2024

SASKATCHEWAN MINING LABOUR MARKET ANALYSIS

MINING INDUSTRY HUMAN RESOURCES COUNCIL

SMA Saskatchewan Mining Association

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Executive Summary

Saskatchewan's mining sector is well-positioned for long-term growth due to its rich resource base. As a result, mining development is viewed as a significant economic opportunity for the province, with expectations of a long runway of growth ahead. In view of ambitious goals, the sector will require a skilled workforce to realize its potential. This report focuses on the fundamental question: **Can Saskatchewan's mining labour market sustain its future growth?**

To answer this question, this report develops a: (1) labour demand forecast, (2) labour supply / employment expectations forecast and (3) a labour gap forecast to identify the imbalance in Saskatchewan's mining labour market.

Forecasting Labour Demand

The labour demand picture largely reflects increasing global demand for Saskatchewan minerals. Price forecasts for uranium, potash and other critical minerals predict an elevated price environment, leading to increases in mining development, mineral production and labour demand. Under MiHR's baseline forecast, mining employment is expected to grow by 35% from 11,043 in 2023 to 14,892 in 2034.

Forecasting Labour Supply and Employment Expectations

MiHR's model estimates the size of the overall labour supply in Saskatchewan for all occupations over the next decade, capturing the primary factors that push and pull on the labour supply. The labour supply is expected to grow by 19% from 597,494 in 2023 to 708,435 in 2034, largely on the strength of population growth from provincial immigration. With roughly 2% of the labour supply, Saskatchewan's mining sector is projected to capture 11,131 workers by 2034.

Saskatchewan's Expanding Labour Market Gap

Based on the forecasted labour demand and employment expectations, MiHR's baseline labour market forecast predicts that the share of Saskatchewan-based workers will gradually decrease from 85% observed in 2023 to 75% by 2034.

So, can Saskatchewan's mining labour market sustain its future growth? If the objective is to achieve full reliance on Saskatchewan-based workers, the province's labour market is projected to face challenges in sustaining its future growth without external support. Alternatively, if the goal is to maintain the status quo of 85% Saskatchewan-based workers, as observed in 2023, MiHR's forecast predicts that the status quo will also be difficult to sustain. This decline is attributed to anticipated labour demand growth outpacing labour supply growth under status quo conditions.

There are many factors that are feeding into this result. First, it reflects the baseline labour demand scenario. Second, the result also includes Saskatchewan's population growth, labour force participation rate, and rate of people entering occupations and school programs that are relevant to mining. Collectively, these factors are placing a downward pressure on labour supply, making it less responsive to periods of labour demand growth.

The full report walks through MiHR's forecasting and provides results for 20 mining occupations that are critical to Saskatchewan's mining sector.

Factors Working Against Future Labour Market Sustainability

Considering the labour market gaps discussed, this report discusses five main factors that are working against future labour market sustainability. Each of these factors threaten to undermine the sector's ability to effectively respond to new growth opportunities.

Mining has a dependency on labour mobility

Saskatchewan mining workers are found in every corner of Canada, residing in nine out of 12 provinces and territories and 48 out of 76 economic regions. This translates to a significant degree of labour mobility, with many workers frequently traveling considerable distances to reach their workplaces in the province. In particular, the least populated region of Northern Saskatchewan also has the greatest percentage of workers travelling from another jurisdiction (at 62%). This region also exhibits the greatest median distance between place of work and place of residence among workers (at roughly 540 kilometers).

Saskatchewan has a widening age gap

The shift towards a retiring workforce can result in a potential shortage of skilled workers given that older workers have decades of experience and are not easily replaced. From 2008 to 2023, Saskatchewan's workforce has experienced a widening age gap. Across all sectors, the share of workers under 25 years old has declined from 18% to 14%, while the share of workers aged 55 years and older has increased from 18% to 21%.

Mining is underperforming with diversity groups

The mining sector has increasingly embraced equity, diversity, and inclusion (EDI) as one of its main guiding principles. However, improving representation among certain groups remains a persistent challenge. The latest workforce trends in Saskatchewan's mining sector show underrepresentation of women (11% in 2023) and immigrants (8% in 2023), while there has been significant growth in the representation of Indigenous workers in recent years (11% in 2023).

Certain occupational labour pools are too shallow

In certain cases, the existing labour pool is simply too small to effectively respond to new growth opportunities. For some occupations, the regional labour supply has a natural limit that is often below labour demand. In these cases, shallow labour pools will quickly be exhausted, and the mining sector will require a different strategy to boost regional employment further, aside from ongoing recruitment efforts. Given these limitations, it becomes necessary to broaden the scope beyond the existing labour pool through investments in awareness, skills, and training, as well as efforts to remove systemic barriers and promote a respectful workplace culture.

People are not entering the relevant occupations

Though there are many factors that push and pull on the labour supply, occupational choices stand out as the primary bottleneck, especially as there are many competitive career paths available. The report reveals that individuals are not necessarily rejecting the mining sector directly; rather, they are bypassing critical occupations that serve as gateways to mining opportunities. Lifetime career choices are the single largest factor contributing to a limited labour pool in the sector.

Next Steps and Path to Sustainability

Finally, MiHR explores potential solutions to impending labour market pressures. For example, MiHR conducted key informant interviews with various post-secondary institutions and training providers in Saskatchewan. These interviews served to explore how the province's post-secondary education (PSE) system has adapted its mining-related programs in response to a challenging labour market environment.

Each of these interviews revealed unique and innovative approaches, showcasing the diversity of strategies employed by Saskatchewan's educational institutions. Together, they present a set of approaches that can mitigate the burden of critical labour and skills shortages, akin to a Swiss-army knife of labour market tools.

Importantly, these success stories also present opportunities for knowledge-sharing and collaboration, with the potential to scale up effective practices and borrow innovative ideas across institutions.

- Addressing Career Awareness Issues
- Creating Opportunities by Removing Barriers to Careers in Mining
- Prioritizing Student Support to Boost Retention
- Repairing Relationships with Indigenous Communities

Introduction

The mining sector continues to be one of Saskatchewan's pivotal economic drivers, directly employing over 10,000 people and consistently ranking among the province's top five contributors to GDP.[1]

With its unique geology and mineral profile, Saskatchewan is well positioned to be a major supplier of minerals that are essential across various sectors. Its rich reserves of potash, uranium and other critical minerals give the province a distinct advantage in the global marketplace.

Not only does Saskatchewan have the minerals, but it also has a clear mandate to grow the provincial mining sector. In 2023, the Government of Saskatchewan released its *Critical Minerals Strategy*,[2] outlining four key objectives aimed at capitalizing on the opportunities within the emerging critical minerals sector:

- Increase Saskatchewan's share of Canadian mineral exploration spending to 15% by 2030.
- Double the number of critical minerals being produced in Saskatchewan by 2030.
- Grow Saskatchewan production of potash, uranium and helium.
- Establish Saskatchewan as a Rare Earth Element Hub.

1 Statistics Canada. (2023). *Gross domestic product (GDP) at basic prices, by industry, provinces and territories (x 1,000,000).* Table 36-10-0402-01.

2 Government of Saskatchewan. (2023). *Securing the Future: Saskatchewan's Critical Mineral Strategy*.

Evidently, critical minerals are viewed as a significant economic opportunity for both the province and the mining sector, with expectations of a long runway of growth ahead. In view of these ambitious goals, the sector will require a skilled workforce to realize its potential. This report focuses on the fundamental question:

Can Saskatchewan's mining labour market sustain its future growth?

At its core, this question is about labour supply (i.e., the availability of labour). The most significant challenge facing Saskatchewan's mining sector is ensuring there will be a sustainable supply of labour capable of supporting the shifting needs of the sector. A thin labour supply has the potential to derail projects, drive up the cost of finding workers and ultimately undermine the sector's ability to continue to run competitively.

Report Overview

This report is organized into six chapters, each centering on a crucial aspect of Saskatchewan's mining labour market:

- Chapter 1: Forecasting Labour Demand Scenarios
- Chapter 2: Estimating the Labour Supply Outlook
- Chapter 3: Finding Critical Labour Market Gaps
- Chapter 4: Factors Working Against Future Labour Market Sustainability
- Chapter 5: Skills Analysis for the Mining Sector
- Chapter 6: Next Steps and Path to Sustainability

The analysis builds a labour market forecast for several critical occupations. The objective is to identify labour gaps and to assess whether the labour supply can sustain future market needs.

Mining sector partners ought to know whether they should primarily be in 'recruitment mode' (i.e., competition with other sectors) or 'labour force development mode' (i.e., collaboration with other sectors). Findings from this analysis will inform the optimal strategy to achieve a balanced labour market.

Sector and Occupational Definitions

MiHR's definition of the mining sector aligns with the North American Industry Classification System (NAICS).[3] In this report, the mining sector encompasses operations categorized under *Mining & quarrying (NAICS 212)*. This classification describes activities at operating mines throughout Saskatchewan, including both surface and underground mining operations, as well as on-site processing activities.

The occupational data presented is aligned with the *National Occupational Classification (NOC)*[4] system to define relevant occupations of interest. In this report, MiHR identifies and examines the most prevalent and critical occupations in Saskatchewan's mining sector using the NOC system. In certain cases, occupational data is reported under broad occupational categories (See Appendix D for more detail). Eight distinct occupational groupings are listed as follows:

- Engineers
- Human Resources & Finance
- Production
- Professional & Physical Science Occupations
- Supervisors, Coordinators & Superintendent
- Support Workers
- Technical
- Trades

Key Data Sources

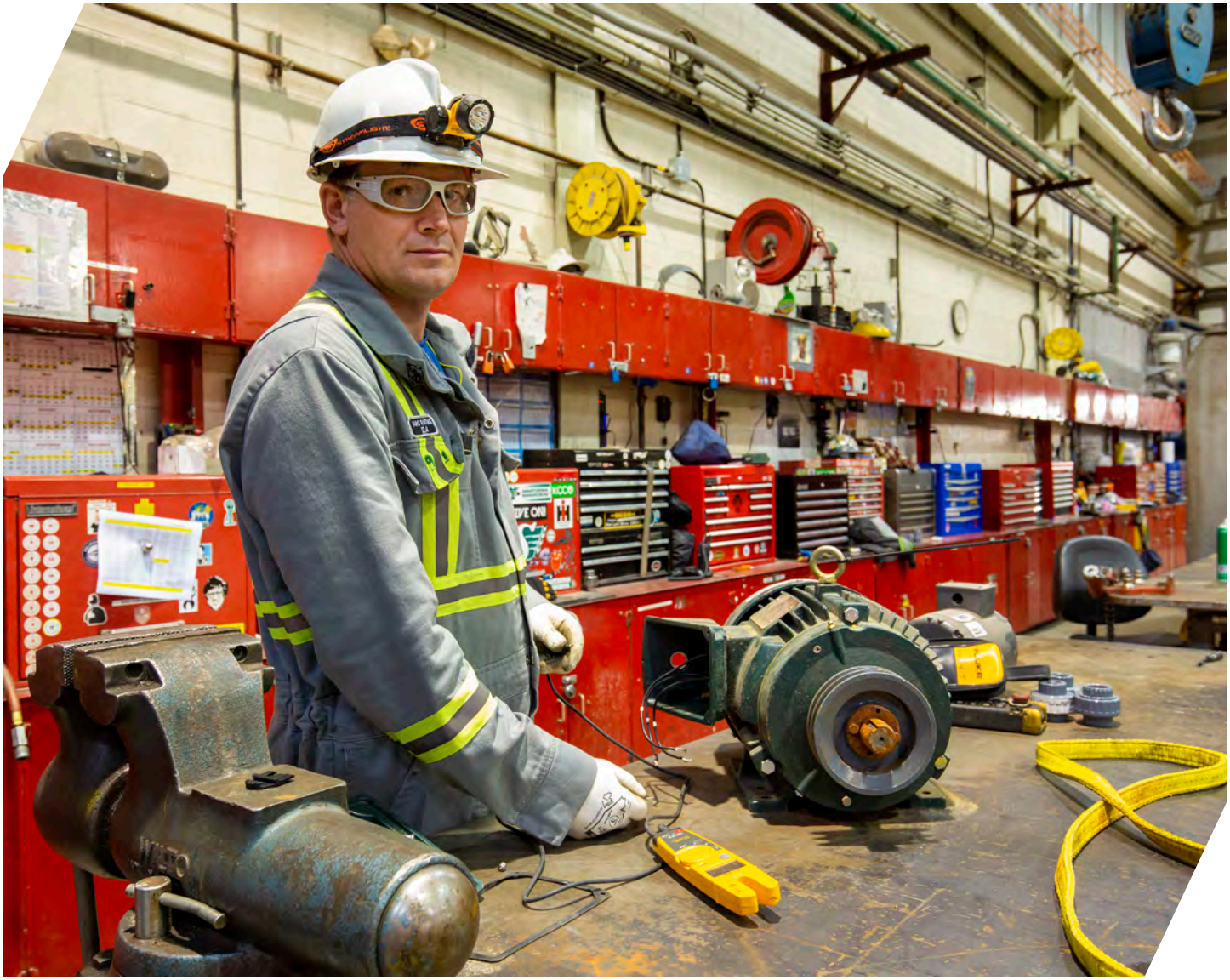
This report relies on various data sources to gather crucial information on variables of interest, including demographic characteristics (e.g., age, gender) and economic and behavioral factors (e.g., employment, unemployment, labour force participation). Information sourced from both public and private entities is utilized to conduct a comprehensive analysis of Saskatchewan's mining labour market.

Secondary Data: The analysis features data from existing sources, notably from Statistics Canada's Census of Population, the Labour force Survey (LFS) and the Canadian System of National Accounts (SNA). Together, these data sources describe Saskatchewan's mining sector and its labour force characteristics. They also underpin the forecasting and analysis presented in this report.

Saskatchewan Mining Workforce Survey: In the fall of 2023, MiHR distributed a mining workforce survey to leading mining employers in Saskatchewan. Employers were requested to provide details regarding their operational workforce, including its size, as well as attributes such as age, job tenure, occupation, place of residence and various other demographic characteristics. The resulting data represents 9,015 individuals employed by 11 Saskatchewan-based mining companies during the latter part of 2023. Key findings from this survey are highlighted in Chapter 4.

Online Employer Questionnaire: Also in the fall of 2023, MiHR distributed an online questionnaire to 11 SMA members with mining operations in or near the production stage. The 35-question survey aimed to gather perspectives on Saskatchewan's economic outlook, workforce challenges, and key labour market trends. The survey received responses from all 11 mining companies with operations in Saskatchewan. Responses were submitted electronically to MiHR. The key findings from this survey are highlighted throughout the report in green call-out boxes.

3 For more information on NAICS codes, visit the *Statistics Canada website*.
4 For more information on NOC codes, refer to Appendix D or visit the *Government of Canada website*.



Key informant Interviews: During the first quarter of 2024, MiHR conducted five key informant interviews with various post-secondary institutions and training providers. The objective was to explore how Saskatchewan's post-secondary system has adapted its mining-related programs in response to a challenging labour market environment. The collected stories underscore the innovative strategies and diverse approaches that Saskatchewan educators have implemented, and the beneficial impact they have had on the sector. The findings from these interviews are summarized in Chapter 6.

Chapter 1: Forecasting Labour Demand Scenarios

The first step in this analysis is to assess the labour demand in Saskatchewan's mining sector, starting with the mining sector as a whole and then focusing on key mining occupations.

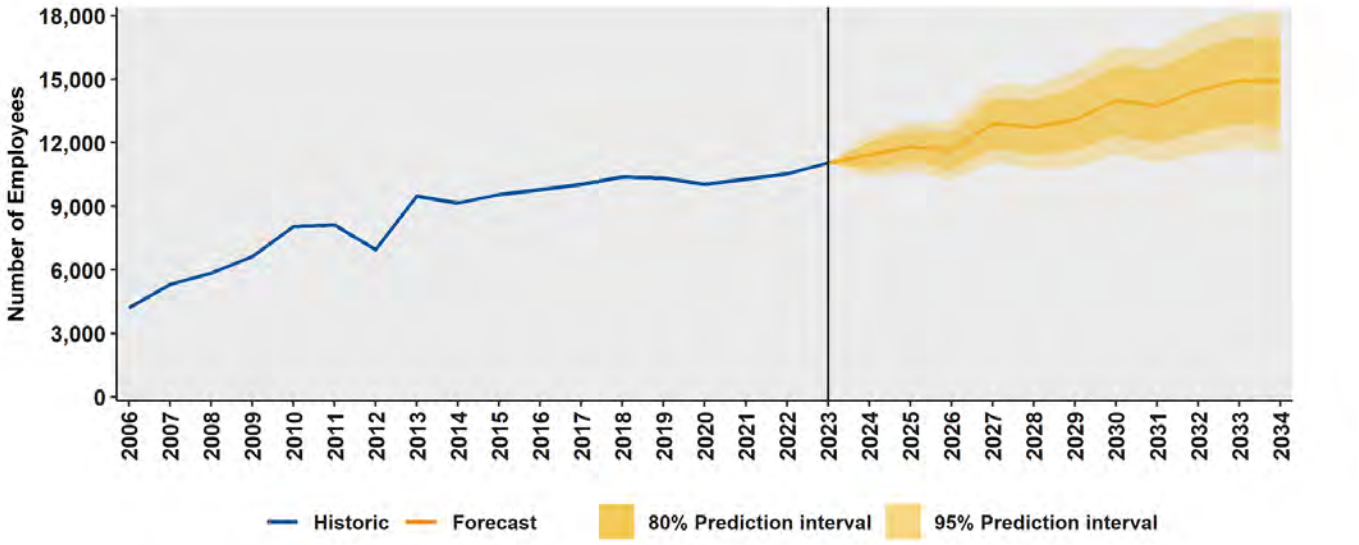
Labour demand describes the labour that the mining sector collectively needs to optimally run operations. MiHR's employment forecast provides an estimate of labour demand (i.e., the optimal employment level) in Saskatchewan's mining sector over the next decade (2024–2034).

MiHR utilizes a time-series econometric model, which considers historic patterns and various leading explanatory factors to predict future employment levels in the mining sector. The best fitted model with the lowest prediction error was selected. See Appendix A for more information on MiHR's labour demand forecasting methodology.

Mining Employment Outlook

Under the baseline forecast, mining employment is expected to grow by 35% from 11,043 in 2023 to 14,892 in 2034 (Figure 1). Under an alternative expansionary scenario, employment is projected to increase to 18,207 workers (or a 65% increase), whereas under a contractionary scenario, employment is projected to remain relatively flat at 11,578 workers (or a 5% increase).

Figure 1: Historic (2006 – 2023) and Forecasted (2024 – 2034) Employment for Saskatchewan's Mining Sector



Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024; Statistics Canada, System of National Accounts (SNA), 2023.

The labour demand picture largely reflects increasing global demand for Saskatchewan minerals. Price forecasts for uranium, potash and other critical minerals predict an elevated price environment, leading to increases in mining development, mineral production and labour demand.

Since the pandemic, potash and uranium prices have surged to higher levels (Figure 2). The rise in uranium prices has been driven primarily by renewed global support for nuclear power and the transition towards a decarbonized green economy.

Similarly, potash prices rose sharply in 2022, largely in response to Russia's invasion of Ukraine and sanctions on Belarusian potash. However, the increase was short-lived, and prices have since normalized closer to pre-2022 levels. Saskatchewan has emerged as an important and stabilizing global supplier of potash as countries look to secure their supply chain for this mineral that is critical for global food security.

Energy prices, which include natural gas, crude oil and coal, represent another significant factor in the forecast. Rising energy prices can present feasibility challenges to mining development due to their impact on production costs. Despite a decline in 2023, energy prices have remained elevated compared to pre-pandemic levels. According to the World Bank forecast, energy prices are expected to remain high in the future.

Figure 2: Historic Price Index for Energy, Uranium and Potassium Fertilizer (Jan 2006 – Dec 2023)

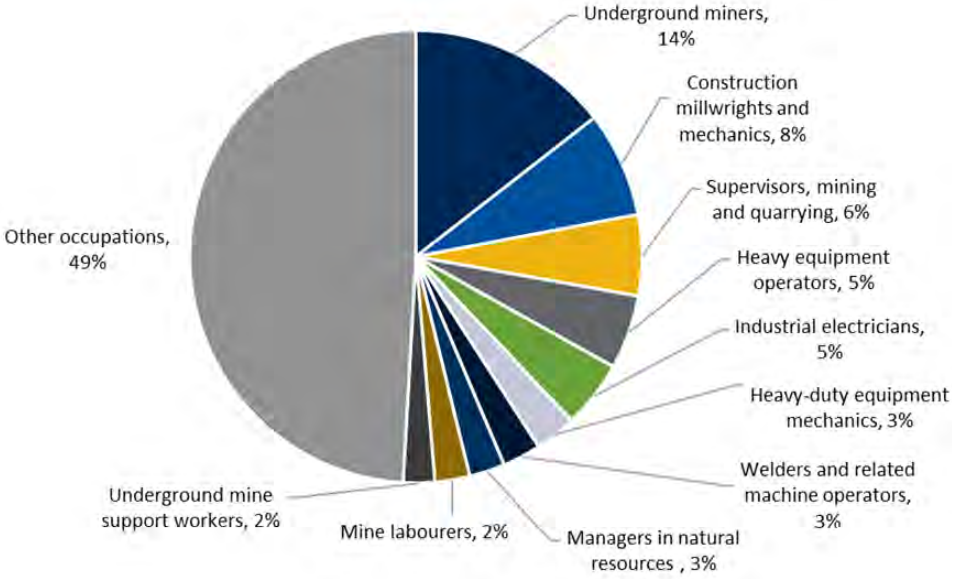
Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024; International Monetary Fund Primary Commodity Prices, 2023.

Occupational Mix

Forecasting for specific occupations depends on the mining sector's occupational mix, which describes the combination of critical jobs that are expected to comprise future labour demand. The occupational mix reveals which roles are most commonly utilized by the sector.

Figure 3 reports the top 10 most prevalent occupations that make up the mining sector. Collectively, these occupations represent about half of the sector. MiHR's forecast makes the conservative assumption that the historical occupational mix will remain relatively stable over the forecasted period.[5]

Figure 3: Occupational Mix in Saskatchewan's Mining Sector (2021)



Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024; Statistics Canada, Census of Population, 2021.

5 Note that the occupational mix is constantly in flux as demand for different occupations will rise and fall depending on macroeconomic conditions and where mining projects are in the mining life cycle. In addition, this could change radically with new technology and increased demand for critical minerals. The baseline forecast assumes that operations are more likely to adhere to the status quo.

Labour Demand by Occupation

Table 1 presents MiHR's baseline labour demand forecast for the 10 most prevalent occupations in Saskatchewan's mining sector. The table also illustrates the extent of demand growth over the forecast period. 'Net change' denotes the cumulative expansion, accounting for all inflows (i.e., new hiring) and outflows (i.e., downsizing).

Table 2 shows the forecast for three economic growth scenarios, illustrating how labour demand would differ under each scenario.

Table 1: Current (2023) and Forecasted (2034) Labour Demand for the 10 Most Prevalent Occupations in Saskatchewan's Mining Sector, Baseline Scenario

Occupation	Labour Demand (2023)	Labour Demand (2034)	Net Change
All Occupations	**11,043**	**14,892**	**3,849 (35%)**
Underground miners	1,556	2,099	543
Construction millwrights and mechanics	833	1,124	290
Supervisors, mining and quarrying	657	886	229
Heavy equipment operators	599	808	209
Industrial electricians	523	706	182
Heavy-duty equipment mechanics	324	436	113
Welders and related machine operators	314	423	109
Managers in natural resources	283	381	99
Mine labourers	300	404	104
Underground mine support workers	256	345	89

Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024.

Table 2: Forecasted Labour Demand for the 10 Most Prevalent Occupations in Saskatchewan's Mining Sector, Three Economic Growth Scenarios (2034)

Occupation	Contractionary Labour Demand (2034)	Baseline Labour Demand (2034)	Expansionary Labour Demand (2034)
All Occupations	**11,578**	**14,892**	**18,207**
Underground miners	1,632	2,099	2,566
Construction millwrights and mechanics	874	1,124	1,374
Supervisors, mining and quarrying	689	886	1,083
Heavy equipment operators	628	808	987
Industrial electricians	548	706	863
Heavy-duty equipment mechanics	339	436	534
Welders and related machine operators	329	423	517
Managers in natural resources	296	381	466
Mine labourers	314	404	494
Underground mine support workers	268	345	422

Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024.

These labour demand estimates will be essential for addressing the central question about labour market sustainability later in this analysis. Chapter 2 expands on this examination by assessing labour supply.

Other Critical Mining Occupations

The remainder of the main body of this report focuses on the 10 most prevalent occupations. Additionally, MiHR has identified 10 other critical occupations of interest based on their 'specificity'[6] and importance to Saskatchewan's mining sector. Results for the following occupations are included in the Appendix:

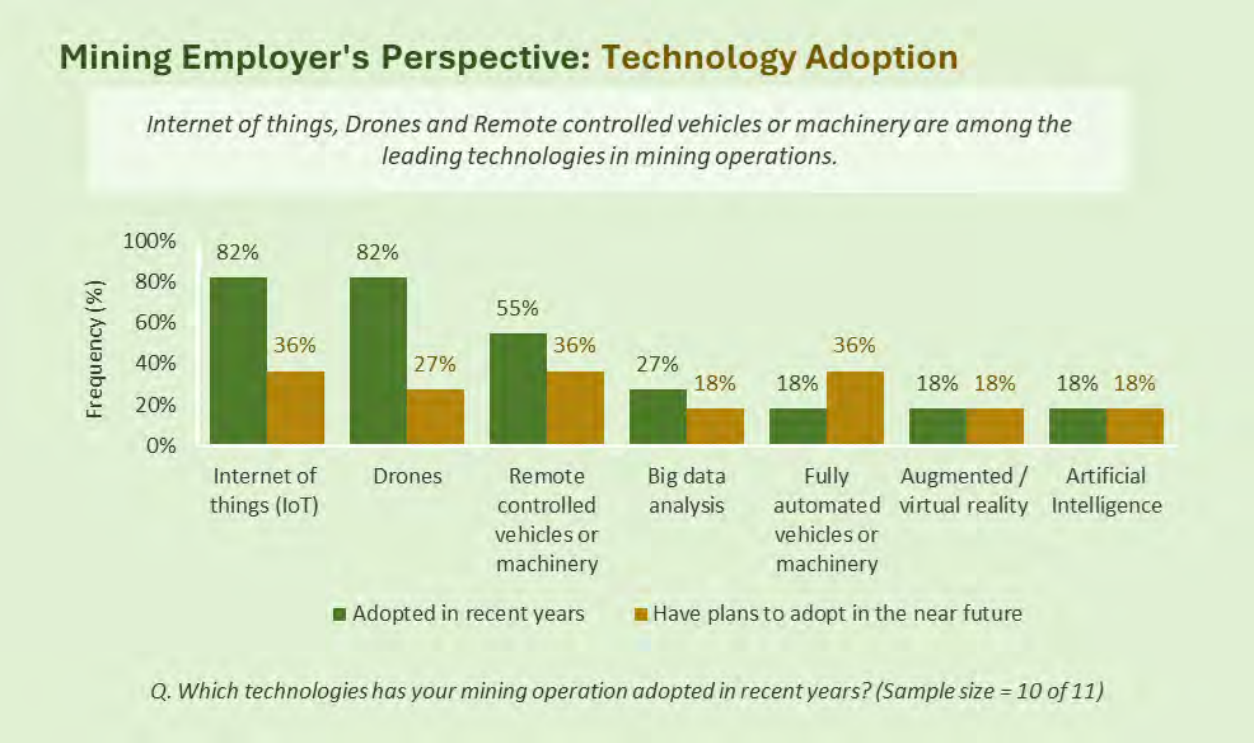
- Geological technologists and technicians
- Mechanical engineers
- Mining engineers
- Central control and process operators
- Industrial instrument technicians and mechanics
- Geoscientists and oceanographers
- Machine operators, mineral and metal processing
- Power engineers and power systems operators
- Civil engineers
- Supervisors, mineral and metal processing

6 Occupational specificity measures how exclusive an occupation is to a sector. To the extent that an occupation is concentrated in one sector, it plays a more specialized and vital role for the sector to which it is attached. An occupation can be relatively small in numbers but also be highly sector specific. Therefore, this measure provides an alternative means for identifying relevant occupations.

The Potential Impact of Emerging Technology

Rapid advancements in technology are reshaping the nature of mining work, placing increasing pressure on the workforce to adjust to new skillsets and adopt different roles and responsibilities. While it is difficult to gauge the scale and timing of technological disruption, it is clear it will fundamentally alter the occupational mix of the sector.

In recent years, Saskatchewan mining operations have increasingly adopted innovative technologies such as internet of things (IoT), drones and remote-controlled vehicles and machinery. The disruption from these emerging technologies is anticipated to vary among workers with different skill sets.



This analysis centres around worker vulnerability in the context of incoming technologies. The aim is to identify which workforce participants face the greatest exposure to technological disruption, and for what reasons.

A quantitative measure of workers' susceptibility to technological disruption would allow decision-makers to plan for the future and to channel resources towards workers who need it the most. This analysis examines occupational data across a wide range of factors and aggregates it into a composite index that will gauge the vulnerability of the most prevalent occupations in Saskatchewan's mining sector.

In 2020, MiHR introduced *MiHR's Occupational Vulnerability Index (MOVI)*. This analysis provides an updated version centred on Saskatchewan's mining sector. The MOVI takes into consideration the likelihood of displacement due to technology, as well as workers' ability to find equal or better employment.

Saskatchewan MOVI

The Saskatchewan MOVI provides an indicator for assessing occupations that are likely to be the most vulnerable to the effects of emerging technology and innovation. Various labour market, production and economic data inputs are combined to produce a single unique score for each mining occupation, making it possible to quantify and compare the vulnerability of occupations in the labour market. Composite scores range from 0 to 1, with higher scores indicating more vulnerability. This version of the MOVI uses Saskatchewan data (e.g., provincial labour force statistics) where appropriate to create an indicator that is tailored for the province's mining sector.

MiHR's framework of occupational vulnerability consists of five main themes, which are supported by several indicators that enable a quantitative measure of vulnerability within each theme. A more detailed methodology can be found in MiHR's 2020 report discussing the impact of innovation in Canada's mining sector.[7] The five main themes are outlined as follows:

- **Scope of Technological Disruption** evaluates the extent to which an occupation can be fully automated. The latest innovations have the potential to automate many mining activities and replace the labour of each mining occupation to a different degree.
- **Incentives for Adoption** evaluates the pace of innovation (i.e., how quickly the potential effects of innovation are likely to be realized). This is partially determined by a mining operation's incentives to adopt new technologies. If the benefits to profitability, worker health and safety, and environmental benefits are substantial enough, new technologies are more likely to be adopted sooner.
- **Absence of Regulatory & Contractual Constraints** evaluates the pace of innovation in terms of social and regulatory obligations that a mining operation must fulfill. Mining companies often need to comply with certain preconditions or honour agreements (e.g., with organized labour) before they can make major changes to the structure of the workforce. This can slow down the pace of adoption of disruptive technologies.
- **Difficulty of Skills Transferability** evaluates a worker's ability to transfer their skillset to a different but similar occupation. In the event of job loss, workers with the most in-demand and transferable skills will have a wider array of employment opportunities and career pathways.
- **Limited Labour Mobility** evaluates the ability to move closer to alternative employment, which is contingent on the geographic proximity of job openings as well as on the worker's relocation possibilities.

MOVI scores are reported for the 10 most prevalent mining occupations in Saskatchewan, along with the corresponding baseline forecast of labour demand in 2034 (Table 3). Underground miners, Heavy equipment operators and Mine labourers show the highest vulnerability as indicated by their MOVI scores. The MOVI scores also indicate how the occupational mix and labour demand may differ in the future where emerging technology has a profound adverse effect on labour demand from gains in productivity.

7 Mining Industry Human Resources Council (MiHR). (2020). *The changing nature of work: innovation, automation and Canada's mining workforce*.

Table 3: Saskatchewan MOVI Scores for the 10 Most Prevalent Occupations in Saskatchewan's Mining Sector

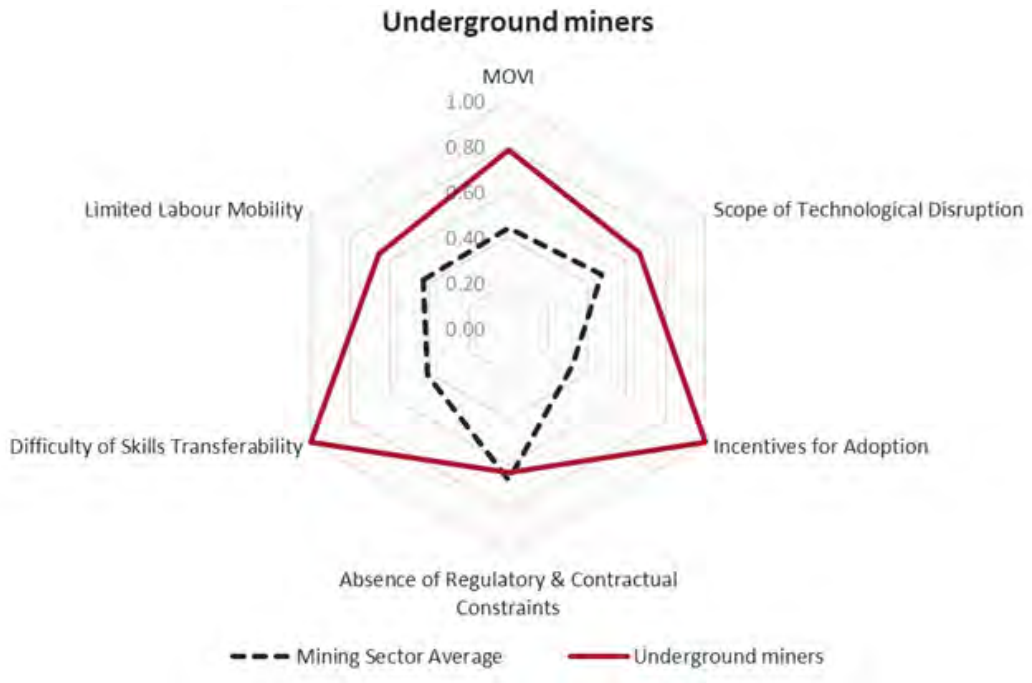
Occupation	Labour Demand (2034)	MOVI Score
Underground miners	2,099	0.78
Construction millwrights and mechanics	1,124	0.53
Supervisors, mining and quarrying	886	0.54
Heavy equipment operators	808	0.75
Industrial electricians	706	0.44
Heavy-duty equipment mechanics	436	0.55
Welders and related machine operators	423	0.65
Managers in natural resources	381	0.42
Mine labourers	404	0.71
Underground mine support workers	345	0.67

Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024.

Figure 4 illustrates the aspects of vulnerability (the five themes and the resulting MOVI score) for the 10 most prevalent mining occupations. For the values corresponding to each aspect and a similar breakdown for other critical mining occupations, see Appendix A. The closer a point is to the edges, the higher the value, pointing to greater occupational vulnerability. A larger area denotes higher exposure to technological disruption.

As shown in the figure, Underground miners have a wider area than the mining industry average in almost all aspects. Notably, there are very high incentives for bringing in technologies disruptive to this occupation, and workers in this occupation are likely to have a higher-than-average difficulty in transferring their skillset. The figure also illustrates aspects that are driving vulnerability in other occupations, which can inform unique strategies to mitigate technological disruptions.

Figure 4: Aspects of Vulnerability for the 10 Most Prevalent Occupations in Saskatchewan's Mining Sector



Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024.

Figure 4: Aspects of Vulnerability for the 10 Most Prevalent Occupations in Saskatchewan's Mining Sector

Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024.

Chapter 2: Estimating the Labour Supply Outlook

The next step is to determine the labour supply that is available to the mining sector for key occupations. Labour supply is a complex subject to the extent that measuring potential sources of labour can be ambiguous and difficult to define. MiHR has developed a model that captures the primary factors that push and pull on the labour supply.

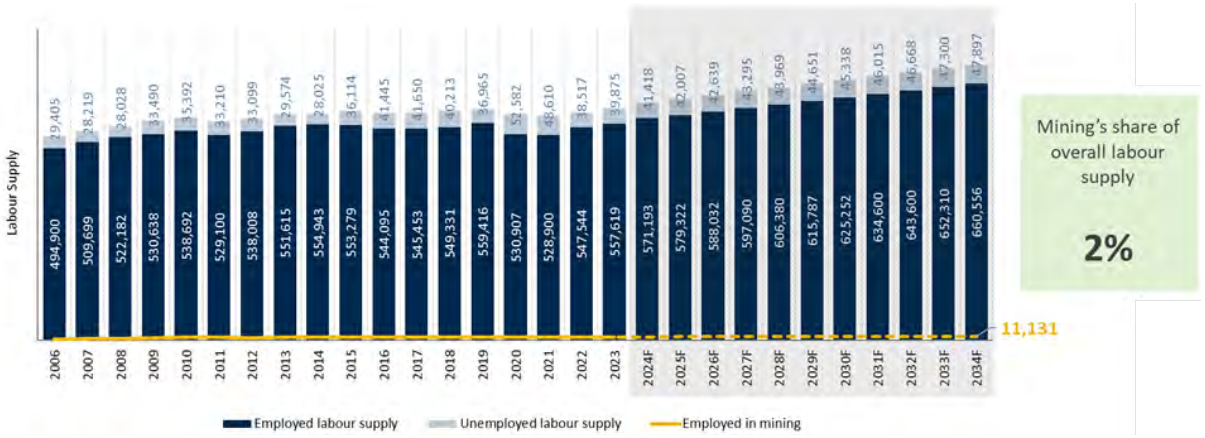
MiHR's Labour Market Analysis (LMA) model is grounded on several key assumptions, including population growth, labour force participation, unemployment rates and occupational choices. Each assumption represents a conservative status quo scenario based on recent historical trends. See Appendix B for more details on MiHR's LMA model.

Mining Labour Supply Outlook

MiHR's LMA model estimates the size of the overall labour supply in Saskatchewan for all occupations over the next decade (2024–2034) (Figure 5). This comprises the total labour force (employed and unemployed) that is shared among all sectors, including the mining sector. The labour supply is expected to grow by 19% from 597,494 in 2023 to 708,435 in 2034, largely on the strength of population growth from provincial immigration.

Figure 5 also illustrates the mining sector's share of the estimated labour supply, shown to be 2% on average across all occupations. This percentage is expected to be stable and difficult to change, considering that efforts to increase mining's share will be countered by competition from other sectors. With roughly 2% of the labour supply, Saskatchewan's mining sector is projected to capture 11,131 workers by 2034.

Figure 5: Historic (2006 – 2023) and Forecasted (2024 – 2034) Labour Supply for Saskatchewan's Mining Sector



Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024.

Labour Supply by Occupation

Table 4 presents MiHR's estimated labour supply forecast for the 10 most prevalent occupations in Saskatchewan's mining sector. The table also illustrates the extent of demand growth over the forecast period. 'Net change' denotes the cumulative expansion, accounting for all inflows (i.e., entrants from graduates, migration, etc.) and outflows (i.e., exits from retirement, migration, etc.).

Table 4: Current (2023) and Forecasted (2034) Labour Supply for the 10 Most Prevalent Occupations in Saskatchewan's Mining Sector

Occupation	Labour Supply (2023)	Labour Supply (2034)	Net Change
All Occupations	**597,494**	**708,453**	**110,959 (19%)**
Underground miners	1,710	2,027	317
Construction millwrights and mechanics	2,634	3,123	489
Supervisors, mining and quarrying	695	824	129
Heavy equipment operators	5,465	6,480	1,015
Industrial electricians	1,346	1,597	250
Heavy-duty equipment mechanics	2,940	3,486	546
Welders and related machine operators	4,876	5,782	906
Managers in natural resources	727	861	135
Mine labourers	364	432	68
Underground mine support workers	300	356	56

Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024.

Employment Expectations by Occupation

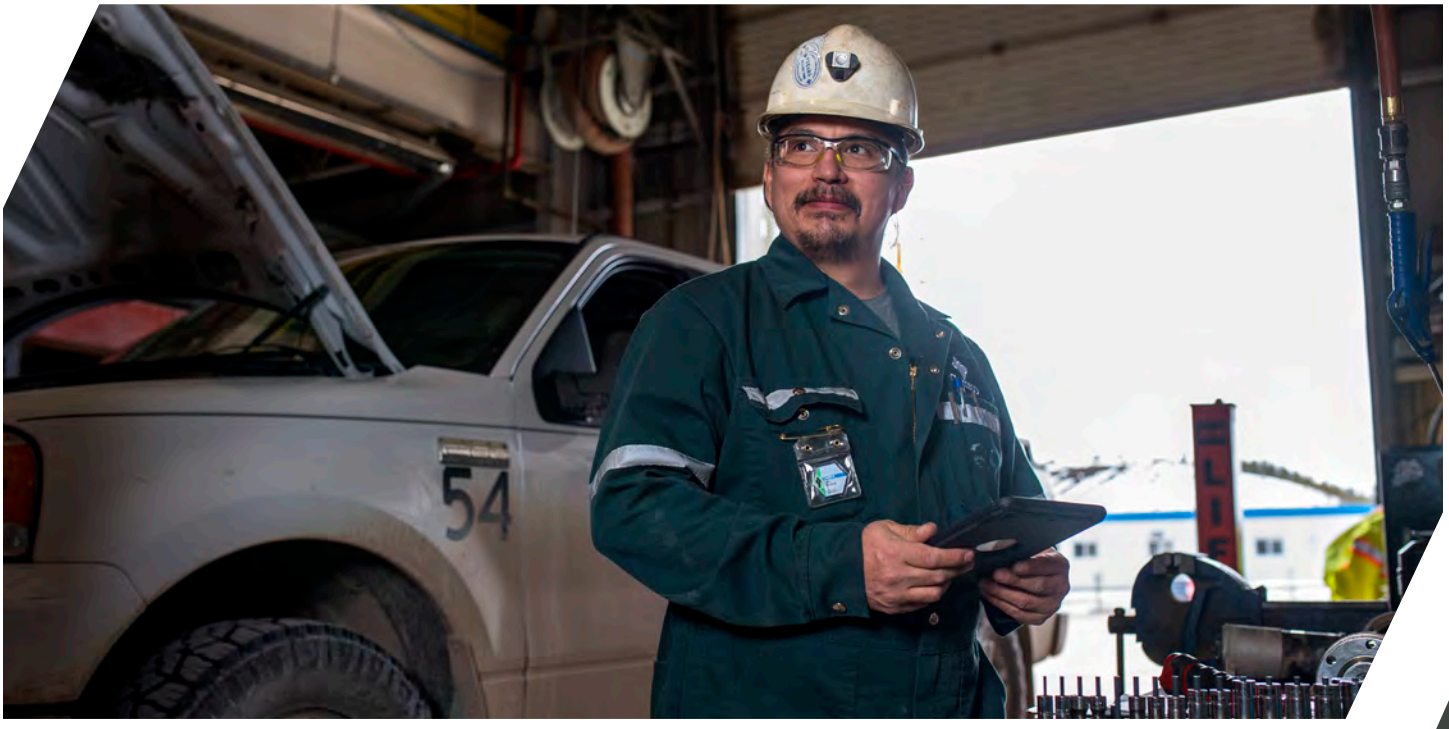
Table 5 presents 'Employment Expectations,' offering an estimate of the number of Saskatchewan-based workers the mining sector can reasonably expect to employ. Employment expectations are calculated based on the projected labour supply and the mining sector's anticipated share of that supply. Mining's share of labour supply will differ depending on the occupation.

Assuming mining's share of the provincial labour supply remains consistent with past performance, the table provides a 2034 estimate of employment expectations for Saskatchewan's 10 most prevalent mining occupations.

Table 5: Employment Expectations for Saskatchewan-based Workers in the Mining Sector (2034)

Occupation	Labour Supply (2034)	Mining's Share of Labour Supply (%) (2034)	Employed in Mining (2034)
All Occupations	**708,453**	**2%**	**11,131**
Underground miners	2,027	77%	1,569
Construction millwrights and mechanics	3,123	27%	839
Supervisors, mining and quarrying	824	81%	664
Heavy equipment operators	6,480	9%	600
Industrial electricians	1,597	34%	544
Heavy-duty equipment mechanics	3,486	9%	329
Welders and related machine operators	5,782	5%	317
Managers in natural resources	861	33%	285
Mine labourers	432	71%	307
Underground mine support workers	356	73%	261

Note: Employed in Mining = Labour Supply x Mining's Share of Labour Supply. Any discrepancies in calculation are due to rounding.
Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024.



Chapter 3: Finding Critical Labour Market Gaps

Thus far, this report has presented a labour demand forecast (Table 1) and an 'employment expectations' forecast (Table 5), the latter derived from underlying labour supply forces. This chapter will compare these forecasts to identify critical labour gaps in Saskatchewan's mining labour market.

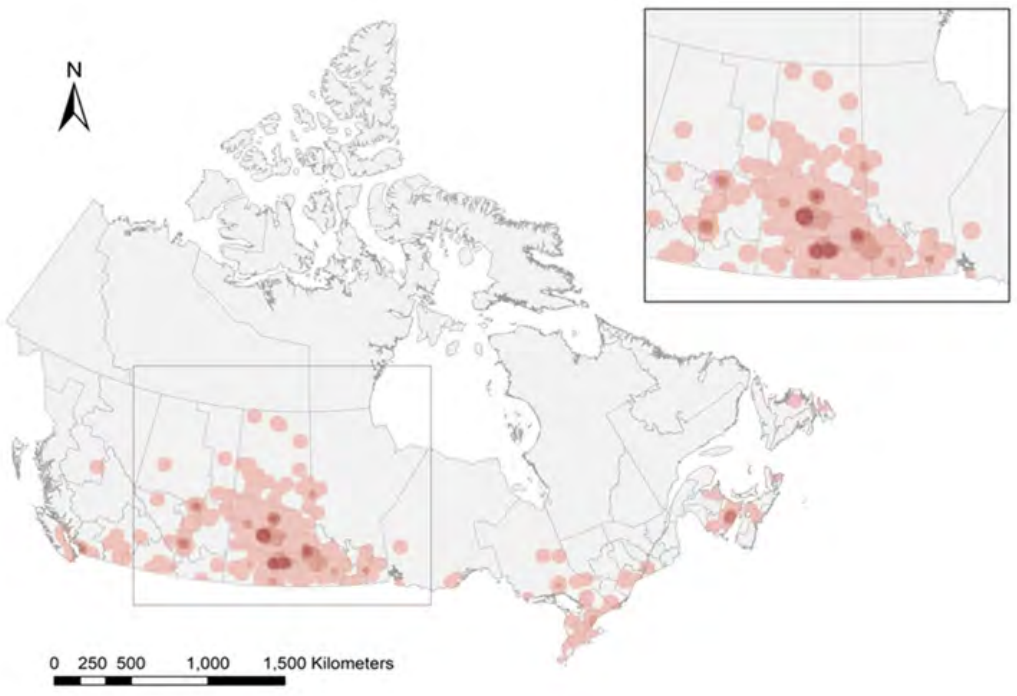
MiHR defines a labour market gap as an imbalance, whereby the mining sector struggles to meet its labour demand with the local labour supply. This mismatch requires the sector to increase recruitment expenses, raise wages, employ out-of-province workers or invest in capital and innovation that will reduce labour needs. These efforts represent additional costs to the mining sector.

This chapter begins by revisiting the primary analysis question posed in the introduction: *Can Saskatchewan's mining labour market sustain its future growth?*

Saskatchewan's Expanding Labour Market Gap

Firstly, it is important to note that Saskatchewan's mining sector already employs people from outside of the province. Figure 6 illustrates the geographic distribution of Saskatchewan's mining workforce across Canada. Approximately 85% of workers reside within the province, while the remaining 15% live elsewhere. Therefore, at present, workers from other provinces are part of a sustainable mining sector in Saskatchewan.

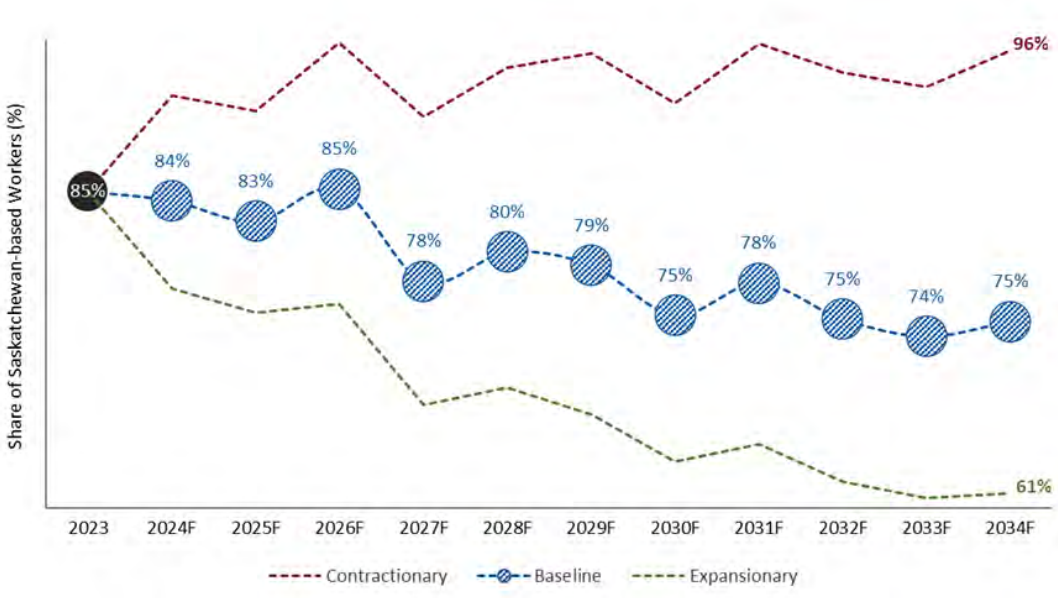
Figure 6: Geographic Distribution of Saskatchewan's Mining Workforce Across Canada (2023)



Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024; Saskatchewan Mining Workforce Survey, 2023.

MiHR's baseline labour market forecast predicts that the current 85% level of Saskatchewan-based workers will gradually decrease to 75% by 2034 (Figure 7). This forecast represents a conservative scenario, assuming economic and labour market trends will continue their current trajectory without any intervention. Based on expansionary and contractionary scenarios, Saskatchewan-based workers could range from 61% to 96%.

Figure 7: Current (2023) and Forecasted (2024 – 2034) Share of Saskatchewan-based Workers in the Mining Sector, Three Economic Growth Scenarios



Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024.

Addressing the Primary Analysis Question

If the objective is to achieve full reliance on Saskatchewan-based workers, the province's labour market is projected to face challenges in sustaining its future growth without external support.

Alternatively, if the goal is to maintain the status quo of 85% Saskatchewan-based workers, as observed in 2023, MiHR's forecast predicts that the status quo will also be difficult to sustain. This decline is attributed to anticipated labour demand growth outpacing labour supply growth under status quo conditions.

There are many factors that are feeding into this result. First, it reflects the baseline labour demand scenario. Second, the result also includes Saskatchewan's population growth, labour force participation rate, and rate of people entering occupations and school programs that are relevant to mining. Collectively, these factors are placing a downward pressure on labour supply, making it less responsive to periods of labour demand growth.

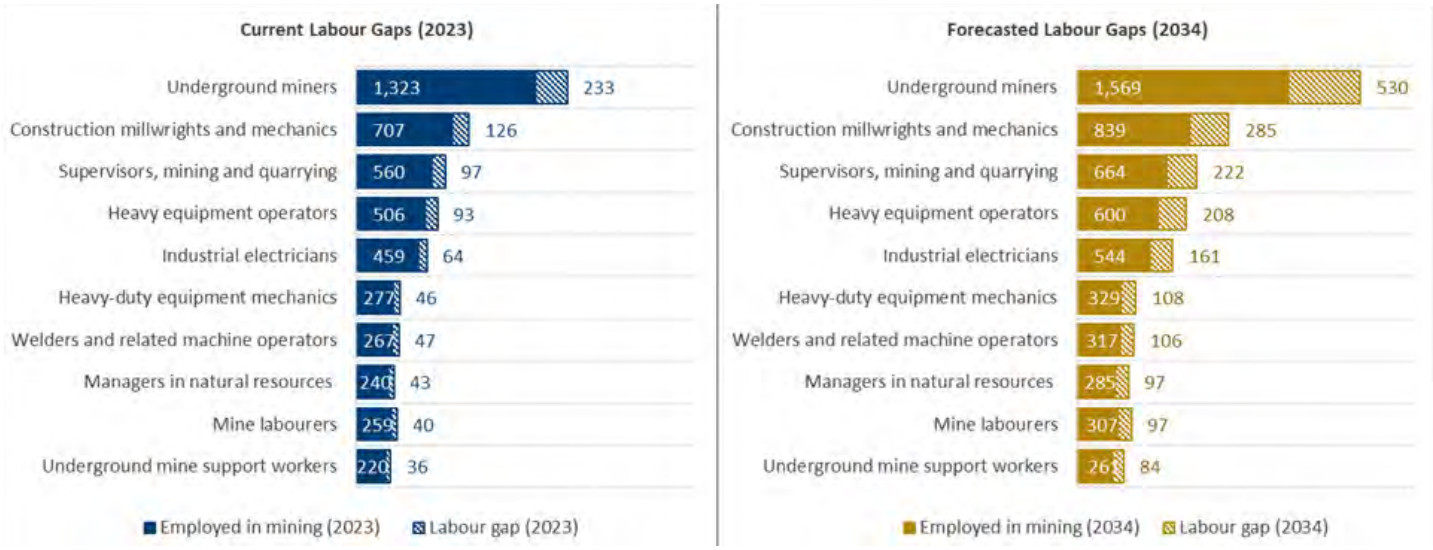
Labour Gaps by Occupation

Figure 8 illustrates the current and forecasted labour gaps for the 10 most prevalent occupations in Saskatchewan's mining sector. Table 6 summarizes the results shown in Figure 8.

The occupational gaps shown are projected to grow over the next decade to varying degrees. Underground miners show the highest gap, mostly due to their large share within the mining sector at 14%. Their gap is projected to grow from 233 workers in 2023 to 530 workers in 2034.

Table 7 shows the labour gap under the three economic growth scenarios, illustrating how the gap might differ depending on labour demand growth.

Figure 8: Current (2023) and Forecasted (2034) Labour Gaps for the 10 Most Prevalent Occupations in Saskatchewan's Mining Sector, Baseline Scenario



Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024.

Table 6: Current (2023) and Forecasted (2034) Labour Gaps for the 10 Most Prevalent Occupations in Saskatchewan's Mining Sector, Baseline Scenario

Occupation	Employed in Mining (2023)	Labour Demand (2023)	Labour Gap (2023)	Employed in Mining (2034)	Labour Demand (2034)	Labour Gap (2034)
All Occupations	**9,387**	**11,043**	**1,656**	**11,131**	**14,892**	**3,761**
Underground miners	1,323	1,556	233	1,569	2,099	530
Construction millwrights and mechanics	707	833	126	839	1,124	285
Supervisors, mining and quarrying	560	657	97	664	886	222
Heavy equipment operators	506	599	93	600	808	208
Industrial electricians	459	523	64	544	706	161
Heavy-duty equipment mechanics	277	324	46	329	436	108
Welders and related machine operators	267	314	47	317	423	106
Managers in natural resources	240	283	43	285	381	97
Mine labourers	259	300	40	307	404	97
Underground mine support workers	220	256	36	261	345	84

Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024.

Table 7: Forecasted Labour Gaps for the 10 Most Prevalent Occupations in Saskatchewan's Mining Sector, Three Economic Growth Scenarios (2034)

Occupation	Contractionary Labour Gap (2034)	Baseline Labour Gap (2034)	Expansionary Labour Gap (2034)
All Occupations	**447**	**3,761**	**7,076**
Underground miners	63	530	997
Construction millwrights and mechanics	35	285	535
Supervisors, mining and quarrying	24	222	419
Heavy equipment operators	28	208	387
Industrial electricians	4	161	318
Heavy-duty equipment mechanics	10	108	205
Welders and related machine operators	12	106	201
Managers in natural resources	12	97	182
Mine labourers	7	97	186
Underground mine support workers	7	84	161

Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024.

Workforce Adjustments

Previous sections of this report develop a forecast of critical labour gaps in Saskatchewan's mining labour market. This section calculates the cumulative hiring needs and workforce deficits over the forecast interval (2024 – 2034), explicitly highlighting the labour market inflows (i.e., entries into the labour force or mining sector) and outflows (i.e., exits due to retirements or industry transfers).

Hiring Requirements

Hiring requirements describe the cumulative workforce adjustments necessary to maintain the optimal level of employment over the next decade. The hiring requirement is calculated as the sum of the following components, each of which create hiring pressures for the sector:

1. **Net change in labour demand:** the number of additional individuals needed due to changes in labour demand resulting from sectoral expansions or contractions.
2. **Mining labour force exits:** the number of individuals exiting the labour force altogether. The primary reason for labour force exits is retirement, though there may be other causes such as returning to school, maternity/paternity leave or other similar factors. MiHR's exit model considers demographic factors (e.g., age, educational attainment) to estimate the share of Saskatchewan's workers likely to withdraw from the mining labour force over time. MiHR estimates the annual labour force exit rate will range between 1% and 2%.

3 **Mining industry exits:** the number of individuals leaving the mining sector to work in another sector. Information related to industry exits is rather sparse; MiHR has relied on limited available literature to estimate a reasonable industry exit rate over the forecast period. [8] [9] MiHR assumes the annual industry exit rate to be about 7%.

Table 8 provides the cumulative hiring requirements over the forecasted period for the mining sector (all occupations) and for the 10 most prevalent occupations, under each of the three economic growth scenarios. Under the baseline scenario, Saskatchewan's mining sector will need to hire 15,631 additional workers over the next decade to accommodate increasing labour demand and replace workers exiting the mining labour force or the mining sector.

Table 8: Forecasted Cumulative Hiring Requirement for the 10 Most Prevalent Occupations in Saskatchewan's Mining Sector, Three Economic Growth Scenarios (2024 – 2034)

Occupation	Contractionary Cumulative Hiring Requirements	Baseline Cumulative Hiring Requirements	Expansionary Cumulative Hiring Requirements
All Occupations	**10,559**	**15,631**	**20,704**
Underground miners	1,488	2,203	2,918
Construction millwrights and mechanics	797	1,180	1,562
Supervisors, mining and quarrying	628	930	1,232
Heavy equipment operators	573	848	1,123
Industrial electricians	500	741	981
Heavy-duty equipment mechanics	309	458	607
Welders and related machine operators	300	444	588
Managers in natural resources	270	400	530
Mine labourers	286	424	562
Underground mine support workers	245	362	480

Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024.

8 Xuyang Chen and Maxime Fougère. (2009). *Inter-provincial and Inter-industry Labour Mobility in Canada, 1994-2005, the Survey of Labour and Income Dynamics (SLID).*

9 U.S. Bureau of Labour Statistics. (2023). Occupational Seperations.

Workforce Deficits

Table 9 outlines the inflow and outflow components of the forecasted workforce deficit, that is, the residual hiring needs not met by local available talent. The workforce deficit represents a measure of additional effort and expense that Saskatchewan's mining sector will need to incur to meet its hiring needs.

Though they report different numbers, workforce deficit is consistent with the labour gap presented in Table 7. Labour gaps describe how labour demand and labour supply will diverge in the future, whereas workforce adjustments describe the cumulative inflows (entries) and outflows (exits) that will occur over that period.

The cumulative workforce deficit in Table 9 shows the shortage over the 10-year interval (2024 – 2034) derived under the baseline scenario:

Workforce Deficit = Hiring Requirements - expected Saskatchewan entries

Expected entries represent the number of "natural" entrants that MiHR projects will join the Saskatchewan mining sector over the next 10 years, under status quo conditions. Overall, MiHR's model finds that workforce deficits across the sector will represent roughly 29% of cumulative hiring requirements, which means mining employers will need to make up for the deficit by recruiting people from out-of-province and from other sectors.

Table 9: Forecasted Cumulative Inflows and Outflows for the 10 Most Prevalent Occupations in Saskatchewan's Mining Sector, Baseline Scenario (2024 – 2034)

Occupation	Cumulative Net Change in Labour Demand	Cumulative Exits	Cumulative Hiring Requirements	Cumulative Saskatchewan Entries	Cumulative Workforce Deficit
All Occupations	**3,849**	**11,782**	**15,631**	**11,075**	**4,556**
Underground miners	543	1,661	2,203	1,561	642
Construction millwrights and mechanics	290	889	1,180	835	345
Supervisors, mining and quarrying	229	701	930	661	269
Heavy equipment operators	209	639	848	597	251
Industrial electricians	182	558	741	542	199
Heavy-duty equipment mechanics	113	345	458	327	131
Welders and related machine operators	109	335	444	315	129
Managers in natural resources	99	302	400	283	117
Mine labourers	104	320	424	306	118
Underground mine support workers	89	273	362	260	103

Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024.

Chapter 4: Factors Working Against Future Labour Market Sustainability

Considering the labour market gaps discussed above, this chapter discusses five main factors that are working against future labour market sustainability. Each of these factors threatens to undermine the sector's ability to effectively respond to new growth opportunities. While the list is not exhaustive, it sheds light on some of the significant challenges facing Saskatchewan's mining sector.

A common thread among these factors is that they each negatively impact the labour supply side. The five factors working against future labour market sustainability are:

- Mining has a dependency on labour mobility.
- Saskatchewan has a widening age gap.
- Mining is underperforming with diversity groups.
- Certain occupational labour pools are too shallow.
- People are not entering the relevant occupations.

Factor #1: Mining has a Dependency on Labour Mobility

The first factor describes the geographical limitations facing the mining sector and the ability of employers to recruit workers in regions that are remote and less populated.

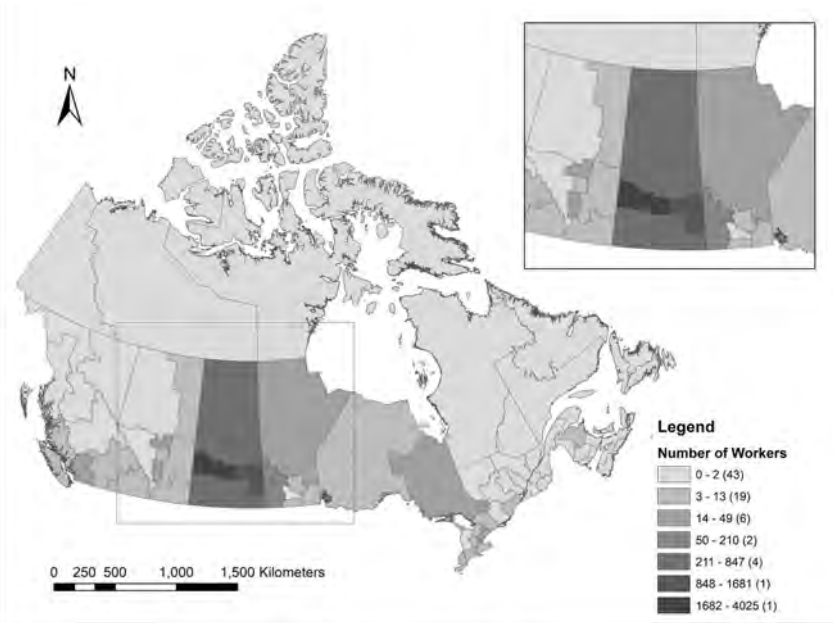
The mining sector frequently relies on workers from outside jurisdictions to supplement their workforce needs. A high dependency on worker mobility is a sign that the local labour market is too tight, given that mining operators are looking to other regions to find workers.

Saskatchewan mining workers are found in every corner of Canada, residing in nine out of 12 provinces and territories and 48 out of 76 economic regions[10] (Figure 9). This translates to a significant degree of labour mobility, with many workers frequently traveling considerable distances to reach their workplaces in the province.

In particular, the least populated region of Northern Saskatchewan also has the greatest percentage of workers travelling from another jurisdiction (at 62%) (Table 10). This region also exhibits the greatest median distance between place of work and place of residence among workers (at roughly 540 kilometers).

Figure 9: Geographic Distribution of Saskatchewan's Mining Workforce by Economic Region (2023)

Economic Region	Count	%
Saskatoon—Biggar, SK	4,025	45%
Yorkton—Melville, SK	1,681	19%
Prince Albert, SK	847	9%
Northern, SK	643	7%
Regina--Moose Mountain, SK	630	7%
Swift Current--Moose Jaw, SK	530	6%
Parklands, MB	210	2%
Southwest, MB	164	2%
Calgary, AB	49	1%
Edmonton, AB	38	0%
All Other Regions	198	2%
Total	**9,015**	**100%**



Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024; Saskatchewan Mining Workforce Survey, 2023.

10 An economic region is a grouping of census divisions — created as a standard geographic area for analysis of regional economic activity. More information regarding economic regions is shown in Appendix E.

Table 10: Labour Mobility Indicators for Saskatchewan's Mining Workforce by Economic Region (2023)

Economic Region	Percentage of Workers with Residence in Another Region	Median Distance (KM) between Place of Work and Place of Residence	Percentage of Workers with Distance of >100 Kilometers
Northern, SK	62%	540	98%
Regina--Moose Mountain, SK	47%	33	5%
Yorkton--Melville, SK	25%	38	11%
Saskatoon--Biggar, SK	21%	28	13%
Swift Current--Moose Jaw, SK	17%	24	7%
Prince Albert, SK	0%	73	0%

Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024; Saskatchewan Mining Workforce Survey, 2023.

Labour Mobility by Various Attributes

Table 11 explores how labour mobility metrics differ across various attributes, namely gender, broad occupational category (refer to Appendix D for definitions), TEER[11], tenure and age. The findings offer a profile of which characteristics are more likely to correspond to higher mobility.

Notably, the findings reveal that mobile workers tend to be male, employed in *Production* and *Trades* occupations, in occupations that require comparatively less education, have shorter job tenure, and are typically in their 20s or over 65 years old.

11 Training, education, experience and responsibilities (TEER). For more information on TEER categories, visit the Government of Canada website.

Table 11: Labour Mobility by Various Categories for Saskatchewan's Mining Workforce (2023)

Category	Percentage of Workers with Residence in Another Region	Median Distance (KM) between Place of Work and Place of Residence	Percentage of Workers with Distance of >100 Kilometers
Total	**31%**	**39**	**26%**
Gender Category			
Male	33%	41	27%
Female	25%	20	24%
Other/Unknown	20%	7	20%
Broad Occupational Category			
Trades Occupations	32%	42	25%
Production Occupations	32%	44	27%
Supervisors, Coordinators, and Superintendents	29%	33	20%
Professional and Physical Science Occupations	30%	8	30%
Engineers	28%	35	25%
Technical Occupations	38%	39	35%
Support workers	34%	38	32%
Human Resources and Financial Occupations	18%	8	11%
TEER Category			
TEER 0: Management occupations	18%	11	12%
TEER 1: Require university degree	29%	23	27%
TEER 2: Require college diploma/apprenticeship (> 2 years)	34%	41	28%
TEER 3: Require college diploma/apprenticeship (< 2 years)	37%	51	36%
TEER 4: Require high school diploma / on-the-job training	28%	40	19%
TEER 5: No formal education	33%	52	38%
Tenure Category			
0 to 4	37%	52	40%
5 to 9	35%	40	20%
10 to 14	28%	36	16%
15 to 19	24%	38	16%
20 +	20%	27	18%
Age Category			
15 to 19	25%	52	13%
20 to 24	39%	52	38%
25 to 29	35%	45	30%
30 to 34	31%	42	26%
35 to 39	31%	39	24%
40 to 44	27%	37	20%
45 to 49	31%	39	25%
50 to 54	32%	39	28%
55 to 59	31%	38	28%
60 to 64	34%	42	35%
65 +	42%	58	45%

Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024; Saskatchewan Mining Workforce Survey, 2023.

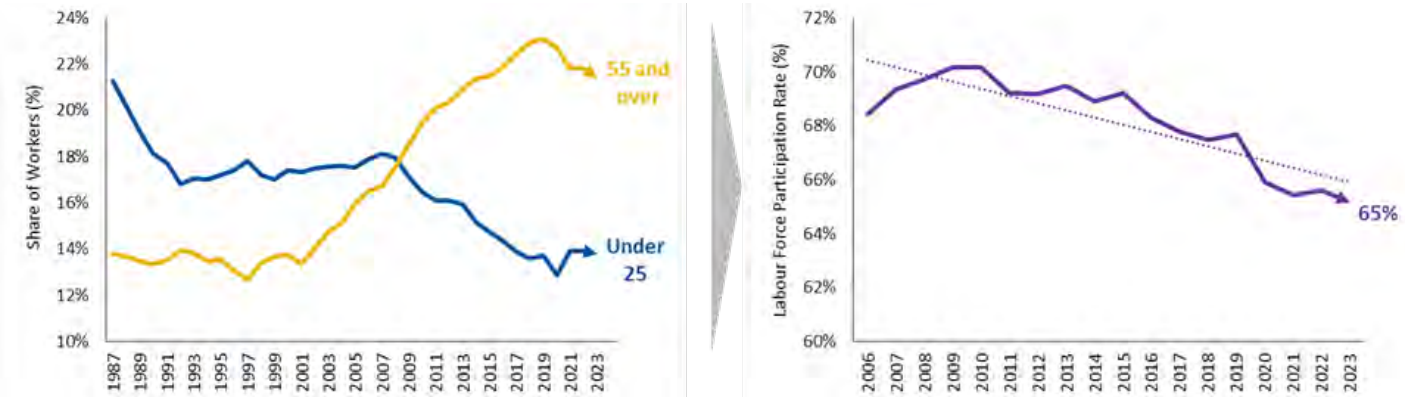
Factor #2: Saskatchewan has a Widening Age Gap

An aging population continues to be a concern for many sectors, particularly as the baby boomer generation transitions into their retirement years. The shift towards a retiring workforce can result in a potential shortage of skilled workers given that older workers have decades of experience and are not easily replaced.

From 2008 to 2023, Saskatchewan's workforce has experienced a widening age gap (Figure 10). Across all sectors, the share of workers under 25 years old has declined from 18% to 14%, while the share of workers aged 55 years and older has increased from 18% to 21%.

The shift to a relatively older workforce appears to be persistent as the mounting gap has remained substantial since it emerged in the 2010's, though the gap has begun to revert in recent years. This trend has coincided with a steady decline in the labour force participation rate, dropping from 70% in 2008 to 65% in 2023, as the increasing number of retirees have exited the labour force without sufficient replacement.

Figure 10: Share of Workforce by Age Category (1987-2023) and Labour Force Participation Rate in Saskatchewan (2006-2023)



Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024; Statistics Canada, Labour Force Survey, 2023

Figure 11 shows the age distribution of Saskatchewan's mining workforce in 2023, according to MiHR's Saskatchewan Mining Workforce Survey. The share of the mining workforce aged 55 and over was about 15%, while the share of workers under 25 years old was only 4%.

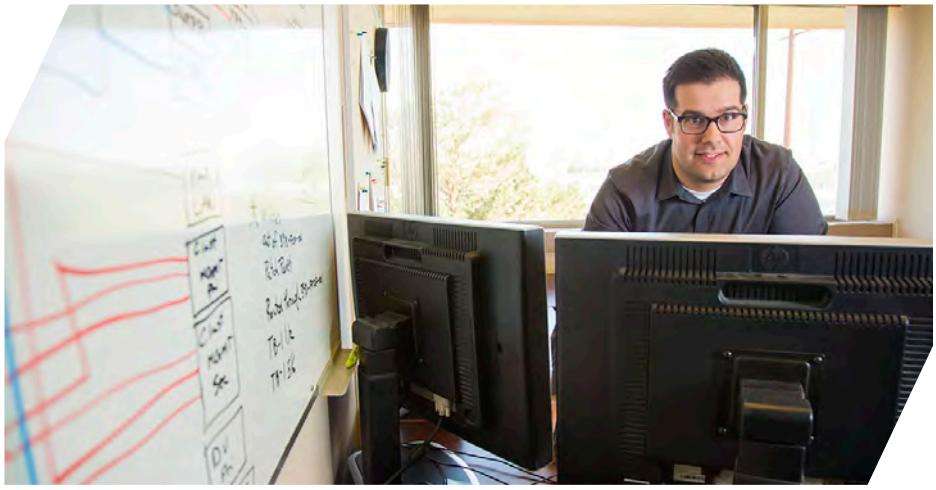
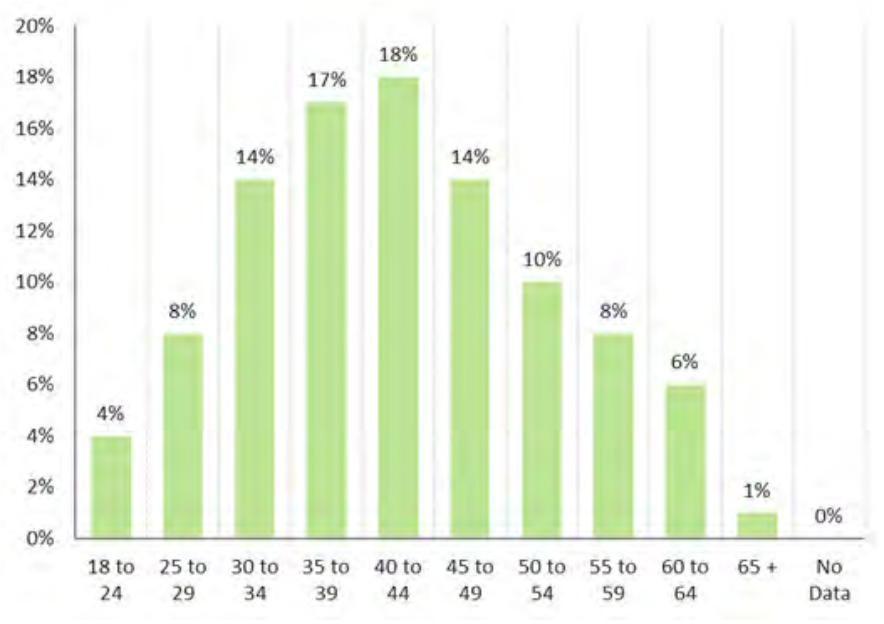


Figure 11: Age Breakdown of Saskatchewan's Mining Workforce (2023)

Age Category	Count	%
18 to 24 years	342	4%
25 to 29 years	708	8%
30 to 34 years	1,238	14%
35 to 39 years	1,555	17%
40 to 44 years	1,595	18%
45 to 49 years	1,232	14%
50 to 54 years	933	10%
55 to 59 years	701	8%
60 to 64 years	579	6%
65 + years	130	1%
No Data	2	0%
Total	**9,015**	**100%**



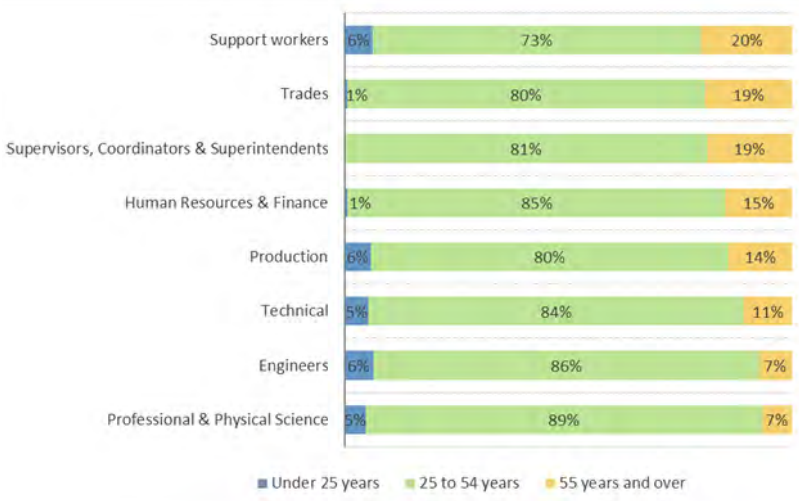
Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024; Saskatchewan Mining Workforce Survey, 2023.

Age and Tenure by Broad Occupational Categories

Certain occupations tend to have a larger share of older workers (Figure 12). Roughly 20% of workers in *Support Workers*, *Trades and Supervisors*, *Coordinators & Superintendents* are aged 55 and over, compared to only 7% of workers in *Professional & Physical Sciences* and *Engineers*.

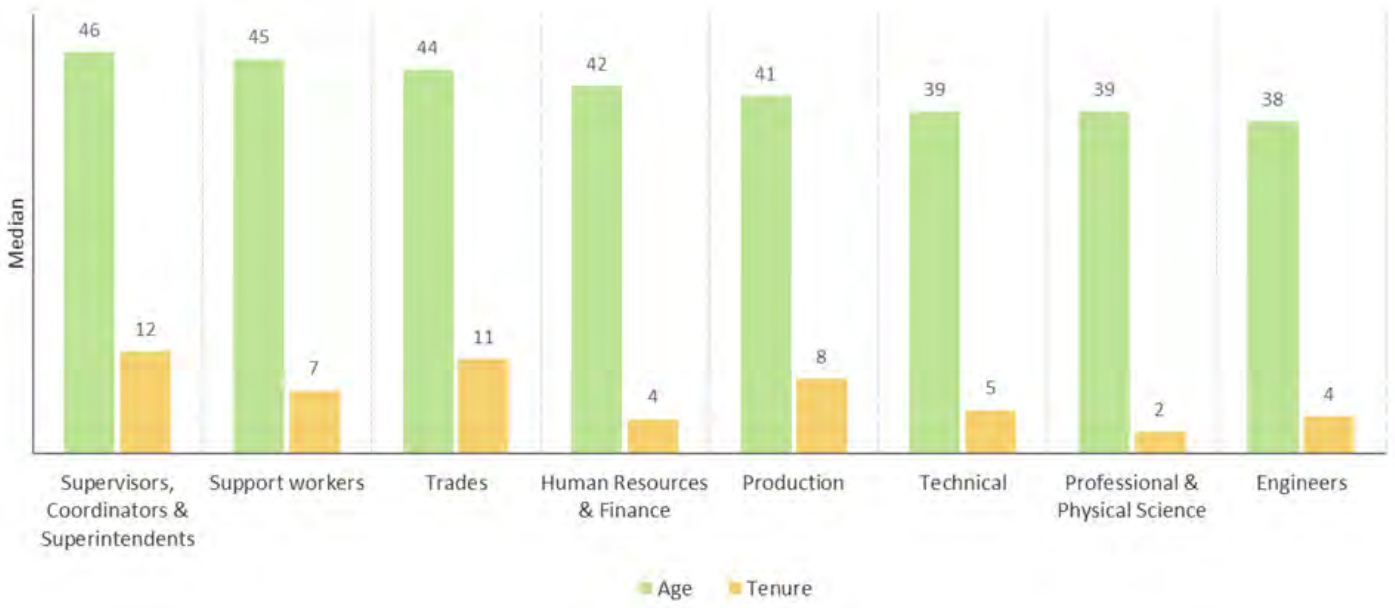
Length of tenure also varies by occupational category. As shown in Figure 13, *Supervisors*, *Coordinators & Superintendents* and *Trades* workers tend to have the most years of continuous employment with their current organization, with 12 and 11 median years of tenure respectively. On the other hand, *Professional & Physical Sciences*, *Engineers* and *Human Resources & Finance* workers only have two to four median years of tenure. There is a strong correlation between median age and median length of tenure, though shorter tenure may also be due to certain occupations naturally having higher turnover.

Figure 12: Age Breakdown of Saskatchewan's Mining Workforce by Broad Occupational Categories (2023)



Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024; Saskatchewan Mining Workforce Survey, 2023.

Figure 13: Median Age and Tenure of Saskatchewan's Mining Workforce by Broad Occupational Categories (2023)



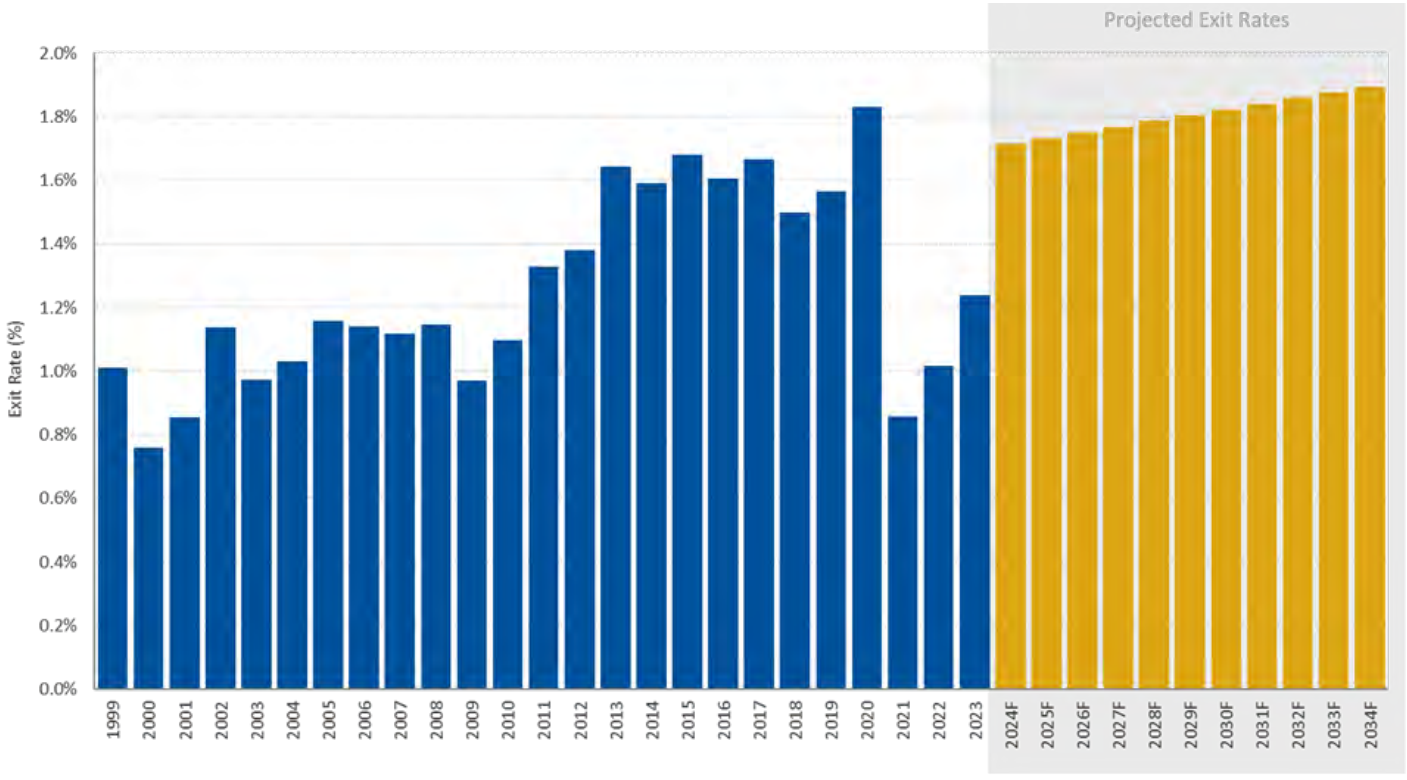
Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024; Saskatchewan Mining Workforce Survey, 2023.

Retirements and the Labour Force Exit Rate

The rise in retirements can be seen in MiHR's projected 'labour force exit rate', characterised as the annual percentage of mining workers expected to exit the labour force altogether. The vast majority of labour force exits are primarily due to retirement, but may also include other reasons such as going back to school, starting maternity/paternity leave, etc.

As shown in Figure 14, MiHR anticipates the labour force exit rate will continue to increase to about 1.9% by 2034, based on the age distribution of the labour force and historical trends.

Figure 14: Historic (1999 – 2023) and Forecasted (2024 – 2034) Labour Force Exit Rates in Saskatchewan's Mining Sector



Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024.

Factor #3: Mining is Underperforming with Diversity Groups

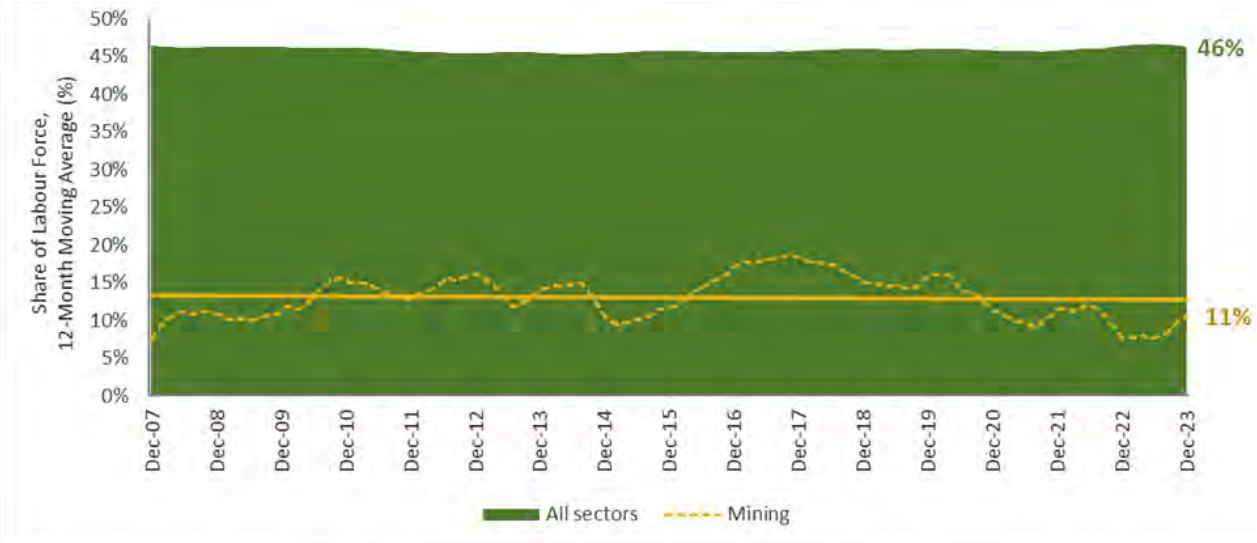
The mining sector has increasingly embraced equity, diversity, and inclusion (EDI) as one of its main guiding principles. However, improving representation among certain groups remains a persistent challenge. The latest workforce trends in Saskatchewan's mining sector show underrepresentation of women and immigrants, while there has been significant growth in the representation of Indigenous workers in recent years.

Women in Mining

Improving women's representation has been an ongoing challenge for Saskatchewan's mining sector. At roughly 46% of the overall labour force, women represent a sizable group with the potential to fill the sector's labour and talent shortages (Figure 15).

Since 2007, women's representation in the mining sector has ranged between 7% and 19% (12-month moving average). Yet, the trend has remained flat at about 13%. The slow pace of progress suggests that prevailing long-term issues with women in mining will not be resolved quickly, and significant progress is more likely to come from generational change rather than from short-term measures.

Figure 15: Women's Representation in Saskatchewan's Labour Force in All Sectors and Mining Sector, 12-Month Moving Average (Dec 2007 – Dec 2023)



Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024; Statistics Canada, Labour Force Survey, 2023.

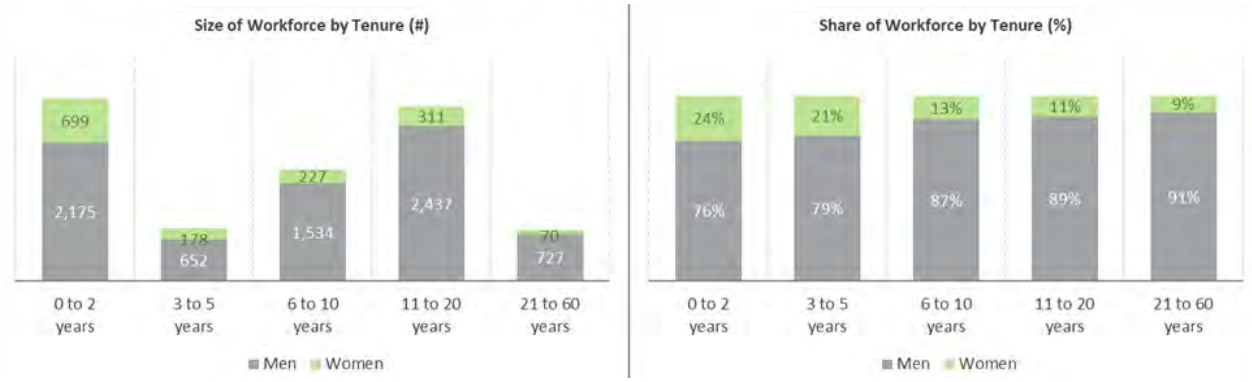
Women's Representation by Tenure

Despite being relatively low, women's representation differs by an individual's tenure. Figure 16 shows a breakdown of the Saskatchewan mining workforce by gender and how long workers have been with their current organization.

Recent hires in the mining sector have a greater proportion of women (24%) compared to those who have longer tenure; nearly 47% of women in the mining sector were hired in the last two years.

The lower share of women among workers with longer tenure could be due to attrition (i.e., women leaving the mining sector as they progress through their careers) or due to better success at recruiting women in recent years.

Figure 16: Size and Share of Saskatchewan's Mining Workforce by Tenure (2023)



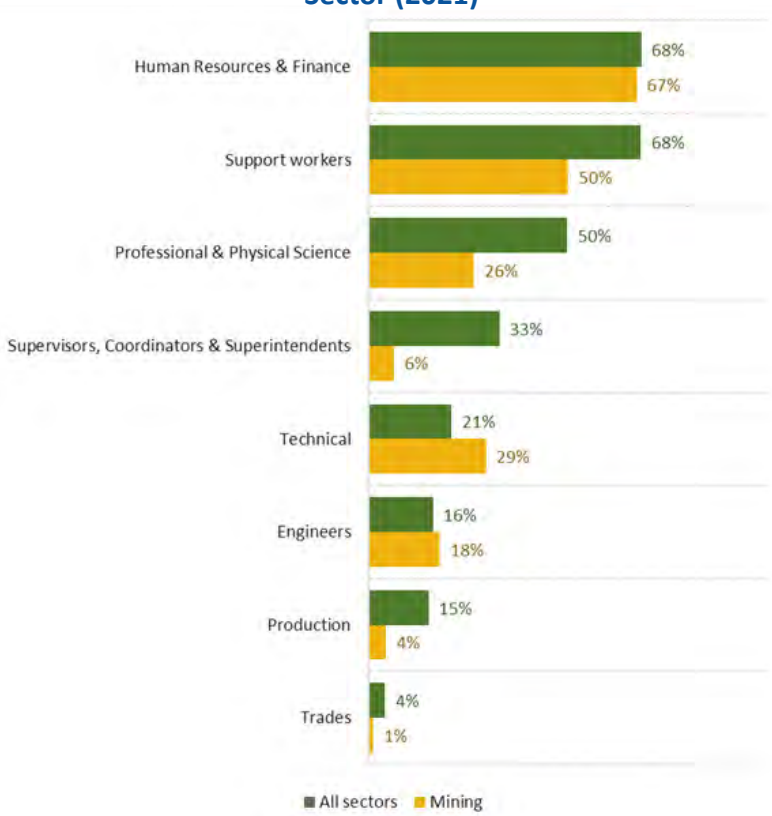
Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024; Saskatchewan Mining Workforce Survey, 2023.

Women's Representation by Broad Occupational Categories

Representation varies widely depending on the occupation. Certain fields such as human resources and finance have a higher percentage of women in their ranks, whereas others like trades occupations are historically male-dominated.

Figure 17 shows there are some occupational categories where mining significantly underperforms other sectors. For example, only 6% of *Supervisors, Coordinators & Superintendents* in mining are women, compared to 33% across all sectors. This indicates there may be some barriers specific to the mining sector preventing women taking up leadership roles. Conversely, *Technical* occupations is a category in which women are well-represented in the mining sector (29%) compared to all sectors (21%).

Figure 17: Women's Representation in Saskatchewan's Labour Force by Broad Occupational Categories in All Sectors and Mining Sector (2021)



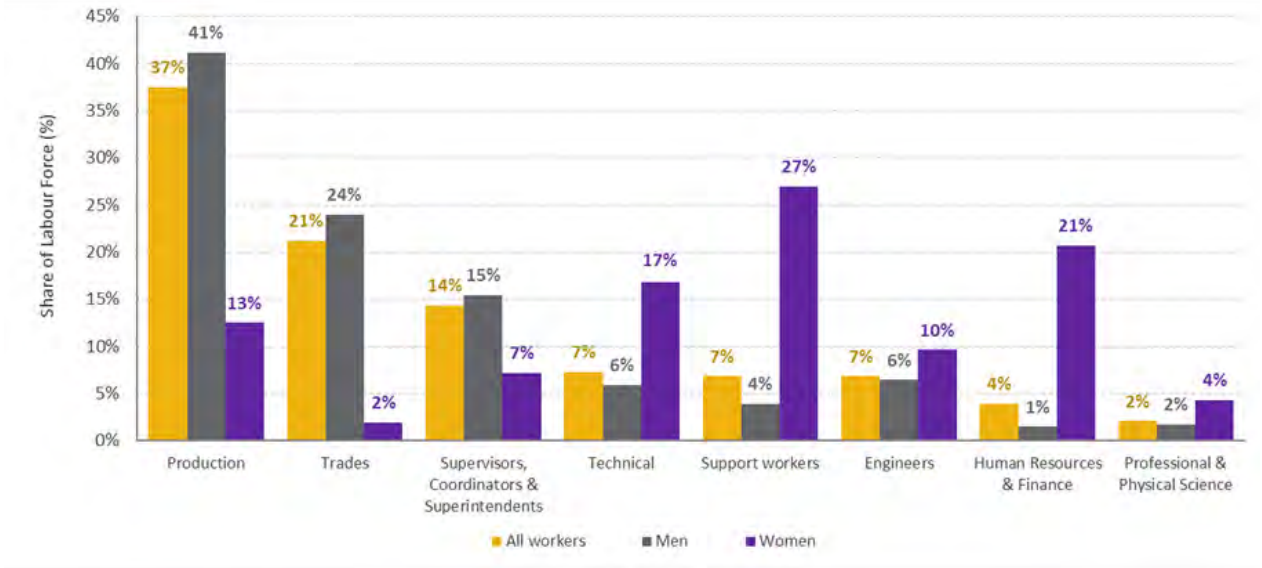
Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024; Statistics Canada, Census of Population, 2021.

Moreover, women's presence in the mining sector is strongly influenced by their career choices. There are occupations where women are broadly underrepresented regardless of sector. For example, in 2021, women held only 4% of positions in skilled *Trades* in Saskatchewan. In the mining sector, the share of women in *Trades* was even lower, at only 1%. Since *Trades* account for roughly 21% of the mining labour force, this has a large impact on the overall representation of women in mining. The key takeaway is that in many instances the challenge lies with the specific occupations, not the mining sector explicitly.

Women's Occupational Mix within the Mining Sector

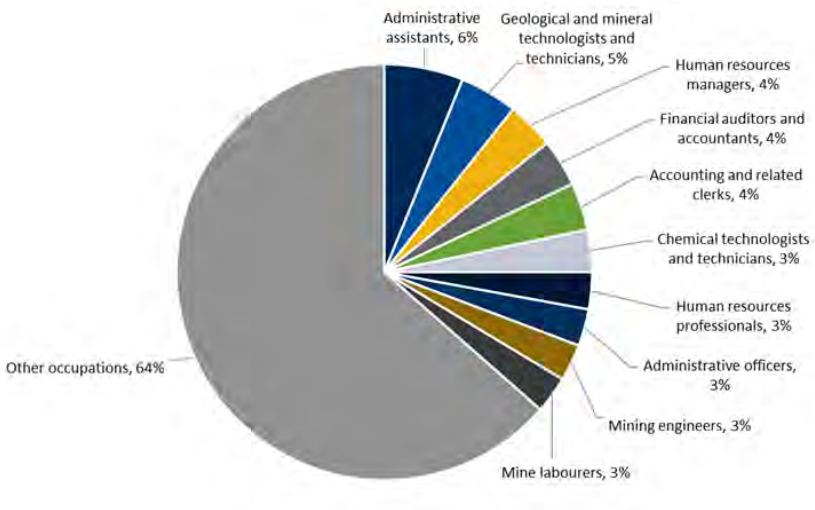
Figure 18 illustrates the distribution of women in the mining sector across various occupational categories. Despite *Production* and *Trades* being the most prevalent categories, comprising 58% of all mining workers, only 13% of women are in *Production* and a mere 2% are in *Trades*. Conversely, a majority of women are employed in *Support Workers* (27%) and *Human Resources & Finance* (21%). This significant disparity in the occupational mix greatly contributes to the underrepresentation of women in mining.

Figure 18: Distribution of Gender by Broad Occupational Categories in Saskatchewan's Mining Sector (2021)



Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024; Statistics Canada, Census of Population, 2021.

Figure 19: Women's Occupational Mix in Saskatchewan's Mining Sector (2021)



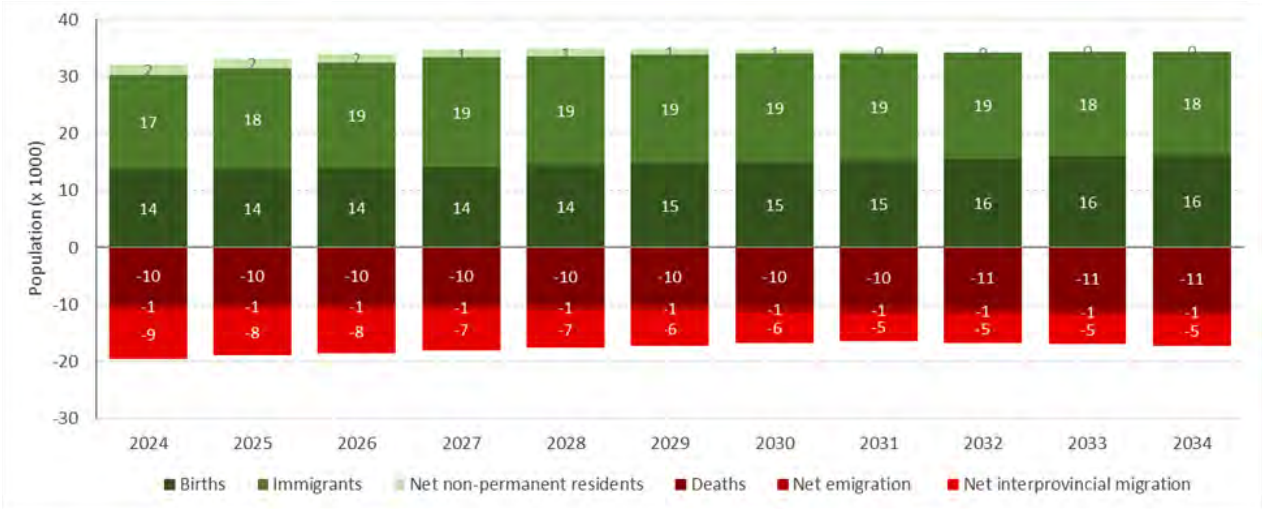
Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024; Statistics Canada, Census of Population, 2021.

Immigrants in Mining

As the largest driver of Saskatchewan population growth[12] , immigrants represent a significant opportunity for the mining sector to tap into a new and skilled workforce that could potentially alleviate labour shortages (Figure 20).[13]

In 2023, immigrants represented roughly 20% of the province's overall workforce, but only 8% of the mining workforce (12-month moving average) (Figure 21). Furthermore, over the last decade and a half, the mining sector has been falling behind other sectors in attracting immigrant workers. Immigrant representation in all sectors has surged from 6% in 2007 to over 20% in 2023. The mining sector has not capitalized on this segment at the same rate.

Figure 20: Projected Components of Population Growth in Saskatchewan (2024 – 2034)



Note: Net emigration is the balance of emigrants, minus returning emigrants, plus net temporary emigrants.
Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024; Statistics Canada, Population Projections for Canada, Provinces and Territories (Projection scenario M1: medium-growth) (Table: 17-10-0058-01), 2023.

12 In 2023, Saskatchewan added 13,343 Births, 26,124 permanent Immigrants, and 9,594 net non-permanent residents (Statistics Canada. (2023). *Estimates of the components of demographic growth, annual. Table 17-10-0008-01.)*

13 Population projects are based on Statistics Canada's conservative medium-growth (M1) scenario. For more information on the projection assumptions see Table: 17-10-0058-01.

Figure 21: Immigrant Representation in Saskatchewan's Labour Force in All Sectors and Mining Sector, 12-Month Moving Average (Dec 2007 – Dec 2023)

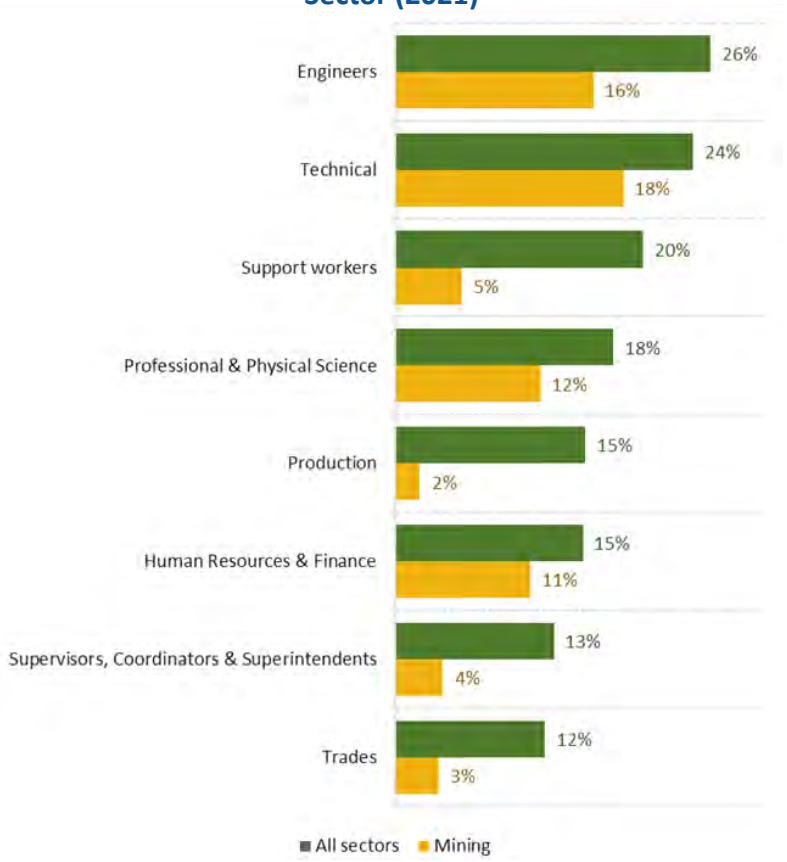
Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024; Statistics Canada, Labour Force Survey, 2023.

Immigrant Representation by Broad Occupational Categories

Unlike the underrepresentation of women, the lack of immigrants in the mining sector is not primarily influenced by occupational choices. Instead of being confined to particular occupations, this issue seems to be inherent to the mining sector specifically.

Immigrants consistently fall below the all-sector level of representation across all occupational categories. Overall, immigrants are present in mining-centric jobs in healthy numbers. However, immigrants across all occupations are choosing other sectors rather than the mining sector (Figure 22). For instance, in *Production* occupations, immigrants make up 15% of the labour force across all sectors. Yet, in the mining sector, it is only 2%, suggesting that there are major barriers specific to the sector.

Figure 22: Immigrant Representation in Saskatchewan's Labour Force by Broad Occupational Categories in All Sectors and Mining Sector (2021)

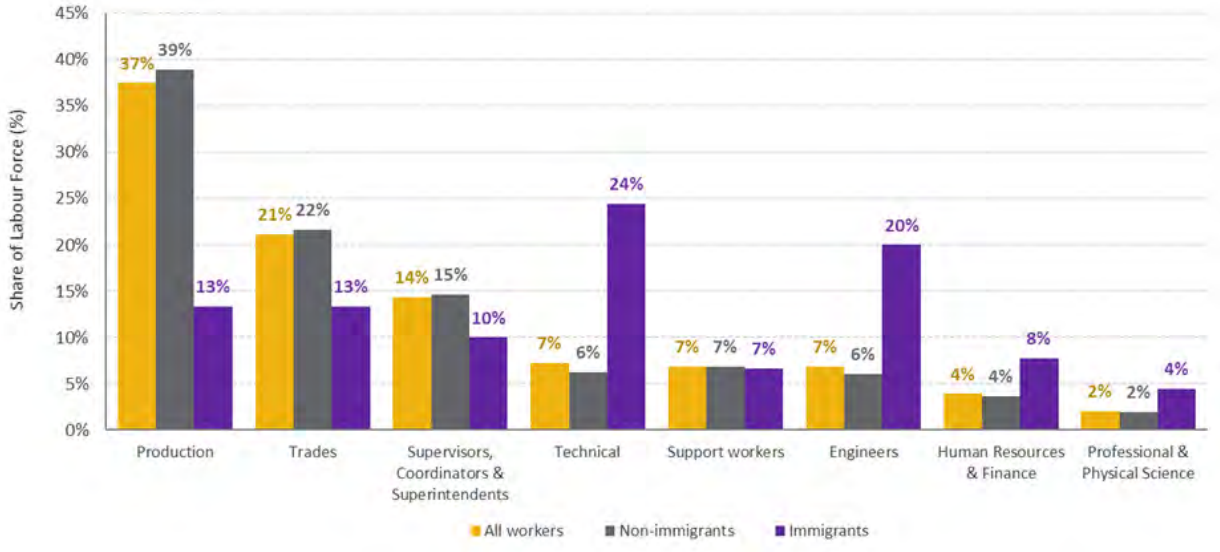


Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024; Statistics Canada, Census of Population, 2021.

Immigrant Occupational Mix within the Mining Sector

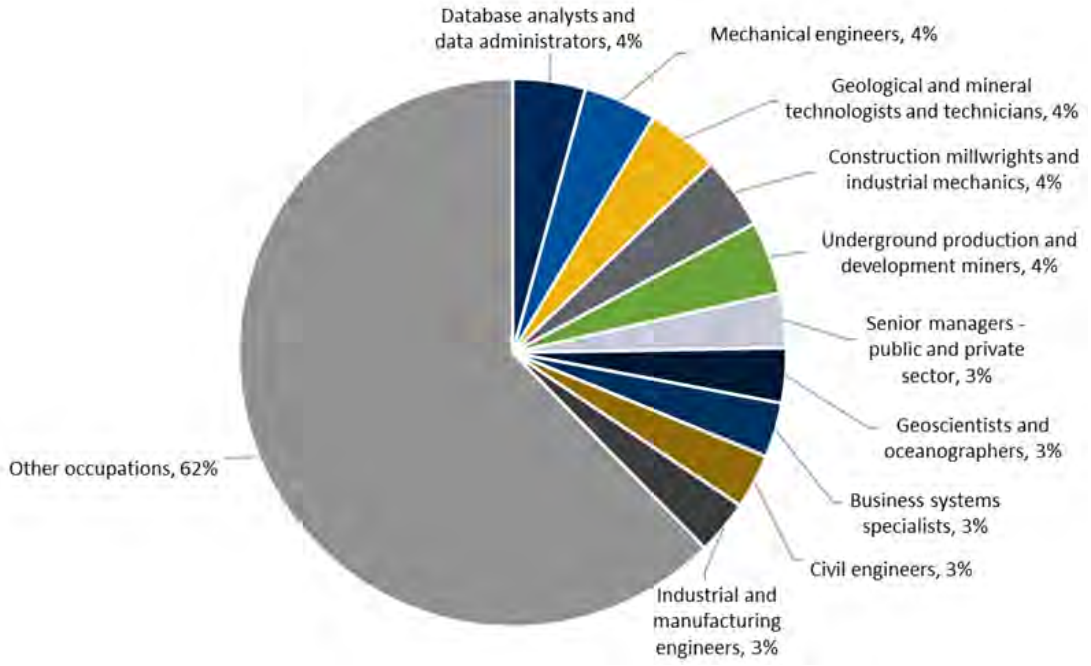
Figure 23 illustrates the distribution of the immigrant labour force in the mining sector across broad occupational categories. While *Production* and *Trades* occupations make up roughly 58% of the total mining labour force, only 26% of immigrants are in these two categories. Nearly half (44%) of the immigrant labour force within the mining sector are either *Engineers* or in *Technical* occupations.

Figure 23: Distribution of Immigration Status by Broad Occupational Categories, Saskatchewan's Mining Sector (2021)



Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024; Statistics Canada, Census of Population, 2021.

Figure 24: Immigrant Occupational Mix in Saskatchewan's Mining Sector (2021)



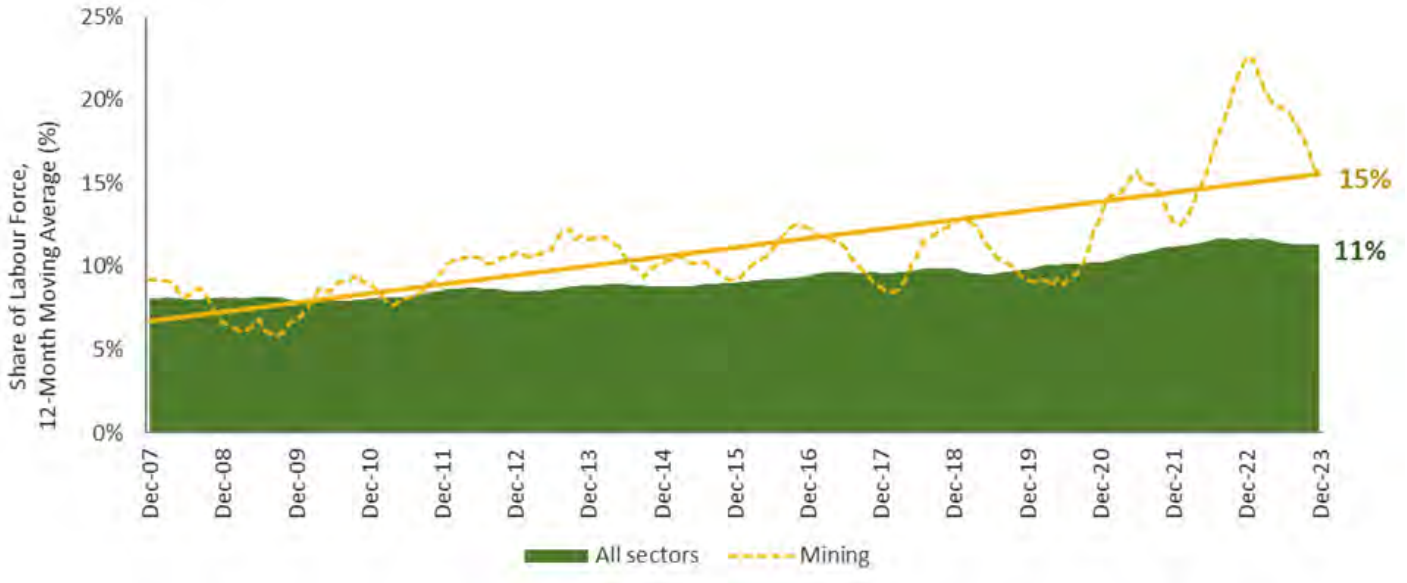
Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024; Statistics Canada, Census of Population, 2021.

Indigenous Peoples in Mining

Mining is one of the largest employers of Indigenous peoples in Saskatchewan. In 2023, Indigenous workers averaged about 15% of the mining labour (12-month moving average) (Figure 25). By contrast, they represented about 11% of the province's overall labour force.

From 2007 to 2023, Indigenous representation in mining has grown substantially. Despite recent large fluctuations, ranging from less than 10% to over 20% since 2020, there is a clear favourable trend for Indigenous employment outcomes in the mining sector.

Figure 25: Indigenous People's Representation in Saskatchewan's Labour Force in All Sectors and Mining Sector, 12-Month Moving Average (Dec 2007 – Dec 2023)

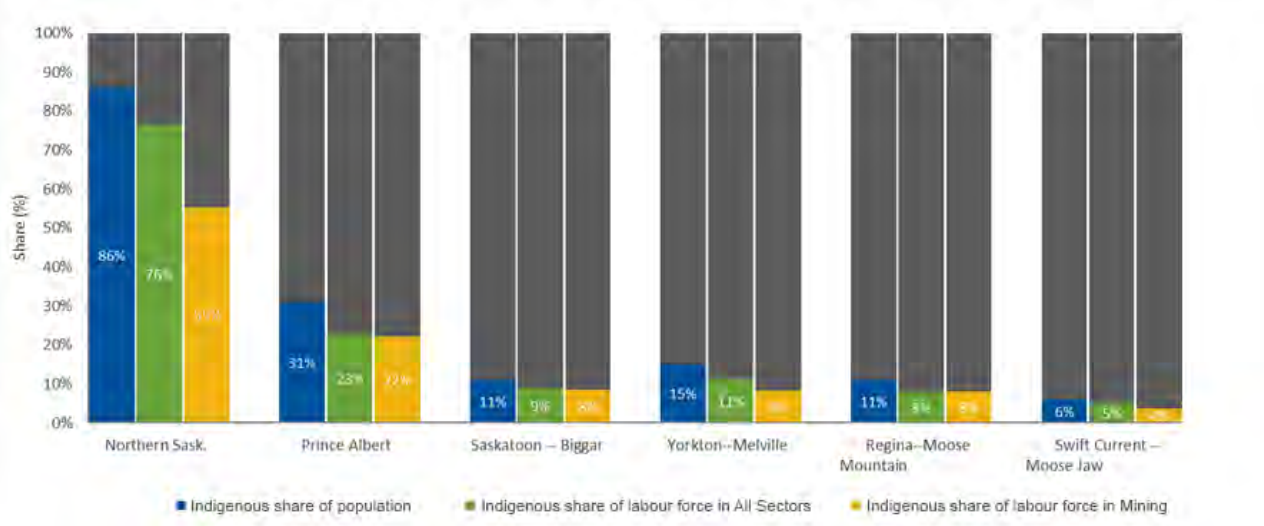


Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024; Statistics Canada, Labour Force Survey, 2023.

Indigenous Representation by Geography

Figure 26 reveals that Indigenous representation differs widely by region, with Northern Saskatchewan having the greatest proportion of Indigenous workers in the mining sector at 55% in 2021. The province's other economic regions show notably lower levels of Indigenous representation. The figure highlights that Indigenous representation in the mining sector is closely tied to representation in the wider economy.

Figure 26: Regional Breakdown of Indigenous People's Share of the Labour Force in All Sectors and Mining Sector (2021)



Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024; Statistics Canada, Census of Population, 2021.

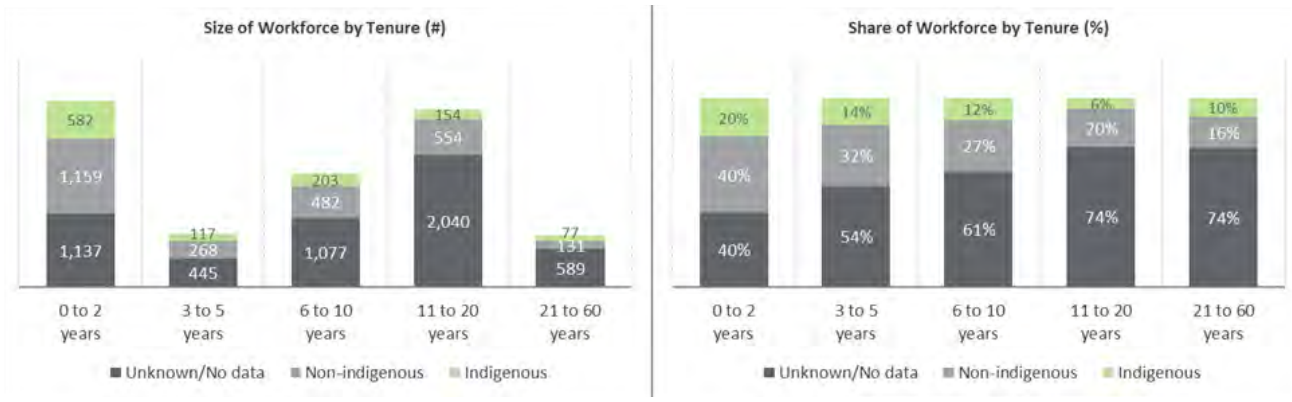
Indigenous Representation by Tenure

Indigenous representation differs by length of tenure. Figure 27 shows a breakdown of the Saskatchewan mining workforce by Indigenous identity and how long workers have been with their current organization.

Recent hires in the mining sector have a greater proportion of Indigenous (20%) compared to those who have longer tenure. More than half of Indigenous workers in the mining sector (51%) were hired in the last two years.

The lower share of Indigenous workers with longer tenure could be due to attrition (i.e., Indigenous workers leaving the mining sector as they progress through their careers) or due to better success at recruiting Indigenous workers in recent years. Furthermore, the figure suggests improved record-keeping among the more recent hires, as the share of workers with an unknown status decreases with shorter-tenured employees.

Figure 27: Size and Share of Saskatchewan's Mining Workforce by Tenure (2023)

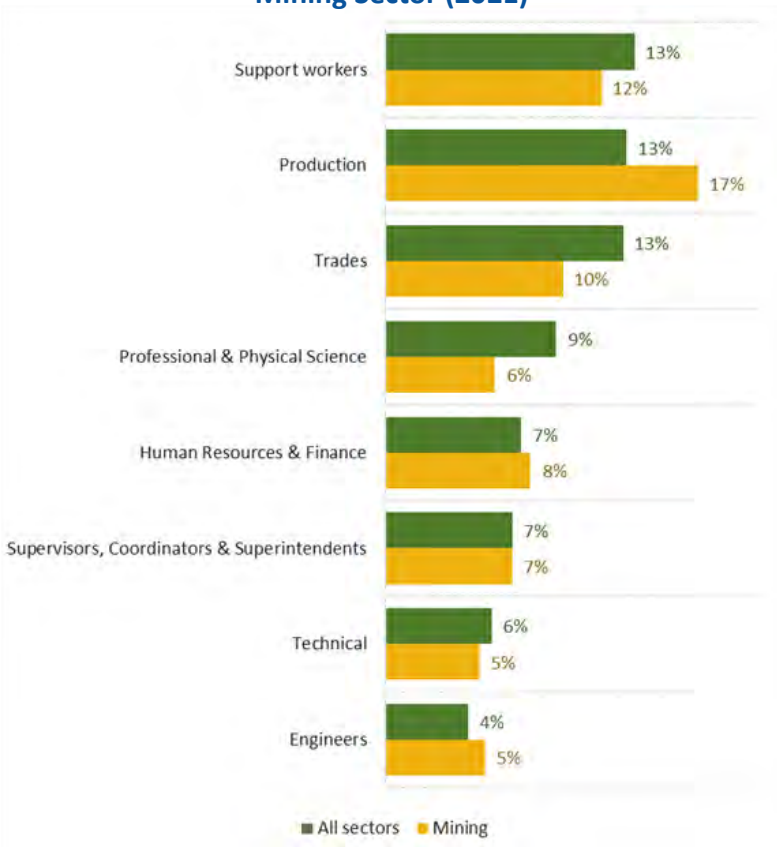


Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024; Saskatchewan Mining Workforce Survey, 2023.

Indigenous Representation by Occupation

A strong Indigenous representation does not necessarily indicate that occupational and economic outcomes are positive for Indigenous workers in the mining sector. Figure 28 shows that the Indigenous workers are more present in *Production* and *Support* occupations and less present in *Technical* and *Engineers* roles. The graph also highlights that, in general, Indigenous representation in the mining sector is comparable to that of other sectors, indicating that performance in the mining sector is largely tied to broader occupational and career choices among Indigenous workers.

Figure 28: Indigenous People's Representation in Saskatchewan's Labour Force by Broad Occupational Categories in All Sectors and Mining Sector (2021)

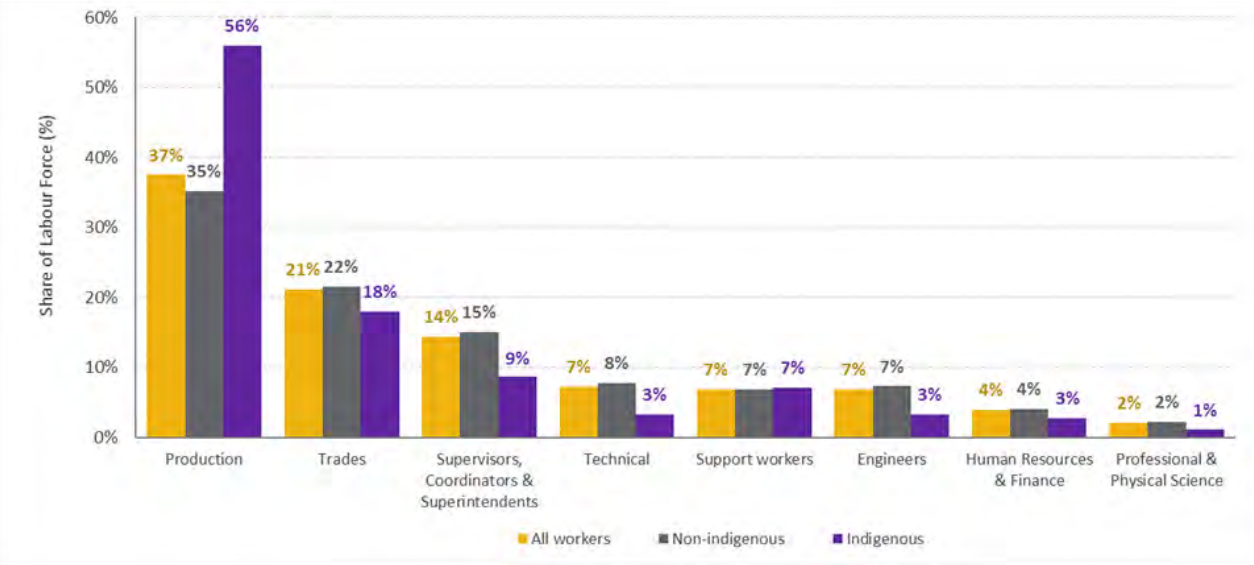


Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024; Statistics Canada, Census of Population, 2021.

Indigenous Occupational Mix within the Mining Sector

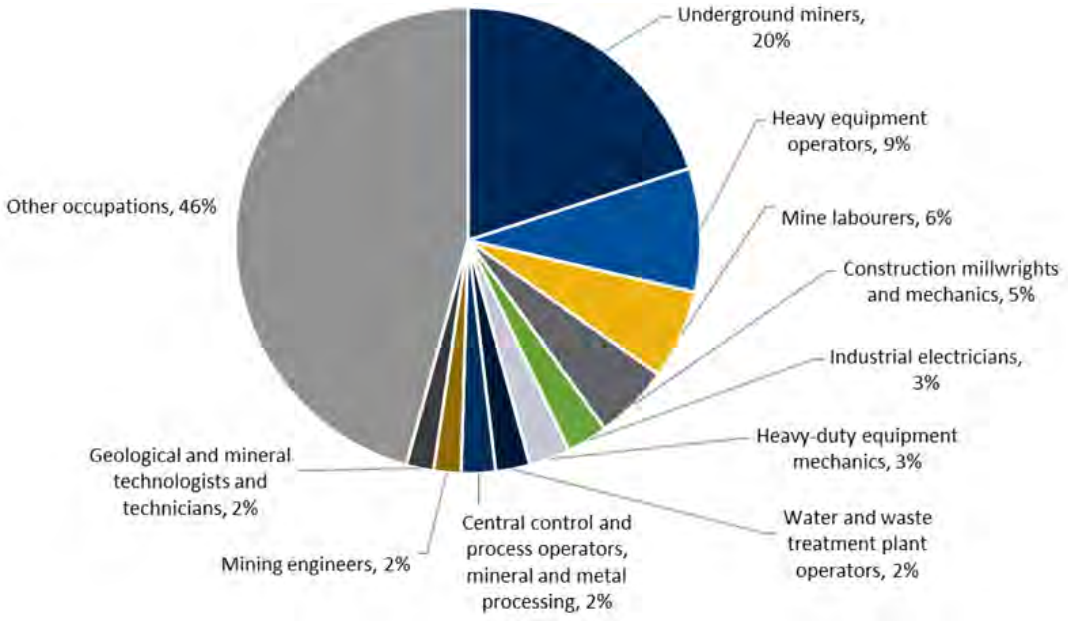
Figure 29 illustrates the distribution of the Indigenous labour force in the mining sector across various occupational categories. *Production* occupations account for over half (56%) of the Indigenous mining labour force in the province, pointing to opportunities to boost their involvement in other types of occupations through upskilling, training and promotion. Figure 30 provides a breakdown of the top 10 most prevalent occupations where Indigenous workers are most commonly found.

Figure 29: Distribution of Indigenous Status by Broad Occupational Category, Saskatchewan's Mining Sector (2021)



Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024; Statistics Canada, Census of Population, 2021.

Figure 30: Indigenous Peoples' Occupational Mix in Saskatchewan's Mining Sector (2021)



Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024; Statistics Canada, Census of Population, 2021.

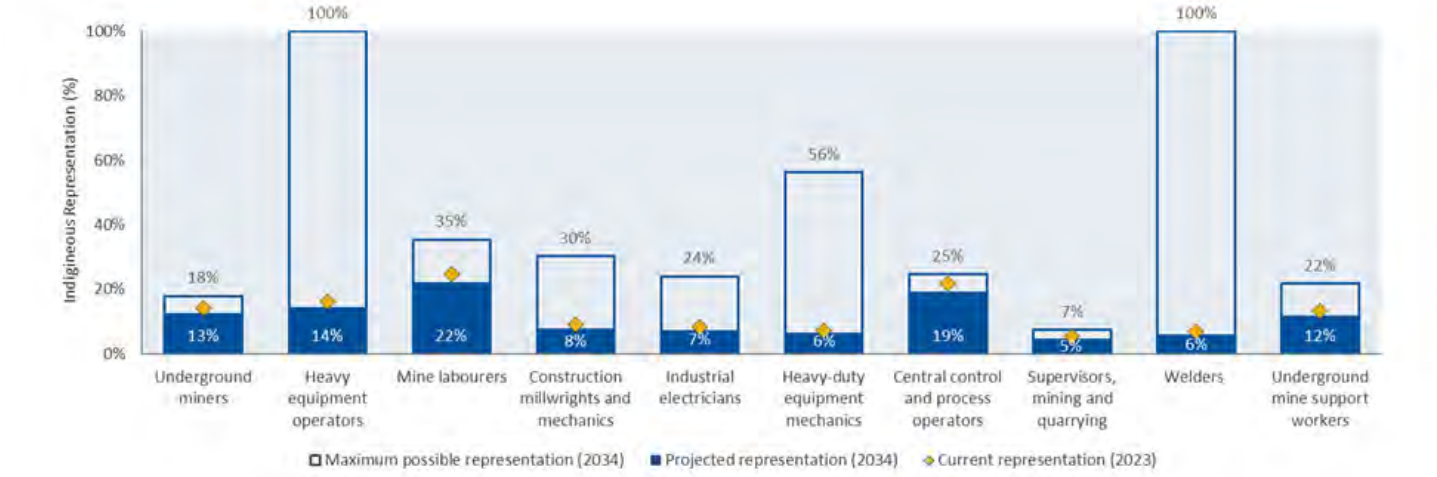
Factor #4: Certain Occupational Labour Pools are Too Shallow

In certain cases, the existing labour pool is simply too small to effectively respond to new growth opportunities. This section employs MiHR's LMA model to recognize which occupations have a sufficiently deep labour pool, and which occupations have a relatively shallow one. The focus is on Indigenous workers; however, this analysis can be easily applied to other groups of interest.

Figure 31 plots MiHR's baseline expectations for Indigenous representation in prevalent mining occupations, projected through 2034. The chart also presents a hypothetical scenario (Maximum Possible Representation) in which the mining sector is able to recruit the entire estimated labour supply of Indigenous workers, uncontested by other sectors. Though the scenario is not realistic, it illustrates an important point: the key constraint for many occupations is the size of the Indigenous labour pool. In these instances, even if the mining sector hired all available Indigenous workers, representation would remain low.

For some occupations, the maximum representation has a natural limit that is often well below 100%. In these cases, shallow labour pools will quickly be exhausted, and the mining sector will require a different strategy to boost representation further. The next section expands on one such occupation, industrial electricians, to highlight this point.

Figure 31: Forecasted Indigenous Representation for the 10 Most Prevalent Occupations in Saskatchewan's Mining Sector (2024 – 2034)



Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024.

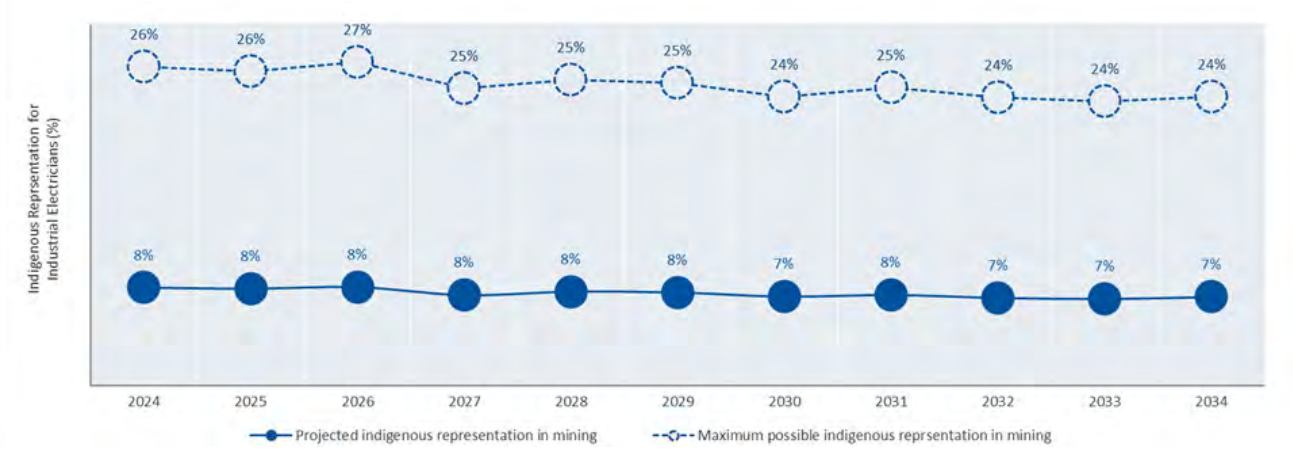
Example of Industrial Electricians

Boosting Indigenous representation in mining can be particularly challenging in occupations with relatively shallow labour pool such as industrial electricians. Indigenous representation in this occupation is expected to hover close to its current level over the next decade, at roughly 7% (Figure 32).[14]

Even in a hypothetical scenario where mining hires every available Indigenous worker in this occupation, the best-case Indigenous representation would range between 24% and 27%. This relatively restrictive upper boundary is an indication that mining is reaching its natural limit in its capacity to increase Indigenous representation, at least in the short-to-medium term. To grow Indigenous representation past its natural upper bound, the labour pool will need to expand beyond its projected size.

14 This assumes current trends prevail through 2034, such as population growth, labour demand growth and mining's share of the Indigenous labour supply.

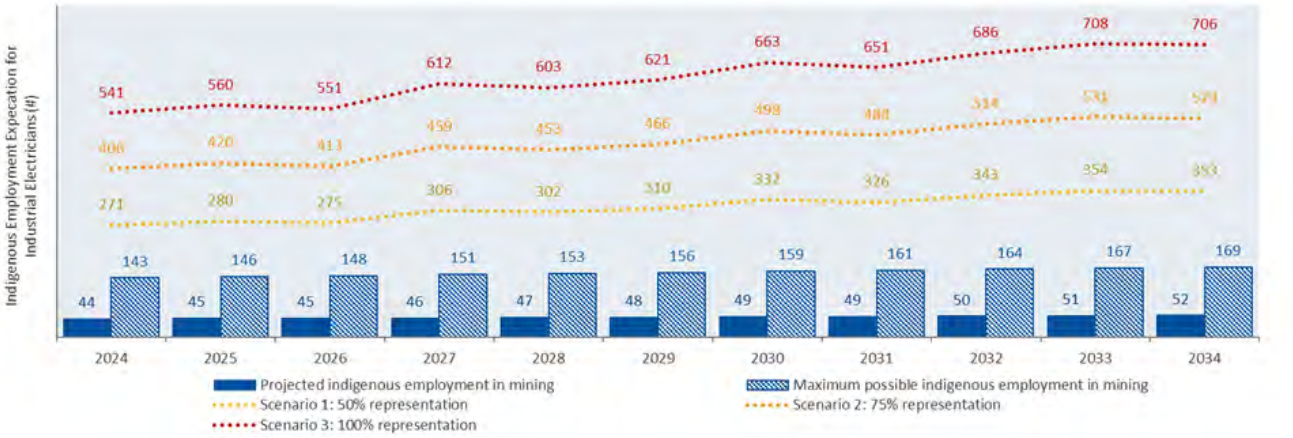
Figure 32: Forecasted Indigenous Representation for Industrial Electricians (2024 – 2034)



Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024.

Figure 33 illustrates this example in terms of number of workers. The three scenarios demonstrate how the mining sector would need to greatly increase its Indigenous workforce numbers to reach various Indigenous representation goals (at 50%, 75% and 100%).

Figure 33: Indigenous Employment Expectation for Industrial Electricians in Saskatchewan's Mining Sector (2024 – 2034)



Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024.

Overall, the model results indicate that there is no short-term recruitment strategy, such as wage increases or advertising, that can significantly boost the number of Indigenous industrial electricians beyond their current level. A limited labour pool means that every additional person becomes increasingly difficult to recruit. Given these limitations, it becomes necessary to broaden the scope beyond the existing labour pool. Encouraging individuals to switch careers adds an additional layer of complexity to this challenge.

Hence, a holistic, long-term workforce development strategy is necessary to significantly enhance Indigenous representation and meet higher representation targets. This strategy involves investments in awareness, skills, and training, as well as efforts to remove systemic barriers and promote a respectful workplace culture.

Factor #5: People are Not Entering the Relevant Occupations

Though there are many factors that push and pull on the labour supply, occupational choices stand out as the primary bottleneck, especially as there are many competitive career paths available.

Occupational choices encompass a series of influential decisions made by individuals throughout their lives, each shaping a trajectory that may bring them closer or take them farther away from working in the mining sector.

This analysis reveals that individuals are not necessarily rejecting the mining sector directly; rather, they are bypassing critical occupations that serve as gateways to mining opportunities. Lifetime career choices are the single largest factor contributing to a limited labour pool in the sector.

Occupational Choice and The Top 10 Occupations

Figure 34 provides a visual breakdown of the labour supply for the 10 most prevalent occupations in Saskatchewan's mining sector. Collectively, these occupations make up about 50% of the mining workforce.

These are listed as follows:

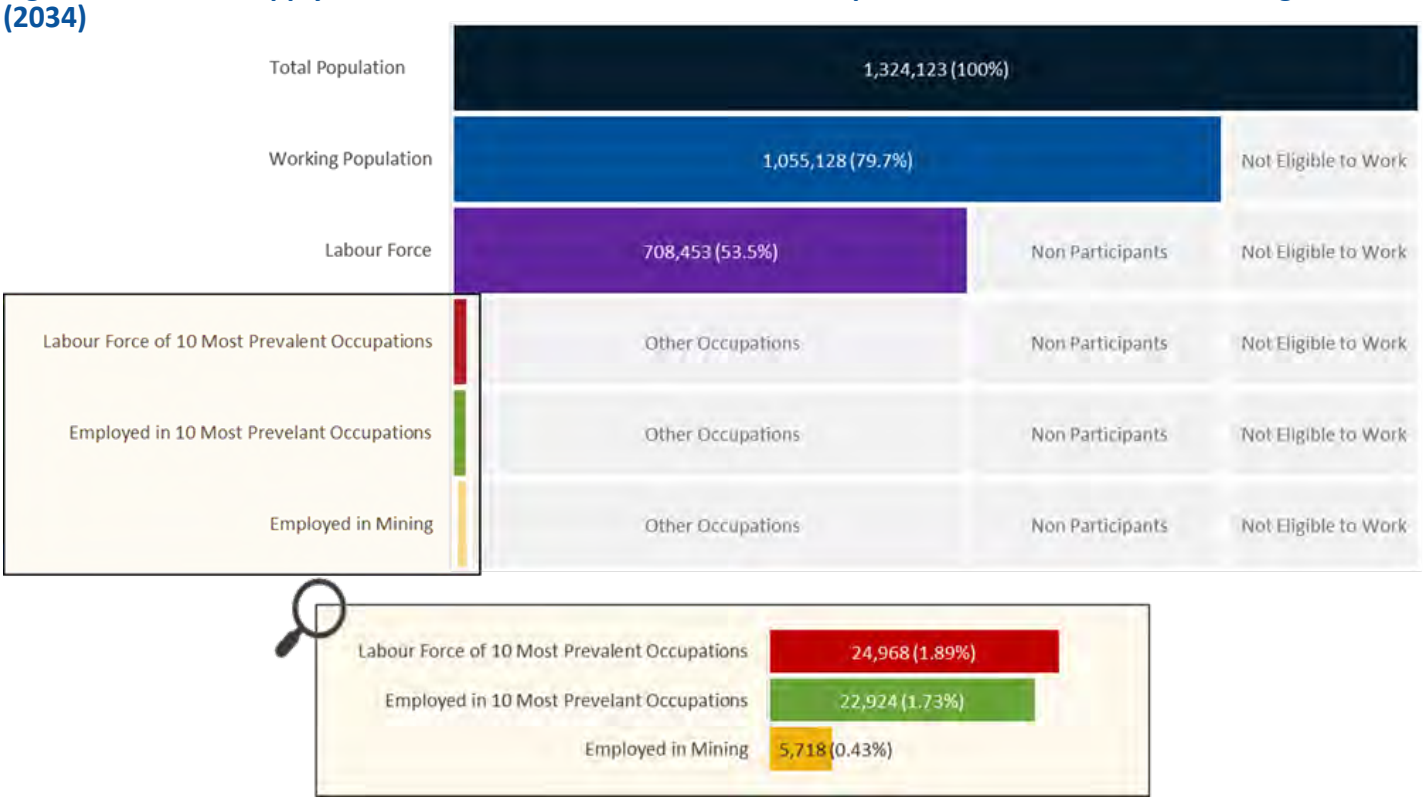
- Underground production and development miners
- Construction millwrights and industrial mechanics
- Supervisors, mining and quarrying
- Heavy equipment operators
- Industrial electricians
- Heavy-duty equipment mechanics
- Welders and related machine operators
- Managers in natural resources production and fishing
- Mine labourers
- Underground mine service and support workers

At the top, the graph illustrates the overall population, with each subsequent layer below representing a potential stage of attrition for the mining sector. The layers progress until reaching mining sector employment in the bottom left-hand corner. This visualization helps quantify where individuals are most likely to deviate from a career path in mining.

The forecasted labour supply for these 10 occupations in 2034 is expected to represent approximately 19 out of 1000 people in the overall population. Of these 19 individuals, 4 are projected to be employed in the mining sector.

The next question naturally arises: *where is the bottleneck?* There is a significant drop-off at the stage where individuals choose their occupations. Despite half of all mining workers being concentrated in the top 10 occupations, most people do not pursue careers in these fields. Out of roughly 700,000 people in the overall labour force, only 25,000 are in these 10 occupations. This underscores how occupational choices contribute to a limited labour pool, where too many employers are competing over too few candidates.

Figure 34: Labour Supply Deconstructed, 10 Most Prevalent Occupations in Saskatchewan's Mining Sector (2034)



Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024.

The Impact of Post-Secondary Education Choices

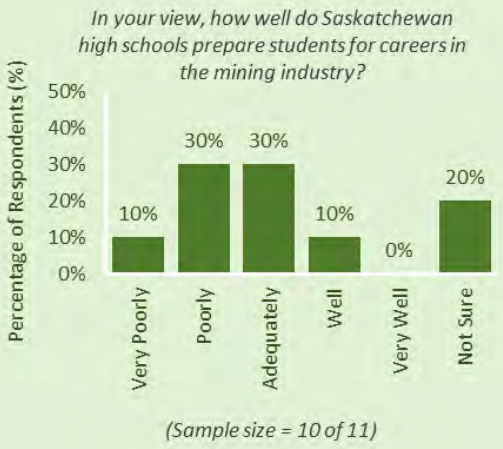
Occupational choices are shaped long before people enter the labour market. At the post-secondary level, mining relevant disciplines tend to be small and contend with strong competition from other fields.

Figure 35 illustrates the enrolment choices of post-secondary students in Saskatchewan. In the 2020/2021 academic year, Saskatchewan recorded 57,804 students enrolled across various disciplines and levels of study.

The three most common disciplines in the mining sector—Engineering, Mechanic and Repair Technologies, and Construction Trades—accounted for only 6% of total enrolments, indicating that 94% of students pursue alternative career paths. This disparity underscores the opportunity for expanding the labour pool at the post-secondary level.

Mining Employer's Perspective: Student Preparedness

Employers suggest improving student preparedness and dispelling myths about mining through more mining specific curriculums in schools, better hands-on training via classroom visits and virtual/augmented reality.



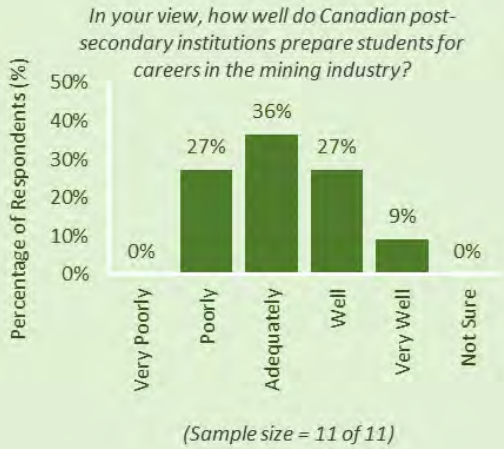
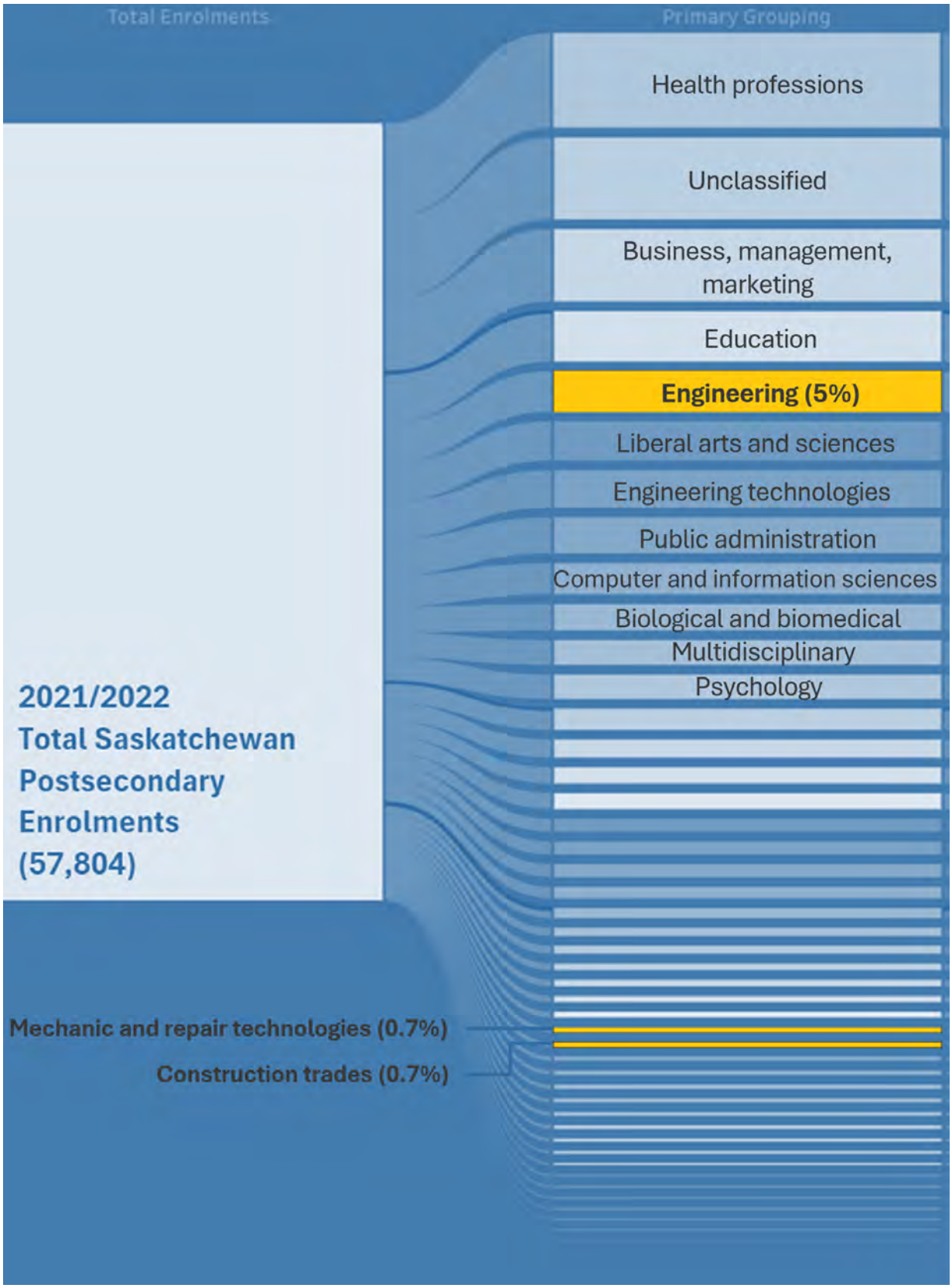


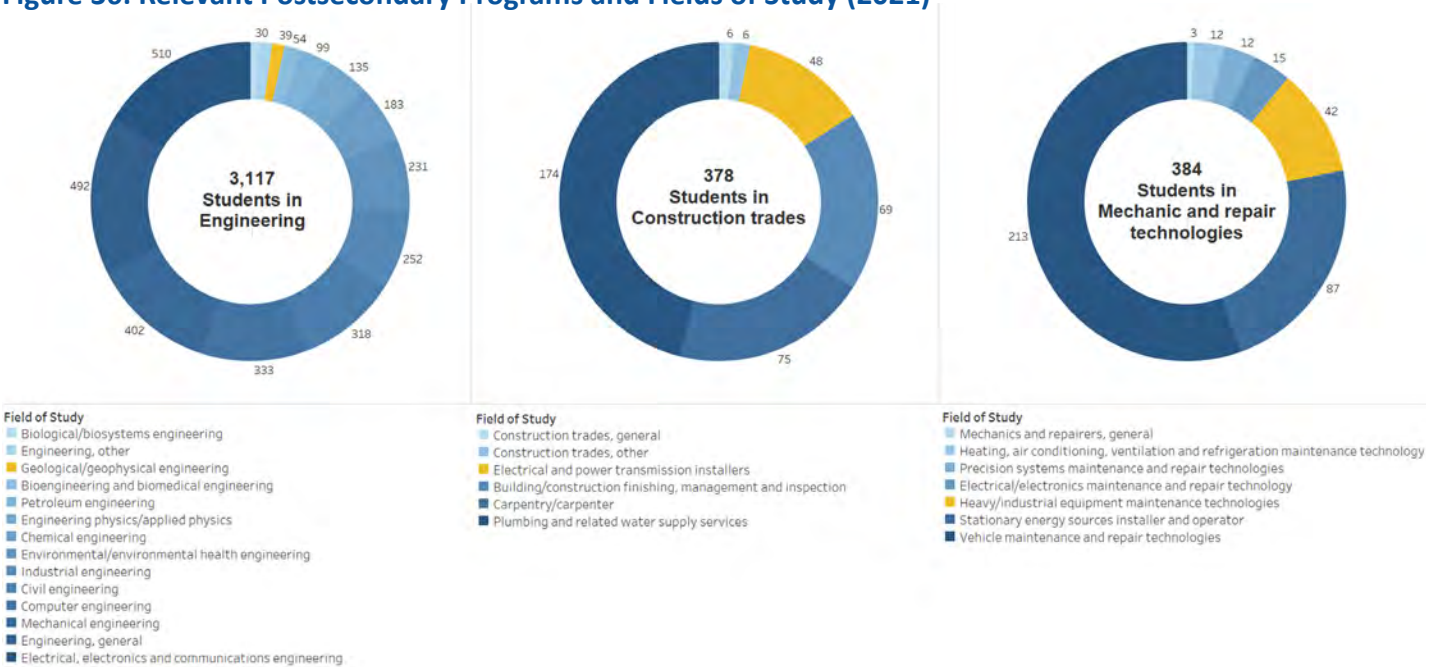
Figure 35: Relevant Postsecondary Programs as a Share of Total Saskatchewan Postsecondary Enrolments (2021/2022)



Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024; Statistics Canada, Postsecondary Student Information System, 2023.

Figure 36 provides a detailed breakdown of the three primary disciplines, which collectively account for 30% of the educational backgrounds within the mining workforce in 2021.[15] Additionally, the figure highlights notable mining-centric subdisciplines within each of these categories. Given that career choices are often established during the formative school years, these findings serve as an early indication and precursor for future occupational paths.

Figure 36: Relevant Postsecondary Programs and Fields of Study (2021)



Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024; Statistics Canada, Postsecondary Student Information System, 2023.

15 Statistics Canada. (2021). *Census of Population.*

Chapter 5: Skills Analysis for the Mining Sector

Workplace skills is an emerging topic of interest as new data and resources have become available to produce relevant information. MiHR has developed an analysis that seeks to quantify the skills and abilities that are most prevalent across the sector.

The analysis offered in this chapter aims to profile the workforce skills and abilities of the mining sector, such that workforce planners can better understand how skillsets used in the mining workforce differ from those in other sectors.

Findings serve as a reference point for how skills distribute among the labour force and provide mining stakeholders (i.e., career seekers, employers, educators, governments) and workforce planners with information to make better decisions, anticipate skills gaps and align labour supply skill sets with industry demand.

Quantifying skills and abilities

MiHR leverages the Occupational and Skills Information System (OaSIS)[16] skills taxonomy to determine the "skills" and "abilities" that are important to the mining sector. The analysis follows a simple two-step approach: (1) Map skills and abilities to occupations, and (2) Add up workers in occupations using a particular skill or ability.[17]

16 OaSIS is a database developed by Employment and Social Development Canada (ESDC) that provides ratings for worker characteristics (e.g., skills, abilities, work environment) associated with occupations.

17 For more details on the skills analysis methodology see: Mining Industry Human Resources Council (MiHR). (2020). *The changing nature of work: innovation, automation and Canada's mining workforce*.

Limitations

In general, skills are difficult to quantify given the ambiguity of how they are applied across different roles in the economy. For example, 'mathematics' has a different application for an engineer compared to an accountant, though they both may require a use of mathematics in their roles. As a result, present-day skills measurements struggle to capture the nuance and complexity of skills in the context of various roles.

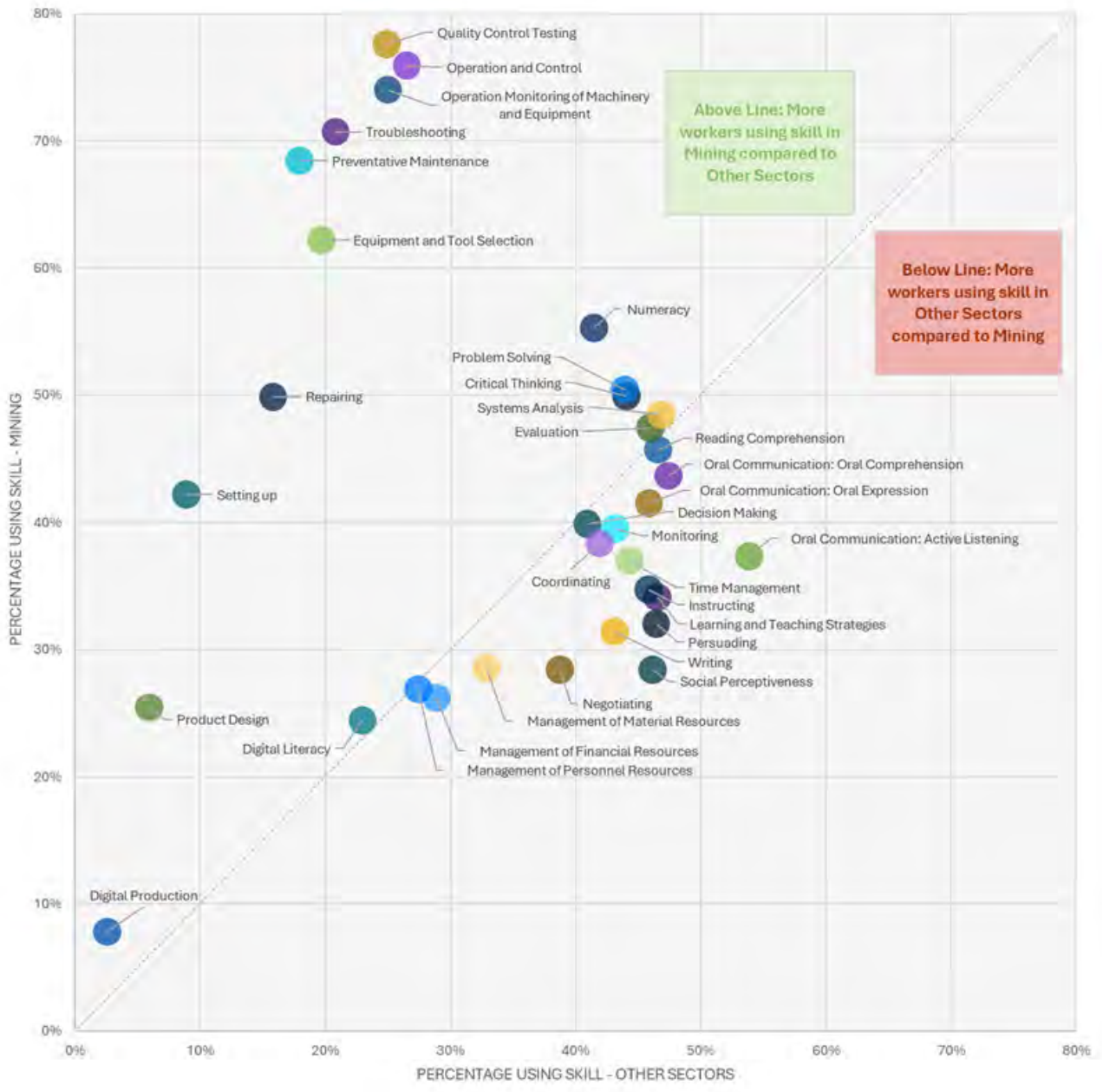
Contemporary analyses of skills typically leverage occupation-based data as a means of describing skills in the workplace, principally because it is intuitive to think about skills through an occupational lens, and since the available resources for occupations (i.e., data, definitions and general familiarity) make this a practical approach. Given an occupation, a catalogue (or ranking) of the necessary skills will vary depending on the method used to determine whether a skill is important to the occupation. In recent contributions on the topic, the method for determining skill importance has varied – from an appraisal of occupational skills (conducted by people with expertise) to the use of job posting data to identify the skills that are being frequently cited by employers.

OaSIS Skills

OaSIS defines 'skills' as the "developed capabilities that an individual must have to be effective in a job, role, function, task or duty." Figure 37 compares how thirty-three OaSIS skills differ between the mining sector and other sectors in Saskatchewan. The percentages represent the share of workers that require a moderate or high proficiency in a given skill.

The graph shows a 45-degree parity line: along the line, mining sector workers use a given skill at the same rate as workers in other sectors. Skills above the line are utilized by mining workers at a higher rate compared to other sectors. Notable skills above the line include *Quality Control Testing, Operation and Control, Operation Monitoring of Machinery and Equipment*.

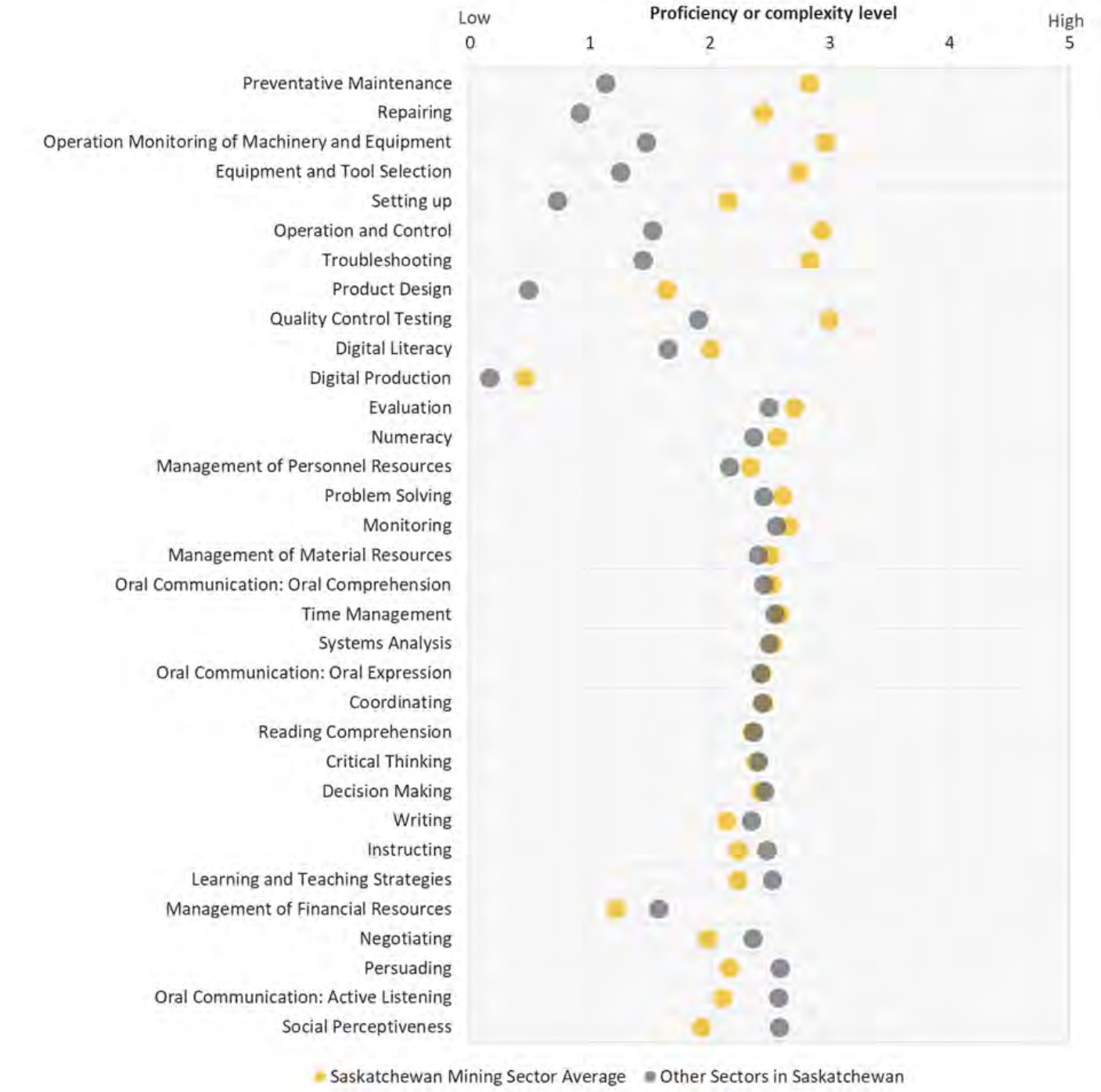
Figure 37: Comparison of Skills Prevalence in Saskatchewan's Mining Sector and Other Sectors (2021)



Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024; Employment and Social Development Canada, Occupational and Skills Information System (OaSIS), 2024; Statistics Canada, Census of Population, 2021.

The OaSIS database evaluates the different workforce skills used across occupations, rating the required level of proficiency on a scale of 0 to 5. Figures 38 and 39 show the average level required of workers in the Saskatchewan mining sector relative to the level required in other sectors, and across various occupational categories.

Figure 38: Average Skill Level Required, Saskatchewan Mining Sector and Other Sectors (2021)



Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024; Employment and Social Development Canada, Occupational and Skills Information System (OaSIS), 2024; Statistics Canada, Census of Population, 2021.

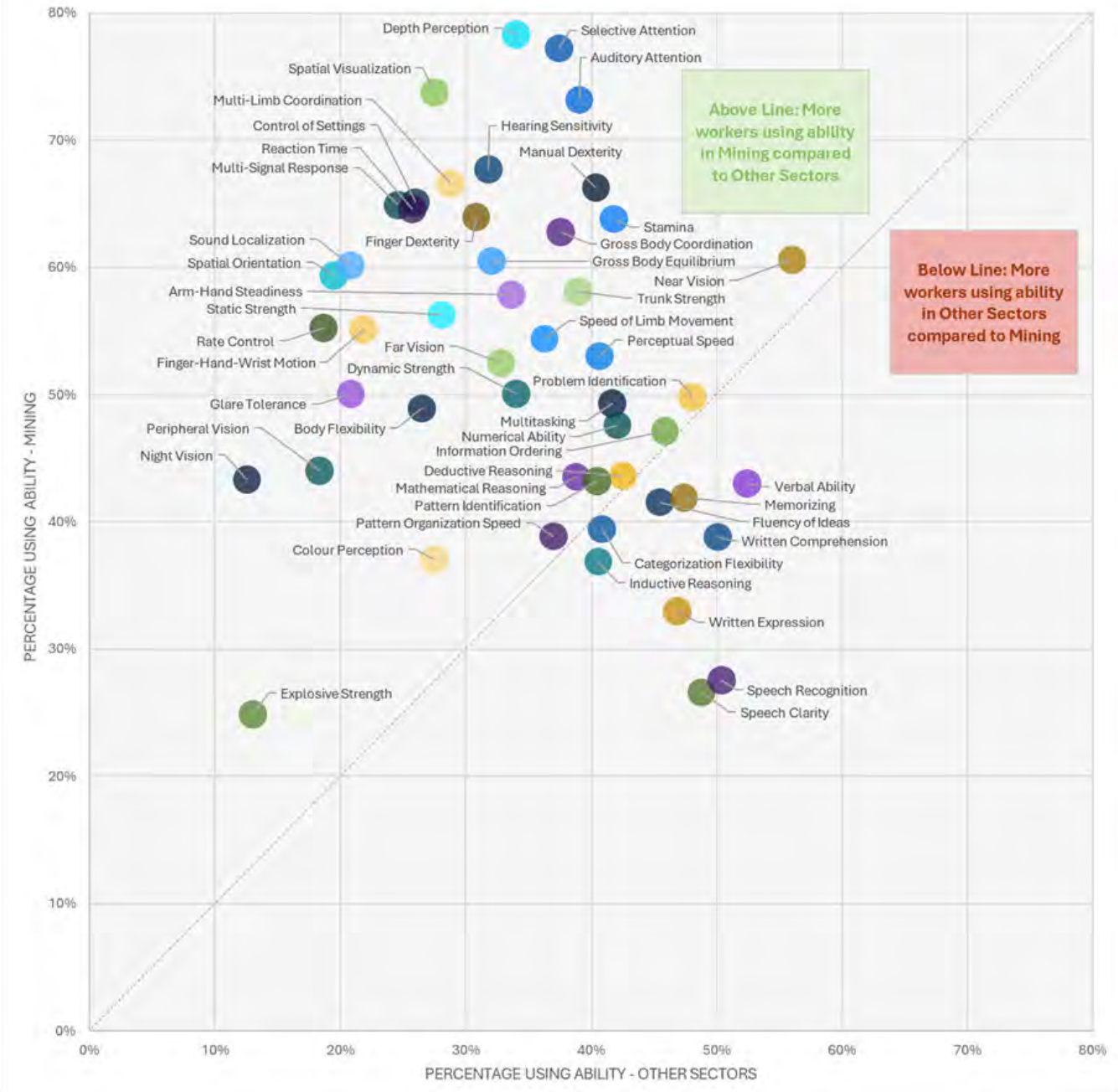
Figure 39: Average Skill Level Required in Saskatchewan's Mining Sector by Broad Occupational Category (2021)

Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024; Employment and Social Development Canada, Occupational and Skills Information System (OaSIS), 2024; Statistics Canada, Census of Population, 2021.

OaSIS Abilities

OaSIS defines 'abilities' as the "Innate and developed aptitudes that facilitate the acquisition of knowledge and skills to carry out expected work." Figure 40 compares how forty-nine OaSIS abilities differ between the mining sector and other sectors in Saskatchewan. The percentages represent the share of workers that require a moderate or high proficiency in a given ability. Notable prevalent abilities in the sector (shown above the parity line) include *Depth Perception, Spatial Visualization, Selective Attention and Auditory Attention*.

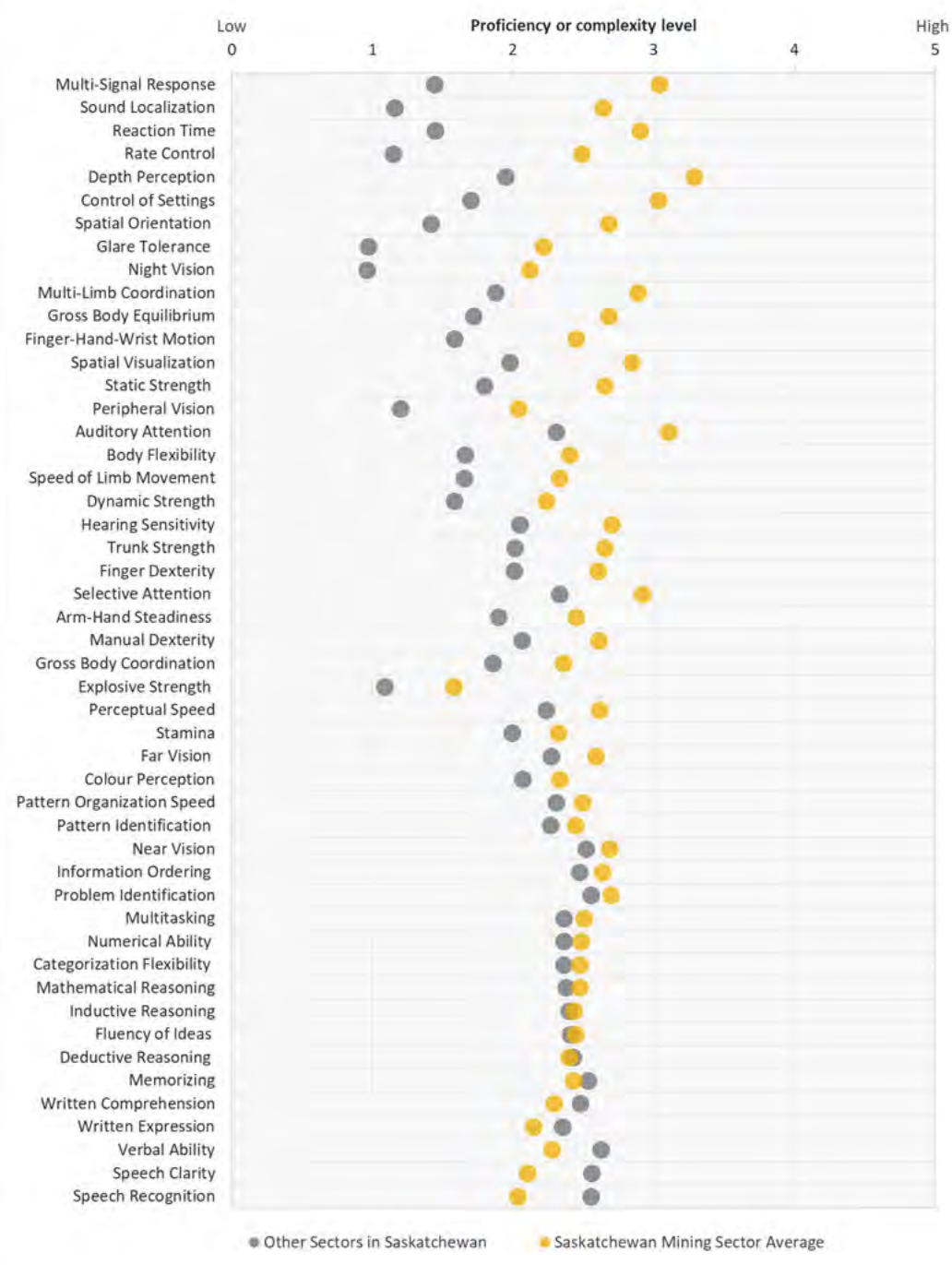
Figure 40: Comparison of Abilities Prevalence in Saskatchewan's Mining Sector and Other Sectors (2021)



Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024; Employment and Social Development Canada, Occupational and Skills Information System (OaSIS), 2024; Statistics Canada, Census of Population, 2021.

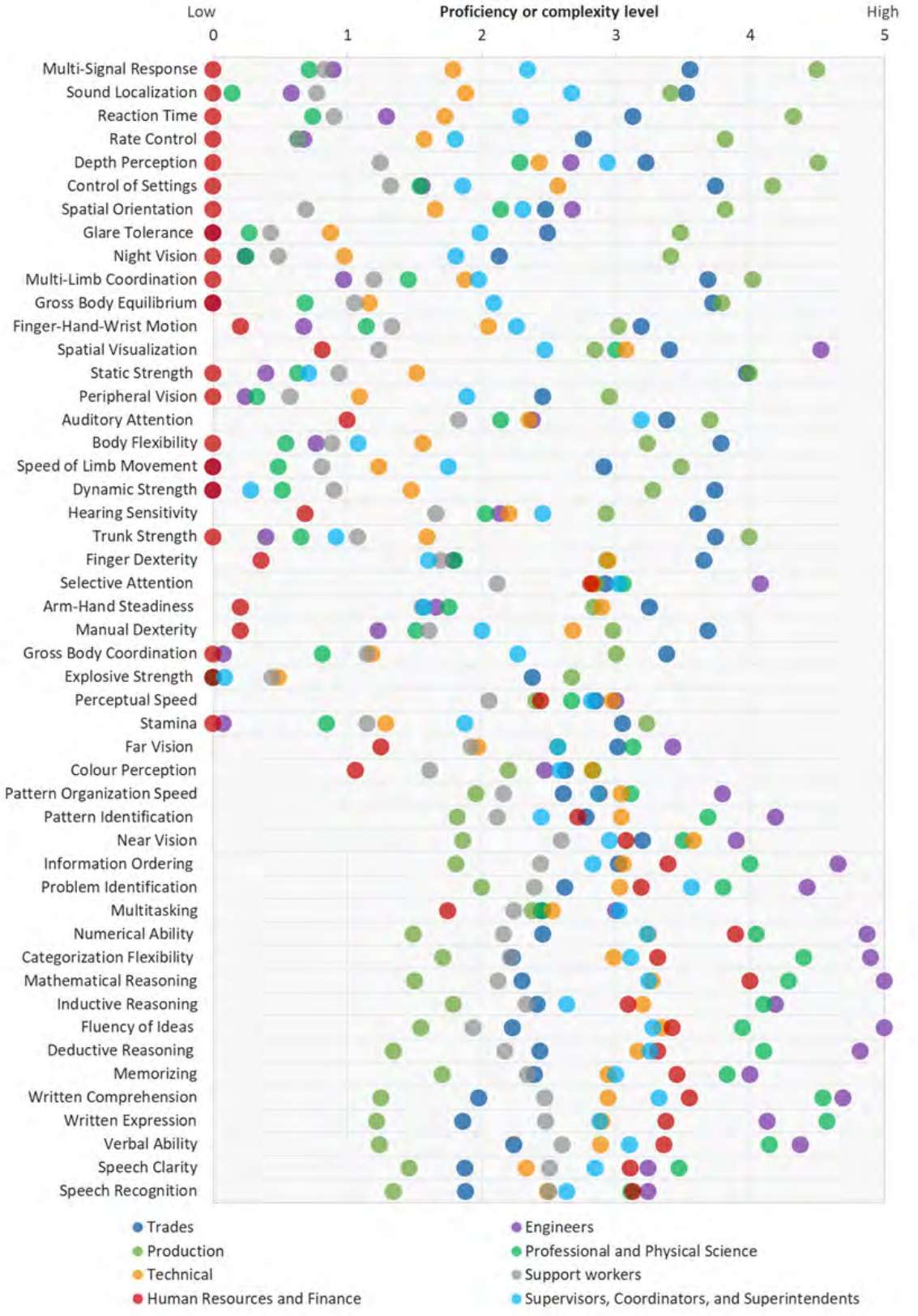
The OaSIS database evaluates the different workforce abilities used across occupations, rating the required level of proficiency on a scale of 0 to 5. Figures 41 and 42 show the average level required of workers in the Saskatchewan mining sector relative to the level required in other sectors, and across various occupational categories.

Figure 41: Average Ability Level Required, Saskatchewan's Mining Sector and Other Sectors (2021)



Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024; Employment and Social Development Canada, Occupational and Skills Information System (OaSIS), 2024; Statistics Canada, Census of Population, 2021.

Figure 42: Average Ability Level Required in Saskatchewan's Mining Sector by Broad Occupational Category (2021)



Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024; Employment and Social Development Canada, Occupational and Skills Information System (OaSIS), 2024; Statistics Canada, Census of Population, 2021.

Chapter 6: Next Steps and Path to Sustainability

This report has developed an analysis of Saskatchewan's mining labour market. The analysis opened with forecasts of labour demand and supply, which predicted emerging labour gaps for critical mining occupations. The focus then turned to five key factors that are impeding labour market sustainability in the mining sector.

This final chapter explores potential solutions to impending labour market pressures. Given that labour market issues are complex and multifaceted, the solutions to address the issues require a holistic approach, tapping into several ideas and practices from those in the field.

This concluding chapter offers recommendations focused on strengthening Saskatchewan's labour supply for the mining sector:

- Firstly, it leverages insights from MiHR's forecasting and analysis to identify opportunities for strategic approaches that would effectively address the needs of Saskatchewan's mining labour market.
- Secondly, it shares innovative solutions and success stories gathered from key informant interviews conducted with five Saskatchewan-based post-secondary institutions and training providers.

Using MiHR's Forecast Findings

In Chapter 3, this report investigated the growing labour market gap in Saskatchewan's mining sector. This analysis found that the mining sector will struggle to meet its labour demand with the Saskatchewan-based labour supply, increasing the share of out-of-province workers from 15% to 25% by 2034. This labour imbalance is a critical issue that mining employers will have to confront.

Furthermore, optimal solutions will vary by occupation. To minimize the rising cost of labour gaps, Saskatchewan's mining sector will require targeted strategies for each occupation that will yield the best return on investment.

Developing Two Scenarios for Labour Market Sustainability

MiHR has presented a baseline labour market forecast for several critical mining occupations. MiHR's model also has the capacity to create scenarios that gauge the relative impact of different strategies aimed at strengthening the mining labour market.

This report presents two scenarios, both aimed at achieving a workforce composed entirely of Saskatchewan-based workers by 2034.[18] One scenario focuses on competition with other sectors, while the other emphasizes labour force development. Under each scenario, the analysis evaluates the relative difficulty of attaining 100% Saskatchewan-based workers across various occupations.

Figure 43: Two Scenarios for Labour Market Sustainability

Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024.

18 This section introduces a sensitivity analysis, in which the main objective is to measure the potential response in the LMA model, under a given set of "what-if" assumptions. The analysis measures how one variable may impact the results of the analysis (in direction and scope) while keeping all other assumptions fixed. The objective of sensitivity analysis is not to predict the future; rather, it is a diagnostic to differentiate how distinct variables will have an impact within the LMA model.

Scenario 1: Competition Mode

This scenario is about reaching goals through competition with other sectors—in other words, Saskatchewan's mining sector takes a greater share of the occupational talent pool away from other sectors. This may involve tactics such as increasing wages, investing more in recruitment efforts, and intensifying advertising campaigns. Specifically, Scenario 1 answers the following question:

How large does mining's share of labour supply need to be such that 100% of workers are Saskatchewan-based?

Table 12 provides a measure of the degree of difficulty of meeting labour demand provincially through competition alone. For example, Welders only require +2% additional share compared to Supervisors with +27%. Therefore, recruitment alone is expected to be more difficult for Supervisors. Moreover, for Supervisors and Underground miners, the mining sector requires a share of the labour supply that is over 100%, highlighting the need for an alternative strategy for these occupations.

Table 12: Mining Sector's Share of Labour Supply and Employment Needed to Achieve 100% Saskatchewan-based Workers, Baseline Scenario (2034)

	Percentage			Value		
Occupation	Mining's Share of Labour Supply (%) (2034)	Mining's Share of Labour Supply (%) (Scenario)	Percentage Point Difference	Employed in Mining (2034)	Employed in Mining (Scenario)	Net Change
Underground miners	77%	104%	26%	1,569	2,099	530
Construction millwrights and mechanics	27%	36%	9%	839	1,124	285
Supervisors, mining and quarrying	81%	107%	27%	664	886	222
Heavy equipment operators	9%	12%	3%	600	808	208
Industrial electricians	34%	44%	10%	544	706	161
Heavy-duty equipment mechanics	9%	13%	3%	329	436	108
Welders and related machine operators	5%	7%	2%	317	423	106
Managers in natural resources	33%	44%	11%	285	381	97
Mine labourers	71%	94%	22%	307	404	97
Underground mine support workers	73%	97%	24%	261	345	84

Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024.

Figure 44 offers a visualization of Scenario 1 for critical mining occupations. Specifically, the graph illustrates: (1) The mining sector's baseline projected share of labour supply in 2034, (2) the share needed to maintain the status quo in 2023 and (3) the share needed to a reach 100% Saskatchewan-based workers in 2034.

Figure 44: Mining Sector's Share of Labour Supply Needed to Achieve Various Targets for Saskatchewan-based Workers (2034)

Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024.

Scenario 2: Collaboration Mode

This scenario is about reaching goals through collaboration with other sectors to grow the occupational labour supply, such that it can sustain the growth of all sectors. This involves labour force development, which means investing in career awareness, skills and training within the province to essentially "grow the whole pie" to levels that can support a competitive and sustainable labour pool that can accommodate the needs of all sectors.

For an employer, investing in labour force development may entail providing training to individuals who could potentially be hired by competitors. However, it is crucial to recognize that every individual hired by a competitor represents one less worker available for the competition to poach.

Scenario 2 answers the following question:

How large does the occupational labour supply need to be such that all workers are Saskatchewan-based?

Table 13 provides a measure of the degree of difficulty of meeting labour demand provincially through labour force development. For example, Mine labourers need only an additional +0.02% share of the Total Labour Pool, compared to Heavy equipment operators who require a share +0.32% larger. Based on this result, labour force development strategies are expected to be more effective for Mine labourers. Note that this does not consider the relative differences in education and training investments across occupations.

Table 13: Occupation's Share of Total Labour Pool and Labour Supply Needed to Achieve 100% Saskatchewan-based Workers, Baseline Scenario (2034)

	Percentage			Value		
Occupation	Occupation's Share of Total Labour Pool (%) (2034)	Occupation's Share of Total Labour Pool (%) (Scenario)	Percentage Point Difference	Labour Supply (2034)	Labour Supply (Scenario)	Net Change
Underground miners	0.29%	0.38%	0.10%	2,027	2,712	685
Construction millwrights and mechanics	0.44%	0.59%	0.15%	3,123	4,185	1,061
Supervisors, mining and quarrying	0.12%	0.16%	0.04%	824	1,099	275
Heavy equipment operators	0.91%	1.23%	0.32%	6,480	8,721	2,241
Industrial electricians	0.23%	0.29%	0.07%	1,597	2,069	472
Heavy-duty equipment mechanics	0.49%	0.65%	0.16%	3,486	4,625	1,139
Welders and related machine operators	0.82%	1.09%	0.27%	5,782	7,721	1,939
Managers in natural resources	0.12%	0.16%	0.04%	861	1,155	293
Mine labourers	0.06%	0.08%	0.02%	432	567	136
Underground mine support workers	0.05%	0.07%	0.02%	356	471	115

Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024.

Figure 45 offers a visualization of Scenario 2 for critical mining occupations. Specifically, the graph illustrates (1) each occupation's projected share of the total labour pool, (2) the share needed to maintain the current (2023) percentage of Saskatchewan-based workers and (3) the share needed to a reach 100% Saskatchewan-based workers in 2034.

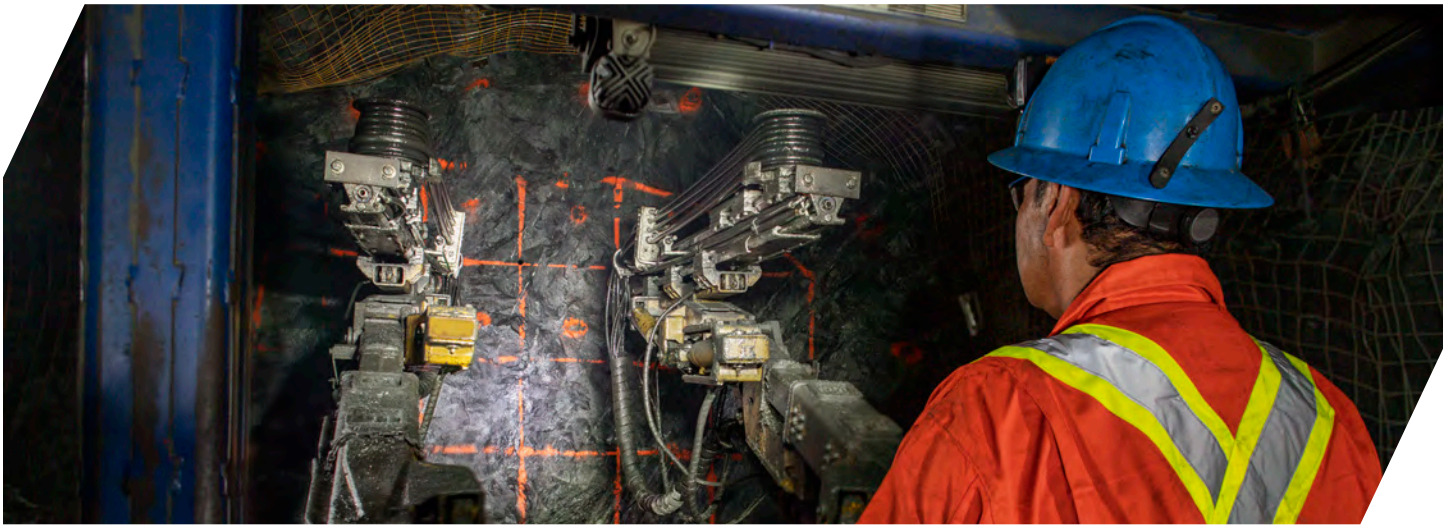
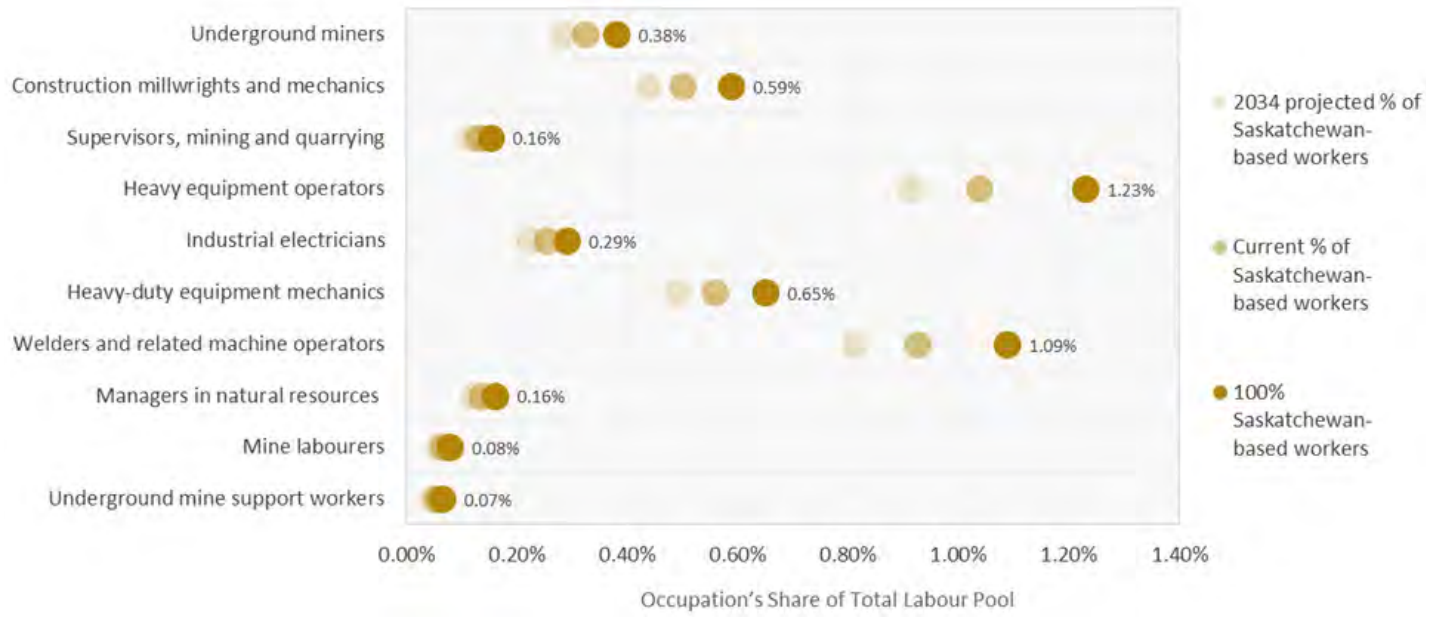


Figure 45: Occupation's Share of Total Labour Pool Needed to Achieve Various Targets for Saskatchewan-based Workers (2034)



Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024.

Insights from Key Informant Interviews

In the first quarter of 2024, MiHR conducted key informant interviews with various post-secondary institutions and training providers in Saskatchewan. These interviews served to explore how the province's post-secondary education (PSE) system has adapted its mining-related programs in response to a challenging labour market environment.

Each of these interviews revealed unique and innovative approaches, showcasing the diversity of strategies employed by Saskatchewan's educational institutions. Together, they present a set of approaches that can mitigate the burden of critical labour and skills shortages, akin to a Swiss-army knife of labour market tools.

Importantly, these success stories also present opportunities for knowledge-sharing and collaboration, with the potential to scale up effective practices and borrow innovative ideas across institutions.

I. Addressing Career Awareness Issues

A key finding from this report is that Saskatchewan's mining sector faces challenges with occupational choices and enrolment trends. Chapter 4 highlights that most people are not inclined to pursue post-secondary education programs that lead to careers in mining.

MiHR's 2023 report on the PSE pipeline for the mining sector[19] delves into these issues extensively. Through primary research with PSE stakeholders across Canada, the report identifies career awareness and interest in mining as significant barriers to enrolment in mining-related programs.

The report's findings highlight that lack of awareness and negative attitudes towards the mining sector often make mining programs the last choice for students. These unfavorable perceptions are formed early in a student's life and are heavily influenced by parents, teachers, and media portrayal of the sector.

19 Mining Industry Human Resources Council (MiHR). (2023). *From Classroom to Mine Site: A Review of Canada's Postsecondary Education Pipeline for the Mining Sector.*

University of Saskatchewan's RE-ENGINEERED Initiative

The University of Saskatchewan's (USask) Geological Engineering program offers an excellent example of how increasing exposure to mining content can have a dramatic impact on student interest and enrolment numbers.

Like other mining-related engineering disciplines across Canada, USask's geological engineering program is among the smaller programs, with only 1.25% of enrolments in 2021/2022. Furthermore, it has faced a shrinking number of students entering the program in recent years. From 2021 to 2024, the program was projected to graduate only 35 students.[20]

Reimagining the Experience for First-year Engineering Students

In 2021, USask restructured their engineering curriculum with the objective of creating "the most effective first-year program in Canada". The RE-ENGINEERED program introduces changes that break from the conventional model. Rather than having first-year students take regular three-credit courses, the program incorporates shorter and more varied course lengths and intensities, allowing for immediate application of knowledge across subjects. It also does away with exams and implements competency-based assessments (CBA) instead of traditional grading methods.

The most notable change is the introduction of a mandatory "lab experience" during the last week of December, encompassing five different engineering disciplines. Throughout the week, students engage in lectures and hands-on labs focusing on a different discipline each day.

This initiative aims to provide students with practical experience across a variety of engineering fields. Senior undergraduate students and alumni are invited to share their experiences in both academia and industry, adding depth and insight to the curriculum. The program's effectiveness is evident as students are captivated by visual presentations and inspired by firsthand accounts from those who have benefitted from the program in the past.

Enrolment Bump in Geological Engineering

Since the introduction of RE-ENGINEERED, USask's geological engineering program has become a more competitive program offering. By simply providing better exposure to the program for first-year students, second-year geological engineering specializations surged to 20 enrolments in 2022 followed by 37 enrolments in both 2023 and 2024. In fact, the program reached full capacity in 2023 and had to increase its enrolment limit to accommodate the uptick in popularity.

Feedback from students following the lab experience has been overwhelmingly positive. As one student aptly stated, "I had not been considering geological engineering before, but I am now."

Increasing Exposure to Mining-related Programs

Overall, many students lack a clear understanding of what geological engineering entails. At USask, program representatives were previously only allotted 30 minutes to explain the discipline, primarily focusing on defining it and highlighting its distinctions from geology. However, there was insufficient time to expose students to the actual material.

Notably, during the lab experience, students learn that the geological engineering program benefits from strong industry support, which includes cooperative internships lasting from 4 to 16 months. This point is frequently emphasized by both student and industry speakers, helping to draw more students into the program.

While RE-ENGINEERED was not solely intended to benefit geological engineering, the discipline stood to gain significantly from the increased visibility

20 According to USask administrators, the program graduated 10 students in 2021, 6 students in 2022, 11 students in 2023, and was projected to graduate 8 students in 2024.

compared to the more established and popular engineering programs. Thanks to this increased visibility, and the dynamic and engaging presentations and hands-on activities delivered during the lab experience, geological engineering managed to capture a larger share of student interest.

Saskatchewan Polytechnic

Saskatchewan Polytechnic (Sask Polytech) plays a crucial role in supporting the mining industry through its industry-aligned programs and collaborative partnerships. Its programs provide a strong focus on applied learning and hands-on experience in specialized areas such as mining engineering technology, geological sciences and environmental protection.

Shortage of Applicants

The shortage of skilled workers in specialized fields, such as welders, industrial mechanics and machinists, has become more pronounced in the wake of the COVID-19 pandemic.

At the same time there is a shortage of applicants, particularly with domestic applications, with an increasing number of young people choosing to leave the province in recent decades. In response to the urgent need for labour, some companies are turning to current students to fill vacancies. While Sask Polytech does not plan to offer co-op programs until 2025 or 2026,[21] administrators have noted that many students are putting their studies on hold to go to pursue internships or summer jobs in the industry, which is unprecedented.

Expanding the Talent Reach

Sask Polytech has responded to labour market challenges by broadening their candidate pool through various approaches.

a **Looking to International Students**
This has involved embracing international students into select programming areas. Sask Polytech notes that education is becoming a global market. A decade ago, the institution relied heavily on local students attending their programs, but with a decline in domestic enrolment, they have turned to international students to fill the gap.

b **Utilizing AR/VR**
The COVID-19 pandemic accelerated the adoption of augmented reality and virtual reality (AR/VR) technology— during the lockdowns it was not feasible to bring students to the sites. This forced Sask Polytech to be more adaptable and embrace new ways of engaging students and prospective employees.

The institution has capitalized on the use of AR/VR to promote interest in mining programs. Through these tools, students with no prior exposure to the mining industry can now experience what these jobs entail firsthand. This shift represents a move away from the traditional approach of bringing individuals to the mine sites for training, instead bringing the mining experience directly to them.

Incorporating more AR/VR "provides a more realistic experience to the students and gets them in front of more technologically advanced equipment […] instrumentation changes rapidly and AR/VR helps keep up with the changes."

This technology can also be applied to attract underrepresented groups such as women, who the industry has especially struggled to recruit. Not only can these tools be used to engage post-secondary candidates, but also to promote awareness to youth in the K-12 system.

c **Emphasizing Employment Prospects**
Additionally, Sask Polytech has adjusted its messaging to place a larger emphasis on what students will be employed as in the workplace, rather than solely emphasizing on the curriculum, recognizing that this is a key

21 Sask Polytech is adding Co-operative Education Work Terms to the Mining Engineering Tech program.

concern for prospective students.

Embracing Adaptability

The key takeaway for the mining sector is that the shifting landscape of post-secondary education will require innovative strategies. Sask Polytech's solutions are a response to the decline in enrolment over the past decade, particularly in engineering tech programs. By leveraging international students, utilizing AR/VR technology to showcase mining careers, and highlighting employment prospects and career pathways, Sask Polytech aims to attract a broader student base and meet the evolving needs of the labour market.

II. Creating Opportunities by Removing Barriers to Careers in Mining

For many prospective career seekers, simply getting a foot in the door represents a significant barrier to a potential career in mining. Conventional hiring evaluations often overlook and discount valuable qualities that candidates possess. Consequently, to tackle labour shortages, it is practical and advantageous to reconsider candidates who may be undervalued due to their lack of direct mining experience.

Furthermore, individuals often view changing careers as risky. Many cannot afford interruptions to their income as they make career transitions. These barriers are significant enough that people are more likely to remain in their current employment situation rather than embark on a new career.

Morris Interactive

Founded in 2003, Morris Interactive is an award-winning consulting firm that has been working with organizations to develop their people and their businesses. Morris Interactive believes their people and their relationships are what drive business growth and success.

They collaborate with clients of all sizes across multiple industries including agriculture, mining, oil and gas, construction, education, financial services, software, public sector, and healthcare, as well as with over 210 Indigenous and Métis organizations.

Morris Interactive provides support for Indigenous peoples seeking to transition into the mining sector through their Digital Transformation in Potash Mining program delivered in partnership with The Mosaic Company. They offer an Indigenous pre-employment program tailored to potash mining, designed to bridge the gap for individuals interested in opportunities within the mining sector.

Reducing Barriers to Employment in the Mining Sector

Through an innovative approach, Morris Interactive has created opportunities by removing barriers for individuals interested in pursuing careers in the mining sector.

a **Finding Undervalued Talent**
They actively seek talent from industries not traditionally associated with mining, such as the service and restaurant industry. Many individuals who work in the service industry possess strong interpersonal skills and are adept at working collaboratively in teams, qualities that translate well to mining roles.

Recognizing the transferable skills and potential in these individuals, Morris Interactive introduces them to the mining sector and connects them with suitable job opportunities. By facilitating this connection, individuals who may have been overlooked for various reasons are provided with opportunities for employment in the mining sector.

b **Reducing Application Barriers**
Morris Interactive also seeks to minimize friction in the application stage that would otherwise dissuade candidates from continuing

with the process. Their simplified application process takes only five minutes and does not require a resume.

c **Providing Income Assistance**
For many candidates, participating in training programs may require missing work and foregoing income, which can be an insurmountable barrier for many individuals. Morris Interactive seeks funding opportunities to provide income assistance so that participants can securely take the necessary steps to improve their skills with additional course work and training. Additionally, they provide daily breakfast and lunch—one less concern for participants to worry about.

d **Accelerating the Path to Employment**
Recognizing the importance of a smooth transition, Morris Interactive prioritizes minimizing the time between program completion and employment to ensure participants can provide for their families. The longer this transition period takes, the more difficult it becomes to foster the connection with mining employers, and the more likely candidates will return to their previous careers.

The program often directs candidates to entry-level positions, such as operators, as these roles offer immediate good pay. The goal is to assist candidates in establishing a foothold, enabling them to progress through the ranks once they secure employment in the mining sector.

Connecting New People with the Mining Sector

Morris Interactive has been able to connect the mining sector with new candidates, many of whom never would have imagined a mining career was possible. Its training and recruitment program has been a positive success story on several fronts.

Firstly, the program has successfully leveraged the skills and abilities of individuals from unconventional sectors, presenting a replicable and scalable strategy for the future. Secondly, several candidates who initially entered entry-level mining positions through the program have progressed to supervisory roles, demonstrating this program can lead to long and prosperous careers. Lastly, the program's partner, The Mosaic Company, boasts an exceptional retention rate of candidates from the program. This has significantly contributed to an improved organizational culture for Morris Interactive, especially as their backgrounds emphasize problem-solving through interpersonal skills and teamwork.

Helping Candidates Get a Foot in the Door

The key lesson for the mining sector is that 'when people get a foot in the door, more opportunities will come.' Morris Interactive's innovative approach underscores the untapped potential of many individuals who simply need an opportunity. Their program achieves this by reducing critical friction points on their journey to becoming productive mining employees. Through their example, Morris Interactive provides a blueprint for the mining sector to address critical labour shortages and gain a competitive edge.

III. Prioritizing Student Support to Boost Retention

For many students, post-secondary education can be a transformative and positive experience. It can also be difficult for some. Those who struggle in the early stages of their studies are more likely to lose motivation and face a higher risk of dropping out altogether, particularly without a strong support system to guide them.

Therefore, it is critical to understand who is vulnerable so that support interventions are effective at keeping students engaged in their programs. Conventionally, post-secondary education institutions provide minimal check-ins after students are admitted.

In the face of labour pressures, the mining sector cannot afford to lose students in relevant programs,

particularly if proactive support could have mitigated attrition for those vulnerable to leaving their studies.

The Saskatchewan Apprenticeship and Trade Certification Commission

The Saskatchewan Apprenticeship and Trade Certification Commission (SATCC) oversees the province's apprenticeship and trade certification system, focusing on apprentice training, tradesperson certification, system regulation, and promoting apprenticeship in the province. Unlike other educational institutions, SATCC does not directly train apprentices on-site but relies on employers, institutional partners and skilled journeyperson mentors to provide practical and theoretical training.

Supporting Students through their Academic Journey

SATCC's program emphasizes supporting students so that they are more likely to complete their programs and enter the workforce with confidence and momentum.

a Discovering the Best Trade Program for each Student

SATCC highlights a major awareness gap among incoming students regarding available trades programs: "Many students believe there are only four trades—plumber, carpenter, electrician, and mechanic—when in fact, there are 46 trades programs available."

This can result in students occasionally finding themselves in the wrong trade. SATCC noted that, while many students have a keen interest in the trades, choosing the wrong trade can lead to disengagement. Some students who drop off within the first six months may well have continued with their studies if they had been guided into the right specialization.

To address this issue in part, the SATCC is undertaking a follow up with pre-apprenticeship students who do not pursue a trade after graduation from the program. This is an opportunity to explore why they did not pursue the trade as their career choice and perhaps determine if another trade my be better suited for them.

b Supporting Students through Program Completion

Students who are at high risk of dropping out can benefit greatly from support and guidance during critical stages in their studies. SATCC has observed that students who are unsuccessful, or marginally achieve a passing grade of 70%, are more likely to drop out before completing their apprenticeship. If students struggle to achieve this passing grade, they may also face challenges during their journey towards obtaining their certification.

Consequently, SATCC offers support to students who need it the most by closely monitoring key identifiers, such as recognizing struggling apprentices and intervening early in the cycle. They also provide training oversight to ensure that students receive the appropriate on-the-job training or acknowledge gaps in the on-the job component so an apprentice can focus on that area in technical training. The goal is to guide students through to completion so that their momentum carries into the labour market.

c Providing In-Nation Training

SATCC recognizes the need for specialized support in Indigenous communities, such as the successful In-Nation training model in Northern regions, which allows students to train and work locally.

Students who progress together in a group environment experience greater success in their programs, stemming from the support they receive from their peers. In SATCC programs, this support is facilitated through structured group activities, such as students being picked up in a van at consistent times, learning together, bonding with each other, and having a support

network that promotes accountability.

While In-Nation Training is ideal for Northern communities, challenges like facility limitations, costs, and demand can make it unfeasible at times.

Improving Retention Rates among Students

SATCC's approach prioritizes comprehensive support for students throughout their educational journey, from selecting the right program to staying engaged until completion. This strategy has effectively enhanced retention rates, particularly among those at risk of early dropout. For the mining sector, greater student retention, especially among those with a preexisting interest in the trades, also contributes to a stronger retention in the labour market.

Losing Fewer Students to Program Attrition

Given that mining and trades programs attract relatively few students, it becomes crucial to support each student effectively and set them up for success. Thus, SATCC's example demonstrates the importance of offering additional support beyond what conventional PSE programs typically provide, addressing students' specific needs such as selecting the right trade specialization or providing assistance during academic challenges. This approach can result in a stronger labour market and enhance economic outcomes for students.

IV. Repairing Relationships with Indigenous Communities

Given their active involvement in the industry, there is a significant opportunity for Indigenous peoples to benefit economically, and at the same time, help address labour shortages. However, historical injustices have led to lingering trust issues within these communities.

While many Indigenous individuals and businesses are engaged in mining sector opportunities, they rightfully seek partnerships that are mutually beneficial rather than one-sided arrangements that may not benefit them proportionally. Establishing partnerships that satisfy all parties involved requires open dialogue and the willingness to engage in uncomfortable conversations.

Efforts towards reconciliation entail strong relationships with Indigenous-owned businesses, bringing their valuable expertise and connections to the table while also ensuring that Indigenous communities have a direct stake in the economic prosperity derived from mining activities. This approach allows for the empowerment of Indigenous entrepreneurs and the promotion of economic self-sufficiency, which are fundamental aspects of reconciliation.

Saskatchewan Indian Institute of Technologies (SIIT)

Established in 1976 by the Chiefs of Saskatchewan, SIIT is one of four credit-granting post-secondary institutions in the province. As the only Indigenous credit-granting institution in Saskatchewan, SIIT's core mission is dedicated to serving the province's 74 First Nations.

SIIT provides a comprehensive array of programs and services tailored to meet the needs of its student population, over 90% of whom are Indigenous. These offerings include Adult Basic Education, Business & Technology, Health & Community Studies and Trades & Industrial programs. SIIT extends its support and services to over 2,500 First Nations students across the province.

SIIT creates work-ready achievers and role models through student-focused programs in an Indigenous learning environment. With a network of campuses, training centers, and community sites, SIIT collaborates with stakeholders to advance post-secondary education and skill development for Indigenous peoples.

Connecting Indigenous Students to Mining Opportunities

SIIT's strength lies in its ability to provide appropriate training to Indigenous communities through its

industry connections and understanding of how to maximize the potential of its students.

a **Understanding Indigenous Student Needs**
SIIT has a first-hand understanding of Indigenous perspectives on the mining sector, having heard from communities that "there is no point in training for the sake of training." In response, the institution prioritizes positive employment outcomes for its students.

SIIT's training is geared toward what Indigenous students need to secure employment right away. Programs focus on awareness of how mining works, essential life skills, communication, mathematics, as well as health and safety. Remarkably, within just twelve weeks, students can secure placements with employers, often leading to immediate employment. This swift transition underscores the effectiveness of SIIT's approach and the significant opportunities it offers in the mining industry.

b **Finding the Right Fit for each Student**
The recruitment process for SIIT students involves personalized case management for each individual. Students undertake an assessment that measures their potential interest and skills alignment with different career paths (carpentry, miner, etc.). Additionally, administrators take the time to get to know each student personally, understanding their employment journey, future goals, and readiness for mining-related work, including pre-access requirements, driver's licence and transportation needs.

SIIT considers case management a key part of both their success and that of students, emphasizing the importance of establishing a personal relationship.

Strong Indigenous Uptake and Success

With its Indigenous-led approach to training, SIIT has achieved an impressive return on investment in its programs, with approximately 98% of graduates remaining within the province after completing their studies. Additionally, SIIT maintains exceptionally high rates of student satisfaction and nearly 50 years has built an outstanding reputation within communities. The institution is widely trusted and recognized, benefiting from strong community ties— many individuals have family members who have previously enrolled in SIIT programs. Past graduates have shown a willingness to endorse and recommend SIIT to others, further enhancing its reputation and impact.

Building Meaningful Indigenous Partnerships

For the mining sector, a successful partnership with Indigenous peoples extends beyond employment opportunities. It requires fostering relationships where Indigenous groups feel included as valued stakeholders. Building trust through meaningful and quality partnerships is essential. As Indigenous representatives emphasize, "we are a band of people, not a corporation," and they seek genuine engagement.

One significant challenge in improving these relationships is addressing the perception of unfulfilled promises related to First Nation treaties. This perception has created a lack of trust, making it vital to establish authentic and respectful partnerships. Indigenous representatives want to ensure that companies are not simply "checking a box" but are genuinely committed to positive change.

Mining companies alone cannot resolve these longstanding issues. They need the support of Indigenous-led organizations to bridge the divide. SIIT exemplifies an Indigenous-led organization making a substantial impact in fostering these crucial relationships.

Appendices

Appendix A: Labour Demand Methodology and Supplementary Tables

Methodology

Central to MiHR's analysis of the mining labour market is a time-series forecast of the mining sector's employment over a 10-year time horizon. MiHR developed the following three economic scenarios for employment projections to capture the sector's underlying volatility relative to changes in economic conditions:

1. **Baseline scenario:** The mean forecasted values serve as the baseline benchmark for MiHR's labour demand forecast. The forecast considers Saskatchewan's historic employment trend in *Mining and Quarrying (NAICS 212)* since 2006[22] and the impact on employment of key predictive variables such as World Bank energy prices (i.e., natural gas, crude oil and coal), which is a strong indicator of the sector's vitality. Future values of indicators were based on consensus estimates from reliable sources. For instance, World Bank's latest projected prices were used, anticipating prices will stabilize at a higher price scheme compared to pre-pandemic levels.[23] MiHR's baseline employment projection reflects this price outlook.
2. **Expansionary scenario:** MiHR's expansionary scenario is estimated from the *upper bound 95% prediction interval*, relative to the baseline benchmark forecasted values. A prediction interval is the estimated interval within which the forecasted value is expected to fall, given a margin of error. This scenario captures the possibility of an alternative environment where future employment levels trend upward (relative to the baseline benchmark) due to, for instance, energy prices being lower than World Bank's projected estimates.
3. **Contractionary scenario:** MiHR's contractionary scenario is estimated from the *lower bound 95% prediction interval*, relative to the baseline benchmark forecasted values. This scenario poses a contrarian scenario to the expansionary whereby future employment levels trend downwards (relative to the baseline benchmark) due to, for example, energy prices following an even higher price regime.

MiHR's forecast implicitly assumes that the future will somewhat resemble the past. While the different scenarios capture some inherent uncertainties, there are still limitations to projections. The model does not account for unexpected or unpredictable events (i.e., exogenous shocks) that may occur during the time horizon analyzed.

22 Statistics Canada. (2023). *Labour statistics consistent with the System of National Accounts (SNA).* Table: 36-10-0489-01.
23 World Bank. (2023). Commodity Markets Outlook.

Table A1: Current (2023) and Forecasted (2034) Labour Demand for 10 Additional Critical Occupations in Saskatchewan's Mining Sector, Baseline Scenario

Occupation	Labour Demand (2023)	Labour Demand (2034)	Net Change
All Occupations	**11,043**	**14,892**	**3,849 (35%)**
Geological technologists and technicians	225	303	78
Mechanical engineers	160	216	56
Mining engineers	159	214	55
Central control and process operators	137	184	48
Industrial instrument technicians and mechanics	139	188	48
Geoscientists and oceanographers	131	176	46
Machine operators, mineral and metal processing	124	167	43
Power engineers and power systems operators	147	198	51
Civil engineers	66	88	23
Supervisors, mineral and metal processing	60	81	21

Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024.

Table A2: Forecasted Labour Demand for 10 Additional Critical Occupations in Saskatchewan's Mining Sector, Three Economic Growth Scenarios (2034)

Occupation	Contractionary Labour Demand (2034)	Baseline Labour Demand (2034)	Expansionary Labour Demand (2034)
All Occupations	**11,578**	**14,892**	**18,207**
Geological technologists and technicians	236	303	371
Mechanical engineers	168	216	265
Mining engineers	166	214	262
Central control and process operators	143	184	225
Industrial instrument technicians and mechanics	146	188	229
Geoscientists and oceanographers	137	176	215
Machine operators, mineral and metal processing	130	167	205
Power engineers and power systems operators	154	198	242
Civil engineers	69	88	108
Supervisors, mineral and metal processing	63	81	100

Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024.

Table A3: Saskatchewan MOVI Scores for the 10 Most Prevalent Occupations and 10 Additional Critical Occupations in Saskatchewan's Mining Sector

Occupation	Labour Demand (2034)	MOVI Score	Scope of Technological Disruption	Incentives for Adoption	Absence of Regulatory & Contractual Constraints	Difficulty of Skills Transferability	Limited Labour Mobility
Underground miners	2,099	0.78	0.67	1.00	0.64	1.00	0.66
Construction millwrights and mechanics	1,124	0.53	0.63	0.72	0.51	0.15	0.40
Supervisors, mining and quarrying	886	0.54	0.17	0.58	0.77	0.90	0.64
Heavy equipment operators	808	0.75	0.89	0.86	0.49	0.52	0.71
Industrial electricians	706	0.44	0.15	0.72	0.52	0.54	0.40
Heavy-duty equipment mechanics	436	0.55	0.67	0.71	0.55	0.15	0.44
Welders and related machine operators	423	0.65	0.94	0.80	0.53	0.37	0.35
Managers in natural resources	381	0.42	0.36	0.38	0.86	0.76	0.18
Mine labourers	404	0.71	0.37	0.85	0.56	0.81	1.00
Underground mine support workers	345	0.67	0.37	0.76	0.69	0.91	0.79
Geological technologists and technicians	303	0.64	0.91	0.60	0.63	0.46	0.46
Mechanical engineers	216	0.27	0.01	0.28	0.82	0.32	0.30
Mining engineers	214	0.41	0.14	0.44	0.74	0.53	0.46
Central control and process operators	184	0.53	0.62	0.52	0.49	0.61	0.40
Industrial instrument technicians and mechanics	188	0.43	0.67	0.23	0.70	0.00	0.43
Geoscientists and oceanographers	176	0.49	0.63	0.40	0.83	0.32	0.33
Machine operators, mineral and metal processing	167	0.67	0.88	0.61	0.56	0.61	0.55
Power engineers and power systems operators	198	0.54	0.90	0.36	0.61	0.19	0.45
Civil Engineers	88	0.33	0.02	0.52	0.81	0.32	0.29
Supervisors, mineral and metal processing	81	0.24	0.02	0.18	0.50	0.39	0.36

Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024.

Appendix B: Labour Supply Methodology and Supplementary Tables

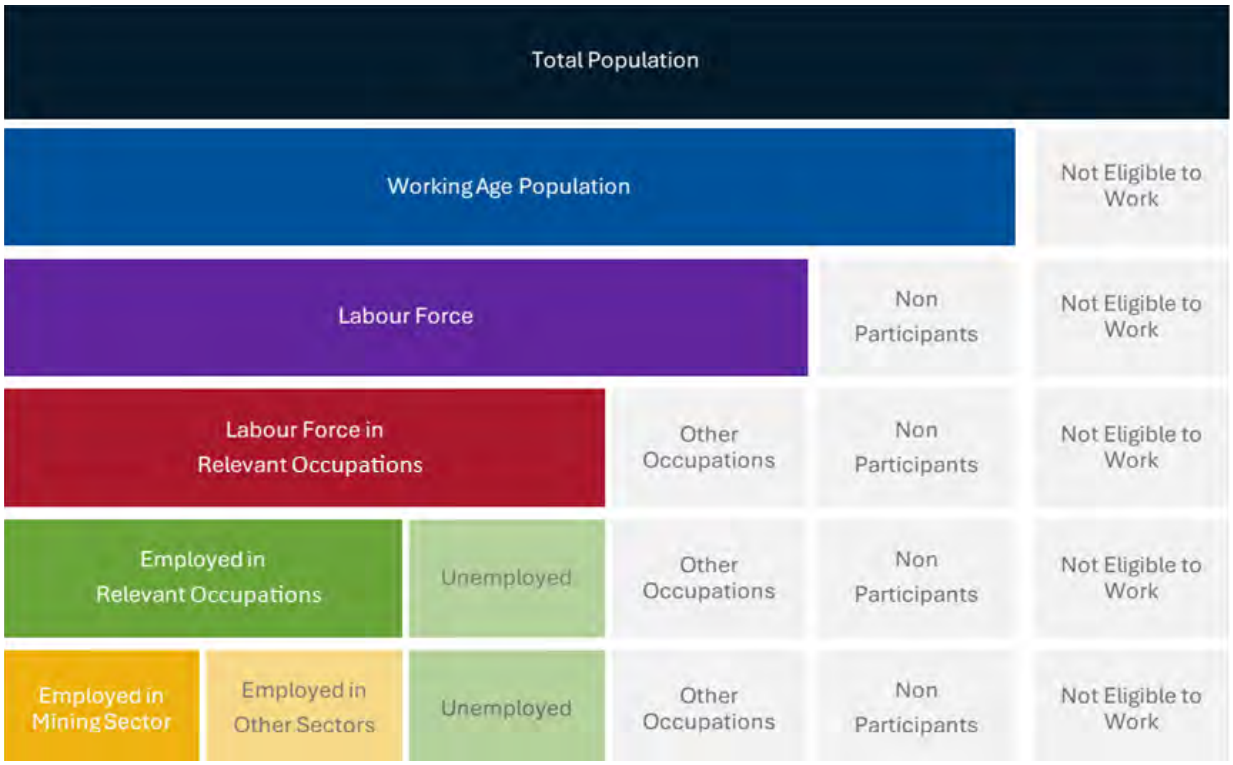
Methodology

The Labour Market Analysis (LMA) framework is MiHR's analytical model to understand how well the future labour supply can sufficiently sustain future labour demand in the mining sector. The LMA framework considers the entire population of Saskatchewan as a base, and rather than decisively excluding anyone from the potential labour pool, the framework selectively sorts individuals according to their "degree of attachment" to the mining sector's relevant labour supply.

Figure B1 deconstructs the complexity of the labour supply through successive levels of inquiry. As the analysis drills down layer by layer, a more detailed picture of the labour supply emerges.

Additionally, Table B1 provides descriptions of the six layers and the forecasting methodology of the key assumptions underpinning each layer.

Figure B1: MiHR's Labour Market Analysis Framework



Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024.

Table B1: MiHR's Labour Market Analysis Methodology and Key Assumptions

LMA Levels and Descriptions	Key Variable and Methodology	Assumptions Projected Year (2024 – 2034)
Total Population Overall population of Saskatchewan	**Total population annual growth rate** Based on Statistics Canada's population forecast.[24]	**1.3%** average annual growth rate
Working Age Population Population of Saskatchewan aged 15 and over	**Total working age population annual growth rate** Based on Statistics Canada's population forecast.[25]	**1.5%** average annual growth rate
Labour Force Working population of Saskatchewan potentially available for employment (including employed and unemployed job seekers)	**Labour force participation rate** Based on historic trend since 2014 from Statistics Canada's Labour Force Survey and Census of Population.	**67.1%** of working age population each year
Labour Force in Relevant Occupations Working population of Saskatchewan employed or looking for employment in relevant occupations (i.e., 10 most prevalent or critical occupations)	**Share of labour force for the 10 most prevalent occupations** Based on historic trend from Statistics Canada's Census of Population 2016 and 2021.	**3.5%** of labour force each year[26]
Employed and Unemployed in Relevant Occupations Labour force divided into those who are employed and unemployed (i.e., actively looking for work) in relevant occupations	**Average unemployment rate for the 10 most prevalent occupations** Based on historic trend from Statistics Canada's Census of Population 2016 and 2021.	**8.2%** of labour force each year[27]
Employed in Mining and Other Sectors Employed workers divided into those who are employed by the mining sector in Saskatchewan and all other sectors	**Mining's share of overall labour supply** Based on historic trend from Statistics Canada's Census of Population 2016 and 2021.	**1.6%** of labour force each year

Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024.

24,25 Statistics Canada. (2023). *Projected population, by projection scenario, age and sex.* Table: 17-10-0057-01.

26 Share of labour force in the 10 additional critical occupation is 1.2%.

27 Average unemployment rate in 10 additional critical occupation is 6.1%.

Table B2: Current (2023) and Forecasted (2034) Labour Supply for 10 Additional Critical Occupations in Saskatchewan's Mining Sector

Occupation	Labour Supply (2023)	Labour Supply (2034)	Net Change
All Occupations	**597,494**	**708,453**	**110,959 (19%)**
Geological technologists and technicians	416	493	77
Mechanical engineers	1,015	1,203	188
Mining engineers	203	240	38
Central control and process operators	172	204	32
Industrial instrument technicians and mechanics	557	661	104
Geoscientists and oceanographers	431	511	80
Machine operators, mineral and metal processing	244	289	45
Power engineers and power systems operators	2,064	2,447	383
Civil engineers	1,637	1,941	304
Supervisors, mineral and metal processing	187	222	35

Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024.

Table B3: Employment Expectations for Saskatchewan-based Workers in Mining (2034)

Occupation	Labour Supply (2034)	Mining's Share of Labour Supply (%) (2034)	Employed in Mining (2034)
All Occupations	**708,453**	**2%**	**11,131**
Geological technologists and technicians	493	46%	227
Mechanical engineers	1,203	13%	158
Mining engineers	240	67%	161
Central control and process operators	204	65%	134
Industrial instrument technicians and mechanics	661	21%	140
Geoscientists and oceanographers	511	26%	132
Machine operators, mineral and metal processing	289	44%	126
Power engineers and power systems operators	2,447	7%	165
Civil engineers	1,941	3%	63
Supervisors, mineral and metal processing	222	29%	64

Note: Employed in Mining = Labour Supply x Mining's Share of Labour Supply. Any discrepancies in calculation are due to rounding.
Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024.

Appendix C: Labour Market Gaps Supplementary Materials

Figure C1: Current (2023) and Forecasted (2034) Labour Gap for 10 Additional Critical Occupations in Saskatchewan's Mining Sector, Baseline Scenario

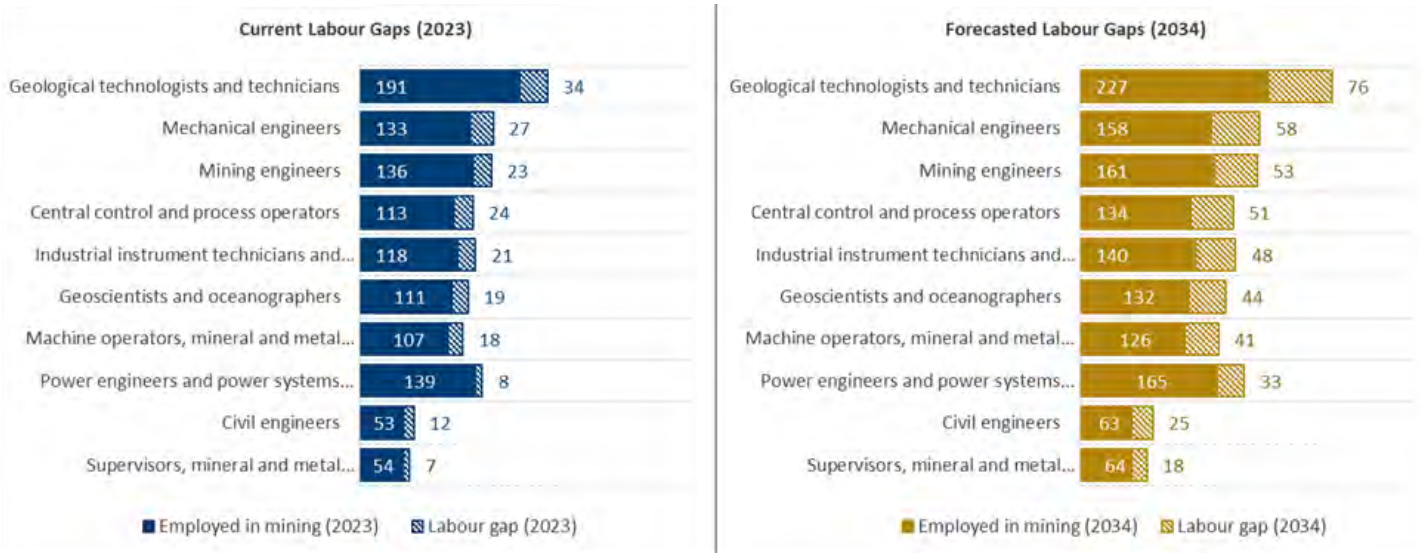


Table C1: Current (2023) and Forecasted (2034) Labour Gap for 10 Additional Critical Occupations in Saskatchewan's Mining Sector, Baseline Scenario

Occupation	Employed in Mining (2023)	Labour Demand (2023)	Labour Gap (2023)	Employed in Mining (2034)	Labour Demand (2034)	Labour Gap (2034)
All Occupations	**9,387**	**11,043**	**1,656**	**11,131**	**14,892**	**3,761**
Geological technologists and technicians	191	225	34	227	303	76
Mechanical engineers	133	160	27	158	216	58
Mining engineers	136	159	23	161	214	53
Central control and process operators	113	137	24	134	184	51
Industrial instrument technicians and mechanics	118	139	21	140	188	48
Geoscientists and oceanographers	111	131	19	132	176	44
Machine operators, mineral and metal processing	107	124	18	126	167	41
Power engineers and power systems operators	139	147	8	165	198	33
Civil engineers	53	66	12	63	88	25
Supervisors, mineral and metal processing	54	60	7	64	81	18

Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024.

Table C2: Forecasted Labour Gap for 10 Additional Critical Occupations in Saskatchewan's Mining Sector, Three Economic Growth Scenarios (2034)

Occupation	Contractionary Labour Gap (2034)	Baseline Labour Gap (2034)	Expansionary Labour Gap (2034)
All Occupations	**447**	**3,761**	**7,076**
Geological technologists and technicians	9	76	144
Mechanical engineers	10	58	106
Mining engineers	5	53	100
Central control and process operators	10	51	92
Industrial instrument technicians and mechanics	6	48	89
Geoscientists and oceanographers	5	44	83
Machine operators, mineral and metal processing	4	41	78
Power engineers and power systems operators	0	33	77
Civil engineers	5	25	45
Supervisors, mineral and metal processing	0	18	36

Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024.

Table C3: Forecasted Cumulative Hiring Requirement for 10 Additional Critical Occupations in Saskatchewan's Mining Sector, Three Economic Growth Scenarios (2024 – 2034)

Occupation	Contractionary Cumulative Hiring Requirements	Baseline Cumulative Hiring Requirements	Expansionary Cumulative Hiring Requirements
All Occupations	**10,559**	**15,631**	**20,704**
Geological technologists and technicians	215	318	421
Mechanical engineers	153	227	301
Mining engineers	152	225	297
Central control and process operators	131	193	256
Industrial instrument technicians and mechanics	133	197	261
Geoscientists and oceanographers	125	185	245
Machine operators, mineral and metal processing	119	176	233
Power engineers and power systems operators	140	208	275
Civil engineers	63	93	123
Supervisors, mineral and metal processing	58	85	113

Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024.

Table C4: Forecasted Cumulative Inflows and Outflows for 10 Additional Critical Occupations in Saskatchewan's Mining Sector, Baseline Scenario (2024 – 2034)

Occupation	Cumulative Net Change in Labour Demand	Cumulative Exits	Cumulative Hiring Requirements	Cumulative Saskatchewan Entries	Cumulative Workforce Deficit
All Occupations	**3,849**	**11,782**	**15,631**	**11,075**	**4,556**
Geological technologists and technicians	78	240	318	226	93
Mechanical engineers	56	171	227	157	70
Mining engineers	55	169	225	161	64
Central control and process operators	48	146	193	133	60
Industrial instrument technicians and mechanics	48	148	197	139	58
Geoscientists and oceanographers	46	139	185	131	53
Machine operators, mineral and metal processing	43	132	176	126	50
Power engineers and power systems operators	51	157	208	164	44
Civil engineers	23	70	93	63	30
Supervisors, mineral and metal processing	21	64	85	63	22

Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024.

Appendix D: National Occupational Classification (NOC) Title and Broad Occupational Categories Definitions and Examples

All occupational data presented in this report is aligned with Statistics Canada's National Occupational Classification (NOC) system. It is important to note that occupational data following the NOC standard may not perfectly align with industry's defined job roles. For example, 'mill operators' fall within Central control and process operators, mineral and metal processing (93100) but could also be included in other NOCs such as Machine operators, mineral and metal processing (94100), Mine labourers (85110), or even Supervisors, mineral and metal processing (92010), depending on the roles and responsibilities.

Table D1 provides definitions and a few examples of job titles for the occupations analyzed (refer to the occupation link for more information on job descriptions, roles and responsibilities, and exclusions).

Table D2 provides definitions for MiHR's broad occupational categories and examples of NOCs that fall under each.

Table D1: Definitions and Job Title Examples for the 10 Most Prevalent and 10 Additional Critical Occupations in Saskatchewan's Mining Sector

NOC Title and Description	Job Title Examples
83100 – Underground production and development miners Drill, blast, operate mining machinery, and perform related duties to extract coal and ore in underground mines and to construct tunnels, passageways and shafts to facilitate mining operations. Apprentices are also included.	blaster- underground mining; drift miner; driller- underground mining; hardrock miner apprentice; hoist operator- underground mining miner
72400 – Construction millwrights and industrial mechanics Install, maintain, troubleshoot, overhaul and repair stationary industrial machinery and mechanical equipment. Apprentices are also included.	construction millwright; industrial mechanic; maintenance millwright millwright; millwright apprentice open-end technician; plant equipment mechanic
82020 – Supervisors, mining and quarrying Supervise and coordinate activities of workers engaged in underground and surface mining operations and quarries.	fill foreman/woman- underground mining; mine captain; mine foreman/woman; mine supervisor; quarry supervisor
73400 – Heavy equipment operators Operate heavy equipment used in the construction and maintenance of roads, bridges, airports, gas and oil pipelines, tunnels, buildings and other structures; in surface mining and quarrying activities; and in material handling work. Apprentices are also included.	backhoe operator; bulldozer operator; grader operator; heavy equipment operator; surface mining equipment operator
72201 – Industrial electricians Install, maintain, test, troubleshoot and repair industrial electrical equipment and associated electrical and electronic controls. Apprentices are also included.	industrial electrician; mill electrician; mine electrician; plant electrician; plant maintenance electrician
72401 – Heavy-duty equipment mechanics Repair, troubleshoot, adjust, overhaul and maintain mobile heavy-duty equipment used in construction, transportation, forestry, mining, oil and gas, material handling, landscaping, land clearing, farming and similar activities. Apprentices are also included.	construction equipment mechanic; diesel mechanic- heavy equipment; heavy equipment mechanic; heavy mobile mining equipment mechanic; heavy-duty equipment technician
72106 – Welders and related machine operators Operate welding equipment to weld ferrous and non-ferrous metals. This unit group also includes machine operators who operate previously set up production welding, brazing and soldering equipment. Apprentices are also included.	brazing machine operator; brazing machine setter; journeyman/woman welder; production welder; soldering machine operator

80010 – Managers in natural resources production and fishing Plan, organize, direct, control and evaluate the operations of establishments mining and quarrying.	director of mining; drilling operations manager; mine manager; quarry manager
85110 – Mine labourers Carry out a variety of general labouring duties to assist in the extraction of coal, minerals and ore, and in other services in support of underground mining.	chute puller; mine helper; mine labourer; pit scaler- underground mining; shoveller- underground mining
84100 – Underground mine service and support workers Perform a range of duties related to the operation of orepasses, chutes and conveyor systems, the construction and support of underground structures, passages and roadways, and the supply of materials and supplies to support underground mining.	backfiller- underground mining; blaster helper- underground mining; conveyor operator- underground mining; crusher operator- underground mining; driller helper- underground mining
22101 – Geological and mineral technologists and technicians Provide technical support and services in geophysics, geology, mining and mining engineering, mineralogy, extractive and physical metallurgy, metallurgical engineering and environmental protection.	assayer; geological technician; log technician; metallurgical technologist; mining engineering technologist; mining technologist
21301 – Mechanical engineers Research, design and develop machinery and systems for heating, ventilating and air conditioning, power generation, transportation, processing and manufacturing. They also perform duties related to the evaluation, installation, operation and maintenance of mechanical systems.	design engineer – mechanical; energy conservation engineer; mechanical engineer; mechanical maintenance engineer; power generation engineer
21330 – Mining engineers Plan, design, organize and supervise the development of mines, mine facilities, systems and equipment; and prepare and supervise the extraction of metallic or non-metallic minerals and ores from underground or surface mines.	mine design engineer; mine development engineer; mine layout engineer; mine production engineer; mine safety engineer
93100 – Central control and process operators, mineral and metal processing Operate and monitor multi-function process control machinery and equipment to control the processing of mineral ores, metals or cement.	blast furnace operator; central control caster; central control room operator- primary metal processing; breakdown mill operator; rolling mill control operator
22312 – Industrial instrument technicians and mechanics Repair, maintain, calibrate, adjust, and install industrial measuring and controlling instrumentation. Apprentices are also included.	apprentice industrial instrument mechanic; industrial instrument mechanic; industrial instrument technician; industrial instrumentation technician; process control equipment mechanic
21102 – Geoscientists Conduct programs of exploration and research to extend knowledge of the structure, composition and processes of the earth, to locate, identify and extract hydrocarbon, mineral and groundwater resources and to assess and mitigate the effects of development and waste disposal projects on the environment.	environmental geologist; exploration geologist; geologist; geophysicist; hydrogeologist
94100 – Machine operators, mineral and metal processing Operate machinery to process mineral ore and metal.	ball mill operator; billet heater; milling machine operator - mineral and metal processing; piercing mill operator- primary metal processing; uranium classifier operator
92100 – Power engineers and power systems operators Operate and maintain reactors, turbines, boilers, generators, stationary engines and auxiliary equipment. Power systems operators monitor and operate switchboards and related equipment in electrical control centres. Apprentices are also included.	auxiliary plant operator; building systems technician; control room operator- electrical power systems; distribution control operator- electrical power systems; power engineer

21300 – Civil engineers Plan, design, develop and manage projects for the construction or repair of buildings, earth structures, powerhouses, roads, airports, railways, rapid transit facilities, bridges, tunnels, canals, dams, ports and coastal installations and systems related to highway and transportation services, water distribution and sanitation. Civil engineers may also specialize in foundation analysis, building and structural inspection, surveying, geomatics and municipal planning.	civil engineer; construction engineer; environmental engineer; geomatics engineer; surveying engineer
92010 – Supervisors, mineral and metal processing Supervise and coordinate the activities of workers engaged in mineral and metal processing and manufacturing.	milling plant foreman/woman; mixing plant foreman/woman; ore milling supervisor; rolling foreman/woman - primary metal processing; uranium processing foreman/woman

Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024; Statistics Canada National Occupational Classification, 2021.

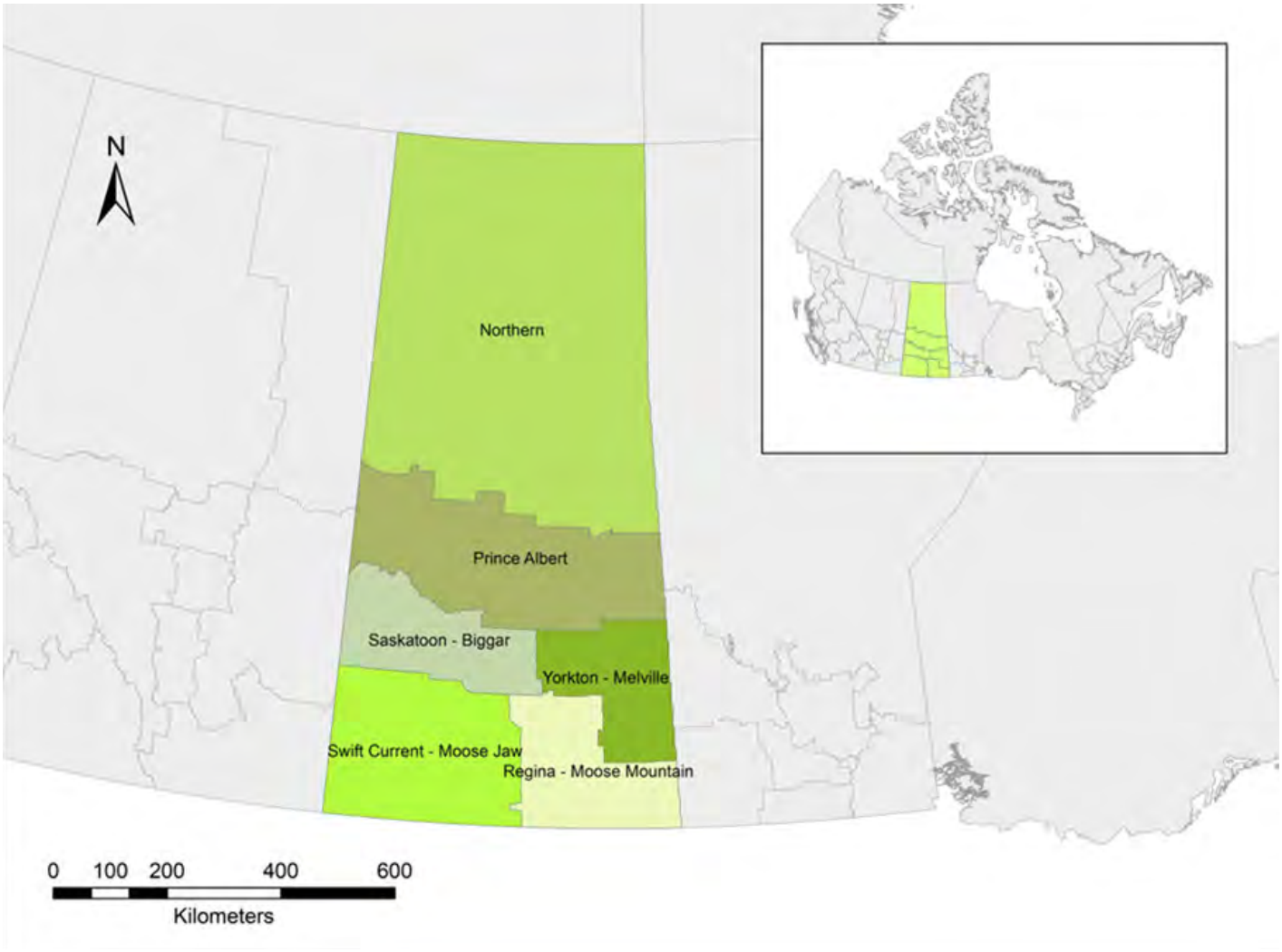
Table D2: Broad Occupational Categories Definitions and Examples

Broad Occupational Categories Definitions	Examples of Occupations in Category
Engineers Roles requiring formal education and training in engineering.	Mechanical engineers; Mining engineers; Civil engineers (including environmental engineers); Electrical and electronics engineers; Metallurgical and materials engineers.
Human Resources & Finance Roles related to managing personnel and financial aspects within a mining organization.	Human resources managers; Financial auditors and accountants; Human resources professionals; Financial and investment analysts; Financial managers.
Production Workers directly involved in the extraction and processing of minerals.	Underground production and development miners; Heavy equipment operators; Mine labourers; Underground mine service and support workers; Central control and process operators, mineral and metal processing; Power engineers and power systems operators; Machine operators, mineral and metal processing.
Professional & Physical Science Occupations Occupations in fields involving scientific expertise and analysis crucial for mining operations and environmental management.	Geoscientists and oceanographers; Urban and land use planners; Natural and applied science policy researchers, consultants and program officers; Chemists.
Supervisors, Coordinators & Superintendent Personnel overseeing work teams, ensuring coordination and safety compliance.	Supervisors, mining and quarrying; Managers in natural resources production and fishing; Supervisors, mineral and metal processing; Supervisors, supply chain, tracking and scheduling coordination occupations; Facility operation and maintenance managers.
Support Workers Individuals providing essential assistance in various capacities, contributing to the smooth functioning of the mining operation.	Administrative officers; Occupational health and safety specialists; Procurement and purchasing agents and officers; Public and environmental health and safety professionals; College and other vocational instructors.
Technical Jobs requiring specialized technical knowledge in equipment maintenance, quality control and data analysis.	Geological and mineral technologists and technicians; Industrial instrument technicians and mechanics; Information systems specialists; Civil engineering technologists and technicians (including environmental technicians); Electrical and electronics engineering technologists and technicians.
Trades Skilled tradespeople involved in construction, maintenance, and repair work, supporting the mining infrastructure.	Construction millwrights and industrial mechanics; Industrial electricians; Heavy-duty equipment mechanics; Welders and related machine operators; Electricians (except industrial and power system).

Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024.

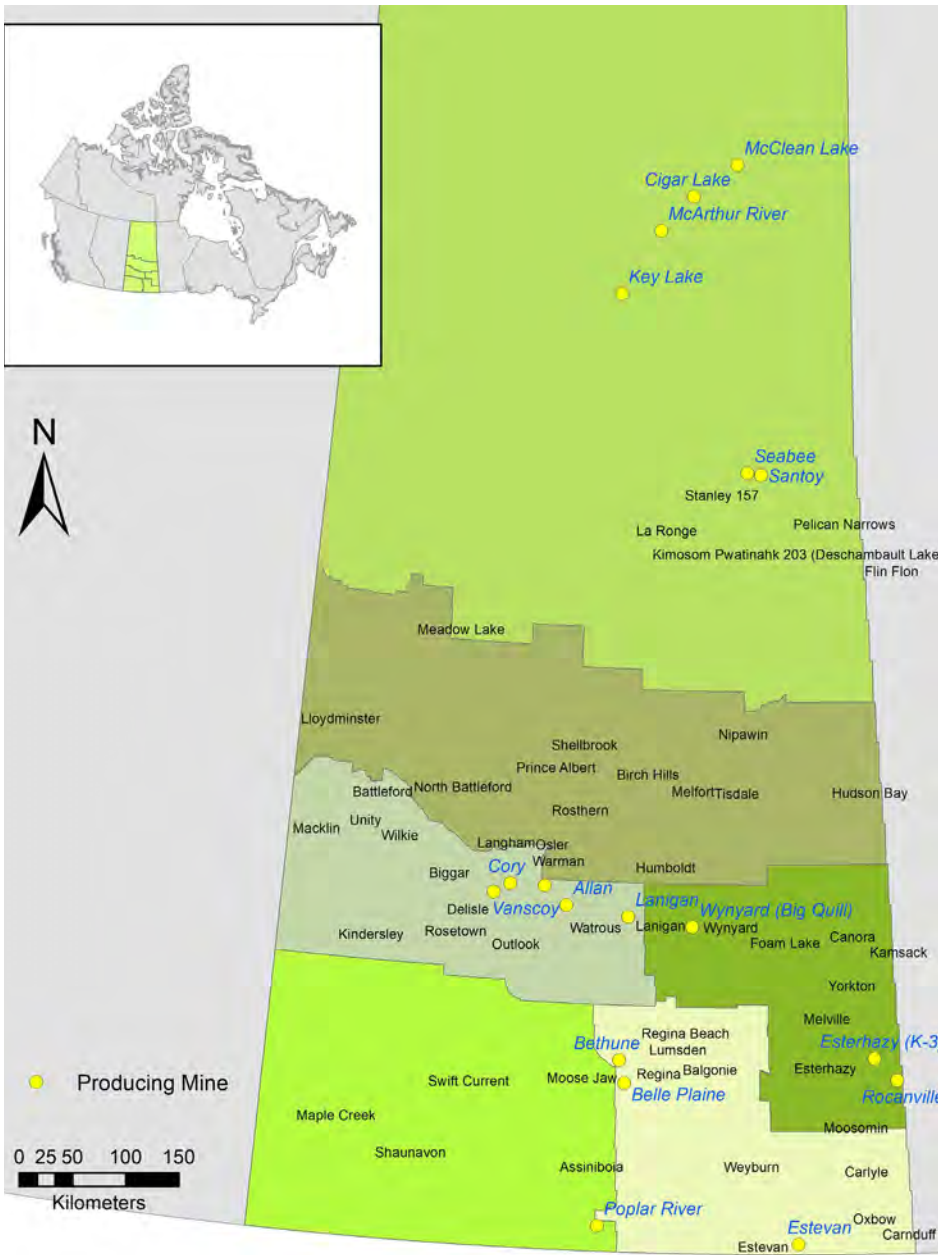
Appendix E: Geography and Boundary Definitions

Figure E1: Economic Regions and Area of Study



**Note: For more information on Canada's economic regions, refer to Economic Regions Reference Map.*
Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024.

Figure E2: Reference Map of Major Producing Mines and Population Centres in Saskatchewan (2023)



**Note: For more information on producing mines in Canada, refer to Canada's Minerals and Mining Map.*

Source: Mining Industry Human Resources Council, Saskatchewan Labour Market Analysis, 2024; Natural Resources Canada, Canada's Minerals and Mining Map, 2023.


Mosaic

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