary skills, purchasing for the commercial kitchen, and principles of hospitality management</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or equivalent, or mature student status (19 years or older)</li><li>• English Grade 12 level or successful completion of Centennial College language testing</li></ul>	\$4648.50  Additional fees may apply.
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
<ul style="list-style-type: none"><li>• Culinary Tourism Alliance (Feast On Certification) Feast On is a certification for sourcing local food and beverage products to be used in academic programs. Centennial College is the first school to receive this certification from the Culinary Tourism Alliance. <a href="#">Feast On</a></li></ul>	On-campus classroom training.	

<b>Program name:</b> Culinary Management	<b>Campus location:</b> Progress Campus	
<b>Institution:</b> Centennial College	<a href="https://www.centennialcollege.ca/programs-courses/full-time/culinary-management/">https://www.centennialcollege.ca/programs-courses/full-time/culinary-management/</a>	
<b>Location:</b> Scarborough	<b>Program Length:</b> 2 Years	
<b>Degree granted:</b> Diploma	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Students study in culinary labs and receive a 14-week work placement with industry partners</li><li>• Receive additional industry certifications including CPR and Safe Food Handling</li><li>• Learn culinary skills along with business management and leadership</li><li>• Courses include a range of topics including culinary operations and food system production</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or equivalent, or mature student status (19 years or older)</li><li>• English Grade 12 level or successful completion of Centennial College language testing</li></ul>	\$4648.50  Additional fees may apply.
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
<ul style="list-style-type: none"><li>• Culinary Tourism Alliance (Feast On Certification)</li></ul>	On-campus classroom training	

<b>Program name:</b> Culinary Skills	<b>Campus location:</b> Progress Campus	
<b>Institution:</b> Centennial College	<a href="https://www.centennialcollege.ca/programs-courses/full-time/culinary-skills-chef-training/">https://www.centennialcollege.ca/programs-courses/full-time/culinary-skills-chef-training/</a>	
<b>Location:</b> Scarborough	<b>Program Length:</b> 1 Year	
<b>Degree granted:</b> Certificate	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Students learn the fundamentals of culinary skills and receive practical hands-on training in on-site facilities before entering the industry</li><li>• Program courses include experience in principles of food, beverage, and labour cost control</li><li>• Graduates of the program are well-equipped to transition to the Culinary Management program</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or equivalent, or mature student status (19 years or older)</li><li>• English Grade 12 level or successful completion of Centennial College language testing</li></ul>	\$4648.50  Additional fees may apply.
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
<ul style="list-style-type: none"><li>• Culinary Tourism Alliance (Feast On Certification)</li></ul>	On-campus classroom training	Students transitioning form this program to the Culinary Management program may enroll in the third semester of studies.

<b>Program name:</b> Food and Beverage Management	<b>Campus location:</b> Progress Campus	
<b>Institution:</b> Centennial College	<a href="https://www.centennialcollege.ca/programs-courses/full-time/food-beverage-management/">https://www.centennialcollege.ca/programs-courses/full-time/food-beverage-management/</a>	
<b>Location:</b> Scarborough	<b>Program Length:</b> 2 Years	
<b>Degree granted:</b> Diploma	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Students participate in on-site learning in Centennial’s food facilities and receive a 14-week industry placement</li><li>• Course subjects include computer techniques for food management, global citizenship, and hospitality sales and marketing</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or equivalent, or mature student status (19 years or older)</li><li>• English Grade 12 level or successful completion of Centennial College language testing</li></ul>	\$4228.50  Additional fees may apply.
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
<ul style="list-style-type: none"><li>• Vancouver Island University (Bachelor of Hospitality Management program, pathways program)</li><li>• Culinary Tourism Alliance (Feast On Certification)</li></ul>	On-campus classroom training	

<b>Program name:</b> Food Media	<b>Campus location:</b> Progress Campus	
<b>Institution:</b> Centennial College	<a href="https://www.centennialcollege.ca/programs-courses/full-time/food-media/">https://www.centennialcollege.ca/programs-courses/full-time/food-media/</a>	
<b>Location:</b> Scarborough	<b>Program Length:</b> 1 Year	
<b>Degree granted:</b> Graduate Certificate (Post-diploma program)	<b>Target group:</b> Industry professionals	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Students learn how to advertise and market their own food product or service</li><li>• A focus on attracting revenue-generating opportunities through creative communications</li><li>• Graduates find work in fields such as food styling specializations and food segment producing</li></ul>	<ul style="list-style-type: none"><li>• College diploma or degree in any discipline</li><li>• Proof of English proficiency</li><li>• Applicants with partial post-secondary experience and relevant industry experience/training will be considered</li></ul>	\$5431.00  Additional fees may apply.
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
<ul style="list-style-type: none"><li>• Culinary Tourism Alliance (Feast On Certification)</li></ul>	On-campus classroom training	Courses are delivered in a 3-day per week format, Saturday –Monday, to account for professional work schedules.

<b>Program name:</b> Food Science Technology (Co-op) *	<b>Campus location:</b> Progress Campus	
<b>Institution:</b> Centennial College	<a href="https://www.centennialcollege.ca/programs-courses/full-time/food-science-technology/">https://www.centennialcollege.ca/programs-courses/full-time/food-science-technology/</a>	
<b>Location:</b> Scarborough	<b>Program Length:</b> 3 Years	
<b>Degree granted:</b> Advanced diploma (Post-secondary program)	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Program is suited for those interested in careers in product development and food safety, and quality control and assurance</li><li>• Students study chemistry, engineering, microbiology, and nutrition to preserve, process, package and distribute healthy and safe food products</li><li>• Eligible students may participate in a 2-term co-op placement</li><li>• Courses include food processing and technology, and introduction to food science</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or mature student status</li><li>• English Grade 12 or Centennial College English Skills Assessment</li><li>• Mathematics Grade 11 or equivalent</li></ul>	\$4028.50  Additional fees may apply.
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training	Additional educational eligibility required for those students interested in a co-op placement. *Additional Food Science Technology programs offered with options for fast-track, and optional co-op.



<b>Program name:</b> Cook I (Apprenticeship)	<b>Campus location:</b> Waterloo Campus	
<b>Institution:</b> Conestoga College	<a href="https://www.conestogac.on.ca/fulltime/cook-i-apprenticeship">https://www.conestogac.on.ca/fulltime/cook-i-apprenticeship</a>	
<b>Location:</b> Waterloo	<b>Program Length:</b> 40 weeks	
<b>Degree granted:</b> Ontario College Certificate	<b>Target group:</b> Apprentices	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Students learn the fundamentals of food preparation, safety, and kitchen operations and management</li><li>• Courses include fundamental nutritional practices and emphasize self-management and interpersonal communication skills necessary to work in a food service establishment</li></ul>	<ul style="list-style-type: none"><li>• Must be a registered apprentice with the Ministry of Advanced Education and Skills Development</li><li>• Must be a member of the Ontario College of Trades</li></ul>	Contact the campus for applicable apprenticeship fees.
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training	

<b>Program name:</b> Cook II (Apprenticeship)	<b>Campus location:</b> Waterloo Campus	
<b>Institution:</b> Conestoga College	<a href="https://www.conestogac.on.ca/fulltime/cook-ii-apprenticeship">https://www.conestogac.on.ca/fulltime/cook-ii-apprenticeship</a>	
<b>Location:</b> Waterloo	<b>Program Length:</b> 358 hours	
<b>Degree granted:</b> Certificate	<b>Target group:</b> Registered apprentices	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• The Cook II program is designed for cooks to build on skills learned in the Cook I placement</li><li>• Students learn advanced culinary techniques, cost control practices and resource management, human resource practices for dining room management, and safe food storage and preparation</li></ul>	<ul style="list-style-type: none"><li>• Must be a registered apprentice with the Ministry of Advanced Education and Skills Development</li><li>• Must be a member of the Ontario College of Trades</li></ul>	Contact the campus for applicable apprenticeship fees.
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training	

<b>Program name:</b> Culinary Management	<b>Campus location:</b> Waterloo Campus	
<b>Institution:</b> Conestoga College	<a href="https://www.conestogac.on.ca/fulltime/culinary-management-co-op">https://www.conestogac.on.ca/fulltime/culinary-management-co-op</a>	
<b>Location:</b> Waterloo	<b>Program Length:</b> 2 Years	
<b>Degree granted:</b> Ontario College Diploma	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Students learn the fundamentals of culinary skills through in-class training followed by a 5-month paid internship placement</li><li>• Courses include subjects such as communication, computer skills, and small business management</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or mature student status</li><li>• English Grade 12 or Conestoga College English Skills Assessment</li><li>• Mathematics Grade 11 or equivalent</li></ul>	<p>\$5086.26</p> <p>Additional fees may apply for work-term opportunities.</p>
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
Institut Paul Bocuse (Co-op work-term opportunities)	On-campus classroom training	Graduates of the program (and co-op) are eligible to write the provincial Trade of Cook Certification of Qualification exam and may go on to receive additional training hours for Red Seal certification.

<b>Program name:</b> Culinary Skills- Chef Training (Co-op)	<b>Campus location:</b> Waterloo Campus	
<b>Institution:</b> Conestoga College	<a href="https://www.conestogac.on.ca/employers/culinary-skills-chef-training-co-op">https://www.conestogac.on.ca/employers/culinary-skills-chef-training-co-op</a>	
<b>Location:</b> Waterloo	<b>Program Length:</b> 1 Year	
<b>Degree granted:</b> Ontario College Certificate	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Students learn the fundamentals of food preparation and an understanding of the complexities of kitchen management</li><li>• Participate in a co-op placement during the final semester</li><li>• Courses cover subjects such as industry cost and control practices, strategies for professional learning, and a basic knowledge of food sustainability</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or mature student status</li><li>• English Grade 12 or Conestoga College English Skills Assessment</li></ul>	\$5358.00  Additional fees may apply.
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training	Graduates of the program (and co-op) are eligible to write the provincial Trade of Cook Certification of Qualification exam.

## TRAINING DIMENSION: FOOD PROCESSING

<b>Program name:</b> Food Processing Advanced Sanitation Practices	<b>Campus location:</b> Waterloo Campus	
<b>Institution:</b> Conestoga College	<a href="https://www.conestogac.on.ca/parttime/food-processing-advanced-sanitation-practices">https://www.conestogac.on.ca/parttime/food-processing-advanced-sanitation-practices</a>	
<b>Location:</b> Waterloo	<b>Program Length:</b> N/A (Part-time studies)	
<b>Degree granted:</b> Certificate	<b>Target group:</b> Students, industry professionals	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Students learn to apply specific sanitation guidelines to food processing environment</li><li>• Learn to apply supervisory duties and train employees in sanitation compliance practices</li><li>• Courses offered include food processing basics, food safety level 1 (online), effective cleaning and sanitation (theory and applications), and Occupational health and safety for food processing</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD)</li><li>• Minimum 2 years industry work experience</li><li>• Or FOOD1240 Food Processing II</li></ul>	Part-time course fees apply.
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training and online course delivery	Prior supervisory experience in food processing is preferable.

<b>Program name:</b> Food Processing Supervisor	<b>Campus location:</b> Waterloo Campus	
<b>Institution:</b> Conestoga College	<a href="https://www.conestogac.on.ca/parttime/food-processing-supervisor">https://www.conestogac.on.ca/parttime/food-processing-supervisor</a>	
<b>Location:</b> Waterloo	<b>Program Length:</b> N/A (Part-time studies)	
<b>Degree granted:</b> Certificate	<b>Target group:</b> Industry professionals	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Learn to apply skills needed to train employees to meet industry standards</li><li>• Assess work environment for safety violations</li><li>• Apply appropriate legislation and guidelines in food processing environment</li><li>• Courses include food processing basics, project management, and food safety level I</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD)</li><li>• Minimum 2 years industry work experience</li><li>• Or 1-year supervisory experience</li><li>• Or 3 years work experience in related industry</li></ul>	Part-time course fees apply.
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training and online course delivery.	Food Processing Technician part-time courses also available.

<b>Program name:</b> Food Safety and Quality Assurance- Food Processing	<b>Campus location:</b> Waterloo Campus	
<b>Institution:</b> Conestoga College	<a href="https://www.conestogac.on.ca/fulltime/food-safety-and-quality-assurance-food-processing?v=1801">https://www.conestogac.on.ca/fulltime/food-safety-and-quality-assurance-food-processing?v=1801</a>	
<b>Location:</b> Waterloo	<b>Program Length:</b> 1 Year	
<b>Degree granted:</b> Ontario College Graduate Certificate	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Enhance knowledge and apply skills in food processing</li><li>• Apply chemistry and microbiology concepts to food processing facilities</li><li>• Evaluate effectiveness of practical applications of food safety</li><li>• Courses include principles of food safety and quality assurance, food microbiology, and food safety applications in the processing environment</li></ul>	<ul style="list-style-type: none"><li>• 2 or 3-year degree or diploma in a related field</li></ul>	\$6421.80 Additional fees may apply.
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training	

<b>Program name:</b> Food Processing Operations	<b>Campus location:</b> Waterloo Campus	
<b>Institution:</b> Conestoga College	<a href="https://www.conestogac.on.ca/parttime/food-processing-operations">https://www.conestogac.on.ca/parttime/food-processing-operations</a>	
<b>Location:</b> Waterloo	<b>Program Length:</b> 5 credits (Part-time)	
<b>Degree granted:</b> Certificate	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• The program provides the students with practical knowledge and experience in food processing methods (pasteurization, filling and packaging), equipment adjustment and sanitation, and troubleshooting a complete production line.</li><li>• Students will gain in-depth knowledge of Good Manufacturing Practices and HACCP.</li><li>• Courses include Principles of Manufacturing Operations and Food Safety and Cleaning Theory</li></ul>	<ul style="list-style-type: none"><li>• Current graduate or undergraduate student in a food science/ food technology at an accredited university or a graduate from a food technology program from an accredited college</li></ul>	Fees for Continuing Education apply.
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	Combination of on-campus classroom training and online learning.	<p>All courses must be completed within 6 weeks of program start date.</p> <p>A Food Processing Supervisor program is also available.</p>



<b>Program name:</b> Food Processing Technician (Co-op)	<b>Campus location:</b> Cambridge Campus	
<b>Institution:</b> Conestoga College	<a href="https://www.conestogac.on.ca/fulltime/food-processing-technician">https://www.conestogac.on.ca/fulltime/food-processing-technician</a>	
<b>Location:</b> Waterloo	<b>Program Length:</b> 2 Years	
<b>Degree granted:</b> Ontario College Diploma	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• This program provides training for those interested in a career as a food processing technician in the food and beverage manufacturing industry.</li><li>• Students will have intensive hands-on mechanical experience with food processing equipment and will be able to apply quality control and quality assurance procedures to food manufacturing.</li><li>• Courses include Food processing, machine technology, and industrial maintenance theory and applications.</li></ul>	<ul style="list-style-type: none"><li>• Current graduate or undergraduate student in a food science/ food technology at an accredited university or a graduate from a food technology program from an accredited college</li></ul>	<p>\$4,629.55</p> <p>Additional fees may apply.</p>
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom instruction, plus co-op work placement.	<p>All courses must be completed within 6 weeks of program start date.</p> <p>A Food Processing Supervisor program is also available.</p>

## TRAINING DIMENSION: FOOD MANUFACTURING

<b>Program name:</b> Operation Leadership in Food Manufacturing	<b>Campus location:</b> Waterloo Campus	
<b>Institution:</b> Conestoga College	<a href="https://www.conestogac.on.ca/fulltime/operations-leadership-in-food-manufacturing">https://www.conestogac.on.ca/fulltime/operations-leadership-in-food-manufacturing</a>	
<b>Location:</b> Cambridge	<b>Program Length:</b> 1 Year	
<b>Degree granted:</b> Ontario College Graduate Certificate	<b>Target group:</b> Students (with a previous degree in science or engineering)	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Intended for students interested in an advanced supervisory role in the industry</li><li>• Students are taught to monitor operations from purchase to shipment, and assess the Overall Equipment Efficiency (OEE), among other courses</li><li>• Subjects include food safety, quality assurance, lean manufacturing, and total preventative maintenance</li></ul>	<ul style="list-style-type: none"><li>• A 2-3-year program degree (with relevant specialization) from a recognized college or university</li></ul>	\$6977.80  Additional fees may apply.
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training	

<b>Program name:</b> Process Operator- Food Manufacturing	<b>Campus location:</b> Waterloo Campus	
<b>Institution:</b> Conestoga College	<a href="https://www.conestogac.on.ca/fulltime/process-operator-food-manufacturing-apprenticeship">https://www.conestogac.on.ca/fulltime/process-operator-food-manufacturing-apprenticeship</a>	
<b>Location:</b> Cambridge	<b>Program Length:</b> 300 Hours	
<b>Degree granted:</b> Certificate	<b>Target group:</b> Apprentices	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Prepares students for a career in the food processing industry</li><li>• Includes 300 hours of in-class training and an apprenticeship</li><li>• Students learn food safety and security, food manufacturing, mechanical techniques and basic electrical theory, and gain an understanding of the requirements of a food processing plant</li></ul>	<ul style="list-style-type: none"><li>• Must be a registered apprentice with the Ministry of Advanced Education and Skills Development</li></ul> Must be a member of the Ontario College of Trades	Consult campus services for applicable apprenticeship fees.
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training	In addition to the 300 hours, the apprentice is required to complete the 4000 hours necessary to become a journeyperson.

## TRAINING DIMENSION: CULINARY ARTS

<b>Program name:</b> Culinary Management	<b>Campus location:</b> Thunder Bay Campus	
<b>Institution:</b> Confederation College	<a href="http://www.confederationcollege.ca/program/culinary-management">http://www.confederationcollege.ca/program/culinary-management</a>	
<b>Location:</b> Thunder Bay	<b>Program Length:</b> 2 Years	
<b>Degree granted:</b> Ontario College Diploma	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Introduces students to basic and advanced culinary techniques, butchery, marketing and sales in the industry, restaurant management, and finances</li><li>• In-class training is supplemented by a work placement with a local food service establishment</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or mature student status</li><li>• English Grade 12</li></ul>	\$2988.00  Additional fees may apply.
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training	

<b>Program name:</b> Culinary Management	<b>Campus location:</b> Whitby Campus	
<b>Institution:</b> Durham College	<a href="https://durhamcollege.ca/programs/culinary-management">https://durhamcollege.ca/programs/culinary-management</a>	
<b>Location:</b> Whitby	<b>Program Length:</b> 2 Years (4 semesters)	
<b>Degree granted:</b> Ontario College Diploma	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Program focuses on skills development, culinary theory, and kitchen management training, including a focus on developing industry knowledge</li><li>• A field-to-fork philosophy is adopted in all course activities</li><li>• Courses also look at cost control techniques and effective marketing strategies for the industry</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or mature student status</li><li>• English Grade 12</li></ul>	\$5573.00  Additional fees may apply
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training	

<b>Program name:</b> Culinary Skills	<b>Campus location:</b> Whitby Campus	
<b>Institution:</b> Durham College	<a href="https://durhamcollege.ca/programs/culinary-skills">https://durhamcollege.ca/programs/culinary-skills</a>	
<b>Location:</b> Whitby	<b>Program Length:</b> 1 Year (2 semesters)	
<b>Degree granted:</b> Ontario College Certificate	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Uses a combination of in-class instruction and hands-on experience</li><li>• Students learn both culinary and nutrition theory, and the principles of kitchen management, along with the food safety and sanitation</li><li>• Program also includes a field placement appointment and workshop</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or mature student status</li><li>• English Grade 12</li></ul>	\$5573.00  Additional fees may apply
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
Students apply technical skills at Bistro '67, a local restaurant run and operated by students and staff of the program.	On-campus classroom training	Graduates may apply for advanced standing in the Culinary Management program.

<b>Program name:</b> Cook II (Apprenticeship)	<b>Campus location:</b> London Campus	
<b>Institution:</b> Fanshawe College	<a href="https://www.fanshawec.ca/programs/coa2-cook-ii-apprenticeship/next">https://www.fanshawec.ca/programs/coa2-cook-ii-apprenticeship/next</a>	
<b>Location:</b> London	<b>Program Length:</b> N/A	
<b>Degree granted:</b> Ontario College Certificate	<b>Target group:</b> Apprentices	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Students already with some professional experience can learn specialized skills and participate in a paid apprenticeship opportunity</li><li>• 2 days/ week classroom training plus hands-on training</li></ul>	<ul style="list-style-type: none"><li>• Must be a registered apprentice and must work under a Red Seal certified cook</li><li>• Must be registered through the Ministry of Advanced Education and Skills Development</li></ul>	An employer must sponsor the student.
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training	Program graduates will be ready to write their Red Seal Certification.

<b>Program name:</b> Culinary Management (Apprenticeship)*	<b>Campus location:</b> London Campus	
<b>Institution:</b> Fanshawe College	<a href="https://www.fanshawec.ca/programs/clm4-culinary-management/next">https://www.fanshawec.ca/programs/clm4-culinary-management/next</a>	
<b>Location:</b> London	<b>Program Length:</b> 1 Year	
<b>Degree granted:</b> Ontario College Certificate	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Students learn food basics and a variety of styles and techniques</li><li>• Also prepare meals for industry professionals and gain hands-on kitchen experience in on-campus restaurant</li></ul>	<ul style="list-style-type: none"><li>• Culinary Skills Certificate from Fanshawe College or another institution</li><li>• Combination of education and work experience</li><li>• Recommended educational experience also suggested</li></ul>	Contact college admissions for applicable apprenticeship fees.
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training	<p>Students must be a graduate or current student of the Culinary Arts program to participate in this program. The total duration for completion of both programs is 2 years.</p> <p>*An apprenticeship program is also available.</p>



<b>Program name:</b> Culinary Skills	<b>Campus location:</b> London Campus	
<b>Institution:</b> Fanshawe College	<a href="https://www.fanshawec.ca/programs/chf2-culinary-skills/next">https://www.fanshawec.ca/programs/chf2-culinary-skills/next</a>	
<b>Location:</b> London	<b>Program Length:</b> 30 Weeks	
<b>Degree granted:</b> Ontario College Certificate	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Students learn and develop knife skills and learn industry practices, purchasing, and meat and baking theory</li><li>• Courses include food safety and First Aid, and communication for the tourism and hospitality industry</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or mature student status</li><li>• English Grade 12 or Conestoga College English Skills Assessment</li></ul>	Contact college admissions for relevant fees.
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training	

<b>Program name:</b> Food and Beverage Management (Co-op) *	<b>Campus location:</b> London Campus	
<b>Institution:</b> Fanshawe College	<a href="https://www.fanshawec.ca/programs/fbm7-food-and-beverage-management/current">https://www.fanshawec.ca/programs/fbm7-food-and-beverage-management/current</a>	
<b>Location:</b> London	<b>Program Length:</b> 2 Years	
<b>Degree granted:</b> Ontario College Diploma	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Students learn accounting, cost control, and marketing strategies for the industry</li><li>• Courses include service leadership, law and risk management, and human resources management for the industry</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or mature student status</li><li>• English Grade 12 or Conestoga College English Skills Assessment</li></ul>	Contact the program coordinator for fees.
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training	* A co-op option for this program is also available. Additional educational requirements for co-op placement may also apply.

<b>Program name:</b> Cook Apprentice Level 1 (Basic)	<b>Campus location:</b> Sutherland Campus	
<b>Institution:</b> Fleming College	<a href="https://flemingcollege.ca/programs/cook-apprentice-basic/curriculum">https://flemingcollege.ca/programs/cook-apprentice-basic/curriculum</a>	
<b>Location:</b> Peterborough	<b>Program Length:</b> 2 Semesters (360 hours each) plus apprenticeship	
<b>Degree granted:</b> N/A	<b>Target group:</b> Apprentices	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Program designed for those already working in the industry and want to improve their skills</li><li>• Students learn culinary, business, and communication skills necessary for the industry</li><li>• Apprenticeship portion gives experience in cuisine creation and operations management</li><li>• Courses also cover curing and smoking techniques</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or equivalent</li><li>• Must be employed and a registered apprentice through the Ministry of Advanced Education and Skills Development</li></ul>	<p>\$600.00</p> <p>Additional fees may apply</p>
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training	<p>Following program completion and examination, students are certified journeyperson cook.</p> <p>A Cook Apprentice Level 2 (Advanced) program is also available.</p>

<b>Program name:</b> Culinary Management	<b>Campus location:</b> Sutherland Campus	
<b>Institution:</b> Fleming College	<a href="https://flemingcollege.ca/programs/culinary-management/curriculum">https://flemingcollege.ca/programs/culinary-management/curriculum</a>	
<b>Location:</b> Peterborough	<b>Program Length:</b> 2 Years	
<b>Degree granted:</b> Ontario College Diploma	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Students learn basic culinary techniques and applied culinary principles</li><li>• Program includes an in-school practicum and an applied project that includes an industry-based work placement</li><li>• Courses include culinary computer applications, food and beverage functions, and cost control</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or equivalent</li><li>• Grade 12 English</li><li>• Grade 11 Mathematics</li></ul>	\$3290.81  Additional fees may apply.
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training	Students with previous college or university credits may qualify for advanced academic standing.

<b>Program name:</b> Advanced French Patisserie (Post-Graduate)	<b>Campus location:</b> St. James Campus	
<b>Institution:</b> George Brown College	<a href="https://www.georgebrown.ca/programs/advanced-french-patisserie-postgraduate-program-h413/">https://www.georgebrown.ca/programs/advanced-french-patisserie-postgraduate-program-h413/</a>	
<b>Location:</b> Toronto	<b>Program Length:</b> 3 semesters	
<b>Degree granted:</b> Ontario College Graduate Certificate	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Program combines on-campus learning and experience in France learning French pastry and culinary traditions</li><li>• Students will be able to converse in French in a business setting and manage production and sales of their own pastry creation</li><li>• Courses include French language, art and design, and advances pastry arts</li></ul>	<ul style="list-style-type: none"><li>• Diploma or degree in pastry arts culinary management, or baking</li><li>• Or, one-year certificate in baking or pastry arts with one year working experience</li></ul>	<p>\$14,284.00</p> <p>Additional fees may apply.</p>
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
Partnership with École National Supérieur de la Patisserie (ENSP) in France for a student externship opportunity. <a href="http://www.ensp-adf.com">http://www.ensp-adf.com</a>	On-campus classroom training and externship in France.	

<b>Program name:</b> Baker/Patisserie Apprentice		<b>Campus location:</b> St. James Campus	
<b>Institution:</b> George Brown College		<a href="https://www.georgebrown.ca/programs/baker-patisserie-apprentice-program-h600/">https://www.georgebrown.ca/programs/baker-patisserie-apprentice-program-h600/</a>	
<b>Location:</b> Toronto		<b>Program Length:</b> 2-5 Years	
<b>Degree granted:</b> George Brown College Certificate		<b>Target group:</b> Apprentices	
PROGRAM DETAILS			
PROGRAM SUMMARY		PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Designed for students with prior experience in the industry to help gain additional skills and expertise</li><li>• Courses include bakery formulas and bake shop calculations theory, advanced fermentation and related application, and a variety of specialized apprenticeship courses</li></ul>		<ul style="list-style-type: none"><li>• Must be a registered apprentice with the Ministry of Advanced Learning and Skills Development</li></ul>	<p>\$678.00 classroom training fees.</p> <p>Additional fees may apply.</p>
INDUSTRY PARTNERS		PROGRAM DELIVERY	NOTES
		On-campus classroom training and apprenticeship.	Program includes basic and advanced streams.

<b>Program name:</b> Baking and Pastry Arts Management	<b>Campus location:</b> St. James Campus	
<b>Institution:</b> George Brown College	<a href="https://www.georgebrown.ca/programs/baking-and-pastry-arts-management-program-h113/">https://www.georgebrown.ca/programs/baking-and-pastry-arts-management-program-h113/</a>	
<b>Location:</b> Toronto	<b>Program Length:</b> 2 Years	
<b>Degree granted:</b> Ontario College Diploma	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Students develop core skills and creativity in pastry arts</li><li>• Will be competent for careers in business planning, sales and marketing, and product packaging, showcasing and distribution methods</li><li>• Courses include dessert menu management, nutrition fundamentals from a culinary perspective, and baking skills</li><li>• Program includes an industry externship in the 3<sup>rd</sup> semester</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or equivalent</li><li>• Grade 12 English</li><li>• Grade 11 Mathematics</li></ul>	\$5715.00  Additional fees may apply.
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training and industry externship placement.	

<b>Program name:</b> Baking- Pre-employment	<b>Campus location:</b> St. James Campus	
<b>Institution:</b> George Brown College	<a href="https://coned.georgebrown.ca/courses-and-certificates/baking-pre-employment-certificate/">https://coned.georgebrown.ca/courses-and-certificates/baking-pre-employment-certificate/</a>	
<b>Location:</b> Toronto	<b>Program Length:</b> 1 Year	
<b>Degree granted:</b> Ontario College Certificate	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Tailored for students interested in baking and pastry arts with no previous experience, the program presents the basic skills</li><li>• Classroom training and hands-on learning opportunities in pastry, cakes, and decorating</li><li>• Courses include nutrition fundamentals from a culinary perspective, baking theory, and dessert menu management</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or equivalent</li><li>• Grade 12 English</li><li>• Grade 11 Mathematics</li></ul>	\$5644.00  Additional fees may apply.
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training	



<b>Program name:</b> Cook Apprentice	<b>Campus location:</b> St. James Campus	
<b>Institution:</b> George Brown College	<a href="https://www.georgebrown.ca/programs/cook-apprentice-program-h601/">https://www.georgebrown.ca/programs/cook-apprentice-program-h601/</a>	
<b>Location:</b> Toronto	<b>Program Length:</b> 2-5 Years	
<b>Degree granted:</b> George Brown College Certificate	<b>Target group:</b> Apprentices	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Designed for those already employed with experience in the industry, the program upgrades the culinary skillset</li><li>• Gain hands-on experience and learn industry-related theory with ability to take classes while working</li><li>• Two levels of in-school learning:<ul style="list-style-type: none"><li>1. Fundamental skills and kitchen management</li><li>2. Advanced culinary skills and leadership management</li></ul></li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or equivalent</li><li>• Grade 12 English</li><li>• Grade 11 Mathematics</li><li>• Registered apprentice with the Ministry of Advanced Learning and Skills Development</li></ul>	<p>Tuition and fees not available for the 2018-2019 academic year.</p> <p>2017 tuition for the in-class portion: \$678.00 plus additional fees.</p>
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training	Following the program students can earn their Red Seal Certification.

<b>Program name:</b> Culinary Management	<b>Campus location:</b> St. James Campus	
<b>Institution:</b> George Brown College	<a href="https://www.georgebrown.ca/programs/culinary-management-program">https://www.georgebrown.ca/programs/culinary-management-program</a>	
<b>Location:</b> Toronto	<b>Program Length:</b> 2 Years	
<b>Degree granted:</b> George Brown College Diploma	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Students learn emerging industry trends and sustainable foods along with the fundamentals of butchery and nutrition</li><li>• Program includes an externship program where students work with industry leaders to gain hands-on experience</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or equivalent</li><li>• Grade 12 English</li><li>• Grade 11 Mathematics</li></ul>	<p>\$6,352.00</p> <p>Additional fees may apply.</p>
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training	

<b>Program name:</b> Culinary Skills	<b>Campus location:</b> St. James Campus	
<b>Institution:</b> George Brown College	<a href="https://www.georgebrown.ca/programs/culinary-skills-program-h134/">https://www.georgebrown.ca/programs/culinary-skills-program-h134/</a>	
<b>Location:</b> Toronto	<b>Program Length:</b> 1 Year	
<b>Degree granted:</b> George Brown College Certificate	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Students learn core cooking and baking skills, along with food, beverage, and labour cost control</li><li>• Courses include practice in essential knife skills and cooking skills, along with culinary principles, fundamentals of butchery, and theory of food</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or equivalent</li><li>• Grade 12 English</li><li>• Grade 11 Mathematics</li></ul>	\$6,028.00  Additional fees may apply.
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training	

<b>Program name:</b> Culinary Management	<b>Campus location:</b> St. James Campus	
<b>Institution:</b> Georgian College	<a href="https://www.georgiancollege.ca/academics/full-time-programs/culinary-management-culn/">https://www.georgiancollege.ca/academics/full-time-programs/culinary-management-culn/</a>	
<b>Location:</b> Barrie	<b>Program Length:</b> 2 Years	
<b>Degree granted:</b> Ontario College Diploma	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Focus on culinary and business skills, safety and sanitation, and product knowledge and identification</li><li>• Courses include practical butchery, advanced cooking techniques, and principles of management</li><li>• Opportunity to participate in entrepreneurial experience</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or equivalent</li><li>• Grade 12 English</li></ul>	\$2487.02  Additional fees may apply
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training and a co-op placement	Students participate in a mandatory co-op work term the final semester of study.

<b>Program name:</b> Culinary Skills	<b>Campus location:</b> Barrie Campus	
<b>Institution:</b> Georgian College	<a href="https://www.georgiancollege.ca/academics/full-time-programs/culinary-skills-culi/">https://www.georgiancollege.ca/academics/full-time-programs/culinary-skills-culi/</a>	
<b>Location:</b> Barrie	<b>Program Length:</b> 1 Year	
<b>Degree granted:</b> Ontario College Certificate	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Students study fundamental food knowledge and food preparation and presentation skills</li><li>• Focus on professionalism, culinary and management skills, safety and sanitation, and product knowledge and identification</li><li>• Courses include basic and advanced cooking skills and techniques, and kitchen management</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or equivalent</li><li>• Grade 12 English</li></ul>	\$2294.02  Additional fees may apply
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training	

<b>Program name:</b> Baking and pastry Arts	<b>Campus location:</b> Barrie Campus	
<b>Institution:</b> Georgian College	<a href="https://www.georgiancollege.ca/academics/full-time-programs/baking-and-pastry-arts-bake/">https://www.georgiancollege.ca/academics/full-time-programs/baking-and-pastry-arts-bake/</a>	
<b>Location:</b> Barrie	<b>Program Length:</b> 1 Year	
<b>Degree granted:</b> Ontario College Certificate	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Students learn traditional and contemporary baking methods, baking theory and trade calculations</li><li>• Focus on critical thinking and business management</li><li>• Courses include basic and advanced pastry production, and basic and advances food safety and certification</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or equivalent</li><li>• Grade 12 English</li></ul>	<p>\$3017.34</p> <p>Additional fees may apply</p>
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training	

<b>Program name:</b> Advanced Chocolate and Confectionery Artistry	<b>Campus location:</b> North Campus	
<b>Institution:</b> Humber College	<a href="https://hrt.humber.ca/programs/advanced-chocolate-and-confectionery-artistry.html">https://hrt.humber.ca/programs/advanced-chocolate-and-confectionery-artistry.html</a>	
<b>Location:</b> Toronto	<b>Program Length:</b> 1 Year	
<b>Degree granted:</b> Ontario Graduate Certificate	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Students learn advanced level pastry arts necessary to produce artisanal chocolate confectioneries</li><li>• Research current and emerging trends and technologies in chocolate confectionery</li><li>• Courses include recipe and product development, chocolate techniques, and bakery entrepreneurship and innovation</li></ul>	<ul style="list-style-type: none"><li>• Bachelor’s degree or advanced diploma in baking and pastry arts</li><li>• Must meet Humber’s language proficiency policy</li></ul>	\$7945.56  Additional fees may apply
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training	

<b>Program name:</b> Baking and Pastry Arts Management	<b>Campus location:</b> North Campus	
<b>Institution:</b> Humber College	<a href="https://hrt.humber.ca/programs/baking-pastry-management.html">https://hrt.humber.ca/programs/baking-pastry-management.html</a>	
<b>Location:</b> Toronto	<b>Program Length:</b> 2 Years	
<b>Degree granted:</b> Ontario Graduate Diploma	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Gain hands-on experience in a variety of settings</li><li>• Learn to create chocolate sculptures, plated desserts, and specialty cakes, among others</li><li>• Students being with foundational courses in baking and progress to in-depth pastry training</li><li>• Courses include international trends and applications in industry</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or equivalent</li><li>• Grade 12 English</li><li>• Three grade 11 or grade 12 courses</li><li>• Or mature student status</li></ul>	\$5281.88  Additional fees may apply
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
Internship partners include a variety of local bakeries.	On-campus classroom training	



<b>Program name:</b> Culinary Management	<b>Campus location:</b> North Campus	
<b>Institution:</b> Humber College	<a href="https://hrt.humber.ca/programs/culinary-management.html">https://hrt.humber.ca/programs/culinary-management.html</a>	
<b>Location:</b> Toronto	<b>Program Length:</b> 2 Years	
<b>Degree granted:</b> Ontario Graduate Diploma	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Opportunity to compete in national and international skills competitions</li><li>• Students execute own dinner event in “Chef’s Table” course</li><li>• Learn to be proficient in various butchery techniques</li><li>• Program also includes a 7-week mandatory hotel and restaurant internship</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or equivalent</li><li>• Grade 12 English</li><li>• Three grade 11 or grade 12 courses</li><li>• Or mature student status</li></ul>	\$5288.15  Additional fees may apply
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
Program approved by the World Association of Chefs Societies (WACS), a global authority on food in education, networking, competition, and humanitarian and sustainability.	On-campus classroom training and internship with hotel and restaurant	

<b>Program name:</b> Culinary Skills	<b>Campus location:</b> North Campus	
<b>Institution:</b> Humber College	<a href="https://hrt.humber.ca/programs/culinary-skills.html">https://hrt.humber.ca/programs/culinary-skills.html</a>	
<b>Location:</b> Toronto	<b>Program Length:</b> 1 Year	
<b>Degree granted:</b> Ontario Graduate Certificate	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Courses include practical butchery, basic contemporary culinary skills, food service safety and sanitation, and business and career management</li><li>• Program includes a mandatory 7-week internship</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or equivalent</li><li>• Grade 12 English</li><li>• Three grade 11 or grade 12 courses</li><li>• Or mature student status</li></ul>	<p>\$5288.15</p> <p>Additional fees may apply</p>
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
Program approved by the World Association of Chefs Societies (WACS), a global authority on food in education, networking, competition, and humanitarian and sustainability.	On-campus classroom training and internship with hotel and restaurant	This curriculum is similar to the culinary management program and students are able to transition to the management program or the cook apprenticeship program.

<b>Program name:</b> Cook Apprenticeship	<b>Campus location:</b> Unavailable.	
<b>Institution:</b> Humber College	<a href="https://hrt.humber.ca/programs/cook-apprentice.html">https://hrt.humber.ca/programs/cook-apprentice.html</a>	
<b>Location:</b> Toronto	<b>Program Length:</b> 30 weeks	
<b>Degree granted:</b> Certificate of Achievement	<b>Target group:</b> Apprentices	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Offers a balance of theory and practical classes; students can study while they work professionally</li><li>• Courses include planning for culinary profit, contemporary fish and seafood, and advanced culinary knowledge theory</li></ul>	<ul style="list-style-type: none"><li>• Candidates must a registered apprentice before applying for the program</li></ul>	Contact the program coordinator for applicable fees.
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
Program approved by the World Association of Chefs Societies (WACS), a global authority on food in education, networking, competition, and humanitarian and sustainability.	On-campus classroom training and an apprenticeship	Students must find an employer willing to hire them as an apprentice or they must apply through the Ontario Youth Apprenticeship Program.

<b>Program name:</b> Culinary Arts *	<b>Campus location:</b> Ottawa Campus	
<b>Institution:</b> La Cité collégiale	<a href="http://www.collegelacite.ca/programmes/41483.htm">http://www.collegelacite.ca/programmes/41483.htm</a>	
<b>Location:</b> Ottawa	<b>Program Length:</b> 1 Year	
<b>Degree granted:</b> Ontario College Certificate	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Students learn the necessary skills to enter into the industry, applying hands-on experience in an on-campus restaurant run by students</li><li>• Courses include fundamental culinary skills, introductory and advanced culinary theory, and baking and pastry essentials</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or mature student status</li></ul>	Semester 1= \$2362.80 Semester 2= \$2296.85  Additional fees may apply
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training	*This program is offered exclusively in French.  Graduates of this program are eligible to enter into the 3 <sup>rd</sup> semester of the Culinary Management program.

<b>Program name:</b> Culinary Management	<b>Campus location:</b> Ottawa Campus	
<b>Institution:</b> La Cité collégiale	<a href="http://www.collegelacite.ca/programmes/51605.htm">http://www.collegelacite.ca/programmes/51605.htm</a>	
<b>Location:</b> Ottawa	<b>Program Length:</b> 2 Years	
<b>Degree granted:</b> Ontario College Diploma	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Students learn the necessary skills and competencies to prepare and present culinary dishes, develop menus, and manage a culinary environment</li><li>• Two options for specialization:<ol style="list-style-type: none"><li>1. Pastry specialization</li><li>2. Cuisine specialization</li></ol></li><li>• Courses include culinary theory, food control and calculations, table service, and nutrition</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or mature student status</li></ul>	Semester 1= \$2362.80 Semester 2= \$2296.85 Semester 3= \$2266.55 Semester 4= \$2267.55  Additional fees may apply
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training	*This program is offered exclusively in French.  Graduates of this program are eligible to enter into the 3 <sup>rd</sup> semester of the Culinary Management program.

<b>Program name:</b> Cook Apprenticeship	<b>Campus location:</b> Sarnia Campus	
<b>Institution:</b> Lambton College	<a href="https://www.lambtoncollege.ca/COOK/">https://www.lambtoncollege.ca/COOK/</a>	
<b>Location:</b> Sarnia	<b>Program Length:</b> 1 Year	
<b>Degree granted:</b> Certificate of Apprenticeship	<b>Target group:</b> Apprentices	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Provides the in-school training component for the apprenticeship</li><li>• Courses include food fundamentals and principles, restaurant career management, science of food and beverage, and advanced baking and cake design</li></ul>	<ul style="list-style-type: none"><li>• Registered apprentice with the Ministry of Advanced Learning and Skills Development</li></ul>	Contact the registrar's office for tuition and fees.
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training and an apprenticeship	

<b>Program name:</b> Culinary Management	<b>Campus location:</b> Sarnia Campus	
<b>Institution:</b> Lambton College	<a href="https://www.lambtoncollege.ca/CULN/">https://www.lambtoncollege.ca/CULN/</a>	
<b>Location:</b> Sarnia	<b>Program Length:</b> 1 Year	
<b>Degree granted:</b> Ontario College Diploma	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Courses include applied culinary techniques, garde manger and charcuterie practical, sustainable agriculture, and advanced baking and cake design</li><li>• Students participate in a capstone class, “Chef’s Table” where students complete and market a complete menu</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or equivalent</li><li>• Grade 12 English</li><li>• Or mature student status</li></ul>	\$8018.00  Additional fees may apply
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training	

<b>Program name:</b> Culinary Skills		<b>Campus location:</b> Belleville Campus
<b>Institution:</b> Loyalist College		<a href="https://www.loyalistcollege.com/programs-and-courses/full-time-programs/culinary-skills/">https://www.loyalistcollege.com/programs-and-courses/full-time-programs/culinary-skills/</a>
<b>Location:</b> Belleville		<b>Program Length:</b> 1 Year/ 2 Years*
<b>Degree granted:</b> Ontario College Certificate/Ontario College Diploma		<b>Target group:</b> Students
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Students participate in The Art of Flavors dinners throughout the year, being exposed to new cuisine and industry connections</li><li>• Gain hands-on experience in the student-run campus restaurant</li><li>• Courses include culinary techniques and food theory, profit management and sustainability in food service</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or equivalent</li><li>• Grade 12 English</li><li>• Or mature student status</li></ul>	\$4322.54  Additional fees may apply
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
Loyalist Culinary programs are in partnership with the Canadian Forces. Students can participate in a Subsidized Education Program and receive advanced standing in the Cook (Apprenticeship) program.	On-campus classroom training	* Students may also take this program in two years, receiving an Ontario College Diploma in Culinary Management (See following page).



<b>Program name:</b> Baking	<b>Campus location:</b> Welland Campus	
<b>Institution:</b> Niagara College	<a href="https://www.niagaracollege.ca/parttimestudies/programs/explore/baking/">https://www.niagaracollege.ca/parttimestudies/programs/explore/baking/</a>	
<b>Location:</b> Welland	<b>Program Length:</b> N/A Part-time	
<b>Degree granted:</b> Statement of Achievement	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Courses include health and safety, fermented products, cake and pastry craft, bake theory, and baking management</li></ul>	<ul style="list-style-type: none"><li>• Prerequisites may be required for these courses. Individual courses may require additional educational requirements.</li></ul>	<p>Tuition information for the 2018-2019 academic year is unavailable.</p> <p>5 out of the 6 required courses are not currently being offered for the 2018-2019 academic year.</p>
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training	Students do not apply for part-time studies. Instead, they are expected to enroll in and complete individual courses towards their desired program. Upon completion, students may apply for their statement of achievement.

<b>Program name:</b> Baking and Pastry Arts	<b>Campus location:</b> Niagara-on-the-Lake Campus	
<b>Institution:</b> Niagara College	<a href="https://www.canadianfoodandwineinstitute.ca/cfwiprograms/baking-pastry-arts/">https://www.canadianfoodandwineinstitute.ca/cfwiprograms/baking-pastry-arts/</a>	
<b>Location:</b> Welland	<b>Program Length:</b> 1 Year	
<b>Degree granted:</b> Ontario College Certificate	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Courses include computer applications, advances baking and pastries, chocolate and sugar work, baking production and product development</li><li>• Students involved in community engagement with recipe competitions and not-for-profit catered events</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or equivalent</li><li>• Grade 12 English</li><li>• Grade 11 Mathematics</li></ul>	\$6169.48  Additional fees may apply
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training	

<b>Program name:</b> Cook (Apprenticeship)	<b>Campus location:</b> Niagara-on-the-Lake Campus	
<b>Institution:</b> Niagara College	<a href="https://www.niagaracollege.ca/apprenticeships/explore/cook/">https://www.niagaracollege.ca/apprenticeships/explore/cook/</a>	
<b>Location:</b> Welland	<b>Program Length:</b> 2 15-week sessions	
<b>Degree granted:</b> Certificate of Apprenticeship	<b>Target group:</b> Apprentices	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Courses include food composition and plating techniques, culinary cost control, introduction to food preparation, and language and communication</li><li>• Students will be prepared to re-enter the workforce as a baker, research and development cook, or chef de cuisine, among other careers</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or equivalent</li><li>• Employment in the industry</li></ul>	Apprenticeship fees may apply. Contact the program coordinator for more information.
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
The program is funded in part by the Government of Ontario and the Government of Canada.	On-campus classroom training and industry apprenticeship.	

<b>Program name:</b> Culinary Innovation and Food Technician (Co-op)	<b>Campus location:</b> Niagara-on-the-Lake Campus	
<b>Institution:</b> Niagara College	<a href="https://www.canadianfoodandwineinstitute.ca/cfwiprograms/culinary-innovation-food-technology/testimonials/">https://www.canadianfoodandwineinstitute.ca/cfwiprograms/culinary-innovation-food-technology/testimonials/</a>	
<b>Location:</b> Welland	<b>Program Length:</b> 3 Years	
<b>Degree granted:</b> Ontario College Advanced Diploma	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Co-op placement gives students applied research experience in product development and food science</li><li>• Careers such as food packaging technician, food production manager, and product development</li><li>• Courses include food chemistry, food law and regulations, and production and processing engineering</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or equivalent</li><li>• English Grade 12</li><li>• Mathematics Grade 12</li></ul>	<p>\$6238.48 Year 1 \$5219.30 Year 2 \$5198.30 Year 3</p> <p>Additional fees may apply</p>
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
The program is funded in part by the Government of Ontario and the Government of Canada.	On-campus classroom training and industry apprenticeship.	

<b>Program name:</b> Culinary Management (Co-op)	<b>Campus location:</b> Niagara-on-the-Lake Campus	
<b>Institution:</b> Niagara College	<a href="https://www.canadianfoodandwineinstitute.ca/cfwiprograms/culinary-management/">https://www.canadianfoodandwineinstitute.ca/cfwiprograms/culinary-management/</a>	
<b>Location:</b> Welland	<b>Program Length:</b> 2 Years	
<b>Degree granted:</b> Ontario College Diploma	<b>Target group:</b> Students	
<b>PROGRAM DETAILS</b>		
<b>PROGRAM SUMMARY</b>	<b>PREREQUISITES</b>	<b>2018-2019 TUITION</b>
<ul style="list-style-type: none"><li>• Students received on-site training at campus dining locations</li><li>• Courses include integrated culinary production, theory of food combination, and event management</li><li>• Students involved in community engagement with recipe competitions and not-for-profit catered events</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or equivalent</li><li>• English Grade 12</li></ul>	<p>\$6712.48 Year 1 \$5851.98 Year 2</p> <p>Additional fees may apply</p>
<b>INDUSTRY PARTNERS</b>	<b>PROGRAM DELIVERY</b>	<b>NOTES</b>
	On-campus classroom training and co-op placement.	Graduates from the Culinary Skills program may enter the second year of the Culinary Management program.

## TRAINING DIMENSION: FOOD AND BEVERAGE PROCESSING

<b>Program name:</b> Brewmaster and Brewery Operations Manager		<b>Campus location:</b> Niagara-on-the-Lake Campus
<b>Institution:</b> Niagara College		<a href="https://www.canadianfoodandwineinstitute.ca/cfwiprograms/brewmaster/">https://www.canadianfoodandwineinstitute.ca/cfwiprograms/brewmaster/</a>
<b>Location:</b> Welland		<b>Program Length:</b> 2 Years
<b>Degree granted:</b> Ontario College Diploma		<b>Target group:</b> Students
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Students learn brewing techniques, sensory evaluation, quality control, and advanced business applications</li><li>• Courses include packaging, brewing equipment and technology, filtration, carbonation, and finishing, and business management</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or equivalent</li><li>• English Grade 12</li><li>• Mathematics Grade 12</li><li>• Biology <b>or</b> chemistry Grade 11</li></ul>	<p>\$7608.97 Year 1 \$2598.89 Year 2</p> <p>Additional fees may apply</p>
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
Close partnership with Ontario Craft Brewers and an industry advisory committee.	On-campus classroom training	Students must be a minimum of 19 years of age and submit a portfolio prior to acceptance.

<b>Program name:</b> Winery and Viticulture Technician	<b>Campus location:</b> Niagara-on-the-Lake Campus	
<b>Institution:</b> Niagara College	<a href="https://www.canadianfoodandwineinstitute.ca/cfwiprograms/winery-viticulture-technician/">https://www.canadianfoodandwineinstitute.ca/cfwiprograms/winery-viticulture-technician/</a>	
<b>Location:</b> Welland	<b>Program Length:</b> 2 Years	
<b>Degree granted:</b> Ontario College Diploma	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Students apply their learning with a major project collaborating with industry partners</li><li>• Participate in a hands-on learning environment</li><li>• Courses include language and communications, introduction to vine biology, vineyard pruning and maintenance practices, and introduction to wine chemistry</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or equivalent</li><li>• English Grade 12</li><li>• Mathematics Grade 12</li><li>• Biology <b>or</b> chemistry Grade 11</li></ul>	<p>\$7081.47 Year 1 \$4739.48 Year 2</p> <p>Additional fees may apply</p>
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
Canadian Food and Wine Institute at Niagara College is well known for its industry partners, although these are not specified.	On-campus classroom training	Students must be a minimum of 19 years of age.

<b>Program name:</b> Wine Business Management	<b>Campus location:</b> Niagara-on-the-Lake Campus	
<b>Institution:</b> Niagara College	<a href="https://www.canadianfoodandwineinstitute.ca/cfwiprograms/wine-business-management/">https://www.canadianfoodandwineinstitute.ca/cfwiprograms/wine-business-management/</a>	
<b>Location:</b> Welland	<b>Program Length:</b> 1 Year	
<b>Degree granted:</b> Ontario College Graduate Certificate	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Gain hands-on experience in the student-led brewery, teaching distillery greenhouse and nursery and hop yard</li><li>• Courses include wine growing environmental management, wine marketing and consumer behavior, winery business management and regulatory environment and principles of human resource management</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or equivalent</li><li>• Proof of English proficiency</li></ul>	\$6241.88  Additional fees may apply
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
Canadian Food and Wine Institute at Niagara College is well known for its industry partners, although these are not specified.	On-campus classroom training	Students must be a minimum of 19 years of age.



<b>Program name:</b> Artisan Distilling	<b>Campus location:</b> Niagara-on-the-Lake Campus	
<b>Institution:</b> Niagara College	<a href="https://www.canadianfoodandwineinstitute.ca/cfwiprograms/artisan-distilling/">https://www.canadianfoodandwineinstitute.ca/cfwiprograms/artisan-distilling/</a>	
<b>Location:</b> Welland	<b>Program Length:</b> 1 Year	
<b>Degree granted:</b> Ontario College Graduate Certificate	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Students develop in-depth understanding of scientific, technological, and business aspects of distilling and fermentation</li><li>• Career opportunities as agency sales representative, distillation technician, or operations manager, among others</li><li>• Courses include quantitative spirit analysis, distillation management, and the legal and regulatory environment</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or equivalent</li><li>• Proof of English proficiency</li></ul>	\$11,255.10  Additional fees may apply
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
Canadian Food and Wine Institute at Niagara College is well known for its industry partners, although these are not specified.	On-campus classroom training	Students must be a minimum of 19 years of age and submit a portfolio prior to enrollment.

## TRAINING DIMENSION: CULINARY ARTS

<b>Program name:</b> Assistant Cook (Apprenticeship)	<b>Campus location:</b> Kingston Campus	
<b>Institution:</b> St. Lawrence College	<a href="http://www.stlawrencecollege.ca/programs-and-courses/full-time/programs/a_m/assistant-cook-apprenticeship/kingston?p=1">http://www.stlawrencecollege.ca/programs-and-courses/full-time/programs/a_m/assistant-cook-apprenticeship/kingston?p=1</a>	
<b>Location:</b> Kingston	<b>Program Length:</b> N/A	
<b>Degree granted:</b> Certificate of Apprenticeship	<b>Target group:</b> Apprentices	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Includes the in-school training portion of the apprenticeship program with the Ministry of Advanced Education and Skills Development</li><li>• Courses include techniques of baking, kitchen management, and business development</li></ul>	<ul style="list-style-type: none"><li>• Apprentices must be sponsored by an employer</li><li>• Registered with the Ministry of Advanced Education and Skills Development</li><li>• Registered with the Ontario College of Trades</li></ul>	<p>The apprentice is required to cover all in-class training costs. Contact the Skilled Trades Office for tuition fees.</p> <p>Additional costs apply</p>
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training and apprenticeship	

<b>Program name:</b> Cook Advanced (Apprenticeship)	<b>Campus location:</b> Kingston Campus	
<b>Institution:</b> St. Lawrence College	<a href="http://www.stlawrencecollege.ca/programs-and-courses/full-time/programs/a_m/cook-apprenticeship/kingston?p=1">http://www.stlawrencecollege.ca/programs-and-courses/full-time/programs/a_m/cook-apprenticeship/kingston?p=1</a>	
<b>Location:</b> Kingston	<b>Program Length:</b> N/A	
<b>Degree granted:</b> Certificate of Apprenticeship	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>Includes the in-school training portion of the apprenticeship program with the Ministry of Advanced Education and Skills Development</li><li>Courses include advanced baking and culinary techniques, advanced food theory, and advanced business management</li></ul>	<ul style="list-style-type: none"><li>Apprentices must be sponsored by an employer</li><li>Registered with the Ministry of Advanced Education and Skills Development</li><li>Must be employed in the industry</li></ul>	<p>The apprentice is required to cover all in-class training costs. Contact the Skilled Trades Office for tuition fees.</p> <p>Additional costs apply</p>
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training and apprenticeship	

<b>Program name:</b> Culinary Management/ Cook Co-op Diploma Apprenticeship	<b>Campus location:</b> Kingston Campus	
<b>Institution:</b> St. Lawrence College	<a href="http://www.stlawrencecollege.ca/programs-and-courses/full-time/programs/a_m/culinary-managementcook-coop-diploma-apprenticeship/kingston?p=1">http://www.stlawrencecollege.ca/programs-and-courses/full-time/programs/a_m/culinary-managementcook-coop-diploma-apprenticeship/kingston?p=1</a>	
<b>Location:</b> Kingston	<b>Program Length:</b> 2 Years	
<b>Degree granted:</b> Ontario College Diploma	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Includes the in-school training portion of the apprenticeship program with the Ministry of Advanced Education and Skills Development</li><li>• Courses include menu planning and food science, food sustainability, culinary math, and culinary techniques</li><li>• Students are registered as apprentices with the Ministry of Advanced Education and Skills Development</li><li>• Includes paid work placement for one semester</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or equivalent</li><li>• English Grade 12</li><li>• Mathematics Grade 11</li></ul>	<p>\$17,135.15</p> <p>Additional costs apply</p>
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training and co-op placement	Apprentices who complete their work requirements are eligible to qualify for their Certificate of Qualification for Cook (Red Seal).

<b>Program name:</b> Culinary Skills	<b>Campus location:</b> Kingston Campus	
<b>Institution:</b> St. Lawrence College	<a href="http://www.stlawrencecollege.ca/programs-and-courses/full-time/programs/a_m/culinary-skills-chef-training/kingston/">http://www.stlawrencecollege.ca/programs-and-courses/full-time/programs/a_m/culinary-skills-chef-training/kingston/</a>	
<b>Location:</b> Kingston	<b>Program Length:</b> 1 Year	
<b>Degree granted:</b> Ontario College Certificate	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Students completing the program will begin career as Level 1 Apprentice</li><li>• Courses include foundations of baking, culinary math, food sustainability, and kitchen management</li><li>• Students help run an on-campus dining location for hands-on learning opportunities</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or equivalent</li><li>• English Grade 12</li><li>• Mathematics Grade 11</li></ul>	<p>\$16,675.15</p> <p>Additional costs apply</p>
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training	

<b>Program name:</b> Cook (Apprenticeship)	<b>Campus location:</b> Sault Campus	
<b>Institution:</b> Sault College	<a href="https://www.saultcollege.ca/Programs/CookApprenticeship">https://www.saultcollege.ca/Programs/CookApprenticeship</a>	
<b>Location:</b> Sault Ste. Marie	<b>Program Length:</b> 2 12-week semesters and 6,000 hr. apprenticeship	
<b>Degree granted:</b> N/A	<b>Target group:</b> Apprentices	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Program includes a 12-week basis in-class instruction component and a 12-week advances section</li><li>• Learn about classic and contemporary food techniques, menu planning, and kitchen management</li><li>• Courses include business computer applications, advanced techniques of baking, and food theory</li></ul>	<ul style="list-style-type: none"><li>• Registered with the Ministry of Advanced Education and Skills Development</li></ul>	\$2661.70 per semester  Additional fees may apply
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training and apprenticeship	

<b>Program name:</b> Culinary Management	<b>Campus location:</b> Sault Campus	
<b>Institution:</b> Sault College	<a href="https://www.saultcollege.ca/Programs/CulinaryManagement">https://www.saultcollege.ca/Programs/CulinaryManagement</a>	
<b>Location:</b> Sault Ste. Marie	<b>Program Length:</b> 2 Years	
<b>Degree granted:</b> Ontario College Diploma	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Students are required to complete a co-op placement before program completion, gaining hands-on experience with a paid work placement</li><li>• Students learn advanced culinary planning and preparation, food and beverage service, and safe kitchen operation</li><li>• Courses include culinary food production, fundamentals of professional baking, and culinary math and computer apps for trade</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or equivalent</li><li>• English Grade 12</li><li>• Mathematics Grade 11</li></ul>	<p>\$2766.70 per semester</p> <p>Additional fees may apply</p>
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training and apprenticeship	

<b>Program name:</b> Culinary Skills- Chef Training	<b>Campus location:</b> Sault Campus	
<b>Institution:</b> Sault College	<a href="https://www.saultcollege.ca/Programs/CulinarySkills">https://www.saultcollege.ca/Programs/CulinarySkills</a>	
<b>Location:</b> Sault Ste. Marie	<b>Program Length:</b> 1 Year	
<b>Degree granted:</b> Ontario College Certificate	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Students will apply basic food and bake science to food preparation, ensure the safe operation of a kitchen, learn sustainability and ethical food sourcing, and develop self-management and interpersonal skills</li><li>• Courses include culinary cost control, fundamentals of professional baking, culinary food production, and nutrition and wellness</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or equivalent</li><li>• English Grade 12</li><li>• Mathematics Grade 11</li></ul>	Tuition fees for the 2018-2019 academic year are currently unavailable.
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training	Field placements may be available throughout the program.



<b>Program name:</b> Food Service Worker	<b>Campus location:</b> Sault Campus	
<b>Institution:</b> Sault College	<a href="https://www.saultcollege.ca/Programs/FoodServiceWorker">https://www.saultcollege.ca/Programs/FoodServiceWorker</a>	
<b>Location:</b> Sault Ste. Marie	<b>Program Length:</b> N/A Part-time continuing education	
<b>Degree granted:</b> Certificate	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Students learn food preparation, service, nutrition, sanitation practices, communication, and business skills</li><li>• Includes fieldwork experience for students without previous job training or experience</li><li>• Courses include institutional food service, introduction to nutrition, and quantity food preparation</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or equivalent</li><li>• English Grade 12</li><li>• Or mature student status</li></ul>	Tuition fees for the 2018-2019 academic year are currently unavailable.
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	Most courses available in an online format.	For students with previous employment or experience in the industry, they may qualify for exemptions from the field placement component.

<b>Program name:</b> General Arts and Science- Kitchen Workers	<b>Campus location:</b> Sault Campus	
<b>Institution:</b> Sault College	<a href="https://www.saultcollege.ca/Programs/GeneratArtsandScience">https://www.saultcollege.ca/Programs/GeneratArtsandScience</a>	
<b>Location:</b> Sault Ste. Marie	<b>Program Length:</b> 1 Year	
<b>Degree granted:</b> Ontario College Certificate	<b>Target group:</b> Students	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Prepares students for entry-level positions in the industry</li><li>• Students may transition to the Culinary Skills program upon completion</li><li>• Courses include sanitation, kitchen operation and menu costing</li><li>• Students participate in a 2-semester work placement</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or equivalent</li><li>• English Grade 12</li><li>• Or mature student status</li></ul>	Tuition fees for the 2018-2019 academic year are currently unavailable.
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training with work placement.	

## TRAINING DIMENSION FOOD PROCESSING

<b>Program name:</b> Industrial Food Technology	<b>Campus location:</b> N/A	
<b>Institution:</b> Seneca College	<a href="http://www.senecacollege.ca/ce/technology/manufacturing-control/industrial-food-technology.html">http://www.senecacollege.ca/ce/technology/manufacturing-control/industrial-food-technology.html</a>	
<b>Location:</b> Toronto	<b>Program Length:</b> N/A Part-time studies	
<b>Degree granted:</b> Seneca College Certificate	<b>Target group:</b> Industry professionals	
PROGRAM DETAILS		
PROGRAM SUMMARY	PREREQUISITES	2018-2019 TUITION
<ul style="list-style-type: none"><li>• Designed for those working in the industry to upgrade their skills and knowledge</li><li>• Students learn how to food science to various food processes including processing, packaging, and distribution</li><li>• Courses include applied food microbiology, plant sanitation, food quality control, food manufacturing I and II</li></ul>	<ul style="list-style-type: none"><li>• Ontario Secondary School Diploma (OSSD) or equivalent or mature student status</li></ul>	Fees unavailable.
INDUSTRY PARTNERS	PROGRAM DELIVERY	NOTES
	On-campus classroom training	Mature students are encouraged to take college prep courses to upgrade their skills and knowledge in English, chemistry, biology, and math.

## APPENDIX F: UNIVERSITY PROGRAMS

**Program name:** Food and Nutrition  
**Institution:** Brescia University College at Western University  
**Location:** London  
**Degree granted:** Bachelor of Science, BSc  
**Program length:** 4 years

PROGRAM DETAILS	
PROGRAM SUMMARY	NOTES
<p>Students can specialize in a variety of programs including an Honors or Specialization in Food Management</p> <p>In Food Science courses, students will learn about the modern food technologies used in food production and will have an insight into principles of food processing, analysis, and food additives.</p> <p>Students will gain practical experience about principles of sensory and consumer science, including test methods, questionnaire design, experimental design, statistical analysis, data interpretation, and decision analysis.</p>	<p>Brescia University College also offers a MSc in Food and Nutrition in two streams:</p> <ul style="list-style-type: none"> <li>• Thesis stream</li> <li>• Internship stream</li> </ul> <p>While the internship stream prepares students to become registered dietitians, the thesis stream equips students with the knowledge and experience in advanced research skills.</p> <p><a href="http://brescia.uwo.ca/academics/undergraduate-programs/school-of-food-nutritional-sciences/foods-and-nutrition/">http://brescia.uwo.ca/academics/undergraduate-programs/school-of-food-nutritional-sciences/foods-and-nutrition/</a></p>

**Program name:** Food Science and Technology  
**Institution:** Brescia University College at Western University  
**Location:** London  
**Degree granted:** Bachelor of Science, BSc  
**Program length:** 4 years

PROGRAM DETAILS	
PROGRAM SUMMARY	NOTES
<p>Students can specialize in a variety of programs including an Honors or Specialization in Food Science and Technology.</p> <p>Students will examine issues of food safety in the global context, about the food product development process from concept to market, and about major groups of microorganisms that are important in food production.</p> <p>Course streams include:</p> <ul style="list-style-type: none"> <li>-Clinical nutrition</li> <li>-Community nutrition</li> <li>-Food Service</li> <li>-Food Science</li> </ul>	<p><a href="http://brescia.uwo.ca/academics/undergraduate-programs/school-of-food-nutritional-sciences/foods-and-nutrition/">http://brescia.uwo.ca/academics/undergraduate-programs/school-of-food-nutritional-sciences/foods-and-nutrition/</a></p>

**Program name:** Nutrition and Food  
**Institution:** Ryerson University  
**Location:** Toronto  
**Degree granted:** Bachelor of Applied Science, BASc  
**Program length:** 4 Years

PROGRAM DETAILS	
PROGRAM SUMMARY	NOTES
<p>The program is designed to train students interested in a career in food service, manufacturing or processing industries, or community or government agencies.</p> <p>Research labs such as the <i>Nutrition Discovery Labs</i> and the <i>Centre for Studies in Food Security</i> give hands-on learning experience, while community initiatives with the <i>Ryerson Urban Farm</i> provide out-of-class experience and application.</p>	<p>This program is recognized by the Canadian Institute of Food Science and Technology, the Canadian Association of Food Service Professionals, Ontario Home Economists in Business and the Ontario Family Studies/ Home Economics Educators Association.</p> <p><a href="https://www.ryerson.ca/nutrition/programs/nutrition-and-food-basc/">https://www.ryerson.ca/nutrition/programs/nutrition-and-food-basc/</a></p>

**Program name:** Oenology and Viticulture  
**Institution:** Brock University  
**Location:** Niagara  
**Degree granted:** Bachelor of Science, BSc  
**Program length:** 4 years

PROGRAM DETAILS	
PROGRAM SUMMARY	NOTES
<p>Students work towards an Honours Bachelor of Science in Oenology and Viticulture.</p> <p>Designed to meet the growing needs of the grape and wine industries in Canada, the program offers a base in biotechnology and explores the scientific disciplines related to the wine industry, such as biochemistry, genetics, and microbiology.</p> <p>Students complete three co-op work terms to be eligible for program completion.</p>	<p>While Brock University offers Master of Science and Doctor of Philosophy degrees in focusing on topics in oenology and viticulture, these programs specialize in plant science and do not pertain to the food and beverage industry.</p> <p><a href="https://brocku.ca/ccovi/graduate-undergraduate-studies/-co-op">https://brocku.ca/ccovi/graduate-undergraduate-studies/-co-op</a></p>

**Program name:** Grape and Wine Technology  
**Institution:** Brock University  
**Location:** Niagara  
**Degree granted:** Certificate  
**Program length:** 1 Year (Part-time study is also available)

PROGRAM DETAILS	
PROGRAM SUMMARY	NOTES
<p>The Certificate in Grape and Wine Technology provides the opportunity for individuals with an existing science degree to gain the training necessary to enter the grape and wine industry or for those with industry experience to upgrade their knowledge. All courses meeting Certificate requirements can be directly transferred to the Degree program if students choose to pursue the degree.</p> <p>Students must also complete one full-time, paid internship before completing the program.</p>	<p><a href="https://brocku.ca/ccovi/graduate-undergraduate-studies/-co-op">https://brocku.ca/ccovi/graduate-undergraduate-studies/-co-op</a></p>

**Program name:** Food Science and Nutrition  
**Institution:** Carleton University  
**Location:** Ottawa  
**Degree granted:** Bachelor of Science, BSc  
**Program length:** 4 Years

PROGRAM DETAILS	
PROGRAM SUMMARY	NOTES
<p>Students learn the fundamentals of food science and take courses in a range of topics applicable to practical application in the industry.</p> <p>Program courses include:</p> <ul style="list-style-type: none"> <li>• Regulation of the Canadian Food Industry</li> <li>• Food Engineering</li> <li>• Food Processing</li> <li>• Food Packaging and Shelf Life</li> </ul>	<p><a href="https://calendar.carleton.ca/undergrad/undergradprograms/foodscienceandnutrition/">https://calendar.carleton.ca/undergrad/undergradprograms/foodscienceandnutrition/</a></p>



**Program name:** Food Science  
**Institution:** Carleton University  
**Location:** Ottawa  
**Degree granted:** Masters of Science, MSc  
**Program length:** 2 Years

PROGRAM DETAILS	
PROGRAM SUMMARY	NOTES
<p>Students study advanced food processing and technology, focusing on the major techniques used in food processing and preservation of raw agricultural materials and a variety of other courses relevant to the industry.</p> <p>Courses include:</p> <ul style="list-style-type: none"> <li>-Theory and Principles of Food Quality and Control</li> <li>-Food Biotechnology</li> <li>-Functional Foods and Natural Health Products</li> </ul>	<p>Students receive graduate certification upon completing the thesis component of the program.</p> <p>A PhD. stream is also available.</p> <p><a href="https://calendar.carleton.ca/grad/courses/FOOD/">https://calendar.carleton.ca/grad/courses/FOOD/</a></p>

**Program name:** Food and Agriculture Business  
**Institution:** University of Guelph  
**Location:** Guelph  
**Degree granted:** Bachelor of Commerce, BCom  
**Program length:** 4 Years

PROGRAM DETAILS	
PROGRAM SUMMARY	NOTES
<p>The program focuses on accounting, economics, finance, marketing, production, organizational behaviour, policy planning and implementation. Students will be equipped with analytical, entrepreneurial and leadership skills for a variety of professional opportunities in this dynamic and innovative sector, both domestically and internationally.</p> <p>Example first year courses include:</p> <ul style="list-style-type: none"> <li>-Business mathematics</li> <li>-Economics of the agri-food system</li> <li>-Financial accounting</li> </ul>	<p>A co-op program stream is also available.</p> <p><a href="https://admission.uoguelph.ca/bcom/fab">https://admission.uoguelph.ca/bcom/fab</a></p>

**Program name:** Food Science  
**Institution:** University of Guelph  
**Location:** Guelph  
**Degree granted:** Masters of Science, MSc  
**Program length:** 2 Years

PROGRAM DETAILS	
PROGRAM SUMMARY	NOTES
<p>The multifaceted program focuses on interdisciplinary studies in chemistry, biology, microbiology, natural product chemistry, nanoscience, physics and nutritional science.</p> <p>Research fields are available in:</p> <ul style="list-style-type: none"> <li>-Food microbiology</li> <li>-Food chemistry</li> <li>-Food processing</li> </ul> <p>Research streams, including food safety research, are directed towards studying approaches to prevent, detect or decontaminate foods. Also included is the application of science to improve the quality of dairy products, chocolate, ice cream, cereals and meat are also studied.</p> <p>Research into methods of food analysis and sensory science as well as studies around nutraceuticals and functional foods are high profile research areas.</p>	<p>A PhD program is also available.</p> <p><a href="https://www.uoguelph.ca/foodscience/future-students/future-graduate-students - MSc and PhD Food Science text">https://www.uoguelph.ca/foodscience/future-students/future-graduate-students - MSc and PhD Food Science text</a></p>

**Program name:** Food Industry Management major  
**Institution:** University of Guelph  
**Location:** Guelph  
**Degree granted:** Bachelor of Bio-resource Management, BBRM  
**Program length:** 4 Years

PROGRAM DETAILS	
PROGRAM SUMMARY	NOTES
<p>The Food Industry Management major, new to the University, is tailored to provide knowledge and experience for a career in food service business or food processing technology.</p> <p>First year courses include:</p> <ul style="list-style-type: none"> <li>-Biological concepts of health</li> <li>-Business mathematics</li> <li>-Financial accounting</li> <li>-Chemistry</li> </ul>	<p>A co-op stream is also available.</p> <p>New for Fall 2018, the Food Industry Management major is pending approval by the Ontario Universities Council on Quality Assurance and the Ministry of Advanced Education and Skills Development.</p> <p><a href="https://www.uoguelph.ca/oac/future-students/food-industry-management">https://www.uoguelph.ca/oac/future-students/food-industry-management</a></p>

**Program name:** Food Science Certificate  
**Institution:** University of Guelph  
**Location:** Guelph  
**Degree granted:** Open Learning program Food Science Certificate  
**Program length:** 2 Years

PROGRAM DETAILS	
PROGRAM SUMMARY	NOTES
<p>The Food Science Certificate program is designed to provide students with a broad understanding of the discipline. It is tailored for those wanting to develop new job responsibilities in a food-related industry, or build food industry skills for a new position or change in career.</p> <p>The program focuses on the chemistry, analysis, microbiology and processing of foods, and on the maintenance of food safety and quality throughout. The program provides recognition for individuals outside of the University of Guelph interested in the field of food science and for food science education for University of Guelph students not in the B.Sc. Food Science Major.</p>	<p>This certificate program will be of interest to:</p> <ul style="list-style-type: none"> <li>• Food industry personnel seeking formal food science education or wishing to upgrade their present qualifications</li> <li>• Technical sales and marketing personnel needing to know how their products work</li> <li>• Dieticians and nutritionists wanting to know more about food science and processing</li> <li>• Government-employed food and public health inspectors needing to expand their knowledge base</li> </ul> <p><a href="https://opened.uoguelph.ca/student-resources/food-science-certificate">https://opened.uoguelph.ca/student-resources/food-science-certificate</a></p>

**Program name:** Cheese Making Technology Short Course  
**Institution:** University of Guelph  
**Location:** Guelph  
**Degree granted:** N/A  
**Program length:** 5 days

PROGRAM DETAILS	
PROGRAM SUMMARY	NOTES
<p>Students learn about the essential cheese making processes required in the occupation, focusing on milk quality, treatment, and chemistry. Participants also learn sanitation and quality control, cheese grading, and processing, ripening, and packaging.</p> <p>The program focuses on the scientific and technological principles of cheese making through interactive lectures. Students then have the opportunity to apply their knowledge in hands-on cheese making laboratories.</p> <p>Students learn the manufacturing of Cheddar, Provolone, Gouda, Colby, Havarti, Ricotta, Feta, Camembert, Romano, Swiss-type and frying and processed cheese.</p>	<p>This program will be of interest to:</p> <ul style="list-style-type: none"> <li>• Production and research dairy personnel</li> <li>• Managers of dairy processing companies</li> <li>• Ingredient suppliers</li> <li>• Government personnel</li> </ul> <p><a href="https://www.uoguelph.ca/foodscience/cheese-making-technology-short-course">https://www.uoguelph.ca/foodscience/cheese-making-technology-short-course</a></p>

## APPENDIX G: DATA SOURCES

List of data sources available for quantitative information about the sector, summarizing content and limitations/gaps.

### Number & Size of Establishments

SOURCE	CANADIAN BUSINESS COUNTS
Websites	<a href="http://www.statscan.gc.ca">www.statscan.gc.ca</a>
Latest update	Statistics Canada. Table 33-10-0092-01 Canadian Business Counts, with employees, June 2018.
Overview	Number of establishments by location and business size. Previously known as Canadian Business Registry
Limitations/Gaps	<ul style="list-style-type: none"> <li>Table 33-10-0092-01 provides information aggregated at the level of manufacturing.</li> <li>Breakdowns of interest available for purchase.</li> </ul>
SOURCE	SUMMARY CANADIAN INDUSTRY STATISTICS
Websites	<a href="https://www.ic.gc.ca/app/scr/app/cis/businesses-entreprises/311">https://www.ic.gc.ca/app/scr/app/cis/businesses-entreprises/311</a>
Latest update	2017
Overview	Number of establishments by province, employment size and subindustry
Limitations/Gaps	<ul style="list-style-type: none"> <li>No information available regarding locations</li> </ul>

### Revenues & Other Operating Statistics

SOURCE	PRINCIPAL STATISTICS FOR MANUFACTURING INDUSTRIES, BY NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM (NAICS), FROM ANNUAL SURVEY OF MANUFACTURING AND LOGGING INDUSTRIES
Websites	<a href="http://www.statscan.gc.ca">www.statscan.gc.ca</a>
Latest update	Statistics Canada. Table 16-10-0117-01 (Data up to 2016). Data for 2017 to be published in February 2019.
Overview	Revenues, employment, costs
Limitations/Gaps	<ul style="list-style-type: none"> <li>Information for the beverage industry is not available separately and must be estimated.</li> <li>Data on employment for the food processing industry in Ontario is sparse (appears to be suppressed for confidentially reasons) and cannot be used.</li> </ul>
SOURCE	SUMMARY CANADIAN INDUSTRY STATISTICS
Websites	<a href="https://www.ic.gc.ca/app/scr/app/cis/businesses-entreprises/311">https://www.ic.gc.ca/app/scr/app/cis/businesses-entreprises/311</a>
Latest update	2017
Overview	Revenues, costs, profit margins
Limitations/Gaps	<ul style="list-style-type: none"> <li>For Ontario companies with revenues &lt; \$5M, information by four-digit NAICS is available. For larger companies, only data for Canada overall is available.</li> </ul>

## Gross Domestic Product (GDP)

SOURCE	GROSS DOMESTIC PRODUCT (GDP) AT BASIC PRICES, BY INDUSTRY, PROVINCES AND TERRITORIES (X 1,000,000)
Website	<a href="http://www.statscan.gc.ca">www.statscan.gc.ca</a>
Latest update	Statistics Canada Table 36-10-0402-01
Overview	GDP by industry and province
Limitations/Gaps	<ul style="list-style-type: none"> <li>None</li> </ul>

## Employment & Economic Impact Estimates

SOURCE	STATISTICS CANADA ECONOMIC IMPACT & INPUT-OUTPUT MODELS
Websites	<a href="http://www.statscan.gc.ca">www.statscan.gc.ca</a>
Latest update	2014 Tables (February 2018 update)
Overview	Input-Output models presenting linkages across industries. Possible to purchase services from Statistics Canada to estimate economic impact of the food processing industry (output, employment, taxes interprovincial trade-flow).
Limitations/Gaps	<ul style="list-style-type: none"> <li>This appears to be the source for large employment figures used by Food &amp; Beverage Ontario in their publications.</li> <li>Input-output tables available for purchase, data as of 2014</li> <li>Economic impact modelling produced on a cost-recovery basis</li> </ul>
SOURCE	LABOUR PRODUCTIVITY AND RELATED MEASURES BY BUSINESS SECTOR INDUSTRY AND BY NON-COMMERCIAL ACTIVITY CONSISTENT WITH THE INDUSTRY ACCOUNTS (ANNUAL).
Websites	<a href="http://www.statscan.gc.ca">www.statscan.gc.ca</a>
Latest update	Statistics Canada, Table 36-10-0480-01 (up to 2017)
Overview	Employment figures and earnings
Limitations/Gaps	<ul style="list-style-type: none"> <li>Figures close to those published by government agencies</li> </ul>

## International Trade

SOURCE	TRADE DATA ONLINE
Websites	<a href="http://www.ic.gc.ca/tdo">www.ic.gc.ca/tdo</a>
Latest update	Up to 2017
Overview	Domestic exports and imports by the industry
Limitations/Gaps	<ul style="list-style-type: none"> <li>In the analysis, domestic exports are presented. These consist of the exports of all goods grown, produced, extracted or manufactured in Ontario leaving Canada through customs for a foreign destination; it includes exports of imported merchandise which has been substantially enhanced in value are also included.</li> <li>Domestic exports exclude “re-exports” which refers to the export of goods that have previously entered Canada and are leaving in the same condition as when first imported.</li> </ul>



## Earnings

SOURCE	SURVEY OF EMPLOYMENT, PAYROLLS AND HOURS (LFS)
Websites	<a href="http://www.statscan.gc.ca">www.statscan.gc.ca</a>
Latest update	Statistics Canada, Table 14-10-0204-01 (up to 2017) Statistics Canada, Table 14-10-0206-01 (up to 2017) Statistics Canada, Table 14-10-0210-01 (up to 2017)
Overview	Average weekly earnings by industry (four-digit NAICS) and province; Average hour of earnings for salaried employees (four-digit NAICS); Average hour of earnings for employees paid by the hour (four-digit NAICS)
Limitations/Gaps	<ul style="list-style-type: none"> <li>Ontario data suppressed for most industries.</li> <li>SEPH has narrower coverage than LFS as it excludes self-employed individuals and the agricultural sector.</li> </ul>

## Salaries & Wages

SOURCE	JOB VACANCY AND WAGE SURVEY
Websites	<a href="http://www.statscan.gc.ca">www.statscan.gc.ca</a>
Latest update	Statistics Canada, Table 14-10-0326-01 Statistics Canada Table 14-10-0356-01
Overview	Job vacancies, payroll employees, job vacancy rate, and average offered hourly wage by industry sector, quarterly, unadjusted for seasonality Job vacancies and average offered hourly wage by occupation (broad occupational category), quarterly, unadjusted for seasonality
Limitations/Gaps	<ul style="list-style-type: none"> <li>Data only available at three-digit NAICS code – no data available for the beverage industry and no breakdowns by sub-industry are available. Only average wages are available</li> <li>Data available at four-digit NOC codes – however, no median wages are available</li> </ul>
SOURCE	LABOUR FORCE SURVEY
Websites	<a href="http://www.statscan.gc.ca">www.statscan.gc.ca</a>
Latest update	Statistics Canada, Table 14-10-0063-01 – quarterly Statistics Canada, Table 14-10-0064-01 – annual Statistics Canada, Table 14-10-0306-01 – quarterly Statistics Canada, Table 14-10-0307-01 – annual
Overview	Employee wages by industry, monthly, unadjusted for seasonality Employee wages by industry, annual Employee wages by occupation, monthly, unadjusted for seasonality Employee wages by occupation, annual
Limitations/Gaps	<ul style="list-style-type: none"> <li>Data by industry: median wages are available, at two-digit NAICS</li> <li>Data by occupation: median wages are available, at two-digit NOC</li> </ul>

SOURCE	JOB BANK - ESDC
Websites	<a href="https://www.jobbank.gc.ca/explorecareers?select=ec-wages">https://www.jobbank.gc.ca/explorecareers?select=ec-wages</a>
Latest update	Website update in 2018 – date for data published is unclear
Overview	Low, median and high wages by occupation – Canada, provinces & territories, and economic regions
Limitations/Gaps	<ul style="list-style-type: none"> <li>• Data by occupation for all industries. Constructed by ESDC using multiple sources (one main source is LFS)</li> <li>• Advantage is that median wage is published</li> <li>• One disadvantage is that the date when data was collected is not clearly indicated in the ESDC website.</li> </ul>

## Job Vacancies

SOURCE	JOB VACANCY STATISTICS
Websites	<a href="http://www.statscan.gc.ca">www.statscan.gc.ca</a>
Latest update	Statistics Canada, Table 14-10-0225-01
Overview	Job vacancies, labour demand and job vacancy rate, annual, calculated using data from BPS (number of job vacancies); SEPH (occupied positions) and LFS (unemployed persons). By calculating the ratio of the number of job vacancies to total unmet (job vacancies) and met (occupied positions) labour demand, the Job Vacancy Statistics program can provide a job vacancy rate. Furthermore, by dividing the number of unemployed persons by the number of job vacancies, the Job Vacancy Statistics program can provide unemployment-to-job vacancies ratios.
Limitations/Gaps	<ul style="list-style-type: none"> <li>• Data only available at two-digit NAICS code</li> </ul>
SOURCE	JOB VACANCY AND WAGE SURVEY
Websites	<a href="http://www.statscan.gc.ca">www.statscan.gc.ca</a>
Latest update	Statistics Canada, Table 14-10-0326-01
Overview	Payroll employment, job vacancies, and average hourly wages, quarterly (unadjusted)
Limitations/Gaps	<ul style="list-style-type: none"> <li>• Data only available at three-digit NAICS code – no data available for the beverage industry and no breakdowns by sub-industry are available.</li> <li>• Job vacancy figures by occupation are available for Canada, Ontario and economic regions; however, these are inclusive of all occupations regardless of the industry in which the jobs are located. These are not job vacancy rates.</li> </ul>

## Labour Supply & Demand Projections

SOURCE	CANADIAN OCCUPATIONAL PROJECTION SYSTEM (COPS) - ESDC ONTARIO LABOUR MARKET INFORMATION (SUMMARY COPS)
Websites	<a href="http://occupations.esdc.gc.ca">http://occupations.esdc.gc.ca</a> <a href="https://open.canada.ca/data/en/dataset/e80851b8-de68-43bd-a85c-c72e1b3a3890">https://open.canada.ca/data/en/dataset/e80851b8-de68-43bd-a85c-c72e1b3a3890</a> <a href="https://www.ontario.ca/page/labour-market">https://www.ontario.ca/page/labour-market</a>
Latest update	2016 historical data, 2017-2026 projections (October 2017)
Overview	Projections for industries, occupations, population, labour force, and job market outlook
Limitations/Gaps	<ul style="list-style-type: none"> <li>• Industry projections, population &amp; labour force projections available only for Canadian total</li> <li>• Occupational level data: Canada-wide from COPS website (demand, supply, outlook)</li> </ul>

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- The Canadian Council of Food Processors (CCFP) (<http://ccfp-ccta.com/industry/>)
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- Canadian Meat Council ([www.cmc-cvc.com](http://www.cmc-cvc.com))
- Better Farming ([www.betterfarming.com/](http://www.betterfarming.com/))
- Food and Farming Canada ([www.foodandfarmingcanada.com](http://www.foodandfarmingcanada.com))
- Canadian Food Innovators ([www.canadianfoodinnovators.ca](http://www.canadianfoodinnovators.ca))
- City of Toronto ([www.toronto.ca](http://www.toronto.ca))
- Food Starter ([www.foodstarter.ca](http://www.foodstarter.ca))
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- Greater Toronto Marketing Alliance ([www.greatertoronto.org/](http://www.greatertoronto.org/))
- Guelph Food Technology Centre ([www.gftc.ca](http://www.gftc.ca))
- Invest in Ontario ([www.sse.gov.on.ca](http://www.sse.gov.on.ca))
- Ontario Food Industry - Ontario Food Cluster ([www.ontariofoodcluster.com](http://www.ontariofoodcluster.com))
- The Canadian Agri-Food Policy Institute, Processed Food Research Program ([www.capiicpa.ca/proc-food/project1/ag-overall.html](http://www.capiicpa.ca/proc-food/project1/ag-overall.html))
- Ontario Ministry of Economic Development and Trade ([www.ontariocanada.com](http://www.ontariocanada.com))
- Ontario Ministry of Finance ([www.fin.gov.on.ca/en](http://www.fin.gov.on.ca/en))
- Ontario's Ministry of Agriculture, Food and Rural Affairs ([www.omafra.gov.on.ca](http://www.omafra.gov.on.ca))

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