



Briefing Note No. 15 | April 2020

# Assessing Labour Market Shortages in the North Bay Region

By Alex Ross

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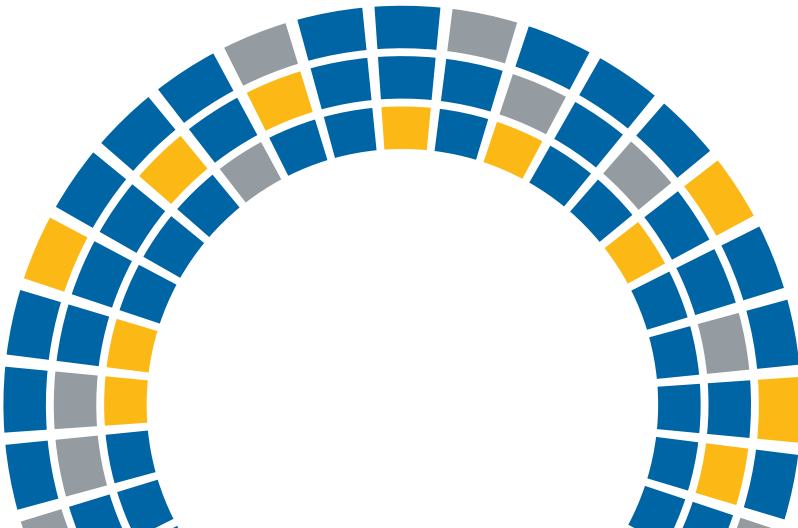
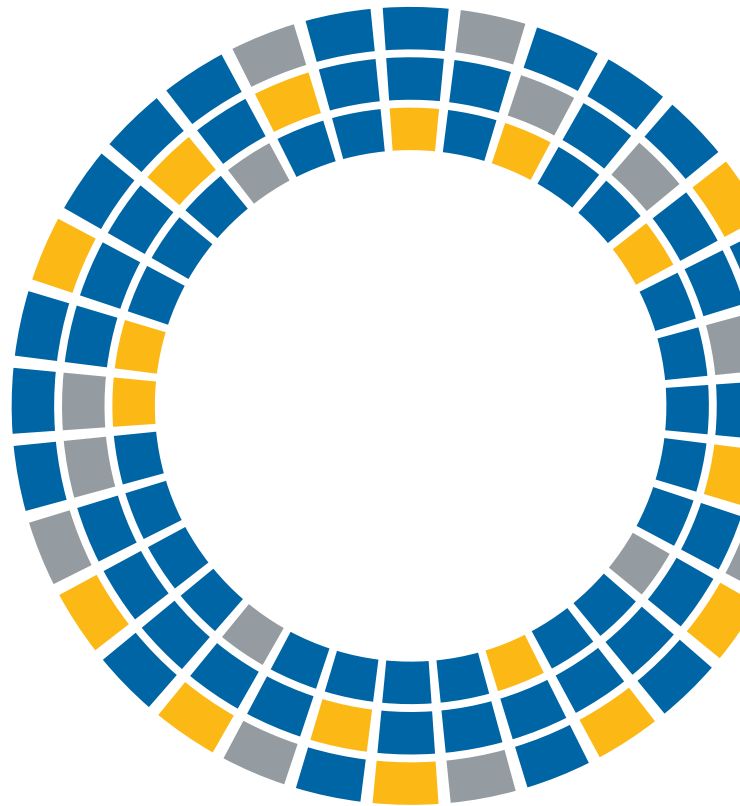
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## About the Author

# Alex Ross

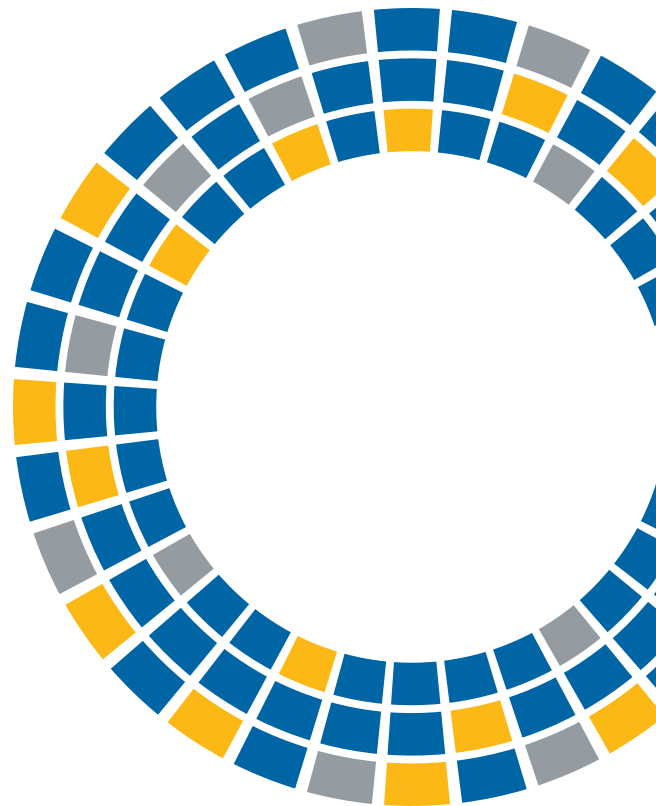
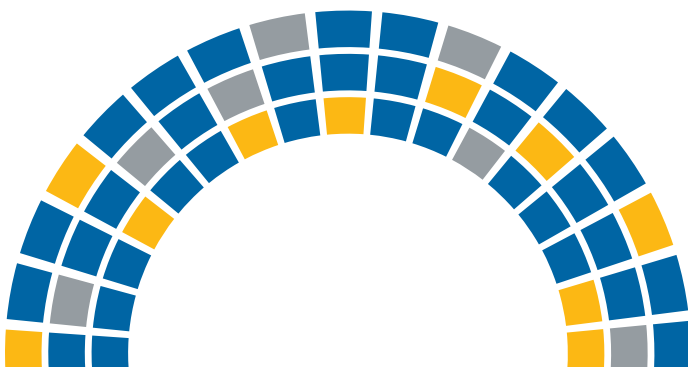


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# Executive Summary

Northern Ontario is ageing. This is well known among decision makers within our communities, and multiple initiatives have been underway to counter the ageing demographic and focus on filling current and future labour force needs due to retirement and out-migration. The most recent initiative includes the Rural and Northern Immigration Pilot (RNIP), a community driven program which includes Northern Ontario's five largest cities and involves increasing immigration to these communities by creating a path to permanent residence for foreign skilled workers (Government of Canada, 2020).

With retirement and out-migration coupled with an already ageing population, it is important now than ever to understand the occupations in which these shortages fall. This briefing note provides insight into current and potential future labour market shortages in North Bay, in order to provide a better understanding to decision makers, potential migrants and youth on the labour market situation in Northern communities. These insights are important to ensure that skills shortages are met, in-migrants move to the North for the right jobs, and so that Northern Ontario's youth prepare themselves for careers that will allow them the option of remaining in their home cities after they graduate.

For the North Bay region, this paper finds that multiple highly skilled positions have been identified as in need, both based on current labour market indicators and potential future retirements. In management, this includes managers in health care, arts and culture, customer services, and legislators / senior managers. Further, multiple health-related occupations were also identified in North Bay, including optometrists, chiropractors, and therapy and assessment professionals. Therapy and assessment professionals are also a category which may be unique to North Bay when compared to the province, as the occupation group did not show up on Ontario's top occupations based on the same indicator. This occupation category also forms a relatively larger portion of the labour market.

Other positions were also identified which stood out for North Bay when compared to the province. This includes auditors, accountants and investment professionals, managers in retail and wholesale trade, food accommodations, and manufacturing, and finally, civil, mechanical, electrical and chemical engineers.

# Introduction

Estimating current and future labour market shortages is a struggle for governments and communities alike due to unavailability of data and variances in small datasets (Parkinson, 2019). However, determining labour market gaps is increasingly becoming a more important practice for policy planning, given projected future labour force declines in Northern Ontario (Moazzami, 2019). Gaining an understanding of occupational shortages is helpful for guiding immigration strategies, aligning future graduates with openings, and maximizing abilities of the current labour force.

This paper attempts to provide a better understanding of local labour market needs, based on the best possible information available at the local level. The paper examines three different estimators of labour market needs; two estimate projected future needs, and one measures potential current labour market gaps.



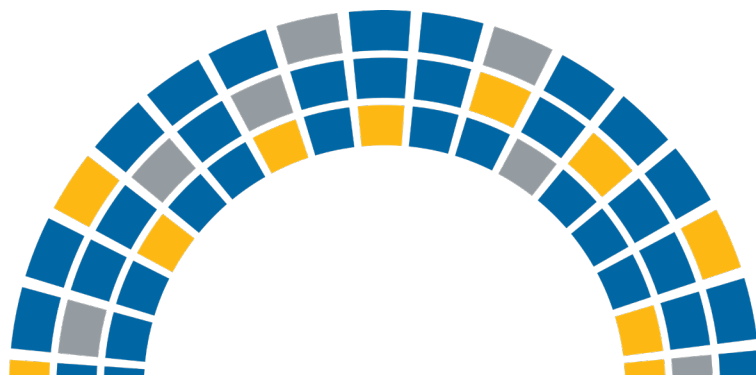
# Estimating current labour market shortages

To estimate current labour market shortages we use a variant of the job vacancy rate. This rate is a regular indicator used by Statistics Canada and is defined as "the number of job vacancies or vacant positions on the last business day of the month, expressed as a percentage of labour demand (occupied positions and vacant positions)" (Statistics Canada, 2015). A high job vacancy rate typically indicates a stronger labour market for job seekers, as it demonstrates that a higher proportion of the total labour market consists of vacant jobs needing to be filled (Lindzon, 2019). Also, generally a negative correlation exists between unemployment rate and job vacancies, suggesting that a high unemployment rate corresponds with a lower job vacancy rate, and thus a higher vacancy rate typically aligns with a lower unemployment rate (Drolet, 2017). Since unemployment rates by occupation are not available at the local geographic level between census years, the job vacancy rate is used to estimate labour market strengths across occupations.

Northern Policy Institute (NPI) conducted an occupation-specific job vacancy rate analysis of the North Bay region to determine the vacancy rates across different National Occupational Classification (NOC) categories.<sup>1</sup> To calculate the average job vacancy rate, the author used data from Emsi Economic Modelling, which was provided through a partnership with the Ontario Ministry of Agriculture, Food and Rural Affairs. Emsi provides an analytical platform with labour market information at the community level. Data were retrieved from Emsi on occupation-specific average job postings in the region in 2018, based on monthly postings throughout the year, and average total jobs within each occupation category in 2018, based on quarterly totals throughout the year. Average jobs and job postings were summed together to arrive at total labour demand for each occupation category. The average job vacancy rate was then determined by dividing occupation-specific job postings by occupation-specific total labour market demand. The calculation used here varies from the standard job vacancy rate calculation used by Statistics Canada

in that the author analyzes average postings and filled jobs rather than the number of postings and filled jobs at a specific point in time. The potential limitations of this approach are further discussed in the last section of this paper.<sup>2</sup>

Based on the above approach, Table 1 identifies the top 20 occupations with the highest average job vacancy rates in the North Bay region in 2018. According to the below table, half of the top 20 positions listed are in management-related fields (Major NOC grouping '0'). Further, four of the occupations listed are in health care related fields, including managers in health care, optometrists, chiropractors, and other health diagnosing professionals, physicians, dentists, and veterinarians, and therapy and assessment professionals. Items identified in red include occupations which were identified as unique to this region when compared to the same top 20 list at the provincial level.



<sup>1</sup> This analysis was made to align with the communities chosen for the Rural and Northern Immigration Pilot (RNIP). As one of the selected communities, North Bay's RNIP region is defined as "An area in Ontario bounded by a radius of 45 km centred on latitude 46°18'31.4" North and longitude 79°27'45.4" West". For the purposes of this analysis, we did our best to include communities that fall or partly fall under this definition, and named it the 'North Bay Region'. Due to data suppression at the time of the original study, the Nipissing 10 First Nation reserve was not included in the job vacancy rate and job growth rate portion of this analysis, however, we anticipate that this data will be available in the near future, at which time the tables will be updated to include the labour market effects from that community.

<sup>2</sup> To test this method, the author calculated the average job vacancy rates at the provincial level and compared this to another method to potentially estimate job shortages provincially—the length of job postings. Jobs that are posted for long periods of time often indicate that those occupations are more difficult to fill (Langevin, 2018). A list of three-digit NOCs was compiled based on occupations that have the highest ratios of jobs that were posted for 30 days or longer. The occupations with the top 20 highest ratios were compared to the top 20 positions based on highest average job vacancy rates, as outlined above. The two lists had an overlap of 40 per cent, meaning that eight out of 140 three-digit National Occupation Classifications appeared on both top 20 lists.

**Table 1: Occupation Categories with the Highest Average Job Vacancy Rates, North Bay Region**

NOC	Occupation	Average Unique Postings, 2018	2018 Jobs	Total Labour Market	Job Vacancy Rate
060	Corporate sales managers	21	28	49	43.20%
065	Managers in customer and personal services, n.e.c.	13	18	31	41.69%
011	Administrative services managers	45	155	200	22.43%
051	Managers in art, culture, recreation and sport	6	27	33	18.66%
953	Other assembly and related occupations	15	66	81	18.35%
125	Court reporters, transcriptionists, records management technicians and statistical officers	5	22	27	18.29%
656	Other occupations in personal service	10	57	67	14.41%
744	Other installers, repairers and servicers	20	131	152	13.45%
031	Managers in health care	11	69	79	13.26%
312	Optometrists, chiropractors and other health diagnosing and treating professionals	8	51	59	13.14%
001	Legislators and senior management	9	68	77	11.44%

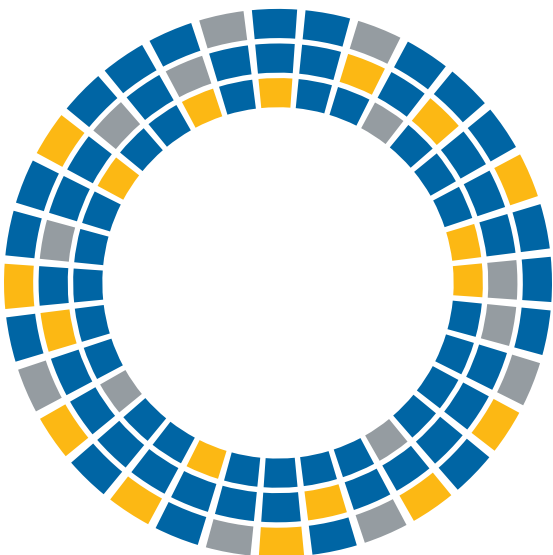
Source: Author's calculations based on Emsi – economicmodeling.com



Table 1: Continued

NOC	Occupation	Average Unique Postings, 2018	2018 Jobs	Total Labour Market	Job Vacancy Rate
311	Physicians, dentists and veterinarians	6	48	54	10.95%
073	Managers in transportation	5	46	51	10.04%
213	Civil, mechanical, electrical and chemical engineers	16	166	182	8.79%
091	Managers in manufacturing and utilities	9	92	100	8.73%
215	Architects, urban planners and land surveyors	4	41	45	8.58%
314	Therapy and assessment professionals	10	121	131	7.89%
063	Managers in food service and accommodation	8	94	102	7.76%
062	Retail and wholesale trade managers	28	348	375	7.33%
111	Auditors, accountants and investment professionals	29	370	399	7.17%

Source: Author's calculations based on Emsi – [economicmodeling.com](https://economicmodeling.com)





# Estimating future labour market shortages

The above section focused on an estimate for current vacancies broken down by three-digit NOC. The next section examines future labour market needs based on occupations that are projected to experience a high rate of growth in the coming years and those that will encounter higher comparative rates of retirement in the future. To start, the growth projections are again based on data obtained from Emsi. These estimates are projected based on historical trends and derived from "industry data, regional occupation data from the

Labour Force Survey (LFS), and regional staffing patterns taken from the Census" (Emsi, 2019). Table 2 summarizes the top five occupations as identified by Emsi based on job growth from 2018 to 2026. Two of the top five occupations are in job skill level C as per the National Occupational Classification (NOC) system. These positions include mine service workers and machine operators in food and beverage processing occupations. The top 20 occupations based on job growth rates are listed in Appendix A.

**Table 2: Top Five Occupational Categories Based on Highest Projected Growth Rates, 2018 to 2026, North Bay region**

NOC	Description	2018 Jobs	2026 Jobs	2018 - 2026 Change	2018 - 2026 % Change
653	Tourism and amusement services occupations	21	41	20	95%
737	Crane operators, drillers and blasters	38	49	11	29%
841	Mine service workers and operators in oil and gas drilling	24	30	6	25%
312	Optometrists, chiropractors and other health diagnosing and treating professionals	51	62	11	22%
946	Machine operators and related workers in food, beverage and associated products processing	77	93	16	21%

Source: Emsi – [economicmodeling.com](https://economicmodeling.com)

The second method used to estimate future labour market shortages includes assessing potential upcoming retirements in order to determine future replacement demand. This methodology follows a similar report published by the Far Northeast Training Board, which examines the proportion of workers 45 years and over in various occupations across Community Futures Development Corporation boundaries in the region. To do this, NPI purchased customized Statistics Canada 2016 census datasets broken down by age and occupation. An analysis of the data was conducted in order to determine the approximate number of individuals that are estimated to reach retirement age in future years based on their age in the 2016 Census of Population. The results identify several occupational groups that may experience high retirement rates in the next 10 years. Retirement rate is determined by dividing the 55 to 64 age group by the total labour force within each occupational category. A higher retirement rate indicates which occupations may require greater focus due to higher future workforce shortages. For example, a retirement rate of 40 per cent would indicate that 40 per cent of all workers in that occupation could potentially retire within the selected time frame.

Table 3 summarizes the top five occupations that will experience the highest estimated retirement rates between 2016 and 2026. Further, the top 20 occupations based on retirement rates are listed in Appendix B.

**Table 3: Replacement Demand by Highest Retirement Rates, 2016 to 2026, North Bay Region<sup>3</sup>**

NOC	Description	Total Labor Force 15 +	Labour Force Aged 55-64	Retirements %
825	Contractors and supervisors, agriculture, horticulture and related operations and services	25	20	80.00%
521	Technical occupations in libraries, public archives, museums and art galleries	50	30	60.00%
653	Tourism and amusement services occupations	25	15	60.00%
736	Train crew operating occupations	50	25	50.00%
031	Managers in health care	105	45	42.86%

Source: Author's calculations, Statistics Canada, 2016 Census of Population, Custom Tabulation



<sup>3</sup> Occupational categories with fewer than 15 people were excluded from the retirement rate analysis, due to random rounding resulting in less accurate retirement rates.

# Combining Current and Future Estimates

The above tables attempt to separately estimate both current and future labour market needs. Table 1 identifies potential current labour market gaps, based on job vacancy rates, and Tables 2 and 3 demonstrate potential future labour market requirements based on occupations with either higher projected growth rates (i.e., increase in labour market demand) or a higher need for workers to replace retirees (i.e., decrease in labour market supply).

The next portion of this analysis will focus on combining the top 20 occupations as identified by the three above methods to determine where the most overlap exists among all three labour market indicators. Table 4 highlights occupational categories that were identified either in all three indicators (high job vacancy rate, high projected growth rates, and high replacement demand), or two out of three indicators, based on the top 20 occupations identified by each indicator.

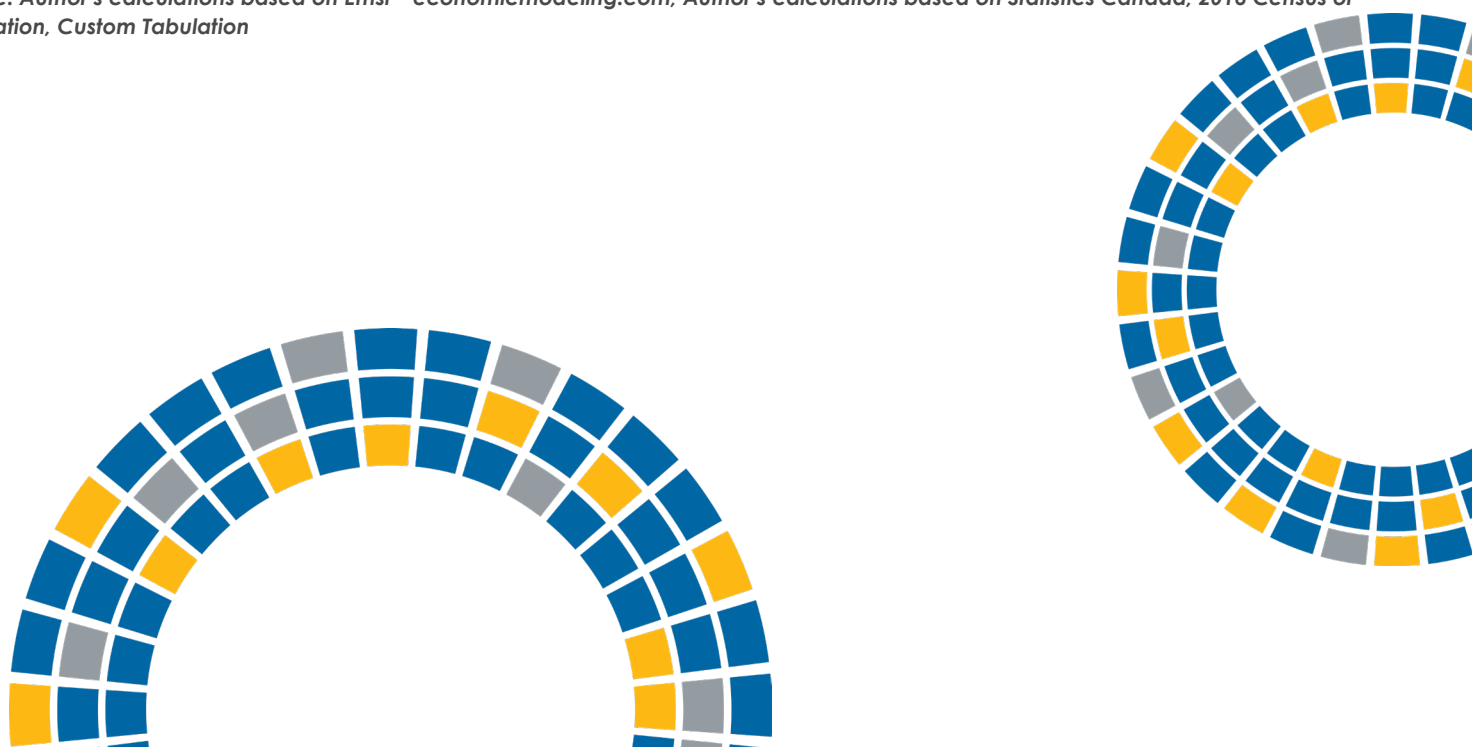
In the North Bay region, physicians, dentists and veterinarians (NOC 311) were flagged in all three indicators as an occupational group that is estimated to experience higher future growth and potential retirement, as well as higher current shortages. Therefore, for these occupations, we estimate that there will be both a decrease in labour market supply and an increase in labour market demand. The high job vacancy rates for these positions potentially indicate an existing high need for these occupations.

Further, multiple management-related occupations were identified across two of the three indicators (retirement rates and vacancy rates). It is estimated that these occupations are experiencing higher current shortages, indicating potentially insufficient labour supply, and a high need for future replacement demand, indicating shrinking labour supply in the future, which could exacerbate the effects of the current shortage. Finally, two occupations were identified as having high current vacancies, indicating potentially low current labour supply, and high projected job growth from 2018 to 2026, indicating a projected increase in labour demand. Both occupational categories were in health-related fields.

**Table 4: Summary of Overlap of the Top Occupations Based on Each Method, North Bay Region**

NOC	Description	Retirement Rate	Job Vacancy Rate	Future Job Growth	# of Jobs, 2018
311	Physicians, dentists and veterinarians	x	x	x	48
031	Managers in health care	x	x		69
051	Managers in art, culture, recreation and sport	x	x		27
065	Managers in customer and personal services, n.e.c.	x	x		18
001	Legislators and senior management	x	x		68
312	Optometrists, chiropractors and other health diagnosing and treating professionals		X	x	51
314	Therapy and assessment professionals		X	x	121
737	Crane operators, drillers and blasters	X		x	38
738	Printing press operators and other trades and related occupations, n.e.c.	X		x	74
521	Technical occupations in libraries, public archives, museums and art galleries	X		x	38
653	Tourism and amusement services occupations	X		x	21

Source: Author's calculations based on Emsi – [economicmodeling.com](http://economicmodeling.com); Author's calculations based on Statistics Canada, 2016 Census of Population, Custom Tabulation





## Limitations

There are several limitations that should be noted, such as those related to the average job vacancy rate method. Since the method uses both average filled jobs in 2018 as well as average job postings in 2018, there will inevitably be overlap due to the fact that some positions that form 'average job postings' would have been posted earlier in the year and subsequently filled at some point during that year. Therefore, in some cases they will be included under both 'average job postings' and 'average filled jobs' in 2018. However, for highly seasonal positions, using 'average postings' and 'average filled jobs' may reduce the inflated effects of seasonality in certain occupations when compared to the typical job vacancy rate indicator, which is based on open positions and filled jobs on the last business day of the month. The average job vacancy rates for seasonal occupations would likely be much lower based on yearly average when compared to the same vacancy rates at specific points throughout the year when those occupations are in higher demand.

Further, estimates of replacement demand are based on a retirement age of 65. One could argue that retirement ages vary, with some individuals retiring in their late 60s or early 70s and others retiring earlier. Due to the inability to

gather average retirement ages by specific occupation, NPI used the age of 65 as an approximate indicator of retirement for the purposes of this analysis. Secondly, the projections are based on the total labour force in 2016, as well as the labour force ages 55 to 64 in 2016, rather than the total number of employed in 2016. Therefore, there seemingly would be a small proportion of individuals within each occupational category that are in the labour force but unemployed. This could cause the projected future retirement numbers to be slightly overstated. Finally, users of these data are encouraged to consider future technological change, future demand, and the potential for automation and its impact on specific occupations. Certain occupations may have more potential retirees but depending on new technology, automation, and industry changes, a portion of those retirees may not be replaced. The above analysis is therefore not short of limitations but aims to provide some indication of current and future labour market needs. This analysis should be used in conjunction with qualitative data and community input to help guide future labour market planning.

## Conclusion

The above analysis is only one of multiple ways to estimate labour market needs. For the North Bay region, the analysis estimates that there is both current and future need for physician, dentist, and veterinarian occupations. Further, a number of the occupations identified above are in health-related fields, which is important when considering that communities in Northern Ontario will experience a higher proportion of elderly people than the province, therefore increasing projected healthcare demand in the future (Moazzami, 2019).





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## Appendix A: Growth rate

NOC	Description	2018 Jobs	2026 Jobs	2018 - 2026 Change	2018 - 2026 % Change
653	Tourism and amusement services occupations	21	41	20	95.24%
737	Crane operators, drillers and blasters	38	49	11	28.95%
841	Mine service workers and operators in oil and gas drilling	24	30	6	25.00%
312	Optometrists, chiropractors and other health diagnosing and treating professionals	51	62	11	21.57%
946	Machine operators and related workers in food, beverage and associated products processing	77	93	16	20.78%
311	Physicians, dentists and veterinarians	48	57	9	18.75%
122	Administrative and regulatory occupations	938	1,111	173	18.44%
421	Paraprofessional occupations in legal, social, community and education services	999	1,182	183	18.32%
752	Heavy equipment operators	334	388	54	16.17%
861	Harvesting, landscaping and natural resources labourers	208	239	31	14.90%
314	Therapy and assessment professionals	121	139	18	14.88%
728	Masonry and plastering trades	93	106	13	13.98%
623	Insurance, real estate and financial sales occupations	268	305	37	13.81%
729	Other construction trades	60	68	8	13.33%
42	Managers in education and social and community services	205	232	27	13.17%
521	Technical occupations in libraries, public archives, museums and art galleries	38	43	5	13.16%
221	Technical occupations in physical sciences	61	69	8	13.11%
323	Other technical occupations in health care	437	494	57	13.04%
738	Printing press operators and other trades and related occupations, n.e.c.	74	83	9	12.16%
513	Creative and performing artists	42	47	5	11.90%

## Appendix B: Replacement Demand

NOC	Description	Total Labour Force	55-64	Replacement Demand
825	Contractors and supervisors, agriculture, horticulture and related operations and services	25	20	80.00%
521	Technical occupations in libraries, public archives, museums and art galleries	50	30	60.00%
653	Tourism and amusement services occupations	25	15	60.00%
736	Train crew operating occupations	50	25	50.00%
31	Managers in health care	105	45	42.86%
212	Life science professionals	70	30	42.86%
51	Managers in art, culture, recreation and sport	50	20	40.00%
924	Utilities equipment operators and controllers	90	35	38.89%
65	Managers in customer and personal services, n.e.c.	65	25	38.46%
944	Machine operators and related workers in textile, fabric, fur and leather products processing and manufacturing	40	15	37.50%
1	Legislators and senior management	340	120	35.29%
145	Library, correspondence and other clerks	390	130	33.33%
622	Technical sales specialists in wholesale trade and retail and wholesale buyers	150	50	33.33%
737	Crane operators, drillers and blasters	60	20	33.33%
921	Supervisors, processing and manufacturing occupations	60	20	33.33%
311	Physicians, dentists and veterinarians	240	75	31.25%
738	Printing press operators and other trades and related occupations, n.e.c.	80	25	31.25%
227	Transportation officers and controllers	65	20	30.77%
733	Other mechanics and related repairers	65	20	30.77%
751	Motor vehicle and transit drivers	1430	435	30.42%

Source: Author's calculations, Statistics Canada, 2016 Census of Population, Custom Tabulation

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